THERMANSYS®

GAS END SEALING FLANGES
Sealing Flanges for Tube Furnace Working Tubes
Model family: GSF-A

Description.

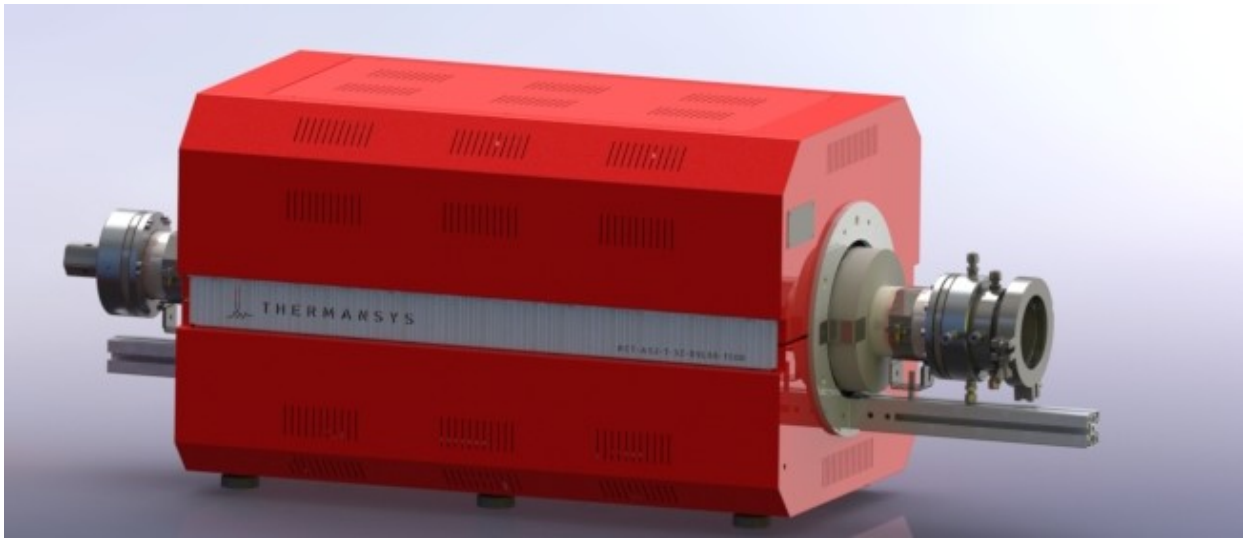
GSF_A flanges family is a compression type fitting that compress an elastomer Viton O-ring gasket between the flange body and the working tube surface providing gas seal. The flanges are metallic and have ports permitting tubing connection and instrumentation installation. Specially design to seal Ceramic or Quartz tubes can be used for metallic tubes also.

Provided with the Main Port coaxial with the tube length having either hydraulic thread port port for gases inlet/outlet connection to the tubing network or Clamp Flange (CF) for quick-open loading. Up to four peripheral threads are available serving as ports for instrumentation mounting (e.g thermocouples, pressure sensors).

Since many times the temperature of the sealing flange used in tube furnaces could be high our Gas End Sealing Flanges are standard provided with a cooling fluid recirculation compartment. Cooling compartment shield is removable.

THERMANSYS® End Gas Sealing Flanges are supplied for work tubes diameters from 20 το 140 mm. Their design allows use with tubes having diameter tolerance ± 1 to ± 3mm (see table 1, next page).

Standard versions material of construction is Stainless Steel ASME 304. Optionally for corrosive applications Stainless Steel ASME 316 is available and Aluminum for a light weight solution (recommended for thin wall Quartz tube reactors).



Key features.

- Vacuum and over pressure conditions
- Clamp Flange for quick reactor access available.
- Water cooled
- ASME 304 Stainless Steel, ASME 316 Stainless Steel, and Aluminium material of construction available
- Custom design available

Cooling Media Suggestions.

The cooling media flow for the flange it is not possible to be defined since it depends on the process, the temperature, the gas flow rates and also the use of radiation shields or not. Usually the flange downstream of the gas flow suffers more, while the upstream flange is being cooled by the gas if gas flow is present. The flanges positioned at the upper part of a vertical furnace also have increased possibility to overheat.
The main purpose of the cooling is to protect the elastomer viton o-ring and other gaskets and PTFE thread sealing tapes. These materials have maximum operation temperature usually up to 220C. Operators safety and protection from elevated hazardous temperatures is also very important. As a rule of thump water flow, with inlet temperature 20C, of 0.2-0.4 lpm for flanges with diameters up to 30mm, and 0.5-1 lpm for larger flanges will be sufficient to keep the

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flanges temperature much bellow 100C and therefore safe.
If water used as cooling media it is very important to ensure that if water exist inside the cooling compartment and is not flowing the supply manifold should be opened to one side because otherwise the water inside could be vaporized and create a potential safety hazard. Practically in case a closed re circulation system, like a chiller, it is used then a pressure relief valve it is necessary. If the system is open closure of the flow with a valve downstream the flange should be avoided. The better way to control the cooling media flow is to use a temperature probe measuring the media flow downstream the flange and regulate the flow to have temperature bellow 80C, if water for example is used, because boiling point is 100C. Solutions with glycerol can increase the boiling point of the cooling media.

TABLE1. GSF-A Flanges with Hydraulic main port

Part Number	Tube Outside Diameter (mm)	Main Port Thread ISO Parallel	Periphery Threads ISO Tapered
GSF-A20	19-21	1/4 in	2 x 1/8 in
GSF-A25	24-26	1/4 in	2 x 1/8 in
GSF-A30	29-31	1/4 in	2 x 1/8 in
GSF-A35	34-36	3/8 in	2 x 1/8 in
GSF-A40	38-42	3/8 in	3 x 1/4 in
GSF-A50	48-52	1/2 in	4 x 1/4 in
GSF-A60	58-62	1/2 in	4 x 1/4 in
GSF-A70	68-72	1/2 in	4 x 1/4 in
GSF-A80	78-82	1/2 in	4 x 1/4 in
GSF-A90	88-92	3/4 in	4 x 3/8 in
GSF-A100	97-103	3/4 in	4 x 3/8 in
GSF-A110	107-113	3/4 in	4 x 3/8 in
GSF-A120	117-123	3/4 in	4 x 3/8 in
GSF-A130	127-133	1 in	4 x 3/8 in
GSF-A140	137-143	I in	4 x 3/8 in

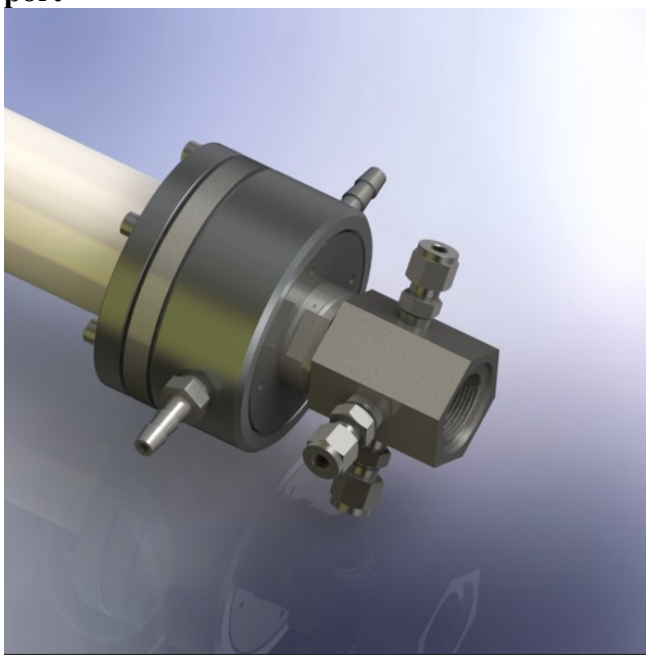
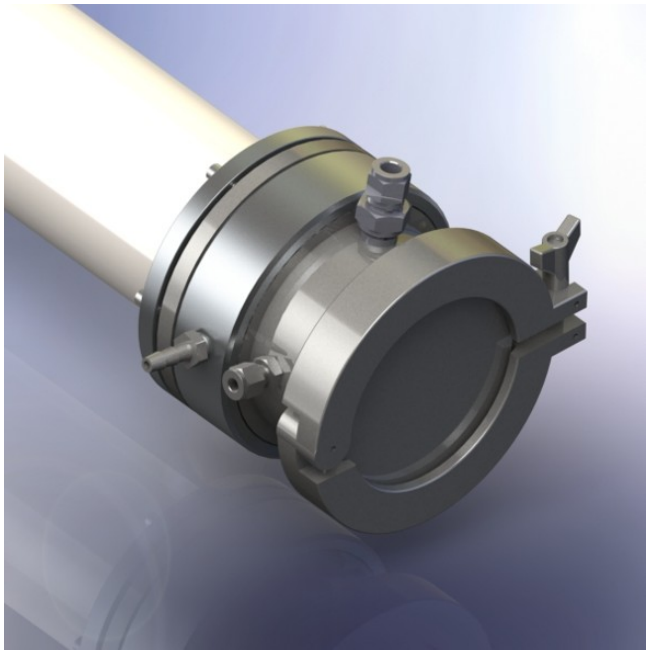


TABLE2. GSF-A Flanges with Clamp Flange main port

Part Number	Tube Outside Diameter (mm)	Main Port Clamp Flange	Periphery Threads ISO Tapered
GSF-A20TC	19-21	NW16KF	2 x 1/8 in
GSF-A25TC	24-26	NW25KF	2 x 1/8 in
GSF-A30TC	29-31	NW25KF	2 x 1/8 in
GSF-A35TC	34-36	NW40KF	2 x 1/8 in
GSF-A40TC	38-42	NW40KF	3 x 1/4 in
GSF-A50TC	48-52	NW50KF	4 x 1/4 in
GSF-A60TC	58-62	DN50TriC	4 x 1/4 in
GSF-A70TC	68-72	DN65TriC	4 x 1/4 in
GSF-A80TC	78-82	DN65TriC	4 x 1/4 in
GSF-A90TC	88-92	DN80TriC	4 x 3/8 in
GSF-A100TC	97-103	DN80TriC	4 x 3/8 in
GSF-A110TC	107-113	DN100TriC	4 x 3/8 in
GSF-A120TC	117-123	DN100TriC	4 x 3/8 in
GSF-A130TC	127-133	DN125TriC	4 x 1/2 in
GSF-A140TC	137-143	DN125TriC	4 x 1/2 in



- Standard material of construction is SS304. Cooling compartment shield is Aluminum.
- To order the flange made of SS316 add in front of the part number the prefix “SS304”, **e.g: SS316-GSF-A90TC.**
- To order the flange made of Aluminum add in front of the part number the prefix “ALU”, **e.g: ALU-GSF-A90TC.**

HELLENIC PRODUCT.

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