User instructions TWIN80C

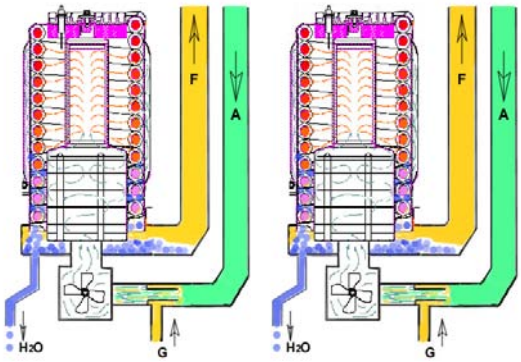
Wall hung, fan flue, room sealed gas boiler

2006 **E000129017**

General
The TWIN 80C is a wall hung, fan flue, room sealed, high efficiency condensing gas boiler for central heating and / or under floor heating systems.
The type plate, which specifies the type of gas etc. to be used, for which the unit is set, is on the left side of the unit.

The appliance is equipped with pre-set gas/air ratio regulators. The purpose of this regulator is to keep the gas/air ratio in the burner as optimal as possible at all times e.g. when modulating. This ensures clean and reliable combustion across the entire load range. In addition it achieves high part-load efficiency.

How the boiler works



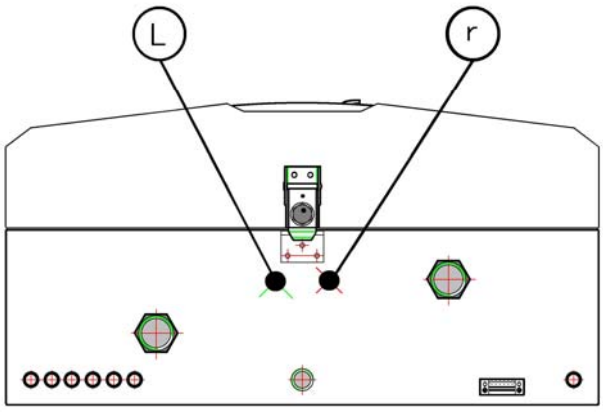
The TWIN 80C incorporates 2x heat units. Each heat burner works independently, cascade controlled by two printed circuit boards.
Master – Left hand side printed circuit board.
The Master is the leading board, calculates and divides the necessary power over both units. Therefore the regulation controls will always be connected to the Master.
Slave – right hand side printed circuit board.
In most cases of a lock-out of the Master printed circuit board the Slave is still able to operate correctly.

A fan sucks the air required for the combustion through the air feed canal (A). Because the combustion air in the venturi sucks an under pressure, the correct amount of gas (G) is automatically added to the combustion air.
The flammable gas/air mixture thus obtained is fed to the burner(s), via a mixing chamber, to be ignited at the surface of the burner(s) by a ceramic glow plug. The hot combustion gases are efficiently fed through the heat exchanger(s), where they give their heat to the system water. The flue gases are fed outdoor, through the flue tube (F), into a combined flue tube exhaust canal.
The formed condensation water (H_2O) is discharged through the waste trap.

Burner is on
- when the room thermostat is closed (heat demand)
- and when the actual flow temperature is 5°C below the set point (desired heating flow temperature)
- and after 3 minutes anti-reciprocital time, if applicable, after a reciprocital stop

Burner is off
- when the room thermostat is open (end of heat demand)
- when the actual flow temperature is 3°C above the set point (blocking)
- or when the actual flow temperature is 3°C above the maximum permissible central heating temperature.

LED indication



Two LED's have been placed under the appliance informing the user the status of each unit individually.

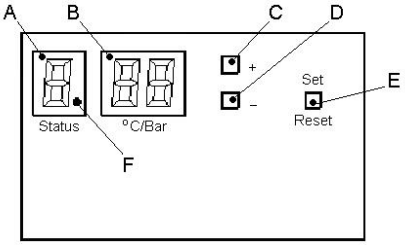
The **left hand side LED** (L) is indicating the actual status of the Left hand side heating unit.
- LED is ON = burner concerned is ON
- LED is OFF = burner concerned is OFF
- LED is FLASHING = unit concerned is LOCK-OUT

The **right hand side LED** (r) is indicating the actual status of the right hand side heating unit.
- LED is ON = burner concerned is ON
- LED is OFF = burner concerned is OFF
- LED is FLASHING = unit concerned is LOCK-OUT

Display

To be able to read the codes of the, open the cover in front of the appliance.

A = Status
B = Reading
C = "+ button"
D = "- button"
E = Set / Reset
F = Flame



The left 7-segment LED shows the status or the menu step. The two right 7-segment LED's show the temperature, the pressure or the parameter value.

What is a functional blocking?
During blocking operation, the display status shows a ***continuous*** indication. The regulation blocks the burner till blocking conditions are within certain requirements.

Most blocking actions restore automatically in time. Some blocking operations need a reset of the 230V supply power or an action manually.
Note that each blocking operation will stay at least with 3 minutes anti-cycling time.

What is a functional lock-out?
During lock-out operation, the display status shows a ***flashing*** indication.
Pump runs over the heating circuit (max 24 hr).
Fan post rinses for 1 minute at 2700 rpm (some lock-outs)

Most lock-out operations can be restored by pressing the 'Set/Reset' button. It is advised to use this button not more than 3 times in a row. Ask your installer for help.
Note that some lock-out operations need a reset of the 230V supply power.

Status indication during normal operation	
Display	Description
-	Initialisation after restoration of supply power
U	Reversed neutral and line
O	No heat demand, stand-by
C	Central heating heat demand, burner off
C.	Central heating heat demand, burner on
P/C.	(Central heating) heat demand, low load water pressure
A/C.	(Central heating) heat demand, low load chimney temperature
c	Central heating pump post-running
b	HWS burner off/ pump post running
b.	HWS burner on
P/b.	HWS, low load by water pressure
A/b.	HWS, low load by chimney temperature
O	Frost protection burner off pump running 8C
o.	Frost protection burner on 3C
C FLASHING	Chimney sweeper function (temp display max/min/ionisation)

Status indication during "blocking" mode (intermittent "L" for master and "r" for slave)	
Display	Description
1	Flow sensor open circuit
1.	Flow sensor short circuit
2	Return sensor open circuit
2.	Return sensor short circuited
4	Flue gas sensor open circuit
A	Flue gas temperature > 80°C
H	Flow sensor > 105°C while the burner was off
J	Blocking flow temperature (3 minutes anti-cycling time)
P	Pump test / Start function blocking / Water pressure
nc	Electronics interruption (manual reset by interruption of electrical supply)
E	No slave connected
b/r	HWS right unit
9	Flow / Return temperature to high

Status indication of "lock-out" mode (flashing) (intermittent "L" for master and "r" for slave)	
Display	Description
1	Boiler does not pass start temperature test
2	Too many restarts
3	Internal regulation fault / A/D conversion fault / external sensor fault /Too many restarts
4	
5	Fan error
6	
7	Gas valve error
8	Flame detected with closed gas valve
A	Flue gas temperature > 95°C
E	Internal interlock fault
H	Flow sensor > 105°C with burner on
F	Too many ignition attempts during
O	Gas valve connection error

Menu structure
By pressing the set/reset button in for longer than 5 seconds, you go to the ‘mode’ menu.
To change the subsequent "Letter" parameter, the user must press the Set/Reset button.
To change the “Range” setting in the parameter, the user must press the “+” or the “–“ button.
Pressing the “+” button you will enter the “view mode” directly, starting at indicating the water pressure wth “8”.

USER / INSTALLER SETTINGS (TWIN80C)			
Letter	**Description**	**Range**	**Factory settings**
C	Heating: Max. flow temperature setting	25 – 90°C	82°C
O	Heating: Pump post-running time	01-25 min, CO=24 hour	05
P	Heating: Max. boiler output	33 – 100%	00 (100%)
h	Extended adjustments for installer (password h=)	10 – 99	10
r	Factory setting return mode; excluded are the settings under Letter “h” (note: for entering press “+” button 5 sec)	= Factory setting = Customised setting	
u	0-10V regulation	0 = Regulation on temperature (°C) 1 = Regulation on boiler input (kW)	0 (4)
o	Configuration of TWIN Power configuration = 01 (input 14,6 – 74.0 kW) Comfort configuration = 00 (input 7,3 – 74.0 kW)	01 / 00	01 (4)
S	Pump mode	00 = Software = Always high = Always low	00 (4)
L	View mode of Left hand side unit	**8 =** Water pressure (in bar) **1 =** Flow temperature (in °C) **2 =** Return temperature (in °C) **3** = 0÷10V **4 =** Outdoor temperature (in °C) **5 =** TWIN flow temperature (in °C) **6 =** Flue gas temperature (in °C) **7 =** Flame signal (in µA DC) **9 =** Last lock-out **A =** Last blocking (internal coding) d =	
r	View mode of right hand side unit	**8 =** Water pressure (in bar) **1 =** Flow temperature (in °C) **2 =** Return temperature (in °C) **6 =** Flue gas temperature (in °C) **7 =** Flame signal (in µA DC) **9 =** Last lock-out **A =** Last blocking (internal coding)	

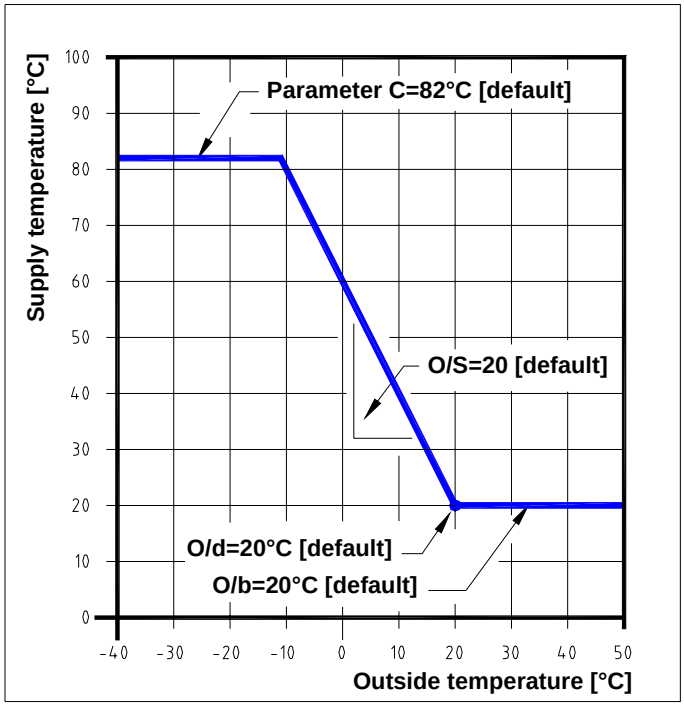
Note: (4) does not return to factory settings

Outdoor sensor **An outdoor temperature sensor (heating) must be an NTC with a resistance of 12kOhm at 25°C** (connected to terminals (3) and (4) of the green connector block)			
Letter	**Description**	**Range**	**Factory settings**
O/b (3)	Basic temperature (outdoor sensor)	10°C – 70°C	40°C (4)
O/S (3)	Slope (outdoor sensor)	1- 100	20 (4)
O/d (3)	Day reference temperature (outdoor sensor)	0°C – 70°C	40°C (4)

Note: (3) Active when an outside sensor is connected, Note: (4) does not return to factory settings

Adjustment heating curve (in case of an outdoor temperature sensor)

By pressing the set/reset button in for longer than 5 seconds, you go to the 'mode' menu.
To change the subsequent "Letter in menu" parameter, the user must press the Set/Reset button.
To change the "Range" setting in the parameter, the user must press the "+" or the "–" button.



Parameter „C"
The setting in the menu „C" makes the maximal heating flow temperature (default 82°C).

O/b-value: The setting of the minimal Heating flow temperature (value in °C).

O/S-value : The setting for the sloop of the curve.
(change of Flow temperature depending on the change of the outside temperature).

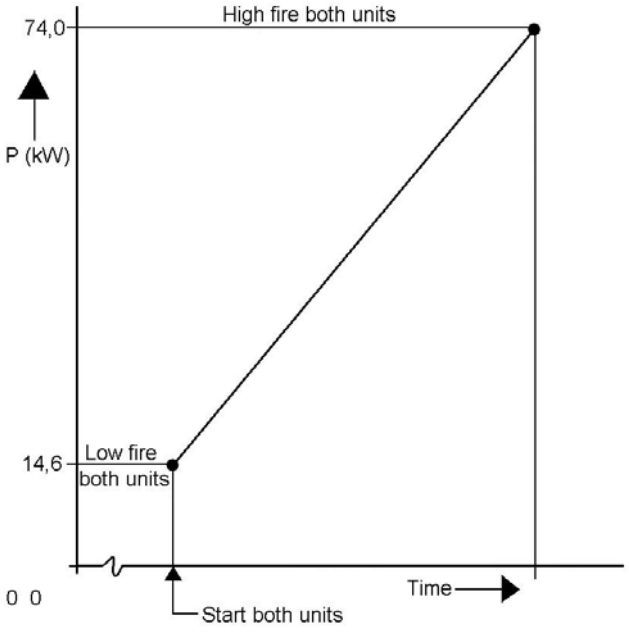
O/d-value : The setting of the flow temperature at an outside temperature of 20°C (value in °C).

Letter in menu	Description	Range	default
C	Max. Flowtemp. for heating	25 –90 °C	82 °C
O/b	Basic temperature	10 –70 °C	20 °C
O/S	Slope	1 – 100	20
O/d	Flow temperature at outside = 20°C	0 –70 °C	20 °C

Cascade options

Power mode (default)

Both units run simultaneously. Menu parameter “o” = 1



At low and at high heat demand both units run simultaneously.

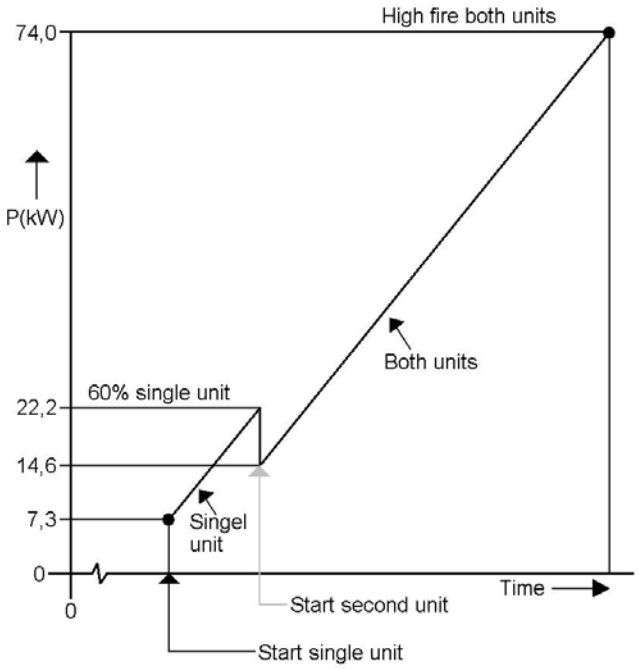
Cascade selection : menu parameter “.o” = 1	
Heat input (gross)	16.2 – 82.2 kW
Heat input (net)	14.6 – 74.0 kW
Nominal output at 80/60ºC	14.1 – 72.0 kW
Nominal output at 50/30ºC	15.6 – 75.3 kW
Efficiency at 80/60ºC (net)	Low load = 96.6 % High load = 97.2 %
Efficiency at 50/30ºC (net)	Low load = 106.9 % High load = 101.8 %

When the room thermostat or space unit indicates that heat is required for central or under floor heating, both units will heat simultaneously. The Master print calculates the system flow temperature and divides the necessary power over both units equally. The speeds of both fans are automatically adapted to the heat required, also with the use of an on/off thermostat.

When the room thermostat or space unit indicates that the desired temperature has been reached, the central heating water is no longer heated. The unit pumps will continue to run for a previously set time to distribute the heat evenly over the heating installation.

Comfort mode (field adjustable)

Menu parameter “o” has to be set onto the value 0



At low heat demand a single unit runs independently.
At high heat demand both units run simultaneously.

Cascade selection : menu parameter “.o” = 0	
Heat input (gross)	8.1 – 82.2 kW
Heat input (net)	7.3 – 74.0 kW
Nominal output at 80/60ºC	7.0 – 72.0 kW
Nominal output at 50/30ºC	7.8 – 75.3 kW
Efficiency at 80/60ºC (net)	Low load = 96.0 % High load = 97.2 %
Efficiency at 50/30ºC (net)	Low load = 106.3 % High load = 101.8 %

When the room thermostat or space unit indicates that heat is required a single unit will start-up, while the other unit remains stand-by. The unit priority will change each 24 hours.

When the heat required is twice low fire, the second unit will be started as well. Both units will heat simultaneously. The Master print calculates the system flow temperature and divides the necessary power over both units equally. The speeds of both fans are automatically adapted to the heat required, also with the use of an on/off thermostat.

Tips
Depending on how much you value optimum comfort and the lowest possible energy consumption, the following tips can help you make optimum use of your unit:
To help limit the energy consumption, it is recommended to set the room thermostat to a lower temperature a few hours before going to bed.
Turn all radiator taps fully open in the rooms that you want to heat.
Shut the radiator taps off in the rooms where you do not want any heating.

Cleaning the unit
Regularly clean the outside of the unit with a soft, damp cloth. It is not necessary to shut the gas tap off or switch the mains off for this.
Never use aggressive or flammable cleaning agents.
Take note that the pipes can be at a high temperature.

Holidays
With long-term absence, for example in the holidays, it is recommended to leave the unit continually switched on. The reason is that the unit makes a number of checks every 24 hours.
If frost can be excluded, set the room thermostat to a lower temperature.
If frost cannot be excluded, set the room thermostat to a temperature of 12°C or higher.
Although the unit has an internal frost protection, this does not protect the whole installation against freezing.

Brrrr, the central heating is not working
In the unlikely event that the central heating has let you down, we have some tips for things that you can check and remedly yourself before an installer.

The central heating boiler is a fairly complicated item that is fitted with safety devices, which prevent a dangerous situation. There can be many reasons why the central heating is not working.

Electricity and gas
Is the connection of the green block in the green socket correct connected?
Is the main switch on the unit in the right position?
Or is the circuit to which the boiler is connected out of operation because the fuse has blown or the earth leakage switch has activated?

Is there an (unusual) interruption in the gas supply? Check by seeing whether a gas cooker in the kitchen is working. If it is not working, call the gas company. The gas flow can also be blocked because the gas filter of the boiler is contaminated; this is a problem for the service man.
The unit also lets the pump regularly run outside the heating season to prevent it from sticking. If the mains supply outside is interrupted several times during the heating season, the pump can stick. Solution: turn the shaft of the pump a few times by hand (screwdriver).

Water and air
If the water pressure in the installation falls below a minimum level, the burner will be off.
Solution: Top up with water.
It is possible to read the water pressure directly from the display.
Reading: Press the + button in for a minimum of 5 seconds.
From the menu back to normal operation: Press the - button in briefly (or automatically after about 5 minutes).
During filling, the unit must be connected to the mains and be switched on.
Fully open all radiator taps.
Connect the water supply to the filling connection of the installation.
Open the tap to fill the system with water.
When the water pressure is sufficient (> 1.3 bar), close the filling tap again.
If there is air in the installation, the boiler can switch on, but the radiators remain cold.
Follow the instructions from the manufacturer/installer for the venting of possible other elements of the heating installation, such as floor heating.
Fully open all radiator taps.
Vent the radiators after the pump is switched off.
Open the air bleed cocks of the radiators one at a time. Use an air bleed key for this.
As soon as water comes out of the air bleed cock, shut the cock off again.
If the central heating boiler is at the highest point of the installation, air can collect in the boiler. This can cause a malfunction in the boiler. Also vent the internal tap pot (only with a Combi-unit).

Other causes
There must be heat demand from the room thermostat or other control, otherwise the boiler will not switch on. Set the thermostat to demand heat and check whether the boiler switches on; this can take a minute or so.

If there is little water circulation because too many radiator taps are closed, the boiler will not function or will function insufficiently. In this case, open more radiator taps or ask your installer to fit a bypass valve.

Take the time to read this document carefully before installing or using the unit. Always keep this document near the unit.

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