

# GUIDANCE

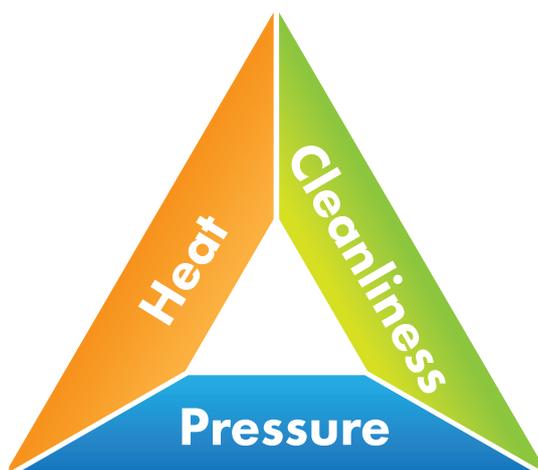
## How to achieve a successful electrofusion joint.



The following general guidance is an overview of the method used for making joints using the electrofusion jointing technique.

Installers of electrofusion fittings **must be competent** and must have undertaken the appropriate training and assessment to acquire the necessary knowledge and experience of jointing processes.

The fundamentals of carrying out a good joint: cleanliness, pressure and heat.



## Must dos for a successful joint.

- The electrofusion process must be carried out as one continuous process from pipe surface preparation to fitting cooling.
- Electrofusion jointing should be undertaken in a clean, dry and dust free environment. A shelter must be used to protect the work area from environmental contamination.
- Where there is evidence of pipe ovality, the pipe must be re-rounded using industry approved equipment. Greater levels of ovality are found in coiled pipes, in pipes with higher SDRs and in diameters above 400mm.
- The electrofusion equipment must be compatible, calibrated and capable of providing the correct fusion voltage for the full duration of the electrofusion cycle.
- Clamps must be used to ensure that there is no movement between the pipe and fitting during the fusion and cooling process.
- For large diameter Easigrip® couplers, combined hydraulic re-rounding and alignment clamps must be used. For more guidance, please contact Radius Systems TechSupport@radius-systems.com
- For saddle fittings a top loading clamp is required. It should be calibrated and capable of applying the correct clamping force.



Minimum personal protective equipment

## Cleanliness

- The electrofusion fitting must remain in its protective packaging until it is placed on the prepared pipe surface. Do not touch the prepared pipe and the fitting jointing surfaces.
- The clean pipe surface must be correctly prepared without excessive scraping. Industry approved pipe surface preparation tools must be used.
- Following pipe surface preparation, do not touch or wipe the pipe surface.
- If the prepared pipe surface becomes contaminated before making the electrofusion joint, it should be cleaned, dried and re-prepared using the approved tools and procedure, without excessive scraping.
- Once prepared, the joint must be assembled and made promptly to prevent contamination of the pipe surface.

## Pressure

- The pipe surface must be correctly prepared without excessive scraping, as this may lead to a poor quality fusion joint.
- When making a socket joint, the pipe ends must be cut square and must be fully inserted into the fitting's socket until it reaches the insertion stops.
- Where there is evidence of pipe ovality, the pipe must be re-rounded before the electrofusion fitting is placed on the pipe.
- Alignment clamps must be used for all socket fittings.
- A calibrated tapping tee top loading clamp capable of applying the correct force must be used for top loading saddle fittings.

## Heat

- When making electrofusion joints, it is important to ensure that the generator (power supply) and the electrofusion control box are compatible with one another and must be capable of delivering the maximum power requirements at the stated voltage to the fitting.
- The following table identifies the fittings' maximum power requirements at the stated voltage for the electrofusion process. These must be delivered to the fitting without interruption, for the full duration of the electrofusion heating cycle:

Fitting type	Terminal pin diameter	Fitting's maximum power requirement	Fitting voltage supply
Saddle fittings	4.0 mm	2.5 kW at 40 V rms	39 to 40 V rms
Socket fittings up to 280 mm	4.0 mm	2.5 kW at 40 V rms	39 to 40 V rms
Socket fittings 315 to 400 mm	4.0 mm	4.0 kW at 40 V rms	39 to 40 V rms
Socket fittings 315 to 400 mm	5.7 mm	4.0 kW at 80 V rms	78 to 80 V rms
Socket fittings above 400 mm	5.7 mm	4.8 kW at 80 V rms	78 to 80 V rms

- For Easigrip® couplers (450 mm and above), equipment compatible with Easigrip® couplers must be used. Please get in touch with our technical support team for more information [TechSupport@radius-systems.com](mailto:TechSupport@radius-systems.com)
- The electrofusion alignment or top loading clamp must be left in place for the full duration of the fusion and cooling cycles.
- The fitting will remain hot to the touch beyond the prescribed cool time. Do not touch the fitting until it has fully cooled.
- If the electrofusion process is interrupted before the fusion cycle is completed, do not re-heat the fitting. The fitting must not be commissioned.

## Quality assessment

- Following the electrofusion process, the fitting should be inspected to ensure that the fusion indicator(s) is (are) raised. The fusion indicator identifies that the electrofusion process has taken place. It is not confirmation of a quality joint.
- For a good quality joint, there should be no visible melted material outside the fitting's fusion zone.
- At the end of the electrofusion cycle, the control box should be checked to confirm that the cycle has completed without error.
- The fusion joint record data should be retrievable for quality inspection.
- Each joint should be marked with the joint reference details.
- Follow industry approved pressure test procedures before commissioning the joint.