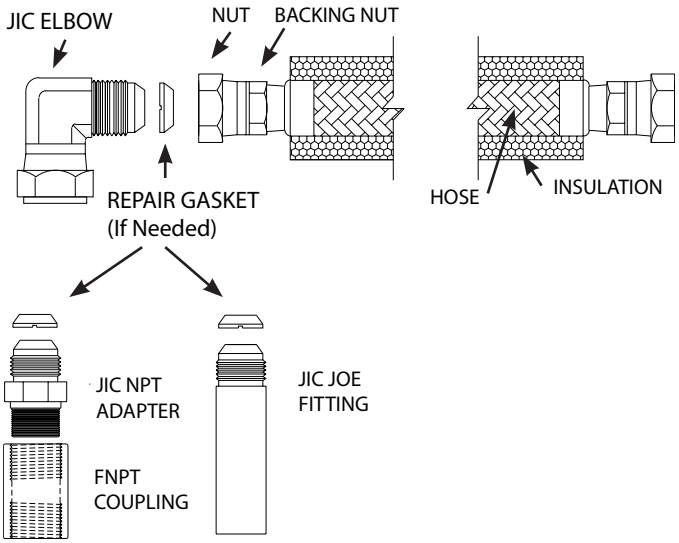
JUMP-OVER INSTALLATION GUIDE



JUMP-OVER INSTASLLATION COMPONENTS

This document provides the recommended installation procedure for CSI flexible metal jump-over hoses configured with Standard JIC or JIC+ fittings. Jump-over hoses are used to connect consecutive jacketed components within a thermal maintenance system. The hose uses a corrugated stainless steel core within a stainless steel overbraid.

- Standard JIC fittings are those made in accordance with the SAE J514 standard.
- JIC+ fittings utilize a CSI proprietary design to provide superior sealing integrity, particularly in steam service. JIC+ fittings are backward compatible with standard JIC fittings.

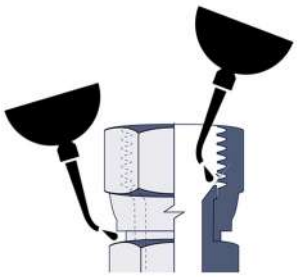
INSTALLATION

1. Adapter – If a JIC-to-NPT adapter is used, install it with appropriate thread sealant according to plant maintenance specifications. CSI recommend that NPT threads be avoided in steam service unless they are back-welded to prevent leaks.

2. Clean – Wipe clean the threads and mating surfaces of both the male and female JIC components. Remove any dirt and ensure that the nut spins freely.

3. Inspect – The conical surfaces are the sealing surfaces; inspect these surfaces for damage (scratches, nicks, etc). If damage is found, replace the component or utilize a JIC repair gasket to reduce the chances of a leak.

4. Lubricate - Lubrication of the fitting is recommended but not required. Apply a small amount of light oil to the conical sealing surface (not required if using a gasket) and to the base ofthe nut (where the nut is crimped onto the fitting).



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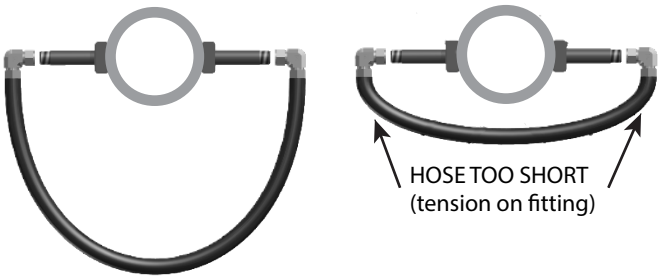
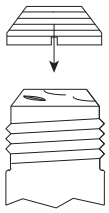
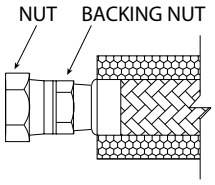
5. Position -Dry fit the jump-over and check the fit. The hose should be positioned so that it forms a U shape. The hose should loop down for optimal heating fluid flow. The hose should carry no tension except from its own weight. Rotate, remove, or add JIC elbows as required to achieve the best possible fit at each location.

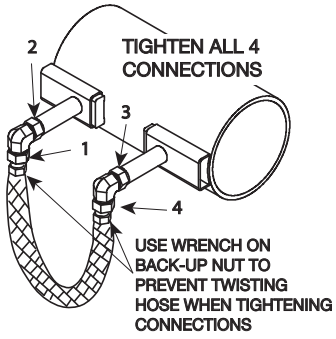


6. Gasket – If a repair gasket is to be used, snap the gasket onto the male-side JIC and tighten the fittings as usual. The use of a repair gaskets is recommended when the sealing surface is damaged and when standard JIC fittings are used. CSI JIC+ fittings do not require gaskets.



7. Tighten - Tighten all applicable JIC nuts (typically four prer jump-over) to the recommended torque. Place a wrench on the backing nut to prevent the hose from turning while tighening the JIC nut. DO NOT ALLOW THE HOSE TO TWIST (corkscrew).





Connection	JIC+ Torque (no gasket)	Standard JIC Torque (gasket recommended)
1/2”	30 ft-lb	40 ft-lb
3/4”	50 ft-lb	80 ft-lb
1”	70 ft-lb	110 ft-lb

8. Test - A leak test is recommended to assure that all connections are completely sealed. In steam service, small leaks are difficult to detect, but will worsen over time as the leak path is eroded by the steam. A snoop test is recommended. Pressureize the system with compressed gas (air, nitrogen, etc) and apply a soapy water snoop solution to each fitting. Leaks will be visible as tehy cause the solution to bubble.

Notes

- Multiple uses – JIC connectors are designed to allow multiple uses; JIC fittings can be removed, moved, and re-installed multiple times.
- Thread tape – The conical surfaces of the JIC fitting form the seal; applying tape to the threads will not provide any benefit and may hinder correct tightening of the fitting.
- Hose damage – The hose is not designed to withstand externally applied forces; do not clamp on the

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