

**Aerospace**  
**Fluid Conveyance**

J13 and WJ13 Gasketless Tube Joints



# J13 and WJ13 Gasketless Tube Joints

## Material Specifications

Eaton's lightweight J13 Joint provides efficient sealing where low leakage rate is permissible. It is particularly useful on ducting where weight is a critical factor. The joint is recommended for applications with temperatures -65°F to +1000°F (-54°C to +537°C).

The WJ13 Joint is a wide radius flange. Various flange materials are available, including stainless steel, titanium, INCONEL 718 and INCONEL 625. The joint consists of one T-Bolt latch style coupling with two flanges.

**T-Bolt:**  
AMS 5732/5737 (A-286)

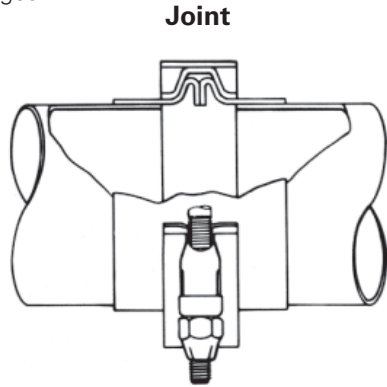
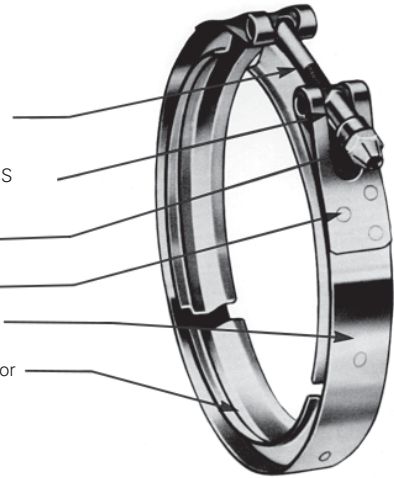
**Trunnion:** Stainless Steel or AMS 5901 (A-286)

**Nut:** Stainless Steel Silver Plated Locknut

**Spotweld:** AMS W 6858

**Band:** AMS 5518 301 CRES or AMS 5596 (INCONEL 718)

**Retainer:** AMS 5518 301 CRES or AMS 5596 (INCONEL 718)



**Joint**



**Standard Flange for J13 Joints**

AMS 5510 (321 CRES)  
AMS 4902 (Titanium)  
AMS 5599 (INCONEL 625)  
AMS 5596 (INCONEL 718)



**Wide Flange for WJ13 joints**

AMS 5510 (321 CRES)  
AMS 4901 (Titanium)  
AMS 5599 (INCONEL 625)  
AMS 5596 (INCONEL 718)

## Dimensional Data

### Flanges

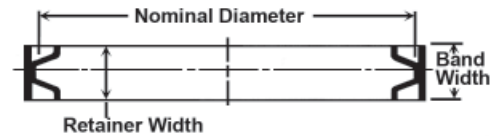
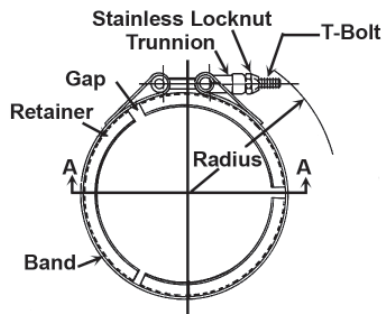


Flange Part Number	Material Gage	L
24538	.032	.75
MFB69633S	.032	.85
56408-1	.040	.75**
MFB69633T	.040*	.85
MFB65202	.032	.71
MFB69633GC	.032	.85
MFB64764	.032	.71
MFB67145	.040	.88

\* .032 Material Gage for tube O.D. under 2.00 in.

\*\* .71 long for tube O.D. under 2.50

### Couplings



Coupling Part Number	Nom. Diameter	Strap Width	Retainer Width	T-Bolt Size
24540	Tube + .64	.75	.75	10-32
MVB64757	Tube + .64	.75	.75	1/4-28
MVB68248	Tube + .69	.75	.75	1/4-28
NM102420	Tube + .64	.75	.75	1/4-28
NM102421	Tube + .59	.75	.94	10-32
NM102422	Tube + .67	.75	.91	1/4-28

The two principal types of loading experienced in this type of joint are pressure and bending. The charts shown on this page are designed to help you determine the ability of the J13 type joints to withstand a given load or combination of loads.

### Step 1

If there is only one type of loading, the capability may be easily determined. Draw a vertical line upward from the joint size on the bottom scale until it intersects the appropriate curve for type of loading.

### Step 2

Draw a horizontal line from this intersection to the appropriate loading scale and read load rating. Compare this with your design load to determine suitability of the joint.

### Step 3

If a combined loading exists (bending and pressure) determine joint capabilities for each load separately as in Steps 1 and 2 above.

### Step 4

Divide load rating into actual load condition for each type of loading and express answer as a percent. Add percentage of load rating for each type of loading. If your answer is less than 100%, the difference represents your safety margin.

### Example: (J13 Joint)

3.00 dia. Joint to operate at 800°F (427°C)  
400 psi burst pressure  
1000 lb. in. bending moment

### Steps 1-3

Rated loads are as follows:  
770 psi burst pressure  
4200 lb. in. bending moment

### Step 4

$\frac{400}{770} = 52\%$  of pressure load rating  
700

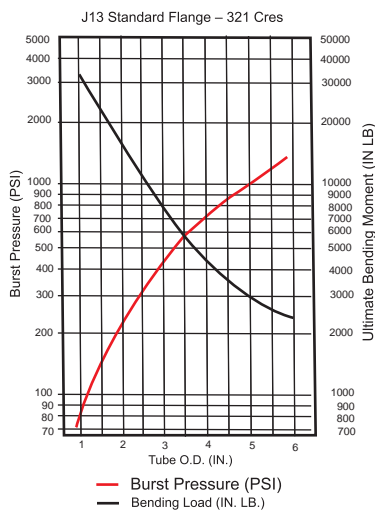
$\frac{1000}{4200} = 24\%$  of bending load rating  
4200

Loads are 76% of joint capability

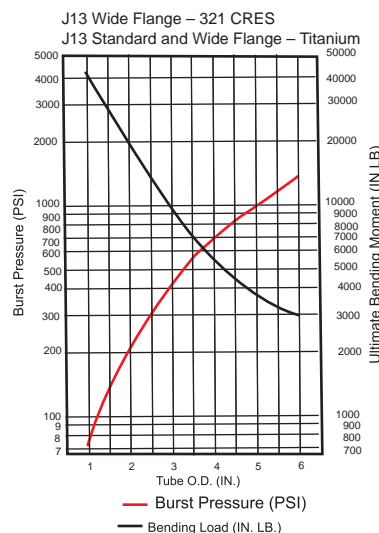
### Temperature Correction Factor

Temperature (°F)	RT	200	400	500	600	800	1000
Titanium Flange	1.00	.80	.57	.46	*	*	*
321 CRES Flange	1.00	.88	.76	.73	.70	.63	*
Inconel 718 Flange	1.00	.96	.92	.91	.90	.88	.85
Inconel 625 Flange	1.00	.91	.83	.80	.79	.77	.77

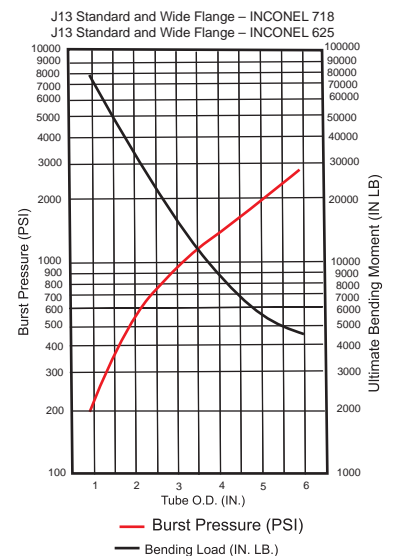
\* Not recommended for use at this temperature



Performance Chart No. 1



Performance Chart No. 2



Performance Chart No. 3

# Specifications and Dimensions

## 321 Stainless Steel Flange and 300 Series Stainless Steel Couplings

### J13 Style Gasketless Tube Joint

#### Standard Flange

See Performance Chart 1

Tube O.D.	Coupling Part Number	Weight Lbs.	Radius Max.	Recommended Torque Lb. In.	Flange	
					Part Number	Weight Lbs.
1.00	24540-100	.15	1.78	35	24538-100	.04
1.25	24540-125	.16	1.84	35	24538-125	.05
1.50	24540-150	.17	2.09	35	24538-150	.05
1.75	24540-175	.19	2.14	35	24538-175	.06
2.00	24540-200	.21	2.22	35	24538-200	.07
2.25	24540-225	.23	2.70	35	24538-225	.08
2.50	24540-250	.24	2.78	35	24538-250	.08
2.75	24540-275	.26	2.87	35	24538-275	.09
3.00	24540-300	.28	2.96	40	24538-300	.10
3.50	24540-350	.30	3.15	40	24538-350	.11
4.00	24540-400	.33	3.34	40	24538-400	.12
4.50	24540-450	.36	3.54	40	24538-450	.14
5.00	24540-500	.39	3.75	45	24538-500	.15
5.50	24540-550	.43	3.96	45	24538-550	.16
6.00	24540-600	.45	4.25	50	24538-600	.18

All dimensions in inches.

### WJ13 Style Gasketless Tube Joint

#### Wide Flange

See Performance Chart 2

Tube O.D.	Coupling Part Number	Weight Lbs.	Radius Max.	Recommended Torque Lb. In.	Flange	
					Part Number	Weight Lbs.
1.00	NM102421H0100	.19	2.28	40	MFB69633S100	.03
1.25	NM102421H0125	.21	2.33	40	MFB69633S125	.04
1.50	NM102422H0150	.27	2.48	40	MFB69633S150	.05
1.75	NM102422H0175	.29	2.56	40	MFB69633S175	.06
2.00	NM102422H0200	.31	2.64	40	MFB69633S200	.07
2.25	NM102422H0225	.33	2.73	40	MFB69633S225	.08
2.50	NM102422H0250	.35	3.00	40	MFB69633S250	.09
2.75	NM102422H0275	.37	3.10	50	MFB69633S275	.09
3.00	NM102422H0300	.40	3.18	50	MFB69633S300	.10
3.50	NM102422H0350	.44	3.37	50	MFB69633S350	.12
4.00	NM102422H0400	.48	3.57	50	MFB69633S400	.14
4.50	NM102422H0450	.52	3.77	60	MFB69633S450	.16
5.00	NM102422H0500	.56	3.97	60	MFB69633S500	.17
5.50	NM102422H0550	.60	4.32	60	MFB69633S550	.18
6.00	NM102422H0600	.64	4.53	60	MFB69633S600	.20

All dimensions in inches.

# Specifications and Dimensions

## Commercially Pure Titanium Flanges and 300 Series Stainless Steel Coupling

### J13 Style Gasketless Tube Joint

#### Standard Flange

See Performance Chart 2

Tube O.D.	Coupling Part Number	Weight Lbs.	Radius Max.	Recommended Torque Lb. In.	Flange	
					Part Number	Weight Lbs.
1.00	NM102420-0100	.21	2.30	40	56408-1-100	.02
1.25	NM102420-0125	.22	2.37	40	56408-1-125	.03
1.50	NM102420-0150	.24	2.41	40	56408-1-150	.03
1.75	NM102420-0175	.26	2.48	40	56408-1-175	.04
2.00	NM102420-0200	.27	2.58	45	56408-1-200	.04
2.25	NM102420-0225	.29	2.66	45	56408-1-225	.05
2.50	NM102420-0250	.32	3.00	45	56408-1-250	.06
2.75	NM102420-0275	.34	3.10	45	56408-1-275	.06
3.00	NM102420-0300	.35	3.18	50	56408-1-300	.07
3.50	NM102420-0350	.40	3.37	50	56408-1-350	.08
4.00	NM102420-0400	.43	3.56	50	56408-1-400	.09
4.50	NM102420-0450	.45	3.76	50	56408-1-450	.10
5.00	NM102420-0500	.47	3.97	55	56408-1-500	.11
5.50	NM102420-0550	.52	4.31	55	56408-1-550	.12
6.00	NM102420-0600	.56	4.52	55	56408-1-600	.13

All dimensions in inches.

### WJ13 Style Gasketless Tube Joint

#### Wide Flange

See Performance Chart 2

Tube O.D.	Coupling Part Number	Weight Lbs.	Radius Max.	Recommended Torque Lb. In.	Flange	
					Part Number	Weight Lbs.
1.00	NM102421H0100	.19	2.28	40	MFB69633T100	.01
1.25	NM102421H0125	.21	2.33	40	MFB69633T125	.02
1.50	NM102422H0150	.27	2.48	40	MFB69633T150	.02
1.75	NM102422H0175	.29	2.56	40	MFB69633T175	.03
2.00	NM102422H0200	.31	2.64	40	MFB69633T200	.04
2.25	NM102422H0225	.33	2.73	40	MFB69633T225	.05
2.50	NM102422H0250	.35	3.00	40	MFB69633T250	.05
2.75	NM102422H0275	.37	3.10	50	MFB69633T275	.06
3.00	NM102422H0300	.40	3.18	50	MFB69633T300	.06
3.50	NM102422H0350	.44	3.37	50	MFB69633T350	.07
4.00	NM102422H0400	.48	3.57	50	MFB69633T400	.09
4.50	NM102422H0450	.52	3.77	60	MFB69633T450	.10
5.00	NM102422H0500	.56	3.97	60	MFB69633T500	.11
5.50	NM102422H0550	.60	4.32	60	MFB69633T550	.12
6.00	NM102422H0600	.64	4.53	60	MFB69633T600	.13

All dimensions in inches.

# Specifications and Dimensions

## INCONEL 718 Flange and INCONEL 718 Coupling

### J13 Style Gasketless Tube Joint

#### Standard Flange

See Performance Chart 3

Tube O.D.	Coupling Part Number	Weight Lbs.	Radius Max.	Recommended Torque Lb. In.	Flange	
					Part Number	Weight Lbs.
1.00	MVB64757-100	.22	2.30	40	MFB64764-100	.03
1.25	MVB64757-125	.23	2.37	40	MFB64764-125	.04
1.50	MVB64757-150	.25	2.41	40	MFB64764-150	.05
1.75	MVB64757-175	.27	2.48	40	MFB64764-175	.05
2.00	MVB64757-200	.28	2.58	40	MFB64764-200	.06
2.25	MVB64757-225	.30	2.66	40	MFB64764-225	.07
2.50	MVB64757-250	.33	3.00	40	MFB64764-250	.08
2.75	MVB64757-275	.35	3.10	45	MFB64764-275	.09
3.00	MVB64757-300	.36	3.18	45	MFB64764-300	.10
3.50	MVB64757-350	.41	3.37	45	MFB64764-350	.11
4.00	MVB64757-400	.44	3.56	45	MFB64764-400	.13
4.50	MVB64757-450	.46	3.76	90	MFB64764-450	.14
5.00	MVB68248-500	.53	3.97	90	MFB64764-500	.16
5.50	MVB68248-550	.59	4.31	90	MFB64764-550	.17
6.00	MVB68248-600	.63	4.52	90	MFB64764-600	.19

All dimensions in inches.

### WJ13 Style Gasketless Tube Joint

#### Wide Flange

See Performance Chart 3

Tube O.D.	Coupling Part Number	Weight Lbs.	Radius Max.	Recommended Torque Lb. In.	Flange	
					Part Number	Weight Lbs.
1.00	Not Available					
1.25	NM102422G0125	.25	2.40	40	MFB67145-125	.04
1.50	NM102422G0150	.27	2.48	40	MFB67145-150	.05
1.75	NM102422G0175	.29	2.56	40	MFB67145-175	.06
2.00	NM102422G0200	.31	2.64	40	MFB67145-200	.06
2.25	NM102422G0225	.33	2.73	40	MFB67145-225	.07
2.50	NM102422G0250	.35	3.00	40	MFB67145-250	.08
2.75	NM102422G0150	.37	3.10	50	MFB67145-275	.09
3.00	NM102422G0300	.40	3.18	50	MFB67145-300	.09
3.50	NM102422G0350	.44	3.37	50	MFB67145-350	.11
4.00	NM102422G0400	.48	3.57	50	MFB67145-400	.13
4.50	NM102422G0450	.52	3.77	60	MFB67145-450	.14
5.00	NM102422G0500	.56	3.97	60	MFB67145-500	.17
5.50	NM102422G0550	.51	4.32	60	MFB67145-550	.19
6.00	NM102422G0600	.64	4.53	60	MFB67145-600	.20

All dimensions in inches.

# Specifications and Dimensions INCONEL 625 Flanges and INCONEL 718 Couplings

## J13 Style Gasketless Tube Joint

### Standard Flange

See Performance Chart 3

Tube O.D.	Coupling Part Number	Weight Lbs.	Radius Max.	Recommended Torque Lb. In.	Flange	
					Part Number	Weight Lbs.
1.00	MVB64757-100	.22	2.30	40	MFB65202-100	.03
1.25	MVB64757-125	.23	2.37	40	MFB65202-125	.04
1.50	MVB64757-150	.25	2.41	40	MFB65202-150	.05
1.75	MVB64757-175	.27	2.48	40	MFB65202-175	.05
2.00	MVB64757-200	.28	2.58	40	MFB65202-200	.06
2.25	MVB64757-225	.30	2.66	40	MFB65202-225	.07
2.50	MVB64757-250	.33	3.00	40	MFB65202-250	.08
2.75	MVB64757-275	.35	3.10	45	MFB65202-275	.09
3.00	MVB64757-300	.36	3.18	45	MFB65202-300	.10
3.50	MVB64757-350	.41	3.37	45	MFB65202-350	.11
4.00	MVB64757-400	.44	3.56	45	MFB65202-400	.13
4.50	MVB64757-450	.46	3.76	90	MFB65202-450	.14
5.00	MVB64757-500	.48	3.97	90	MFB65202-500	.16
5.50	MVB64757-550	.53	4.31	90	MFB65202-550	.17
6.00	MVB64757-600	.57	4.52	90	MFB65202-600	.19

All dimensions in inches.

## WJ13 Style Gasketless Tube Joint

### Wide Flange

See Performance Chart 3

Tube O.D.	Coupling Part Number	Weight Lbs.	Radius Max.	Recommended Torque Lb. In.	Flange	
					Part Number	Weight Lbs.
1.00	NM102421G0100	.19	2.28	40	MFB69633GC100	.03
1.25	NM102421G0125	.21	2.33	40	MFB69633GC125	.04
1.50	NM102422G0150	.27	2.48	40	MFB69633GC150	.05
1.75	NM102422G0175	.29	2.56	40	MFB69633GC175	.06
2.00	NM102422G0200	.31	2.64	40	MFB69633GC200	.07
2.25	NM102422G0225	.33	2.73	40	MFB69633GC225	.08
2.50	NM102422G0250	.35	3.00	40	MFB69633GC250	.09
2.75	NM102422G0150	.37	3.10	50	MFB69633GC275	.09
3.00	NM102422G0300	.40	3.18	50	MFB69633GC300	.10
3.50	NM102422G0350	.44	3.37	50	MFB69633GC350	.12
4.00	NM102422G0400	.48	3.57	50	MFB69633GC400	.14
4.50	NM102422G0450	.52	3.77	60	MFB69633GC450	.16
5.00	NM102422G0500	.56	3.97	60	MFB69633GC500	.17
5.50	NM102422G0550	.60	4.32	60	MFB69633GC550	.18
6.00	NM102422G0600	.64	4.53	60	MFB69633GC600	.20

All dimensions in inches.

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