Technical Bulletin

Installation: Auto bypass requirements

DOMESTIC GAS APPLIANCES: PUMP OVER-RUN.

Although a modulating pump may satisfy requirements for building regulations and allow for an automatic bypass to be omitted from a heating system in some instances, any time a circulating pump is controlled by the boiler there must be a means of maintaining circulation during pump over-run at the end of a heat demand or during appliance over-heat conditions.

If circulation can be completely stopped by zone valves or thermostatic radiator valves and the boiler does not contain an internal bypass, then a properly adjusted automatic bypass must be installed across the flow and return pipes.

We are currently in the process of updating the guidance in our manuals to be more concise about when an auto bypass is recommended, and when one must be fitted.

- To comply with building regulations, **If the circulating pump speed is fixed (constant speed) and system circulation can be significantly reduced** by Thermostatic Radiator Valves (TRV's) or zone valves, an auto bypass must be installed and adjusted to provide constant pump head pressure to the heating circuits.
  This will help to maintain system efficiency, minimise water velocity noise and help ensure the quiet operation of valves.

- **If the appliance does not contain an internal bypass, and flow to the heating circuits can be stopped completely** by zone valves or TRV's, an auto bypass must be installed and adjusted to open during pump over-run and overheat conditions and should provide a minimum 3 metre circuit when activated.

- **If a constant pressure pump setting is selected, and circulation cannot be completely stopped** by zone valves or TRV's, an auto bypass will not be required. In this instance, a modulating pump will satisfy building regulations.
  Constant pump head pressure to the system will be maintained by the circulating pump.

Fig 1 (System and Combi boilers)

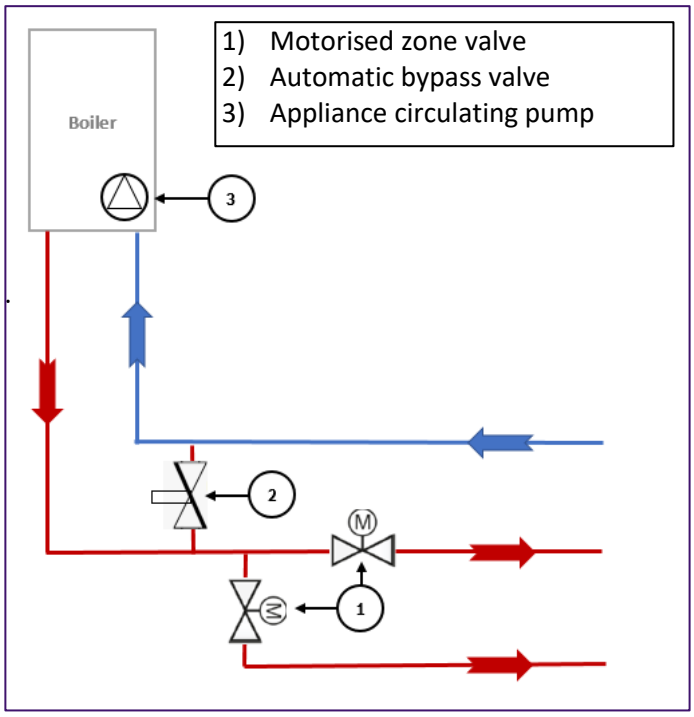
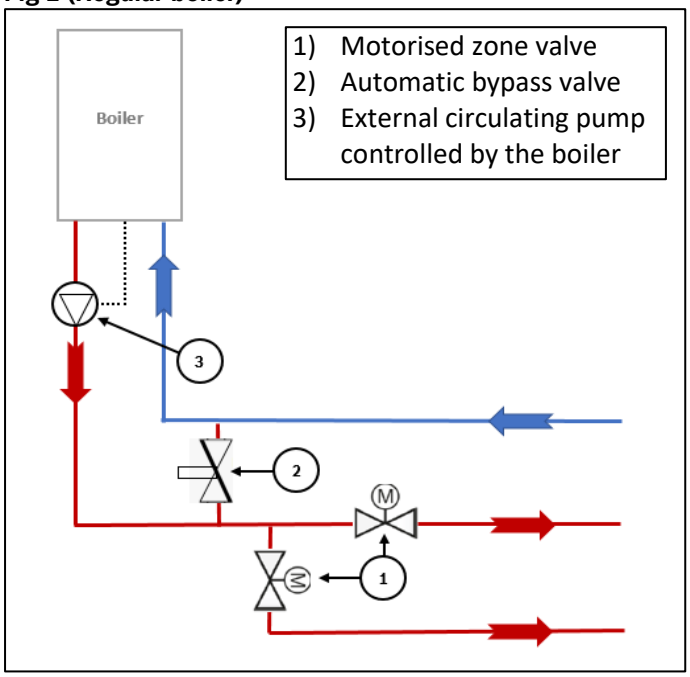


Fig 2 (Regular boiler)



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On 4000 series appliances, it may be necessary to increase pump over-run time and speed to open an external bypass. The following instruction should be used as guidance.
We plan to introduce an improvement which will remove the need for these menu settings to be altered.

Please refer to the installation and servicing manual for further guidance on navigating the appliance menus.

Opening the service menu

- Press the key and the key simultaneously until the service menu appears.

Closing the service menu

- Press the key or the key.

-or-

- Press the key.

Navigating through the menu

- To highlight a menu or a menu item, press the ▲ key or the ▼ key.
- Press the **ok** key.
  The menu or the menu item is displayed.
- To return to the next higher menu level, press the key.

Changing the setting values

- Select the menu item with the **ok** key.
- To select the desired value, press the ▲ or the ▼ key.
- Press the **ok** key.
  The new value is saved.

Exiting the menu item without saving values

- Press the key.
  The value is not saved.

- In the Hot Water menu, you must change CH delay from 0 to 1.

CH delay	• **0** ... 30 min	The heating mode is disabled for this period of time following DHW heating.

- Adjust the pump range map to 0. (proportional)
- Adjust pump Min output to 60%.
- Adjust pump range map back to its original setting.

Pump		
Pump range map	• 0: Pump output proportional to the heat output • 1: constant pressure 150 mbar • 2: constant pressure 200 mbar • **3: constant pressure 250 mbar** • 4: constant pressure 300 mbar • 5: constant pressure 350 mbar • 6: constant pressure 400 mbar	▶ In order to save energy and to keep potential flow noises to a minimum, set a low pump curve (→ Chapter 13.5, page 90).
Min. output	• **10** ... 30 %	Pump output at minimum heat output. Only available with pump map 0 (output-dependent control).
Max. output	• Min. output ... **100%**	Pump output at maximum heat output. Only available with pump characteristic map 0. • Can only be reduced to value set in Min. output.

Once these adjustments have been made, the bypass can be adjusted to open during pump over-run.
Pump over-run will be active at the end of each heat demand.
The bypass should remain closed during normal heating operation, the modulating pump in the appliance should maintain constant pressure on the system.

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