

# ***WATER HEATERS***

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*IN WARRANTY*

**TECHNICAL HELPLINE**

**01773 828400**

***HEATCALL***

**01773 828100**



THESE ARE CAT II2H3+ APPLIANCE

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## Mandatory warning notice for CEE countries

**WARNING**, this appliance was designed, approved and inspected to meet the requirements of the English market.

The identification plate located on the inside of the appliance certifies the origin where the product was manufactured and the country for which it is intended.

If you see any exception to this rule, please contact your nearest Saunier Duval dealer.

Thank you in advance for your assistance.

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## OPALIS 5 - OPALIS 6

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# INTRODUCTION

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**These instructions describe how to install and use Saunier Duval appliances. It is important to pay attention to the warnings on the packaging and the casing of the appliances, and follow the information given in this document.**

The water heaters are gas-fired appliances providing instant hot water.

This appliance is of an atmospheric type, i.e. the air in the premises in which the water heater is installed, is used for the burner combustion. It is therefore important for the installation to be carried out in compliance with the current Standards, especially in terms of the ventilation of the premises.

In situations where the appliance may be used continuously for more than five minutes at a time, the appliance must be flued in accordance with the latest issue of BS 5440 Part 1.

- The **OPALIS 6** models have a permanent pilot and a fixed output of 9,65 kW.

- The **OPALIS 5** models have a permanent pilot and a fixed output of 8,70 kW. **They may only be run for short periods.**

The **OPALIS 6** models are fitted with a flue safety device that shuts off the appliance in the event of a problem with the flue system. It is essential, for correct operation of this device, that the appliance is correctly flued in accordance with the latest issue of BS 5440 Part 1.

The **OPALIS 5** models are fitted with an atmospheric control pilot and a safety mechanism to prevent operation in the event of a fault or blockage.

These appliances are available in the following versions :

- normal pressure without taps,
- normal pressure with taps.



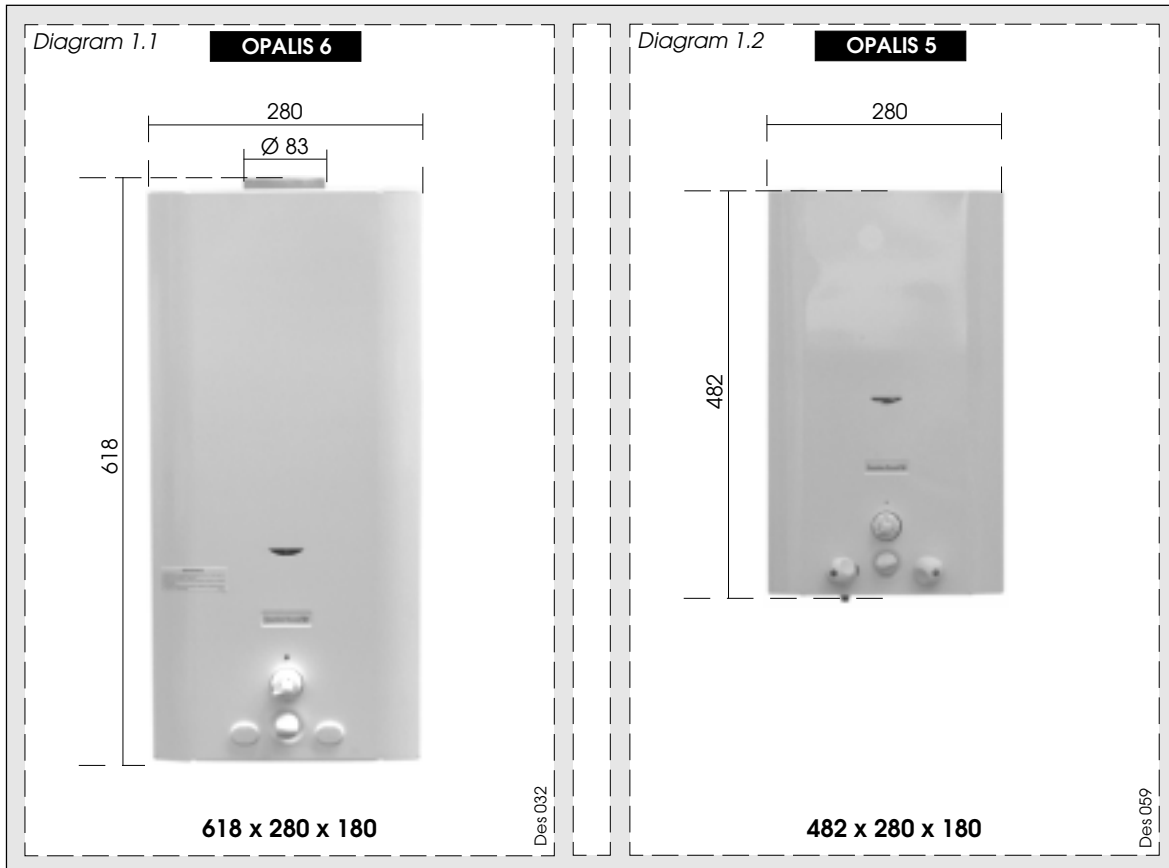
## DIMENSIONS

### Accessories

Various size spouts are available. Please contact your supplier.

**Net weight** : 8,5 Kg

**Gross weight** : 9 Kg



## TECHNICAL DATA

Model	Input	Water inlet pressure	Gas category	Usable gases	TYPE
OPALIS 6	fixed	normal	II <sub>2</sub> H <sub>3</sub> +	G30 - G31	B11BS

This appliance is of the II<sub>2</sub>H<sub>3</sub>+ Gas Category for use with Propane (G 30) or Butane (G 31) only.

Model	Input	Water inlet pressure	Gas category	Usable gases	TYPE
OPALIS 5	fixed	normal	II <sub>2</sub> H <sub>3</sub> +	G20	AAs

This appliance is of the II<sub>2</sub>H<sub>3</sub>+ Gas Category for use with Natural gas (G 20) only.

# TECHNICAL DATA

## OPALIS 6

● Output (P)	9,65 kW	(32905 Btu/h)
● Efficiency	78 %	
● Minimum flow rate	2,7 l/min	(0.6 g/min)
● Maximum flow rate	6 l/min	(1.3 g/min)
● Minimum water pressure (pw)	0,6 bar	(9 lb/in <sup>2</sup> )
● Maximum water pressure (1) (pw)	10 bar	(150 lb/in <sup>2</sup> )
● Nominal rated heat input (Q)	12,4 kW	(42280 Btu/h)
● Temperature rise	25 °C	
● Fresh air flow rate	24 m <sup>3</sup> /h	
<b>Butane (G30) : Appliance inlet pressure</b>	<b>28/30 mbar</b>	
<b>Propane (G31) : Appliance inlet pressure</b>	<b>37 mbar</b>	
● Ø pilot injector	0,18 mm	
● Ø Burner injector	0,70 mm	
● Ø diaphragm	8,00 mm	
● Nominal gas flow rate	0,88 kg/h	

Gas connection ..... 15 mm copper tail  
 Cold water connection ..... 15 mm copper tail  
 Hot water outlet ..... 12 mm copper tail

## OPALIS 5

● Output (P)	8,7 kW	(29665 Btu/h)
● Efficiency	75 %	
● Minimum flow rate	2,5 l/min	(0.55 g/min)
● Maximum flow rate	5 l/min	(1.08 g/min)
● Minimum water pressure (pw)	0,5 bar	(7,5 lb/in <sup>2</sup> )
● Maximum water pressure (1) (pw)	10 bar	(150 lb/in <sup>2</sup> )
● Nominal rated heat input (Q)	11,7 kW	(39895 Btu/h)
● Temperature rise	25 °C	
● Fresh air flow rate	— m <sup>3</sup> /h	
<b>Natural (G20) : Appliance inlet pressure</b>	<b>20 mbar</b>	
● Ø Base pilot injector	0,21 mm	
● Ø Vent pilot injector	0,35 mm	
● Ø Burner injector	1,20 mm	
● Ø diaphragm	3,00 mm	
● Nominal gas flow rate (2)	1,11 m <sup>3</sup>	

Gas connection ..... 15 mm copper tail  
 Cold water connection ..... 15 mm copper tail  
 Hot water outlet ..... 12 mm copper tail

(1) These maximum water pressure values take into account the dilatation of the water.

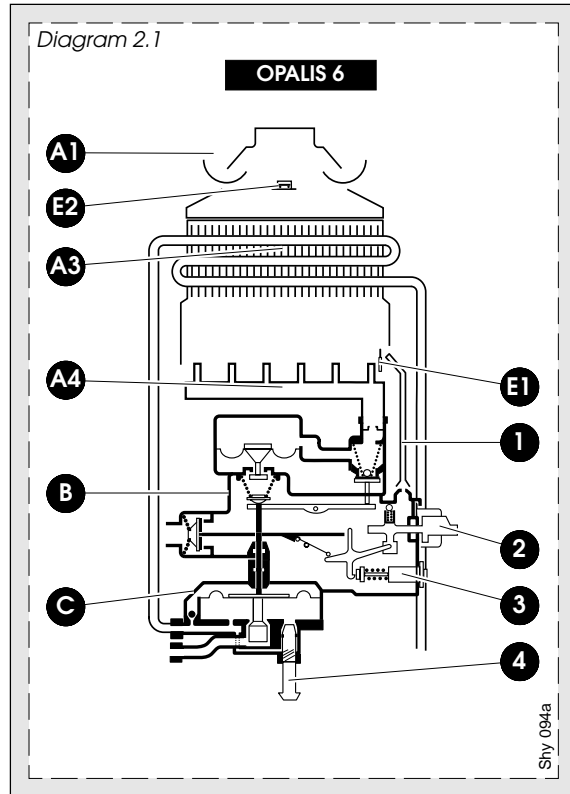
(2) All values for nominal gas flow rates expressed in m<sup>3</sup>/hr are given for a gas temperature of 15° C and an atmospheric pressure of 1013 mbar.



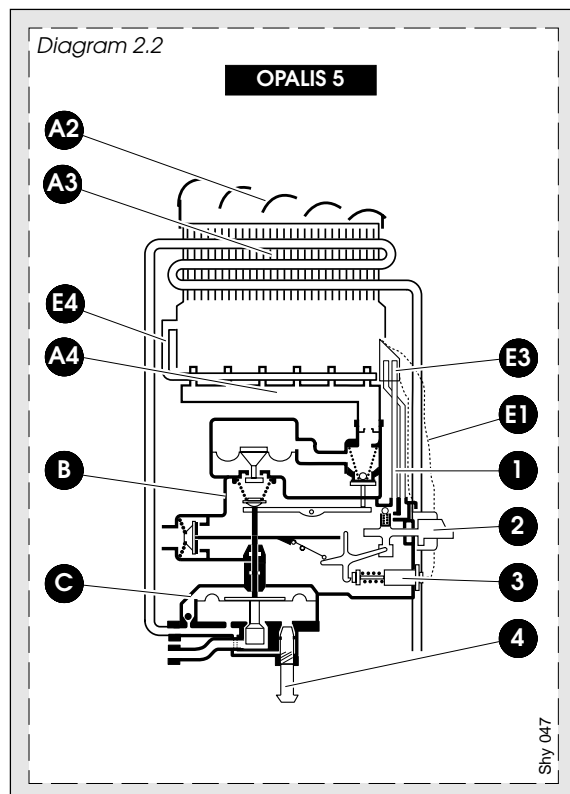
# HEATER SCHEMATIC

## SCHEMATIC DIAGRAM

- A1 ..... draught diverter
- A3 ..... heat exchanger
- A4 ..... burner
- B ..... gas mechanism
- C ..... water mechanism
- E1 ..... thermocouple
- E2 ..... flue safety device
- 1 ..... pilot
- 2 ..... user control
- 3 ..... flame supervision device
- 4 ..... temperature selector



- A2 ..... deflector
- A3 ..... heat exchanger
- A4 ..... burner
- B ..... gas mechanism
- C ..... water mechanism
- E1 ..... thermocouple
- E3 ..... atmospheric control safety device
- E4 ..... safety device sensor
- 1 ..... pilot
- 2 ..... user control
- 3 ..... flame supervision device
- 4 ..... temperature selector



# INSTALLATION REQUIREMENTS

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This appliance must be installed in accordance with the latest issue of the following :

BS 5440 : Part 1 flues. Flues and air supply for gas appliances of rated input not exceeding 60 kW.

BS 5440 : Part 2 air supply. Flues and air supply for gas appliances of rated input not exceeding 60 kW.

BS 5546 : Installation of gas hot water supplies for domestic purposes.

BS 5482 : Code of practice for domestic butane and propane gas burning installations.

Building regulations. The bylaws of the local water undertaking. The Gas Safety Regulations : it is the law that all gas appliances are installed by competent persons in accordance with the above regulations. Failure to install appliances correctly could lead to prosecution. It is in your own interest, and that of safety, to ensure the law is complied with.

It is essential that the appliance is used in a well ventilated room, NOT in a confined space (i.e. shower cubicle).

The appliances comply with Standard EN 26 (basic appliances).

Specific conditions for the **Opalis 5**

Under no circumstances must a flueless water heater be installed in a bathroom, shower room, bedroom, living room or any other such room by a permanent opening except any opening provided for air admission.

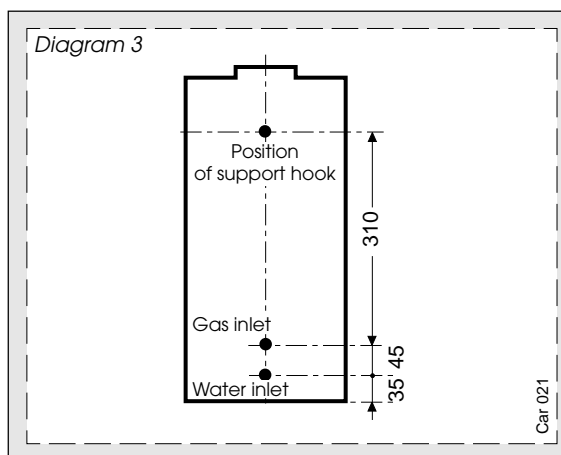
**A free space of 0,60 metre or more must be left above stand alone appliances.**



# WATER HEATER INSTALLATION

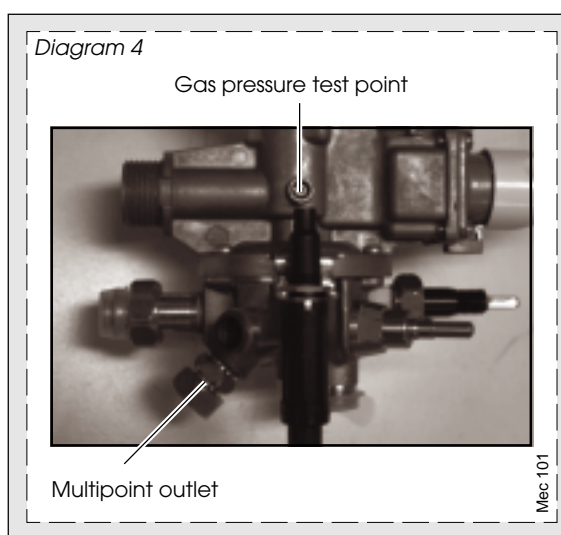
## LOCATION

- Avoid installing the appliance in a room in which the air is corrosive or dusty.
- Avoid installing the appliance in close proximity to a cooking appliance.
- The recommended height to install the appliance is 1.5 m (59 in) from the viewing window to the ground.
- Space required for maintenance :
  - each side = 50 mm (2 in)
  - base = 150 mm (6 in).
- The appliance must be installed with a minimum dimension of 20 mm (3/4 in) from the rear of the appliance to the mounting surface.



## INSTALLATION

- Flush out service pipes to remove any foreign material before connecting to the 15 mm water inlet elbow on the wall plate.
- Mark the position of the hook which supports the top of the heater, see **diagram 3**.
- Temporarily attach the heater to the wall fixing plate and measure the distance between the wall and the back of the heater. This will indicate the length of hook required.
- Remove the heater. Drill a 6.5 mm hole in the wall and insert the wall plug, supplied.
- Screw home the hook and leave it protruding the correct distance to keep the heater vertical.
- Mount the heater onto the hook and connect the gas and water unions at the wall fixing plate using the two washers supplied.
- Tighten up all fittings.
- For installation with a spout - attach the swivel spout to the spout outlet.
- For multipoint installation - remove the nut and blanking plate from the multipoint outlet, see **diagram 4**.
- Fit the 12 mm copper multipoint outlet connector and washer.
- Connect the pipe to the remote draw off taps.





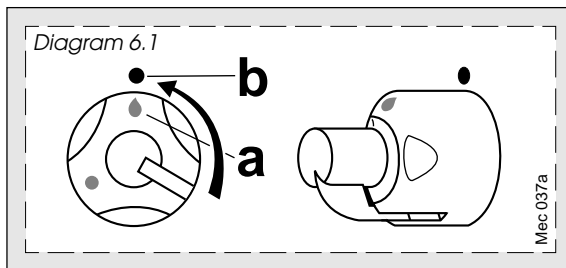
# COMMISSIONING & LIGHTING - OPALIS 6

## Commissioning

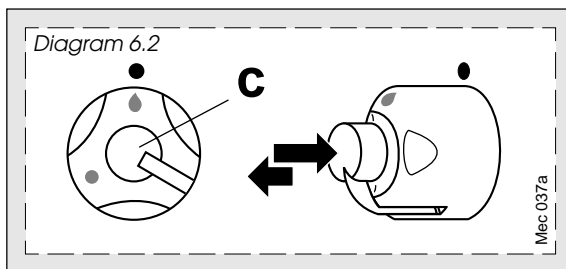
- With the front casing removed, fit the temperature selector knob where applicable.
- On tap models, fit the hot tap handle (red) to the left hand spindle and the cold tap handle (blue) to the right hand spindle.
- Open all remote hot taps and on tap models open the hot tap on the front of the heater.
- Open the water service cock.
- When all the air has been removed from the system, close the taps and check all joints for water soundness.

## Lighting

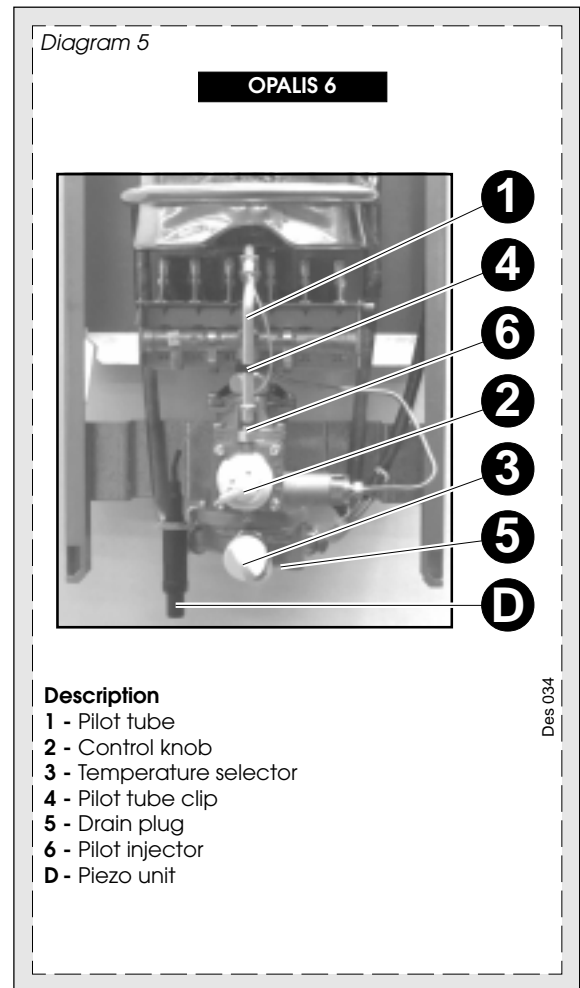
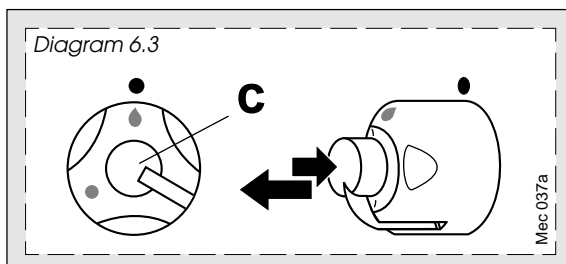
- Turn the control knob anti-clockwise as far as it will go, the red flame (a) will line up with the mark (b) on the casing, see **diagram 6.1**.



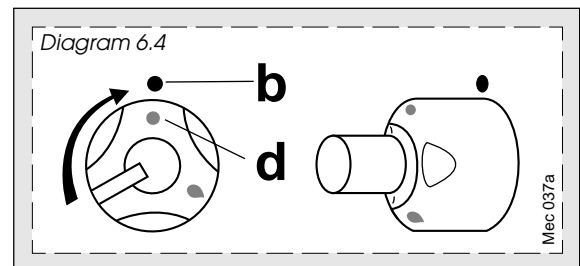
- Fully depress and then release centre button (c), the button will remain semi-depressed, see **diagram 6.2**.
- Press piezo igniter button (D) see **diagram 5**. It may be necessary to wait a few moments for the gas to reach the pilot.



- Wait 15 seconds and then fully depress and release the centre button (c) of the control knob, see **diagram 6.3**.
- If the pilot flame should go out, wait 60 seconds and repeat lighting sequence.



- The heater is now ready for operation when a hot tap is opened.
- To turn off the heater, turn control knob clockwise as far as it will go, the white mark (d) will line up with the mark (b) on front panel, see **diagram 6.4**.  
**NB**: To turn off the heater while button (c) is in pilot position, see **diagram 6.2**, press a second time, see **diagram 6.3**, and turn knob fully clockwise.



# COMMISSIONING & LIGHTING - OPALIS 5

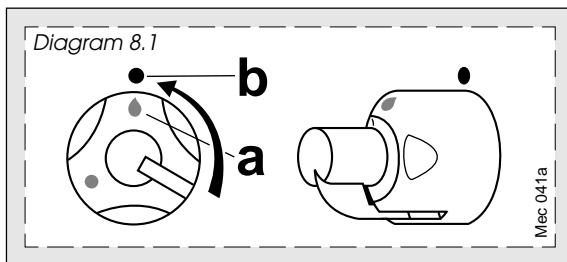
## Commissioning

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- Open all remote hot taps and, on tap models, open the hot tap on the front of the heater.
- Open the water service cock.
- When all the air has been removed from the system, close the taps and check all joints for water soundness.

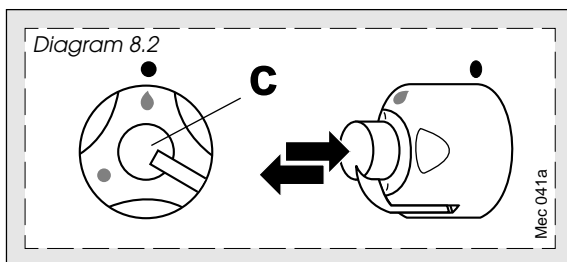
## Lighting

For your convenience, this appliance has been fitted with a rapid-vent starter pilot. This will prevent having to press the button for a long time at start-up or after long stoppage.

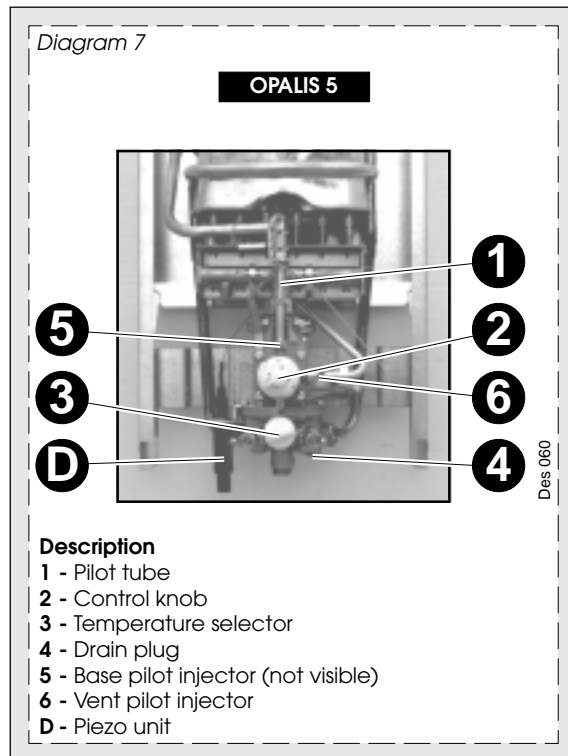
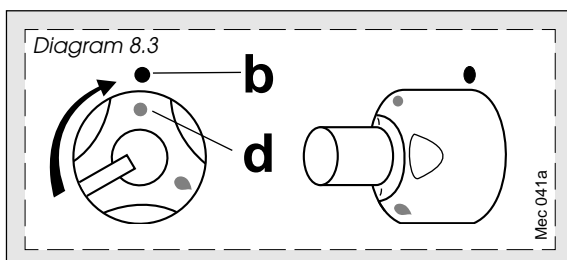
- Turn control lever (**2 diagram 7**) to align red flame (**a**) with mark (**b**) on front panel (**diagram 8.1**).



- Push button (**c**)(**diagram 8.2**) right down and hold ; air contained in the pipes is discharged by vent pilot. The gas cannot reach the burner.



- Push piezo-unit button (**D diagram 7**), and starter pilot ignites followed by safety pilot.
- Wait approximately 15 seconds for the thermocouple to heat up, then release button (**c**) to return ; appliance is then ready for operation.
- To turn off the appliance, turn control lever to align white circle (**d**) with mark (**b**) on front panel (**diagram 8.3**).



# ADJUSTMENTS

It is not possible to adjust the gas input, this has been pre-set during manufacture.

Check the burner pressure by fitting a suitable gauge onto the pressure test point situated on the bottom left hand side of the burner injector bar, see **diagram 9**.

### OPALIS 6 : LPG

The correct burner pressure is between 32,5 mbar and 40 mbar (13" WG and 16" WG) for propane and 25,5 mbar and 31 mbar (10,2" WG and 12,4" WG) for butane. If the burner pressure is within these values the heat input will be correct. If the pressure is not correct, check the inlet gas pressure at the test point on the left hand side of the gas section, see **diagram 4**, refer to "TECHNICAL DATA" for the correct inlet pressure.

### OPALIS 5 : NATURAL GAS

The correct burner pressure is between 8,5 mbar and 10,5 mbar (3,4" WG and 4,2" WG) for natural gas. If the burner pressure is within these values the heat input will be correct. If the pressure is not correct, check the inlet gas pressure at the test point on the left hand side of the gas section, see **diagram 4**, refer to "TECHNICAL DATA" for the correct inlet pressure.

### Slow ignition

The servo gas device ensures automatic adjustment of slow ignition.

### Hot water temperature adjustment

These appliances are fitted with a temperature selector (**4 diagram 9**) acting directly on the water flow rate.

By turning this selector :

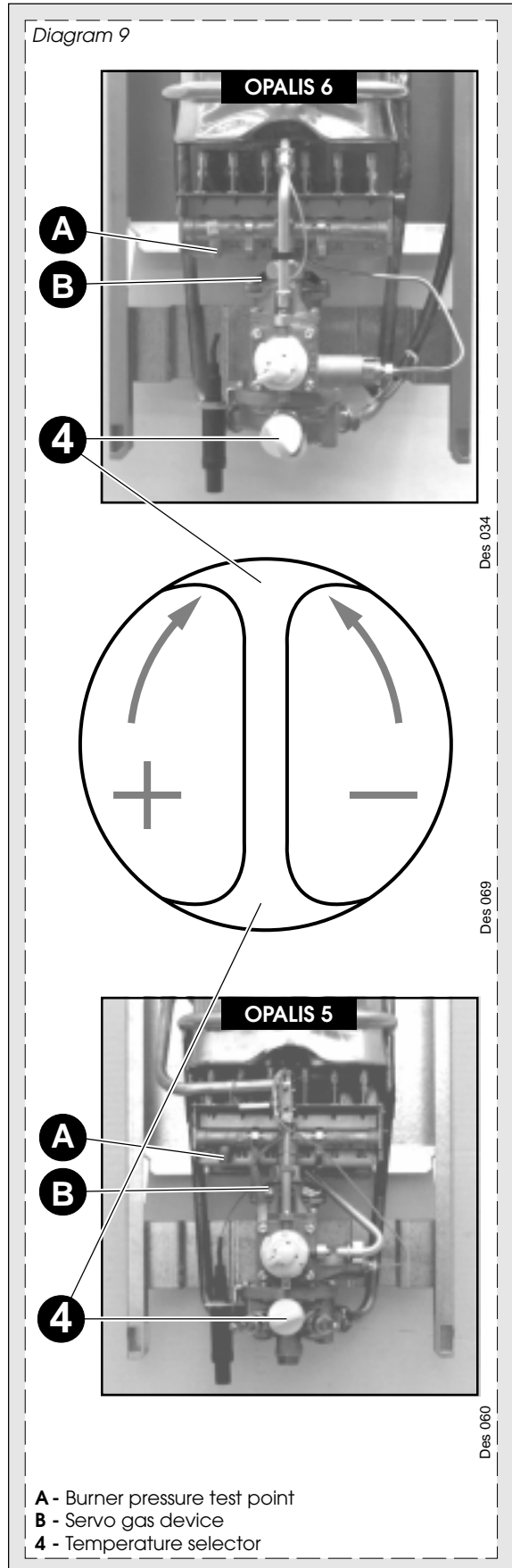
- in the direction "+", the temperature increases and the flow rate decreases;
- in the direction "-", the temperature decreases and the flow rate increases.

The flow rate of the hot water is adjustable :

- for the **OPALIS 6** : between 2.7 l/mn with an increase of 50 °C and 6 l/ mn with an increase of 25 °C.
- for the **OPALIS 5** : between 2.5 l/mn with an increase of 50 °C and 5 l/ mn with an increase of 25 °C.

In all cases, always turn the hot water tap full on, in order to allow the temperature selector to adjust the water flow rate automatically, maintaining the temperature selected constant.

**Important** : to prevent premature scaling of the heat exchanger in your appliance, avoid leaving the selector (**4 diagram 9**) in the minimum flow-maximum temperature position, when the use of very hot water is not required.



**IMPORTANT** : It is forbidden to bypass or tamper with any of the safety devices. If, after attempting to use the heater, a safety shut-down condition occurs, this must be rectified immediately by a qualified, competent person.

### OPALIS 6 MODELS

The heater is fitted with a flue safety device. In the event of total or partial obstruction of the flue system or detrimental downdraught into the heater, the safety device will shut off the heater requiring a manual re-start. Restarting the heater must only be carried out after waiting 15 minutes. Repeated safety shutdown must be dealt with by a qualified, competent person.

### OPALIS 5 MODELS

#### Safety pilot atmospheric control

When the ambient atmosphere reaches a critical vitiation threshold, the pilot is extinguished. The thermocouple cools very rapidly thereby causing the disconnection of the appliance, thereby automatically cutting off the gas supply to the appliance.

#### Heat exchanger - Blockage safety device

This device consists of a tube fixed onto the left side of the combustion chamber. The other end rests on a cradle integral with the stirrup fixed on the burner bracket.

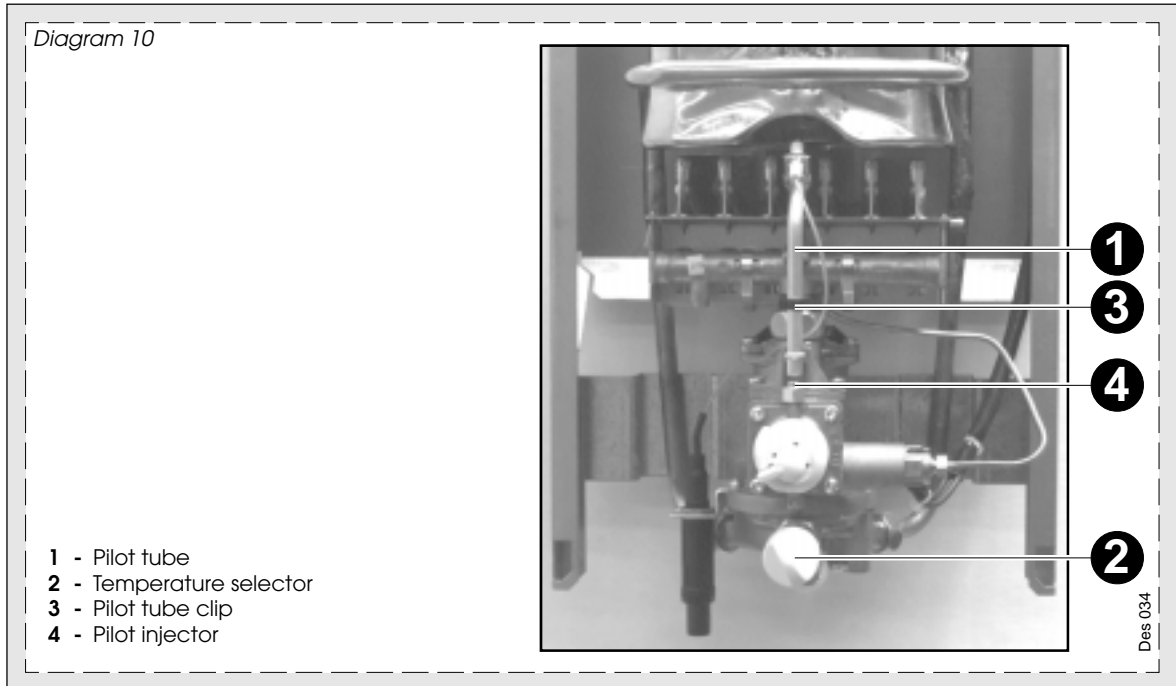
If the heat exchanger becomes blocked, the path offered to the flue gases between the fins decreases, and a stagnation of the combustion products in the combustion chamber occurs, the former tending to leak increasingly towards the bottom of this chamber.

The tube permits recycling of the combustion products discharged at the level of the pilot. The recycling flow rate of these products towards the pilot increases as the heat exchanger becomes more restrictive. When it reaches a critical threshold, it extinguishes the pilot leading to an interruption of the gas supply to the burner.

**After a service call**, the technician must check the blockage safety device is in working order :

- Dismantle the deflector and place the test-mesh bottom plate at the top of the heat exchanger
- Ignite the pilot and leave the pilot to operate for a minimum of 2 minutes
- start the appliance and check that the complete extinction of the appliance takes place in a time less than or equal to 40 seconds
- replace the test mesh bottom plate with the deflector.

## SERVICING / MAINTENANCE - OPALIS 6



**To ensure the continued efficient and safe operation of the water heater, it is recommended that it is checked and serviced annually.**

### Heat exchanger descaling

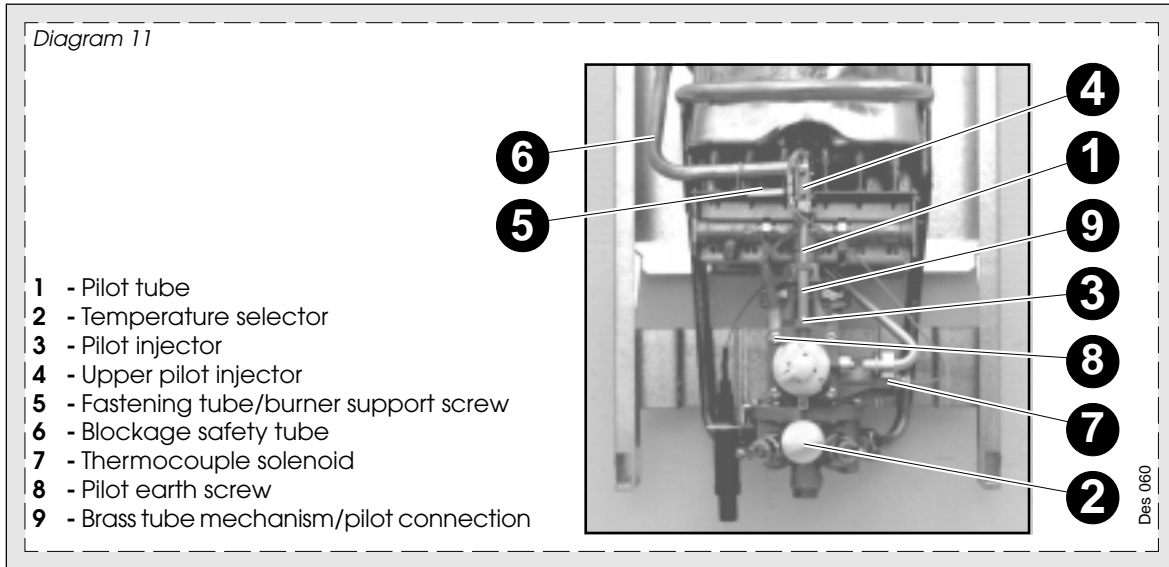
If the heater is installed in a hard water area and a drop in water flow rate is noticed and/or noise occurs, the heat exchanger may need descaling.

#### Proceed as follows :

- shut off water supply
- remove heat exchanger and fill with a 15 % inhibited acid solution
- leave to act for 10 to 15 minutes then rinse thoroughly
- If necessary, repeat operation.

### Cleaning of pilot

- Unclip the pilot tube (1)
- Clean pilot tube by blowing through
- Clean pilot injector by brushing lightly
- If necessary, remove pilot injector and blow through
- Refit parts in reverse order to removal.



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- leave to act for 10 to 15 minutes then rinse thoroughly
- If necessary, repeat operation.

### Cleaning of pilot

An obstruction, even partial, of the pilot is identifiable by a change in the appearance of the small flame visible at the top of the pilot tube.

During normal functioning, this flame has the appearance of a very steady, small blue cone ; when the pilot is fouled, this flame becomes feebler or takes on a yellow colour.

To clean the pilot (1) :

- turn off appliance
- pull back selector control lever (2) and unscrew plastic nut
- unscrew, but do not remove, screw (5) securing blockage safety tube (6)
- separate tube (6) from heat exchanger and remove from cradle, rotating from the back to the front
- remove screw (5) and thermocouple nut. Remove thermocouple
- remove pilot earth screw (8)

- lift pilot until pilot tube (1) slips out of brass tube (9), then pull forward away from heater until scoop support stirrup is free
- brush interior of scoop with soft brush
- clean upper pilot injector (4) by immersing extremity of scoop in 15 % acetic acid solution
- clean lower part of tube by blowing through
- unscrew brass tube (9) and blow through upper part
- clean lower pilot injector (3) by brushing lightly and blowing through
- refit parts in reverse order to removal.

### Cleaning of blockage safety device

The tube and its cradle having been taken out (see dismantling procedure in "Cleaning of pilot" paragraph), check that there is no obstruction in Ø 8 hole in element pipe.

**NB :** the making safe of the appliance by the blockage safety device involves cleaning or replacing the element.

# DRAINING

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If there is a risk of frost it is essential to drain the heater :

- Shut off gas supply
- Shut off water supply
- open hot-water cocks
- remove drain screw under water mechanism.

