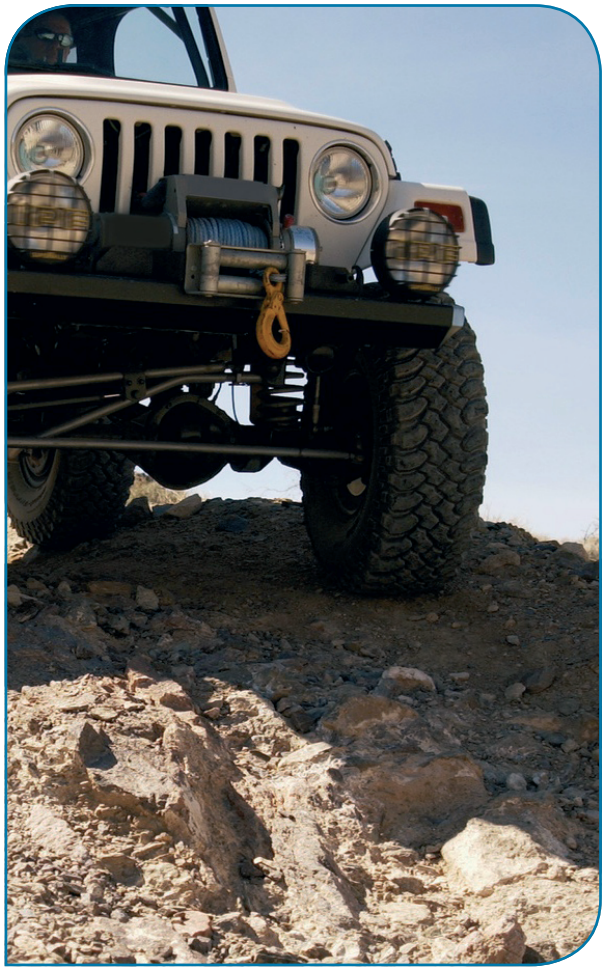
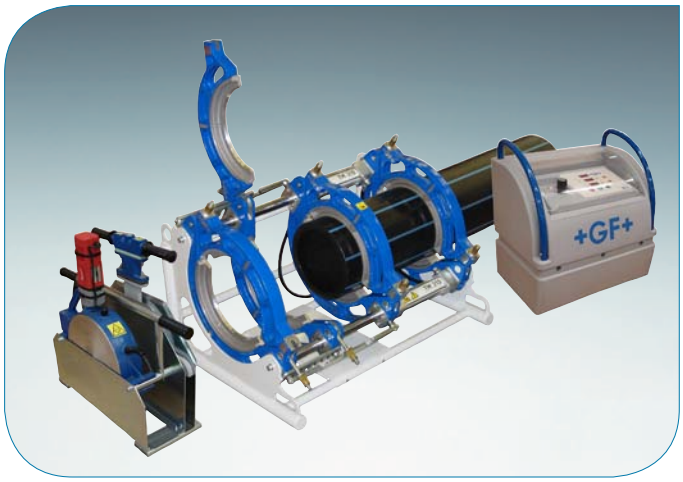




Truly all-terrain ➤

Butt-fusion machines for use on site in tough conditions

TM 160 (ø 40 - 160 mm)
TM 250 (ø 75 - 250 mm)
TM 315 (ø 90 - 315 mm)

Perfect welding equipment for PE and PP pipes in Gas & Water distribution

+GF+

GEORG FISCHER
PIPING SYSTEMS

From Source to Point of Use

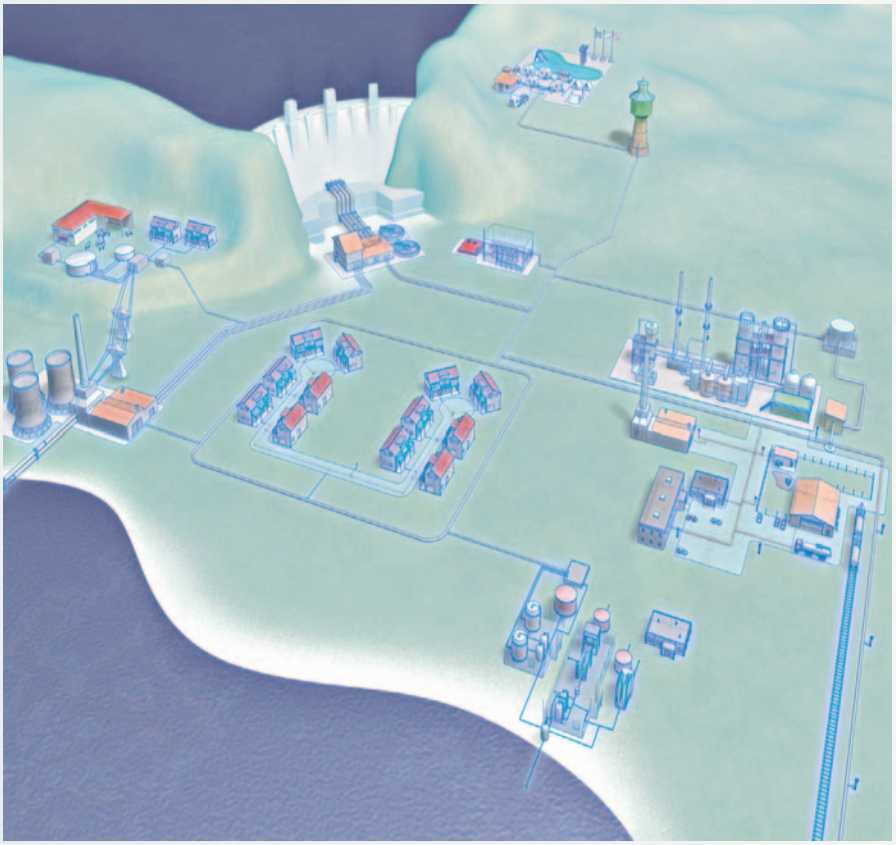
Source › Treatment › Storage › Transport › Distribution › Point of Use

Clean drinking water, pure in taste, smell and appearance, is one of the fundamental health requirements of humans and the demand for a secure supply of clean water is increasing worldwide.
Delivery of gas directly to the point of end use within a given geographic area requires a wide network of transport and distribution pipelines providing the highest safety standards.

Safe, reliable and economical conveyance of water and gas is more and more achieved with plastic piping systems.
GF leading know-how and expertise for all water and gas distribution applications helps you find the right solution.

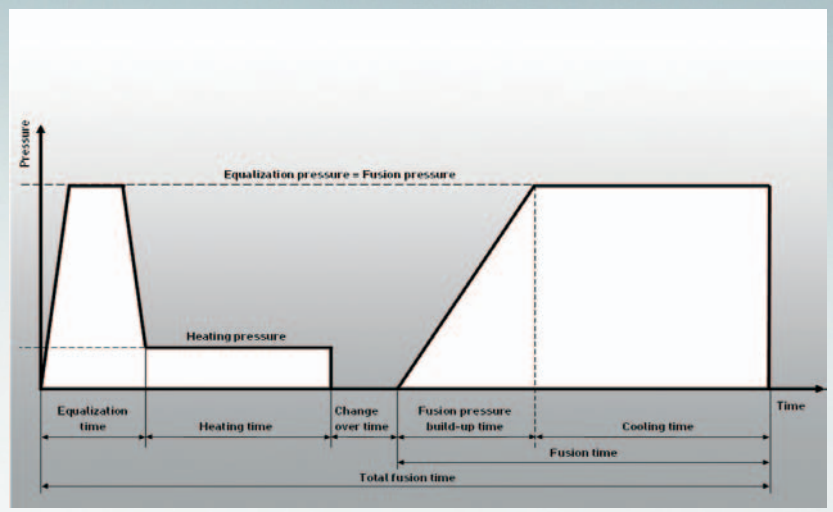
The professional GF butt-fusion and electro-fusion welding systems for plastic pipes provide you with a comprehensive solution for all applications in water and gas distribution. This equipment can also provide you with full traceability features of joints for documented quality assurance of installations.

For more than 40 years GF Piping Systems has been developing and manufacturing high quality butt-fusion machines for the installation of plastic piping systems. This long experience is reflected in many successful installations worldwide. The robust heavy duty design of our new TM butt-fusion machines make them the first choice when welding in difficult site conditions where high quality joints are essential.



Butt-Fusion Technique

The butt-fusion welding cycle of thermoplastic pipes (PE, PP, PVDF) consists of a certain number of steps. The quality of welding joints depends on the skill of the welder, the suitability of the equipment used and the compliance to the applicable welding standards. The time and pressure values are given by country specific recommendations.



For buried piping systems robust trench machines are used. Such machines comprise of a hydraulically operated slide, a planer, a heater plate and hydraulic control unit. The hydraulic unit can be supplied with a joint data logger. Machines are available for use on pipe up to 2000 mm outside diameter. Investment in this pipe jointing technology can be offset against increased productivity and uniform joints meeting higher quality standards.

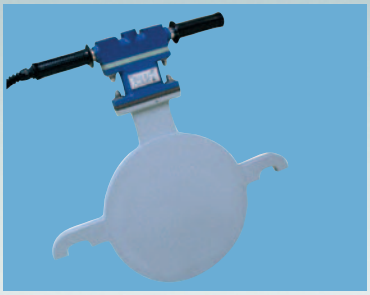
Advantages of butt-fusion method

- Simplified axial alignment and re-rounding of pipes is allowed by integrated four-bridge clamping arrangement, even when pipe is ovalised or may have collapsed ends
- Bending and installation stresses are compensated by the rigidity of the machine frame and pipe clamps
- Easy removal of the oxidised layer on pipe ends with the electrically operated planer
- Self cleaning action through the partial expulsion of melted material during the jointing process
- Immediate visual inspection of the welded area and fusion bead

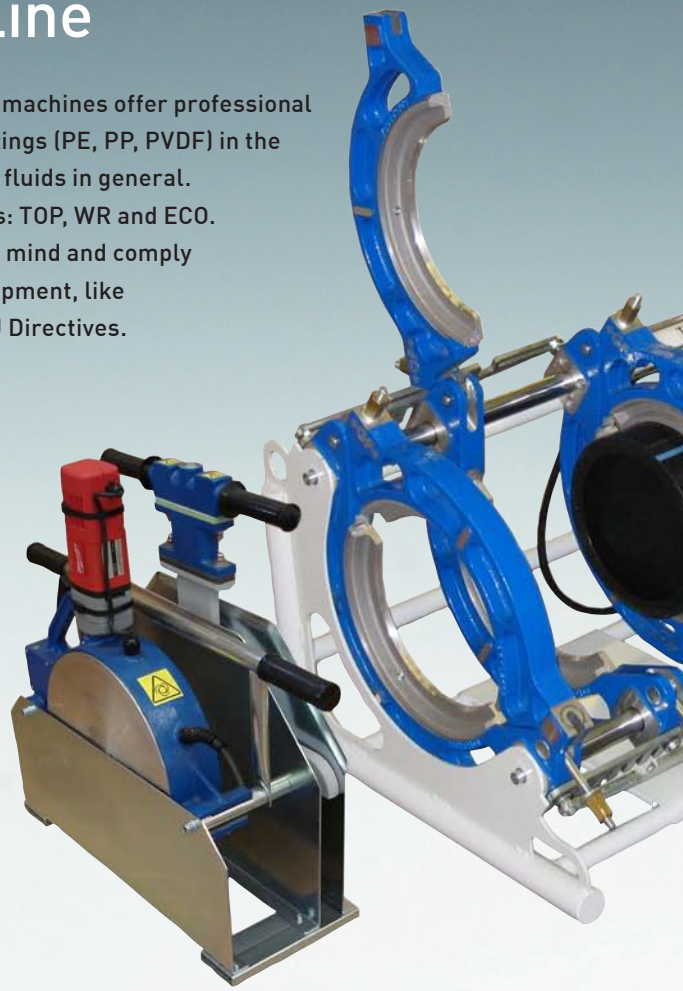
In piping network fabrication, depending on the specific applications, electro-fusion and butt-fusion jointing methods have their particulars strengths and weaknesses. Neither of these techniques can be completely ignored in the modern installation practice. Without doubt, the greatest possible benefit is achieved by a professional combination of both methods.

Butt-Fusion Machine Line

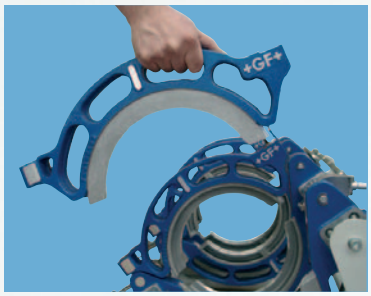
Reliable and exceptionally practical for on-site use, these machines offer professional welding equipment for joining thermoplastic pipes and fittings (PE, PP, PVDF) in the fabrication of pressurised transport lines of gas, water or fluids in general. The new GF Trench Machine line consists of three versions: TOP, WR and ECO. The TM machines have been designed with the end user in mind and comply with national and international standards for welding equipment, like DVS 2208-1, ISO 12176-1 and the specifications of other EU Directives.



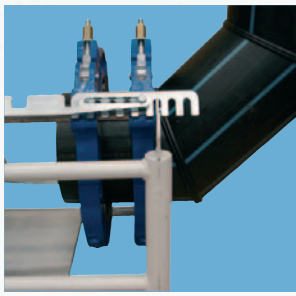
PTFE coated heating element with an optimised surface temperature distribution for highest quality welding results. For additional checking of the heating element status, a temperature indicator is fitted on the handle.



The pipe planer provides improved pipe facing performances thanks to a powerful motor and a re-designed worm-gear torque transmission. Handling of the facing tools is ergonomic thanks to reduced and well balanced weight. User's safety is assured by a spring loaded self-locking mechanism and a micro-switch preventing accidental operation of the motor. Mains cables are wired internally within the housing for full protection against potential damage.

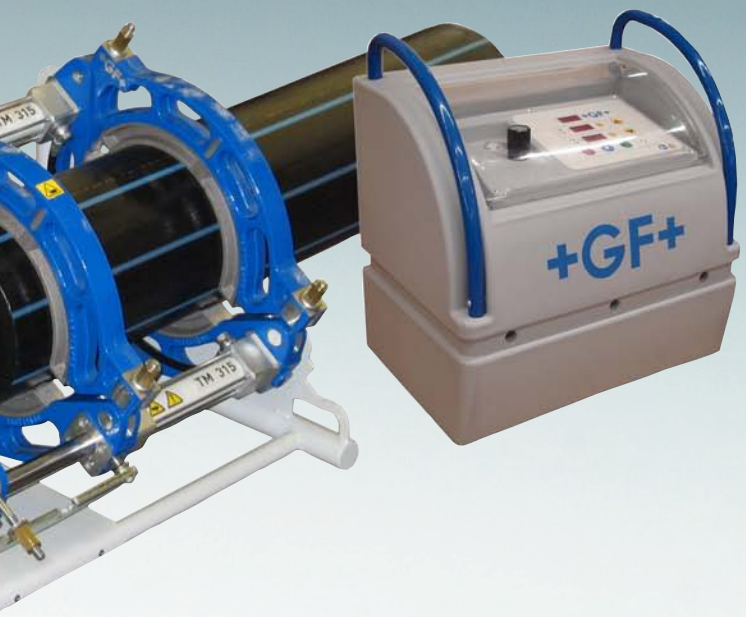


The new tilting upper clamps allow quick and easy pipe securing, alignment and removal of the welded pipe. Whenever necessary, upper clamps may also be quickly removed.
The optimised design of the clamp section profile provides easier handling and weight reduction with an increase in rigidity at the same time. Reduction inserts of the former GF butt-fusion machines are fully compatible.



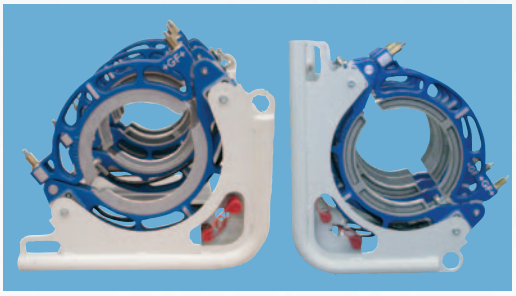
The sliding 3rd clamp provi
time saving and a highly fle
system for clamping bends
tees without additional tool
Just take out the spacer bla
shift the clamp to the desig
position and fix it again with
spacer. A double-sided pull
mechanism enables a secu
heater plate separation fro
melted pipe ends in all welc
positions.

TM 160 / 250 / 315 TOP



All hydraulic and electric connections are available on the rear panel and protected in an enclosed position. Only one mains cable to the generator! All machine electric devices are plugged into the hydraulic unit, which is also ready for connection of the WR 100 data logger. A 230V-AC power socket is also available for additional electrical accessories. The removable rear panel is fitted on an internal aluminium frame providing a highly robust construction, while resistance to shocks is provided by a thick PEHD external plastic case.
Internal electric and hydraulic components are separated by a protective metal shield. Accessibility to internal parts is achieved, by just sliding up the plastic housing.

des
xible
and
s.
ade,
nated
the
-off
re
m the
ding

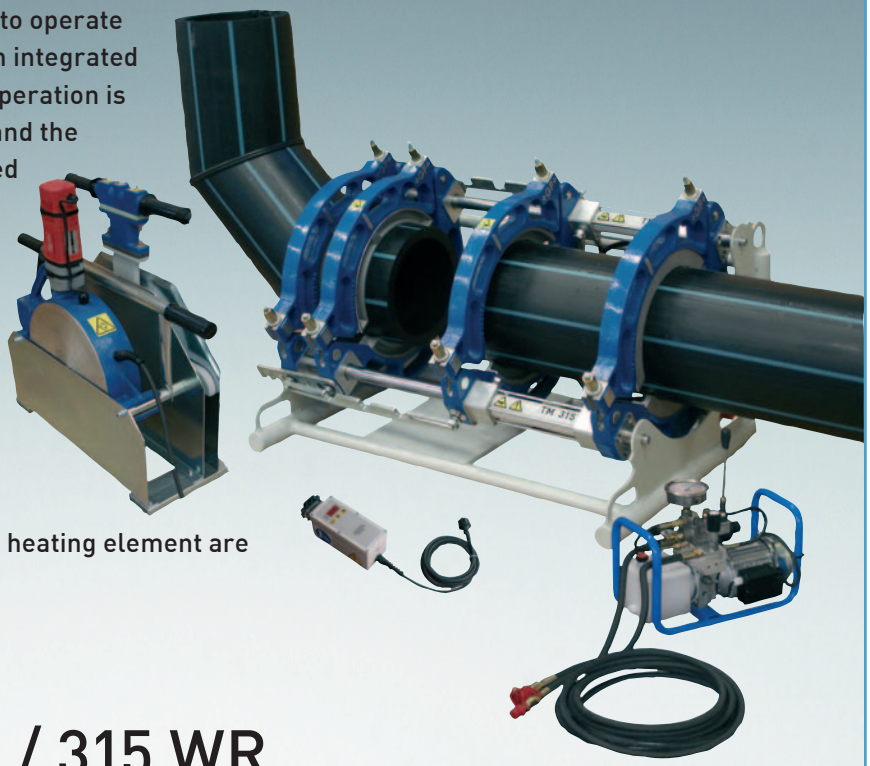


Quick-action drip-proof hydraulic hose connections are housed in a protected position to prevent accidental damage.
By rotating the TM base machine, a second operating position is made available, this maintains the same pipe pulling direction and the same arrangement of the hydraulic hoses. This feature enables the welding of pipes even in narrow trenches, increasing the machine's flexibility.

The new TM hydraulic unit incorporates an easy and intuitive operator interface with high quality components, all surrounded by a robust plastic housing with an attractive design. The control panel is provided with digital indication of hydraulic pressure and heating element temperature. An integrated 2-channel digital welding timer is also included. Operation of machine carriage, as well as pressure release, are executed through servo-assisted push buttons. A new hydraulic valve enables precise pressure setting and fine adjusting. The tilting plastic cover provides protection against damage during transportation and reduces sunlight reflection during operation.

TM 160 / 250 / 315 ECO

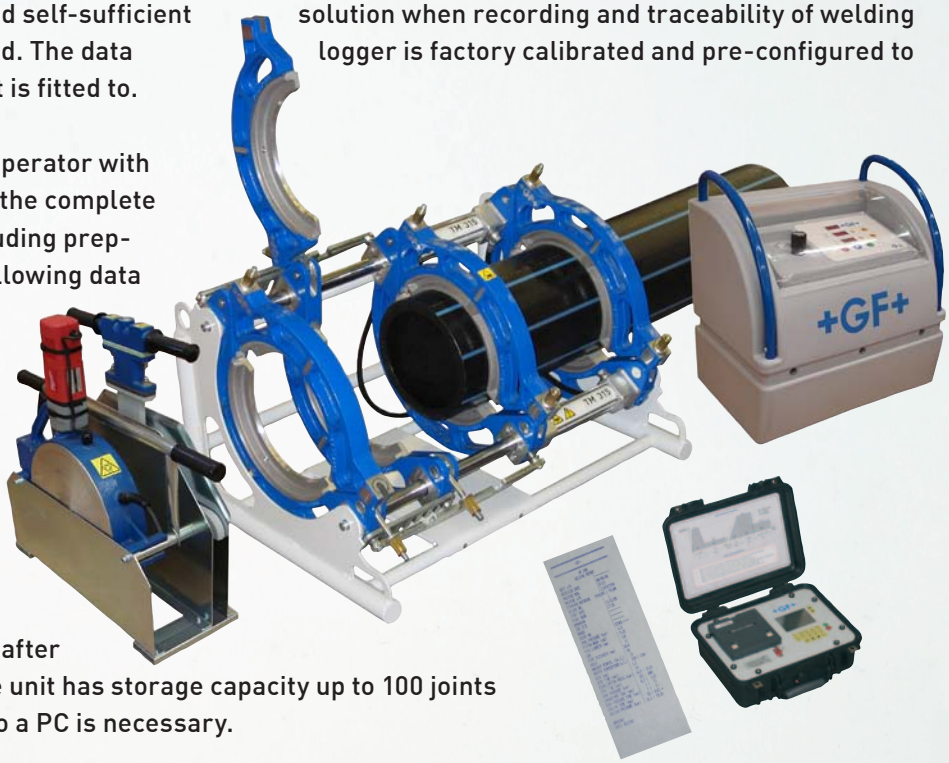
The TM machine in ECO version is fitted with the well known ECO hydraulic unit. This is a lightweight and easy to operate hydraulic device provided with integrated flexible hoses. The carriage operation is activated by a master switch and the hydraulic pressure is displayed on a precise analogue gauge. The heating element temperature regulation is carried out by a remote electronic controller displaying both current or set point temperatures through a 3 digit LED display.



Base machine, facing tool and heating element are the same as the TOP version.

TM 160 / 250 / 315 WR

The TM machines in WR versions are just the TOP ones fitted with the welding data logger WR 100 providing a flexible and self-sufficient solution when recording and traceability of welding parameters is required. The data logger is factory calibrated and pre-configured to the specific machine it is fitted to.



WR 100 provides the operator with full guidance through the complete welding process, including preparation stages, also allowing data storage of operator identification, order and job site codes. The welding execution is compared to the selected standards and a print-out of all parameters can be obtained immediately after finishing the joint. The unit has storage capacity up to 100 joints before data transfer to a PC is necessary.

The same WR 100 can also be connected to other TM machines of different dimensions, just by an easy and immediate type selection in the configuration menu.

Technical data

Butt fusion machine	TM 160 TOP	TM 250 TOP	TM 315 TOP
Code	790150011	790151011	790152011
Power Supply	Single phase 230 V, 50 Hz		400V, 50 Hz
Power rating [W]	1900	3270	3870
Mains connector	230 V, Schuko		CEE 3P+N+T
Net Weight [kg]	81	122	138
Dimension Packaging W/D/H [cm]	110x68x68	130x95x75	162x92x95

Butt fusion machine	TM 160 ECO	TM 250 ECO	TM 315 ECO
Code	790150010	790151010	790152010
Power Supply	Single phase 230 V, 50 Hz		
Power rating [W]	1900	3270	3870
Mains connector	3x 230 V, Schuko		
Net Weight [kg]	70	111	127
Dimension Packaging W/D/H [cm]	105x68x68	158x83x84	158x83x84

TM accessories

Clamp tightening knobs

By using this accessory no tools are required for tightening the machine clamps. Usually clamps are kept hinged to the frame at the tilting point, therefore it is only necessary to replace the four nuts in the bottom fixing point of the clamps.

Stub-end holder

This accessory is necessary for welding short-end fittings (flanges) to pipes. Depending on the components to be jointed, the stub-end holder can be fitted both on the outer clamp or the sliding 3rd clamp.

Chamfered upper clamps

This accessory is useful for welding short-leg bends having diameters equal to the maximum available for the machine: e.g. bend Ø 250 mm with a TM 250 machine.

Set of reduction inserts

For all three machines 160/250/315 complete sets of reduction inserts are available, consisting of 4 narrow and 4 wide half rings of each dimension. The narrow half rings are generally used to fix short-leg fittings, while the wide ones enable also easy re-rounding of pipes.