



PACKING INJECTION INSTRUCTIONS

GENERAL - ALL PACKING CYLINDERS TYPES

1. Instructions in this section must be read and fully understood by all maintenance personnel servicing the P2 Ball or TP2 Thermal Pak Slip-Type Expansion Joints prior to injecting packing plugs

Thermal insulation must be removed from the TP2 slip/stuffing box or ball joint to allow the exact location of the leak to be identified.

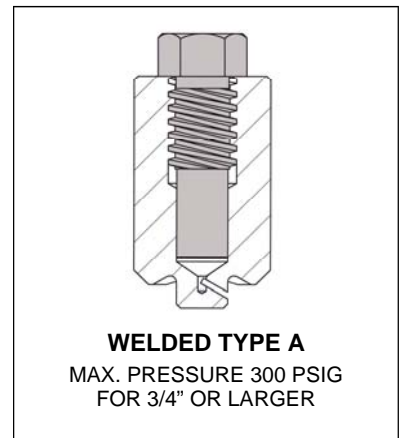
2. Inject only ATS Type "H" packing plugs. Type "H" packing plugs are compatible for use with P2 Ball and TP2 Slip-Type Expansion Joints originally furnished with ATS Type "T" packing (Teflon/Asbestos).
3. Two (2) to three (3) plugs of packing should be added first to the packing cylinder on either side of the leak. If the leak is still present, add 2-3 packing plugs to each remaining packing cylinders. The sequence for adding packing plugs should be to pack cylinders opposite each other where possible. If the leak still persists, repeat the sequence.

CAUTION: Avoid injecting an excessive quantity of packing plugs through one packing cylinder. When the leak stops add no more than one (1) or two (2) additional plugs at each packing cylinder.

4. It may not always be necessary to seal a leak 100% during the packing injection process. If a very minor leak persists after injecting packing plugs, allow the expansion joint to set for several hours or overnight to allow the newly injected packing to adjust to the operating temperature. Thermal expansion of the new packing will often seal a minor leak. Re-check the slip joint or ball joint and if leakage still exists, inject additional packing plugs.
5. It is important to fully seat the packing plunger after each packing plug is injected. Following the injection of the last plug in each packing cylinder, fully seat the plunger then back out the plunger 1/4 turn.

INSTALLATION: TYPE "A" PACKING CYLINDERS ONLY

1. Using a 1-1/8" hex socket, remove the packing plunger from the packing cylinder nearest the leak and lubricate the threads with an anti-seize compound or equivalent lubricant.
2. Difficulty in injecting the first packing plug through Type "A" packing cylinders may be encountered. This is due to the column of impacted packing that remains in the cylinder from previously injected packing. Do **NOT** use excessive force to inject the first packing plug. A few drops of oil in the bottom of the packing cylinder will greatly reduce the torque required to inject packing plug at each packing cylinder. If a SAF-T-PACKER[®] was purchased, follow the instructions furnished before using this tool.
3. Place a packing plug into the packing cylinder and re-engage the packing plunger. Thread the plunger in using a 1-1/8" hex socket until the underside of the plunger's head contacts the top of the packing cylinder. **DO NOT OVER TORQUE THE PLUNGER TO INJECT THE PACKING PLUG.** If a torque in excess of 200 ft-lbs is required, follow the procedure outlined in paragraph 2.
4. Inject 2-3 plugs of packing into the packing cylinders on both sides of the leak. To identify the location of the leak it will be necessary to remove any thermal insulation necessary to expose the slip/stuffing box interface or ball joint. If this does not stop the leak, add 2-3 plugs of packing to each additional packing cylinder. If the leak still persists, repeat the sequence.



SAFETY PRECAUTION: ALWAYS BE ALERT FOR POSSIBLE BLOW-BACK WHENEVER REMOVING THE PACKING CYLINDER PLUNGER. NEVER FULLY DISENGAGE THE PACKING PLUNGER FROM THE PACKING CYLINDER IF STEAM (FLOWING MEDIA) IS OBSERVED. IF BLOW-BACK IS NOTED, RE-ENGAGE THE PACKING PLUNGER. ADDING TWO (2) OR THREE (3) PACKING PLUGS TO THE ADJACENT PACKING CYLINDERS WILL USUALLY SEAL THE BLOW-BACK TO PERMIT PACKING INJECTION IN THE PACKING CYLINDER WHERE BLOW-BACK WAS OBSERVED.

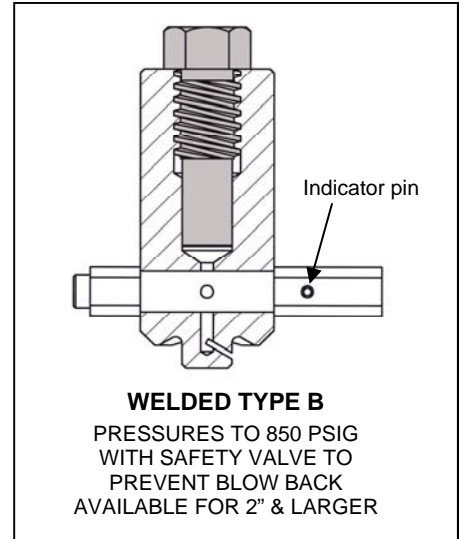


TYPE "B" PACKING CYLINDERS

1. Ensure the safety valve is in the closed position. (All valves are shipped closed from the factory.) The indicator pin located on the hex portion of the safety valve indicates the valve position - the valve is closed when the pin is horizontal. Prior to removing the packing plunger ensure the safety valve rotates. To avoid excessive torque on the valve, use two (2) 3/4" open end box wrenches - one at each end - to rotate the valve. Lubrication of the valve with DRI-SLIDE lubricant or other suitable high temperature lubricants will facilitate rotation of the valve.

CAUTION: DO NOT BY-PASS THE USE OF THE SAFETY VALVE TO SAVE TIME.

2. Difficulty in injecting the first packing plug through Type "B" packing cylinders may be encountered. This is due to the column of impacted packing that remains in the cylinder from previously injected packing. Prior to injecting the first plug of packing into a Type "B" cylinder, the Type "GB" SAF-T-PACKER must be used. Instructions for use of the SAF-T-PACKER are furnished with each purchase of the SAF-T-PACKER.
3. Ensure the safety valve is closed (pin horizontal) and disengage the plunger from the packing cylinder nearest the leak and lubricate the threads of the plunger with an anti-seize compound or equivalent high temperature lubricant.
4. Place a packing plug into the packing cylinder, re-engage the packing plunger a minimum of two threads. Rotate the valve to the open position (pin vertical). Fully engage the plunger using a 1-1/8" hex socket until the underside of the plunger's head contacts top of the packing cylinder. **DO NOT OVER TORQUE THE PLUNGER TO INJECT THE PACKING PLUG.** If a torque in excess of 200 ft-lbs is required, the packing cylinder must be cleaned out using the Type "GB" SAF-T-PACKER. Adding a few drops of oil to the inside of the packing cylinder will also facilitate packing injection.
5. Inject 2-3 plugs of packing into the packing cylinder on both sides of the leak. To identify the location of the leak it will be necessary to remove any thermal insulation to expose the slip/stuffing box interface or ball joint. If this does not stop the leak, add 2-3 plugs of packing to each additional cylinder. If the leak still persists, repeat the sequence. **ENSURE THE SAFETY VALVE IS ROTATED CLOSED EACH TIME THE PACKING PLUNGER IS REMOVED.**

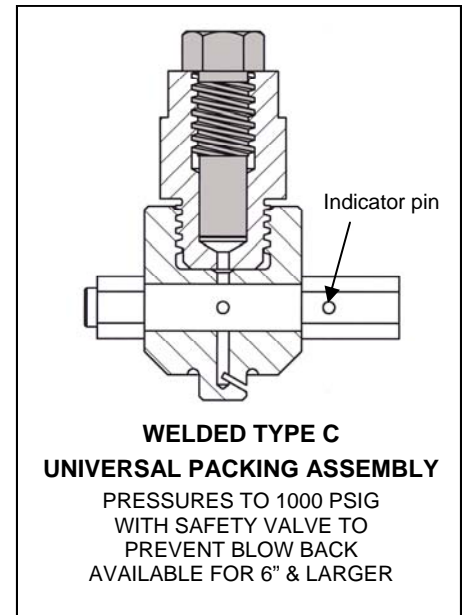


TYPE "C" UNIVERSAL PACKING CYLINDERS

1. Ensure the safety valve is in the closed position. (All valves are shipped closed from the factory.) The indicator pin located on the hex portion of the safety valve indicates the valve position - the valve is closed when the pin is horizontal. Prior to removing the packing plunger ensure the safety valve rotates. To avoid excessive torque on the valve, use two (2) 3/4" open end box wrenches - one at each end - to rotate the valve. Lubrication of the valve with DRI-SLIDE lubricant or other suitable high temperature lubricants will facilitate rotation of the valve.

CAUTION: DO NOT BY-PASS THE USE OF THE SAFETY VALVE TO SAVE TIME.

2. Difficulty in injecting the first packing plug through Type "C" packing cylinders may be encountered with the first packing plug. This is due to the column of impacted packing that remains in the cylinder from previously injected packing. Prior to injecting the first plug of packing into a Type "C" cylinder, the Type "GC" SAF-T-PACKER must be used. Instructions for use of the SAF-T-PACKER are furnished with each purchase of the SAF-T-PACKER.
3. Ensure the safety valve is closed (pin horizontal) and disengage the plunger from the packing cylinder nearest the leak and lubricate the threads of the plunger with an anti-seize compound or equivalent high temperature lubricant.





TYPE "C" PACKING CYLINDERS CONTINUED.

4. Place a packing plug into the packing cylinder, re-engage the packing plunger a minimum of two threads. Rotate the valve to the open position (pin vertical). Fully engage the plunger using a 1-1/8" hex socket until the underside of the plunger's head contacts top of the packing cylinder. **DO NOT OVER TORQUE THE PLUNGER TO INJECT THE PACKING PLUG.** If a torque in excess of 200 ft-lbs is required, the packing cylinder must be cleaned out using the Type "GC" SAF-T-PACKER. Adding a few drops of oil to the inside of the packing cylinder will also facilitate packing injection.
5. Inject 2-3 plugs of packing into the packing cylinder on both sides of the leak. To identify the location of the leak it will be necessary to remove any thermal insulation to expose the slip/stuffing box interface or ball joint. If this does not stop the leak, add 2-3 plugs of packing to each additional cylinder. If the leak still persists, repeat the sequence. **ENSURE THE SAFETY VALVE IS ROTATED CLOSED EACH TIME THE PACKING PLUNGER IS REMOVED.**

TYPE "A" THREADED CYLINDERS (FOR SERIES S2 BALL JOINTS ONLY)

1. Type "A" threaded packing cylinders are intended for use only on our Series S2 ball joints which are originally provided without packing cylinders. The packing cylinders are installed in place of the 1/2" NPT plugs at the factory fill connections. One threaded packing cylinder; with plunger; should be purchased for each fill connection. Once installed they function essentially the same as standard type "A" packing cylinder.

Caution: Prior to installing the threaded packing cylinders, the system must be fully depressurized.

2. Ensure that the system has been depressurized prior to removing the plugs at the factory fill connections.
3. Lubricate the threads on the packing cylinders with an anti-seize compound or equivalent lubricant. Using a 1-5/8" wrench install one threaded packing cylinder at each factory fill connection.
4. Using a 1-5/8" wrench hold the packing cylinder from unthreading while using a 1-1/8" hex socket to remove the packing plunger from the packing cylinders nearest the leak and lubricate the threads with an anti-seize compound or equivalent lubricant.
5. Place a packing plug into the packing cylinders and re-engage the packing plungers. Thread the plunger in using a 1-1/8" hex socket until the underside of the plunger's head contacts the top of the packing cylinder. **DO NOT OVER TORQUE THE PLUNGER TO INJECT THE PACKING PLUG.** If a torque in excess of 200 ft-lbs is required a few drops of oil in the bottom of the packing cylinder will greatly reduce the torque required to inject packing plug.
6. Inject 2-3 plugs of packing at each packing cylinders on both sides of the leak. To identify the location of the leak it will be necessary to remove any thermal insulation necessary to expose the ball end of the joint.
7. Re-pressurize the system and check for leaks. If the leak still persists, repeat the sequence.
8. Once the leak has been stopped the threaded packing cylinders can be left in place for future use or removed for use at a different location.

Caution: Prior to removing the threaded packing cylinders, the system must be fully depressurized.

9. Prior to reinstalling the factory fill connection plugs lubricate the threads with an anti-seize compound or equivalent lubricant.

