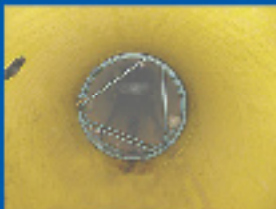


Electro-Fusion Socket



Introduction

The quality standard of a pipeline depends to a great extent on the durability and leak free condition of the joint. HENZE manages a durable and leak free joint by welding the connection. HENZE applies three welding technologies. 1. extrusion welding; 2. butt welding; 3. electrofusion welding. (all according to DVS 2207-16). HENZE diameters are from DN 300 to DN 2400.

Electrofusion Welding

The electrofusion socket is integrated in the Henze wrapped pipe. This not only improves the welding knit quality but also allows welding novices, ie construction workers to manage the welding process independantly. All they need is a short welding instruction by HENZE experts which is of course free of charge. From then on they can easily manage the electrofusion process.

The welding process functions semi-automatic, welding parameters are scanned with a barcode and thereby all welding information is entered into the welding machine. Then the welding is initiated. A high welding efficiency and standard is achieved.

In the welding process the wires within the pipe heat up and the surrounding plastic melts and joints with other plastic melt. The temperature regulator of the machine will thereby consider the surrounding temperature and regulate the electricity flow in order to attain correct welding. When welding is completed the joint is solid and homogenously knited with the rest of the pipe and the socket-spigot-connection turns into a plastic full wall pipe..

The advantages in short

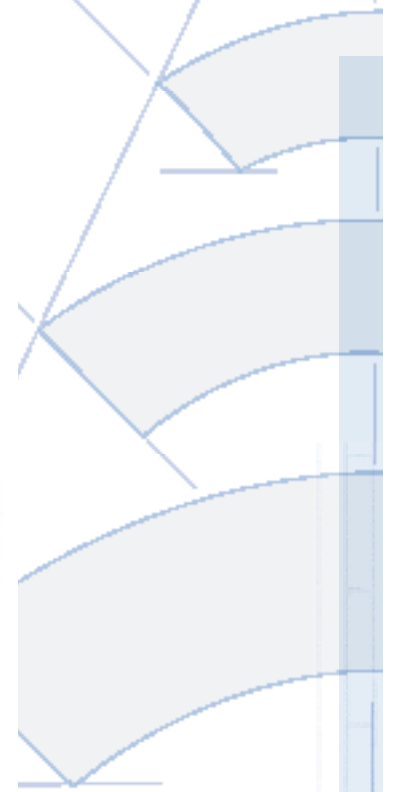
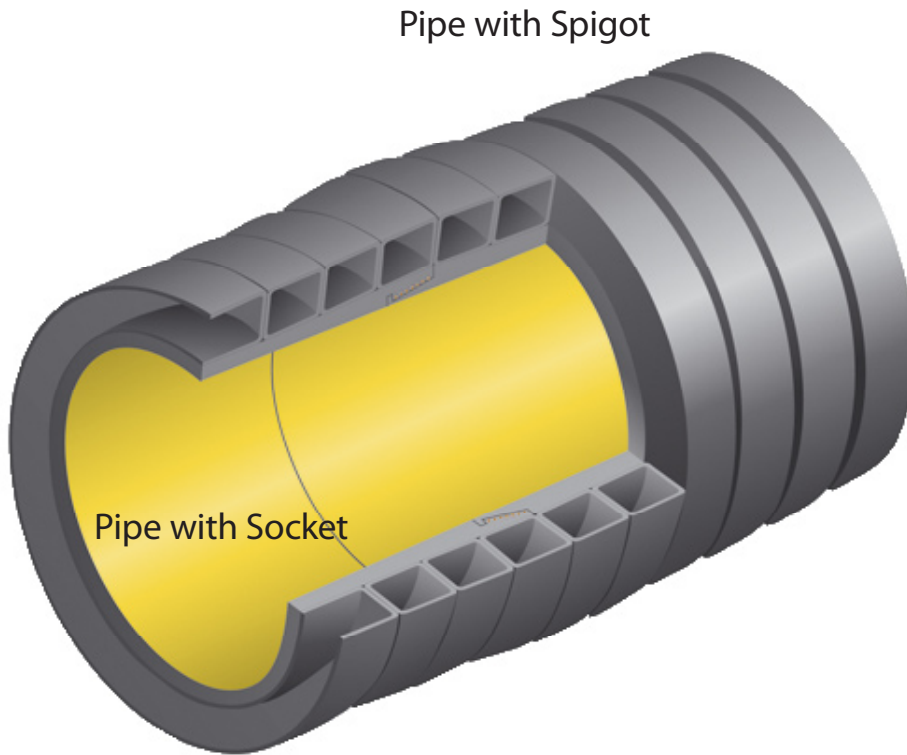
- ≡ Longitudinal Connection
- ≡ High density
- ≡ Simple handling
- ≡ Cost efficient pipe laying
- ≡ Little space requirement
- ≡ Less time required
- ≡ Automatic welding



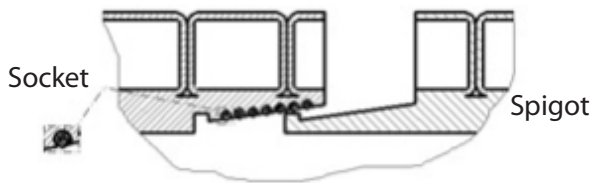
Drawing E- Socket

Profilwickelrohr DIN 16961

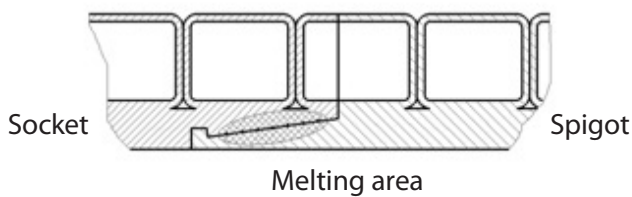
Material:



Prior to welding



After Welding



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Electrowelding (Electrofusion Welding)

Preliminary remark

DVS 2207 part 1 (Electrofusion Welding) contains welding instructions, which must be adopted for the pipe installation.

General Welding rules

The welding area must protect from the following conditions:

- ≡ wind
- ≡ sun rays (partial warming up of the pipe)
- ≡ humidity
- ≡ dirt/impurities

If necessary some preparations must be made i.e. enclosure by tent or covering, heating, without hindering the welder at his work. The circumference temperature of the pipe wall must be the same and be within the permissible temperature limits.

Requirements for the welder

The welder should be familiar with the rules of welding thermoplastics, the regulations DVS 2207-1, DVS 2207-3 and 4, DVS 2208-1 and DVS 2212-1. It is best, if he has a welding certificate by an inspection authority.

Requirements for the welding equipment

A universal welding machine is necessary which will be programmed with HENZE corrosion pipe welding parameters and will make a protocol according to ISO TC 138 SC 04.

Welding preparations

- ≡ Enter pipe for welding into the ditch.
- ≡ Thereafter permanently mark the welding joint and if necessary make a welding map for future necessities.
- ≡ Protective foil should only be removed shortly before welding and without damaging the welding surface
- ≡ Pipe ends, socket and spigot should be cleaned with a cleaning agent
- ≡ The socket and spigot are interlocked as far together as possible by moving the pipes together while held in ropes.
- ≡ While moving the welding areas together one should be aware not to get any dirt, humidity etc. on the welding surface. The welding areas are not allowed to be damaged, there is the danger of destroying the electrofusion wires. If this happens the electrofusion process can be interrupted and the process and the welding will not be successful.

for PEHD Profile Spiral Pipe

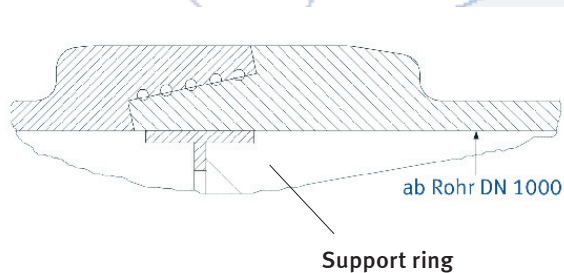
Welding process

- ⚡ Using Tensioners the pipes are pulled together on the complete periphery of the pipe until further tightening is not possible (new technology) and the socket and spigot snap together.
- ⚡ in result the sleeve and spigot must interlock along the complete periphery
- ⚡ the pipe is read to connect the welding machine
- ⚡ adjust welding parameters
- ⚡ the parameters are entered with a bar code (scanning pen + bar code), the welding process takes place automatically.
- ⚡ The suggested cool down time should now be fulfilled. Tensioners are only to be removed after the cool down phase is finished.
- ⚡ Finally the welding protocol needs to be printed to gain information on the welding parameters as well as the welding seem numbers. (ISO TC 138 SC 4).

Remarks

Support rings needs to be available in sufficient Nr. in order for a continuous and quick job to be accomplished.

Position of the support rings



Electrofusion Socket Warm up and Welding period

	DN 500		DN 600		DN 700		DN 800		DN 900		DN 1000		DN 1200	
	WARM UP PERIOD	WELDING PERIOD	WARM UP PERIOD	WELDING PERIOD	WARM UP PERIOD	WELDING PERIOD	WARM UP PERIOD	WELDING PERIOD	WARM UP PERIOD	WELDING PERIOD	WARM UP PERIOD	WELDING PERIOD	WARM UP PERIOD	WELDING PERIOD
T °C	S	S	S	S	S	S	S	S	S	S	S	S	S	S
5°C	240	800	240	800	260	800	310	850	350	900	370	950	430	950
10°C	220	800	220	800	240	800	280	850	320	900	330	950	390	950
15°C	200	800	200	800	220	800	250	850	290	900	290	950	340	950
20°C	180	800	180	800	200	800	220	850	260	900	260	950	300	950

	DN 1300		DN 1400		DN 1500		DN 1600		DN 1800		DN 2200		DN 2400	
	WARM UP PERIOD	WELDING PERIOD	WARM UP PERIOD	WELDING PERIOD	WARM UP PERIOD	WELDING PERIOD	WARM UP PERIOD	WELDING PERIOD	WARM UP PERIOD	WELDING PERIOD	WARM UP PERIOD	WELDING PERIOD	WARM UP PERIOD	WELDING PERIOD
T °C	S	S	S	S	S	S	S	S	S	S	S	S	S	S
5°C	370	950	570	1300	410	1650	430	1800	560	2000	680	2000	800	2600
10°C	330	950	540	1300	350	1650	370	1800	500	2000	610	2000	730	2600
15°C	290	950	510	1300	300	1650	320	1800	480	2000	550	2000	670	2600
20°C	260	950	480	1300	260	1650	270	1800	370	2000	470	2000	600	2600

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Cool down time: The cool down times are not taken into consideration for the construction process .

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Welding machine

The Electro socket welding machine is used to weld Henze pipes. The welding equipment contains:

- ≡ Bar code scanner
- ≡ Automatic adjustment of the welding parameters considering the surrounding temperature
- ≡ Automatic regulation of the welding time
- ≡ Manual entry of data if necessary
- ≡ Welding process surveillance
- ≡ Protocol printout either with a connected printer or by transferring data to PC. Software is supplied.

The welding machine can be rented.

Our service is of course to instruct and brief the personnel at the construction site with qualified HENZE staff. We also supply the necessary tensioners and as of ID 1000 also tension rings in sufficient number.

For density tests we can also offer a socket examination tool, which will examine the connection.



Socket Testing Apparatus

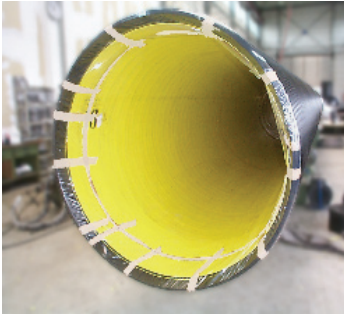
The socket testing tool has to be rented.

Socket testing apparatus are available in following diameters:

- DN 1000
- DN 1200
- DN 1300
- DN 1400
- DN 1500
- DN 1600
- DN 1800
- DN 2000
- DN 2200
- DN 2400



Attachment to the welding process



- ⚡ The pipe is packaged for transport in order to prevent impurities



- ⚡ The pipe is entered into the ditch. The pipe in the picture is 6,0m long.

- ⚡ Attention: The welding area may not be damaged.



- ⚡ After removing the protective foil the socket and spigot must be cleansed with cleaning agents and utensils. (the surface must be clean)
- ⚡ When connecting the pipes no impurities may enter into the welding area



- ⚡ Thereafter the pipes are pulled together and tightened with tensioners. As of a diameter of DN 1000 the tensioners are attached on the inside.
- ⚡ The welding machine is then connected and the welding parameters are scanned or manually entered.

The Welding Process takes place automatically!



- ⚡ Follow Cool down Time requirements !
- ⚡ The tensioners should only be taken off after the cool down time (>30min) is over
- ⚡ Earth around pipes should be compacted layer for layer

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Information request

Please send us more Information on the following products:

- General Information
- Pipe Systems
- Information on Electrofusion Welding
- Landfill Technology
- Chemical - and Systems Engineering
- Tenders
- Please arrange a meeting with us for an elaborate consultation

Company _____

Correspondance person _____

City / Zip Code _____

Country _____

E-Mail _____

Telefon _____

Fax _____