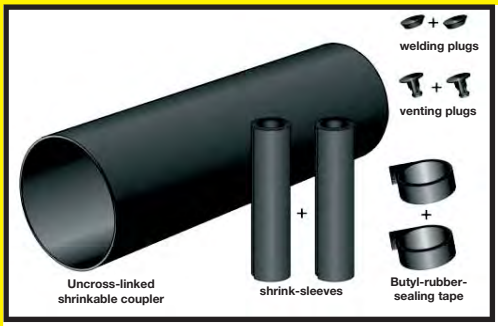
Assembly instructions - uncross-linked shrinkable coupler

Processing instructions for uncross-linked shrinkage coupler from D_a=65 to D_a=1200 mm

01 Product description / scope of supply



The uncross-linked shrinkable coupler is a self-sealing shrinkable sleeve, for example, pre-insulated pipe systems. The scope of delivery includes a standard mounting kit consisting of:

- 2 shrinking sleeves
- 2 Butyl rubber sealing tapes
- 2 venting and 2 welding plugs

02 General information

The uncross-linked shrinkable coupler is delivered in white plastic wrapping to protect against humidity and dirt. This wrapping must not be removed. The sleeve must be slid on with the wrapping before the welding of the pipes.

Under extreme weather conditions (jacket pipe temperature below 5 °C) appropriate measures must be taken for the installation.

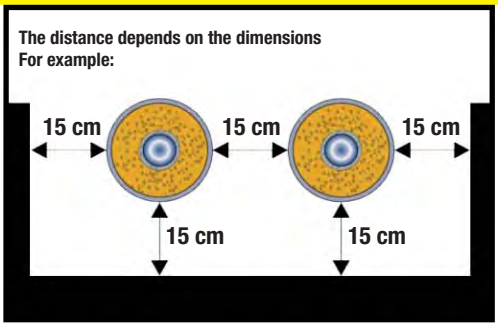
03 Information regarding storage and safety

To ensure an optimal and long service life the isoplus products that must still be processed must be stored in a dry and well-ventilated location. Avoid storing under direct sunlight, rain, snow, dust or other adverse environmental conditions. The processing of the isoplus products must be in compliance with the relevant regional health and safety regulations.

04 Processing equipment

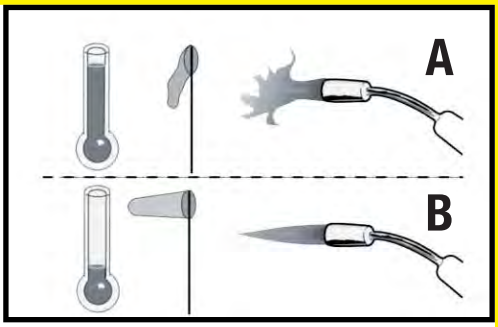
- Propane gas tank with hose, a suitable burner and a suitable safety valve
- Lint-free cloths
- Grease free marker pen
- Ethanol/alcohol (min. 99,9 %)
- Emery cloth (grain 40–60)
- Tape measure, scissors, triangular scraper, hollow grater
- thermometer with contact sensor
- Electric drilling machine
- Suitable welding plug equipment (with welding plug machine), PEHD-welding - and venting plugs, welding plug holder, drill with stop, generally conical
- Ø 20 mm drill with stop
- Pressing on fixture
- Leak detection spray

05 Required space in ditch



In order to guarantee quality and long service life when using the isoplus products in ditches there must be sufficient working room for the application positions. The ditch bottom must be free of water and mud. The pipe installation and the bearing must meet requirements.

06 Information regarding using the propane gas burner



The propane gas flame must be adapted to each building site and the ditch conditions:

a. Soft, yellow flame with thin -walled jacket pipes and shrinkage products, with no wind and high ambient temperatures.

b. Hard, blue flame with thick-walled jacket pipes and shrinkage products, with wind and low external temperatures.

The vertical guiding of the propane gas flame only to the shrinkage product and a continuous movement in a circumferential direction minimise the danger of burning the PEHD-jacket pipe.

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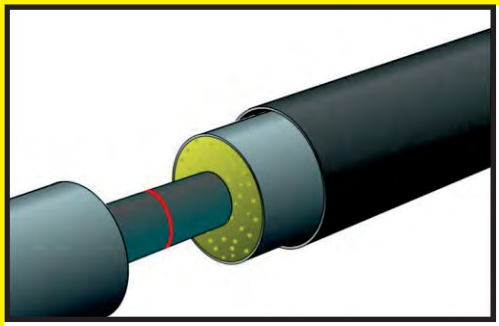
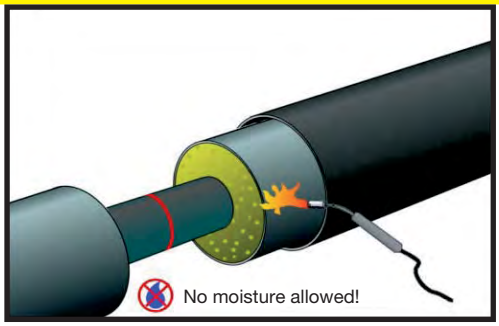
07 Push on coupler



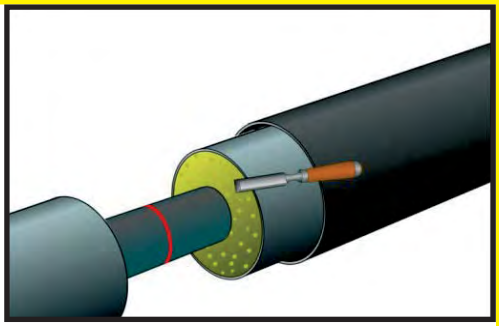
The coupler must be pushed against the medium pipe **with the white protective film before the welding** and is to be protected against burning during the welding process. The coupler and its accessories must be checked for damage before use.

08 Drying



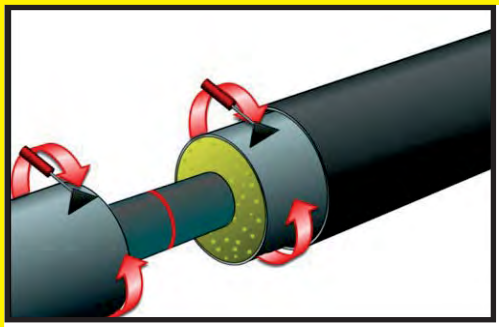
Remove the white protective film from the coupler.
Drying of the entire coupler area and all sealing surfaces (outer surface of the HDPE outer casing end and inner surface of the shrinkage ends) and the medium pipe.

09 Treating of the KMR fronts



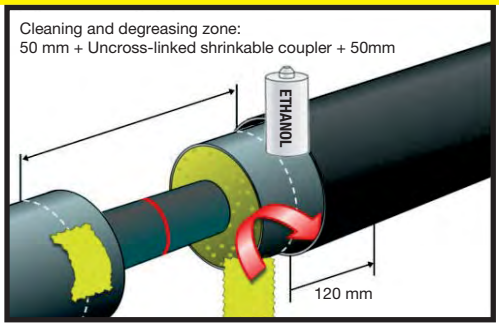
Pricking of the PUR fronts of the plastic jacket pipe and moulded parts to remove capillary bound humidity.

10 Removal of rough impurities



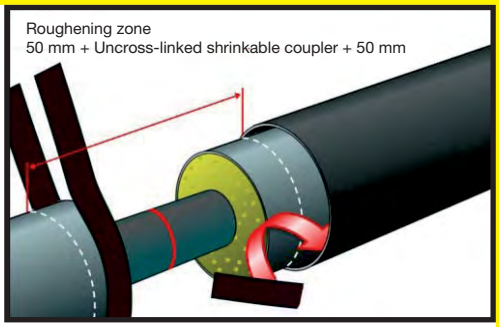
Removal of plastic burrs and adhering impurities on **all** sealing surfaces with a triangular scraper.

11 Removal of loose impurities / Degrease



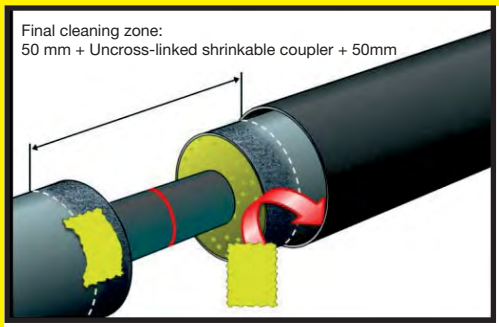
Cleaning and degreasing of **all** sealing surfaces with ethanol/alcohol (at least 99.9%) with a dry, grease and lint-free cloth.

12 Roughening of the sealing areas



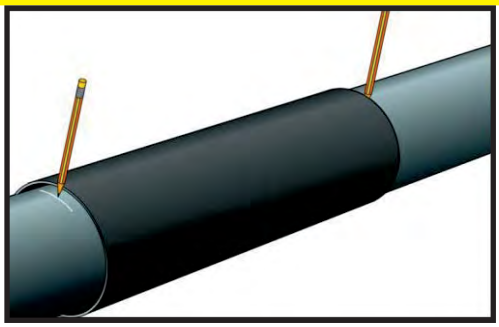
Roughening of the sealing surface (jacket pipe and inner sleeve side) with an emery cloth (grain 40-60).

13 Final cleaning of the sealing areas



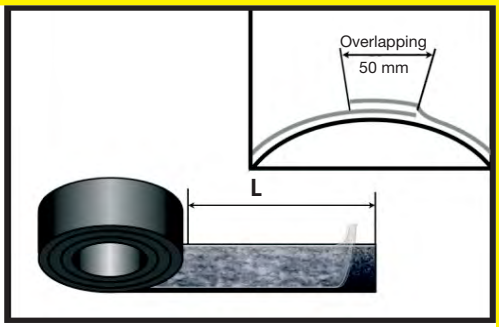
Final cleaning of all sealing surfaces using ethanol / alcohol 99.9% of loose PEHD and sand particles with a grease and lint-free cloth.

14 Marking of the coupler position



Place the sleeve centrally over the entire rear section of the PEHD jacket pipes. Mark out the shrinkage area and the centring marks. Then slide the coupler back.

15 Cutting to length of the sealing tape



Cut the butyl rubber sealing tape to length Circumference of the PEHD-jacket pipe + 50 mm

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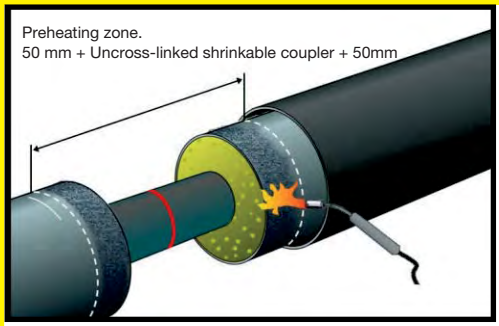
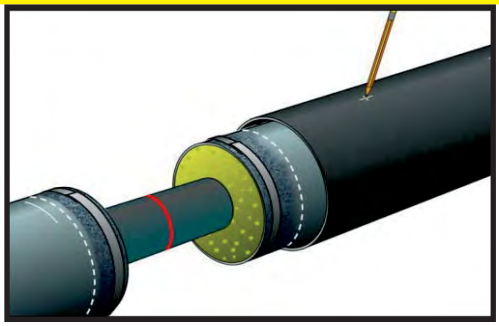
16 Preheating / attaching the sealing tape



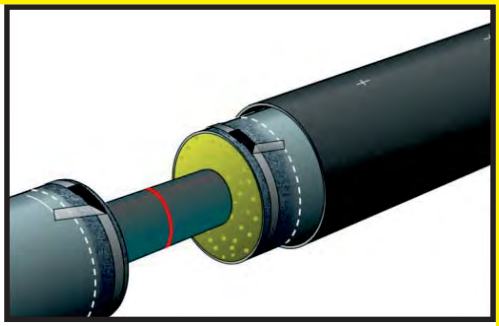
Finally heat both ends of jacket pipe with a soft propane gas flame at **40 °C to 50 °C**. Do not burn the jacket pipe.
Check temperature! Overlap the butyl rubber sealing tape by approximately 20 mm radial markings in 12:00 clock position about 50 mm overlap and wrap tightly around the jacket pipe.

17 Marking for the filling and venting hole



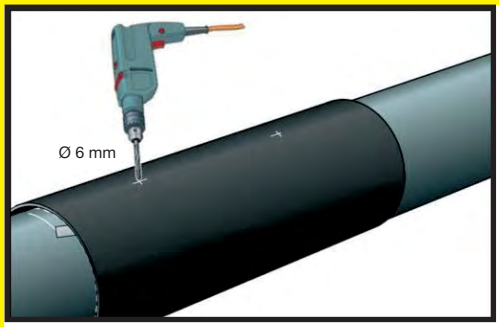
Calculate and apply two marks for the filling and venting hole in the 12.00 position. To ensure good ventilation of the coupler and to prevent gas bubbles, provide a large as possible opening at the edge of the coupler.

18 Ends of the protective film



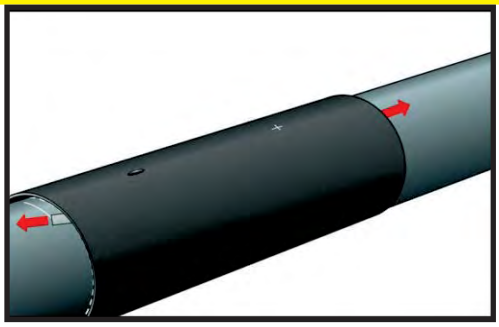
Remove approx.150mm of one end of the protective foil and fold at a right angle; if necessary, stick backing paper on the jacket pipe.

19 1. Drill venting hole



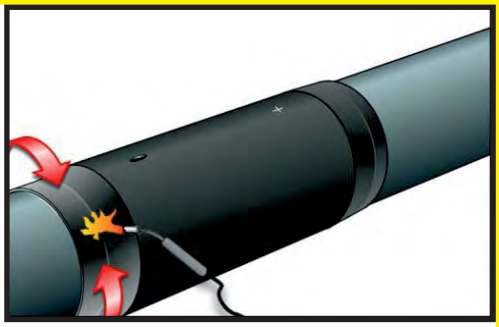
Now slide the coupler over and align using the two centring marks Drill first venting hole with a 6mm diameter.

20 Remove backing paper



Remove backing paper of the butyl rubber sealing tape on both sides.

21 Shrink the ends of the coupler



Heat both coupler ends through with a soft propane gas flame and shrink on the jacket pipe. Take care not to burn.

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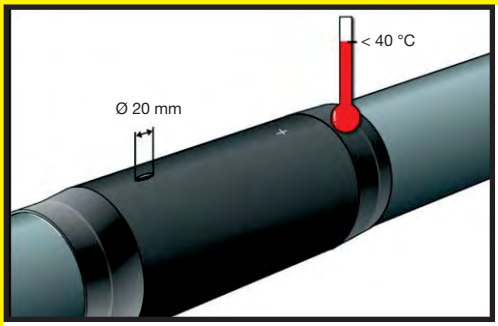
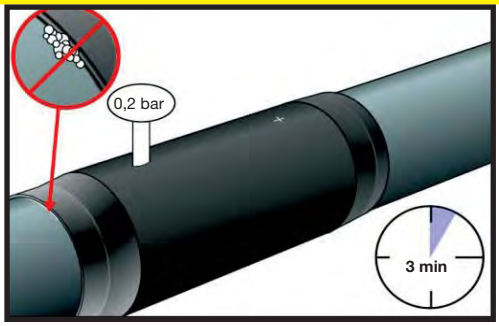
22 Reaming of the 1st. venting opening



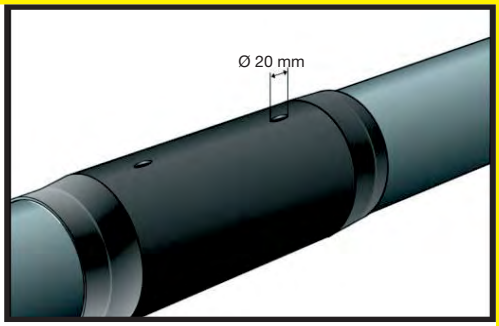
Increase Ø 6 mm venting opening to Ø 20 mm. Let the coupler further cool down to 40 °C.

23 Leakage testing



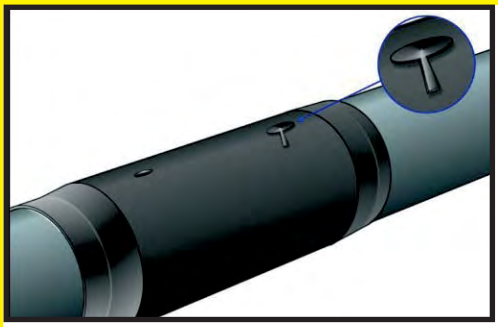
Generally allow the coupler to cool down to under 40 °C prior to further work steps. Subject the coupler to a air pressure test of 0.2 bar for a period of 3 minutes during which soap solution is applied to the coupler and jacket pipe-transition area. Wash off the liquid soap after successful testing. Document the execution parameters in the sleeve report.

24 2. Drill venting hole



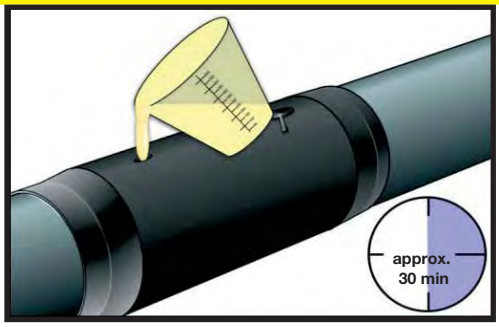
Drill the second venting opening with Ø 20 mm analogue to picture 19.

25 Close venting opening / touch foam



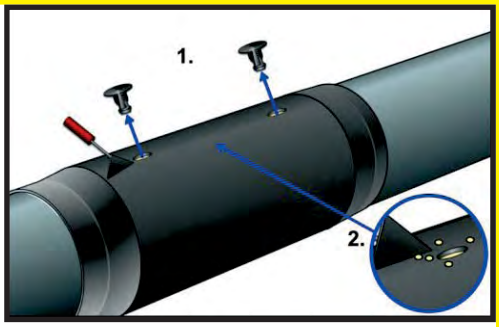
Seal the venting opening in picture 24 with a venting plug.

26 Foaming of the sleeve



Determine the required amount of foam with the aid of foam table and touch or adjust to the foam machine and pour into the filling in opening of the sleeve.
Immediately close the foam filling in openings with the venting plugs.
The foam will have hardened after approx.30 mins.

27 Remove venting plugs/ remove remaining foam



Remove both venting plugs again. Remove the remaining foam from around both drill holes with the triangular scraper.
Drill out both holes with a conical drill to match the welding plugs.

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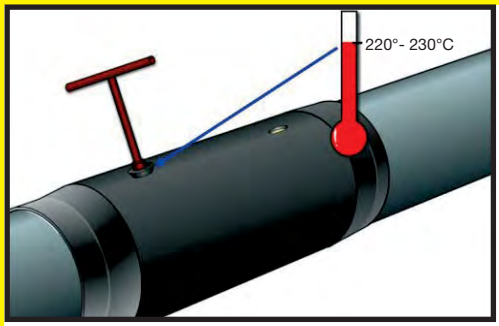
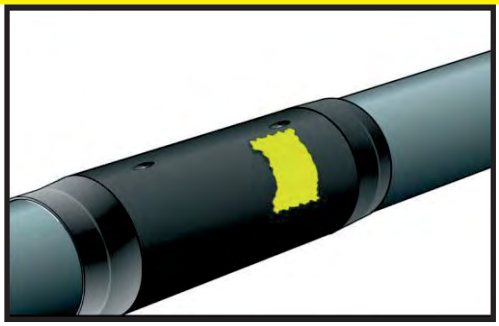
28 Insert welding plugs



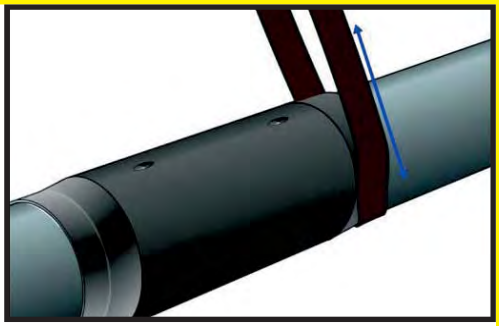
To close the first opening preheat welding plug and the drill hole in the plug welding apparatus to 220 °C to 230 °C.
Once the temperature is reached pull the plug from the welding apparatus and immediately press into the opening. Apply continuous pressure for 30 seconds. Remove the handle with a rotational movement from the plug.
Repeat with second opening.

29 Cleaning



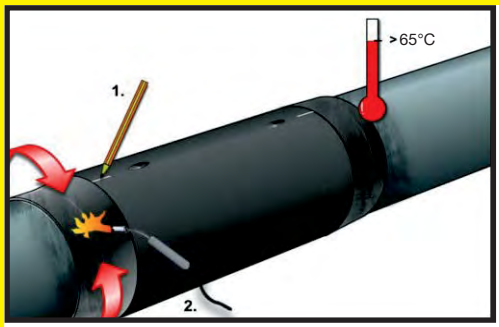
Thoroughly degrease the transition areas of the sleeve to the jacket pipe with a lint free cloth and PE cleaner; on both transitional areas approximately 300 mm wide, i.e. 150 mm on the sleeve and 150 mm on the jacket pipe.
These areas must perfectly clean and dry prior to more processing.

30 Roughening of the transitional areas



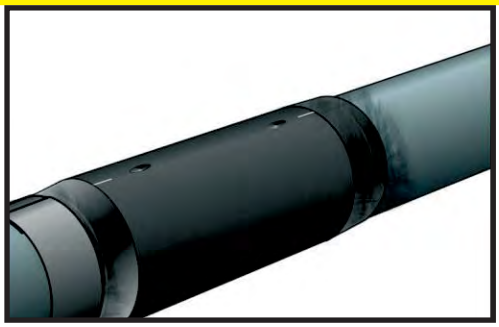
Use an emery cloth to roughen the transition areas in the cuff width by at least + 50 mm. Wipe all sanded PE particles with ethanol and a lint-free soft cloth.

31 Prepare collars



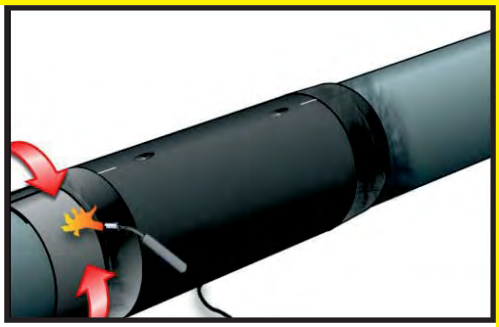
Measure the collar width and make a centring mark at 50% (collar type C) on the jacket pipe or the coupler at approximately the 12:00 clock position.
Heat the first roughened transition area through with a soft propane gas flame at 65 °C, do not burn it.
Control the temperature!

32 Process collar I



Only unpack the collar and remove the protective film immediately prior to processing (danger of contamination). Based on the centring marks, position the bevelled collar end and loosely wrap around the pipe. Remove the protective film from the second straight and overlapping end of the integrated sealing flap.
Heat the collar end with a soft flame for about 1 second and press to secure.
Soiled and stuck together shrink collars must be excluded from the assembly and disposed of!

33 Process collar II



Start the shrinking process at the sealed end (12:00 clock position) and continue in the direction of jacket pipe.
Subsequently shrink the collar **on the coupler** in the circumferential direction using circular movements. Shrinking process repeated until the collar is applied over the entire surface of the sleeve.
This prevents air pockets.

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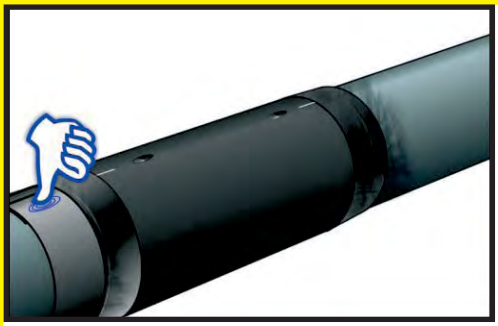
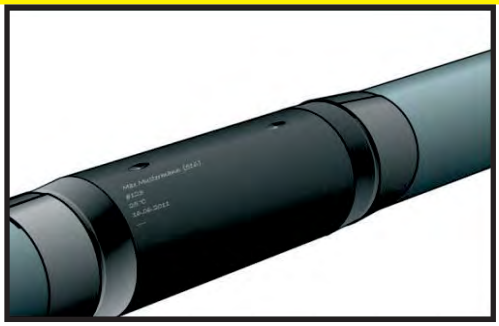
34 Thumb test



The melt adhesive leaked on the collar indicates that sufficient heat has been introduced. Additionally, through the thumb test, the collar is displaced axially to the beads which immediately recede back to a smooth surface when sufficiently warmed through.
Now install the second collar in the same manner as shown in images 31 to 34.

35 Markings by the assembler



The assembler must make the following marks in the ground with a durable permanent marker pen:
- Name of technician and/or the assemblers number
- Coupler number
- Measured numbers
- Assembly date
- Foam system

36 Recommendations

At least 0.5 to 1 hour should elapse between the end of processing of the isoplus uncross-linked shrinkage couplers and the beginning of the sanding so that the shrinkable base material and the hot melt adhesive have sufficiently cooled and solidified to achieve the required protection function, peel and shear strength and the desired long-term sealing function.

The installation of the uncross-linked shrinkable coupler as connecting sleeve applies also to the reduction shrinkable coupler, double reduction shrinkable coupler and shrinkable end coupler.

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