
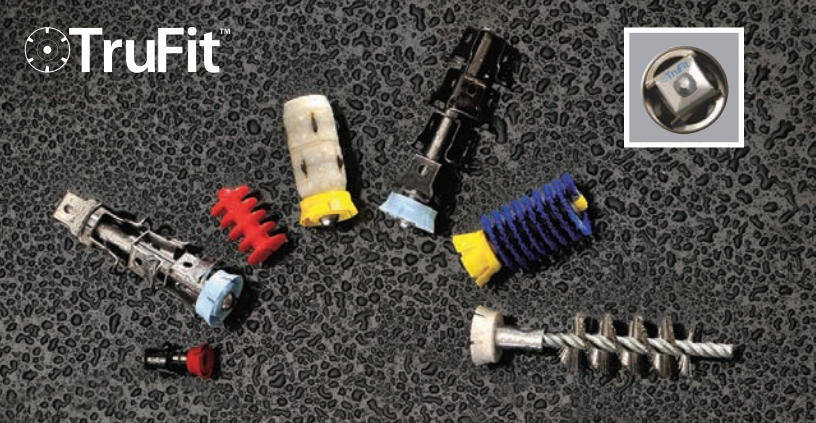
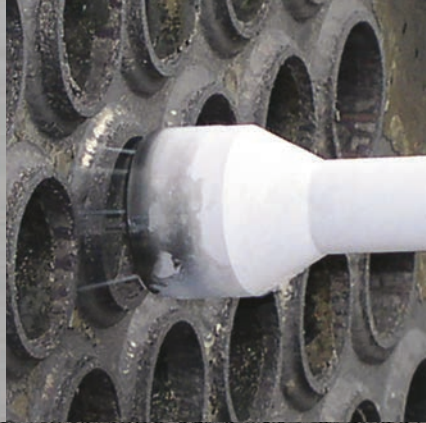


2015

- Heat Exchanger Tube Cleaning
- Air-Cooled Condenser Cleaning
- Eddy Current and Remote Field Testing
- Tracer Gas Leak Detection

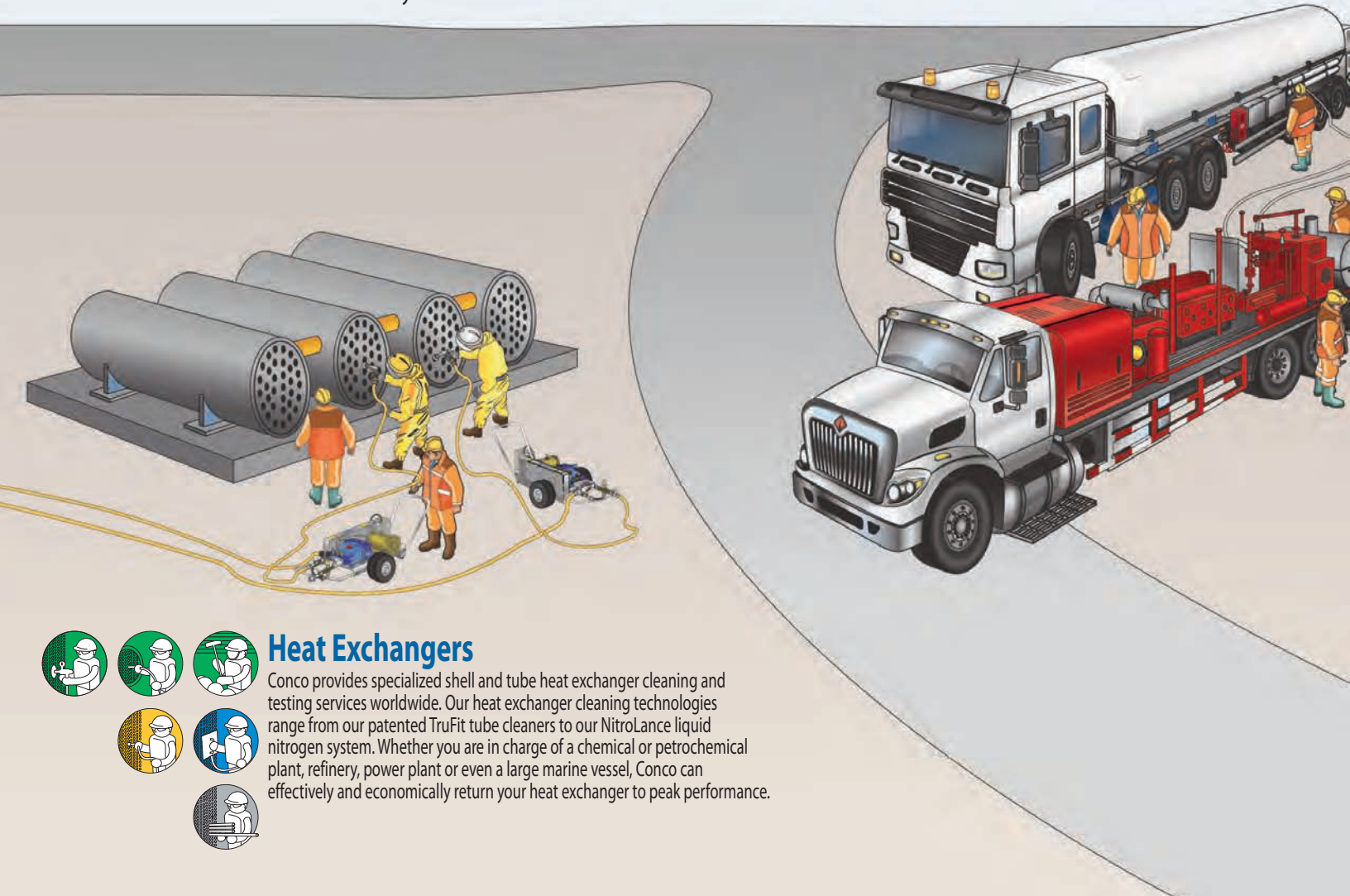


The Conco Advantage

Safety – Conco uses TruFit mechanical tube cleaners, custom fit to match tube characteristics and types of deposits, and a low pressure water stream to both propel the cleaner down the tube and flush out loosened debris. This low pressure system offers a much safer alternative to the dangers of high pressure water lancing or chemical cleaning.

Size – At Conco, we realize that both the crew size and their footprint are important to you. The smaller the crew size and the smaller their footprint, the less disruption you will experience to your plant's operations. Our crews are much smaller and take up only about a quarter of the footprint of a hydrolancing operation, helping you to keep your plant running at peak efficiency.

Speed – Mechanical tube cleaning is faster and provides for a more thorough cleaning than hydrolancing, saving you both time and money.



Heat Exchangers

Conco provides specialized shell and tube heat exchanger cleaning and testing services worldwide. Our heat exchanger cleaning technologies range from our patented TruFit tube cleaners to our NitroLance liquid nitrogen system. Whether you are in charge of a chemical or petrochemical plant, refinery, power plant or even a large marine vessel, Conco can effectively and economically return your heat exchanger to peak performance.

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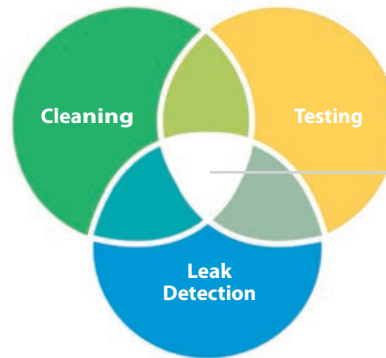
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Total Performance™

The Perfect Balance of Productivity, Reliability and Profitability



Productivity

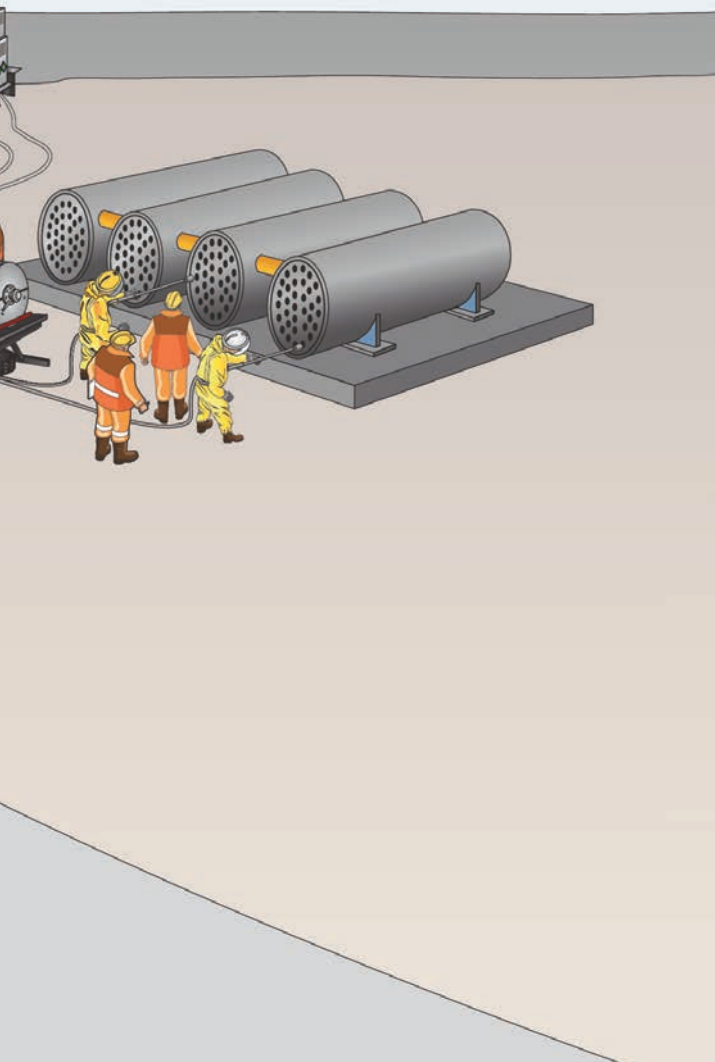
Clean condenser and heat exchanger tubes lead to improved and more effective flow and heat transfer rate, increasing overall megawatt output. Clean tubes can increase efficiency by as much as 4%.

Reliability

Impurities and leaks lead to unscheduled downtime. Tube inspection makes plant more dependable, identifying equipment fatigue and corrosion before they force unplanned outages.

Profitability

When your plant is reliable and productive, efficient energy production is high and maintenance costs are low, improving your bottom line and increasing your profits.



ProSeries™ Tube Cleaning

Our exclusive Pro Series tube cleaning system allows crews to effectively clean more tubes per shift than high-pressure water or chemical cleaning at a significantly lower cost. Our tube cleaning services are backed by 90 years of experience and a full line of our patented TruFit™ tube cleaners, uniquely designed for specific fouling and customized for a perfect fit.



Excaliber™ Flex Drive and HydroDrill™ Rotary Tube Cleaning

Both the Excaliber and HydroDrills incorporate rotary-cleaning and water-flushing actions to remove heavy wall deposits and fouling in condensers and heat exchangers. The Excaliber features a powerful 5.25 HP motor to drive a flexible shaft at speeds up to 2,500 RPM, powering off deposits and flushing tubes clean in a single, efficient operation. HydroDrill units use a rigid shaft rotating at 1,000 to 2,000 RPMs and 2 to 3 GPM of water at 200 to 300 PSI to remove hard deposits from tubes.



FinTech Air-Cooled Condenser Cleaning

Designed to clean air-cooled condensers, our FinTech ACC™ method has restored performance to units fouled with dust, dirt, debris, pollen, leaves and insects. At the heart of the FinTech ACC system is a computer-controlled 12-nozzle water jet assembly traveling on tracks, ensuring a consistent clean from start to finish.



NitroLance™ Liquid Nitrogen Cleaning

NitroLance is a highly effective and innovative solution for removing the most tenacious deposits. Harnessing the power of liquid nitrogen, the NitroLance removes difficult deposits quickly and safely without producing secondary waste or cross-contamination.



Non-Destructive Testing

Conco's staff of certified analysts and technicians offer comprehensive tube inspection services, utilizing state-of-the-art testing technology. Experienced with Eddy Current, Remote Field and Near Field Testing, Conco is recognized as an industry expert on tube failure prevention.



Tube Leakage Detection

Leaks in condenser tubes can result in contaminants and fouling flowing out of control through your system. Contaminants can change condensate chemistry, causing corrosion and cracking in the boiler, turbine or steam generator. Our crews work methodically and utilize ultra-sensitive SF₆ tracer gas and helium to find even the smallest leaks.



Air Inleakage Detection

Conco developed the industry standards for air inleakage at power plants and provides more leak detection inspections to power customers than any other company. Our technicians' years of specialized technical expertise means they can reliably locate inleakage fast.



Plugging

When your condenser or heat exchanger tubes need to be plugged, you can count on Conco to get the job done right. We offer a wide range of plugs to match any application. Conco crews are experts in plugging. In addition to providing the know-how, our staff can work with you to determine the appropriate tube plugs best suited for your project.

Conco's Distribution Network Is Worldwide
See Back Cover for Contact Information



● Conco Facility
● Conco Distributor
or Representative



Welcome to the World of Conco!

Here at Conco we have been designing and manufacturing tube cleaning tools for over 90 years. In that time our goal has never changed. Conco's aim is to be the manufacturer of the highest quality, best performing tube cleaning systems in the world. Only by using absolutely the best equipment can our service crews provide you the comprehensive unparalleled results in the safest, most effective and efficient way possible.

Our TruFit™ tube cleaners have been proven to be the safest, quickest, most effective tools in the world over and over again. Whether you need to clean tens of thousands of tubes in power plant surface condensers or hundreds of tubes in refinery and chemical plant process heat exchangers, Conco is the answer for your tube cleaning needs.

Conco's equipment is the safest. At less than 600 psi and 36 gallons per minute water propulsion, our cleaners exit the tubes at a safe, low-energy state. That means there is no longer a need for large roped off safety zones around the heat exchanger.

Requiring a foot print of only 100 to 200 square feet means many heat exchangers can be cleaned in place and the equipment can be placed close to the unit being cleaned to enhance safety and oversight.

Our cleaning systems are designed to be the most effective, worldwide. Our brushes have more and better bristles, our metal tube cleaners cover and more closely fit the radii of the tubes and our rotating equipment is designed to be much more robust than any other on the market today.

Our service crews are trained to the highest safety standards. They receive many hours of hands-on instruction in a variety of product applications and cleaning situations. Our security checks and screening programs exceed all industry standards and can be adjusted and updated to fill any custom standard your facility may require.

So call today, and enjoy the benefits of our 90+ years' experience and understanding of the operations of your facility... Quick, safe, effective tube cleaning, what Conco is all about!

Be Safe,

Ed Saxton

Chief Executive Officer

Total Performance™ For Heat Exchangers

Fast, Safe and Efficient

Conco technology is fast and effective, improving turnaround time; safer than high pressure water, reducing risk; and has a much smaller footprint, allowing for additional work to be complete near or around the component.

At Conco, we believe achieving Total Performance, the perfect balance of productivity, reliability and profitability, is attainable through a unique integration of cleaning, non-destructive testing and leak detection.

With Total Performance you can anticipate problems and keep your condenser tubes at optimum efficiency. The three-part process identifies the status of condenser tubes, detects equipment fatigue that can cause inefficiency, and cleans the tubes to improve flow and heat transfer. Together, Conco's Total Performance platform can increase efficiency by as much as 4%.



Tube Cleaning



ACC Fin-Fan Cleaning



Non-Destructive Testing



Plugging



Leak Detection

Cleaning Services

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Testing Services

Non-Destructive Testing	18 to 19
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Leak Detection Services

Tracer Gas Testing	20 to 21
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Plugging Services

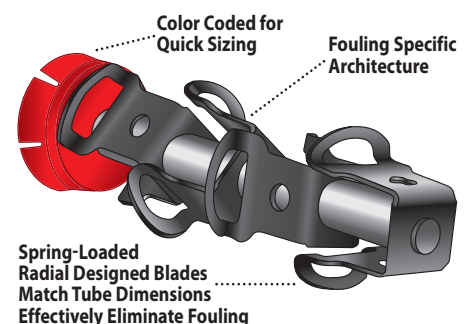
Tube Plugging	22 to 23
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Conco TruFit Tube Cleaners are custom made to match your exact tube dimensions. We offer not just one or two, but over a dozen different styles and configurations to thoroughly remove any deposit from any tube. Call today and ask how you can get a free sample of the Conco TruFit Tube Cleaner that is right for you.





CONCO INDUSTRIAL SERVICES

CLEANING • NON-DESTRUCTIVE TESTING • LEAK DETECTION • PLUGGING

Over 150 Million Tubes Cleaned and Counting

For over 90 years Conco has designed and developed heat exchanger tube cleaners that have set the industry standards. Our tube cleaners feature TruFit™ technology, a system that uses custom sized tube cleaners propelled by safe 300 PSI water pressure to give tubes an exceptional clean. In addition to our exclusive line of tube cleaners and plugs, we have developed tracer gas leak detection technology and fully integrated our non-destructive testing services. We have introduced new methods for cleaning air-cooled condensers as well as HydroDrill™ services for removing the most difficult deposits. We even pioneered the use of liquid nitrogen as a cleaning agent with our NitroLance™ cleaning service. These developments along with our many success stories have positioned Conco as the company on the cutting edge of heat exchanger tube cleaning and maintenance.



TUBE CLEANING SERVICES

With 90 plus years of experience and over 150 million tubes cleaned Conco is the leader in heat exchanger tube maintenance!

Since 1923, Conco has been an innovator for industrial heat exchanger tube cleaning services. From power generation to polymers and alumina to refineries, Conco technicians have restored efficiency and reliability to over 150 million heat exchanger tubes worldwide.

Today, Conco crews can be found cleaning tubes in facilities of all sizes and configurations including large nuclear and fossil fuel plants, petrochemical and refining companies and industrial facilities.

Conco's exclusive technology allows our crews to effectively clean more tubes per shift than high-pressure water jetting or chemical cleaning and at a significantly lower overall cost. Our tube cleaning services are backed by

over 90 years of experience and feature a full line of TruFit™ tube cleaners that can tackle anything you can throw their way. Whether your heat exchanger is fouled with hydrocarbons, chemicals, sea life or scale, Conco has the field-proven expertise to quickly and efficiently return it to optimal performance.

Regardless of your plant's size or output, Conco tube cleaning services will help you run more efficiently, improving system reliability and production. You will experience improved heat rate, increased output, improved heat exchanger performance and reduced emissions.



Fast and Effective

Conco tube cleaning services minimize down time, returning your unit to service in the briefest time possible. A large selection of Conco TruFit tube cleaners, as well as rotary brushing, drilling and other technologies are available, designed to suit site-specific deposit conditions and assure immediate removal of:

- Fouling Deposits
- Corrosion Products
- Physical Obstructions
- Tube Surface Roughness

Conco is experienced in providing tube cleaning services for all types of heat exchangers including:

- Condensers
- Heat Exchangers
- Service Water Heat Exchangers
- Feedwater Heaters
- Oil Coolers
- Sulfur Recovery Units
- Re-boilers
- Chemical Reactors

Available 24-7

Conco crews, are available 24 hours a day, 7 days a week, 365 days a year for routine maintenance or emergency situations. Our response time is second to none. We can deliver a Conco crew, complete with a supervisor, to your site within 24 hours. During emergency outages, multiple crews can be added to expedite work.

Full Service Operation

Conco's service does not stop with tube cleaning. Service options include:

- Non-Destructive Testing
- Tracer Gas Leak Detection
- High Confidence Tube Plugging



Expert Staffing Focused on Safety

Professional, quality-oriented and self-sufficient are just a few words that describe the Conco crews. They are fully certified in confined space, CPR, safety and first aid. All of our technicians are TWIC (Transportation Worker Identification Credentials) card carriers, issued by the US government. TWIC card carriers are pre screened by the US Government for security clearance and access to refining and petrochemical facilities. They have also completed OSHA (Occupational Safety and Health Administration) training, Basic Plus refining training along with logging all site specific training.

Conco Supervision

All Conco supervisors are full-time Conco employees, thoroughly trained in a full range of tube cleaning operations and applications. They come with a complete personal resume, including a list of plants where each supervisor has worked. Conco supervisors are prepared to work directly with non-union forces, casual work forces or union crews in expediting the completion of your project.



Conco Supervisor and Crews Ready for Action



6,202 Pounds of Iron Pyrite Deposits Removed from Waste Heat Boiler Tubes

The Frontier El Dorado Company in El Dorado, Kansas, had problems with significant deposits of iron pyrite in the tubes of a waste heat boiler. The deposits on the tubes inner diameters ranged from 0.20 inches to 0.32 inches thick, with similar deposits on the tube sheet. These deposits decreased the heat transfer rate and reduced the overall unit efficiency. Using a hydro-blast technique to clean the boiler took twelve shifts and resulted in thousands of gallons of effluent that required treatment by the plant's wastewater system.

A call to Conco Industrial Services brought a solution to Frontier El Dorado's problem. Conco technicians quickly arrived and configured the Conco NitroLance™ system to an optimal pressure and nozzle temperature. Twenty-foot-long lances with specially designed rotating jet nozzles were used to clean the boiler's 308 tubes with safe and effective pressurized liquid nitrogen in a single shift and with no waste effluent.

The heat transfer performance was brought back to design conditions and overall plant efficiency was improved. The total iron pyrite deposits removed totaled approximately 19.7 cubic feet, weighing 6,202 pounds. Conco's NitroLance system was so effective in cleaning the boiler that it is now being used to clean Frontier El Dorado Refinery's sulfur condensers.



PROSERIES™ 200B TUBE CLEANING SYSTEM

Improve your heat exchanger performance with the cleaning power of Conco.

No one understands tube fouling better than Conco. We've engineered our tube cleaning systems to clean a wide range of deposits, including waterborne manganese, iron, corrosion product, sediment, crystalline, biofouling, hydrocarbons and chemicals.

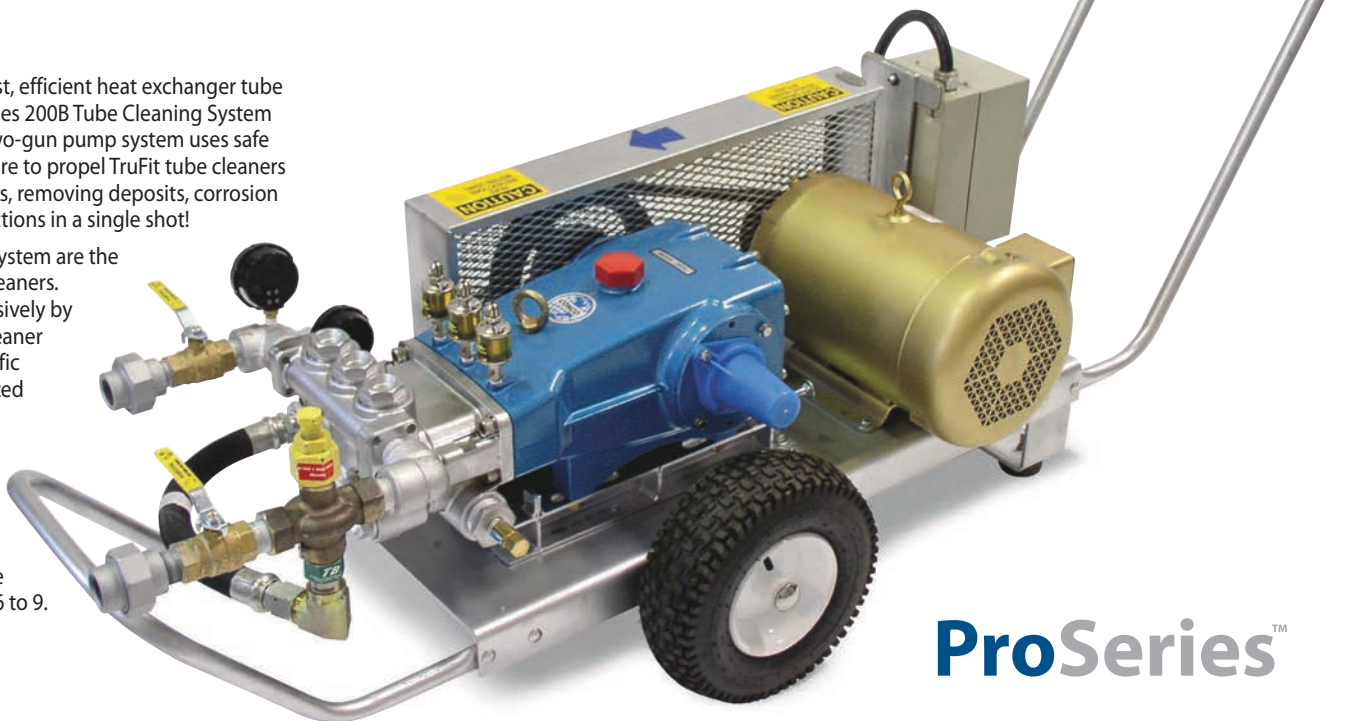
For shooting tubes our crews use the ProSeries™ 200B Tube Cleaning System with TruFit™ Tube Cleaners. This system has been used worldwide to clean over 150 million heat exchanger tubes quickly, safely and effectively. Designed to shoot TruFit tube cleaners through tubes from 1/2" to 1 1/2" O.D., it increases available water pressure to the 300 PSI necessary for effective cleaning.



How It Works

When it comes to fast, efficient heat exchanger tube cleaning, the ProSeries 200B Tube Cleaning System has no equal. This two-gun pump system uses safe 300 PSI water pressure to propel TruFit tube cleaners through fouled tubes, removing deposits, corrosion product and obstructions in a single shot!

At the heart of this system are the Conco TruFit tube cleaners. Manufactured exclusively by Conco, each tube cleaner is designed for specific fouling types and sized for your exact tube dimensions to ensure safe, effective tube cleaning. For more information on Conco TruFit tube cleaners, see pages 6 to 9.

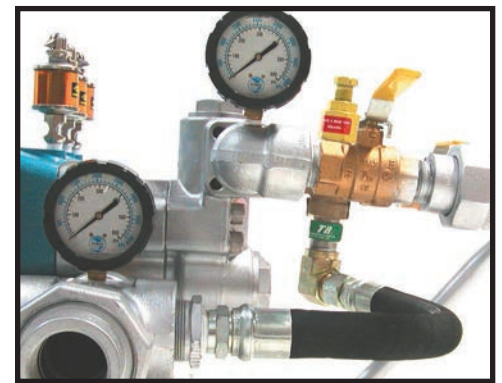


ProSeries™



Specifications

Motor Power: 10 HP
Input Power: Standard 440 Volts, 60 Hz AC, three phase; **Optional 220 Volts or 380 Volts, 50 Hz**
Note: Additional wiring configurations available. Please indicate your electrical requirements when placing your order or ask for our assistance in helping to determine your need.
Power Supply Cord: 6', 10-4 Type SO
Water Requirements: Minimum 40 PSI at 36 GPM, Maximum 70 PSI at 36 GPM
Output Water Pressure: 300 PSI at 36 GPM
Hoses: 1 1/4" or 1 1/2" x 50' inlet, 3/4" or 1" x 50' outlet
Pump: Positive displacement
Dimensions: 2.6' high x 2.2' wide x 6.2' deep
Weight: 480 lbs net dry







TRUFIT™ TUBE CLEANERS

Experience the ultimate in tube cleaning technology...
experience the TruFit difference.

A Conco tube cleaner with TruFit technology is your guarantee that the tube cleaner our crews shoot is the perfect match for your tube dimensions. Using a tube cleaner that claims to fit multiple tube dimensions, or one manufactured of low-quality material, can cause tube damage. Conco TruFit Tube Cleaners are built by us, in our factory, using the best materials and quality inspection techniques every step of the way. Insist on cleaning your heat exchanger tubes with a Conco crew shooting genuine Conco tube cleaners with TruFit technology.

At Conco, we know that all fouling is not created equal. Because tube deposits can be soft, hard or somewhere in between, we have developed over a dozen different styles and

configurations of TruFit Tube Cleaners to tackle any type of deposit. Whether you have a problem with mud, slime, algae, zebra mussels, manganese, iron, corrosion product, crystalline, calcium carbonate, or any other soft to hard deposit, Conco has your TruFit solution. Simply put, Conco TruFit Tube Cleaners are the best tube cleaners on the market!



How They Work

Unlike other manufacturers who claim their "off the shelf" tube cleaners can clean a range of tube sizes, Conco TruFit Tube Cleaners are custom engineered to match your tube dimensions. By creating an exact match between the diameter of the tube cleaner and the tube I.D., we are able to maximize the cleaning effectiveness of the tube cleaner while preventing any damage to the tube wall.

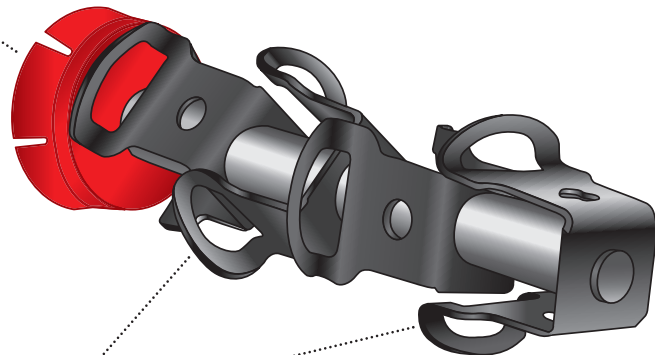
Got a difficult deposit? No problem. Our sales engineers work with you, helping you to select from over a dozen different types and styles of TruFit Tube Cleaners, assuring that the tube cleaner you select is a perfect fit for your application.

All Conco TruFit Tube Cleaners are:

- Custom built in our factory to match your exact tube dimensions
- Made from only the highest quality materials for maximum performance
- Individually inspected for quality assurance
- Designed with fouling specific architecture
- Color coded for quick sizing and easy identification

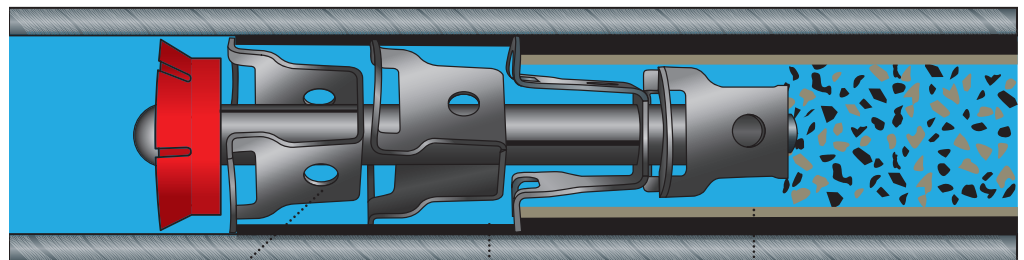


Color Coded for Quick Sizing



Fouling Specific Architecture

Spring-Loaded Radial Designed Blades Match Tube Dimensions Effectively Eliminate Fouling



Spring-Loaded Radial Designed Blades

Scale and Corrosion

Soft Deposits



C4S Flexi-Blade Tube Cleaner

The C4S is an all-purpose tube cleaner for heat exchangers with tubes ranging from 1/2" to 1 1/2" O.D. This spring-loaded metal cleaner is highly effective on all types of deposits, including micro and macro fouling, organic type scales, corrosion and pitting by-products, and all types of obstructions. It can also be used safely with tube inserts and coatings on tubesheets.



Features

- Four metal Flexi-Blade design provides overlapping tube I.D. coverage
- TruFit technology ensures a perfect match to tube specifications
- Safe, water-powered cleaner that travels at 10 to 20 feet per second
- Color-coded caps quickly identify sizing
- Can be shot up to 12 times each



C3S Rigid-Blade Tube Cleaner

The C3S is a heavy-duty tube cleaner for heat exchanger tubes ranging from 7/8" to 1" O.D. Effective on all types of deposits, its reinforced metal-bladed construction makes it especially effective for the removal of hard deposits, corrosion and pitting by-products and all types of obstructions.



Features

- Three metal-bladed reinforced construction provides overlapping tube I.D. coverage
- TruFit technology ensures a perfect match to tube specifications
- Safe, water-powered cleaner that travels at 10 to 20 feet per second
- Color-coded caps quickly identify sizing
- Can be shot up to 12 times each



C4SS Stainless Steel Tube Cleaner

The C4SS Stainless Steel Tube Cleaner can be used on all types of tube materials in heat exchangers with tubes ranging from 3/4" to 1 1/4" O.D. Originally developed by Conco for application on AL-6XN and SeaCure stainless steel condenser tubing, it is also ideal for applications in highly corrosive environments.



Features

- Four stainless steel-bladed design provides overlapping tube I.D. coverage
- TruFit technology ensures a perfect match to tube specifications
- Safe, water-powered cleaner that travels at 10 to 20 feet per second
- Color-coded caps quickly identify sizing
- Can be shot up to 8 times each





ADDITIONAL TRUFIT™ TUBE CLEANERS

For every heat exchanger tube deposit problem Conco has your TruFit solution.

C2X and C3X Hex Tube Cleaners

The C2X and C3X Hex Tube Cleaners provide six points of cleaning contact per blade and are available to fit tubes ranging from 3/4" to 1 1/4" O.D. Hex Tube Cleaners are designed to remove thin tenacious deposits such as manganese, silica, iron and calcium. They are also effective in removing corrosion product and other types of debris and obstructions. Depending on the amount of fouling, choose between the two-stage C2X or the three-stage C3X models.

Features

- Metal hexagon two or three-stage blade design
- TruFit technology ensures a perfect match to tube specifications
- Safe, water-powered cleaner that travels at 10 to 20 feet per second
- Color-coded caps quickly identify sizing
- Can be shot up to 12 times each



QTB Stainless Steel Brush

The QTB Stainless Steel Brush is designed for use on all types of tube materials in sizes ranging from 5/8" to 1 1/4" O.D. They can be used on tubes with inserts and epoxy coatings. The brush is particularly effective on manganese, iron and silica deposits. It is also effective on all types of obstructions, macrofouling and debris. The QTB will restore the tube surface to its original heat transfer characteristics, while providing absolutely the best protection from under-deposit corrosion.

Features

- Stainless steel bristle design featuring over 1,000 contact points
- TruFit technology ensures a perfect match to tube specifications
- Safe, water-powered cleaner that travels 10 to 20 feet per second
- Color-coded caps quickly identify sizing
- Can be shot up to 12 times each



H-Brush

The H-Brush is typically utilized for removing light deposits in heat exchangers with tubes ranging from 5/8" to 1 1/2" O.D. It removes micro and macro fouling, soft organic deposits, some corrosion by-products, mud and silt, and most types of obstructions. It can also be used in applications with enhanced tube surfaces and is safe on all inserts and epoxy coatings.

Features

- Coil-bound nylon bristle design with nylon shaft
- TruFit technology ensures a perfect match to tube specifications
- Safe, water-powered cleaner that travels at 10 to 20 feet per second
- Color-coded caps quickly identify sizing
- Can be shot up to 8 times each

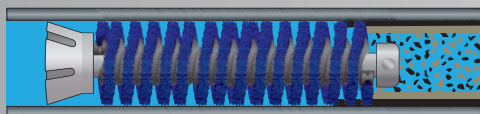


XL-Brush and XXL-Brush

Larger than the H-Brush and exhibiting similar features, the 3 1/2" long XL-Brush and the 5 1/2" long XXL-Brush provide the advantage of extra length plus more nylon bristles for removal of most types of light deposits in heat exchanger tubes ranging from 5/8" to 1 1/2" O.D. for the XL-Brush and from 7/8" to 1 1/2" O.D. for the XXL-Brush.

Features

- Coil-bound nylon bristle design with nylon shaft
- TruFit technology ensures a perfect match to tube specifications
- Safe, water-powered cleaner that travels at 10 to 20 feet per second
- Color-coded caps quickly identify sizing
- Can be shot up to 8 times each





Plastic Tube Cleaner

The Type-P Plastic Tube Cleaner is designed for removal of only the softest types of deposits such as mud, silt and microbiological fouling in heat exchangers with tubes ranging from 5/8" to 1 1/4" O.D. The Type-P fins are slit horizontally and vertically which, along with a small diameter hole in the core, allows water to bypass the cleaner to lubricate and flush out deposits.

Features

- Multi-blade design
- TruFit technology ensures perfect match to tube specifications
- Safe, water-powered cleaner that travels at 10 to 20 feet per second
- Can be shot up to 4 times each



Cal-Buster™

Removing hardened calcium scale from the inside of heat exchanger tubes can be a difficult and time-consuming task. Traditional cleaning methods are virtually ineffective. The Cal-Buster was designed to fracture the eggshell-like surface of calcium carbonate. Once the calcium has been fractured, Conco C3S or C4S tube cleaner with TruFit™ technology are used to shoot out the calcium leaving a polished, like-new tube surface. Cal-Busters are available for use in tubes ranging from 3/4" to 1 1/4" O.D., and require an on-site inspection to determine critical sizing information.

Features

- Hard plastic body with two stages, each containing four cutting wheels
- Custom sized for tube I.D. and deposit thickness
- Safe, water-powered cleaner with speeds dependant on scale thickness
- Color-coded caps quickly identify sizing
- Environmentally friendly design allows for replacement of cutting wheels and reuse



C2S U-Tube Cleaner

The C2S U-Tube Cleaner, featuring a robust, carbon steel construction, is designed to navigate u-tube configurations in heat exchangers and feedwater heaters, removing tough deposits that softer cleaners can't touch. The C2S U-Tube Cleaner features the same, spring-loaded design found in our larger cleaners ensuring effective cleaning and TruFit safety. The C2S U-Tube cleaner is available for tubes ranging from 5/8" to 1 1/4" O.D.

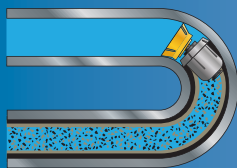
Features

- Carbon steel design can remove tough deposits
- TruFit technology ensures perfect match to tube specifications
- Safe, water-powered cleaner that travels at 10 to 20 feet per second
- Color-coded caps quickly identify sizing
- Can be shot up to 12 times each



Plastic U-Tube Cleaner

Thanks to its unique design, the Type-U Plastic U-Tube Cleaner can navigate very tight U-tube radiuses previously unreachable by conventional cleaners. By cleaning all the way through the bend, more accurate eddy current testing results can now be achieved. The Plastic U-Tube Cleaner is available for tubes ranging from 1/2" to 1 1/4" O.D.



Features

- Hard, plastic body, capable of navigating tight radiuses
- Safe, water-powered cleaner that travels at 10 to 20 feet per second
- Color-coded caps quickly identify sizing
- Can be shot up to 2 times each





EXCALIBER™
Pneumatic Flex Drive

TUBE CLEANING SYSTEM

This state-of-the-art rotary technology scours tubes clean even in tight and limited access locations.

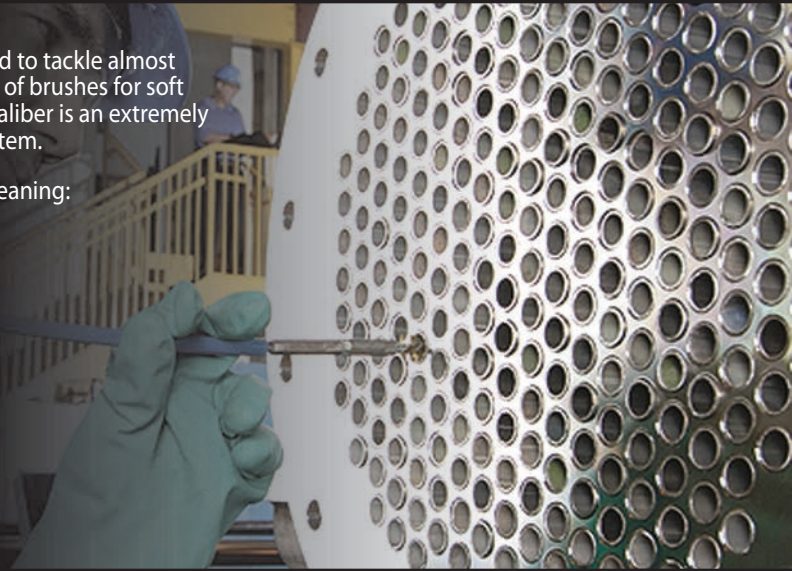
Built ProSeries™ tough, the Excaliber Flex Drive Tube Cleaning System incorporates rotary tube cleaning action with a water flush to remove tough deposits in heat exchanger tubes from 3/8" to 1 1/2" O.D. No electricity is required. This powerful unit uses only plant air and water to operate and is safe to use in any location. Shaft rotation and water flow are controlled by a simple foot pedal. The system is very easy to use and only minimum training is required.

At the heart of the Excaliber is a robust 5.25 HP air powered motor that drives a flexible shaft at speeds up to 2,500 RPM. Armed with the proper brush, the unit will scour off deposits and flush tubes clean in a single, efficient operation.

Excaliber can be configured to tackle almost any job. With a wide range of brushes for soft and hard deposits, the Excaliber is an extremely versatile tube cleaning system.

The Excaliber is ideal for cleaning:

- Lube Oil Coolers
- Excitor Coolers
- Hydrogen Coolers
- Seal Oil Coolers
- Stator Coolers



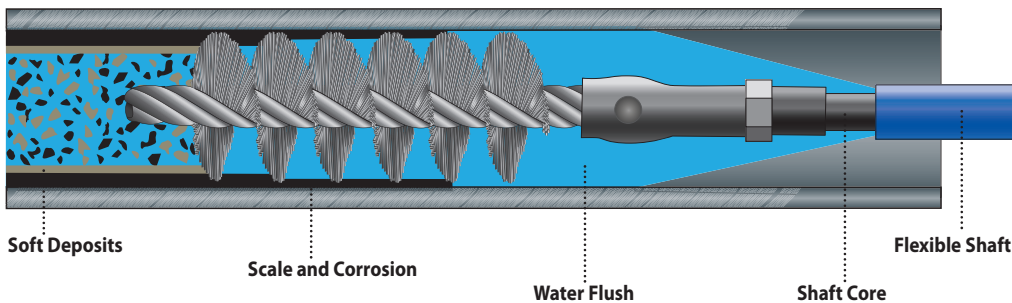
How It Works

The Excaliber Flex Shaft Tube Cleaner uses a brush mounted to the tip of a flexible shaft, rotating at up to 2,500 RPM, and a water flush to remove debris. As the flexible shaft rotates, the unit pumps water through the shaft casing to the cleaning tool, flushing away deposits as they are loosened.



ProSeries™

**Air Powered
for Safety**



Specifications

Motor Power: 5.25 HP

Air Requirements: Minimum 60 PSI at 85 CFM, Maximum 100 PSI at 175 CFM

Water Requirements: Minimum 30 PSI at 3 GPM, Recommended 50 PSI at 5 GPM, Maximum 125 PSI at 7 GPM

Flexible Shaft Speed and Torque: Adjustable, 300 RPM at 185 lb in to 2,500 RPM at 132 lb in

Air and Water Hoses: 3/4" with Chicago quick connect fittings

Dimensions: 10" high x 26" wide x 8" deep

Weight: 36 lbs net dry





HydroDrill™ TUBE CLEANING SYSTEMS

Got scale? No Problem. These rotary tube cleaners will even clear tubes plugged solid with hard deposits.

Designed to solve the most difficult deposit problems, Conco HydroDrills combine powerful rotary tube cleaning action with a 2 to 3 GPM water flush to clear even completely blocked tubes. They are ideal for cleaning all types of heat exchangers including chillers, oil coolers, condensers and process manufacturing tubes. Sized properly, the heavy duty Dominator and hand held Mitee Mouse II units are designed for maximum cleaning effectiveness. Depending on the system used, Conco crews can remove obstructions from any type of tube ranging from 1/2" to 2 3/4" O.D. and up to 60' in length. Completely blocked tubes can be restored to 100% of the original tube I.D. in one pass. HydroDrill tube cleaning is fast, typically clearing 20-foot long tubes in only 30 to 90 seconds each.

The HydroDrill system has been used repeatedly to clean process fouling on some exchangers over a thousand times. The system can even accommodate tubes that are bowed, since the long, slender Kelly Rod or Extension Rod that drives the bit inherently bends to follow the tube. Both HydroDrills are easy to set up and operate. A Conco crew can be in-the-cut in less than one hour. In the last 30 years, the HydroDrill system has successfully cleaned thousands of heat exchanger tubes, worldwide.

HydroDrills are used to remove hard tough deposits including:

- Coke
- Calcium
- Sulfur
- Bauxite
- Alumina
- Asphalt
- Oxides
- Polymers



How They Work

A HydroDrill uses a brush or drill bit mounted to the tip of a rotating Kelly Rod or Extension Rod and a water flush to remove debris. As the rod rotates, the unit pumps water through the rod to weep holes in the cleaning tool, flushing away hardened deposits as they are loosened.

Safe On Tubes

The HydroDrill system is designed for maximum cleaning effectiveness with no tube damage. Drill bits are sized to be 0.005" below the minimum tube I.D. They feature long shanks to ensure that the axis of the bit and the axis of the tube are in complete alignment. Furthermore, the bits are designed with carbide tips on the leading edge only and rounded corners to ensure no sharp edges directly impact the tube wall. The drill also rides on a thin layer of water for lubricating bearing surfaces between the bit and the tube. HydroDrills have been used repeatedly to clean process fouling on some heat exchangers over 1,000 times – with no tube damage or degradation!

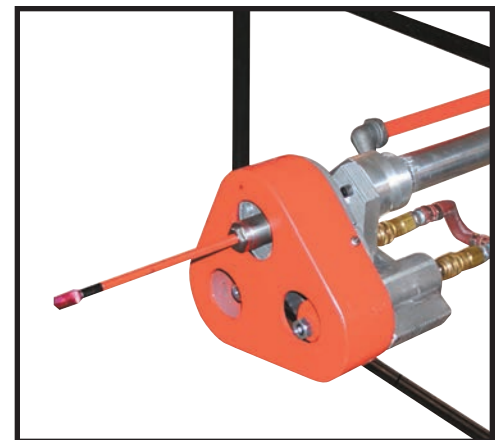


Dominator HydroDrill Tube Cleaning System

Specifications – Dominator

- Motor Power:** 1 HP
- Air Requirements:** Minimum 80 PSI at 125 CFM
- Water Requirements:** Minimum 250 PSI at 20 GPM
- Water Flush at Drill Tip:** 2 to 3 GPM
- Flexible Shaft Speed:** 1,200 RPM, Free Spinning 2,400 RPM
- Air and Water Hose:** 3/4" with Chicago quick connect fittings
- Packaged and Ready for Shipment –**
- Crate Dimensions:** 24" high x 24" wide x drill length + 2' deep,
- Crate Weight:** 1,200 lbs net dry

Note: A 5 HP "Terminator" option is available for the toughest deposits on tubes larger than 1 1/8" O.D. only.

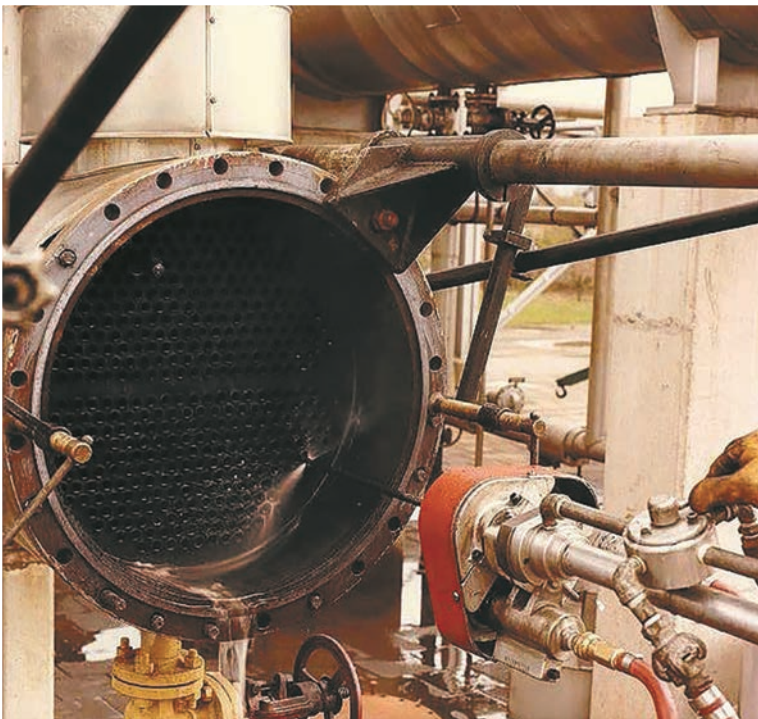


Mitee Mouse II HydroDrill Tube Cleaning System

Specifications – Mitee Mouse II

- Motor Power:** 0.8 HP
- Air Requirements:** Minimum 90 PSI at 22 CFM
- Water Requirements:** Minimum 25 PSI at 20 GPM
- Water Flush at Drill Tip:** 2 to 3 GPM
- Flexible Shaft Speed:** 5,000 RPM, Free Spinning 6,000 RPM
- Air and Water Hose:** 3/4" with Chicago quick connect fittings
- Dimensions:** 11" high x 7" wide x 14" deep
- Weight:** 10 lbs net dry







FinTech[™] ACC AIR-COOLED HEAT EXCHANGER CLEANING

Conco FinTech ACC Services... the faster, safer way to clean any fin-fan, air-cooled heat exchanger.

Fouled surfaces of air-cooled heat exchangers can cause performance issues, especially when ambient temperatures start to rise. Until now, cleaning fin-fan units meant tedious work at dangerous heights using fire hoses, hand lances or chemicals. While using fire hoses and hand lances can damage delicate fins, chemicals present environmental cleanup concerns.

FinTech ACC cleaning provides plants with a safer, more effective and affordable alternative to dangerous high-pressure or chemical cleaning. FinTech can accommodate any fin-fan, air-cooled heat exchanger and has been used successfully to clean fins fouled with dust, dirt, debris, pollen, leaves, insects and even bird and bat carcasses.

Conco can setup and operate a portable FinTech system to help you save on capital expenditures or operate your installed system. Whatever you prefer.

FinTech services have been used in power plants, chemical and petrochemical facilities and processing industry factories worldwide. FinTech is safe to use on all materials including steel, aluminum, brass and copper.



How It Works

At the heart of the FinTech system is a computer-controlled 12-nozzle water jet assembly. The assembly travels on tracks at a constant speed and fixed height, ensuring a consistent clean from start to finish. Water nozzles on the assembly are configured to match fin geometry, ensuring that they clean all the way through, not just on the fin surface. The frame and tracks of the system are adjustable for virtually all sizes and layouts of fin-fan exchangers, including flat coolers, vertical coolers, "A" frame and "V" frame configurations. The system is suitable for use on all materials, including steel, aluminum, brass and copper.

Features

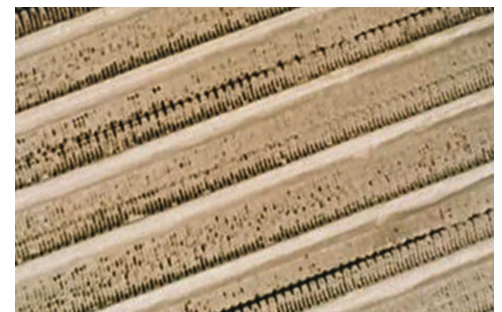
- Fast – driven at optimum speed, the nozzles can clean 325 square feet per hour
- More effective than cleaning with hand lances, foam washers or fire hoses
- No wait time for heat exchanger cooling, FinTech can be used while your system is online
- Safe – no personnel on scaffolds or exposed to hot, humid conditions during operations

“ FinTech has completely changed the operating dynamics of this facility. Our unit started showing measurable performance improvements during the one-quarter cleaned. **”**

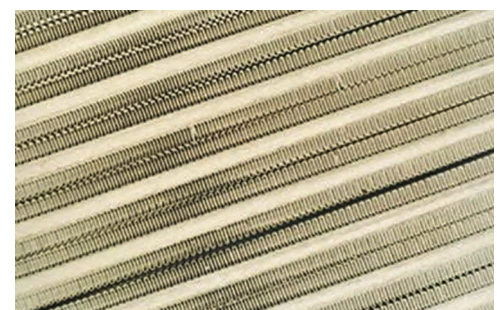
Dan Gray
Director of Operations
Rosebud Operating Services



Back of Fins During Cleaning Operations



Fins Before Cleaning with FinTech



Fins After Cleaning with FinTech

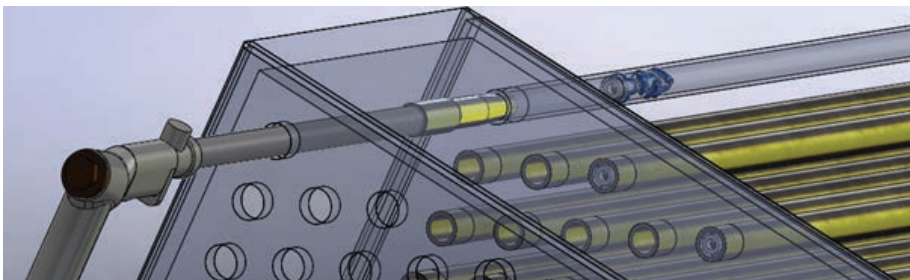


Fouled Fin-Fan Tubes a Problem?

Don't worry. Conco has your TruFit™ solution.

Don't be fooled by hydrolancing and chemical cleaning. These methods are not only dangerous and time consuming, but often leave a significant amount of deposits clinging to the tube walls keeping your plant from running at peak efficiency. For a safer, more thorough cleaning experience, talk to us.

Conco's TruFit method (see pages 6 to 9) uses mechanical tube cleaners, custom engineered to match your tube material, size and deposit, propelled through your fin fan tubes with safe low pressure water. Concerned about the manifolds? No problem. Our unique bridging system "jumps the gap" between the bolt plugs and tube sheet, allowing for a complete removal of the tube deposits from the unit while leaving the manifolds in place.





NitroLance™ LIQUID NITROGEN CLEANING

The Conco NitroLance saves time and money in precision cleaning applications yielding zero secondary waste.

Harnessing the power of liquid nitrogen, NitroLance can remove incredibly difficult deposits safely and without producing secondary waste streams. It has been used to restore flow to tubes completely blocked with hardened calcium carbonate quicker than high-pressure water or chemical cleaning. And because liquid nitrogen readily dissipates, only the removed deposit is left behind, saving our customers thousands of dollars in cleanup costs.

NitroLance is a safe alternative to high-pressure water jetting. Where high-pressure water can be hazardous at distances greater than six feet, the liquid nitrogen jet from NitroLance extends only a few inches.

Liquid nitrogen is ideally suited for adverse tube cleaning environments, yielding quicker

turnarounds for critical path components. In addition to being fast, NitroLance customers have reported performance improvements in heat transfer by up to 20% on units cleaned with this technology. NitroLance also provides optimal cleanliness for vessels being examined with Remote Field or Eddy Current Testing.

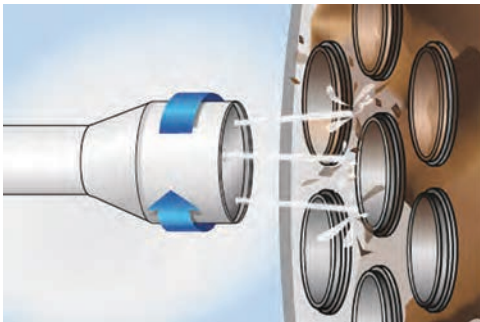
NitroLance is available with a variety of nozzle configurations for fast and effective cleaning of tough deposits in industries such as:

- Refineries – Sulfur Recovery Units, Fire Heaters and Furnaces
- Catalyst Services – Reactor Cleaning
- Power Generation – Preheaters, Heaters and Coolers
- Alumina – Bauxite Heat Exchanger Cleaning



How It Works

The super-cooled cryogenic jet emerges from the NitroLance nozzle entering solid deposit cracks and crevices and then expands, rapidly breaking up deposits from the inside. NitroLance nozzles are customizable for any application ensuring precision cleaning. The NitroLance can clean vertical or horizontal heat exchangers in place, eliminating the need for costly removal or crane services.



Features

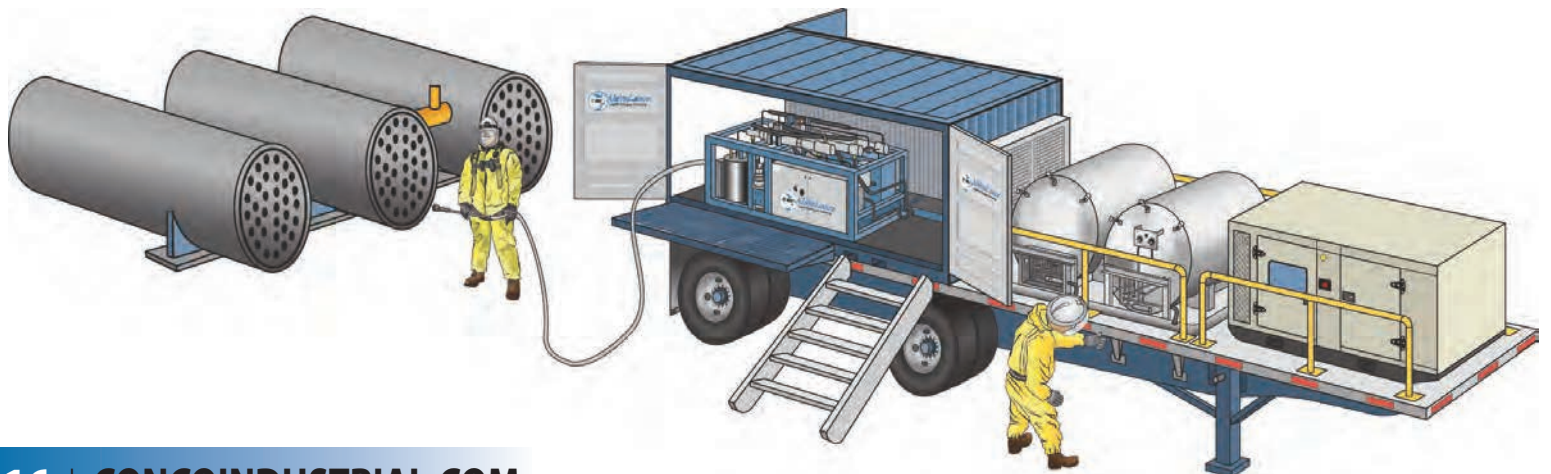
- Faster than hydrolance or chemical cleaning
- Dramatically improves turnaround time for critical path equipment
- Can remove deposits where conventional methods fail
- Liquid nitrogen evaporates leaving only the deposit to remove, saving you time and money
- Technology so safe on equipment, it has been used by NASA to clean the Space Shuttle

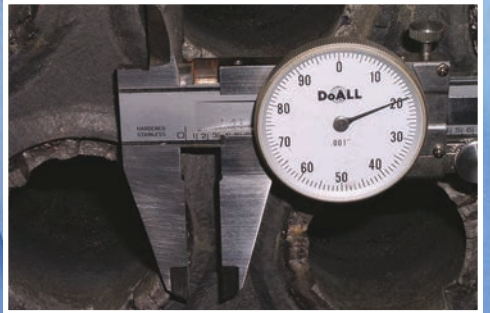


“ NitroLance is a revolutionary service for the cleaning of our thermal reactor boilers. Compared to our previous mechanical cleaning, NitroLance not only cleaned better but was 300% faster! ”

Rick Scott

Turnaround Superintendent
Frontier Refinery





0.320" Thick Hardened Carbon Based Deposit



NitroLance Clean



Preheater Fins Before Cleaning with NitroLance



Preheater Fins After Cleaning with NitroLance



Preheater Basket Before Cleaning with NitroLance



Preheater Basket After Cleaning with NitroLance



NON-DESTRUCTIVE TESTING

**For Eddy Current, Remote Field and Near Field Testing...
count on Conco for fast, reliable and accurate results.**

Conco Non-Destructive (NDE) Testing Services are performed for all utility, industrial and commercial customers on all types of tubing in condensers and heat exchangers included in the steam cycle, cooling water systems, service water systems and process systems. Non-Destructive Testing helps to prevent forced shut downs by detecting various defects such as pitting, cracking, corrosion, erosion, grooving, steam impingement and tube-support fretting that cause tube failures. Conco NDE personnel are certified in accordance with the American Society of Non-Destructive Testing (ASNT) SNT-TC-1A guidelines. In addition, Conco follows the most stringent nuclear guidelines. Our customers realize significant economic savings from routine testing through improved reliability and plant availability.



Different Tubes Require Different Tests

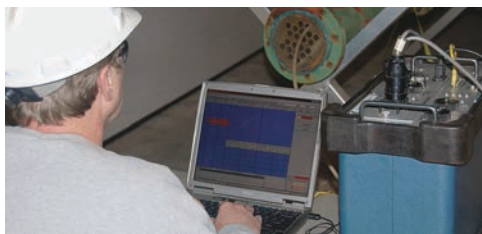
Heat exchangers come in a variety of sizes, shapes and materials. Tube materials can include carbon steel, stainless steel, admiralty brass and Cu-Ni alloys. No single nondestructive technique can test them all. It's crucial to select a testing company that has the capabilities and experience to provide a variety of testing techniques for your different tube materials. Also, understanding site-specific conditions and their effects on tube material such as wall thinning, chemical attack and pitting is fundamental in selecting the right test for the job.

Did you know that more than 7,000 outages and shut downs per year are attributed to tube failures costing the industry hundreds of millions of dollars in lost production and repair? Many plants have created teams focused on preventing tube fouling and failure and Conco stands ready to assist you with yours. With numerous technical papers and contributions to organizations like EPRI and ASME, Conco is recognized as an expert on tube fouling and failure prevention. So, if you are serious about stopping tube failures, contact us today.*

** Based on recent North American Electric Reliability Corporation Data.*

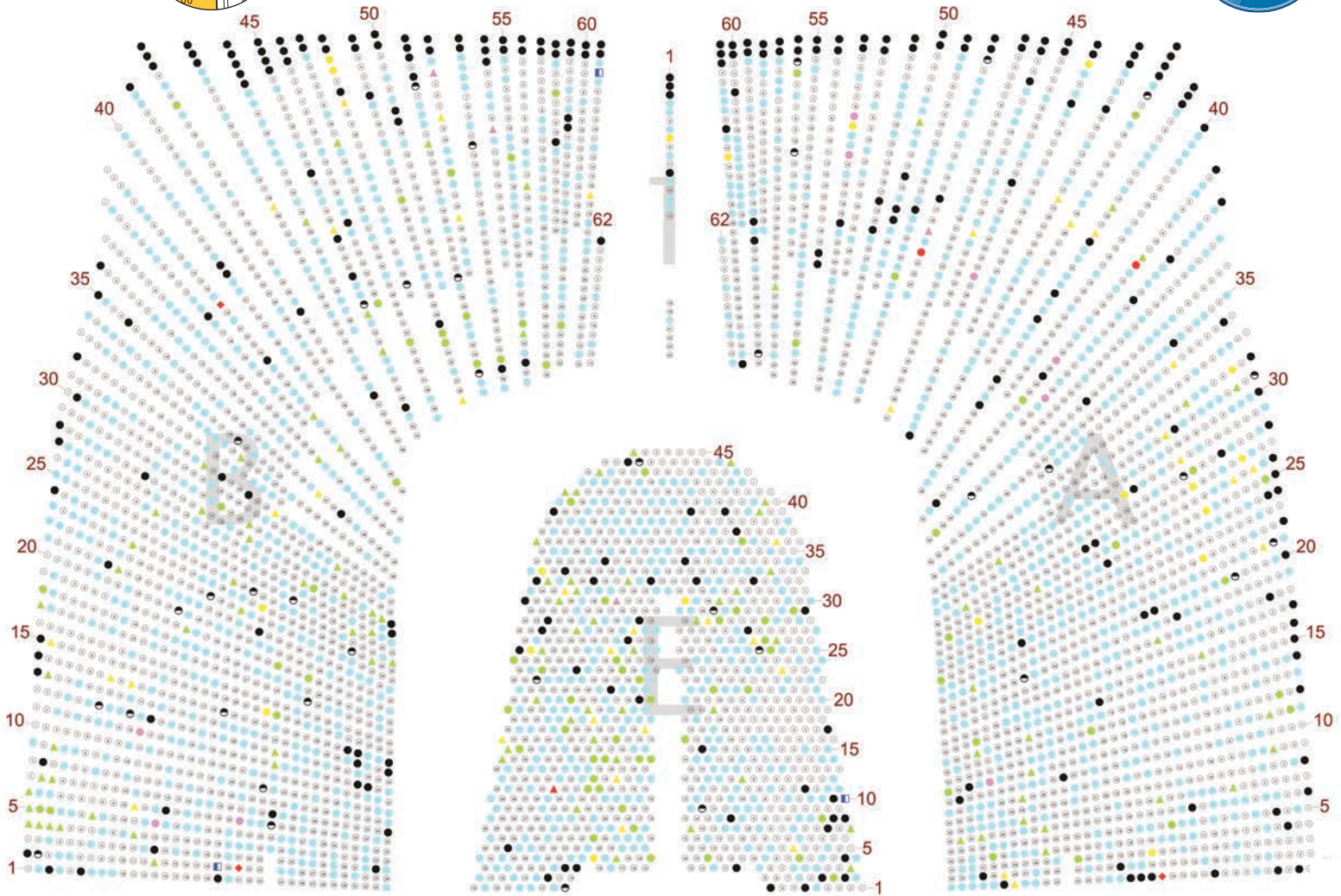
Eddy Current, Remote Field and Near Field Testing

Conco Eddy Current, Remote Field and Near Field Testing Services specialize in finding tube defects in a variety of materials including stainless steel, titanium, brass and Cu-Ni alloys. Non-Destructive Testing can find defects ranging from pitting, cracking, corrosion, erosion, grooving and dents that cause tube failures. After testing, Conco provides each customer with a tube-by-tube analysis and full-color tubesheet map of the tested condenser or heat exchanger, giving a detailed assessment of the tubing.



Conco Technician Acquiring Eddy Current Data

Conco Technician Performing an Eddy Current Test on a Main Steam Condenser



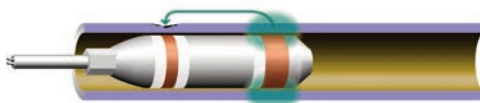
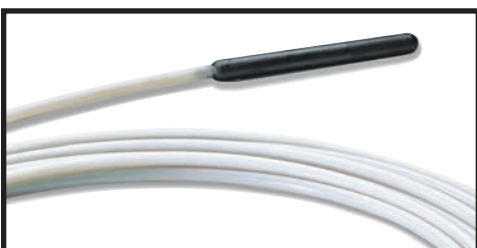
SYM	HITS	TUBES	VIS	TYPE	DESCRIPTION
■	0	0	0	QUERY	OBS_CALLS.qry
■	3	3	3	QUERY	RES_CALLS.qry
■	1409	1408	1406	QUERY	NDD_CALLS.qry
■	0	0	0	QUERY	PVN_CALLS.qry
●	45	45	37	QUERY	DNT_CALLS.qry
●	112	109	108	QUERY	20-29.qry
●	87	85	83	QUERY	30-39.qry
●	39	39	39	QUERY	40-49.qry
●	20	20	20	QUERY	50-59.qry
●	9	9	9	QUERY	60-69.qry
●	4	4	4	QUERY	70-79.qry
●	1	1	1	QUERY	80-89.qry
●	2	2	2	QUERY	90-100.qry
●	282	282	282	QUERY	PLG_CALLS.qry
●	3	3	3	QUERY	STC_CALLS.qry
	2,016	2,010	1,997		

Tubesheet Mapping

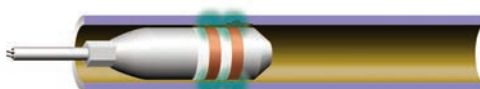
This service provides an at-a-glance summary of heat exchanger condition. Upon completion of a comprehensive non-destructive testing evaluation, Conco can create a multicolor tubesheet map for graphic illustration of tube wall condition. The overall condition of the condenser or heat exchanger and any developing trends are obvious as each tube's condition is represented by a different color or symbol.

Data Analysis

Depending on your requirements, our NDE analyst can provide on-site or remote data interpretation, utilizing the most advanced software for Eddy Current, Remote Field and Near Field Testing. Conco analysts will identify defects in your heat exchanger tubing and provide a comprehensive report of their findings. We can even assist you in the establishment of a non-destructive testing program. This allows Conco to trend the growth of previously identified damage within the heat exchanger. It also allows Conco to monitor for any new damage mechanisms that may occur during the operating cycle. This is part of a preventative maintenance program that Conco can help establish and maintain.



Remote Field Probe



Eddy Current Probe



LEAK DETECTION SERVICES

Increase plant performance and help put a stop to forced outages... locate and repair air inleakage and tube leaks today.

Air inleakage negatively impacts plant performance, while tube leaks can cause forced shut downs costing plants thousands in maintenance and lost productivity. Using advanced tracer gas leak detection technology, Conco technicians can quickly locate sources of leaks within your plant. Conco has been an innovator and leading provider of leak detection services for over 30 years and offers both helium and SF₆ tracer gas technology.

Depending on leak characteristics, a determination is made whether to mobilize with the helium mass spectrometer system, the state-of-the-art Conco Fluorotracer™ system, or both.

Conco crews can detect:

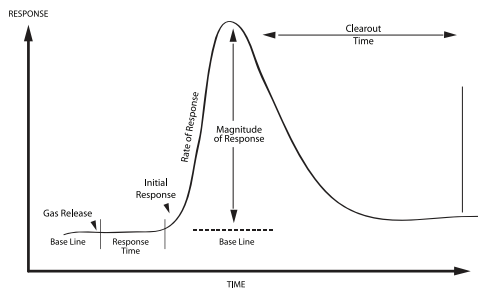
- Condenser air in-leakage
- Condenser tube leakage
- Sources of dissolved oxygen
- Stator water system leakage
- Main generator leakage



Locating Sources of Air In-leakage

Conco pioneered the use of tracer gas technology to locate air in-leakage in plants. Since 1978, Conco has restored performance to thousands of plants worldwide using exclusive technology. Our technicians are the best in the business with an average of 23+ years experience in the field. They're knowledgeable of all the components within your vacuum boundary. A typical unit can be fully tested in one shift with no need for plant interruption. Our technicians are fully compliant with fossil and nuclear testing procedures and are confined space, first aid and CPR trained.

Chart Recording of a Typical Leak Response



Air in-leakage can negatively impact your unit's efficiency and also increase dissolved oxygen levels in your hotwell, which can lead to corrosion.

Locating Circulating Water Tube Leaks

Circulating water leaks can result from penetrations through the tube walls, from joints between the tubes and tubesheet, or from other penetrations between the water box and condenser shell. Contaminants in the circulating water change condensate chemistry, which can cause boiler or steam generator corrosion. Our methodical approach, using either helium or SF₆ tracer gases, ensures that we find even the smallest leaks.



Conco Technician with SF₆ Pack Unit Checking for Sources of Air In-leakage



Helium Testing Services

Trained in all aspects of tracer gas leak detection, Conco technicians can use a Helium Mass Spectrometer System to inspect for heat exchanger air in-leakage and/or heat exchanger tube leakage while the unit is running. When the unit is down, they can test main generators and stator water systems for leakage. Unsurpassed in experience, Conco technicians have mastered the "art" of leak detection.

SF₆ Testing Services

SF₆ has a detectable concentration of one part per ten billion versus helium's one part per million above background level. The ultra sensitive nature of this tracer gas makes it ideal for finding very small leaks within heat exchanger tubes. Conco pioneered the use of SF₆ for heat exchanger leak detection in 1978 and is the only company to manufacture a continuous sampling SF₆ analyzer! Our Fluorotracer analyzer takes full advantage of the detectable concentration of SF₆ and can also be used with our handheld SF₆-Pak to perform air in-leakage surveys, making it an extremely versatile system.





Plugging Services

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

If your condenser or heat exchanger tubes need to be plugged, call Conco. Different situations call for different types of plugs, and Conco has a full array of plugs in a variety of styles and materials to select from. Need a plug that can handle over 1,000 PSI? We've got you covered. Pulled a tube and now the tubesheet needs plugging? We've got a plug for that too. High temperatures an issue, not for Conco plugs.

Conco has a plug for every application. Our technicians are experts in diagnosing your needs and installing the best plug to solve your problem. Whether you need a temporary or permanent plug, count on Conco to get the job done right.



A Plug for Every Type of Tube

When you need to plug off leaking tubes in condensers and heat exchangers, look no further than Conco. Our crews can accommodate any tube plugging application. Conco offers a full range of plug sizes, styles and materials to match your needs.





High Confidence Tube Plugs

When you have to plug off leaking tubes in heat exchangers, the Conco patented High Confidence Tube Plugs are "Absolutely the Best" plugs you can use! Tested at pressures in excess of 1,000 PSI and available in 3/4" to 1 1/4" O.D. tube sizes, these tube plugs offer a separate gripping and sealing design in one plug, will not move into or out of leaking tubes, and can be used on coated or epoxied tubesheets.



Features

- Separate gripping and sealing design in one plug
- Tested to over 1,000 PSI under wide range of temperature and vibration
- Grip made of machined serrated adjustable cleats allowing for positive gripping action
- Durable, expanding chloroprene cylinder provides dependable sealing action
- Available with metal components in titanium, stainless steel, brass and bronze



Expanding Tube Plugs

For temporary or permanent plugging of 5/8" to 1 1/4" O.D. heat exchanger tubes, Conco's line of Expanding Tube Plugs are tested to withstand a wide range of pressure, temperature and vibration conditions. The larger washer on the end of the EX-3 Tube Plug allows the plug to fit flush with the tubesheet and not be pulled into the tube by the vacuum of the unit. The EX-4 Tube Plug is designed to be placed inside the tube at exact locations, to enable leak detection tests of other tubes. These plugs can resist pressures up to 150 PSI. The EX-F Tube Plug offers a separate gripping and sealing design in one plug and seals to 400 PSI.

Features

- Installation is quick and easy
- Chloroprene cylinder material expands to seal tube
- Available with metal components in titanium, stainless steel, brass and bronze



Fiber Tube Plugs

Easily installed for emergency and temporary plugging of heat exchanger tubes, the Conco Fiber Tube Plug expands when wet to effectively seal off the tube. These one-piece plugs will not damage tubesheets and can be used in temperatures up to 230° F. They are available for plugging tubes 5/8" to 1 1/4" O.D.

Features

- Made of vulcanized cloth fiber rod
- Machined to fit specific tube sizes
- Only a hammer needed for quick, easy installation



Pin, and Pin and Collar Tube Plugs

The one-piece tapered design of the Type-1 Pin Tube Plug fits specific tube sizes. The Type-2 Pin and Collar Tube Plug features a two-piece design with a matching tapered pin and collar for a positive full-length seal. Both types of tube plugs seal at high temperatures and isolate leaking tubes from the system, allowing continued use of the unit without major overhaul. They are available for plugging tubes 5/8" to 1 1/4" O.D. and are ideal for plugging tubesheets where tube samples have been extracted.

Features

- Available in titanium, stainless steel, brass, and bronze
- Special materials available on request
- Can be machined to your drawing specifications





TUBE SIZE AND CLEANER SELECTION GUIDE

Find your TruFit™ with Conco's state-of-the art tube cleaners, and start on your path to TotalPerformance™!

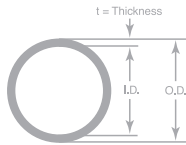
Conco's line of advanced, industry leading tube cleaners featuring TruFit™ technology can be sized to your exact specifications. They come standard in a variety of popular sizes to match most condenser and heat exchanger tubes.

Got a unique tube size? Use the handy guides below to determine your tube data and call us for recommendations on the best tube cleaner for your site specific application.



Inches		Tube Gauge in BWG / Tube Thickness in Inches													
O.D. of Tube		12	13	14	15	16	17	18	19	20	21	22	23	24	25
mm	in	Tube I.D. in Inches													
12.70	1/2	0.282	0.310	0.334	0.356	0.370	0.384	0.042	0.416	0.430	0.436	0.444	0.450	0.456	0.460
15.88	5/8	0.407	0.435	0.459	0.481	0.495	0.509	0.527	0.541	0.555	0.561	0.569	0.575	0.581	0.585
19.05	3/4	0.532	0.560	0.584	0.606	0.620	0.634	0.652	0.666	0.680	0.686	0.694	0.700	0.706	0.710
22.23	7/8	0.657	0.685	0.709	0.731	0.745	0.759	0.777	0.791	0.805	0.811	0.819	0.825	0.831	0.835
25.40	1	0.782	0.810	0.834	0.856	0.870	0.884	0.902	0.916	0.930	0.936	0.944	0.950	0.956	0.960
28.58	1 1/8	0.907	0.935	0.959	0.981	0.995	1.009	1.027	1.041	1.055	1.061	1.069	1.075	1.081	1.085
31.75	1 1/4	1.032	1.060	1.084	1.106	1.120	1.134	1.152	1.166	1.180	1.186	1.194	1.200	1.206	1.210
34.93	1 3/8	1.157	1.185	1.209	1.231	1.245	1.259	1.277	1.291	1.305	1.311	1.319	1.325	1.331	1.335
38.10	1 1/2	1.282	1.310	1.334	1.356	1.370	1.384	1.402	1.416	1.430	1.436	1.444	1.450	1.456	1.460

Millimeters		Tube Gauge in BWG / Tube Thickness in Millimeters													
O.D. of Tube		12	13	14	15	16	17	18	19	20	21	22	23	24	25
in	mm	Tube I.D. in Millimeters													
1/2	12.70	7.16	7.88	8.48	9.04	9.40	9.76	10.22	10.56	10.92	11.08	11.28	11.42	11.58	11.68
5/8	15.88	10.34	11.05	11.66	12.22	12.57	12.93	13.39	13.74	14.10	14.25	14.45	14.61	14.76	14.86
3/4	19.05	13.51	14.22	14.83	15.39	15.75	16.10	16.56	16.92	17.27	17.42	17.63	17.78	17.93	18.03
7/8	22.23	16.69	17.40	18.01	18.57	18.92	19.28	19.74	20.09	20.45	20.60	20.80	20.96	21.11	21.21
1	25.40	19.86	20.57	21.18	21.74	22.10	22.45	22.91	23.27	23.62	23.77	23.98	24.13	24.28	24.38
1 1/8	28.58	23.04	23.75	24.36	24.92	25.27	25.63	26.09	26.44	26.80	26.95	27.15	27.31	27.46	27.56
1 1/4	31.75	26.21	26.92	27.53	28.09	28.45	28.80	29.26	29.62	29.97	30.12	30.33	30.48	30.63	30.73
1 3/8	34.93	29.39	30.10	30.71	31.27	31.62	31.98	32.44	32.79	33.15	33.30	33.50	33.66	33.81	33.91
1 1/2	38.10	32.56	33.27	33.88	34.44	34.80	35.15	35.61	35.97	36.32	36.47	36.68	36.83	36.98	37.08



O.D.	BWG	t	I.D.	C4S	C3S	C2X	C3X	C4SS	BUS	H	XL	XXL	P	C2S	U	QTB
5/8"	16	0.065"	0.495"	●						●	●		●	●	●	●
0.625"	17	0.058"	0.509"	●						●	●		●	●	●	●
0.625"	18	0.049"	0.527"	○						○	○		○	○	○	○
0.625"	19	0.042"	0.541"	●						●	●		●	●	●	●
0.625"	20	0.035"	0.555"	●						●	●		●	●	●	●
0.625"	21	0.032"	0.561"	●						●	●		●	●	●	●
0.625"	22	0.028"	0.569"	●						●	●		●	●	●	●
3/4"	16	0.065"	0.620"	●		●	●	●	●	●	●		●	●	●	●
0.750"	17	0.058"	0.634"	●		●	●	●	●	●	●		●	●	●	●
0.750"	18	0.049"	0.652"	○		○	○	○	○	○	○		○	○	○	○
0.750"	19	0.042"	0.666"	●		●	●	●	●	●	●		●	●	●	●
0.750"	20	0.035"	0.680"	●		●	●	●	●	●	●		●	●	●	●
0.750"	21	0.032"	0.686"	●		●	●	●	●	●	●		●	●	●	●
0.750"	22	0.028"	0.694"	●		●	●	●	●	●	●		●	●	●	●
7/8"	16	0.065"	0.745"	●	●	●	●	●	●	●	●	●	○	●	●	●
0.875"	17	0.058"	0.759"	●	●	●	●	●	●	●	●	●	○	●	●	●
0.875"	18	0.049"	0.777"	○	○	○	○	○	○	○	○	○	○	○	○	○
0.875"	19	0.042"	0.791"	●	●	●	●	●	●	●	●	●	○	●	●	●
0.875"	20	0.035"	0.805"	●	●	●	●	●	●	●	●	●	○	●	●	●
0.875"	21	0.032"	0.811"	●	●	●	●	●	●	●	●	●	○	●	●	●
0.875"	22	0.028"	0.819"	●	●	●	●	●	●	●	●	●	○	●	●	●
1"	16	0.065"	0.870"	●	●	●	●	●	●	●	●	●	○	●	●	●
1.000"	17	0.058"	0.884"	●	●	●	●	●	●	●	●	●	○	●	●	●
1.000"	18	0.049"	0.902"	○	○	○	○	○	○	○	○	○	○	○	○	○
1.000"	19	0.042"	0.916"	●	●	●	●	●	●	●	●	●	○	●	●	●
1.000"	20	0.035"	0.930"	●	●	●	●	●	●	●	●	●	○	●	●	●
1.000"	21	0.032"	0.936"	●	●	●	●	●	●	●	●	●	○	●	●	●
1.000"	22	0.028"	0.944"	●	●	●	●	●	●	●	●	●	○	●	●	●
1 1/8"	16	0.065"	0.995"	●		●	●	●	●	●	●	●	○	●	●	●
1.125"	17	0.058"	1.009"	●		●	●	●	●	●	●	●	○	●	●	●
1.125"	18	0.049"	1.027"	○		○	○	○	○	○	○	○	○	○	○	○
1.125"	19	0.042"	1.041"	●		●	●	●	●	●	●	●	○	●	●	●
1.125"	20	0.035"	1.055"	●		●	●	●	●	●	●	●	○	●	●	●
1.125"	21	0.032"	1.061"	●		●	●	●	●	●	●	●	○	●	●	●
1.125"	22	0.028"	1.069"	●		●	●	●	●	●	●	●	○	●	●	●
1 1/4"	16	0.065"	1.120"	●				●	●	●	●	●	○	●	●	●
1.250"	17	0.058"	1.134"	●				●	●	●	●	●	○	●	●	●
1.250"	18	0.049"	1.152"	○		○	○	○	○	○	○	○	○	○	○	○
1.250"	19	0.042"	1.166"	●		●	●	●	●	●	●	●	○	●	●	●
1.250"	20	0.035"	1.180"	●		●	●	●	●	●	●	●	○	●	●	●
1.250"	21	0.032"	1.186"	●		●	●	●	●	●	●	●	○	●	●	●
1.250"	22	0.028"	1.194"	●		●	●	●	●	●	●	●	○	●	●	●

Note: For metric tube sizes, calculate the equivalent diameter in inches and use the nearest size cleaner.
 To convert metric to inches: multiply millimeters x 0.03937. For example: 20 mm = 20 x 0.03937 = 0.7874" I.D.
 This tube size takes a Conco cleaner Type C3S for 7/8" O.D. x 19 BWG tube.

Note: Additional sizes and gauges available.



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