PLASTITALIA S.p.a.

high performance fittings

Electrofusion process

THE PROCESS OF WELDING IS COMPOSED BY SEVERAL PARTS:

- *INSPECTION (PRIOR AND AFTER THE WELD)*
- *PREPARATION*
- *WELD*

ALL OF THOSE ACTIVITIES HAVE TO BE PERFORMED BY QUALIFIED PEOPLE

PLASTITALIA HAS A WELDING TRAINING CENTER PROVIDED WITH SKILLED PEOPLE THAT CAN QUALIFY WELDING OPERATORS ALL OVER THE WORLD.

PLASTITALIA CAN TEACH BOTH ELECTROFUSION AND HEATING BUTT WELD PROCESS

I Plast experience

INSPECTION PRIOR START TO WELD

This inspection is divided in two parts, on:

- *equipment (tools, control unit, etc.)*
- *material (pipes, fittings, etc.)*

We recommend to record any inspection for future reference.

INSPECTION ON EQUIPMENT

The presence and the suitability of following items has to be considered as minimum requirement:

- *Electronic Control Unit (ECU) conform to*

ISO 12176-2 and well maintained (possibly under annual maintenance contract)

I PLAST 105 - I PLAST 30 - I PLAST 60

are ECU designed to comply with ISO 12176-2

INSPECTION ON EQUIPMENT

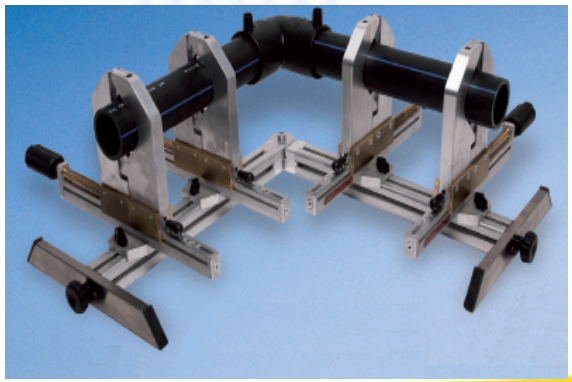
Measurement, tools and marker

INSPECTION ON EQUIPMENT

Pipe cutter
Pipe scraper (preferred mechanical)

INSPECTION ON EQUIPMENT

Re-rounding clamps
Clamps



INSPECTION ON EQUIPMENT

Polyethylene cleaner
Tools: Wrenchs, screwdrivers, etc.

We strongly recommend the use of a check-list

inspection	Requirement	Pass	Fail	Note
Control unit type I PLAST 105	general	x		
	Welding leads	x		
	Connectors (4 – 4,7mm)	4,00		
	Power suitable for specific fitting	x		
	Maintenance	x		Expiry date next month
	Manual of use available	x		

We strongly recommend the use of a check-list

inspection	Requirement	Pass	Fail	Note
Pipe cutter	Suitable	x		
Re-rounding	Suitable	x		
Pipe Clamps	Suitable	x		
Hand scraper	Suitable	x		
Power Generator	Power suitable for specific fitting and Control Unit	x		New – output power = 5.5 Kw
Extension leads	Suitable		x	
Welding operator	Qualified for welding process to be applied	x		
Place: xxxxxxxxx	Sign:	date: 2013.03.07		

INSPECTION ON MATERIAL

Pipes, fittings, valves, etc. have to be in good condition without scratches and visible defects.

Pipe out-of-roundness (ovality) have to be such that the pipe can slip into the fitting without excessive force (less than 1,5%)

PREPARATION

Elements to be welded have to be cleaned. Mud, oil, dirt, etc. shall be removed from surfaces.

Use clean water and then use approved PE cleaner (isopropyl alcohol, etc.)

2) Cut squared end. Use suitable pipe cutter. After cutting all chips and fragments of polyethylene must be completely removed from the welding area.

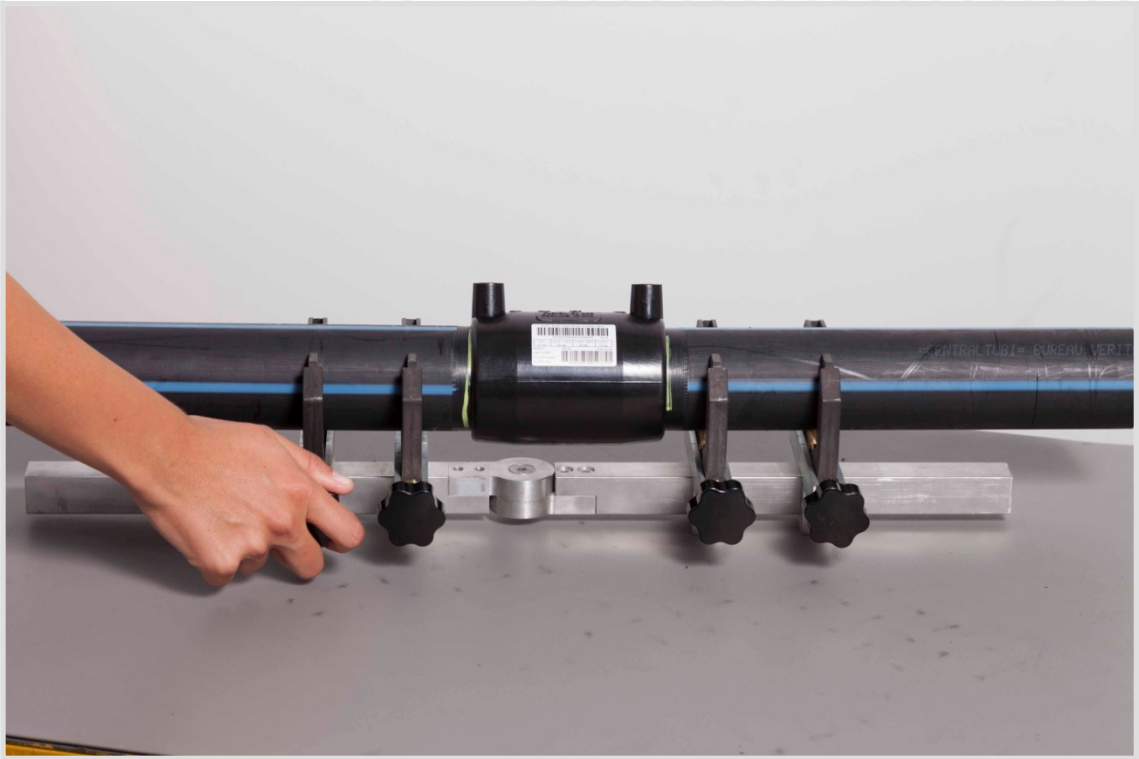
3) Mark scraping area. This mark shall identify an area greater than the real penetration depth (at least longer 10 mm.)

4) Scrape the external oxidate surface.This operation shall be homogeneus on all surface. Use mechanical scraper (0,1mm ø < 63mm – 0,2 mm for other ø).

5) Clean scraped surfaces with suitable PE cleaner. This operation have to be done even in the inner fittings surface. Wait until all cleaned parts are completely dry.

6) Mark insertion depth with felt pen

7) Slip in to the fitting elements to be welded. This operation have to be smooth without excessive force. Clamp all together.



8) *Connect Electronic Control Unit leads to fitting's pins*
Read fitting's bar-code by means of the bar-code reader
Be sure that pipes are placed in the right way into the fitting, that any element is correctly aligned and clamped
Press Start on the ECU front panel

9) *Wait until the cooling time indicated on the fitting is completely elapsed before dismantle clamps.*

The welding operator is obliged to perform some inspection after the control unit has completed the welding cycle.

INSPECTION AFTER WELDING CYCLE

There are two different type of inspection:

- Non destructive test (NDT)
- Destructive test

Only NDT have to be performed by the welding operator

INSPECTION AFTER WELDING CYCLE

Non Destructive Test:

- Welded elements are correctly aligned
- No signs of melt-out from fitting
- Fusion indicators have to comply with fitting manufacturer instruction
- Insertion depth has been respected
- Scraped area have to be clearly visible

INSPECTION AFTER WELDING CYCLE

Fusion indicator correctly got out, insertion depth respected, "all right".

Misalignment, not allowed.

Melt-out, not allowed.

INSPECTION AFTER WELDING CYCLE

Destructive Test:

Many destructive tests can be performed by a well equipped laboratory.

By means of any of those tests is possible to individuate reasons of weld defects.

INSPECTION AFTER WELDING CYCLE

Longitudinal section to looking for defects

Peel test

Crush test

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