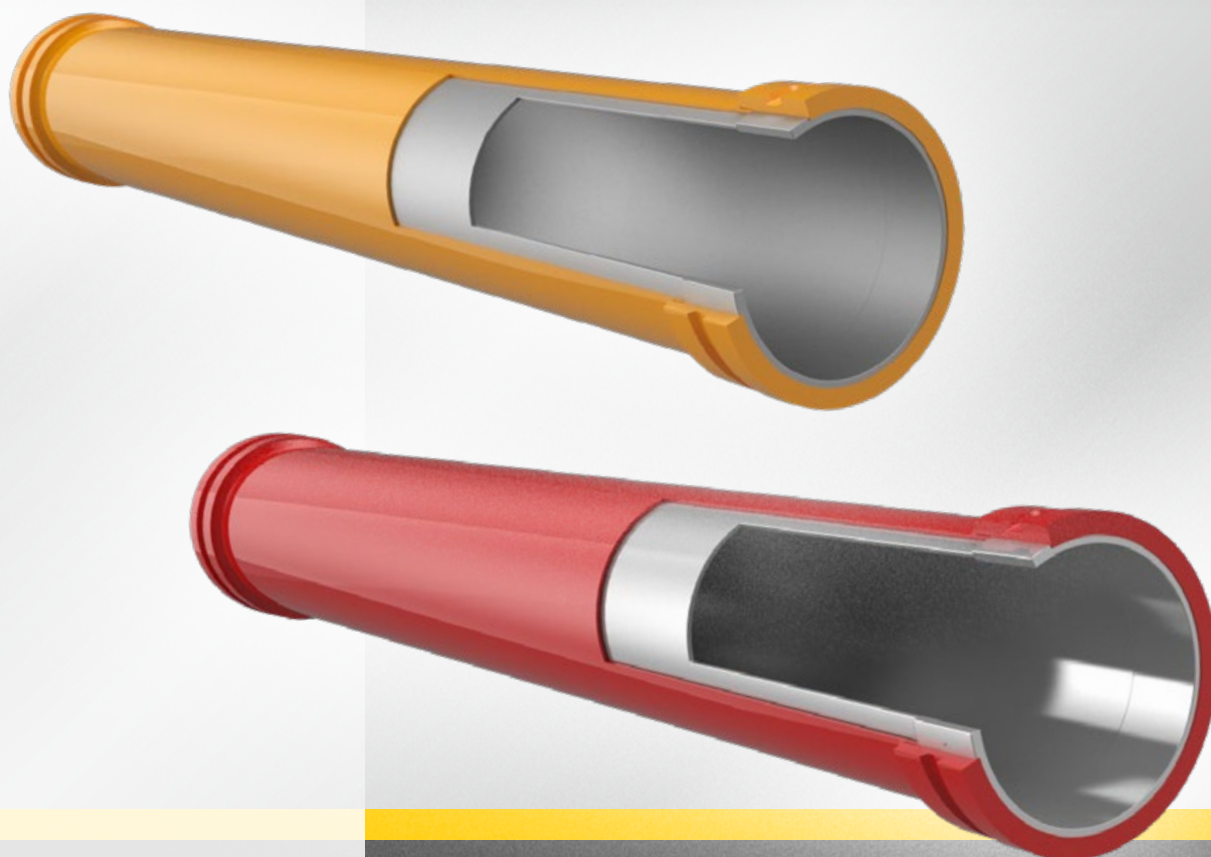


WALL THICKNESS MEASUREMENT

on Putzmeister double-layer delivery pipes



Correctly assessing delivery pipes:

wall thickness measurement and minimum permissible wall thicknesses

#01 GENERAL INFORMATION

As the method for measuring wall thickness differs between single-layer and double-layer delivery pipes and has been carried out differently in the past, the updated measurement procedure for Putzmeister double-layer pipes is described here.

The wall thickness measurement procedure for Putzmeister double-layer delivery pipes has been revised and updated in the maintenance card.

Scope:

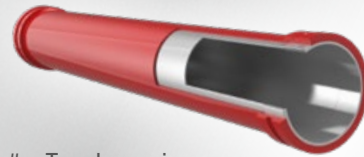
Applies to Putzmeister PROLINE 2000 and PROLINE 3000 delivery line components.

PROLINE 2000



- # Two-layer pipe
- # Inner pipe hardened to 63 HRC
- # 85 bar
- # Stable
- # Highly abrasive media

PROLINE 3000



- # Two-layer pipe
- # Inner pipe hardened to 67 HRC
- # 85 bar
- # Maximum durability
- # Extremely abrasive media

#02 NOTES

Warning: Danger to life

Warning: Concrete may escape if there is pressure in the delivery line. The delivery line may remain under pressure even when the concrete pump is switched off.

- # Do not open the delivery line whilst it is still under pressure.
- # Do not tap the delivery line whilst it is still under pressure.
- # Pump the concrete back and relieve the pressure in the delivery line before opening it.
- # Never work whilst bent over the delivery line coupling.
- # Open the delivery line carefully, even if you cannot see the delivery pressure on the screen.

#02 NOTES (CONTINUED)

Maintenance, inspection and repair work involve particular risks of accidents. You should therefore refer to the operating instructions and maintenance card for the relevant machine.

The following special tool is required: Wall thickness gauge, item no. 454460. Ultrasonic devices are unsuitable and must not be used on double-walled pipes!



#03 OPTIMISING THE SERVICE LIFE OF PIPEWORK

- # Regular inspections extend the service life of pipework.
- # Pipes and pipe elbows should be rotated regularly.
- # Wear varies depending on the position and operating conditions within the delivery line.
- # Factors influencing this include flow rate, pump pressure and the composition of the concrete.
- # The wall thickness of all pipeline components should be checked regularly.
- # Rotating pipes and pipe elbows significantly extends their service life.

#04 MEASUREMENT INSTRUCTIONS

Identification of the type of feed pipe

Quality: Proline 2000 | Proline 3000

Type and wall thickness: as indicated on the type plate

Validation: Determine the installation configuration using the pipework diagram

Carrying out the measurement:

The wall thickness measurement must be carried out in accordance with the specifications in this data sheet.

The lowest measured value must be recorded as the wall thickness.

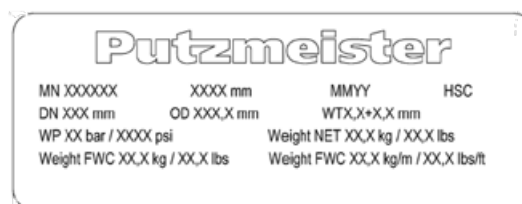
Comparison with reference values:

The determined minimum wall thicknesses must be compared with the reference values in the data sheet. All measurement results must be documented in a traceable manner.

Decision on continued use:

If any of the permissible lower limit values are reached or fallen below, the component must be taken out of service.

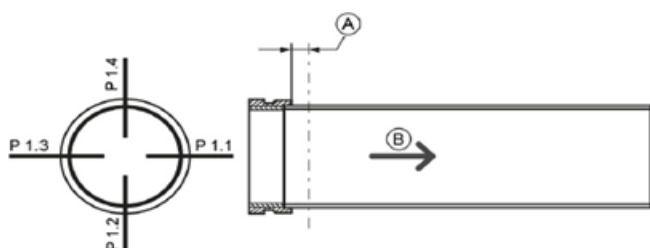
The affected component must be replaced.



#05 MEASUREMENT POINTS AND PROCEDURE

05.01 STRAIGHT PIPES

- # General operating pressure of the pipes: 85 bar
- # Measure on the pipe body on the inlet side.
- # Measure points P 1.1–P 1.4.
- # Compare the values with those in the table.



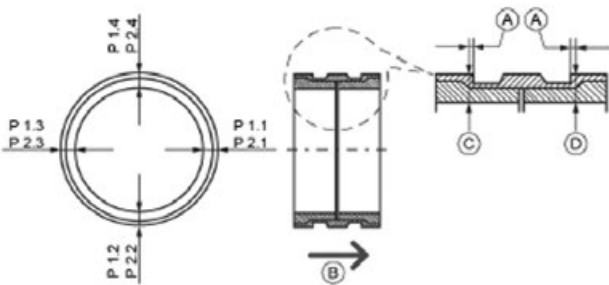
Item	Description
P 1.1 – P 1.4	Measuring points offset by 90°
A	Measuring plane 0–30 mm
B	Flow direction

Pipe type			Minimum wall thickness
Quality grade	Nominal diameter [mm]	Construction	P 1.x [mm]
Proline 2000	100	2020	1,8
	125	2020	1,8
	125	2520	1,8
	125	5630	3,0
Proline 3000	117	2015	1,8
	125	2020	1,8
	125	2520	1,8
	125	3015	1,8
	125	5630	3,0
Proline 3000XL	125	3015	1,8
Proline 3000E	117	2015	1,8
	125	3015	1,8

#05 MEASUREMENT POINTS AND PROCEDURE

05.02 STRAIGHT SHORT PIPES

- # General operating pressure of the pipes: 85 bar
- # The measurement points must each be located as close as possible to the diameter offset towards the bottom of the flange groove.
- # Measure at the pipe inlet (P 1.1–P 1.4) and pipe outlet (P 2.1–P 2.4).



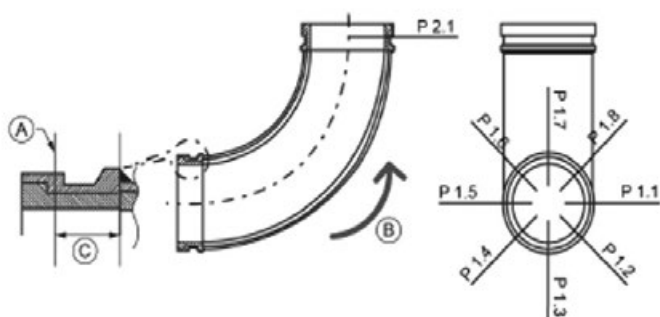
Item	Description
P 1.1 – P 1.4 P 2. – P 2.4	Measurement points offset by 90°
A	Distance of the measurement points from the diameter offset (close to the bottom of the groove)
B	Flow direction
C	Measurement plane P 1.x
D	Measurement plane P 2.x

Pipe type			Minimum wall thickness
Quality grade	Nominal diameter [mm]	Construction	P 1.x [mm]
Proline 3000	125	5630	8,7
Proline 3000E	125	5630	8,7

#05 MEASUREMENT POINTS AND PROCEDURE

05.03 PIPE ELBOWS

- # General operating pressure of the pipes: 85 bar
- # The measurement points must each be located as close as possible to the diameter offset towards the groove base of the flange.
- # Take measurements at the elbow inlet and outlet (P 1.1–P 1.8) and on the outside of the elbow (P 2.1).



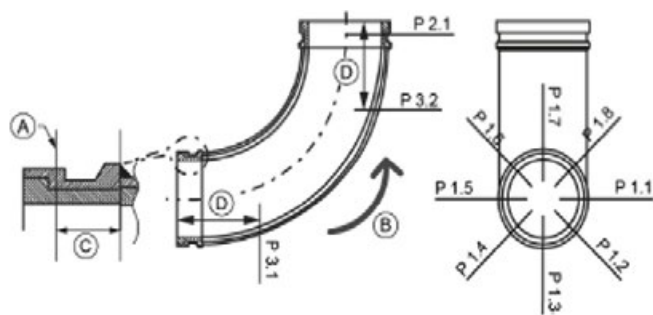
Item	Description
P 1.1 – P 1.8	Measurement points with a 45° offset
P 2.1	Measurement point on the outer side of the arc
A	Minimum distance from the measurement plane
B	Direction of flow
C	Distance of the measurement points from the diameter offset (close to the bottom of the groove)

Pipe type			Minimum wall thickness
Quality grade	Nominal diameter [mm]	Construction	P 1.x [mm]
Proline 2000	100	503	10,0
	100	504	10,0
	125	704	8,0
	125	502	8,7
Proline 3000 Proline 3000E	125	702	8,7
	125	703	8,7
	125	704	8,7
	125	1202	8,7 For the case study form, see the separate chapter

#05 MEASUREMENT POINTS AND PROCEDURE

05.04 IMPACT ELBOWS

- # General operating pressure of the pipes: 85 bar
- # The measurement points must each be located as close as possible to the diameter offset towards the bottom of the flange groove.
- # Take measurements at the elbow inlet and outlet (P 1.1–P 1.8) and on the outside of the elbow (P 2.1).
- # Carry out a visual inspection at the elbow inlet and elbow outlet (P 3.1 & P 3.2) at the level of the maximum engagement depth of the measuring caliper.



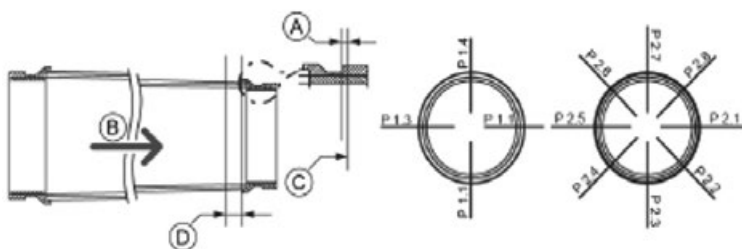
Item	Description
P 1.1 – P 1.8	Measurement points offset by 45°
P 2.1	Measurement point on the outer side of the elbow
A	Minimum distance from the measurement plane
B	Direction of flow
C	Distance of the measurement points from the diameter offset (close to the bottom of the groove)
D	Maximum engagement depth of 116 mm for the measuring caliper

Pipe type			Minimum wall thickness	
Quality grade	Nominal diameter [mm]	Construction	P 1.x / P 2.x [mm]	P 3.x
Proline 3000	125	1202	8,7	Visual inspection

#05 MEASUREMENT POINTS AND PROCEDURE

05.05 REDUCER

- # General operating pressure of the pipes: 85 bar
- # The measurement points must be located as close as possible to the diameter offset towards the bottom of the flange groove.
- # Take measurements at the inlet of the reducing pipe (P 1.1–P 1.4) and the outlet of the reducing pipe (P 2.1–P 2.8).



Item	Description
P 1.1 – P 1.4	Measurement points on the pipe body with a 90° offset
P 2.1 – P 2.8	Measurement points on the flange with a 45° offset
A	Minimum distance from the measurement plane
B	Flow direction
C	Measurement points (close to the bottom of the groove)
D	Measurement plan 0–50 mm

Pipe type			Minimum wall thickness	
Quality grade	Nominal inlet diameter [mm]	Nominal outlet diameter [mm]	P 1.x [mm]	P 2.x [mm]
Proline 2000	125	100 (4,5Z)	4,0	10,3
	125	112 (5,5Z)	4,0	15,5
	125	117 (5,5Z)	4,0	11,5
	150	100	4,0	10,3
Proline 3000	150	125	-	8,7
	180	150	-	8,2

Putzmeister Concrete Pumps GmbH

Max-Eyth-Straße 10 · 72631 Aichtal / Germany

P.O.Box 2152 · 72629 Aichtal / Germany

Tel. +49 (7127) 599-0 · Fax +49 (7127) 599-520

pmw@putzmeister.com · www.putzmeister.com