RAL QUALITY MARK

Expansion Joint

Technical Information

Bolted connections for fabric expansion joints
Imperial Units

RAL-GZ 719

TI-007

Rev. 0

1. Following guidelines for bolted connections have to be respected to achieve flue gas tightness acc. to TI-002 or nekal tightness acc. to TI-003. Attention: The bolt torques are not valid for clamp bands, straps and external clamps.

2. Bolting torque

To control the setting of the different expansion joint materials, the conditions and instructions of the manufacturer regarding the retorque of the bolting or the use of spring washers need to be observed. Guideline valid for ambient temperature acc. to the following chart.

	fabric expansion joint					elastomer expansion joint				
bolt	width of clamp bar / back-up bar [inch]					width of clamp bar / back-up bar [inch]				
	1 3/16	1 1/2	2	2 1/2	3	1 3/16	1 1/2	2	2 1/2	3
[inch]	bolting torque [ft-lbs]					bolting torque [ft-lbs]				
5/16	15					15				
3/8	22	30				22	22			
1/2		37	45				30	37		
5/8		48	60	75	85		37	48	55	66
3/4			75	90	105			55	66	81
1			85	105	120			63	77	92

bolting torque +/- 10% valid for MoS_2 lubricated bolting and design acc. to item 3.

3. Guidelines for the design of clamp bars / back-up bars

width	1 3/16	1 1/2	2	2 1/2	3	inch
thickness	1/4, 5/16	5/16, 3/8	5/16, 3/8, 1/2	3/8, 1/2	3/8, 1/2	inch
bolt spacing	2 1/2	3	4	4	5	inch
bolts M	5/16, 3/8	3/8, 1/2	1/2, 5/8	1/2, 5/8	5/8	inch

The stiffness of the duct flange should be at least the same as the stiffness of the clamp bar / back-up bar

4. Bolting material of galvanized quality 5.6 and 8.8 should be preferred for expansion joint fixation.

5. The combination of stainless steel bolting material and fabric expansion joint material is in some extend problematic. This material should be avoided if possible.

6. High temperature resistant bolts should only be used for temperatures higher than 570 °F at the bolt.

7. Reduction of the mechanical strength of the bolting in respect of higher temperature

class of strength	temperature				
	+70 °F	+210 °F	+390 °F	+480 °F	+570 °F
	modulsas of elasticity ReL [ksi]				
ASTM A307-A	35	30	27	25	20
ASTM A193-B8C1	43	39	33	31	28
ASTM a193-B7	93	85	78	74	59
ASTM A490	130	127	114	108	102
ASTM A574	153	148	134	127	120

values in reference to EN ISO 898-1:1999 annex A

Edited by the Quality Committee of the Quality Association for Fabric Expansion Joints