

## Procedure 2403: Assembling Cam and Groove Flanged Adapters

effective 10/16

### Preparation

- 1. Verify the assembly's intended pressure is within the working pressures as defined in Procedure 4002, Test Pressures & Procedures for Cam and Groove Couplings (page 62).
- 2. Inspect the fittings for damage per Procedure 3003: Inspecting Dixon® Cam and Groove Couplings (pages 53-54).
- 3. Inspect the flange end of the fitting for excessive damage to the mating surface. Minor dings in the sealing surface are acceptable, but any raised bumps or contamination that would prevent the normal compression of the gasket are cause for rejection or rework.
- 4. Inspect the bolts and nuts for damaged threads or incomplete threads. That damage could provide false torque readings and a lower clamping pressure. Bolts must be long enough to provide a full nut when assembled.
- 5. Cam and groove product typically has a lower working pressure than the rating for a 150# flange. Flanges on some cam and groove flange adapters have been lightened to provide the necessary cam and groove working pressure.
- 6. Reference ASME PCC-1 for flange assembly instructions. Torque values in the specification typically exceed those necessary for acceptable cam and groove assemblies. The user should tighten the assembly enough to achieve an acceptable seal but not enough to distort the flange.

### Notes

- 1. Do not re-use gaskets. 
- 2. If there is an alignment problem between the two flanges, do not use the bolts to correct that condition. Align the mating flanges correctly before tightening the nuts.
- 3. Refrain from using air assisted or electric impact tools as they make it harder to evenly tighten the assembly and can lead to flange damage and/or lower sealing performance.
- 4. Disassembly of a flanged connection should occur in a similar manner to the tightening described below (slowly and sequentially). Make sure all pressure, including head pressure, has been removed from the system before beginning the disassembly process.

### Process

#### *To Connect:*

- 1. Select the correct gasket, bolts and nuts for your assembly. Verify their condition as per "Preparation."
- 2. Position the gasket correctly on one flange. If adhesive is necessary, it should be applied to the gasket, not to the flange. The gasket should not extend into the ID (Internal Dimension) of the flange but be evenly centered on the flange face.
- 3. Install the bolts and nuts, all facing in the same direction, with the nuts on the side of easiest access for tightening and inspection. Only tighten the nuts hand tight until all are installed and the flanges have an even gap all the way around.
- 4. Follow the correct tightening sequence when tightening nuts. The torques should be applied gradually, first approximately 20% of the desired final torque.
- 5. Inspect the assembly for an even gap around the perimeter of the flanges. Adjust for an even gap by tightening or loosening nuts as necessary. Readjust all to achieve an even gap and uniform torque at around 20% of the desired level. Remember, all tightening should be done in the specified sequence.
- 6. Repeat that step, taking the torque to between 50% and 70% of the desired torque level. Again inspect for an even gap and adjust as necessary.
- 7. Repeat this step, taking the torque to 100% of the desired level and inspect for evenness, adjusting if necessary.
- 8. Repeat this step once more, again torquing all nuts to 100% of the desired level.
- 9. If possible, wait several hours, then re-torque all nuts using the correct sequence. This will overcome any loosening brought on from gasket creep.