Joining PE Pipes
In Cold Temperatures

January 2026

Electrofusion Jointing

When undertaking an electrofusion joint using Radius Systems electrofusion fittings, the electrofusion control unit (ECU) can be programmed either by manually entering the fixed fuse and cool times embossed on the body of the fitting, or by using a barcode scanning unit. The options below relate to the different temperature ranges that are referenced in UK and International specifications.

Option 1: Manual Input (Fixed Fuse Time)

The manual fixed fusion time should be used where the ambient temperature range is between -5°C and +23°C (UK specification). These fusion times are embossed on the electrofusion fitting and feature on the product packaging label. They are entered into the ECU when prompted.

Embossed Fuse and Cool Times

Option 2: Barcode Fusion

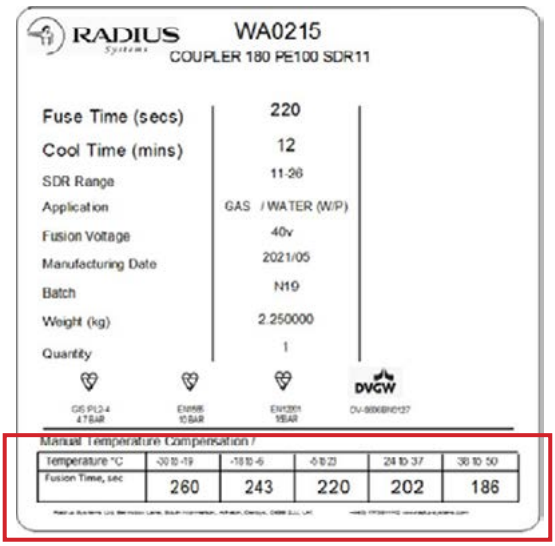
Where the ambient temperature range is between -30°C and +50°C, a barcode scanner shall be used to read the fittings barcode label, which automatically provides the electrofusion fuse and cool time into the ECU.

An ECU which has barcode enabled software and a scanning device is required to use the barcode fusion option.

Barcode and Traceability Label

Option 3: Manual Range Input

Where the ambient temperature range is between -30°C and +50°C, but a barcode enabled ECU is not available, manual entry is permitted using the 'Manual Temperature Compensation' fusion times. These fusion times can be found on the product packaging as detailed on the example shown. The user should select the appropriate fusion time for the ambient temperature range.



Example Packaging Label

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Butt-fusion Jointing

The butt-fusion equipment is pre-programmed with welding parameters in accordance with UK water and gas industry specifications. These parameters are determined by the pipe's material, diameter, and SDR, for minimum ambient temperatures of 0 °C and above, as specified by the Water Industry, or −5 °C and above as specified by the Gas Industry.

Where practical a heated shelter can be used to gradually raise and control the ambient temperature to above a minimum 0°C and preferably to above +5°C. This helps prevent icing of the butt-fusion machine chassis and thickening of hydraulic control fluids.

Important notes on using a heated shelter.

- Using a heated shelter in cold weather may cause condensation, ensure no moisture is present on the pipe or fitting's jointing surfaces when making the joint.
- If using a warm air blower, ensure that there is no dust disturbance that may contaminate the pipe surfaces.
- Ensure the warm air blower is not directed at the pipe, but instead heats the whole sheltered area evenly.
- Ensure the pipes are clean and dry and free from ice or snow.

Industry reference documents.
- IGEM/TD3/Edition 6 'Pipelines for gas distribution'
- UK Water Industry Specification WIS 4-32-08 - Issue 4 'Specification for the fusion jointing of polyethylene pressure pipeline systems using PE80 and PE100 materials'.

Always follow industry/network specific and the manufacturer's best practice when joining polyethylene pipes.