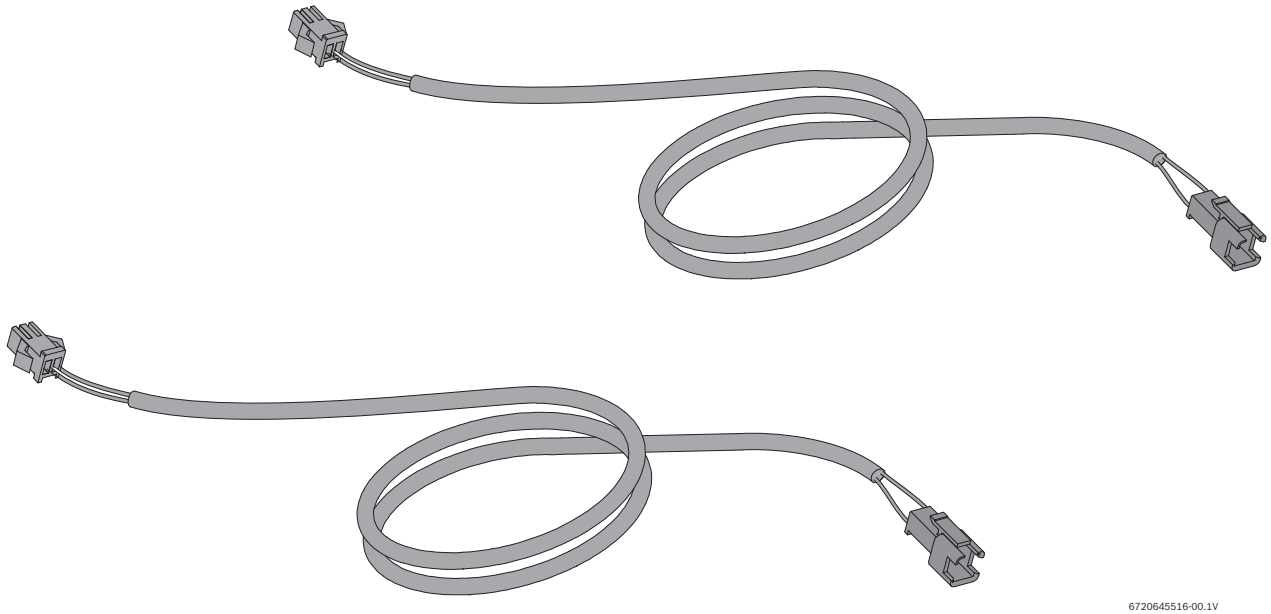
Installation Instructions

Intelligent cascading kit

For models: C1210ESC, C1210ES, C1050ES, 940ES, 940ESO, 830ES

Part no. 7709003962



Warning: This kit shall be installed by a qualified service agency in accordance with these instructions and all applicable codes and requirements of the authorities having jurisdiction.

Kit components:
Cascading cable (x2)

6 720 645 516 (2010/08) US

BOSCH

1 Cascading operation

(for models C1210ES, C1210ESC, C1050ES, 940ES, 940ESO, 830ES)

Cascading allows up to twenty four appliances to be connected in parallel.
One of the appliances will serve as the controlling primary appliance and will attempt to meet the hot water demand. If the hot water demand is beyond the capacity of the primary appliance, a signal is sent to one or more of the secondary appliances to ignite. A cascading kit (part no. 7709003962) must be purchased and installed for each secondary appliance included in the installation.
Example: A 7 unit cascade installation includes 1 primary appliance and 6 secondary appliances. 6 intelligent cascading kits must be purchased for this installation.
With the Intelligent Cascading kit, after each 100 hours of operation, the system will automatically rotate which heater is serving as the primary.

1.1 Plumbing set up

The plumbing should be connected in the reverse return method with a minimum number of elbows to aid in balancing pressures between the appliances. It is recommended that an Ariston ProTi model GL8Ti be used as a buffer tank to stabilize temperatures and eliminate the “cold water sandwich” that occurs when turning on and off a hot water fixture. If a domestic recirculation system is desired, recirculate the water through the Ariston ProTi water heater. Further information on domestic recirculation is available on our website: www.boschpro.com.
Locating the appliances as close together as possible improves performance.

- Follow industry plumbing practices when installing multiple appliances
- Minimum pipe diameter: ¾”
- Minimum water pressure: 50 psi
- Maximum distance between appliances: 36”
- Insulate pipes to prevent heat loss.

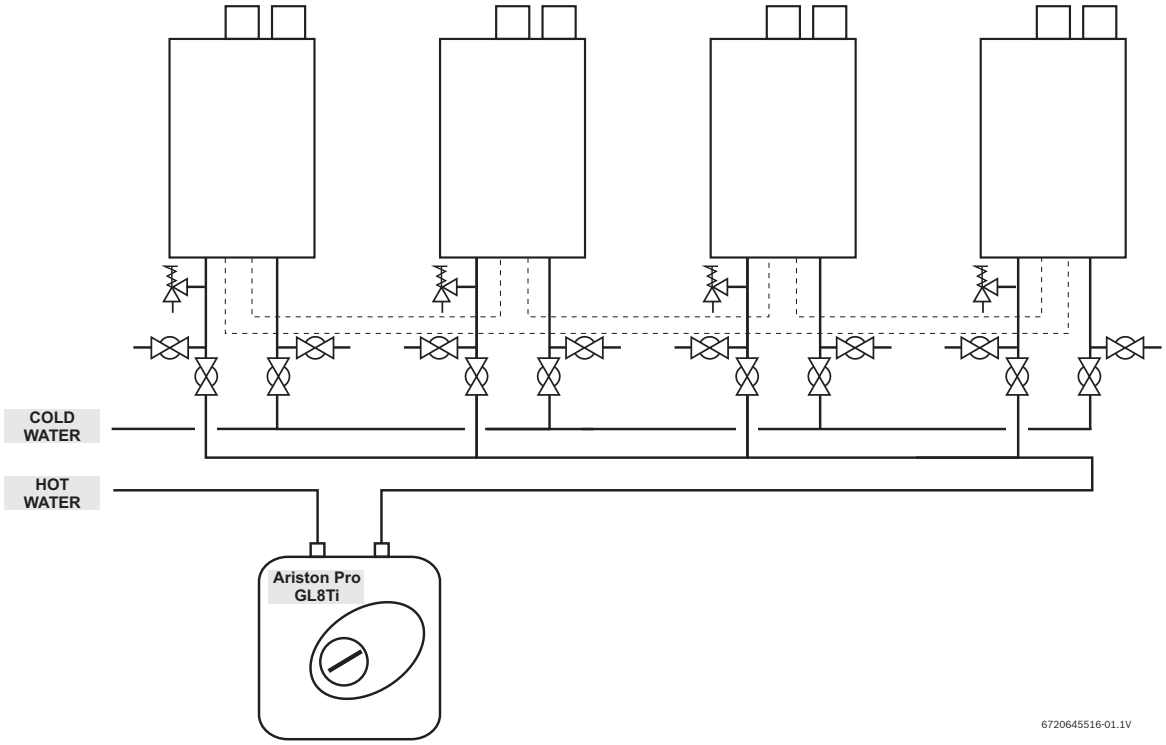


Fig. 1

NOTE: These water heaters may not be common vented. See water heater installation manual for venting/combustion air requirements.

1.2 Installation of Intelligent Cascading Kit.

Each appliance comes equipped with two connectors inside for the installation of the intelligent cascading kit. The connectors are labeled 'cascading input' and 'cascading output'. To access connectors, remove front cover per the installation manual.

Although intelligent cascading will rotate the primary appliance, it is essential to install the kit starting with the appliance that is furthest from the cold water main.

- Starting with the appliance furthest from the cold water main, connect the male end of the cascading cable to the connector inside labeled 'cascading output'.
- Feed the cascading cable to the left from the primary appliance through the hole at the bottom of the adjacent secondary appliance.
- Connect to the 'cascading input' connector of the secondary appliance (Fig. 2).
- Repeat this procedure for all the secondary appliances.
- Complete the circuit by connecting a cascading cable from the "cascading output' connector on the last secondary appliance to the "cascading input" connector on the primary appliance. Cascading cables may be connected in series if one cable is not long enough.
- The procedure is now complete.

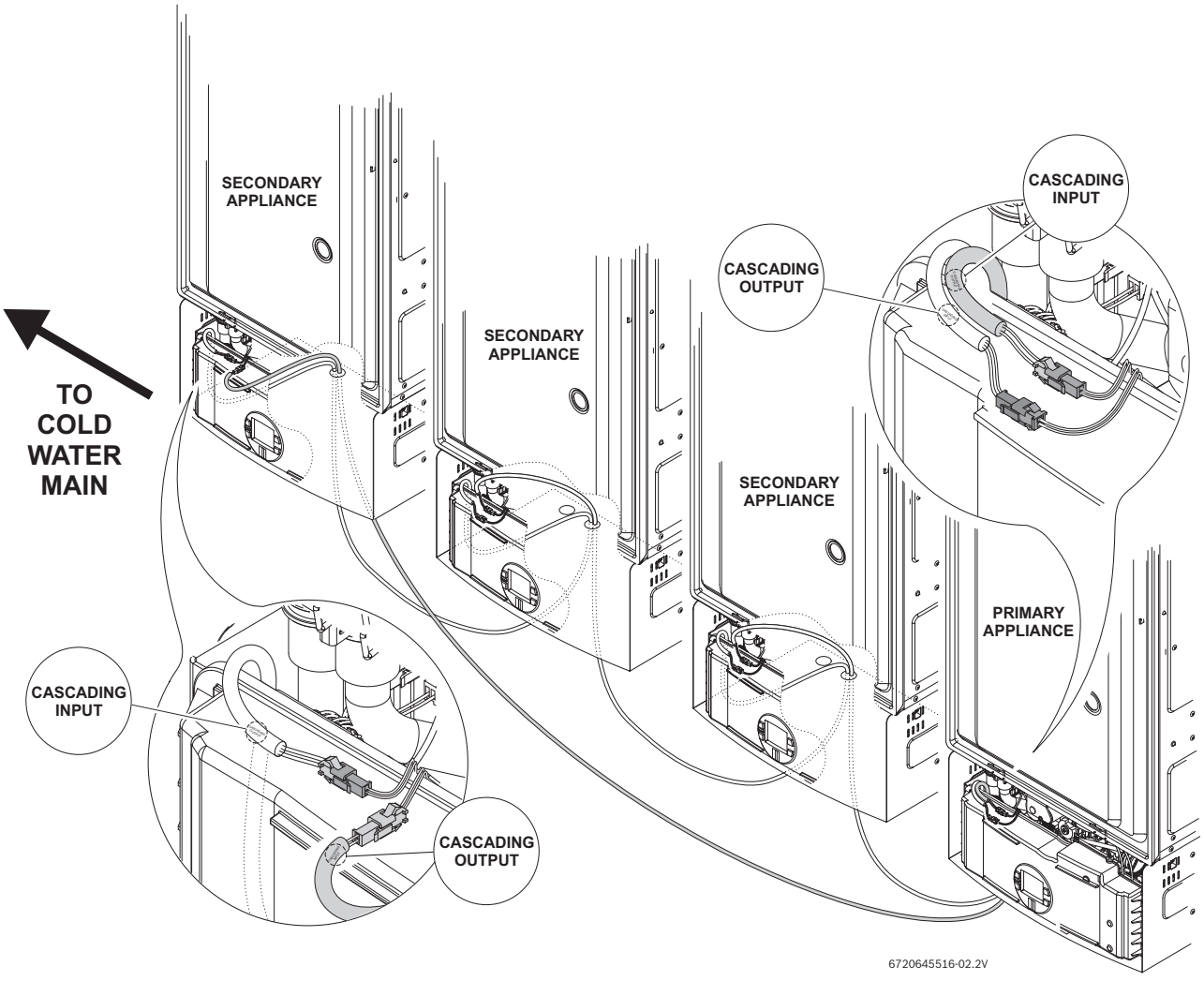


Fig. 2 Example of installation for: C1210ES, C1210ESC, C1050ES, 940ES, 940ESO, 830ES

1.3 Appliance cascading mode setting

Perform this procedure on all appliances in the cascading set up.

All appliances in the installation must be adjusted to the same outlet water temperature by selecting on any appliance all the others will update the set temperature accordangly.

▶ Push ON/OFF switch to the OFF position.

1. Press and hold the program button P and then press the ON/OFF button to the ON position. As soon as '188' flashes on the display, release the P button.

The display should now read P2.

2. Press the + button until P5 appears.
3. Press Program button P.

The display should now read NC (normal mode).

4. Press + button until CC (cascading mode) appears.
5. Press and hold Program button P until CC blinks on the display.

   To enter in the main menu, press P button.

After the “CC” is selected, two new menus will become available in the main menu, PH and PC.
To acess PH and PC menu,

▶ Press the + button until PH or PC appears.

PC - Primary and Secondary selection

- MS - Primary
  - Only one appliance in the cascading system should be selected as “Primary”.
- SL - Secondary (default)
  - The others appliances in the cascading system must be “Secondary”.

PH - Cascading mode selection

- IC - Intelligent Cascading (default)
  - The primary will rotate after 100h/work.
- SC - Simple Cascading
  - There will not be any primary rotation when this appliance is selected as primary.

Selection is done pressing the button P until the display starts flashing.

The appliance is now programmed to operate in the cascading mode.

1.4 Functional requirements

1.4.1 Hot water requests

Currently operating units reach 80% of their capacity, it passes on hot water requests to the next secondary heater in the system. Secondary acts like a primary to the next secondary. When primary reach 30% of his capacity it will remove the request sent to the secondary.

1.4.2 Water demand from solar

When the primary reads flow higher than 8 GPM and inlet temperature is higher than set point, water will flow through the appliance working with the solar function and the primary will send a hot water request to the next Secondary in the system. This way, when the appliances are in solar mode, the water flow of the cascading system will not be restricted.
This function is reset when inlet temperature reaches set point - 4°C. Appliances will get out of solar mode and restart normal operation.

1.4.3 Error handling

When one appliance in the cascading system is locked, due to an error code, all actions are passed to the next appliance. If the appliance is a primary, it will request to the next appliance to be the primary.

If the electronics are damaged or disconnected the handling is not possible. Primary will not occur and appliance will only work from the primary until the damaged appliance. If the damaged appliance is the primary, the system will not work (disconnect the damaged unit from the cascade system and select a new primary unit with the PC menu).

In this case the damaged appliance must be turn OFF and the cascading cables must be disconnect from the appliance. The two connector ends must be connect between them, in order to close the cascading circuit.

If the damaged appliance is the primary, it's needed to define other appliance as primary, see section 1.3.

1.4.4 Working hours counter

In order to get acurate in the primary rotation we need to measure the operation time of the appliance. This values are visible in P4 mode. Menus H0, H1 and H2.
To verify the total operation time of the appliance we need to check menus H0, H1 and H2 and multiply the values existing in each menu.
The formula to calculate the total amount of working hours is:
H0 + (H1x100) + (H2x10000)= Total working hours.

1.4.5 Number of hours to rotate primary

Primary rotation will happen when water flow is OFF and 100 burning hours are reached on the primary appliance. Proper means should be assured to perform primary rotation.

NOTE: In recirculation systems where water is recirculated through the cascaded tankless units (not recommended), at least 1hour per day the water flow must be OFF, to allow the primary rotation. Primary appliance will send a message to the next appliance delivering the primary function. This rotation will only occur in stand by and water flow OFF.

1.4.6 Temperature set point change

The set point temperature limitations are the same in a cascade as in a stand alone appliance, all the set point temperatures in the existing appliances will be updated within two seconds. The temperature is adjustable through the same complete set point temperature range as a single appliance.

1.4.7 Remote control usage

In this cascading configuration (Intelligent cascading) only one remote control is needed to change the temperature set point in the system. If we change in one appliance the set point this will be updated in all appliances in 2 seconds.
The error code visualization is only done in the appliance were the base unit is installed.
The base unit can be installed in any appliance, independently if it is primary or secondary.

1.5 Primary identification

Primary appliance is identify by the following symbol:

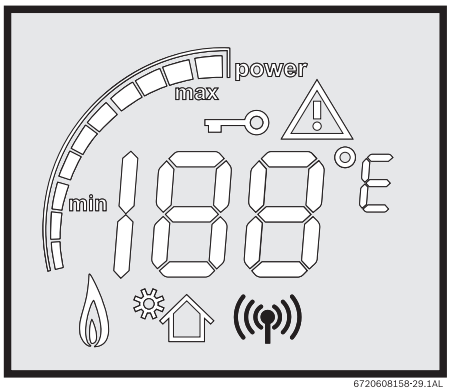


Fig. 3 Primary symbol in cascading mode

6720645516

Replacement Parts available from:

BOSCH THERMOTECHNOLOGY CORP.

50 Wentworth Avenue
Londonderry, NH 03053
Tel. 866-330-2730
www.boschpro.com

Bosch Termotecnologia SA
Estrada de Cacia
3800 - 533 Cacia - PORTUGAL