

F.S.S. 5: 2014 (Amended March 2025)

FINGAL COUNTY
COUNCIL STANDARD
SPECIFICATION

**SPECIFICATION FOR INSTALLATION OF
GAS CENTRAL HEATING SYSTEMS IN
NEW / EXISTING DWELLINGS**

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SPECIFICATION FOR INSTALLATION OF GAS CENTRAL HEATING SYSTEMS IN NEW/EXISTING DWELLINGS

1. General

This specification covers the requirements and conditions for the installation of gas-fired central heating systems into occupied or new build council dwellings. It should be read and construed together with drawings indicating the layout of radiators and the design of heating systems generally.

The gas boiler will be wall-mounted, generally located in the kitchen and on the rear wall. The system may be piped in copper or other approved piping.

The system design will be as indicated on Diagram 1 'Schematic Layout' appended, and the heating and plumbing layouts.

All motorised valves, thermostats, and programmers will be included to achieve maximum control and energy efficiency as specified. Samples of all materials will be supplied for approval by Fingal County Council before any installation work commences.

A twelve-month maintenance period applies to this contract. The true meaning and intent of all clauses of the F.C.C. General Housing Specification apply as do all clauses of GDLA 82.

2. Compliance with Regulations

The installation of gas central heating will be carried out by suitably qualified and competent tradesmen and in accordance with I.S. 813 2002 and the Building Regulations. The contractor will be required to hold GID Certification to work on gas central heating systems for Fingal County Council, and evidence of this certification will be required before installation work commences. All installations must be tested, commissioned, and certified in accordance with RGII requirements.

3. Safety Statement

The contractor will be required to produce a current Health and Safety Statement in accordance with the Health and Safety at Work Act 2005

4. Equipment to be installed in each Dwelling

The installation of the heating systems shall be as per the attached drawings, generally, and will consist of the following items of equipment:

- Gas-fired Condensing boiler, wall-mounted and sized for the particular house type.
- Radiators as indicated on drawings of correct output and adjusted in physical dimension when and where required.
- Pegler radiator valves, or similar and approved, for each radiator and Myson TRV Two Way valves, or equivalent, for each bedroom radiator.
- Circulating pump with the required flow rate shall be provided separately of the boiler system.
- Expansion vessel of correct size and charge pressure.

Cylinder Thermostat (strap on type)

A 2 channel or 3 channel (four-bedroom dwelling) Programmer as required.

2 x 2 port valves (one to three bed dwelling) or 3 x 2 port valves (four-bed dwelling). A 27-litre fill tank with lid.

A safety valve of approved type.

A pressure gauge.

Cylinder lock shield balancing valve.

Automatic air vent.

System by-pass to be an automatic type (Potterton or equivalent).

A non-return valve and gate valve (filling line).

Drain points on heating and hot water system.

Magnetic filter to be installed (MagnaClean, TF1 or equivalent and approved by FCC Mechanical Inspector).

Filling loop with gauge shall be installed to connect the mains cold water to the central heating system. And then disconnected when filled.

5. Boiler

The manufacturer and type of boiler to be used in each dwelling will be agreed with F.C.C.

Boilers selected will comply with the following requirements:

Natural gas-fired condensing boiler.

Sedbuk band "A" rated.

Boiler-frost thermostat

NOx class 5.

Flow and return primary connections exiting at the top of the boiler as Glow Worm Energy or equivalent.

Room sealed with fan-assisted flue.

CE approved with thermal output specified.

Fitted with a manual reset high limit thermostat.

Variable flue extensions, if necessary.

Adaptable for sealed system kit, if necessary.

Operational with available static head pressure as part of the semi-sealed system.

Boiler must come with a minimum 10-year warranty.

The gas boiler shall be installed in accordance with the manufacturer's instructions and IS 813:2002 + (A2:2005). The boiler will be installed in the kitchen area in a suitable location on the rear wall of the dwelling (or other approved area as agreed on site), avoiding corner locations where possible, and with adequate room for servicing and maintenance. Where the boiler is enclosed in a kitchen unit, particular attention will be paid to the boiler manufacturers and IS 813:2002 + (A2:2005) requirements for compartment ventilation. A safety valve to IS EN ISO 4126-1:2013 will be fitted to the upper part of the boiler water section or on the flow pipe as close as possible with no intervening valve or restriction. The safety valve will be non-adjustable and pre-set to a lifting pressure not exceeding 3 bar. This valve will be accessible for testing. The discharge from this valve will be piped in 15mm pipe with an appropriate fall to an external location and turned downwards against the external wall face to avoid accidental injury from a scalding water discharge. A pressure gauge will be installed with a range of 0 – 4 bar and will be sited for convenient inspection. The flue will be installed in accordance with the particular boiler manufacturer's instructions, and a flue terminal guard will be installed if there is any risk of persons coming in contact with, or risk of damage to the exposed flue terminal.

Boilers will be commissioned in strict accordance with the particular manufacturer's instructions, and arrangements will be made for the F.C.C. Inspector to witness all testing and commissioning.

6. Radiators

The radiators will be installed as per the locations on the attached drawings, and the type of radiator will be agreed in advance of installation. As a general rule, all radiators will be installed on external walls in individual rooms below windows unless otherwise agreed. Where radiators have to be installed on internal walls, the output of the particular radiator will be increased by a margin of 15%. Radiators will be roll-top convector type with no sharp edges or side/top plates. As condensing boilers have a lower flow temperature, radiators must be capable of producing the required output with a mean water temperature of 53 degrees centigrade (A Delta T of 32 degrees centigrade). Radiators will be hung securely with brackets provided and fitted with lock shield valves (Terrier/Peglar or equivalent and approved by the FCC Mechanical Inspector) with stem seal replaceable without having to drain the system.

Two Two-way thermostatic Radiator Valves (Myson or a similar approved by the FCC Mechanical Inspector) are to be installed on all bedroom radiators and are to be mounted horizontally to achieve maximum efficiency. In dwellings for the elderly, i.e., one-bed units or those dwellings designated for handicapped or the elderly, the TRVs will be T.B.O.E. to facilitate convenient operation. A radiator on the ground floor will be fitted with a drain cock shall be fitted to one of the radiators to facilitate drainage of the system. All radiators will be covered to protect the finish until final commissioning and handover.

It will be the responsibility of the Contractor to have the radiators sized by the manufacture of the radiator type being used. A copy of the results shall be given to the Architect for approval. A report is required for every different house type.

7. Domestic Hot Water

The domestic hot water cylinder shall have a capacity of 136 litres. It shall comply with BS 1566-1:2002 + (A1:2011) and be factory insulated with CFC and HCFC-free insulation. It shall have a threaded connection to allow for a top entry electric immersion heater in accordance with IS 60335-2-73:2003 + (A2:2009). The cylinder shall be fitted with a high efficiency, finned copper coil, which will give a reasonable recovery time. A strap-on cylinder thermostat will be installed approximately $\frac{1}{4}$ the way up the cylinder to control the domestic hot water temperature (See also Electrical specification for details of high limit thermostat). The primary supply and return pipes at the coil shall have a minimum diameter of 22mm; the return primary shall be fitted with a lock shield balancing valve for adjustment when commissioning. Cylinders shall be fitted with a suitably located drain valve. The cylinder shall be tank fed from the cold-water storage tank and shall vent back to that tank.

In situations where sufficient space cannot be provided for a cold-water storage tank of adequate size, i.e., apartments and duplexes, or, where otherwise directed by an architect, a combination hot and cold-water storage tank of an approved type and size (Coppercraft Ltd. or equivalent and approved by the FCC Mechanical Inspector). The combination tank shall be connected in accordance with the manufacturer's instructions and shall comply with all aspects of BS 1566-1:2002 + (A1:2011) and with the Water Authority regulations. Tanks shall be factory

insulated and have a threaded connection to allow for an electric immersion heater.

Tanks shall be fitted with a suitably located drain valve. The tank shall be fitted with a high efficiency, finned copper coil and shall be provided with a 1.5 bar, twin brass impellers, single phase, negative head pump.

The cold-water section shall have a threaded connection to allow for a dedicated cold-water supply to the toilet cistern.

8. Circulating Pump

If the circulating pump is not supplied as part of a system boiler, then the following will apply:

The installed pumps will comply with IS EN 16297-1:2012.

Equipped with surge protection.

Replacement pumps to be agreed upon by the FCC Mechanical Inspector.

Pump will be installed close to the boiler on the main flow pipe.

Fully accessible for maintenance.

Isolating valves are to be complete with spindle gate valve types.

Fitted with gate valves to either side to allow replacement of the pump without the need to drain the system.

Capable of maintaining a flow rate of 1.5 metres per second throughout the system.

Fitted with Brass Impellers (Grundfos, Wilo or equivalent and approved by the FCC Mechanical Inspector).

9. Expansion Vessel

Amendment March 2025

A diaphragm-type vessel to IS EN 13831:2007 will be used to accommodate the increase in water volume as the system rises in temperature.

If the vessel is not supplied as part of a system boiler, then the following will apply:

Connecting pipework will not be less than 22 mm with no valve.

Expansion may be located remotely from the boiler.

The capacity of the vessel will accommodate the increase in volume when the system is heated to 110 degrees centigrade.

Vessels charge pressure will not be more than the static head pressure of the system at point of connection to circulating pipe minus 0.2 bar.

Pressure in the system at 100 ° C will be at least 0.35 bar less than the lift pressure of the safety valve.

Expansion vessel to be properly supported with manufacturer's brackets or by a wall plate elbow 321.

Vessel will be positioned to provide access for maintenance and charge pressure testing.

10. Controls

The controls for the system will be capable of providing independent time and temperature control for the heating system and the domestic hot water system by use of the following components.

2 no. 2 port valves with auxiliary switches.

A strap-on cylinder thermostat.

A 2-channel programmer as approved.

A temperature room thermostat (Settings to be agreed upon by FCC Mechanical Inspector).

A TRV 2-WAY for each bedroom radiator (Myson or equivalent and approved by FCC Mechanical Inspector).

The position of the motorised valve and cylinder thermostat will be agreed with F.C.C. in advance. The spur (3 Amp), programmer and wiring centre will be positioned in the hot press in an accessible and user-friendly location. All electrical connections to the heating system will be carried out by qualified electricians and will comply fully with F.C.C. Specification for Electrical Installations in Houses & Extensions, E.T.C.I. Regulations for Electrical Installations and in accordance with manufacturer instructions for all components.

Contractor will ensure that reverse circulation will not occur in any system with the installation of automatic controls for separate hot water and heating.

Houses with four or more bedrooms shall have an additional central heating zone. In these units, a 3-channel programmer, 3 No. two-port valves with auxiliary switches and two room thermostats shall be installed. Details of these systems shall be agreed, in advance, with the Mechanical and Electrical Inspectors.

11. Seal system

The heating system will be a sealed system, connected to the mains via two stages two-stage non-return valve filling loop.

Which will be disconnected once filling of the system is complete.

An appropriately sized expansion vessel must be installed to allow for system expansion.

12. Magnetic Filter

A magnetic filter should be installed in the hot press on the return pipework. It should be sized to match the dia. of the return pipework. The capacity of the filter should be no less than 200 grams and will have a removable plastic sheath to collect magnetic and non-magnetic material. The filter should have a removable lid for visual inspection of the magnet and incorporate an air vent.

Magnetic filter to be installed (MagnaClean, Fernox TF1 Compact or equivalent and approved by FCC Mechanical Inspector). Pump to be removable and non-returnable.

13. Gas Supply

All gas pipework shall comply fully with the requirements of IS 813 2002+(A2:2005) National Standards Authority of Ireland – Domestic Gas Installations (Edition 2).

The gas line to the boiler and cooker positions will be installed by the heating contractor. This pipe shall have a minimum diameter of 22mm, and the pipe should be properly supported along its length. The line to the cooker position will be sealed and capped properly. The gas supply internally will be laid in the ground floor screed (or other approved method). The minimum depth of cover will be 25 mm of crack free concrete. Pipes laid in concrete will be plastic coated or wrapped and any external exposed pipework shall be wrapped or sleeved, with the sleeve to be appropriately sealed on the interior side of the concrete.

The gas pipe shall be a continuous length from the meter to a position below the boiler. Provision will be made where necessary to allow for expansion and contraction of the buried pipe. Gas pipes shall not be buried in floors with underfloor heating.

Compression fittings or screwed joints are not permitted on internal buried pipework.

The gas pipework, prior to installation of appliances, shall be pressure tested to a test pressure of 100 Mbar where there will be no pressure drop for a 5-minute period. The maximum permitted pressure loss, under full load conditions, between the meter and the boiler shall be 1Mbar.

In the case of duplexes and apartments where the gas main may have to run surface, it will be run in Galvanized Gun Barrel and painted Yellow.

In multi occupied dwellings a gas isolating valve should be accessibly fitted into each apartment between the gas meter and the boiler.

14. Pipework – Copper

The pipework to the boiler, cylinder, fill tank and radiators will be copper tube to IS EN 1057:2006 + (A1:2010). (See Clause R/W/1: Copper pipe and fittings, of FCC general specification Section R-Plumbing Installation). Plastic and Multi-Layer pipe will not generally be permitted.

Where copper pipe is laid in a floor screed or concealed under floors the contractor shall ensure that the minimum possible number of joints are made. All solder joints shall be cleaned of excess solder flux residue when cool.

Where copper pipe is laid in floor screed or floor slab it shall be insulated with 13mm wall thickness open cell pipe insulation (Aero tube or equivalent). Ensure pipes are completely covered and insulation is cut to properly fit around brackets, fittings and valves. All joints on the insulation shall be tight and taped. Copper pipe shall not come in contact with concrete, plaster or masonry. Adequate cover to buried copper pipe will be provided at all locations.

Where copper pipe is located in attic spaces it shall be insulated with 22mm wall thickness closed cell pipe insulation (Armaflex or equivalent). Ensure pipes are completely covered and insulation is cut to properly fit around brackets, fittings and valves. All joints on the insulation shall be tight and taped. All jointing will be with soldered fittings.

All pipework will be pressure tested to 4 bar and remain drop tight for a period of 2 hours.

Pipe runs in as far as possible shall be either vertical or horizontal. All pipework shall be supported clear of the supporting surface at spaces not exceeding those referred to in Table 1. Pipe clips shall be of a type that ensures no contact between the pipe and the surrounding surface. Single nail clips are not acceptable for this purpose.

Compression tube fittings of copper and copper alloy, including stopcocks, gate valves, M.T. fittings and flanged tank connectors shall comply with IS EN 1254-2:1998 and shall bear the Irish Standard Mark. Capillary fittings shall comply with IS EN 1254-1:1998. A copy of the manufacturers or suppliers' certificate shall be available for submission to the architect if requested.

Table 1: Maximum interval between pipe supports (Copper pipes).

Nominal size (mm)	Interval for vertical runs (m)	Interval for horizontal runs (m)
Up to 15	2.0	1.2
22	2.5	1.8
28	2.5	1.8

15. Pipework

Multi-Layer and Plastic (where permitted)

F.C.C. will not generally permit the use of multi-layer and thermoplastic pipe. Their use will be considered on sealed heating systems subject to prior agreement, before commencement of the works, provided it is installed in STRICT COMPLIANCE with the manufacturer's requirements and the following:

Where a multi-layer and thermoplastic pipe is used as an alternative to a copper pipe, it will conform with the relevant standard for the product. Selection of the material will be appropriate for LTHW sealed heating systems. Distribution manifolds will be considered.

Installation will conform to B.S. 5955-8.

The installation pipework will be clipped at proper intervals and be neat in appearance.

Pipework will be installed so as to protect the product where it enters and exits floors and walls.

Thermoplastic pipe shall not be connected directly to a boiler.

Thermoplastic pipe shall not be connected directly to a radiator.

Thermoplastic pipe shall not be used in a hot-press area.

Pipework laid in concrete will be sleeved/insulated for easy removal, if necessary, at future date.

All pipework will be pressure tested to 4 Bar and remain drop tight for a period of 2 hours (min).

Insulation shall be provided as set out for copper pipework in Clause 13 above

16. Testing and Commissioning

The heating system will be pressure tested at 3 bar and will remain drop tight for a period of 2 hours (min). This test will be witnessed by F.C.C. staff. The system will be treated with SENTINEL X300 UNIVERSAL CLEANSER or equivalent. The system water will be circulated at normal operating temperature for at least 1 hour with all valves open. The system will then be drained and filled with clean water. With the pump running, the drain valve will be opened until the water runs clear. When flushing is complete, SENTINEL X100 INHIBITOR or FERNOX MB1, or equivalent, will be added at the rate of not less than 1% of system volume.

When all services to the heating system have been connected, the following checks will be carried out:

The boiler will be commissioned in accordance with the manufacturer's instructions. In new housing schemes manufacturer of the boiler to commission unit. All commissioning papers (boiler property) are to be completed by the contractor.

The gas consumption rate and the working pressure will be measured and adjusted as necessary to match the boiler system requirements.

The expansion vessel charge pressure will be set.

The pump speed, cylinder balancing valve, and radiator balancing valves will be adjusted to ensure the correct distribution of heat throughout the system.

The automatic by-pass valve will be adjusted to give the minimum flow rate required for the correct operation of the boiler when all other circuits are closed.

The correct operation of the programmer, motorised valves, cylinder thermostat, and all TRVs will be checked.

The correct operation of the boiler thermostat, high limit manual reset stat safety valve, and pressure gauge will be checked.

The heat-up time of the hot water cylinder will be checked.

The correct operation of all radiators will be checked.

Automatic air vents will be checked to be open.

17. Control Settings

The control settings will be as follows:

Boiler thermostat 65 Deg C

Cylinder thermostat 60 Deg C

TRV's Max

The programmer's time will be set to the correct time.

18. User Instructions

The contractor will ensure the following are made available, either directly to the tenant or to the handover Clerk of Works for issue to the tenant.

User operating instructions for the boiler and the programmer.

Air vent keys.

Meter cabinet key.

19. Construction and Equipment Waste Removal

The contractor shall be responsible for the removal of all construction waste and replaced equipment from the site before the end of the works.

20. DIAGRAM 1. - Central Heating System Schematic



