SAH seal – Homogenizer sanitary diaphragm seal type

Design description

Badotherm sanitary seals are designed for pressure, level and flow measurements in food & beverage and pharmaceutical industries where the formation of bacteria needs to be prevented by reducing or eliminating blind spaces where process product could remain and thus creating impurities, bacteria by e.g. fermentation. As such these seals allow for easy cleaning by means of either threaded or clamp quick couplings. All these seals and fill fluid are suitable for CIP (Cleaning In Process) applications.

Body / diaphragm combinations

Housing materials	Diaphragm material		
Upper / Lower	General name	UNS	Wst.
AISI 316(L)	AISI 316L	S31600	1.4404
AISI 316	AISI 316	S31600	1.4435

Size and rating – Homogenizer

Size	Rating	Type
DN25 (1”)	PN600	Block mount

Cleanliness of the wetted parts

All parts are standard cleaned from excessive oil and grease. When additional requirements are needed, the parts can be cleaned according customer requirements and cleaning specifications.

Testing

All seals are helium tested according the EN 13185 test procedure A.3 up to 10^{-9} mbar l/s before used on a diaphragm seal application.
-> See datasheet “Diaphragm Seal testing”

Gaskets

Gaskets for the sanitary seals can be supplied by Badotherm. However due to the high demands of the pharmaceutical and food processes the material and dimensions should be specified clearly.

Block mount for homogeniser

The block mount type is clamping the device to the homogenizer pump. Because of the pressure spikes that occur in the homogenizer pump the assembly of the diaphragm seal is executed with a dampening device. There are different design of pumps and connections. .

Block

The SAH Homogenizer seals are fixed to the process by block fixed with bolts. The block is part of the supply and assembled with the diaphragm seal.

Polymer coatings

Polymer coatings come in several types. The technical data on thickness and temperature limitation can be found in datasheet "polymer solutions" The applicable selection on BF seals are:

- PTFE coating
- ECTFE (Halar®) coating
- PFA coating
- FEP coating
- *PTFE sheet*

-> See datasheet "Polymer solutions"

Capillary tube and armor (protection)

The standard capillary mounting position is top side (axial) of the seal. Alternatively, the capillary can be placed at the side of the seal (radial). The standard tube material is TP316 (316SS). There are three options in ID of the capillary; 2mm, 1mm, and 0.7mm. Badotherm capillaries are always protected against mechanical forces by armor. This doubled shielded armor consist is standard AISI 304, and optionally AISI 316. Additionally, the armor could be protected with a PVC sleeve in white, black, optionally with ATEX114 approval to protect against dust and water ingress and possibly corrosive ambient atmosphere.

-> See datasheet "Capillary lines"

Roughness

The roughness of the sanitary diaphragm seals is very important. Basic roughness is achieved with mechanically polishing process. A lower roughness is achieved with mechanically polishing with electropolish finish. The surface finish (SF) reference are from the ASME BPE standard. The values are valid for wetted parts excluding the weld seam.

	Max Value	BPE
Mechanically polished surface	0.76 Ra	SF3
Electropolished surface	0.38 Ra	SF4

Instrument connections

The SAH seals are designed to be direct mounted to a pressure gauges or a pressure transmitter. The leading instrument connection for the SA seals is G ½. However for vibrating application that are remoted mounted with a mounting bracket, a capillary a top mounted execution is available.

Material Certification

Material traceability and related certification are applicable for all process wetted parts. Material certification possibilities depend on the type of seal, the assembly construction and the materials used. Material certification is in accordance with EN10204 3.1.

Additional material certification and testing can be provided on request, such as Positive Material Identification (PMI), Intergranular corrosion (IGC) testing, material certification in accordance with EN10204 3.2, NACE conformity for ISO-15156 (MR-0175) and/or ISO-17945 (MR-0103), NORSOK M-630 and many more.

-> Please note that the responsibility for material selection always rests with the user.

Flange Marking & Traceability

All flanges are marked by the forging shop with heat number, material designation, size, and rating. Badotherm adds a Badotherm reference number and the manufacturers name to the flange for traceability purposes.

Flanges and origin

The seal parts are made from forged materials according to the applicable standards. The standard sourcing of flanges is of international origin. Optionally regional preference can be requested, for example materials from EU origin.

Example performance calculation

Whether a diaphragm seal can be used for a specific measurement, depends on the size of the diaphragm. That size is restricted by the size of the diaphragm seal.

For pressure transmitters, Badotherm offers an online performance calculation tool to calculate its performance and to ensure that the diaphragm size is suitable for your measurement.

The table below presents the minimum span of the respective diaphragm sizes with standard process conditions. As rule of thumb, a TPE of max 5% is often considered acceptable, but it depends per situation.

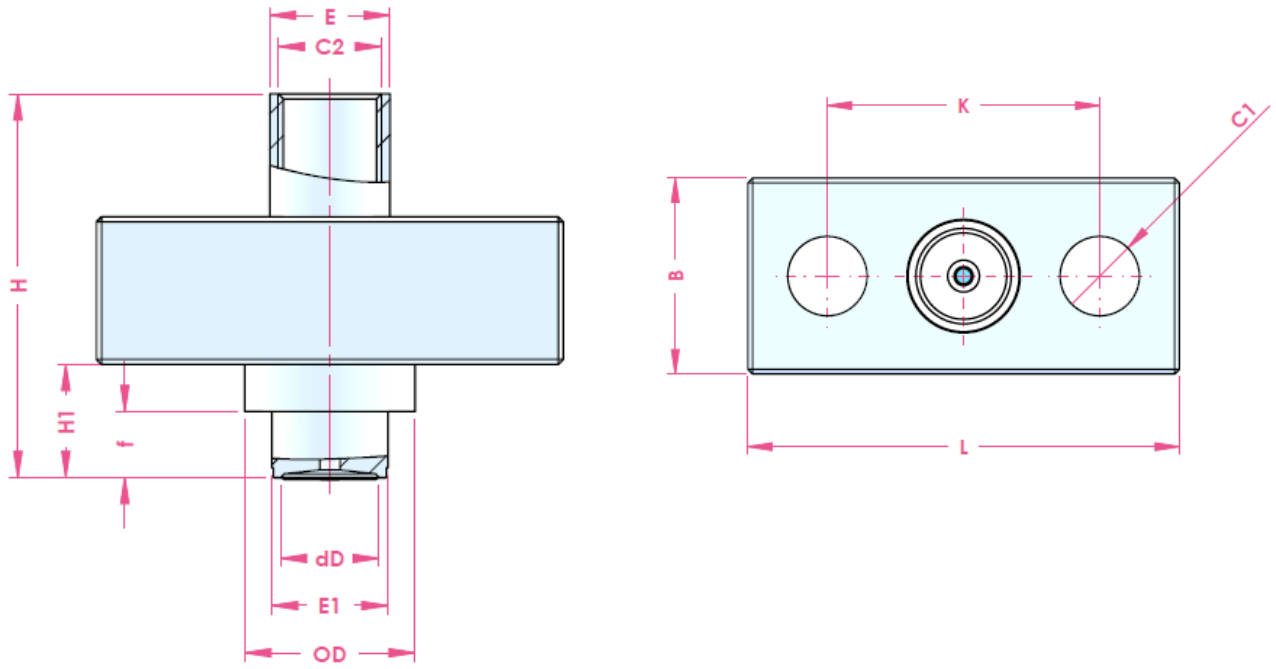
Minimum span table

dD	AP/GP	DP
20mm	21 bar	na

Pressure transmitter; ambient temperature -10…+30°C; process temperature 100°C with BSO 22 fill fluid; 3 meter capillary; ID 1mm, DP both sides mounted with seal

See the general overview of all diaphragm sizes with several standard situations and in combination with Badotherm pressure gauges.

Dimensions table: SAH – Homogenizer



size	rating	dD	C2	b	E	E1	OD	f	H1	H	K	C1	LxB
Block 95x45	PN600	20.0	G1/2	30.0	24.8	23,.8	34.8	13.4	23.0	78.0	60.0	17.5	95x45

All dimensions in mm

Authorised Distributor:

NATIONWIDE OIL & GAS

46, Jalan SS 22/21, Damansara Jaya,
47400 Petaling Jaya,
Selangor Darul Ehsan, Malaysia.

Email: nog@nog.com.my
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Change log

Date	Change
8-7-2022	Split the SA datasheet into separate models (clamped, threaded, block)