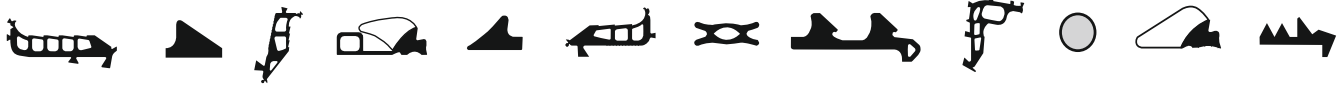
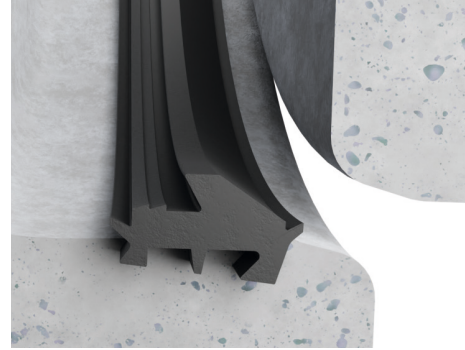


PRODUCT DATA SHEET

DS BZ-R standard socket



DS BZ-R are sealing rings made from elastomers with dense structure for concrete pipes and reinforced concrete pipes according to DIN EN 1916 and DIN V 1201. The seals are firmly embedded in the socket during manufacture of the pipe.

- DS BZ-R are in accordance with the requirements of DIN EN 681-1 / DIN 4060 (seals made from elastomers) and the FBS quality guideline.
- DS BZ-R pipe connections fulfill, concerning durability, the criteria of DIN EN 1916, method 1-4.
- DS BZ-R can be easily connected with the pipe:
Seal and formwork ring are mounted on the base ring. During concreting of the pipe, the sealing ring is anchored in the sleeve by two holding parts. The formwork ring is removed the next day and may be used 10 - 20 times.
- DS BZ-R can be used for all pipe production machines with core vibration and radial pressure roller head.
- DS BZ-R require special base rings which determine by their shape the seat of the seal.
- DS BZ-R can be supplied for pipes DN 250 to DN 2000 in 5 specific cross sections.
- DS BZ-R pipe connections resist high shearing forces.

**Tested and quality controlled
by MPA Berlin-Brandenburg.**

SPECIAL ADVANTAGES

- Consist out of a double anchored seal and a reusable form ring belonging to it.
- Form an integrated unit together with the pipe which allows quick and safe installation.
- The wedge shape of the seal body facilitates the pipe centering.

MATERIAL

The sealing rings are generally manufactured from styrene-butadiene rubber (SBR), hardness 40 ± 5 IRHD. The material resists the usual stresses caused by sewage. In case of content of light liquids (oil, petrol, fuels) in the sewage water it is recommended to use seals out of acryl-nitrile-butadiene-rubber (NBR) hardness 45 ± 5 IRHD, which has a higher resistance against light liquids.

QR 4060



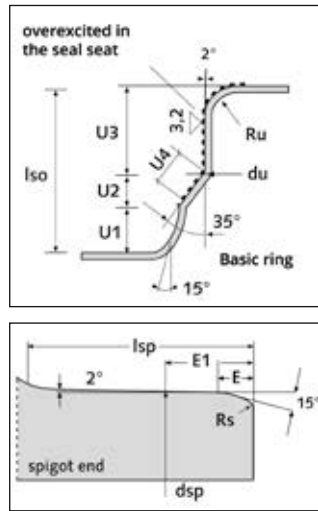
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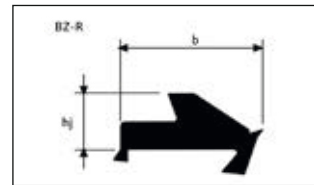
PIPE REQUIREMENTS (all dimensions in mm)

- Reinforced concrete pipes must comply with the requirements of DIN EN 1916 and DIN V 1201.
- DS BZ-R require finely dimensioned smooth pipe spigot ends. When producing the pipes inner and outer supporting rings must be used to ensure compliance with spigot end diameters dsp shown in the table.
- The seal seat and the socket diameter at the built-in seal must be checked regularly.



DIMENSIONING OF THE SEALING RING

(all dimensions in mm)



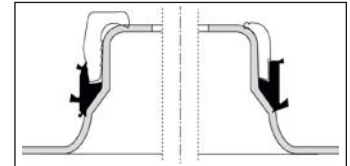
DN	Profile type						W*)
	Profile	hj **)	b	Profile	hj	Profile	
250 - 300	BZ-R	12	29	SHP N	12	EPS N	7,8
400 - 600		14	33,2		14		9,1
700 - 1200		18	45,7		18		11,7
1300 - 1500		22	50,4		22		14,3
1600 - 2000		26	59,3		26		16,9

*) Socket gap width: gap between spigot end and socket in the main sealing area.

**) $h_{j_{eff}} = h_j / \sqrt{1,04}$

PRODUCTION OF PIPES WITH DS BZ-R SEALING RING

- Mount the sealing ring and the cleaned form ring on the cleaned and lightly oiled base ring. Ensure correct seating and even pre-stretching of the sealing rings.
- Before mounting, ensure that the socket is completely filled with concrete. Then produce concrete pipe in normal manner.
- After removal of the pipe mould, place inner and outer supporting rings on the spigot end and leave them there until concrete has cured.
- On the next day pull base ring centrally and remove supporting rings. After the concrete has fully cured the pipe is ready for installation.



BASE RING

DN	ISO	U1	U2	U3 -0/+0,5	U4 min	Ru	du		Tolerance du
							Concrete	Reinforced	
250	80	22,6	13,9	43,5	16	13	315,6	341,6	-0/+0,5
300	-	-	-	-	-	-	377,6	395,6	-
400	85	20	16	49	18	13	486,2	495,5	-0/+0,5
500	90	25	-	-	-	-	600,2	-	-
600	-	-	-	-	-	-	716,2	-	-
700	100	22,6	23	54,4	26	15	831,4	-	-0,4/+0,8
800	-	-	-	-	-	-	949,4	-	-
900	-	-	-	-	-	-	1067,4	-	-
1000	-	-	-	-	-	-	1185,4	-	-
1100	-	-	-	-	-	-	1303,4	-	-
1200	-	-	-	-	-	-	1421,4	-	-
1300	125	30	28	67	32	17	1536,6	-	-0,7/+0,7
1400	-	-	-	-	-	-	1654,6	-	-
1500	-	-	-	-	-	-	1772,6	-	-
1600	145	30	35	80	41	19	dsp+2w-2hj	-	-0,8/+0,8
2000	145	30	35	80	41	19	dsp+2w-2hj	-	-0,8/+0,8

SPIGOT END DIMENSIONS

DN	E	Rs	Lsp	E1	dsp		Tolerance dsp recom. (extreme value*)
					Concrete	Reinforced	
250	17	13	85	39	324	350	-0,7/+1,2 (-1,5/+2,0)
300	-	-	-	-	386	404	-
400	20	13	90	43	496	505,3	-0,9/+1,4 (-1,9/+2,4)
500	-	-	95	-	610	-	-
600	-	-	-	-	726	-	-
700	20	15	105	47	844	-	-1,0/+1,4 (-2,2/+2,6)
800	-	-	-	-	962	-	-
900	-	-	-	-	1080	-	-
1000	-	-	-	-	1198	-	-
1100	-	-	-	-	1316	-	-
1200	-	-	-	-	1434	-	-
1300	25	16	130	58	1552	-	-1,5/+1,5 (-3,0/+3,0)
1400	-	-	-	-	1670	-	-
1500	-	-	-	-	1788	-	-
1600	30	18	150	69	variabel	-	-1,8/+1,8 (-3,6/+3,6)
2000	30	18	150	69	variabel	-	-1,8/+1,8 (-3,6/+3,6)

Larger DN on request.

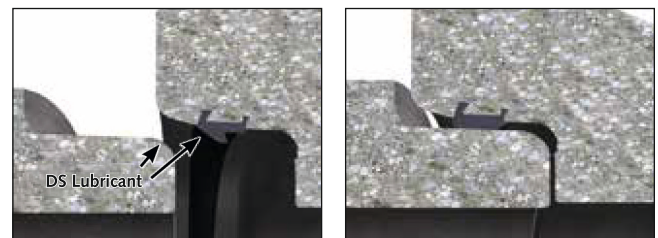
- Recom. concrete tolerance: sealing ring deformation 30% to 40%,
- Extreme sealing ring deformation due to concrete tolerances 26.5% to 43.5%*)

*) for milled spigot ends the recommended tolerance is simultaneously the limit value of concrete tolerance

PIPE INSTALLATION TIPS

Pipe connections can be installed without any problems using normal construction site equipment.

When laying the pipes observe DIN EN 1610 and ATV-work sheet DWA-A 139.



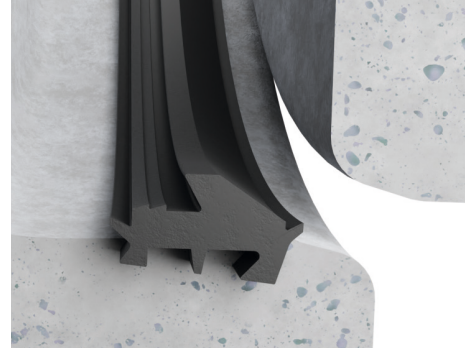
- Clean socket and spigot end.
- Cover thoroughly the spigot end with DS lubricant. The additional use of lubricant on the seal is recommended as this reduces the mounting forces.
- Move spigot end centrally into socket and pull pipes together.

Values and properties shown in diagrams and tables are not subject to any guarantees. Our warranty is limited to the values and properties as required by the relevant standards. Our literature, data sheets and recommendations represent our knowledge at the time of printing but are in no way legally binding on us. Our "General Conditions of Sale" apply to all sales.

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PRODUCT DATA SHEET

DS BZ-R deep socket



DS BZ-R are sealing rings made from elastomers with dense structure for reinforced concrete pipes according to DIN EN 1916 and DIN V 1201. The seals are firmly embedded in the socket during manufacture of the pipe.

- DS BZ-R are in accordance with the requirements of DIN EN 681-1 / DIN 4060 (seals made from elastomers) and the FBS quality guideline.
- BZ-R pipe connections fulfill, concerning durability, the criteria of DIN EN 1916, method 1-4.
- BZ-R can be easily connected with the pipe:
Seal and formwork ring are mounted on the base ring. During concreting of the pipe, the sealing ring is anchored in the sleeve by two holding parts. The formwork ring is removed the next day and can be reused 10 - 20 times.
- BZ-R can be used for all pipe production machines with core vibration and radial pressure roller head.
- BZ-R require special base rings which determine by their shape the seat of the seal.
- BZ-R can be supplied for pipes DN 300 to DN 2000 in 4 specific cross sections.
- BZ-R pipe connections resist high shearing forces.

**Tested and quality controlled
by MPA Berlin-Brandenburg.**

SPECIAL ADVANTAGES

- Consist out of a double anchored seal and a reusable form ring belonging to it.
- Form an integrated unit together with the pipe which allows a quick and safe installation.
- The wedge shape of the seal body facilitates the pipe centering.

MATERIAL

The sealing rings are generally manufactured from styrene-butadiene rubber (SBR), hardness 40 ± 5 IRHD. The material resists the usual stresses caused by sewage. In case of content of light liquids (oil, petrol, fuels) in the sewage water it is recommended to use seals out of acryl-nitrile-butadiene-rubber (NBR), hardness 45 ± 5 IRH, which has a higher resistance against light liquids.

QR 4060



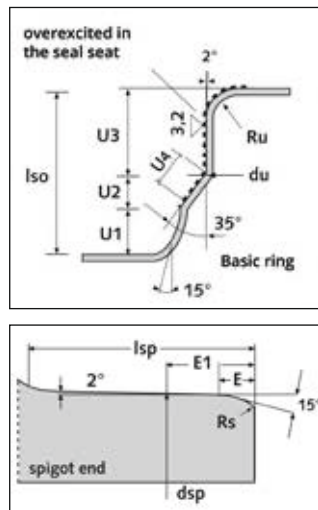
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PIPE REQUIREMENTS (all dimensions in mm)

- Reinforced concrete pipes must comply with the requirements of DIN EN 1916 and DIN V 1201.
- DS BZ-R require finely dimensioned smooth pipe spigot ends. When producing the pipes inner and outer supporting rings must be used to ensure compliance with spigot end diameters dsp shown in the table.
- The seal seat and the socket diameter at the built-in seal must be checked regularly.



BASE RING

DN	ISO	U1	U2	U3 -0/+0,5	U4 min	Ru	du	Tolerance du
300	100	22	17	61	19	13	416,34	-0/+0,5
400	-	-	-	-	-	-	516,34	-
500	-	-	-	-	-	-	616,34	-
600	-	-	-	-	-	-	716,34	-
700	120	22,6	23	74,4	26	16	831,7	-0,5/+0,5
800	-	-	-	-	-	-	949,7	-
900	-	-	-	-	-	-	1067,7	-
1000	-	-	-	-	-	-	1185,7	-
1100	130	25	28	77	32	17	1300,8	-0,7/+0,7
1200	-	-	-	-	-	-	1418,8	-
1300	-	-	-	-	-	-	1536,8	-
1400	-	-	-	-	-	-	1654,8	-
1500	-	-	-	-	-	-	1772,8	-
1600 - 2000	155	30	35	90	41	19	dsp+2w-2hj	-0,8/+0,8

SPIGOT END

DN	E	Rs	lsp	E1	dsp	Tolerance dsp recom. (extreme value*)
300	20	13	105	49	426	-0,9/+1,4 (-1,9/+2,4)
400	-	-	-	-	526	-
500	-	-	-	-	626	-
600	-	-	-	-	726	-
700	28	15	125	61	844	-1,3/+1,3 (-2,6/+2,6)
800	-	-	-	-	962	-
900	-	-	-	-	1080	-
1000	-	-	-	-	1198	-
1100	28	16	135	63	1316	-1,5/+1,5 (-3,0/+3,0)
1200	-	-	-	-	1434	-
1300	-	-	-	-	1552	-
1400	-	-	-	-	1670	-
1500	-	-	-	-	1788	-
1600 - 2000	30	18	160	76	variable	-1,8/+1,8 (-3,6/+3,6)

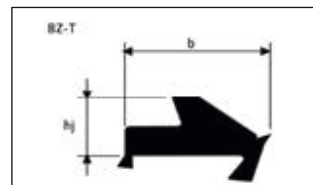
Larger DN on request.

- Recom. concrete tolerance: sealing ring deformation 30% to 40%,
- Extreme sealing ring deformation due to concrete tolerances 26.5% to 43.5%*)

*) With milled spigot ends recommended deformation is equal to extreme tolerance value

DIMENSIONING OF THE SEALING RING

(all dimensions in mm)



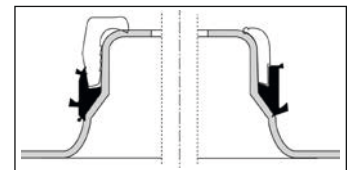
DN	Profile type						W*)
	Profile	hj **)	b	Profil	hj	Profile	hj
300 - 600	BZR	14	33,2	SHP T	14	EPS T	14
700 - 1000		18	45,7		18		-
1100 - 1500		22	50,4		22		-
1600 - 2000		26	59,3		26		-

*) Socket gap width: gap between spigot end and socket in the main sealing area.

**) $h_{j\text{eff}}: h_j / \sqrt{1,04}$

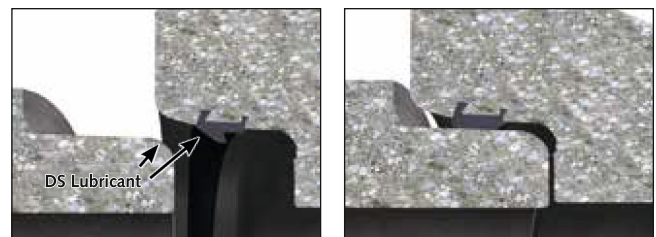
PRODUCTION OF PIPES WITH DS BZ-R SEALING RING

- Mount the sealing ring and the cleaned form ring on the cleaned and lightly oiled base ring. Ensure correct seating and even pre-stretching of the sealing rings.
- Before mounting, ensure that the socket is completely filled with concrete. Then produce concrete pipe in normal manner. After removal of the pipe mould, place inner and outer supporting rings on the spigot end and leave them there until concrete has cured.
- On the next day pull base ring centrally and remove supporting rings. After the concrete has fully cured the pipe is ready for installation.



PIPE LAYING TIPS

Pipe connections can be installed without any problems using normal construction site equipment. When laying the pipes observe DIN EN 1610 and work sheet DWA-A 139.



- Clean socket and spigot end.
- Cover thoroughly the spigot end with DS lubricant. The additional use of lubricant on the seal is recommended as this reduces the mounting forces.
- Move spigot end centrally into socket and pull pipes together.

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