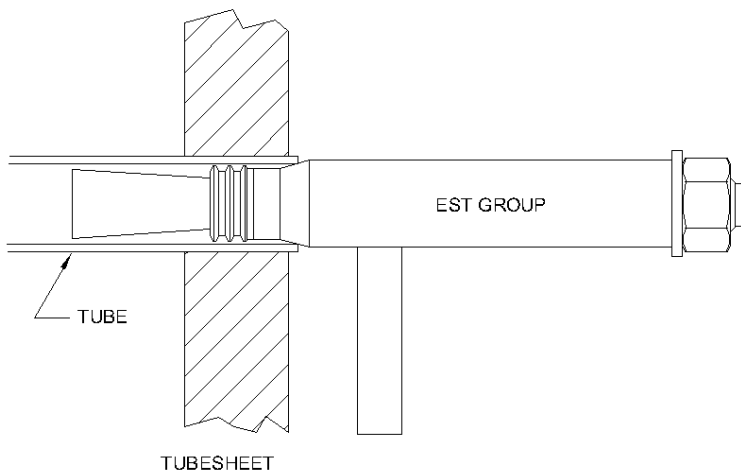


POP-A-PLUG® OUTER PERIMETER TOOL INSTALLATION INSTRUCTIONS

THE OUTER-PERIMETER TOOL (OPT), HAS BEEN SPECIFICALLY DESIGNED TO INSTALL POP-A-PLUGS IN CONDENSER/HEAT EXCHANGER TUBES WITH LIMITED RADIAL OR OVERHEAD CLEARANCE. THE REACTION ARM WILL BEAR AGAINST PARTITION PLATE OR CHANNEL HEAD DURING INSTALLATION PROCEDURE, AS SHOWN IN FIGURES 1 & 2.

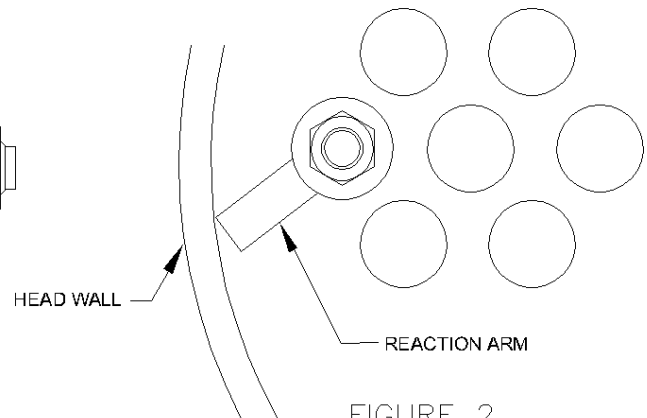
WARNING!

- **IMPORTANT: FOLLOW ALL INSTRUCTIONS FOR TUBE PREPARATION AND PLUG SIZING THAT ACCOMPANY THE CPI/PERMA OR P2 POP-A-PLUG TO BE INSTALLED.**
- **FAILURE TO PROPERLY PREPARE THE TUBE AND USE THE CORRECT SIZE PLUG WILL RESULT IN PLUG FAILURE.**
- **BEFORE USING THESE INSTRUCTIONS REFER TO EITHER EST DOCUMENTS DC4010 (NOTES 1-5) OR DC4000 (NOTES 1-10) WHEN INSTALLING P2 POP-A-PLUGS OR EST DOCUMENT DC1220 (NOTES 1-4) WHEN INSTALLING CPI/PERMA PLUGS.**
- **IF YOU DO NOT HAVE THE ABOVE INSTRUCTIONS, PLEASE CONTACT EST CUSTOMER SERVICE.**
- **BE SURE THE REACTION ARM CONTACTS THE HEAD WALL OR DIVIDER PLATE AND NOT ON AN INSTALLED PLUG.**



TUBESHEET

FIGURE 1



HEAD WALL

REACTION ARM

FIGURE 2

PLUG INSTALLATION STEPS

1. It is recommended that plugs are installed with the OPT in the tubes closest to the head wall/divider plate first to avoid any interference with installed plugs. If reaction arm of tool cannot contact head wall/plate, use vice grips on the back of the tool body to keep the tool from spinning.
2. Slip the antigall washer over the threaded section of the pull rod and engage hex nut onto pull rod by several turns by rotating hex nut clockwise (Refer to Figure 3). Insert this assembly into the back end of the tool body. Fully engage the male thread of the Pop-a-Plug into pull rod by rotating clockwise then loosen plug by 2 full turns by rotating the plug counterclockwise. The plug is loosened to prevent any torsion loads from being accidentally transmitted to the breakaway. A torsion load will cause premature fracture of the breakaway and will lead to an improperly installed plug. Hand tighten hex nut by rotating clockwise to remove slack in assembly.



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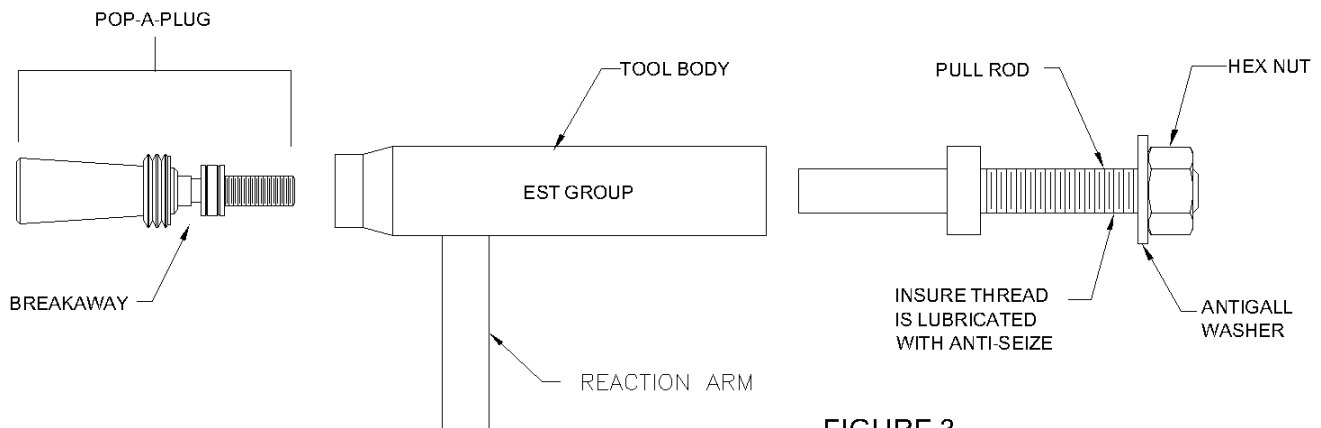


FIGURE 3

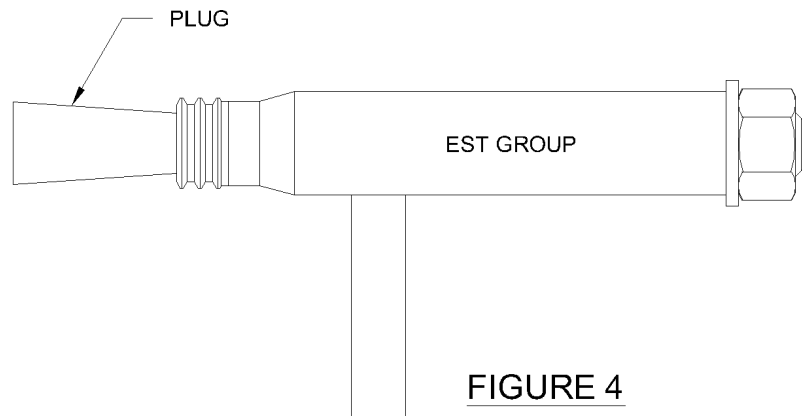


FIGURE 4

- Fully insert plug into the tube that needs to be plugged until tool body rests against the tube. The ring section of the plug must remain positioned within the tubesheet area (Refer to Figure 1). Rotate tool so that reaction arm is resting on the head wall (Refer to Figure 2). Begin installation by tightening hex nut on the back of the tool in a clockwise motion. A box end ratchet wrench or socket wrench is recommended. Keep forward pressure on tool assembly while tightening. Be sure to keep the plug and tool body straight throughout installation. Continue tightening until breakaway fractures.

WARNING! COCKING THE PLUG OR SIDE LOADS MAY CAUSE PREMATURE BREAKAWAY FAILURE RESULTING IN PLUG FAILURE.

- Pull tool assembly straight back from tubesheet. Withdraw pull rod from tool body and remove breakaway section from pull rod and retract hex nut to original location for next installation. Remove the remaining piece of the Breakaway from the end of the tapered pin of the plug by gently unscrewing it with needle nose pliers or the rubber eraser from a wooden pencil. Discard the breakaway remnant.

Onsite Training and Installation Services are available by contacting EST Customer Service.

QUESTIONS? Contact EST Group Customer Service at any of the following locations with questions.

In USA and Canada: tel: 800-355-7044, fax: 215-721-1101, e-mail: est-info@curtisswright.com

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