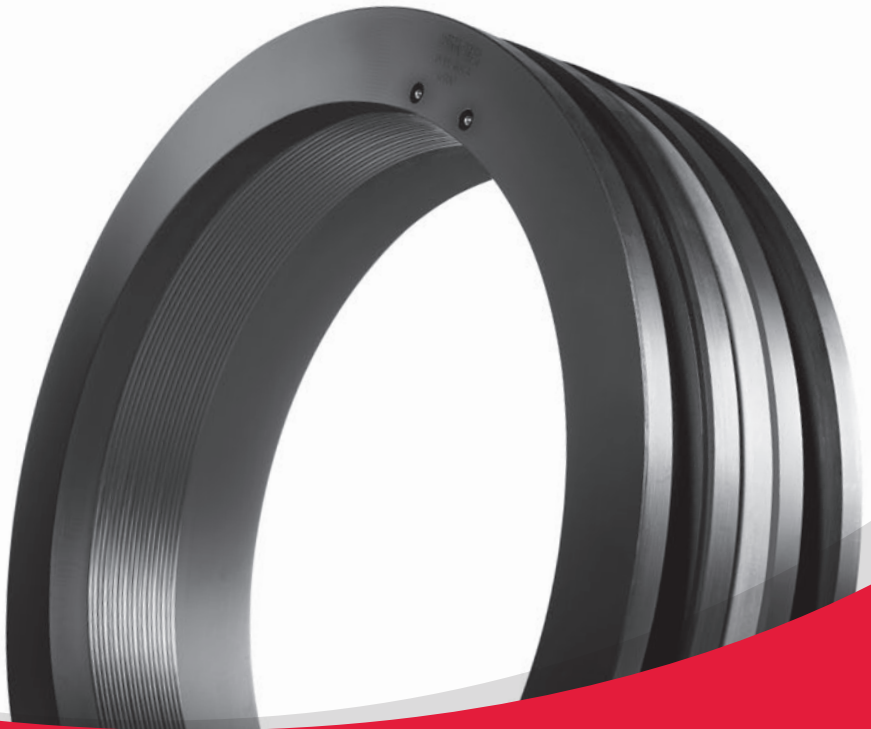


SIMONA

tech.info

SIMOFUSE® Shaft Connection

Date: March 2010



Product Information
Installation Instructions
Information about Shaft Installation

Welcome to SIMONA

Behind each product associated with our company stands a dedicated team that has developed and manufactured it. SIMONA draws its inspiration from the unparalleled vision, dedication and passion of its employees – and a history spanning more than 150 years.

Today, we are recognised as one of the world's leading producers of semi-finished thermoplastics.

Products tailored to your needs

SIMONA is able to offer you the most extensive range of semi-finished thermoplastics worldwide. Our comprehensive portfolio of products encompasses pipes, fittings, valves, sheets, rods, profiles, welding rods and finished parts for a diverse range of applications. The materials offered within this area span everything from PE and PP to PVC, PVDF, E-CTFE and PETG. On request, we can also develop customised products tailored to your specific requirements.

Best-in-class quality

Our products and services are designed to deliver the very best quality imaginable. When implementing your projects, we always place the greatest possible emphasis on professionalism during every stage of the process. We are supported in our efforts by a first-class Quality Management system – for total peace of mind.

Global sales network

Boasting a global network of subsidiaries and distribution partners, SIMONA is renowned as a fast, flexible and reliable partner. We look forward to assisting you.

Exceptional service

As a customer, you always take centre stage: from project development to materials procurement and on-site planning, we are committed to providing the very best consulting services. In addition, we will supply you with the full range of documentation accompanying our products and offer specialist training where required.

SIMOFUSE® Shaft Connection

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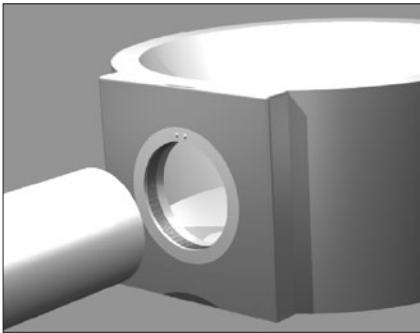
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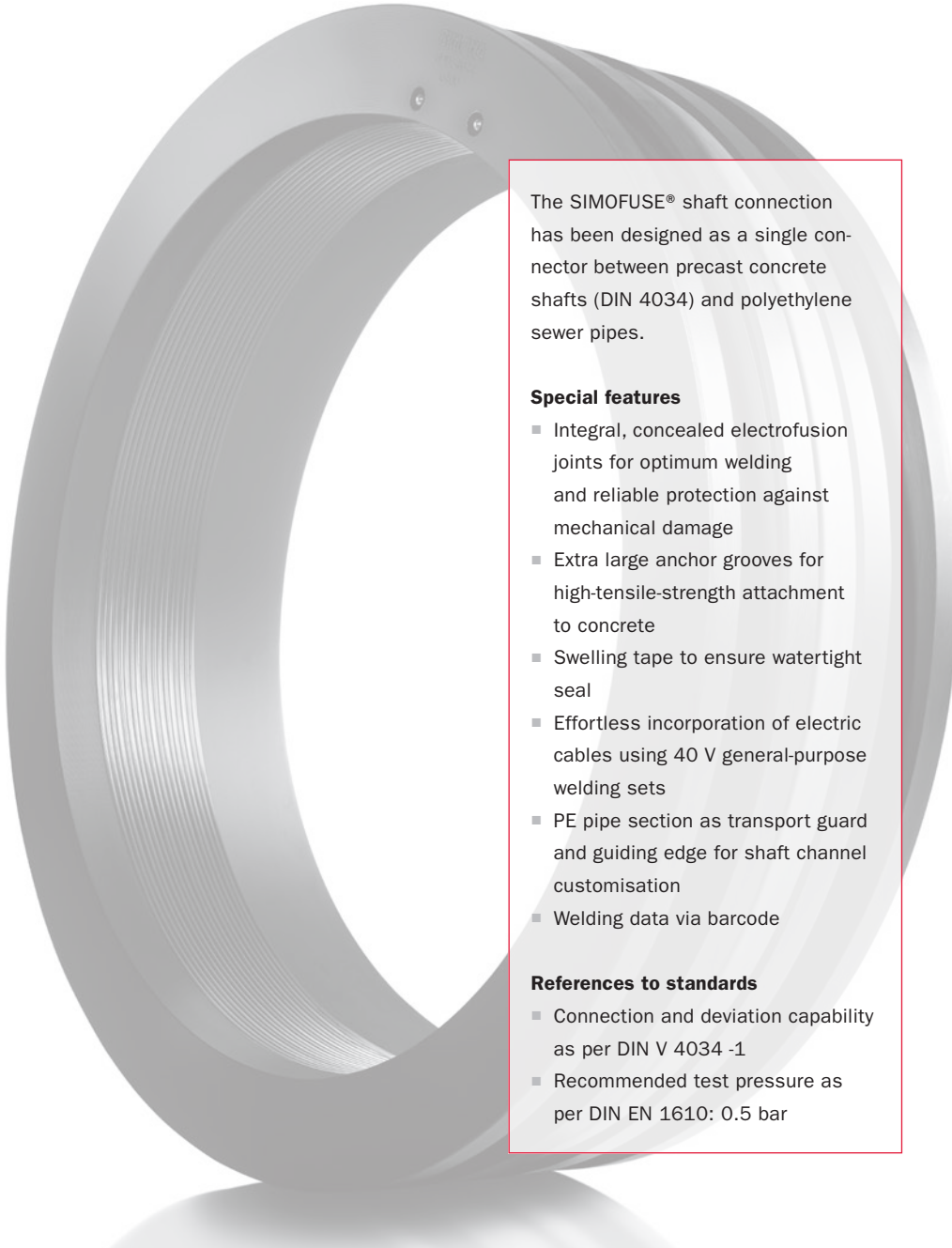
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Overview

This tech.info applies to SIMONA® shaft connections in the SIMOFUSE® series, featuring PE-HD with integral electrofusion filaments for a strong connection between PE-HD sewer pipes and precast concrete shafts for factory installation at a concrete plant.



- The overall length is designed for flush wall integration into the base of the shaft. For this reason, the overall length and shaft wall thickness must be specified when ordering (standard length 135 mm; other overall lengths, e.g. 150, 200, 250 mm on request).
- Tested pressurised water tightness is 10 m H₂O.
- The SIMOFUSE® shaft connection is designed to facilitate connection of the following pipes to precast concrete shafts:
 - PE 80/PE 100 pipes to DIN 8074/75
 - SIMONA® PE 80 CoEx sewer pipes
 - SIMONA® PE 80/PE 100 SPC waste-water pipes in pipe series SDR 26 and SDR 17.6/17 in non-pressure operation (DIN EN 1610).
- On delivery, the shaft connection is accompanied by 4-mm terminals, which may be used for the purpose of fitting electric cables to the ends. This facilitates connection of 40 V general-purpose welding sets for electrofusion sockets.



The SIMOFUSE® shaft connection has been designed as a single connector between precast concrete shafts (DIN 4034) and polyethylene sewer pipes.

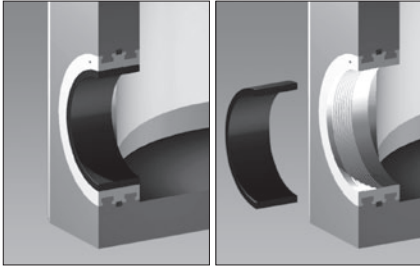
Special features

- Integral, concealed electrofusion joints for optimum welding and reliable protection against mechanical damage
- Extra large anchor grooves for high-tensile-strength attachment to concrete
- Swelling tape to ensure watertight seal
- Effortless incorporation of electric cables using 40 V general-purpose welding sets
- PE pipe section as transport guard and guiding edge for shaft channel customisation
- Welding data via barcode

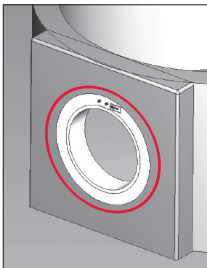
References to standards

- Connection and deviation capability as per DIN V 4034 -1
- Recommended test pressure as per DIN EN 1610: 0.5 bar

Shaft Installation



PE pipe section as transport guard and guiding edge for shaft channel customisation



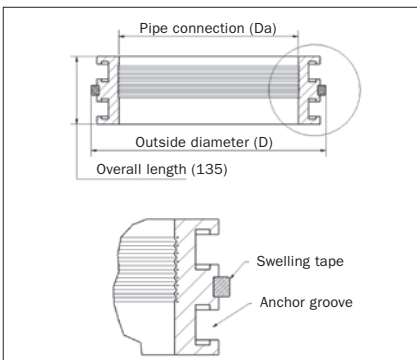
Observe installation alignment in the concrete shaft!

Generally, the end connectors must be facing outwards in the 12 o'clock position.

The SIMOFUSE® shaft connection is supplied as an assembly consisting of the shaft connection itself and an inserted pipe section.

This pipe section serves as a transport and installation guard for the internal surface, which features the integrated electrofusion filaments of the shaft connection. It may only be removed by the client just before the planned welding connection procedure. Furthermore, with regard to any planned installation by machine (vibrating operation) at the concrete shaft factory, it is absolutely essential that the assembly remains intact in order to prevent soiling of or damage to the filaments. Please note that even a brief separation of the assembly prior to actual welding is not permitted.

Subsequent manual installation in shaft blank is prohibited.



The inserted pipe section has the same wall thickness (SDR series) as the pipe to be connected later. Therefore, it must be used as a guiding edge for the purpose of creating the channel.

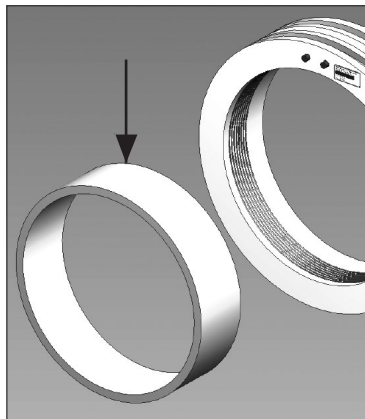
Welding Technique

The technique of electrofusion welding is governed by DVS 2207-1. Installation of the SIMOFUSE® shaft connection is subject, in particular, to the requirements concerning welding sets, welding preparations and welding procedure. These guidelines constitute the basis for processing. It is assumed that those performing the installation are familiar with these guidelines.

Welding must take place under clean and dry conditions. In the event of unfavourable weather conditions (snow, rain, strong wind, etc.) the welding area must be adequately protected. The pipes must be aligned with the shaft connection to be able to ensure stress-free positioning of the welded joint. If necessary, appropriate retaining devices must be used. They may only be removed after the cooling time specified.

Removal of the oxide layer in the welding zone of the pipe must be performed with tools that ensure safe machining. Only detergents which are explicitly approved for processing PE may be used. The detergent must have completely evaporated before welding.

Welding must be performed directly after machining and the cleaning operation.



Barcodes for scanning the welding data are shown on the outside of the transport guard.

After insertion of the pipe the gap between the pipe and the socket must not exceed the permissible size.

Permissible gap size:

- DA up to 250 < 1.5 mm
- DA up to 400 < 2.0 mm
- DA up to 630 < 3.0 mm

Measurement can be conducted with a feeler gauge at the pipe/socket transition on the outside of the shaft.

To compensate for tolerances and ovality, an additional barcode is provided to reduce gap size. The geometry is adapted by thermal expansion of the material. This procedure can be performed a number of times if necessary. The actual welding procedure is performed using the welding code. It is essential that you also observe the specified cooling times before you recommence the welding procedure.

At ambient temperatures of < 0 °C this procedure must always be used at least once.

If installation is considered to be impossible despite the additional information about welding preparation described here, please contact SIMONA's technical advisory service before the welding attempt.

Information on welding:

The quality of the welded joint depends not only on the suitability of the materials and jigs used but also on the welders' qualifications. It is essential that welding is performed by well-trained personnel with a valid certificate (welder's pass). For documentation purposes a welding record is to be recommended, based on the DVS specimen.

ADVISORY SERVICE

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Factory Test

The SIMOFUSE® shaft connection serves as a single-piece connector between precast concrete shafts conforming to DIN 4034 and PE-HD sewer pipes conforming to DIN 8074/75. It is made of the thermoplastic material PE-HD, making it corrosion-resistant.

Two large anchor grooves over the entire circumferential width ensure a secure hold in the concrete. The necessary watertight seal of the PE-HD/concrete joint is provided by an additional swelling tape.

The joint between the shaft connection and the concrete shaft as well as the component width of the latter conform to DIN V 4034-1.

The concealed, integral electrofusion filaments ensure optimum heat transfer during welding.

Owing to the strong connection achieved through electrofusion, maximum protection against root penetration is guaranteed. In accordance with DIN V 4034-1, the entire joint is designed to provide a watertight seal up to a pressure of 10 m H₂O.

A test pressure of 0.5 bar gauge pressure is recommended in accordance with DIN EN 1610.



Successful leak test in accordance with DIN V 4034-1, monitored by the official Material Testing Institute (MPA) Darmstadt.

Confirmation of Deviation Capability

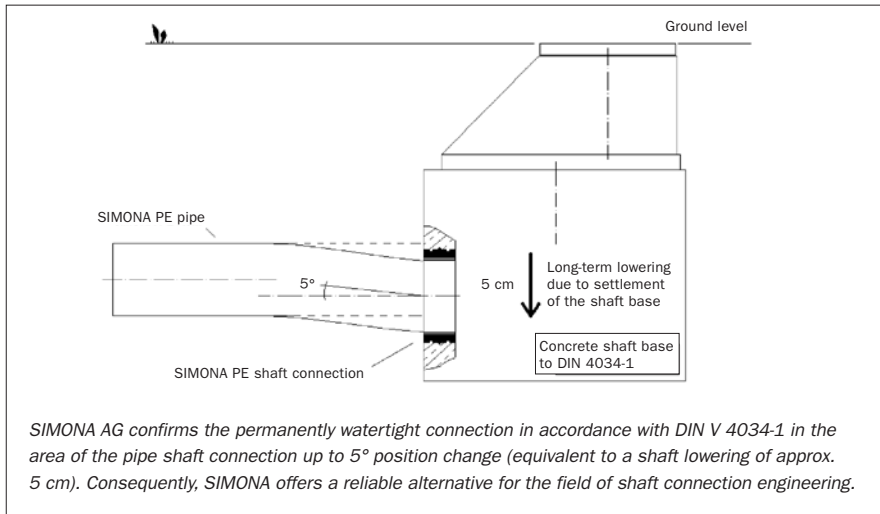
According to DIN V 4034-1, connections must generally be made “double-jointed” in relation to all incoming and outgoing sewers and pipes. The aim is to mitigate the risk of fracture damage due to shear stress that may arise on account of reciprocal position changes between the shaft and the pipe.

Owing to the selection of thermoplastic material for the pipe/shaft connection joint, all known manufacturers of PE-HD pipes and shaft connectors dispense with the use of articulated joints in lengths of

approx. 1 m (e. g. conforming to DIN EN 1916 and FBS quality guidelines).

Since the assumed settlements occur over a very long period of time, deformation of the pipe cross-section is expected to be minimal. In addition, local stresses occurring in the transitional zone can relax in time. This is also confirmed by many years of experience in mining subsidence areas.

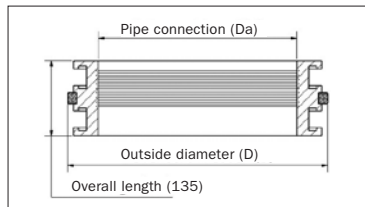
Consequently, a long-term watertight seal and the performance of the component are guaranteed.



Product Range

Material: PE 80

Type: made by machining,
with integrated electrofusion
filaments, overall length 135 mm,
other overall lengths on request



Colour: black

Note: for sewer applications, capable of withstanding a test pressure of 0.5 bar, supplied with pipe section for shaft channel customisation, sizing for factory shaft installation in precast concrete shafts by machine using a vibrator.

Article Code: PE0080—SF—IHW—EM-SW09500

Da [mm]	SDR 26 Art.-Nr.	SDR 17,6 Art.-Nr.	Outside diameter [D] mm	Overall length mm
160		016500079	219	135
180		016500080	244	135
200		016500081	269	135
225		016500082	299	135
250		016500083	334	135
280	016500084	016500085	374	135
315	016500086	016500087	417	135
355	016500089	016500090	467	135
400	016500092	016500093	517	135
450	016500095	016500096	577	135
500	016500098	016500099	647	135
560	016500101	016500102	722	135
630	016500104	016500105	812	135

Subject to technical changes, also with regard to dimensions.

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