

SEAL CLEAN



INSTALLATION MANUAL

V7_2024

All information and statements submitted on this paper are based on our current knowledge and experience. Torque retightening is required in any case. In view of the many factors that may affect processing and application, these data do not relieve users from the responsibility of carrying out their own tests and experiments; neither do they imply any legally binding assurance of certain properties or of suitability for a specific purpose. It is the responsibility of those to whom we supply our products to ensure that any proprietary rights and existing laws, standards and legislation are observed. The statements about all product relevant properties in our valid catalogues, documents and price lists have to be considered.

General Information:

The Seal Clean gasket is made out of expanded 100 % virgin PTFE. The special feature of this gasket is the pre - compacted ring which ensures its high permeation resistance.

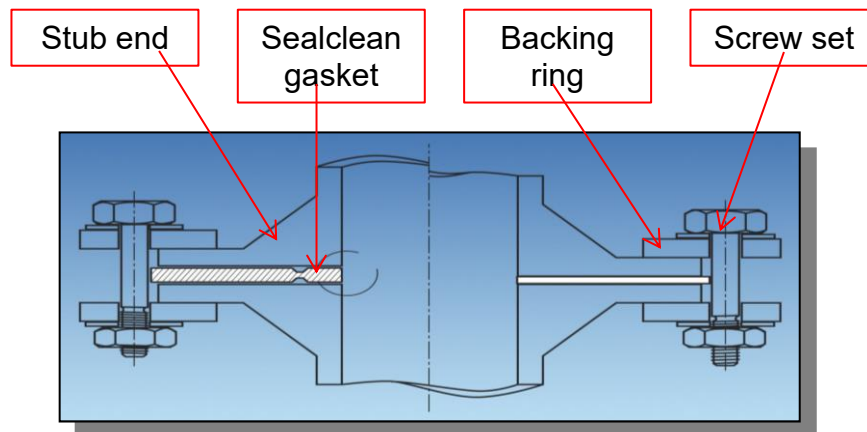
In comparison this special design provide a higher safety in installation as the permeation resistance is not depending on the compression force applied to the gasket. Due to its brilliant features, it is up to the installer to use stub ends with or without grooves on the sealing surface.

Product Range - Gasket thickness 3mm		
Norm	Dimension	Pipe SDR
		class
DIN	20, 25, 32, 40, 50, 63, 75	SDR 11/21
	90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315	SDR 11/21/33
ANSI	20, 25, 32, 40, 50, 63, 75	SDR 11/21
	90, 110, 125, 160, 200, 225, 250, 315	SDR 11/21/33
JIS	20, 25, 32, 40, 50, 63, 75	SDR 11/21
	90, 110, 125, 140, 160, 200, 225, 250, 280, 315	SDR 11/21/33

The gasket is suitable and designed for the application in plastic piping systems used for the transport of Ultra Pure, highly purified and purified water as well for Chemicals and waste water operated with pressure up to 16 bar. (For detailed application suitability please consult with AGRU Austria or local representative of AGRU)

Assembly of flanged joints: (According DVS 2210 guideline)

With regard to the assembly of flanged joints, particular attention must be paid to the following remarks:



1) Joining of the stub ends to the pipe:

The construction length of the stub end as well the melt distance per joint must be taken into consideration when welding it to the pipe using the butt fusion or IR fusion process.

2) Installation of piping components:

For vertical placed flange installations, make sure that the flange connection is free of stress and free of its own piping weight (pipe must be supported by fix points).

3) Alignment of the stub ends and gasket:

Ideally, the stub end, the gasket and the backing rings should be aligned centrally with the pipe axis. When aligning the gasket, it must be checked that the gasket dimensions are conform to the outside diameter of the applied stub end.

4) Bolt assembly:

The length of the bolts must be chosen in such a way that the bolt thread protrudes over the nut by no more than two or three thread turns.

5) Bolting tightening torque:

The necessary bolt-tightening torque depends on the diameter of the flange connection. The required torque values for SealClean gaskets to be found on the next page.

Step by step procedure for SealClean gasket installation:
(based on DVS 2210, ESA FSA guidelines and EN 1591)

Preparation:

- 1) To ensure a proper installation of Agru SealClean gaskets, following accessories are required:
 - a. Torque spanner
 - b. Ring- or open-end spanner
 - c. Complete set of screws /Fasteners(apply correct size and material as required for the desired flange connection)
 - i. Bolt
 - ii. Nut
 - iii. 2x Washers per set



	Pipe outside diameter (OD) in [mm] for SDR 11 DIN/ANSI/JIS																	
	20	25	32	40	50	63	75	90	110	125	140	160	180	200	225	250	280	315
minimumTorque [Nm]*	15	15	25	25	35	45	55	50	50	45	80	85	80	110	110	120	120	120
maximum Torque [Nm]*	20	20	30	30	40	50	60	55	55	50	85	95	90	120	120	130	130	130
Sealclean gasket thickness [mm]	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

	Pipe outside diameter (OD) in [mm] for SDR 21 and SDR 33 DIN/ANSI/JIS																	
	20	25	32	40	50	63	75	90	110	125	140	160	180	200	225	250	280	315
minimumTorque [Nm]*	15	15	25	25	35	45	55	50	50	45	80	85	80	110	110	120	120	120
maximum Torque [Nm]*	20	20	30	30	40	50	60	55	55	50	85	95	90	120	120	130	130	130
Sealclean gasket thickness [mm]	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

(* Torque values are based on installation temperature of 20°C)

First tighten the nuts so that they are hand-tight (Make sure that the bolts turn with ease of motion) and then apply the torque in a star pattern sequence by means of four incremental adjustments:

- 1st adjustment: 30 % of required minimum torque
- 2nd adjustment: 60 % of required minimum torque
- 3rd adjustment: 100 % of required minimum torque
- 4th adjustment: check all bolts in a circular sequence, re -torque where necessary with required minimum torque.
- 5th adjustment: 100% of required torque retightening should be done after 4 hours*

*Retightening after 4 hours could be omitted if the following parameters are met:

- Cold DI water (20°C – 30°C)
- No pressure change (max. ±1bar)
- No temperature change (max. ±5°C)
- Start up of the piping line must be within the first 6 months after installation / tightening of the flange connection
- Pressure <10bar

After shut-down and restarting the piping system we recommend checking and tightening the flange connection if necessary.

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Installation:

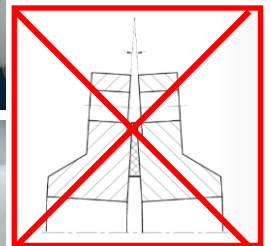
- 1) It's important to install the backing ring with the moulded marking placed outside to be readable. ->



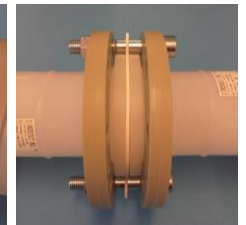
- 2) To ensure a proper flange connection, ensure that the stub ends are straight (parallel) positioned and they are 100% aligned.

A gap of approx. 5mm (stub end distance should not be larger) is needed to insert the gasket. ->

Avoid any excessive stress on stub ends by significant Misalignment or too large distance between the stub end sealing surfaces (see picture)



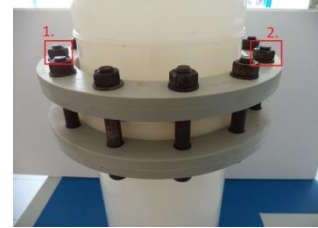
- 3) In order to reach a centred installation of the ePTFE gasket, fit 2/3 of all screws of the backing rings to avoid the gasket falling through the gap. ->
No specific Torque value is needed for the preliminary fixation of the gasket in the flange connection.
– Hand tight fit of the screws !



- 4) Insert gasket and make sure the OD of gasket is in-line (centred) with OD of the stub ends. ->
- 5) Fit all remaining screws by hand and ensure that the gasket stays centred. ->
- 6) Before tightening of the screws make sure both stub ends, backing rings and the gasket are perfectly in line. ->



- 7) After completing step 6), start tighten two screws placed diagonally by hand. ->



- 8) Check again the correct centricity of stub ends, backing rings and gasket. ->

Therefore all bolts have to be straight.



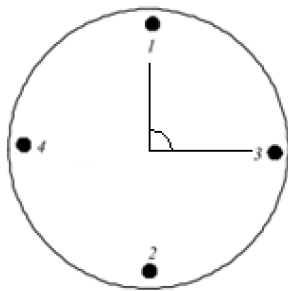
- 9) Cross wise tightening of all screws by hand. ->

- 10) Adjust the torque spanner to correct torque value stated in table above. ->

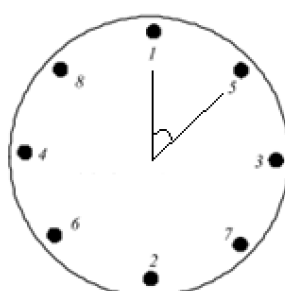


- 11) Cross wise tightening of all screws by torque spanner. ->

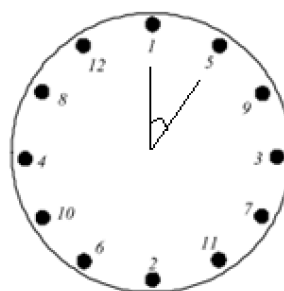
Cross wise is important to avoid tilting:



4 bolts, 90° apart



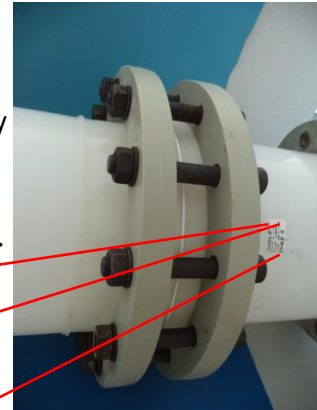
8 bolts, 45° apart



12 bolts, 30° apart

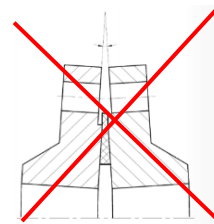
- 12) After all steps processed the correct order, the quality/traceability Label has should be filled out with the necessary information for the assembled and placed next to the flange connection (readable for later validation and traceability for QC inspection) ->

Sample

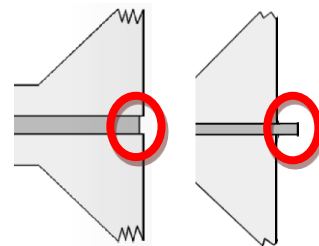


Failures which have to be avoided when assembling flange connections:

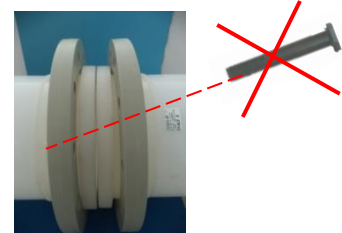
- 1) Avoid deformation of flanged components by imposed forces caused by to large misalignment or not correct placement of stub ends!



- 2) Always make sure that the gasket stays centred:



- 3) Screws and bolts have to be straight and in line and should never be tightened when they are placed in an angle. If this is the case centre the backing rings correctly to resolve this problem.



Key recommendations based on FSA/ESA* guidelines.

1) Gasket dimension

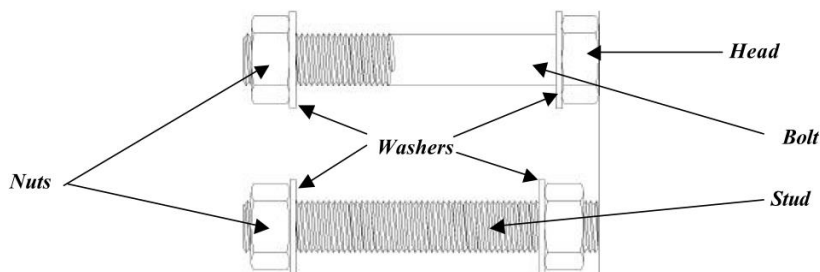
Choose the correct gasket size for the nominal diameter, SDR ratio and its standard DIN/ANSI/JIS.

2) Stub end sealing surface finish:

Ensure that the sealing surfaces are clean, dry and free of scratches.

3) Screws / Fasteners:

For the majority of flange and gasket joints, the fasteners which provide the compressive pressure on the flanges are normally bolts or studs in tension. (Torque values to be found on page no.1)



NEVER USE LESS SCREWS / FASTENERS THAN THE NUMBER DEFINED FOR THE BACKING RING!

4) Reuse of gaskets and Screws:

Never reuse a gasket, since it may have been modified dramatically under operating conditions. Even if the gasket appears to be visually okay, it is not worthwhile!

As soon the screws are going to be opened again on an assembled flange connection, a gasket change is a necessity!

DO NOT REUSE GASKETS !

* FSA, Fluid Sealing Association/ESA, European Sealing Association e.V.

Schematic summary for the correct assembly of a flange connection (acc. FSA/ESA guidelines)

A summary of the considerations and key recommendations to produce good sealing performance in a flange connection (valid for new installation and changing gaskets in Flange connections):

