Kelso Technologies – Kelso One-bolt Manway Quick Points

General Operation

The Kelso One-bolt Manway system is a robust system that requires a minimal amount of maintenance. Designed to withstand the most severe of conditions and events, the following activities are recommended to ensure proper performance for the life of the product. Please refer to the Kelso One-bolt Manway System Maintenance Manual for additional details concerning maintenance and operation.
For questions concerning the Kelso One-bolt Manway System please contact Kelso Engineering at (903) 583-9200.

Note:
Should any questions present themselves between this document and the Maintenance Manual always defer to the Maintenance Manual.
Always evaluate the need for, and utilize, proper Personal Protective Equipment (PPE) when conducting the following activities.

Product Preparation (Pre Install)

All sliding surfaces (flange and inside of straps) must be protected from media blast used in surface preparation as well as paint overspray.

- Tee Bolts, Fasteners and must be protected from media blast used in surface preparation as well as paint overspray.
- The serrations located on the top edge of the nozzle and lid must be protected from weld slag, media blast material, paint overspray, and other impact damage. The unit is supplied with foam protection which may be utilized throughout installation.

Product Preparation (Post Install)

- Thoroughly clean the inside surfaces of the straps and the top and bottom surfaces of the flanges. Use a cotton cloth and general shop degreaser to perform this function.
- Apply a liberal amount of Kelso lubricant (or equivalent moly lube) to the inside surfaces of the straps and also on the top/bottom sides of the flange.
- Thoroughly clean the threads of the Tee bolt and Hex nut. Use a cotton cloth and general shop degreaser to perform this function.
- Apply a liberal amount of Kelso lubricant (or equivalent moly lube) to the entire length of the Tee Bolt as well as the hex nut that the Tee Bolt attaches to.
- Using compressed air at low volume blow out the serrations on the lid and nozzle of the Klincher system.

Gasket Install

Prior to installing the gasket into the Kelso One-bolt Manway system the following actions should be performed to ensure proper seating of the seal.

- Wipe both top and bottom sides of the seal using a clean lint free rag.
- Inspect the serrated surfaces on the nozzle and on the lid to ensure that there is no debris or damage in the seal surface.
- Gently install the seal to prevent any damage to the serrations or to the seal itself.

Proper Closing Technique

Proper care must be used when closing the Klincher system in order to avoid damage or injury to the operator. The following recommendations are provided as a guide to prevent injury or damage. Refer to the Kelso One-bolt Manway Maintenance Manual for more information.

- Ensure that the strap assemblies are pushed back and away from the nozzle allowing the lid to close without interference.
- Standing in front of the Klincher grasp the handle mounted on the lid with both hands. Slowly pull the lid forward lowering it down to the flange surface.
- Once the lid has been lowered to the nozzle, starting from the rear of the manway pull the strap assemblies forward and in towards the flange until the strap assemblies are in contact with the flange and the lid.
- Grasping the Tee Bolt and Hex Nut, pull them forward until they are engaged. Apply three to four full turns by hand to engage properly.
- Torque coupling to 50% of the torque specification; then use a rubber mallet to tap the strap assemblies at the 2, 5, 8 and 10 o'clock positions. Continue to torque to 75% of the torque specification. Repeat the tapping process and torque to 100% of the specification. This process is to ensure conformity of the straps to the cover. After initial installation by OEM or retrofit repair shop this process may be repeated, but is not required.
  - Torque values identified are suggested. An additional 50 ft. lbs. of torque may be applied in 25 ft. lb. increments.
  - If sealing cannot be achieved, for any reason, do not over torque. Simply reset gasket and repeat sealing procedure.

Gasket Material Class/ Family	Torque (ft.-lbs.)	Various Brand Names
Elastomeric (soft)	150 ft.-lbs.*	Viton® A, B & GFS, EDPM, EDPM PC, Buna-N(Nitrile)
Expanded PTFE (hard)	200-250 ft.-lbs.*	Cycle Tight®, Gore-Tex®, GR, Inertex® , SQS Garlock Gylon® 3545
Compressed non-asbestos	300-350 ft.-lbs.*	Garlock Bluegard® 3000, 3200, 3300, 3700, Klingersil® C-4401
Filled PTFE (hard)	300-350 ft.-lbs.*	Garlock Gylon® 3500, 3504, 3510, Glass Filled PTFE, VSP, PBG, Virgin Teflon®

Proper Opening Techniques

Proper care must be used when opening the Klincher* system in order to avoid damage to the system or injury to the operator. The following recommendations are provided as a guide to prevent injury or damage. Refer to the Kelso Klincher* Maintenance Manual for more information.

- **Ensure that all appropriate safety instructions, commodity hazards are fully understood and all applicable protective equipment is worn prior to opening any Tank Car. Severe injury or death can occur without proper understanding of the transported commodity.**
- Using a Kelso socket fitted to a "breaker" bar, slowly loosen the Tee Bolt and Hex Nut assembly. Continue to disengage the Tee Bolt and Hex Nut until fully disengaged and free hanging.
- Starting in front of the lid, begin to push the strap assemblies back and away from the nozzle. Continue to work from front to back until the straps are fully disengaged.
- Apply downward force on the lid handle and disengage the safety lock located directly in front of the lid. Slowly reduce pressure being applied to the lid allowing the lid to slowly rise. When internal pressure has equalized, grasp the lid handle with both hands and continue to lift the lid until it is fully opened and in the rear position.

Post Operation Inspection and Service

- Thoroughly clean the inside surfaces of the straps and the top and bottom surfaces of the flanges. Use a cotton cloth and general shop degreaser to perform this function.
- Inspect all fasteners and seal surfaces for damage.