

Condenser Tube Plugging with High Confidence (Patented Technology)

Presented by:
Conco Services Corp.



Achieve Legendary Success
CHANGE YOUR WORLD





The Significance of Condenser Tube Plugging

- Condenser reliability and availability
- The real cost of condenser tube failure
 - Damage to major plant components
 - Contamination of high purity steam
 - Loss of MW production and revenue





A Plug for Every Tube

When you need to seal off a leaking or damaged tube Conco is your one-stop source

- Multiple designs
- Variety of materials
- Configuration for any condenser specification





Determining the Correct Plug

From the condenser manufacturer's data sheet determine the correct plug

- Tube size and tube/tubesheet materials
- Maximum operating pressure and temperature
- Purpose and location of plug





Plug Specifications

Sized to specific Tube O.D., I.D. and BWG

Materials must not have galvanic reaction with Tube wall or Tubesheet

Certified to withstand maximum operating pressure and temperature

Designed to match application

- Tube and/or tubesheet plugging
- Temporary or permanent plugging
- Plugging coated tubes/tubesheets
- Placed flush with or recessed past tubesheet
- Placed deep inside tube



Type of Plugs

- High Confidence
- Expanding
- Fiber
- Pin and Pin and Collar





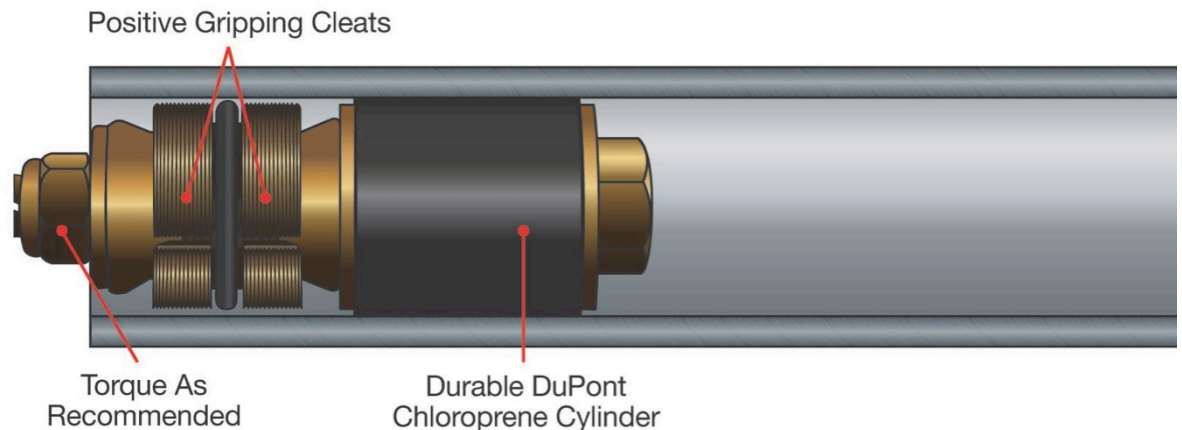
Common Characteristics

- Temporary or permanent plugging
- Compatible with coated tubes and tubesheets (except Fiber, Pin and Pin and Collar)
- Tested under pressure, temperature and vibration conditions common in the steam surface condenser
- Metal components available in titanium, 304 and 316 stainless steel, brass and bronze



High Confidence Tube Plugs

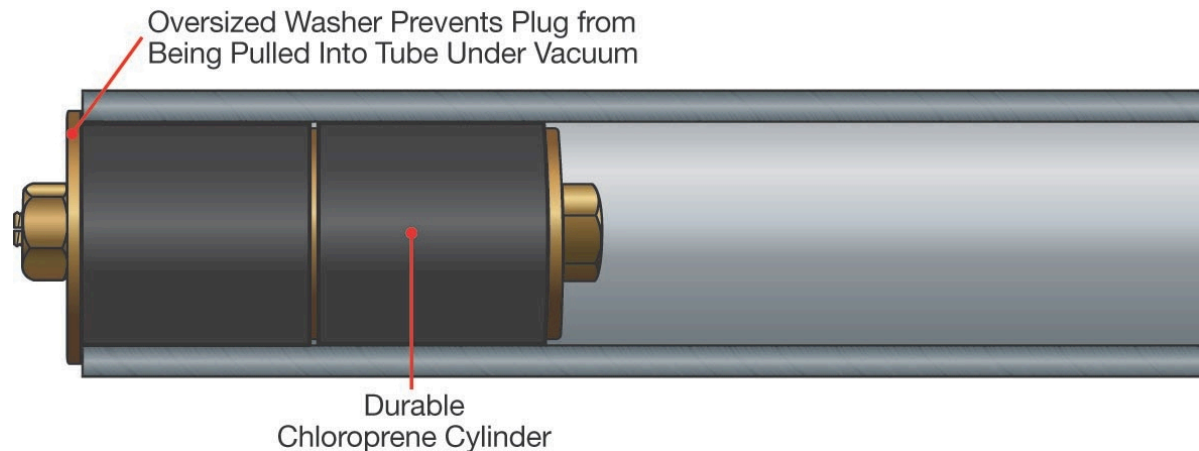
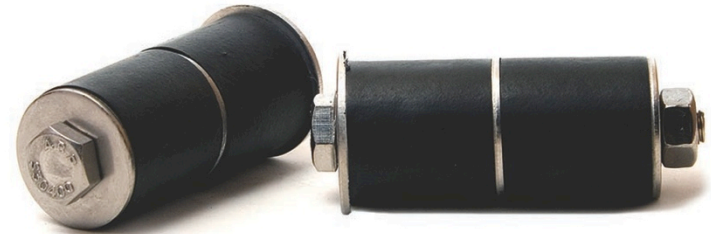
- For $3/4$ " (19 mm) through $1\frac{1}{4}$ " (32 mm) O.D. tubes
- Separate gripping and sealing designs
- Wrench or socket torques plug into position
- Serrated adjustable cleats for positive gripping action
- Chloroprene cylinder expands to seal tube
- Tested to 1,000 PSI (69 BAR) and 200° F (93° C)





EX-3 Expanding Tube Plugs

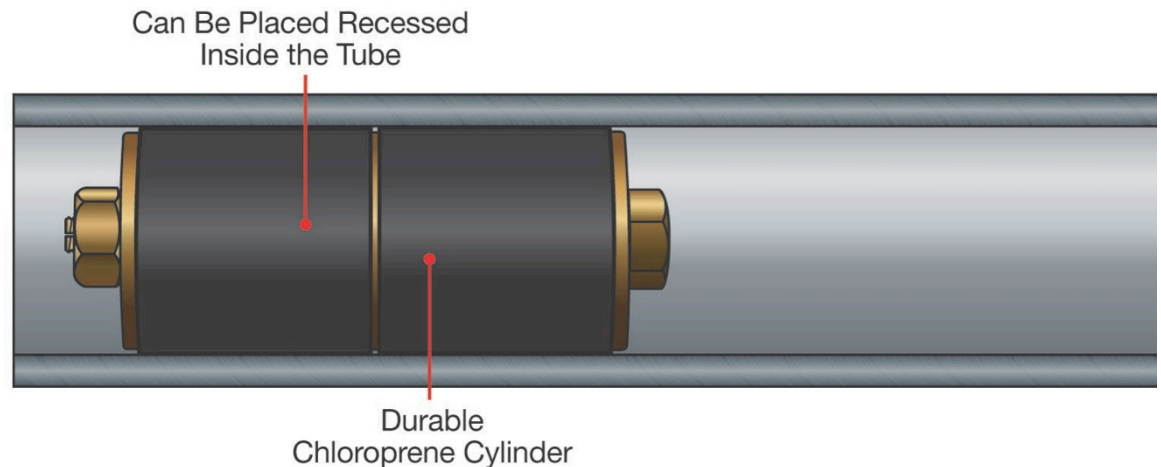
- For $\frac{5}{8}$ " (16 mm) through $1\frac{1}{4}$ " (32 mm) O.D. tubes
- Large outer washer holds plug flush with tubesheet
- Wrench or socket torques plug into position
- Chloroprene cylinders expand to seal tube
- Tested to
150 PSI
(10 BAR)
and 200° F
(93° C)





EX-4 Expanding Tube Plugs

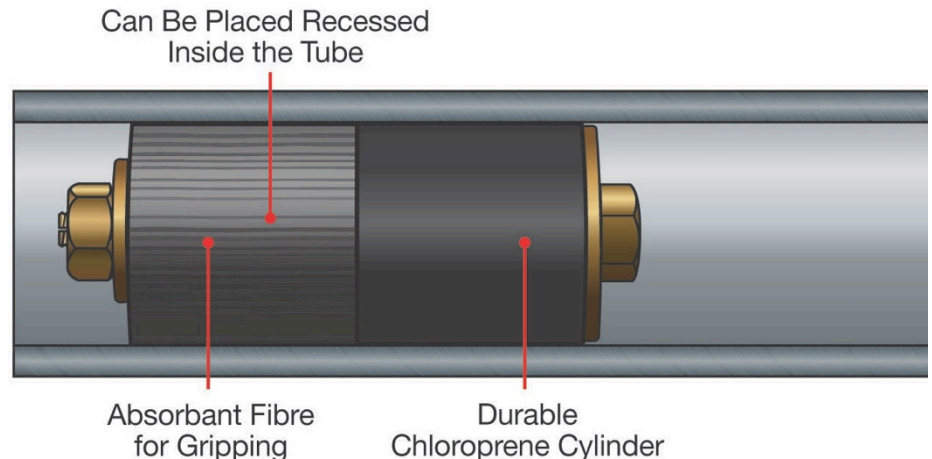
- For $\frac{5}{8}$ " (16 mm) through $1\frac{1}{4}$ " (32 mm) O.D. tubes
- Can be recessed past tubesheet
- Wrench or socket torques plug into position
- Chloroprene cylinders expand to seal tube
- Tested to 150 PSI (10 BAR) and 200° F (93° C)





EX-F Expanding Tube Plugs

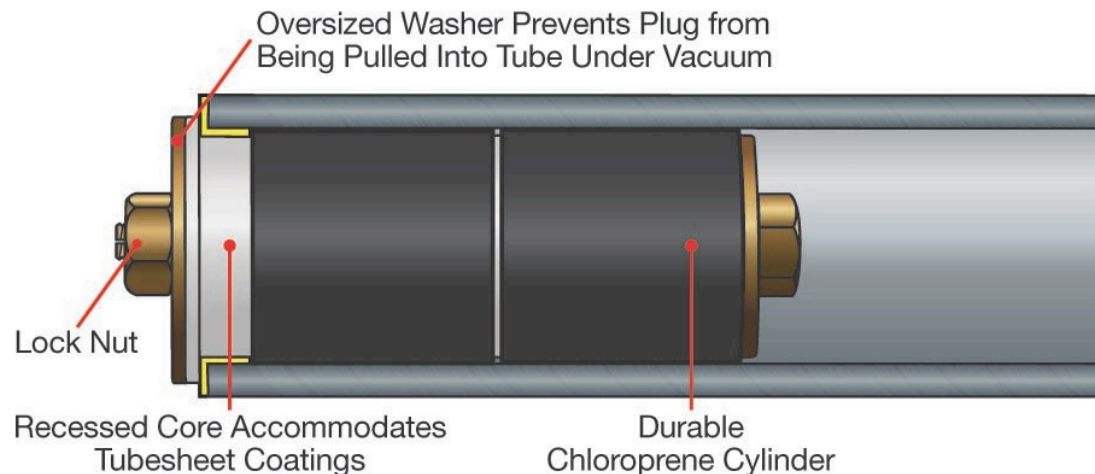
- For $5/8$ " (16 mm) through $1\frac{1}{4}$ " (32 mm) O.D. tubes
- Can be recessed past tubesheet
- Separate gripping and sealing designs
- Wrench or socket torques plug into position
- Vulcanized cloth fiber expands when wet for positive gripping action
- Chloroprene cylinder expands to seal tube
- Tested to 400 PSI (28 BAR) and 200° F (93° C)





Custom Expanding Tube Plugs Produced for EDF

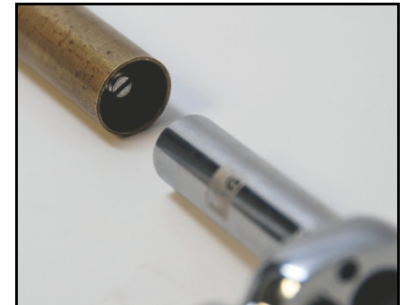
- For $\frac{3}{4}$ " (19 mm) O.D. tubes
- Large outer washer holds plug flush with tubesheet
- Lock nut provides secure installation
- Wrench or socket torques plug into position
- Chloroprene cylinder expands to seal tube
- Tested to 150 PSI (10 BAR) and 200° F (93° C)





Installation of EX-3, EX-4, EX-F and Custom Expanding Tube Plugs

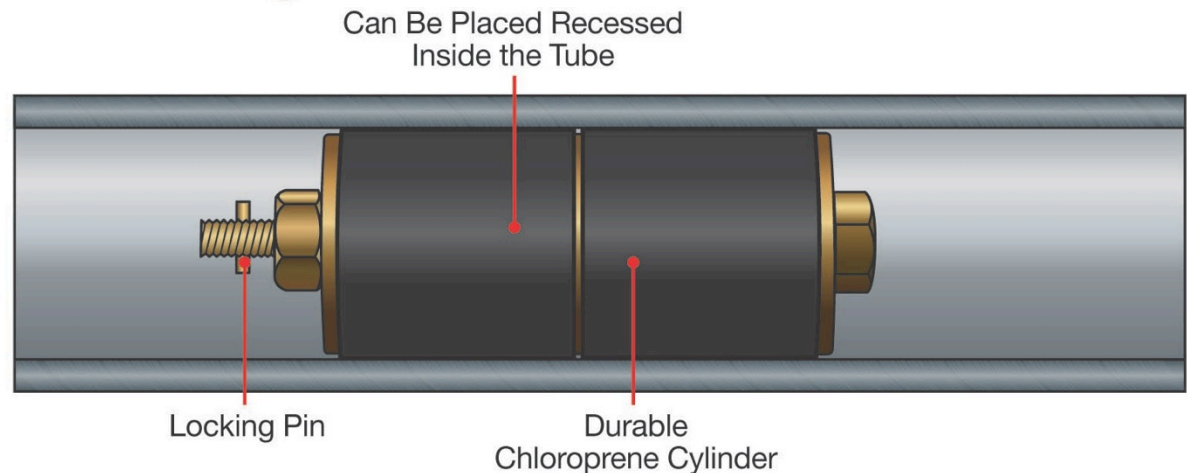
- Clean and dry the last 3" of the tube
- Expand the Chloroprene cylinder(s) for a snug fit
- Insert the plug into the tube
 - Washer flush with tubesheet (EX-3 and Custom)
 - Plug recessed below tubesheet (EX-4 and EX-F)
- Tighten the nut firmly
- Use a torque wrench to verify torque is not above 150 inch pounds





Rapid Installation Expanding Tube Plugs

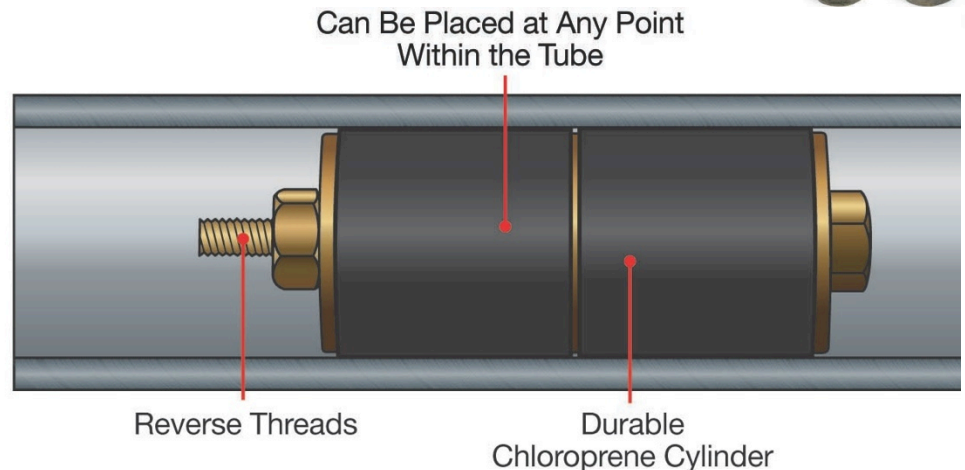
- For 1" (25 mm) through 1¹/₄" (32 mm) O.D. tubes
- Plug thread pin locks onto application tool for placement
- Can be recessed past tubesheet
- Application tool torques plug into position
- Chloroprene cylinder expands to seal tube





Reverse Thread Expanding Tube Plugs

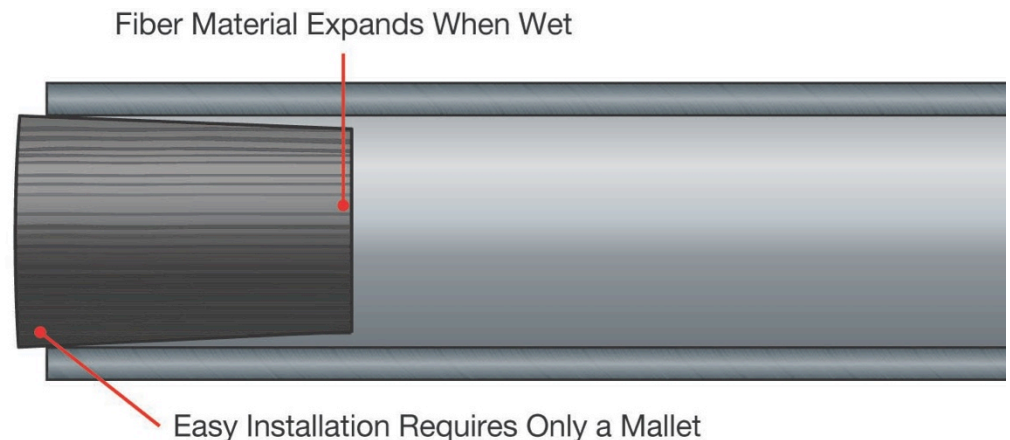
- For $5/8$ " (16 mm) through $1\frac{1}{4}$ " (32 mm) O.D. tubes
- Plug reverse threads onto application tool for placement
- Application tool torques plug into position
- Can be placed at any point within the tube
- Chloroprene cylinder expands to seal tube
- Tested to 150 PSI (10 BAR) and 200° F (93° C)





Fiber Tube Plugs

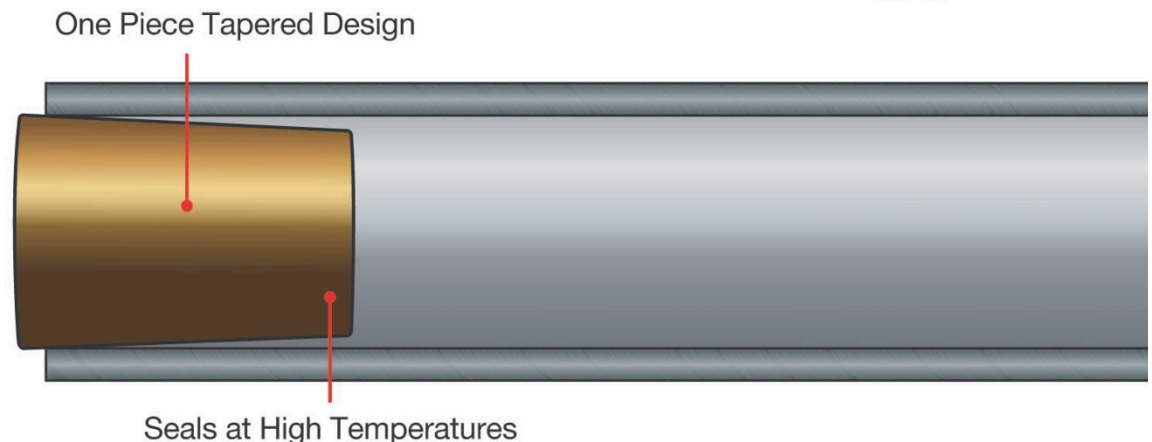
- For $\frac{5}{8}$ " (16 mm) through $1\frac{1}{4}$ " (32 mm)
- Made of vulcanized cloth fiber rod
- Hammered into position
- Vulcanized cloth fiber expands when wet for increased gripping and sealing action
- Tested to 400 PSI (28 BAR) and 230° F (110° C)





Pin Tube Plugs

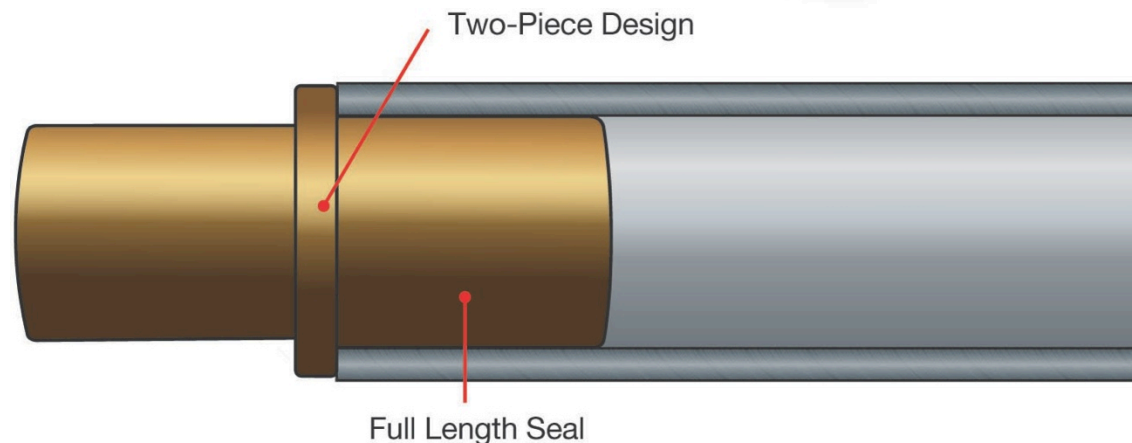
- For $\frac{5}{8}$ " (16 mm) through $1\frac{1}{4}$ " (32 mm) O.D. tubes
- Hammered into position
- Can be welded into place
- Machined to exact specifications
- Tested at high pressures and temperatures



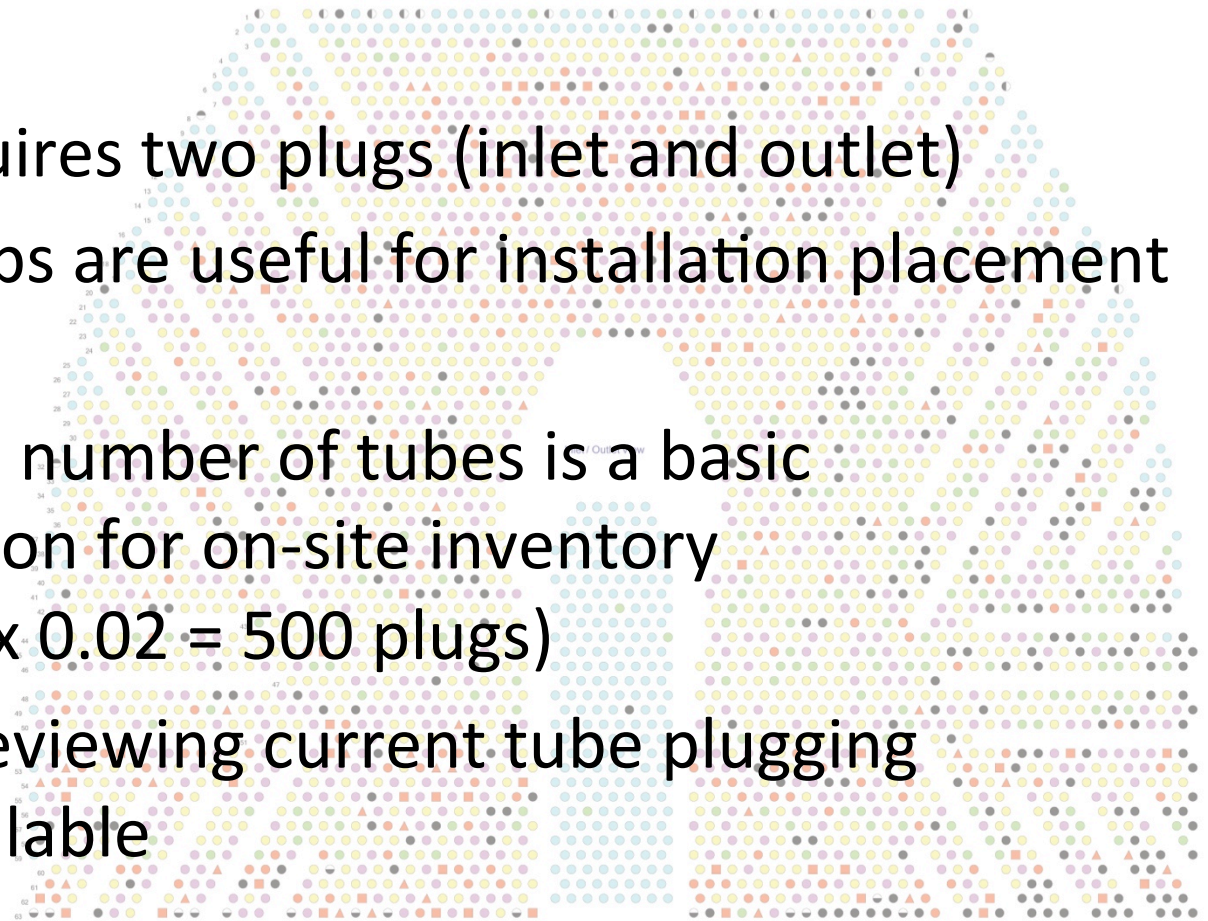


Pin and Collar Tube Plugs

- For $\frac{5}{8}$ " (16 mm) through $1\frac{1}{4}$ " (32 mm) O.D. tubes
- Hammered into position
- Can be welded into place
- Machined to exact specifications
- Tested at high pressures and temperatures
- Can be used to seal tubesheet holes





- 
- requires two plugs (inlet and outlet)
dots are useful for installation placement
number of tubes is a basic
on for on-site inventory
($500 \times 0.02 = 500$ plugs)
reviewing current tube plugging
table

Database: Main Condenser



Safe, Quality Products and Services...
BEYOND EXPECTATIONS!

Conco Services Corp.

530 Jones Street

Verona, PA 15147

Phone 1-412-828-1166

Toll-Free 1-800-345-3476

Fax 1-412-826-8255

info@conco.net

www.conco.net

- Condenser and Heat Exchanger Tube Cleaning
- Air Cooled Condenser and FinFan Cleaning
- Plate Heat Exchanger Cleaning
- Eddy Current Testing
- Leak Detection
- Tube Plugging
- Deposit Analysis