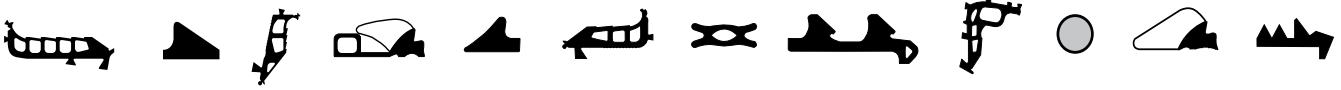
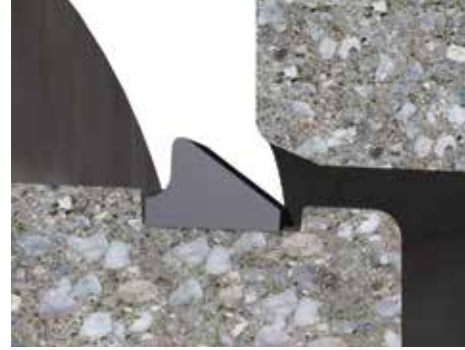


PRODUCT DATA SHEET DS GRS



DS GRS is a slip ring seal made from elastomers with dense structure for the permanent sealing of concrete pipes and reinforced concrete pipes and socket box culverts.

- DS GRS is in accordance with the requirements of DIN EN 681-1 / DIN 4060 [88] (seals made from elastomers) and the FBS quality guideline.
- DS GRS pipe connections fulfill the criteria of DIN EN 1916, method 1-4.
- DS GRS is a compression slip ring seal. It requires a shoulder or chamber on the spigot end which determines the seat of the profile.
- DS GRS can be supplied in different specific cross sections.
- DS GRS is normally supplied by the pipe manufacturer directly to the job site along with the pipes separately or fixed to the spigot end.
- DS GRS eases by its even ascending wedge shape the centering of the pipes.
- DS GRS pipe connections resist high shearing forces of the FBS quality guideline.

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

SPECIAL ADVANTAGES

- ideal wedge-shaped slip-ring
- combines easy and secure pipe mountability with highest possible tightness security
- wide support width
- supplied loose, at low temperatures it can be separately warmed up.

MATERIAL

DS GRS is produced from styrene-butadiene rubber (SBR) or ethylene-propylene-diene rubber (EPDM), hardness 40+5 IRHD and 45±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 DS GRS out of acryl-nitrile-butadiene-rubber (NBR), which has a higher resistance against light liquids.

QR 4060

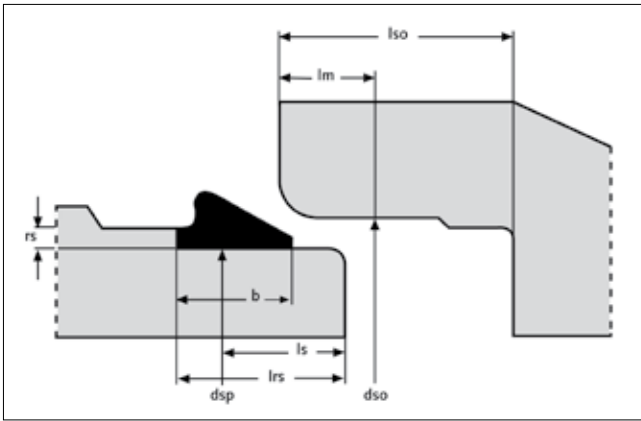


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PIPE REQUIREMENTS (all dimensions in mm)



- Concrete and reinforced concrete pipes must comply with the requirements of DIN EN 1916 and DIN V 1201.

By taking appropriate production measures – e.g. use of outer and inner supporting rings – it must be ensured that the limits for the gaps max w and min w of the dimensioning table are met.

Design of spigot end:

- $rs \geq 0,35 \cdot hj$ (observe FBS-QR!)
- $ls = lrs - 15$;
- $lm = lso - ls - 10$

Chamber width:

- $> b + 3$
- For chambered sealings the chamber must be large enough to accept the volume of the seal!

DIMENSIONING OF THE SEALING RING

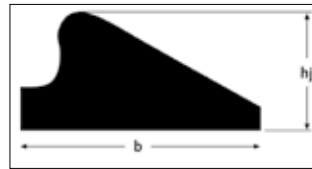
(All dimensions in mm)

For the dimensioning of the necessary seal height hj the socket gap width w has to be determined. To achieve this, the outer diameter of the spigot end dsp and the inner diameter of the socket end must be measured on at least ten pipes of a production batch or delivery. The pipes and the diameters are to be selected according to information gained on site in such a way that the maximum and minimum values are recorded. Max w and min w of the socket gap width are then calculated from the measured values as follows:

$$\max w = \frac{\max dso - \min dsp}{2}$$

$$\min w = \frac{\min dso - \max dsp}{2}$$

The cut length of the sealing ring is to be calculated as follows:



$$l = 2,73 \times (dsp + hj)$$

(deformation 30% – 45%,
pre-stretching $s = 15\%$)

hj	t+	t-	$b \pm 1,5$	max w	min w	$w \pm$	
10	0,6	0,2	16,5	6,4	5,4	5,9	0,5
12	0,6	0,2	22,5	7,7	6,5	7,1	0,6
13	0,6	0,2	24,4	8,4	7,0	7,7	0,7
14	0,6	0,2	26,3	9,0	7,5	8,2	0,8
15	0,6	0,2	27,7	9,7	8,0	8,8	0,8
16	0,6	0,2	29,5	10,3	8,5	9,4	0,9
18	0,6	0,2	34	11,6	9,5	10,6	1,0
19	0,8	0,2	36	12,3	10,2	11,2	1,1
20	0,8	0,2	38	12,9	10,7	11,8	1,1
21	0,8	0,2	40	13,6	11,2	12,4	1,2
22	0,8	0,2	42	14,2	11,7	13,0	1,3
23	0,8	0,2	43,5	14,9	12,2	13,5	1,3
24	0,8	0,2	45	15,5	12,7	14,1	1,4
26	0,8	0,2	45	16,8	13,7	15,3	1,5
28	0,8	0,2	45	18,1	14,8	16,5	1,7
30	0,8	0,2	45	19,5	15,8	17,6	1,8
32	1,2	0,2	48	20,8	17,0	18,9	1,9
33	1,2	0,2	49	21,4	17,5	19,5	1,9
34	1,2	0,2	51	22,1	18,1	20,1	2,0
36	1,2	0,2	54	23,4	19,1	21,2	2,1
38	1,2	0,2	57	24,7	20,1	22,4	2,3
40	1,2	0,2	60	26,0	21,1	23,6	2,4

Smaller or larger hj on request.

PIPE INSTALLATION TIPS

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



- Clean the sealing ring, socket and spigot end before mounting.
- Mount sealing ring to spigot end and place it next to the shoulder ensuring an even pre-stretching of the sealing ring.
- Cover the seal slide surface and the socket thoroughly 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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