

APPLICATION NOTE

Bonded Seals, bolt gasket, flange gasket

Type USF, with centering diaphragm (self-centering),
inside sealing.

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Product description

Metallic flat gasket with inside vulcanized, trapezoidal,
rubber-elastic sealing lib for static sealing of screw joints
and flange connections.

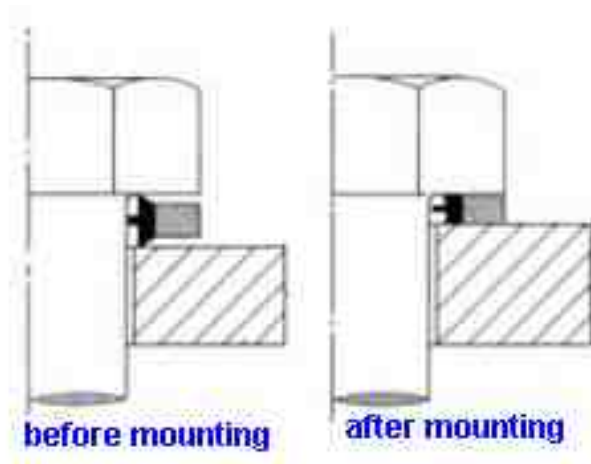
These self-centering gaskets are characterized by a
simple, fast and captive mounting, a friction-locked joint,
as well as a safe and self-reinforcing sealing. The
performance is suitable for high pressures – especially
when using a sinking (see below) for mounting- where
e.g. copper rings fail.



metal ring



bonded
sealing lib



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Material information

Metal ring:

The standard types have a metal ring out of mild steel (also known as DC01, FePB01, St12, SPCC-1D or ASTM 1008-1010, 1.0330), hardness 83 HB.

For protection against corrosion we use a 5µm thick coating out of zinc, plated with trivalent chrome (CrVI free).

Rubber sealing lip:

The regular elastomer is a nitrile-rubber (**NBR**), hardness 80+/- 5° Shore A. It is characterized by a very good resistance against mineral oil and fuel/ gasoline, good mechanical strength and low compression set.

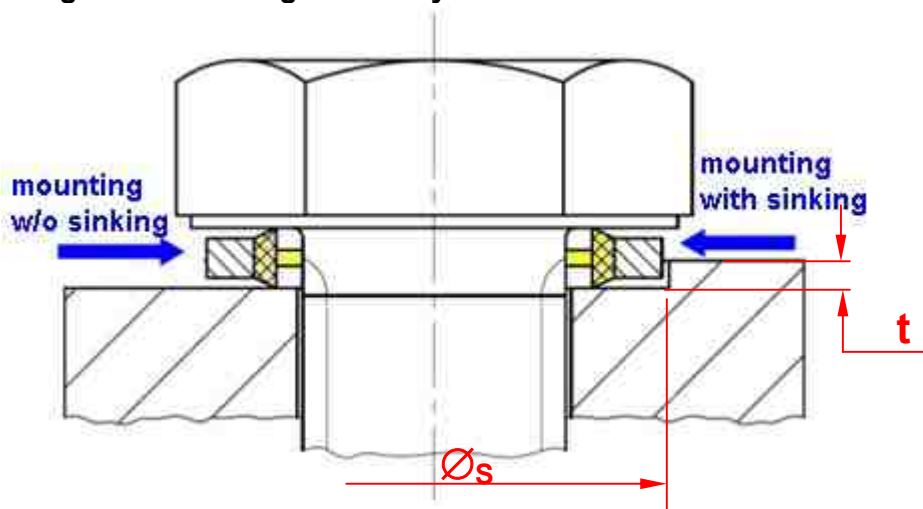
Temperature range of use: -30°C - +100°C, low gas permeability.

To be considered: low weather, ozone and UV-light resistance as well as flammability and a bad resistance against aromatic and polar solvents.

The dielectric strength is relatively low (NBR is not suitable as electric insulator).

For particular requirements, as higher or lower temperatures, aggressive chemicals, UV-light contact etc. we can also provide other material combinations from individual production runs (e.g. stainless steel, zinc-nickel coating, as well as EPDM, HNBR or FKM/FPM-rubber). Please don't hesitate to contact us.

Design and mounting/ assembly



Recommendation for
Dimensions of the
sinking:

$$\begin{aligned}\varnothing_s &= A + 0,2/+0,6\text{mm} \\ t &= E/2\end{aligned}$$

Dimensions A and E:
see chart 1 and 2

Mounted as above you can seal inner pressures **up to 1.000 bars/ 14.500 psi** (M5 to M27; to 3/4") respectively **700-800 bars/ ca 10.000 psi** (from size for M30; from 1") when using a sinking, otherwise the limit is **ca 400 bars/ 5.800 psi**.

The surfaces should be even and ideally have a roughness similar to ground levels. Regularly the roughness must be at least $R_{\text{max}} < 15 \mu\text{m}$, $R_a < 3\mu\text{m}$.

The necessary mounting torques you can find in chart 1 and 2 below.

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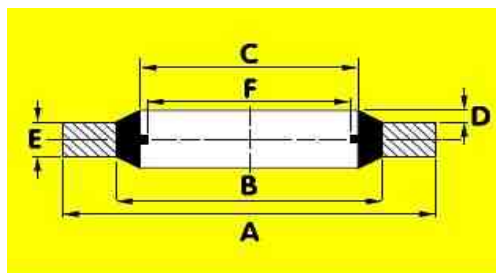
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All listed sizes of below charts (and some more) you can find in our Online-Shop:



www.bonded-seals-shop.de

Metric sizes

dimensions and tolerances

BS. No. SATTLER	Size Diameter Suitable for screws	A	B	C	D	E	F	Min. torque [Nm]
		+0.13 - 0.00	+0.10 - 0.10	+0.10 - 0.10	+ 0.25 - 0.00	+0.10 - 0.10	+0.20 - 0.20	
BS602	M4	7,00	5,40	4,50	0,30	1,00	3,40	5,3
BS603	M5	9,00	6,80	5,70	0,30	1,00	4,50	5,3
BS604	M5	10,00	7,40	5,70	0,30	1,00	4,50	5,3
BS606	M6	10,00	8,00	6,70	0,30	1,00	4,70	5,3
BS607	M6	11,00	8,20	6,70	0,30	1,00	4,70	5,3
BS612	M8	13,00	10,00	8,70	0,30	1,00	6,40	5,3
BS613	M8	14,00	10,40	8,70	0,30	1,00	6,40	5,3
BS616	M10	15,88	12,00	10,35	0,40	2,00	8,56	7,1
BS617	M10	16,00	12,40	10,70	0,40	1,50	8,05	7,1
BS622	M12	18,00	14,30	12,70	0,40	1,50	9,73	15,8
BS627	M14	22,00	16,40	14,70	0,40	1,50	11,38	22,6
BS629	M16	24,00	18,40	16,70	0,40	1,50	13,41	30,5
BS632	M18	26,00	20,40	18,70	0,40	1,50	14,76	40,7
BS633	M20	28,00	22,50	20,70	0,40	1,50	16,76	56,5
BS634	M21	28,70	23,30	21,50	0,40	2,50	17,80	67,8
BS636	M22	30,00	24,40	22,70	0,40	2,00	18,74	67,8
BS638	M24	32,00	26,40	24,70	0,40	2,00	20,11	73,4
BS639	M26	35,00	28,40	26,70	0,40	2,00	22,30	73,4
BS640	M27	36,00	29,00	27,20	0,40	2,00	23,30	ca. 79
BS642	M30	39,00	33,00	31,00	0,40	2,00	25,70	ca.76
BS643	M33	42,00	35,80	33,70	0,40	2,00	28,70	ca.83
BS645	M36	46,00	38,80	36,70	0,40	2,00	31,10	ca.101
BS647	M42	53,00	44,40	42,70	0,40	3,00	36,50	ca.133
BS648	M48	59,00	50,80	48,70	0,40	3,00	41,90	ca.142

Chart 1

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**INCH-Sizes
(USF)**

dimensions and tolerances

BS. No. SATTLER	Size	A	B	C	D	E	F	Min. torque [Nm]
	(BSP)	+0.13 -0.00	+0.10 -0.10	+0.10 -0.10	+ 0.25 -0.00	+0.10 -0.10	+0.20 -0.20	
BS820	1/8"	15,88	11,84	10,37	0,25/0,51	2,03	8,56	7,1
BS821	1/4"	20,57	15,21	13,74	0,25/0,51	2,03	11,45	15,8
BS823	3/8"	23,80	18,75	17,28	0,25/0,51	2,03	14,96	30,5
BS825	1/2"	28,58	23,01	21,54	0,25/0,51	2,49	18,64	56,5
BS827	3/4"	34,93	28,53	27,05	0,25/0,51	2,49	24,13	73,4
BS831	1"	42,80	36,88	33,89	0,25/0,51	2,49	30,30	ca. 79
BS832	1 1/4"	52,38	45,93	42,93	0,25/0,51	3,38	38,96	ca.102
BS833	1 1/2"	58,60	51,39	48,44	0,25/0,51	3,38	44,86	ca.124
BS836	2"	73,03	63,63	60,58	0,25/0,51	3,38	56,67	ca.194
BS838	2 1/4"	79,50	69,98	66,68	0,25/0,51	3,20	65,80	ca.213
BS839	2 1/2"	90,17	79,38	76,08	0,25/0,51	3,20	72,20	ca.271
BS879	3"	101,47	92,84	89,09	0,25/0,51	3,20	85,00	ca.249

Chart 2

All our tooled types for Bonded Seals are more than 150 sizes (also intermediate Inch sizes or non-self-centering types). Customer specific production runs mostly have lead-times around 4-6 weeks and a cost-efficient lot size of 500~5.000 pcs (depending on size and materials).

Our mentioned contact person will assist you with good grace. Our full sizes-table (PDF-File) you can find on our website. http://www.sattler-scm.de/EN/pdf/Bonded_Seals_E.pdf

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