



**EATON**

*Powering Business Worldwide*

# LJ11 and J11 Joints

LJ11 and J11 Joints were designed primarily to join standard tubing for fuel, hot air and gas systems. The substitution of couplings other than the coupling part numbers specified for each joint can seriously impair the effectiveness of the joint. Although these joints are basically the same configurations, the LJ11 flange skirts

are lighter, and the gasket is thinner except at the sealing point. Therefore, the LJ11 Joint should be used when weight saving is an important factor. The J11 Joint is a heavier joint with a high safety factor.



Joint consists of one coupling, two flanges and an all-metal gasket.

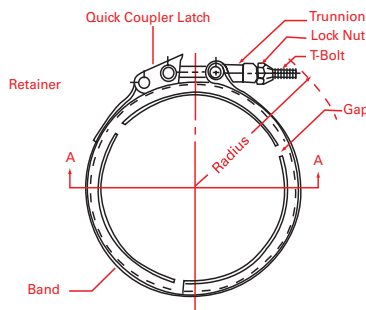


Quick Coupler Latch can be connected or disconnected without removal of nut.

LJ11 Joint is available with T-Bolt Latch only. This latch is also used on the large sizes of the J11 Joint.

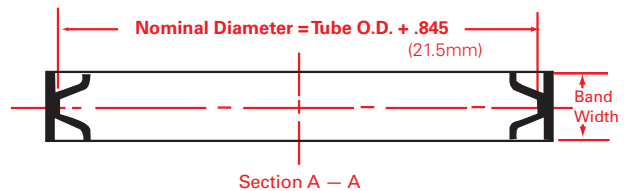
## LJ11 and J11 Joint Specifications and Dimensions

### Quick Coupler Latch Coupling

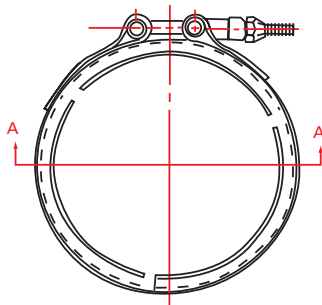


Band Width **.750** (19.05mm) for dias. **1.00** (25.4mm) through **2.75** (69.85mm)  
**.875** (22.23mm) for dias. **3.00** (76.2mm) through **5.50** (139.7)

### Section A – A

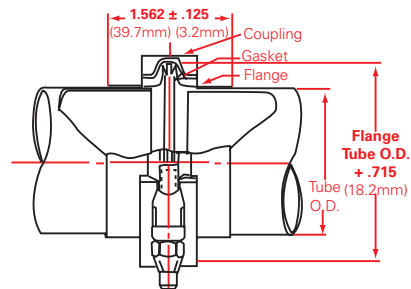


### T-bolt Latch Coupling



Band Width **.750** (19.05mm) for dias. **1.00** (25.4mm) through **5.00** (127mm)  
**1.125** (28.58) for dias. **6.00** (152.4mm) through **9.00** (228.66mm)

### Joint



inches in boldface; mm in lightface

**Order By Component Part Numbers**

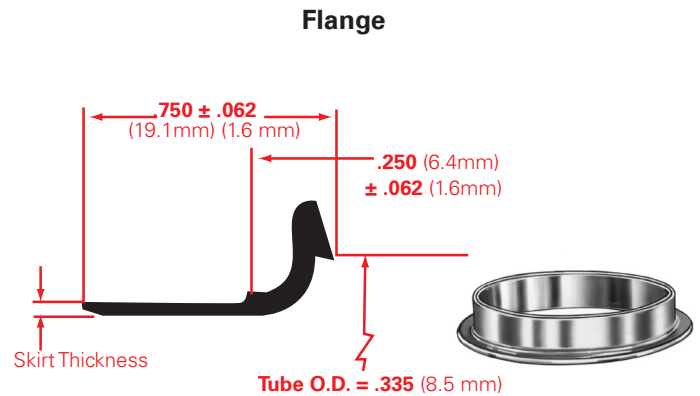
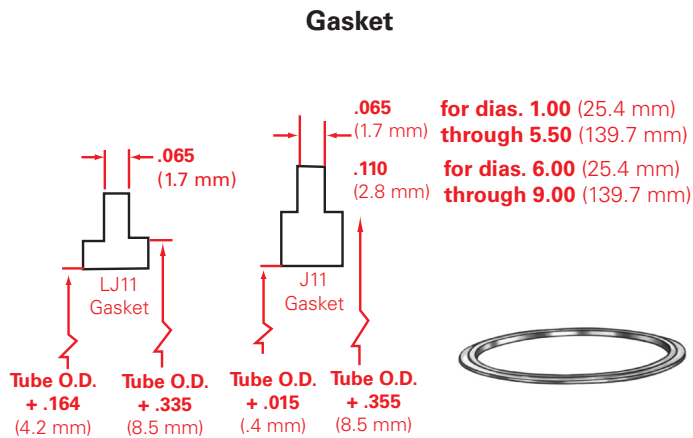
One coupling, one gasket and two flanges are required to make a complete joint. (T-Bolt and nut are furnished with coupling). Flange skirt thickness code must be added to complete the Flange Part Number, and gasket material code must be added to complete the Gasket Part Number.

**Sample Flange Part No.:** 16933-100-6 (one inch dia. for J11 Joint with .050 skirt thickness).

**Sample Gasket Part No.:** 17189-400-N (four inch dia. for J11 Joint with nickel material).

Replacement T-Bolts can be ordered for Quick Coupler Latches only. They cannot be replaced on T-Bolt Latches. Last dash number indicates T-Bolt length in hundredths inches.

Tolerances on recommended torque are ±10%.



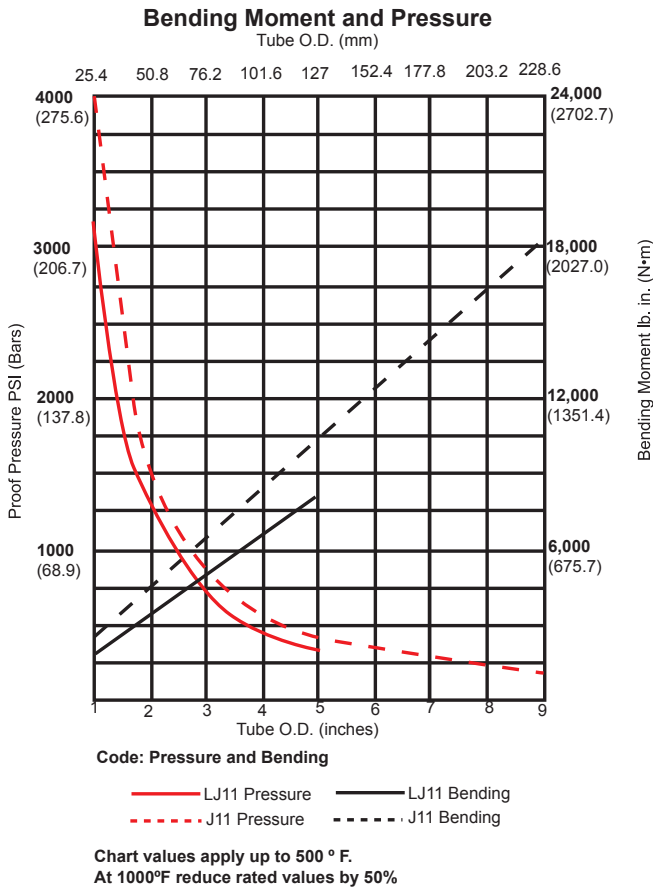
Gasket Material	Temperature	Material Ordering Code
Aluminum	+ 500°F + 260°C	-A
Copper (Nickel Plated)	+ 750°F + 399°C	-C
Nickel	+ 1000°F + 538°C	-N

If a joint is disassembled after service operations, a new gasket should be used when reassembled to ensure maximum sealing efficiency of the joint.

Tube Size O.D.	Skirt Thickness	Ordering Code
1.00 — 5.50 25.4 — 139.7	+ .005 (.030) — .010 +127 (.762) — .254	-3*
1.00 — 9.00 25.4 — 228.6	(.050) ± .010 (1.27) ± 2.54	-6
6.00 — 9.00 152.4 — 228.6	(.080) ± .010 (2.03) ± .254	-6

Inches in **bold** face type  
Millimeters in light face type

# Performance Ratings for LJ11 and J11 Joints



The two principal types of loading experienced in this type of joint are pressure and bending. The chart shown at the left is designed to help you determine the ability of the LJ11 or J11 Joint to withstand a given load or combination of loads.

**Step 1.** If there is only one type of loading, the joint 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 joint\* and type of loading.

**Step 2.** Draw a horizontal line from this intersection to the appropriate loading scale and read load rating. Adjust for temperature conditions by multiplying with the correction factor. 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.

*\*If joint weight is a consideration, it is recommended that the LJ11 be checked against the applied conditions first. If the margin of safety is not satisfactory, then steps 1 through 4 may be repeated using the J11 curves.*

**Example:**

- 3.00 dia. joint to operate at 200° F.
- 300 psi proof pressure
- 2000 lb in. bending movement

**Steps 1-3.**

- Rated loads for LJ11 are as follows:
- 642 psi proof pressure @200°F.
- 4400 lb in. bending moment @200°F.

**Step 4.**

$$\frac{300}{642} = 46.7\% \text{ of pressure load rating}$$

$$\frac{2000}{4400} = 45.4\% \text{ of bending load rating}$$

Loads are 92.1% of joint capacity

Temperature	+ 70° F +21.1°C	+200°F +93°C	+400°F +204°C	+500°F +260°C	+600°F +316°C	+800°F +427°C
Correction	1.00	.88	.76	.73	.70	.63

Inches, lbs. and lb. - in. in **bold** face type  
 Millimeters, kg. and N-m in light face type

	Coupling						Flange				Gasket				Weight each (lbs)			
	Tube Size O.D.	Part Number	Weight each	Radius Max.	T-Bolt*		Part Number	Skirt Thick-ness Code (Specify One)			Part Number	Material Code (Specify One)			Alum.	Copper or Nickel		
					Part Number And Length	Thread		Recom-mended Torque	Part Number	Weight Each		Part Number	Material Code (Specify One)					
T-Bolt Latch	<b>1.00</b> 25.4	18276-100	<b>.177</b> .080	<b>2.093</b> .949	* -200	10-32 UNJF -3A	<b>50</b> 5.65	16933-100	-3			<b>.050</b> .022	24346-100	-A	-C	-N	<b>.008</b> .003	<b>.033</b> .014
	<b>1.25</b> 31.37	18276-125	<b>.196</b> .088	<b>2.187</b> .992	* -200		<b>50</b> 5.65	16933-125	-3			<b>.058</b> .026	24346-125	-A	-C	-N	<b>.010</b> .004	<b>.038</b> .017
	<b>1.50</b> 38.1	18276-150	<b>.217</b> .098	<b>2.531</b> 1.148	* -250		<b>80</b> 9.04	16933-150	-3			<b>.071</b> .032	24346-150	-A	-C	-N	<b>.012</b> .005	<b>.045</b> .020
	<b>1.75</b> 44.45	18276-175	<b>.250</b> .113	<b>2.625</b> 1.190	* -250		<b>80</b> 9.04	16933-175	-3			<b>.083</b> .037	24346-175	-A	-C	-N	<b>.014</b> .063	<b>.050</b> .022
	<b>2.00</b> 50.8	18276-200	<b>.348</b> .158	<b>2.687</b> 1.218	* -250		<b>80</b> 9.04	16933-200	-3			<b>.094</b> .042	24346-200	-A	-C	-N	<b>.016</b> .007	<b>.056</b> .025
	<b>2.25</b> 57.15	18276-225	<b>.370</b> .167	<b>3.093</b> 1.402	* -275	¼ - 28 UNJF -3A	<b>115</b> 12.99	16933-225	-3			<b>.103</b> .046	24346-225	-A	-C	-N	<b>.018</b> .008	<b>.051</b> .023
	<b>2.50</b> 63.5	18276-250	<b>.387</b> .171	<b>3.125</b> 1.417	* -275		<b>115</b> 12.99	16933-250	-3			<b>.113</b> .051	24346-250	-A	-C	-N	<b>.020</b> .009	<b>.067</b> .030
	<b>2.75</b> 69.85	18276-275	<b>.415</b> .190	<b>3.400</b> 1.542	* -300		<b>115</b> 12.99	16933-275	-3			<b>.124</b> .056	24346-275	-A	-C	-N	<b>.022</b> .010	<b>.074</b> .033
	<b>3.00</b> 76.2	18276-300	<b>.570</b> .258	<b>3.562</b> 1.615	* -300		<b>115</b> 12.99	16933-300	-3			<b>.137</b> .062	24346-300	-A	-C	-N	<b>.024</b> .011	<b>.078</b> .035
	<b>3.50</b> 88.9	18276-350	<b>.624</b> .283	<b>3.593</b> 1.629	* -300		<b>165</b> 18.64	16933-350	-3			<b>.158</b> .071	24346-350	-A	-C	-N	<b>.028</b> .012	<b>.091</b> .041
	<b>4.00</b> 10.16	18276-400	<b>.688</b> .312	<b>3.781</b> 1.715	* -300	<b>165</b> 18.64	16933-400	-3			<b>.180</b> .081	24346-400	-A	-C	-N	<b>.032</b> .014	<b>.102</b> .046	
	<b>4.50</b> 114.3	18276-450	<b>.752</b> .341	<b>4.000</b> 1.814	* -300	<b>165</b> 18.64	16933-450	-3			<b>.215</b> .079	24346-450	-A	-C	-N	<b>.036</b> .016	<b>.114</b> .051	
	<b>5.00</b> 127	18276-500	<b>.825</b> .374	<b>4.250</b> 1.927	* -300	<b>165</b> 18.64	16933-500	-3			<b>.223</b> .101	24346-500	-A	-C	-N	<b>.038</b> .017	<b>.126</b> .057	

\* Replacement T-Bolts can be ordered for Quick Coupler Latches only. They can not be replaced on T-Bolt Latches. Last dash number indicates T-Bolt length in hundredths inches.

# J11 Joints

Inches in **bold** face type  
Millimeters in light face type

	Coupling					Flange					Gasket			Weight each (lbs)			
	Tube Size O.D.	Part Number	Weight each	T-Bolt* Radius Max.	Part Number And Length	Thread	Recom- mended Torque	Part Number	Skirt Thick- ness Code (Specify One)		Weight Each	Part Number	Material Code (Specify One)			Alum.	Copper or Nickel
Quick Coupler Latch	<b>1.00</b> 25.4	24502-100	<b>.277</b> .125	<b>2.125</b> .963	18462-75-250	1/4-28 UNJF -3A	<b>70</b> 7.91	16933-100	-3	-6	<b>.061 †</b> .027	17189-100	-A	-C	-N	<b>.012</b> .005	<b>.039</b> .017
	<b>1.25</b> 31.37	24502-125	<b>.293</b> .132	<b>2.187</b> .992	18462-75-250		<b>70</b> 7.91	16933-125	-3	-6	<b>.075 †</b> .034	17189-125	-A	-C	-N	<b>.015</b> .006	<b>.050</b> .022
	<b>1.50</b> 38.1	24502-150	<b>.325</b> .147	<b>2.500</b> 1.133	18289-75-250		<b>100</b> 11.32	16933-150	-3	-6	<b>.089 †</b> .040	17189-150	-A	-C	-N	<b>.017</b> .007	<b>.058</b> .026
	<b>1.75</b> 44.45	24502-175	<b>.344</b> .156	<b>2.562</b> 1.162	18289-75-250		<b>100</b> 11.32	16933-175	-3	-6	<b>.100 †</b> .045	17189-175	-A	-C	-N	<b>.020</b> .009	<b>.070</b> .031
	<b>2.00</b> 50.8	24502-200	<b>.372</b> .175	<b>2.875</b> 1.304	18289-75-275		<b>130</b> 14.69	16933-200	-3	-6	<b>.119 †</b> .053	17189-200	-A	-C	-N	<b>.022</b> .010	<b>.073</b> .033
	<b>2.25</b> 57.15	24502-225	<b>.387</b> .175	<b>2.937</b> 1.332	18289-75-275		<b>130</b> 14.69	16933-225	-3	-6	<b>.128 †</b> .058	17189-225	-A	-C	-N	<b>.024</b> .011	<b>.087</b> .039
	<b>2.50</b> 63.5	24502-250	<b>.402</b> .182	<b>3.062</b> 1.388	18289-75-275		<b>130</b> 14.69	16933-250	-3	-6	<b>.144 †</b> .065	17189-250	-A	-C	-N	<b>.028</b> .012	<b>.098</b> .044
	<b>2.75</b> 69.85	24502-275	<b>.433</b> .196	<b>3.187</b> 1.445	18289-75-275		<b>130</b> 14.69	16933-275	-3	-6	<b>.156 †</b> .070	17189-275	-A	-C	-N	<b>.031</b> .014	<b>.110</b> .049
	<b>3.00</b> 76.2	24503-300	<b>.775</b> .351	<b>3.687</b> 1.672	18289-75-350		5/16-24 UNJF -3A	<b>220</b> 24.86	16933-300	-3	-6	<b>.172 †</b> .078	17189-300	-A	-C	-N	<b>.035</b> .015
<b>3.50</b> 88.9	24503-350	<b>.835</b> .378	<b>3.875</b> 1.757	18448-88-350	<b>220</b> 24.86	16933-350		-3	-6	<b>.208 †</b> .094	17189-350	-A	-C	-N	<b>.037</b> .016	<b>.120</b> .054	
<b>4.00</b> 101.6	24503-400	<b>.895</b> .405	<b>4.062</b> 1.842	18448-88-350	<b>220</b> 24.86	16933-400		-3	-6	<b>.226 †</b> .102	17189-400	-A	-C	-N	<b>.043</b> .019	<b>.147</b> .066	
<b>4.50</b> 114.3	24503-450	<b>.960</b> .435	<b>4.250</b> 1.927	18448-88-350	<b>240</b> 27.12	16933-450		-3	-6	<b>.268 †</b> .121	17189-450	-A	-C	-N	<b>.048</b> .021	<b>.170</b> .077	
<b>5.00</b> 127	24503-500	<b>1.030</b> .467	<b>4.437</b> 2.012	18448-88-350	<b>240</b> 27.12	16933-500		-3	-6	<b>.290 †</b> .131	17189-500	-A	-C	-N	<b>.053</b> .024	<b>.180</b> .081	
<b>5.50</b> 139.7	24503-550	<b>1.080</b> .488	<b>4.625</b> 2.097	18448-88-350	<b>240</b> 27.12	16933-550		-3	-6	<b>.320 †</b> .145	17189-550	-A	-C	-N	<b>.059</b> .026	<b>.210</b> .095	
<b>6.00</b> 152.4	24504-600	<b>1.633</b> .740	<b>5.125</b> 2.324	* -400	<b>280</b> 31.64	24249-600			-6	-8	<b>.449 †</b> .203	24189-600	-A	-C	-N	<b>.090</b> .040	<b>.317</b> .143
<b>7.00</b> 177.8	24504-700	<b>1.793</b> .813	<b>5.500</b> 2.494	* -400	<b>280</b> 31.64	24249-700			-6	-8	<b>.507 †</b> .229	24189-700	-A	-C	-N	<b>.107</b> .048	<b>.386</b> .175
<b>8.00</b> 203.2	24504-800	<b>2.005</b> .910	<b>5.937</b> 2.692	* -400	<b>300</b> 33.90	24249-800			-6	-8	<b>.565 †</b> .256	24189-800	-A	-C	-N	<b>.125</b> .056	<b>.432</b> .195
<b>9.00</b> 228.6	24504-900	<b>2.190</b> .993	<b>6.375</b> 2.891	* -400	<b>300</b> 33.90	24249-900		-6	-8	<b>.623 †</b> .282	24189-900	-A	-C	-N	<b>.140</b> .063	<b>.477</b> .216	

\* Replacement T-Bolts can be ordered for Quick Coupler Latches only. They can not be replaced on T-Bolt Latches. Last dash number indicates T-Bolt length in hundredths inches.

† Weight is for largest Flange size

# Assembly of LJ11 and J11 Joints To Machined Flange

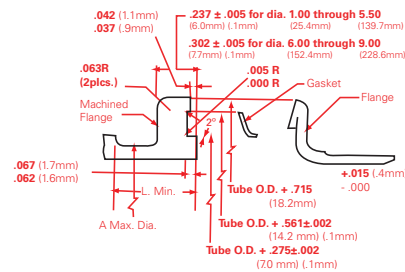
Inches in **bold** face type  
 Millimeters in light face type

Tube Size O.D.	Part Number	Special Gasket Material Code (Specify One Only)			A Max	L Min.	Tube Size O.D.	Part Number	Special Gasket Material Code (Specify One Only)			A Max	L Min
<b>1.00</b> 25.4	24096-100	-A	-C	-N	<b>1.135</b> .514	<b>.515</b> .233	<b>3.50</b> 88.9	24096-350	-A	-C	-N	<b>3.635</b> 1.648	<b>.593</b> .268
<b>1.25</b> 31.37	24096-125	-A	-C	-N	<b>1.385</b> .628	<b>.515</b> .233	<b>4.00</b> 10.16	24096-400	-A	-C	-N	<b>4.135</b> 1.875	<b>.593</b> .268
<b>1.50</b> 38.1	24096-150	-A	-C	-N	<b>1.635</b> .741	<b>.515</b> .233	<b>4.50</b> 114.3	24096-450	-A	-C	-N	<b>4.635</b> 2.102	<b>.593</b> .268
<b>1.75</b> 44.45	24096-175	-A	-C	-N	<b>1.885</b> .855	<b>.515</b> .233	<b>5.00</b> 127.00	24096-500	-A	-C	-N	<b>5.135</b> 2.329	<b>.593</b> .268
<b>2.00</b> 50.8	24096-200	-A	-C	-N	<b>2.135</b> .968	<b>.515</b> .233	<b>5.50</b> 139.7	24096-550	-A	-C	-N	<b>5.635</b> 2.555	<b>.593</b> .268
<b>2.25</b> 57.15	24096-225	-A	-C	-N	<b>2.385</b> 1.081	<b>.515</b> .233	<b>6.00</b> 152.4	24096-600	-A	-C	-N	<b>6.170</b> 2.798	<b>.718</b> .325
<b>2.50</b> 63.5	24096-250	-A	-C	-N	<b>2.635</b> 1.195	<b>.515</b> .233	<b>7.00</b> 177.8	24096-700	-A	-C	-N	<b>7.170</b> 3.252	<b>.718</b> .325
<b>2.75</b> 69.85	24096-275	-A	-C	-N	<b>2.885</b> 1.308	<b>.515</b> .233	<b>8.00</b> 203.2	24096-800	-A	-C	-N	<b>8.170</b> 3.705	<b>.718</b> .325
<b>3.00</b> 76.2	24096-300	-A	-C	-N	<b>3.135</b> 1.422	<b>.593</b> .268	<b>9.00</b> 228.6	24096-900	-A	-C	-N	<b>9.170</b> 4.159	<b>.718</b> .325

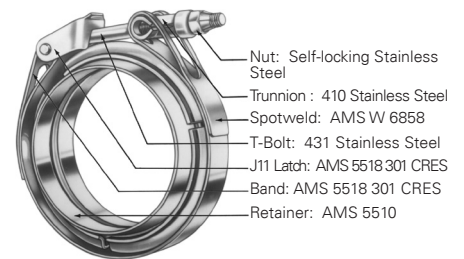
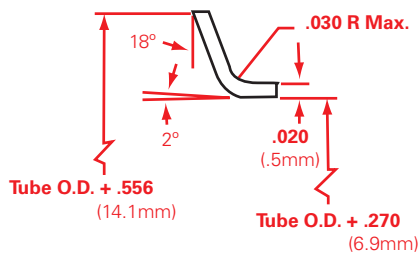
### Order by Part Number

Material Code must be added to complete the Gasket Part Number.

**Sample Part number.:** 24096-400-C (four inch dia. with copper material)



LJ11 or J11 Flanges and Couplings are to be used to complete the joint



Gasket Material	Ordering Code	Temperature
Aluminum	-A	+ 500 °F + 260°F
Copper (Nickel Plated)	-C	+750°F +399°C
Nickel	-N	+1000°F +528°C

**Eaton**  
**Aerospace Group**  
**Fluid & Electrical Distribution Division**  
**90 Clary Connector**  
**Eastanollee, Georgia 30538**  
**Phone: (706) 779 3351**  
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