Pop-A-Plug® P2
Heat Exchanger Tube Plugging System

Description
The Pop-A-Plug P2 heat exchanger tube plug is the most reliable, cost effective tube plugging solution available. Unlike hammered in, tapered plugs that need to be replaced every 5-7 years, once Pop-A-Plugs are installed they will remain leak tight throughout your heat exchanger’s life cycle. In service for 20 years, the P2 is a proven long-term performer in fossil and nuclear power station heat exchanger units operating at pressures up to 7000 PsiG (483 BarG).

In addition, EST Group’s Pop-A-Plug meets ASME PCC-2-2011 and Electric Power Research Institute (EPRI) permanent tube plug selection criteria.

The Pop-A-Plug P2 tube plugging system is the only plug that features patented Internally Serrated Sealing Rings designed to maintain a helium leak-tight seal under extreme thermal and pressure cycling throughout the heat exchanger’s life cycle.

The Result: Pop-A-Plugs have the lowest lifecycle cost of any tube plugging system.


Applications
• Feedwater Heaters
• Shell and Tube Heat Exchangers
• Fin-Fan Air Cooled Heat Exchangers
• Reboilers

Competitive Advantage
• Quick installation – plug installation time less than 15 seconds, maximizing plant uptime.
• Permanent and Reliable - engineered for optimal performance throughout the heat exchanger’s life cycle.
• Metal to metal sealing eliminates plug degradation concerns due to thermal expansion and corrosion resulting from galvanic interaction between the plug and tube.
• Safer and more cost effective than welding tapered pins or explosive plugs.
• Controlled, repeatable installation minimizes installer fatigue and eliminates the need to enter confined spaces during plug installation.

Features and Benefits
• Enduring performance comparable to explosive or welded tube plugs at a fraction of the cost.
• Faster installation times.
• Reduced manpower needed for plugging operations. Pop-A-Plug requires only 1-2 installers, freeing up your welders for more important work.
• Proven long-term performer in combined cycle, coal and nuclear power stations.
• Design that features patented Internally Serrated Sealing Rings to maintain a helium leak-tight (1x10^-10 cc/sec) seal under extreme thermal and pressure cycling.
• Installation does not damage tube end, tubesheet or tube joints like hammered in, tapered plugs.
• Eliminates welding and the need for time consuming pre-heat and post-weld stress relieving.

QA and Product Certifications
• ISO 9001: Quality Program
• TÜV Nord Suitability and Type Test Certification
• NUPIC Approved Supplier
• Cited in ASME PCC-2 as an accepted permanent heat exchanger tube plugging method
Quick Installation

- Verify heat exchanger information (tube size, tube I.D., tube material, pressure, temperature).
- Remove weld droop with Tapered Reamer if necessary.
- Gage the tube I.D. with Go/No-Go Gage to confirm proper sizing.
- Use Tube Preparation Brush to remove pitting and tube defects and roughen tube surface to maximize pressure hold capability of Pop-A-Plug P2.
- Gage the tube I.D. with Go/No-Go Gage to confirm correct plug size for prepared I.D.
- Assemble Hydraulic Ram and Pump.
- Select Pull Rod Assembly and thread Pop-A-Plug P2 onto it.
- Insert Pop-A-Plug P2 in the expanded portion of the tube end within tubesheet and activate Hydraulic Ram to install.
- The Pop-A-Plug P2 is properly installed when Breakaway “Pops” and separates from Pull Rod Assembly.
- Remove Breakaway stub from the installed Pop-A-Plug P2.

Specs/Material

Inventory of Pop-A-Plug P2 plugs is maintained to fit tube I.D. sizes from 1/2 " to 1 1/2 " (12.7 - 38.1 mm). The Pop-A-Plug P2 has been engineered for applications larger and smaller in size. Materials available from inventory include:

- Carbon Steel
- SS 316/316L
- Brass
- Titanium
- CuNi 70/30
- Monel
- SS 304/304L
- CuNi 90/10
- Chrome Moly 4142
- Chrome Moly F5/F9/F11/F22
- AL6XN
- SS 317L/321/347
- SS 400 Series Alloys
- SS 904L
- SS 254 SMO
- SS 20CB3/Alloy 20
- Duplex SS
- Super Duplex SS
- Inconel Alloys
- Incoloy Alloys
- Hastelloy Alloys
- Nickel 200/201
- Zirconium
- Carbon Steel A350 LF2
- AL6XN
- SS 317L/321/347
- SS 400 Series Alloys
- SS 904L
- SS 254 SMO
- SS 20CB3/Alloy 20
- Duplex SS
- Super Duplex SS
- Inconel Alloys
- Incoloy Alloys
- Hastelloy Alloys
- Nickel 200/201
- Zirconium
- Carbon Steel A350 LF2

Pop-A-Plugs are currently available in over 35 alloys. Contact EST Group if materials other than those listed above are needed. EST Group provides emergency manufacturing services 24 hours a day/7 days a week to meet your specific plugging needs.

FAQs

Q Can the Pop-A-Plug P2 and tube materials be different?
A No. The plug and tube materials must closely match to accommodate thermal expansion and avoid problematic galvanic interaction.

Q What is the minimum quantity of Pop-A-Plug P2s that can be ordered?
A Pop-A-Plug P2s are sold in kits that contain ten (10) plugs, one (1) Go/No-Go Gage and one (1) Tube Preparation Brush Kit.

Q Do the tubes need to be prepped before the Pop-A-Plug P2s can be installed?
A Yes. Preparing the tubes sizes and returns concentricity to them while also providing the ideal surface needed to achieve a leak tight seal.

Q What is the average amount of time required to install a Pop-A-Plug P2 after the tube is prepped?
A The average amount of time for the Hydraulic Ram to do a full stroke and pop the breakaway is less than 15 seconds.

Q What is the max pressure rating of the Pop-A-Plug P2?
A The Pop-A-Plug P2 is rated to handle pressures up to 7000 PsiG (483 BarG), size and material dependent.

Q Does a Pop-A-Plug P2 damage the tube or tube joint that it’s plugging?
A No, the Pop-A-Plug P2 can be installed and removed w/o damaging your tubes or tubesheet joints.

Q Is it possible to remove a Pop-A-Plug P2 after it has been installed?
A Yes, with the use of the EST Group Plug Removal Tool, a Pop-A-Plug P2 can be removed in a few simple steps.