

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.

As a permanent tube plugging solution, Pop-A-Plug's "once and done" installation process maximizes plant uptime. Just Set 'em and Forget 'em.

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.



EST Group's Job Box program increases plant uptime by providing you with all the installation tools and plugs you need on site and ready to use prior to any planned outage or emergency.

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:

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

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.

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