



Conco Systems



2014

**Condenser and Heat Exchanger
Tube Cleaning**

Air-Cooled Condenser Cleaning

**Eddy Current and
Remote Field Testing**

Tracer Gas Leak Detection

Retubing Services





Welcome to the brave new world of Conco!

As we pass 90 years of inventing specialized tube cleaning tools and close in on our 100th year, I am pleased that our results continue to confirm that the Conco no nonsense approach to tube cleaning is still providing state-of-the-art results and leading the way to the most efficient power generation and industrial processing practices.

While many have tried to copy our technology, Conco tube cleaning tools and services continue to deliver results above and beyond the rest. Our unique combination of manufacturing our own tools and delivering cleaning and testing services through our seasoned full time personnel gives us a perspective few can match. We have pioneered, perfected and practiced essentially every improvement in tube cleaning and testing in the last 90 years and continue to push the edge and provide unequalled results to our customers to this day.

Our strict attention to the details of our cleaning tools helps our customers to squeeze every last watt of power out of their fuel and every last ounce of efficiency out of their heat exchangers resulting in setting the standard for fast, safe, and effective tube cleaning practices around the world.

This catalogue will provide some basic insights into what delivering true performance is all about. Check it out and give us a call to set up your next service call. Conco is ready to do our best for you.

Welcome to the world of Conco!

Sincerely,

Ed Saxon

Chief Executive Officer

Total Performance™

For Condensers and Heat Exchangers

Productivity, Reliability and Profitability

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



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Leak Detection



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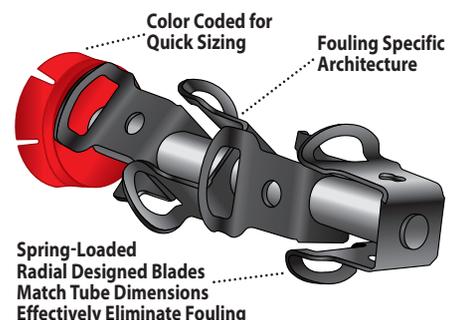
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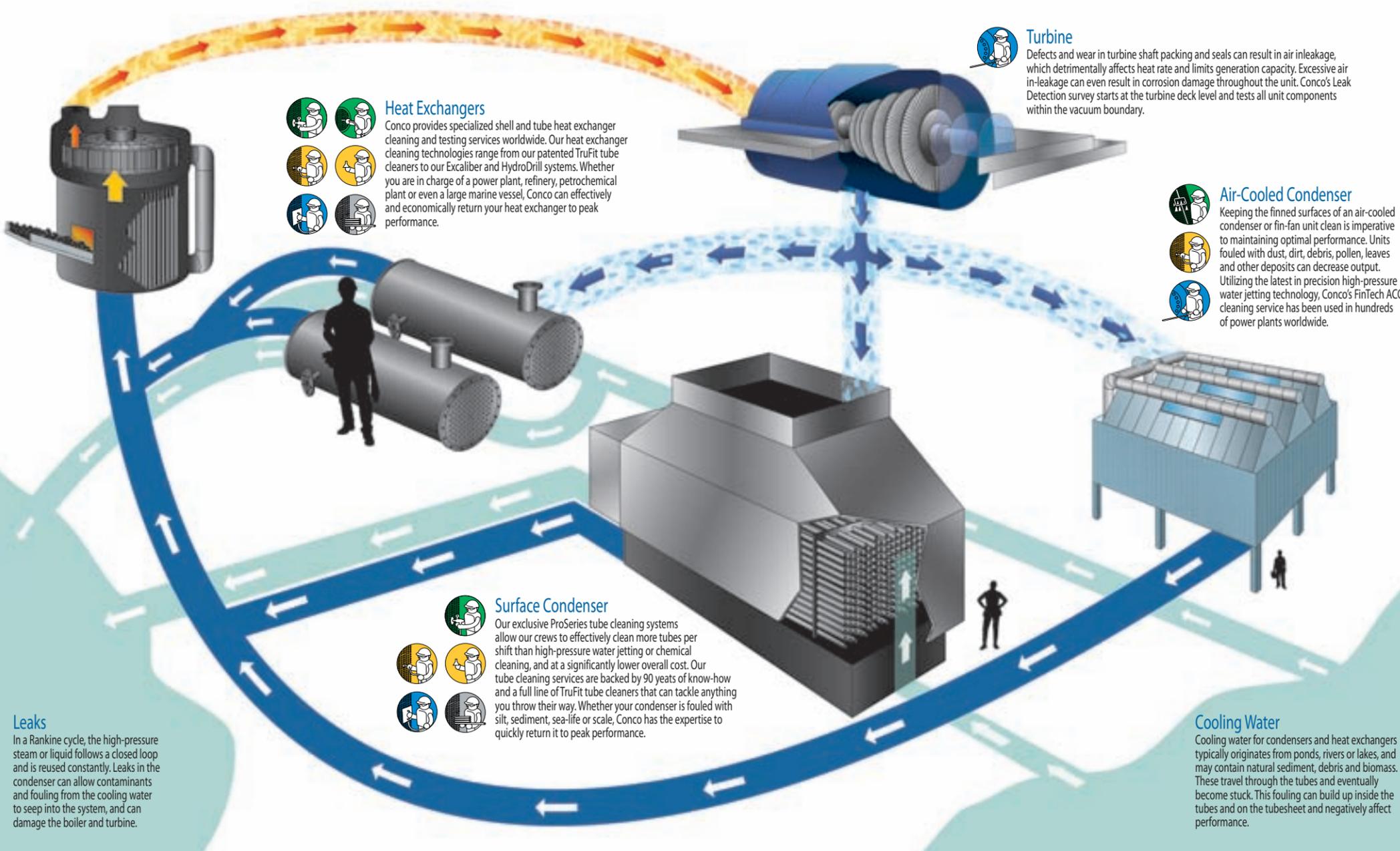
Conco TruFit Tube Cleaners are custom made to match your exact tube dimensions. We offer not just one or two, but over a dozen different styles and configurations to thoroughly remove any deposit from any tube. Call today and ask how you can get a free sample of the Conco TruFit Tube Cleaner that is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





Solutions for Every Application

Conco's services work together to provide the best possible result through every step of the Rankine Cycle or Industrial Process. Our Total Performance program offers cleaning and maintenance solutions for rotary air heaters, turbines, condensers and heat exchangers.



Leaks

In a Rankine cycle, the high-pressure steam or liquid follows a closed loop and is reused constantly. Leaks in the condenser can allow contaminants and fouling from the cooling water to seep into the system, and can damage the boiler and turbine.

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● Conco Facility
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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 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.



Conco 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 3.9 kW (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 7.6 to 11.4 LPM (2 to 3 GPM) of water at 14 to 20 BAR (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.



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.



Deposit and Tube Failure Analysis
Knowing what type of deposits are in your tubes and how they effect tube integrity can help you win the war on tube fouling and failure. Once a sample is collected it is sent to Conco's lab for analysis where the deposit's key elements and organic content are identified, and a full report is made. You can then make the necessary adjustments to your cooling water chemistry to reduce the impact of future deposits.



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, Pulling and Retubing
Whether your condenser or heat exchanger tubes need to be plugged, pulled or replaced, 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 retubing. In addition to providing the know-how, our staff can work with you to determine the appropriate tubing material best suited for your project.



CONCO SERVICES

CLEANING • NON-DESTRUCTIVE TESTING • LEAK DETECTION • RETUBING

Over 150 Million Tubes Cleaned and Counting

For over 90 years Conco has designed and developed condenser and heat exchanger tube cleaners that have set the industry standards. 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. These developments along with our many success stories have positioned Conco as the undisputed world leader in condenser and 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 condenser and heat exchanger tube maintenance!

Since 1923, Conco has been providing tube cleaning services for major power generation companies, 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 condenser or heat exchanger

is fouled with silt, sediment, 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 condenser and heat exchanger performance and reduced CO₂ 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 and drilling 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 analysis reports with deposit weight and density, loss of ignition, and elemental analysis by X-Ray Fluorescence. In addition to superior tube cleaning and analysis services, our crews can provide:

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

Cleaning at Reduced Load

Whether your plant is down for an outage, turnaround or operating at reduced load, Conco crews have the ability to clean your condensers and heat exchangers. Cleaning the tubes at reduced load during periods of peak demand often results in immediate return-on-investment and optimal output during peak revenue generating periods.

Expert Staffing

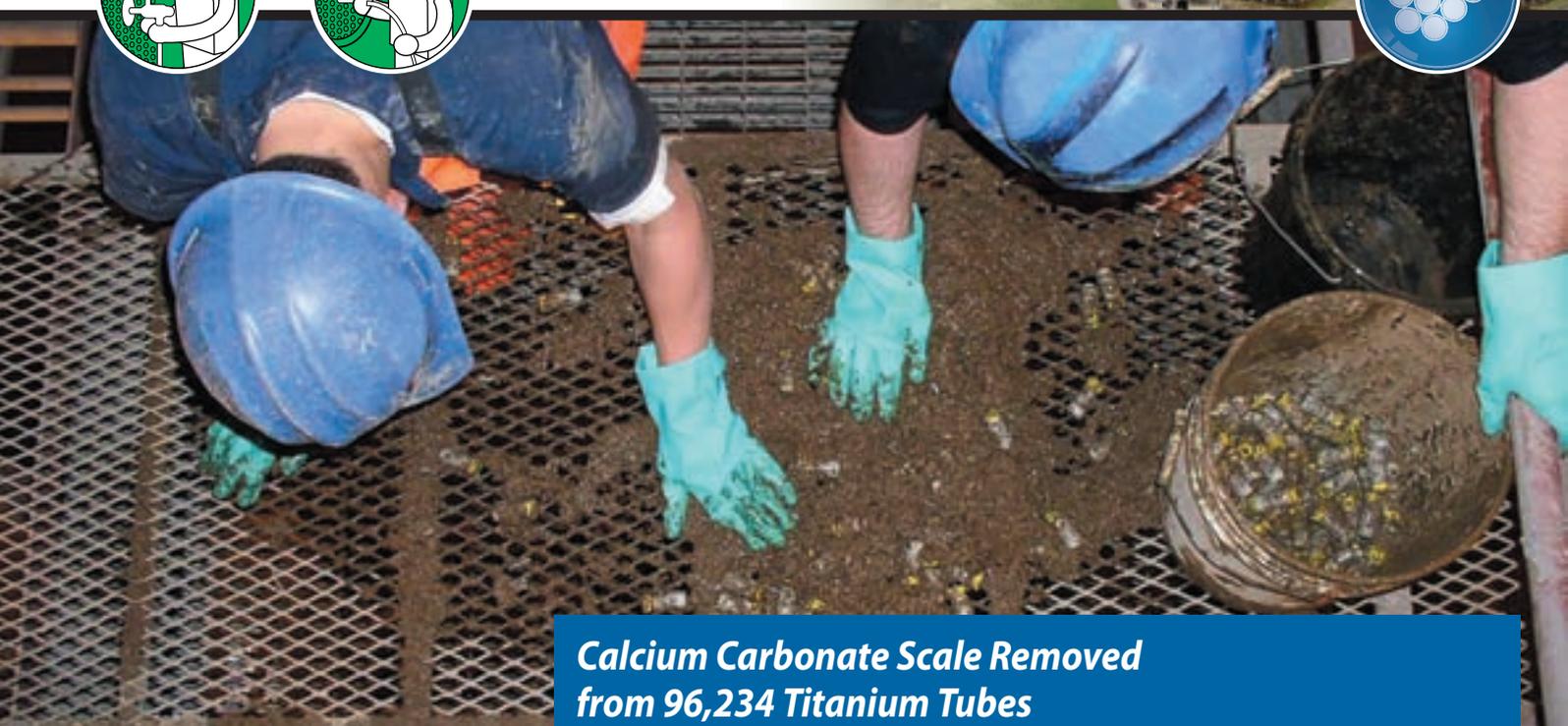
Professional, quality-oriented and self-sufficient are just a few words that describe the Conco crews. They are fully certified in confined space, CPR, safety and first aid. All of our technicians are TWIC (Transportation Worker Identification Credentials) card carriers. Issued by the US government. 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



Calcium Carbonate Scale Removed from 96,234 Titanium Tubes

The South Texas (STP) Nuclear Power Plant in Wadsworth, Texas, was put into operation in 1988. It was designed with two condenser units, acting as heat exchangers to condense the power-generating steam back into a liquid state. It is imperative that the 96,234 titanium condenser tubes in each of the two units be maintained in as clean a state as possible to effect optimal condensing efficiency.

During a prior maintenance of the two condenser units that each produce 1,250 MW of power, a scale deposit was found in the tubes of Unit 1 which proved to be a tenacious form of calcium carbonate, or calcite. The deposit is a crystalline compound found in such materials as limestone and marble. The thickness of twenty samples tested at STP ranged from 7.6 to 31.2 mils, with an average of 19.06 mils. It was also discovered that over 20% of the tubes were blocked completely.

The Conco team arrived with a supply of mechanical tube cleaners called "Calbusters," which are specifically designed to break the stratified calcium carbonate deposits. One pass was performed with undersized Conco C4S metal-bladed cleaners, followed by multiple passes of various sized Conco Calbuster calcium carbonate cutting cleaners that are stepped in size for inside diameters ranging from 15.7 to 17.6 mm (0.620" to 0.694") and a final pass with a C4S to remove the fractured scale.

In all, 5.7 cubic meters (7.5 cubic yards) of calcium carbonate, weighing over 2,268 kilograms (5,000 pounds), were removed from the 96,234 condenser tubes in Unit 1 and another 3.1 cubic meters (4 cubic yards), weighing over 1,361 kilograms (3,000 pounds), were removed from Unit 2. As a result of the condenser tube cleaning and removal of the calcium carbonate scale, South Texas Project Nuclear Power Station reports an increase of upwards of 3 MW in power production from the two units, a significant improvement.





TUBE SHOOTING, BRUSHING AND DRILLING

Improve your condenser and 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 and biofouling. Our systems have been used worldwide to clean over 150 million condenser and heat exchanger tubes quickly, safely and effectively. Conco systems include the ProSeries™ 200B Tube Cleaning System with TruFit™ Tube Cleaners, the ProSeries Excaliber™ Flex Shaft Tube Cleaning System, and the Dominator and Mitee Mouse II HydroDrills™ for high torque rotary drilling action.



ProSeries 200B Tube Cleaning System with TruFit Tube Cleaners

When it comes to fast, efficient condenser and heat exchanger tube cleaning, the ProSeries 200B Tube Cleaning System has no equal. This two-gun pump system uses safe 20 BAR (300 PSI) water pressure to propel TruFit tube cleaners through fouled tubes, removing deposits, corrosion product and obstructions in a single shot!

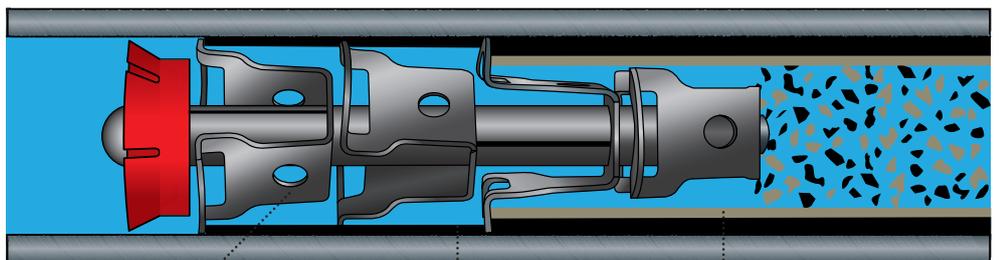
At the heart of this system are the Conco TruFit tube cleaners. Manufactured exclusively by Conco, each tube cleaner is designed for specific fouling types and sized for your exact tube dimensions to ensure safe, effective tube cleaning. Unlike other companies that shoot only one or two types of cleaners, Conco has more than a dozen designs engineered for effective removal of fouling and underlying corrosion. By removing underlying corrosion, you extend tube life and dramatically reduce the chance of tube failure. Made from quality materials and quality checked every step of the way, Conco TruFit tube cleaners are built to perform better than any other tube cleaner on the market.



A Conco tube cleaner with TruFit technology is your guarantee that the tube cleaner you buy is a 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 damage to tubing. Conco tube cleaners with TruFit are built by us in our factory using the best materials and are quality checked every step of the way. Insist on genuine Conco tube cleaners with TruFit technology!



Conco Crew Shooting Tubes with TruFit Tube Cleaners



Spring-Loaded Radial Designed Blades

Scale and Corrosion

Soft Deposits



The ProSeries Excaliber Flex Shaft Tube Cleaning System

Equipped with a 3.9 kW (5.25 HP) motor, the ProSeries Excaliber Flex Shaft Tube Cleaning System gives Conco crews the torque needed to scour away any deposit. This compact, portable system features a brush mounted to the tip of a flexible shaft, rotating at up to 2,500 RPM, and water flush to remove debris. As the flexible shaft rotates, water is pumped through the shaft casing to the cleaning tool, flushing away deposits as they are loosened. No electricity is required. The Excaliber uses plant air and water, and is activated with a simple foot pedal. It is ideal for cleaning heat exchanger tubes from 9.5 to 38.1 mm ($\frac{3}{8}$ " to $1\frac{1}{2}$ " I.D. with heavy wall deposits, or where limited access prevents conventional tube shooting.



HydroDrill Tube Cleaning Systems

Utilizing a water flush and rotary drilling action, Conco HydroDrill Tube Cleaning Systems are the fastest and most effective way to remove difficult deposits from the inside of heat exchanger tubes, chemical reactors, condensers, re-boilers and absorbers. Sized properly the heavy duty Dominator and hand held Mitee Mouse II units are designed for maximum cleaning effectiveness. Both units will quickly scour away hard deposits such as coke, calcium, sulfur, bauxite, asphalt, oxides and baked-on hard polymers. Depending on the system used, Conco crews can remove obstructions from any type of tube ranging from 12.7 to 70 mm ($\frac{1}{2}$ " to $2\frac{3}{4}$ " I.D. and up to 18.3 m (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 6.1 m (20') long tubes in only 30 to 90 seconds each. 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.





FinTech ACC AIR-COOLED CONDENSER CLEANING

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

Fouled surfaces of air-cooled condensers and 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 condenser or heat exchanger and has been used successfully to remove 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. What ever 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 30.2 square meters (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 Gary
Director of Operations
Rosebud Operating Services



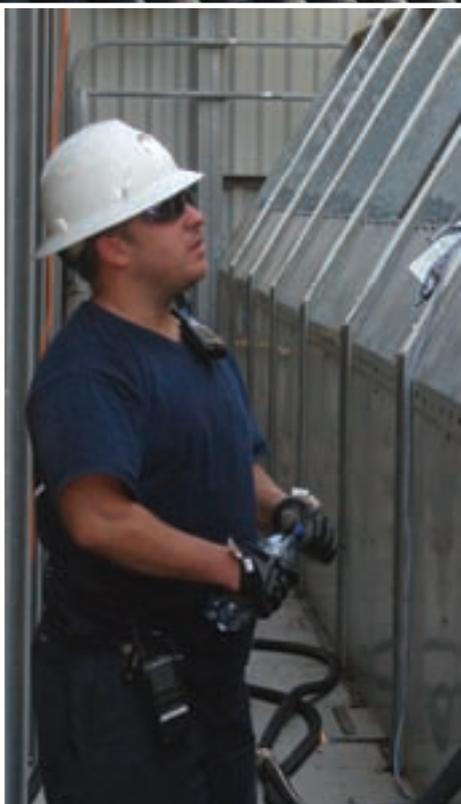
Back of Fins During Cleaning Operations



Fins Before Cleaning with FinTech



Fins After Cleaning with FinTech





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 outages 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

Condensers and 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.

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.

Did you know that more than 7,000 outages per year are attributed to tube failures costing the industry hundreds of millions of dollars in lost production and repair? Many power 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.*

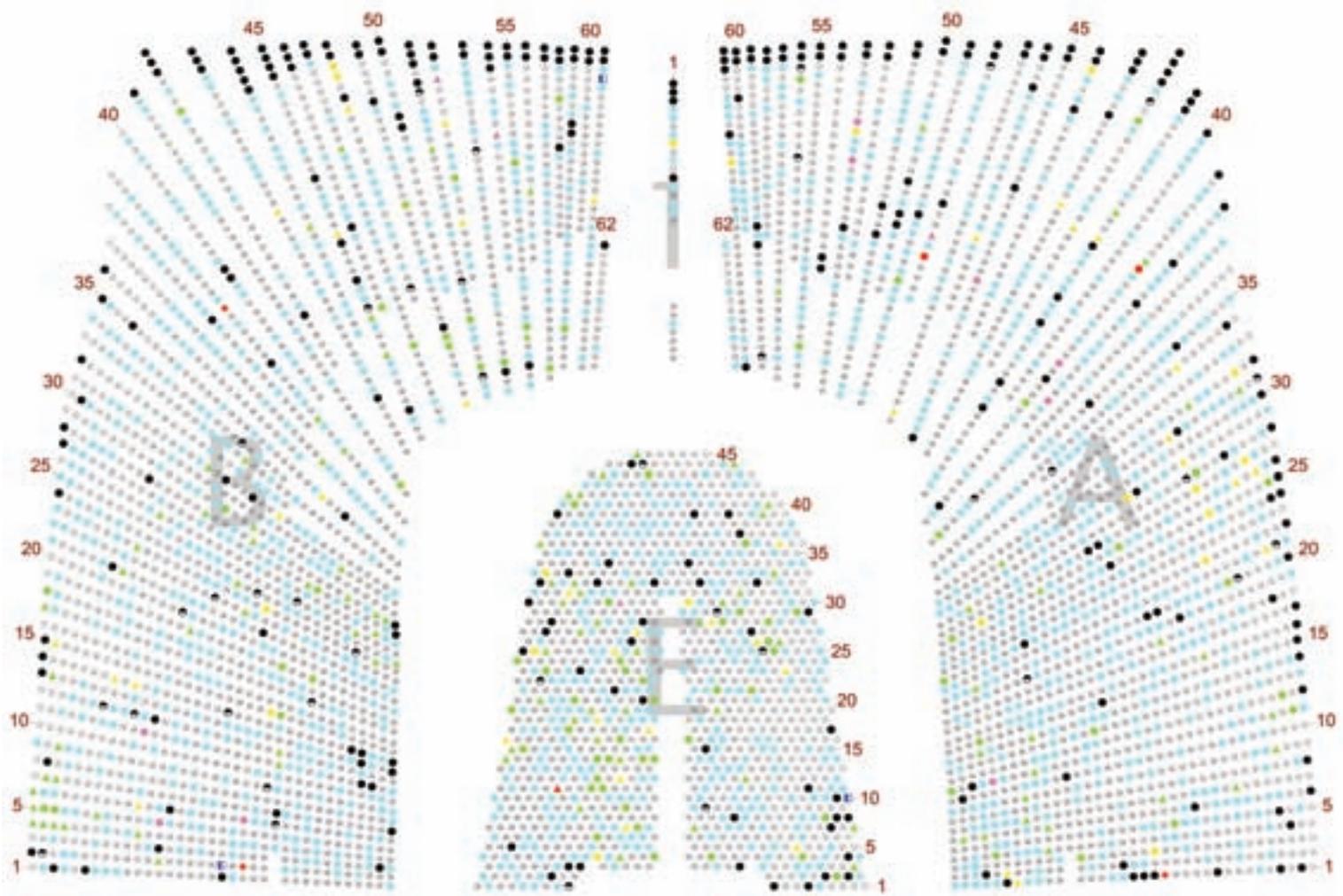
** Based on recent North American Electric Reliability Corporation Data.*



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	0	QUERY OBS_CALLS.qry
■	3	3	3	3	QUERY RES_CALLS.qry
■	1409	1408	1404	1404	QUERY HOO_CALLS.qry
■	0	0	0	0	QUERY FWH_CALLS.qry
●	45	45	37	37	QUERY DNT_CALLS.qry
●	112	109	108	108	QUERY 20-29.qry
●	87	85	83	83	QUERY 30-39.qry
●	39	39	39	39	QUERY 40-49.qry
●	20	20	20	20	QUERY 50-59.qry
●	9	9	9	9	QUERY 60-69.qry
●	4	4	4	4	QUERY 70-79.qry
●	1	1	1	1	QUERY 80-89.qry
●	2	2	2	2	QUERY 90-100.qry
●	282	282	282	282	QUERY PLG_CALLS.qry
●	3	3	3	3	QUERY STC_CALLS.qry
	2,016	2,010	1,997		

Tubesheet Mapping

This service provides an at-a-glance summary of condenser or 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 analysts 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 condenser or 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 condenser or heat exchanger. It also allows Conco to monitor for any new damage mechanisms that may occur during the run cycle. This is part of a preventative maintenance program that Conco can help establish and maintain.



Remote Field Probe



Eddy Current Probe



DEPOSIT AND TUBE FAILURE ANALYSIS

Know your enemy and win the war on tube fouling and failure.

Military strategist Sun Tzu once wrote "know your enemy and you will win a thousand wars." At Conco, we believe knowing what type of fouling deposits are within your tubes can help you win the war against tube fouling and failure.

By utilizing Conco's tube shooting method, crews are able to capture whole tube deposit samples. This would be virtually impossible to do with high-pressure water or chemical cleaning. These deposits are then analyzed and key elements and their organic content are identified. Armed with this information, your chemistry team can then make the necessary adjustments to your cooling water to reduce the impact of future deposits.



Deposit Analysis

Once a Conco cleaning crew collects a deposit sample from a condenser or heat exchanger tube, the sample is sent to Conco's lab. There the sample is filtered and dried, and a loss-on-ignition test is performed. A representative portion is then analyzed and a full report is provided to the customer.

Deposit Density

Full-length tube deposit samples are taken by shooting Conco TruFit™ tube cleaners through selected tubes and collecting the deposits. These samples are then filtered, dried and measured to determine the deposit's weight in grams. Deposit density then provides information for trending and cleaning effectiveness.

Tube Failure Analysis

Before you can prevent future tube failure, you must first determine the cause of current tube damage and failure. Conco's Tube Failure Analysis Service analyzes tube surface abnormalities. A tube is pulled from the subject condenser or heat exchanger, sectioned and subjected to a host of metallurgical examinations and tests. Once testing has been completed and all tube surface abnormalities identified, a full report is provided to the customer.

Deposit Analysis			
Plant:	Power Station		
Unit:	Unit No. 4 Condenser		
Tube Info:	1" O.D. x 22 BWG x 30' L		
Date of Sample:	January 8, 2014		
Analysis:	XRF (X-Ray Fluorescence)		
Elements (%):			
Iron	14.61	Manganese	17.30
Calcium	18.17	Nickel	0.002
Magnesium	2.36	Cobalt	0.002
Titanium	0.076	Tin	0.00
Potassium	0.16	Sodium	0.06
Silicon	22.95	Zinc	0.004
Aluminum	0.89	Copper	0.002
Zirconium	0.009	Molybdenum	0.002
Phosphorus	0.16	Sulfur	0.23
Loss on Ignition (750° C):			43.17
Samples:			
Cleaner Type	Passes	Deposit Wt. (g)	Deposit Wt. Density (g/sq.ft.)
C3S	1	18.46	2.77
C3S	1	12.93	1.94
C3S	1	21.05	3.15



Condenser Tube Fouled with Calcium Carbonate Scale



Tube Wall Showing Pitting Due to Magnesium Deposit

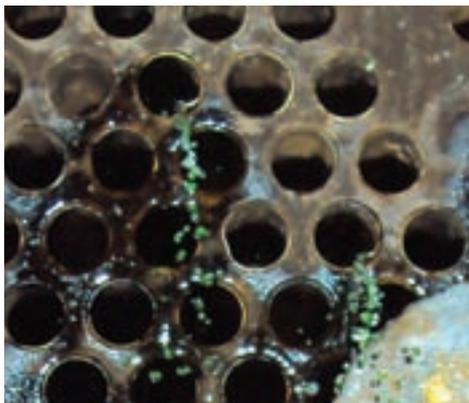


Damaged Tube End



Tube Cleaning and Tube Condition Assessment

Tube cleaning and tube condition assessments are available to help you determine the best and most suitable Conco tube cleaner for your site specific conditions. First, sample tubes are selected and cleaned using a variety of Conco tube cleaners. The tubes are then inspected for deposit removal. The cleaning efficiency of the selected Conco tube cleaning products are determined, reported to the customer and cleaning recommendations are made.



Leaking Tubes



Heat Exchanger with Eroded Tubes



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 outages 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.

Conco crews can detect:

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

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.



Locating Sources of Air Inleakage

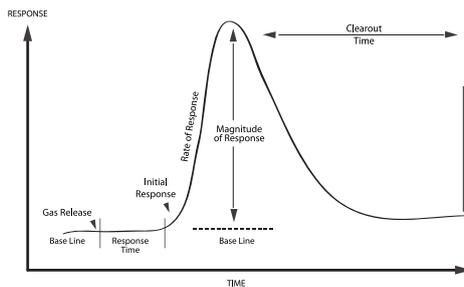
Conco pioneered the use of tracer gas technology to locate air inleakage in power plants. Since 1978, Conco has restored performance to thousands of plants worldwide using exclusive technology. Our technicians are the best in the business with an average of 23+ years experience in the field. They're knowledgeable of all the components within your vacuum boundary. A typical 500 MW 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.

Air inleakage can negatively impact your units 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. Poor water chemistry can also cause stress corrosion cracking of turbine components. Our leak detection specializes in finding tube leaks within main condensers. Our methodical approach, using either helium or SF₆ tracer gases, ensures that we find even the smallest leaks.

Chart Recording of a Typical Leak Response



During a recent four-year period, condensers were responsible for more than 25,000 forced and scheduled outages, with condenser tube leaks being the primary source of generation loss.



Conco Technician with SF₆ Pack Unit Checking for Sources of Air Inleakage



Helium Testing Services

Trained in all aspects of tracer gas leak detection, Conco technicians can use a Helium Mass Spectrometer System to inspect for condenser air leakage and/or condenser 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. In addition to field services, complete Helium Mass Spectrometer Systems and in-house training are available, see pages 28 to 29.

SF₆ Testing Services

SF₆ has a detectible 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 condenser tubes. Conco pioneered the use of SF₆ for power generation leak detection in 1978 and is the only company to manufacture a continuously sampling SF₆ analyzer! Our Fluorotracer analyzer takes full advantage of the detectible concentration of SF₆ and can also be used with our handheld SF₆-Pak to perform air inleakage surveys making it an extremely versatile system. For complete SF₆ Systems and in-house training see pages 28 to 29.

Vacuum Leak Detection Services

Leaking tubes can ruin an entire tube bundle. To avoid costly retubing, these damaged tubes must be identified and plugged. Conco's hand held Vacuum Leak Detector Gun provides a safe, simple solution to identify leaking tubes in single compartment components with no turbine vacuum. All the Gun requires is compressed air.

To locate leaking tubes, a technician selects a tube to be tested and temporarily plugs the far end. Next, the nozzle of the Vacuum Leak Detector Gun is firmly placed into the open end of the tube, forming an air tight seal. Powered by compressed air, the Vacuum Leak Detector Gun pulls a vacuum in the tube to a desired reading on the gauge. A steady reading on the gauge indicates that the tube does not leak. If the reading on the gauge drops, you have pinpointed a leaking tube. For a complete Vacuum Tube Leak Detector Kit see page 28.





PULLING AND RETUBING SERVICES

**Retube with Confidence... Retube with Conco,
the Condenser and Heat Exchanger Performance Experts.**

Turn to Conco for all your condenser and heat exchanger retubing needs. Our strong relationships with tube manufacturers and retubing equipment suppliers allow us to bring the best value to you, our customer when replacing tubing in your main condenser or other balance of plant heat exchangers. Whether you need to pull and replace 500, 5,000 or 25,000 tubes, Conco can provide you with a turnkey operation or work with your existing general contractor as directed.

Choosing the Best Tube Material Starts with Conco

Conco crews are experts in condenser and heat exchanger retubing. In addition to proving the know-how for your retubing project, Conco can work with you to determine the appropriate tubing material best suited for your application. Not sure of what type of tube material to use? Let us put our knowledge of 90 plus years of tube cleaning and testing to work for you. We can give you the pros and cons of available tube materials and help you come up with the ideal plan. Our relationship with the top names in tubing allows us to provide in depth education to our customers on the best choice for their site-specific conditions.

Retubing isn't just about how many linear feet a company can install, it's about how a company can bring together the best resources for the application, combined with almost 90 years experience on how that tubing holds up to fouling and other environmental factors.

Conco Innovation Exceeds Expectations

Conco recently completed the retubing of 25,000 AIBr condenser tubes at a 700 MW coal-fired power plant. The power plant retained the services of the engineering firm who originally installed the condenser to oversee the project. The engineering firm stipulated that prior to installing new tubing, tubesheet holes must undergo and pass a "white glove" inspection for cleanliness. Because Conco also specializes in condenser tube cleaning services, they were able to quickly innovate technology for meeting the engineering firm's cleanliness requirement. Conco engineers adapted a tool that performed cleaning utilizing rotating brush technology while simultaneously applying a cleaning agent. Once clean, the same tool was used to buff the tubesheet holes to achieve a "white glove" finish. An engineering company spokesman said, "The process was extremely efficient and underscored the benefit of having a multi-disciplined company like Conco on the project."







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 69 BAR (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 your need a temporary or permanent plug, count on Conco to get the job done right.



A Plug for Every Type of Tube

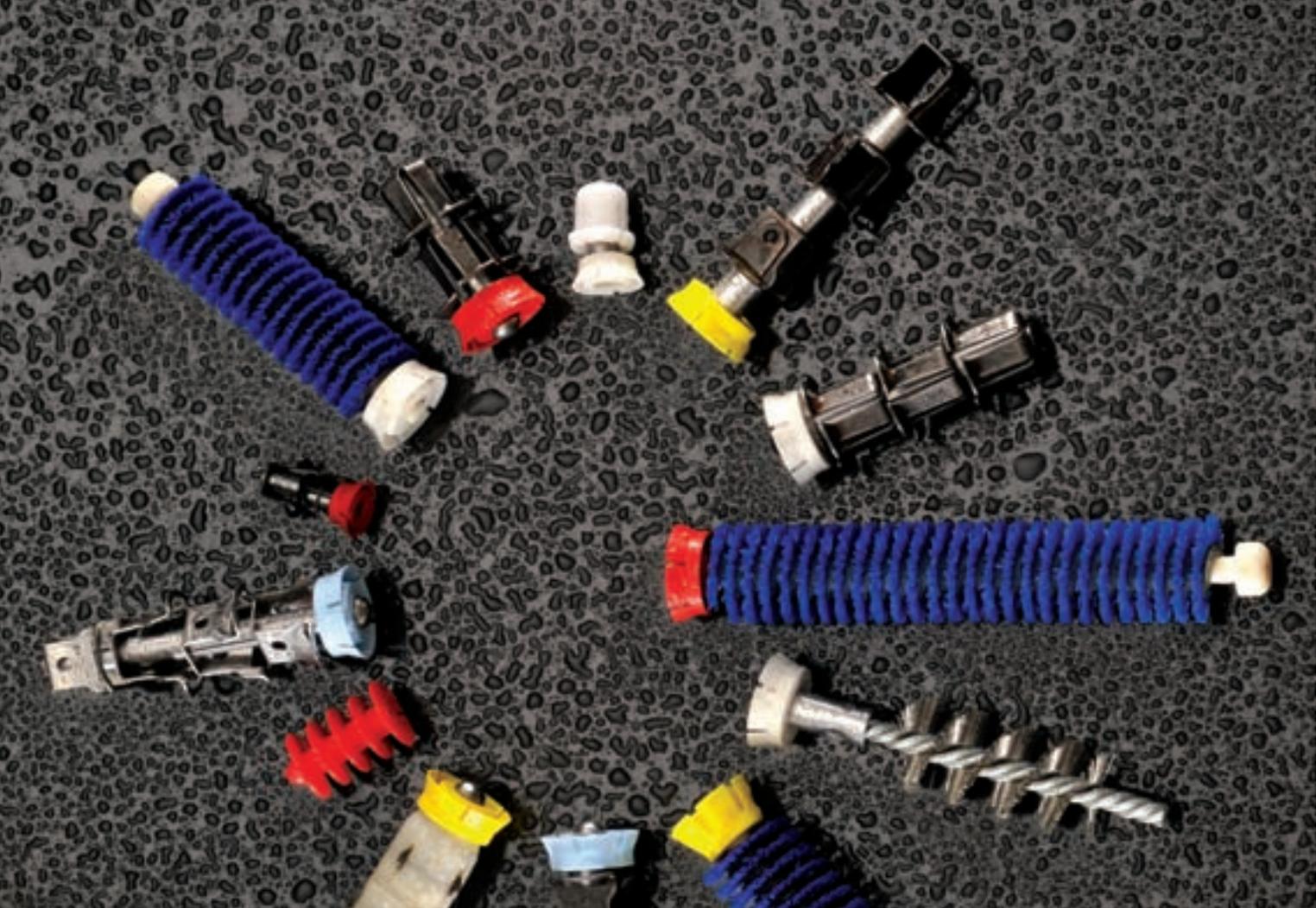
When you need to plug off leaking tubes in condensers and heat exchangers, look no further than Conco. Our crews can accommodate any tube plugging application. Conco offers a full range of plug sizes, styles and materials to match your needs.

Our inventory includes High Confidence Plugs, tested to over 70 BAR (1,000 PSI) under a wide range of temperature and vibration conditions. Our line of expanding tube plugs can be used for temporary or permanent plugging. While our EX-3 features an oversized washer to prevent it from being pulled into the tube by the vacuum of the unit, our EX-4 is designed to be placed inside the tube at exact locations. Our EX-F plug offers two separate gripping and sealing designs in one plug and seals to 35 BAR (500 PSI).

Need a temporary or emergency plug, then check out Conco Fiber Tube Plugs. These plugs install easily, expand when wet and will not damage tube sheets. They can be used in temperatures up to 110° C (230° F).

Type-1 Pin, and Type-2 Pin and Collar Tube Plugs come standard in titanium, stainless steel, brass and bronze. They seal at high temperatures, allowing continued use of the unit without major overhaul. They are ideal for use in the tubesheet where tube samples have been extracted.





CONCO EQUIPMENT

TUBE CLEANING SYSTEMS • LEAK DETECTORS • ACCESSORIES

Now You Can Own And Operate The Same Equipment The Pros Use!

If you are an owner or operator of a plant facility and you want to perform your own cleaning projects, please contact Conco for your complete equipment needs and certified training. Our qualified supervisors will train you every step of the way, assuring quality productivity and satisfaction. Conco manufactures a wide variety of state-of-the-art tube cleaning and leak detection equipment including our ProSeries™ 200B Tube Cleaning System with TruFit™ Tube Cleaners, Excaliber™ Flex Shaft and HydroDrill™ Rotary Tube Cleaning Systems with water flush, and ProSeries Helium Mass Spectrometer, SF₆ Fluorotracer™ and Vacuum Leak Detection Systems. No matter how difficult your deposit problem... whether it be microbiological, manganese and iron, calcium carbonate scale, hydrocarbons or anything in between... Conco has the solution. Call Conco today and let our experts help you select the equipment, accessories and training you need to help you keep your condensers and heat exchangers running at peak efficiency.



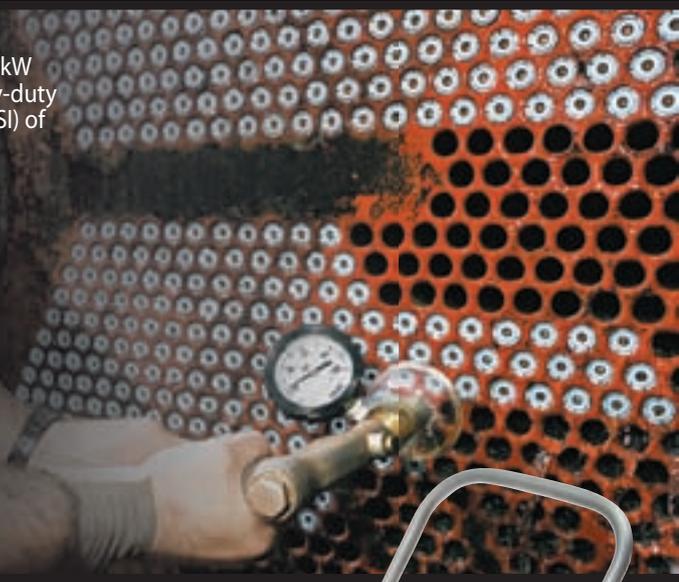
PROSERIES™ 200B TUBE CLEANING SYSTEM

Dependable, fast and built to last... the 200B will shoot tubes 12.7 to 38.1 mm (1/2" to 1 1/2") I.D. with a 20 BAR (300 PSI) water flush at 136 LPM (36 GPM).

The ProSeries™ 200B Tube Cleaning System features the same durable, field-proven machine that our crews use. This state-of-the-art equipment has effectively cleaned over 150 million condenser and heat exchanger tubes worldwide. Designed to shoot any make or model of tube cleaner through tubes from 12.7 to 38.1 mm (1/2" to 1 1/2") I.D., it increases available water pressure to the 20 BAR (300 PSI) necessary for effective cleaning. The unit is equipped with a 7.5 kW (10 HP) motor and durable positive displacement triplex plunger two-gun pump.

- Powerful – Features a robust 7.5 kW (10 HP) electric motor and heavy-duty pump generating 20 BAR (300 PSI) of water pressure
- Reliable – Built from heavy-duty, industrial strength components, the 200B is designed for years of dependable performance

- Flexible – Can be used with any make or model of tube cleaner
- Portable – Complete with mobile base, can be easily moved to and around the job site



How It Works

The ProSeries 200B pumps water at 20 BAR (300 PSI), propelling tube cleaners through condenser and heat exchanger tubes to remove deposits, corrosion product and obstructions in a single pass. For best results, use in conjunction with TruFit™ tube cleaners, see pages 20 to 23.

Features

- 20 BAR (300 PSI) two-gun pump
- Ergonomically designed easy action guns
- Industrial grade, safety yellow inlet and outlet hoses
- Large pneumatic tires
- Heavy-duty cart

Specifications

Motor Power: 7.5 kW (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: 1.8 m (6'), 10-4 Type SO
Water Requirements: Minimum 2.8 BAR at 136 LPM (40 PSI at 36 GPM), Maximum 4.8 BAR at 136 LPM (70 PSI at 36 GPM)
Output Water Pressure: 20 BAR at 136 LPM (300 PSI at 36 GPM)
Hoses: 31.8 or 38.1 mm x 15.2 m (1 1/4" or 1 1/2" x 50') inlet, 19.1 or 25.4 mm x 15.2 m (3/4" or 1" x 50') outlet
Pump: Triple plunger running in oil bath
Dimensions: 80 cm (2.6') high x 67 cm (2.2') wide x 190 cm (6.2') deep
Weight: 217 kg (480 lbs) net dry

200B ProSeries Pump System including 7.5 kW (10 HP) motor, triplex plunger pump, water pressure inlet and outlet gauges, plumbing for up to two guns, pneumatic tires and heavy-duty cart
Call for Customization Options and Prices

Explosion Proof Model Available



ProSeries™





Check Light

For visual inspection of tubes to locate obstructions, this light includes a 3 m (10'), 16-3 cord with a three-prong plug for a 110V supply, a 12 V transformer with handle and 15.2 m (50'), 14-3 extension cord to lamp. It features a powerful one million candle power, 230 mm (9") diameter, 12 V, DC lamp with pistol grip and adjusting knob to regulate light beam.

MISCLC Check Light

Call for Price



Tarps

Lightweight and easy to handle, our rugged tarps protect the tube cleaners as well as the surrounding area from damage when the cleaners exit the tubes. Mesh tarps are designed for use inside condensers and solid vinyl tarps are ideal for use outside heat exchangers.

TAR6 Mesh Tarp, 1.8 m x 1.8 m (6' x 6') **Call for Price**

TAR10 Mesh Tarp, 3 m x 3 m (10' x 10') **Call for Price**

TAR12 Mesh Tarp, 3.7 m x 3.7 m (12' x 12')

Call for Price

TAR1216 Mesh Tarp, 3.7 m x 4.9 m (12' x 16')

Call for Price

TAR6V Solid Vinyl Tarp, 1.8 m x 1.8 m (6' x 6')

Call for Price

TAR12V Solid Vinyl Tarp, 3.7 m x 3.7 m (12' x 12')

Call for Price



Water Guns

Available in bronze or lightweight aluminum with a spring-loaded fail-safe valve, the Conco Water Guns have proven ideal for heavy-duty use. Each gun features quick-change nozzles (available in brass, stainless steel and delrin) for tube 12.7 through 34.9 mm (1/2" through 1 3/8") I.D. and powers all types and sizes of tube cleaners.



- Clear rubber splash guard prevents splash back
- SAFE – uses only non-compressible water pressure with a fail safe spring-loaded trigger valve
- Protective comfort grip rubber handle
- Few operating parts allows ease of use and repair

WGCB Bronze Water Gun including spring-loaded fail-safe valve, splash guard, comfort grip handle, quick-change nozzle and carrying case

Call for Price

WGCA Aluminum Water Gun including spring-loaded fail-safe valve, splash guard, comfort grip handle, quick-change nozzle and carrying case

Call for Price



Hoses

Conco's rugged, industrial strength hoses are rated to withstand pressures up to 55 BAR (800 PSI). They are bright yellow and wire braided with durable pressed-on NPT fittings on each end for safe, dependable service. Four standard sizes are available, all in 15.2 m (50') lengths. Inlet hoses are 32, 38 or 51 mm (1 1/4", 1 1/2" or 2") in diameter for use from the water source to the pump. Outlet hoses are 19 or 25 mm (3/4" or 1") in diameter for use with the water guns. Quick disconnect fittings and special length hoses are available.

HOS5450 Inlet Hose, 32 mm x 15.2 m (1 1/4" x 50') with NPT fittings

Call for Price

HOS3250* Inlet Hose, 38 mm x 15.2 m 1 1/2" x 50' with NPT fittings

Call for Price

HOS2150 Inlet Hose, 51 mm x 15.2 m (2" x 50') with NPT fittings

Call for Price

HOS3450* Outlet Hose, 19 mm x 15.2 m (3/4" x 50') with NPT fittings

Call for Price

HOS1150 Outlet Hose, 25 mm x 15.2 m (1" x 50') with NPT fittings

Call for Price

** Note: Recommended sizes for new 200B ProSeries Pump Systems.*



Flexible Fiberglass Rod

Available in several diameters and in 3 m (10') increments, this rod is used for dislodging obstructions from tubes. Its flexible construction allows the operator to work in a confined area.

FFR516 Flexible Fiberglass Rod, 7.9 mm (5/16") diameter

Call for Price

FFR716 Flexible Fiberglass Rod, 11.1 mm (7/16") diameter

Call for Price

FFR916 Flexible Fiberglass Rod, 14.3 mm (9/16") diameter

Call for Price





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 you buy 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 are quality checked every step of the way. Insist on 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, algae, zebra muscles, manganese, iron, corrosion product, crystalline, calcium carbonate, or any other soft or 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.

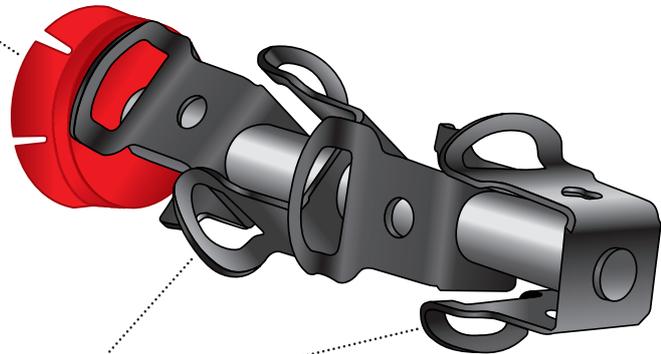
Got a difficult deposit? No problem. Our sales engineers work with you, helping you to select from over a dozen different types and styles of TruFit Tube Cleaners, assuring that the tube cleaner you select is a perfect fit for your application.

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

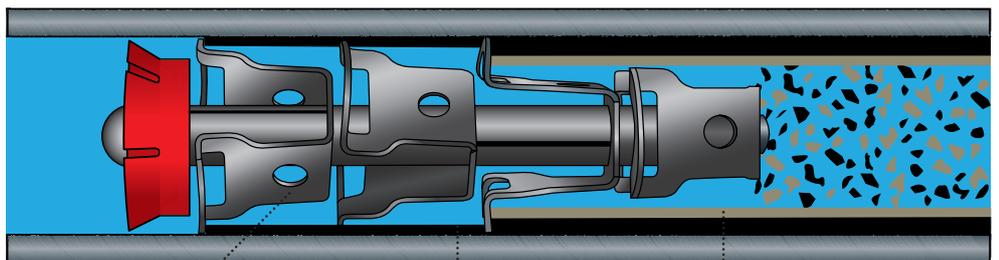


Color Coded for Quick Sizing



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

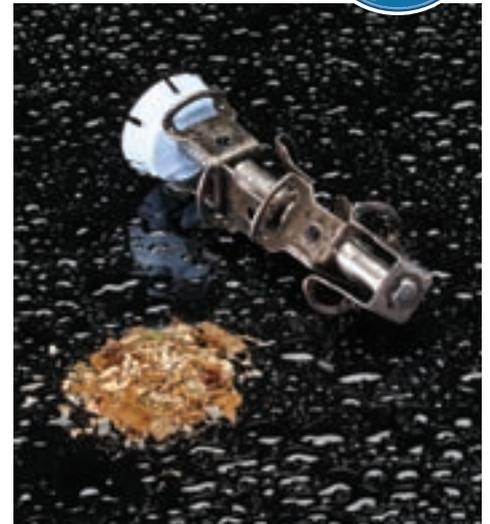
The C4S is an all-purpose tube cleaner for condensers and heat exchangers with tubes ranging from 12.7 to 38.1 mm (1/2" to 1 1/4") I.D. This spring-loaded metal cleaner is highly effective on all types of deposits, including micro and macro fouling, organic type scales, corrosion and pitting by-products, and all types of obstructions. It can also be used safely with tube inserts and coatings on tubesheets.



FEATURES

- Four metal-bladed center rivet design provides overlapping tube I.D. coverage
- TruFit technology ensures a perfect match to tube specifications
- Safe, water-powered cleaner that travels at 3 to 6.1 meters (10 to 20 feet) per second
- Color-coded caps quickly identify sizing
- Can be shot up to 12 times each

C4S Flexi-Blade Tube Cleaner
Call for Quantity Discounts and Prices



C3S Rigid-Blade Tube Cleaner

The C3S is a heavy-duty tube cleaner for condenser and heat exchanger tubes 22.2 and 25.4 mm (7/8" and 1") I.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 3 to 6.1 meters (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
Call for Quantity Discounts and Prices



C4SS Stainless Steel Tube Cleaner

The C4SS Stainless Steel Tube Cleaner can be used on all types of tube materials in condensers and heat exchangers with tubes ranging from 19.1 to 31.8 mm (3/4" to 1 1/4") I.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 center rivet design provides overlapping tube I.D. coverage
- TruFit technology ensures a perfect match to tube specifications
- Safe, water-powered cleaner that travels at 3 to 6.1 meters (10 to 20 feet) per second
- Color-coded caps quickly identify sizing
- Can be shot up to 8 times each

C4SS Stainless Steel Tube Cleaner
Call for Quantity Discounts and Prices





ADDITIONAL TRUFIT™ TUBE CLEANERS

For every condenser and 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 19.1, 22.2, 25.4 and 28.6 mm (3/4", 7/8", 1" and 1 1/8") I.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 3 to 6.1 meters (10 to 20 feet) per second
- Color-coded caps quickly identify sizing
- Can be shot up to 12 times each

C2X and C3X Hex Tube Cleaners
Call for Quantity Discounts and Prices



QTB Stainless Steel Brush

The QTB Stainless Steel brush is designed for use on all types of tube materials in sizes ranging from 15.9 to 31.2 mm (5/8" to 1 1/4") I.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 at 3 to 6.1 meters (10 to 20 feet) per second
- Color-coded end caps quickly identify sizing
- Can be shot up to 12 times each

QTB Stainless Steel Brush
Call for Quantity Discounts and Prices



H-Brush

The H-Brush is typically utilized for removing light deposits in condensers and heat exchangers with tube ranging from 15.9 to 38.1 mm (5/8" to 1 1/2") I.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 3 to 6.1 meters (10 to 20 feet) per second
- Color-coded caps quickly identify sizing
- Can be shot up to 8 times each

H-BRUSH Coil-Bound Nylon Brush
Call for Quantity Discounts and Prices



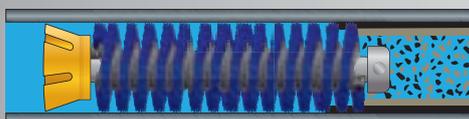
XL-Brush and XXL-Brush

Larger than the H-Brush and exhibiting similar features, the 89 mm (3 1/2") long XL-Brush and the 140 mm (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 condenser and heat exchanger tubes ranging from 15.9 to 38.1 mm (5/8" to 1 1/2") I.D.

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 3 to 6.1 meters (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 Coil-Bound Nylon Brushes
Call for Quantity Discounts and Prices





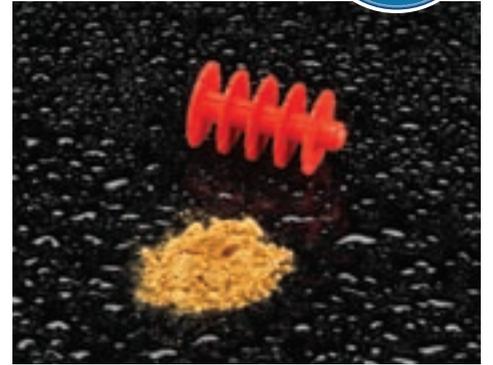
Plastic Tube Cleaner

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 condensers and heat exchangers with tubes ranging from 15.9 to 31.2 mm (5/8" to 1 1/4") I.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 prevents streaking
- TruFit technology ensures perfect match to tube specifications
- Safe, water-powered cleaner that travels at 3 to 6.1 meters (10 to 20 feet) per second
- Can be shot up to 4 times each

TYPE-P Plastic Tube Scrubber
Call for Quantity Discounts and Prices



Calbuster

Removing hardened calcium scale from the inside of condenser and heat exchanger tubes can be a difficult and time-consuming task. Traditional cleaning methods are virtually ineffective. The Calbuster 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. Calbusters are available for use in tubes ranging from 19.1 to 31.2 mm (3/4" to 1 1/4") I.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 end caps quickly identify sizing
- Environmentally friendly design allows for replacement of cutting wheels and reuse

BUS Calbuster
Call for Quantity Discounts and Prices



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 15.9 to 31.2 mm (5/8" to 1 1/4") O.D. in all BWG's.

FEATURES

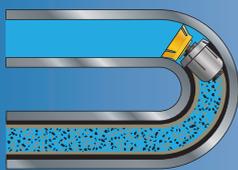
- Carbon steel design can remove tough deposits
- TruFit technology ensures perfect match to tube specifications
- Safe, water-powered cleaner that travels at 3 to 6.1 meters (10 to 20 feet) per second
- Color-coded end caps quickly identify sizing
- Can be shot up to 12 times each

C2S U-Tube Cleaner
Call for Quantity Discounts and Prices



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 Type-U Plastic U-Tube Cleaner is available for tubes ranging from 15.9 to 31.2 mm (5/8" to 1 1/4") O.D. in all BWG's.

FEATURES

- Hard, plastic body, capable of navigating tight radiuses
- Safe, water-powered cleaner that travels at 3 to 6.1 meters (10 to 20 feet) per second
- Color-coded end caps quickly identify sizing
- Can be shot up to 2 times each

TYPE-U Plastic U-Tube Cleaner
Call for Quantity Discounts and Prices





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 condenser and heat exchanger tubes from 9.5 to 38.1 mm (3/8" to 1 1/2") I.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 is 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 3.9 kW (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 biofouling and soft deposits, the Excaliber is an extremely versatile tube cleaning system.

The Excaliber is ideal for cleaning:

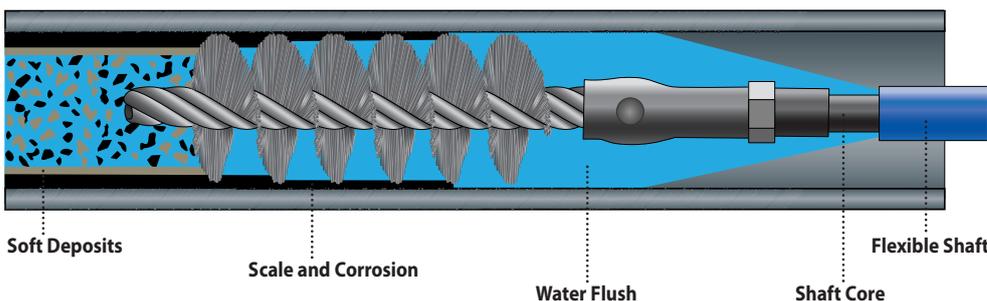
- Lube Oil Coolers
- Excitor Coolers
- Hydrogen Coolers
- Seal Oil Coolers
- Stator Coolers

How It Works

The Excaliber Flex Shaft Tube Cleaner uses a brush or drill bit 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.

Features

- Air Powered, no electricity required
- Stainless steel and aluminum construction
- Adjustable speed and torque control
- Flexible shafts, up to 60' long
- Interchangeable brushes
- Air and water hose available in 7.6 and 15.5 m (25' and 50') lengths
- Foot pedal activation



ProSeries™

**Air Powered
for Safety**

Specifications

Motor Power: 3.9 kW (5.25 HP)

Air Requirement: Minimum 4.1 BAR at 144 CMH (60 PSI at 85 CFM), Maximum 6.9 BAR at 279 CMH (100 PSI at 175 CFM)

Water Requirements: Minimum 2.1 PSI at 11.4 LPM (30 PSI at 3 GPM), Recommended 3.4 BAR at 18.9 LPM (50 PSI at 5 GPM), Maximum 8.6 BAR at 26.5 LPM (125 PSI at 7 GPM)

Flexible Shaft Speed and Torque: Adjustable, 300 RPM at 20.9 N m (185 in lb) to 2,500 RPM at 14.9 N m (132 in lb)

Air and Water Hoses: 19 mm (3/4") with Chicago fittings

Dimensions: 25 cm (10") high x 66 cm (26") wide x 20 cm (8") deep

Weight: 16.3 (36 lbs) net dry

P2000XCAL Excaliber Pneumatic Flex Drive Tube Cleaning System including foot pedal with quick connect air fitting

Call for Customization Options and Prices

Note: See page 25 for air/water hoses, flexible shafts and brushes.



Flexible Shafts

No matter what type of condenser or heat exchanger tubes you are cleaning, Conco has the flexible shaft to match your application. Our shafts feature an abrasion resistant nylon casing to withstand harsh industrial environments, an internally lubricated shaft insert to reduce friction and a galvanized spring steel core with multiple counter rotated windings for long life. All shafts are equipped with a metal nut to provide a secure connection to the Excaliber and a strain relief sleeve molded with variable thickness to provide a gradual radial bend to help prevent breakage. A shaft stop can be positioned anywhere along the shaft to let you know when the end of the tube has been reached. Custom shafts are available for dry and high temperature applications.

SAFLXSHNY Flexible Shafts – Nylon Casing

Shaft O.D.	Tube I.D.	Length	Thread
6.4 mm (1/4")	7.1 to 11.1 mm (0.281" to 0.437")	4.6 m (15')	8-32 F
9.5 mm (3/8")	11.1 to 1.9 mm (0.437" to 0.625")	7.6 m (25')	1/4-28 F
9.5 mm (3/8")	11.1 to 15.9 mm (0.437" to 0.625")	13.7 m (45')	1/4-28 F
9.5 mm (3/8")	11.1 to 15.9 mm (0.437" to 0.625")	18.3 m (60')	1/4-28 F
12.7 mm (1/2")	15.9 to 31.8 mm (0.625" to 1.25")	7.6 m (25')	1/4-28 F
12.7 mm (1/2")	15.9 to 31.8 mm (0.625" to 1.25")	13.7 m (45')	1/4-28 F
12.7 mm (1/2")	15.9 to 31.8 mm (0.625" to 1.25")	13.7 m (45')	1/4-28 F
14.3 mm (9/16")	17.4 to 31.8 mm (0.687" to 1.25")	7.6 m (25')	1/4-28 F
14.3 mm (9/16")	17.4 to 31.8 mm (0.687" to 1.25")	13.7 m (45')	1/4-28 F
14.3 mm (9/16")	17.4 to 31.8 mm (0.687" to 1.25")	13.7 m (45')	1/4-28 F
19.1 mm (3/4")	31.8 to 38.1 mm (1.25" to 1.5")	7.6 m (25')	1/4-28 F
19.1 mm (3/4")	31.8 to 38.1 mm (1.25" to 1.5")	10.7 m (35')	1/4-28 F
19.1 mm (3/4")	31.8 to 38.1 mm (1.25" to 1.5")	18.3 m (60')	1/4-28 F

Abrasion Resistant Nylon Casing

Strain Relief Sleeve

Metal Nut

Shaft Stop

Galvanized Spring Steel

Internally Lubricated Shaft Insert

Note: Couplings available to connect brushes with mismatched threads.

Call for Quantity Discounts and Prices

Brushes

Always match the brush material to the tube metal and deposit. Use Nylon Brushes for soft deposits in any tube and Brass Brushes for deposits on soft tube metals. Only use Stainless Steel Brushes for deposits on hard tube metals. Use Spin-Grit Brushes to clean and polish the lands and groves of enhanced tubes.



SABRNY Nylon Brushes

Brush Size	Thread	Brush Size	Thread
7.9 mm (5/16")	8-32 M	17.5 mm (11/16")	1/4-28 M
9.5 mm (3/8")	8-32 M	19.1 mm (3/4")	1/4-28 M
11.1 mm (7/16")	1/4-28 M	20.6 mm (13/16")	1/4-28 M
12.7 mm (1/2")	1/4-28 M	22.2 mm (7/8")	1/4-28 M
14.3 mm (9/16")	1/4-28 M	23.8 mm (15/16")	1/4-28 M
15.9 mm (5/8")	1/4-28 M	25.4 mm (1")	1/4-28 M



SABRBR Brass Brushes

Brush Size	Thread	Brush Size	Thread
7.9 mm (5/16")	8-32 M	17.5 mm (11/16")	1/4-28 M
9.5 mm (3/8")	8-32 M	19.1 mm (3/4")	1/4-28 M
11.1 mm (7/16")	1/4-28 M	20.6 mm (13/16")	1/4-28 M
12.7 mm (1/2")	1/4-28 M	22.2 mm (7/8")	1/4-28 M
14.3 mm (9/16")	1/4-28 M	23.8 mm (15/16")	1/4-28 M
15.9 mm (5/8")	1/4-28 M	25.4 mm (1")	1/4-28 M



SABRSS Stainless Steel Brushes

Brush Size	Thread	Brush Size	Thread
7.9 mm (5/16")	8-32 M	17.5 mm (11/16")	1/4-28 M
9.5 mm (3/8")	8-32 M	19.1 mm (3/4")	1/4-28 M
11.1 mm (7/16")	1/4-28 M	20.6 mm (13/16")	1/4-28 M
12.7 mm (1/2")	1/4-28 M	22.2 mm (7/8")	1/4-28 M
14.3 mm (9/16")	1/4-28 M	23.8 mm (15/16")	1/4-28 M
15.9 mm (5/8")	1/4-28 M	25.4 mm (1")	1/4-28 M



SABRSG Spin-Grit Brushes

Brush Size	Thread	Brush Size	Thread
12.7 mm (1/2")	1/4-28 M	25.4 mm (1")	1/4-28 M
19.1 mm (3/4")	1/4-28 M	31.2 mm (1 1/4")	1/4-28 M



Note: Brushed should be equal to or 1.6 mm (1/16") smaller than tube I.D.
Call for Quantity Discounts and Prices

Air/Water Hoses

Made of abrasion resistant, industrial grade red rubber, Conco air/water hoses are designed for harsh environments. These heavy-duty hoses feature galvanized steel Chicago fittings for durability and quick, easy connection to Conco equipment. They have a 19 mm (3/4") I.D. for ideal flow and are available in 7.6 and 15.2 m (25' and 50') lengths.

Conco air/water hoses are for use with the Excaliber Pneumatic Flex Drive System, and the HydroDrill™ Dominator and Mitee Mouse II units.



P2000XCAL-HOSE-25 Air/Water Hose
19 mm x 7.6 m (3/4" x 25') with quick connect Chicago fittings
Call for Price

P2000XCAL-HOSE-50 Air/Water Hose
19 mm x 15.2 m (3/4" x 50') with quick connect Chicago fittings
Call for Price



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 7.6 to 11.4 LPM (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.

Conco offers two versions of the HydroDrill, the Dominator and the Mitee Mouse II. The Dominator is our large heavy-duty unit. It is powered by compressed air and a booster pump delivering 17.2 BAR (250 PSI) at a minimum of 70 LPM (20 GPM) [121 LPM (32 GPM) recommended] and is designed to clean tubes from 12.7mm to 70 mm (1/2" to 2 3/4") I.D. The Mitee Mouse II is a hand held unit, powered by compressed air and water, and is designed to clean tubes from 12.7mm to 70 mm (1/2" to 2 3/4") I.D.

Both the Dominator and the Mitee Mouse II are easy to set up and operate. HydroDrill tube cleaning is fast and efficient. A 6.1 m (20') long tube can be cleared of hard deposits in only 30 to 90 seconds. A heavily fouled or even a completely blocked tube can be easily restored to its original I.D. in a single pass. Cleaning with HydroDrill brushes can restore a tube's interior to as-new condition.

HydroDrills are used to remove hard tough deposits including:

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



How It Works

A HydroDrills 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 0.127 mm (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!

Features

- Air and water powered (no electricity required)
- Heavy-duty construction
- Custom length Kelly Rods (Dominator) and sectional Extension Rod design (Mitee Mouse II) for extending shaft length
- Interchangeable brushes and drill bits
- Air and water hose available in 7.6 m (25') and 15.2 m (50') lengths
- Hand lever activation

Dominator HydroDrill Tube Cleaning System

Specifications

- Motor Power:** 0.7 kW (1 HP)
- Air Requirements:** Minimum 5.5 BAR at 112 CMH (80 PSI at 125 CFM)
- Water Requirements:** Minimum 17.2 BAR at 76 LPM (250 PSI at 20 GPM)
- Water Flush at Drill Tip:** 7.6 to 11.4 LPM (2 to 3 GPM)
- Flexible Shaft Speed:** 1,200 RPM, Free Spinning 2,400 RPM
- Air and Water Hose:** 19.1 mm (3/4") with Chicago fittings
- Packaged and Ready for Shipment –**
- Crate Dimensions:** 60 cm (24") high x 60 cm (24") wide x drill length + 0.6 m (2') deep
- Crate Weight:** 544 kg (1,200 lbs) net dry

*Note: Front and rear stand required for horizontal operation.
Note: A 3.7 kW (5 HP) "Terminator" option is available for the toughest deposits on tubes larger than 28.6 mm (1 1/8") ID only. All components are the same with the exception of the 3.7 kW (5 HP) "Terminator" drive.
Note: Pumping system not included, call for pump options.
Note: See page 27 for Kelly Rods, brushes and drill bits.*



GLDR-DOM Dominator HydroDrill Tube Cleaning System including barrel assembly compete with dual or single motor drive and one Kelly Rod, support mast complete with adjustable A-arms, filter lubricator assembly and foot pedal assembly
Call for Customization Options and Prices

Mitee Mouse II HydroDrill Tube Cleaning System

Specifications

- Motor Power:** 0.6 KW (0.8 HP)
- Air Requirements:** Minimum 6.2 BAR AT 37.4 CMH (90 PSI at 22 CFM)
- Water Requirements:** Minimum 1.7 BAR AT 76 LPM (25 PSI at 20 GPM)
- Water Flush at Drill Tip:** 7.6 to 11.4 LPM (2 to 3 GPM)
- Flexible Shaft Speed:** 5,000 RPM, Free Spinning 6,000 RPM
- Air and Water Hose:** 19.1 mm (3/4") with Chicago fittings
- Dimensions:** 28 cm (11") high x 18 cm (7") wide x 36 cm (14") deep
- Weight:** 4.5 kg (10 lbs) net dry

Note: See page 27 for Extension Rods, brushes and drill bits.



GLMM Mitee Mouse II HydroDrill Tube Cleaning System including hand held drill unit with drive cone and rod, eight 0.9 m (3') Extension Rods, eight sub connectors, two sub adaptors, 19.1 mm x 2.1 m (3/4" x 7') air hose with oiler and tool box
Call for Customization Options and Prices



Kelly Rods for the Dominator

Conco Kelly Rods are long square metal tubes available in various lengths custom ordered to suit the HydroDrill and heat exchanger tubing to be cleaned. They are available in 7.9 mm (5/16") (1/4 - 28 female thread), 9.5 mm (3/8") (5/16 - 24 female thread) and 12.7 mm (1/2") (3/8 - 24 female thread).

GLHD-ASSY-KR33 Kelly Rod for Dominator
[Call for Price](#)

Extension Rods for the Mitee Mouse II

Conco Extension Rods are a round heavy wall metal tubes available in 0.9 or 1.8 m (3' or 6') lengths that are connected to extend the reach of the drill. They are coupled together using Kelly Connectors. Extension Rods are available in 7.9 mm (5/16") (1/4 - 28 female thread), 11.1 mm (7/16") (5/16 - 24 female thread) and 12.7 mm (1/2") (3/8 - 24 female thread).

GLMM-EXT Extension Rod
[Call for Price](#)

Kelly Subs and Connectors

Made with both male and female threads Kelly Subs are used to adapt drill bits and brushes to both Kelly Rods and Extension Rods. To preserve the female threads on the rods it is recommended to use the hardened subs. Kelly Subs can also be used to adapt to various drill bit threads. Kelly Connectors are used to connect a short extension onto a Kelly Rod and also to connect the Extension Rods of the Mitee Mouse II

GLKELLY-SUB Kelly Sub
[Call for Price](#)
GLKELLY-CON Kelly Connector
[Call for Price](#)



Brushes

HydroDrill brushes feature weep holes to allow the water flush to pass from the Kelly Rod or Extension Rod into the tube to flush away deposits. They are used to polish tube surfaces smooth and help keep deposits from adhering during operation. The result is extended operation between cleanings and enhanced equipment reliability. Nylon Brushes are used for removal of biofouling or thin silt like deposits on all tube surfaces. Brass Brush are idea for removal of thin soft deposits or for high speed polishing of copper tube materials. Only use Stainless Steel Brush on hard tube materials for removing all types of soft tube deposits, stronger cleaning ability and durability.

GLBRNYL Nylon Brushes available in sizes ranging from 19.1 mm (3/4") x 12 to 51mm (2") x 12

GLBBRA Brass Brushes available in sizes ranging from 19.1 mm (3/4") x 12 to 51mm (2") x 12

GLBRQ Stainless Steel Brushes available in sizes ranging from 19.1 mm (3/4") x 12 to 51mm (2") x 12



*Note: Custom sizes available.
 Note: Brush should be equal to or 1.6 mm (1/16") smaller than tube I.D.*

[Call for Quantity Discounts and Prices](#)

Twist Bits

Got a completely blocked tube? Conco has your solution. Our line of Twist Bits power through blockages quickly. They feature a wide, flat blade with optimum flushing volume for deposit removal.

GLBTTW Twist Bits, available in sizes ranging from 15.9 mm (5/8") x 12 to 38.1 mm (1 1/2") x 21
[Call for Quantity Discounts and Prices](#)



*Note: Additional Sizes available.
 Bit should be 0.127 mm (0.005") smaller than tube I.D.*

Red Witch Bits

Conco Red Witch Bits are ideal for removing thin and thick wall scale. They are the preferred bit for copper based tubes because of the excellent water barrier maintained between the bit and the tube.

GLBTRW Red Witch Bits, available in sizes ranging from 12.7 mm (1/2") x 18 to 25.4 mm (1") x 18
[Call for Quantity Discounts and Prices](#)



*Note: Additional Sizes available.
 Bit should be 0.127 mm (0.005") smaller than tube I.D.*

Klaw Bits

Our line of Klaw Bits are only for use in tubes with I.D.'s of 31.8 mm (1 1/4") or larger. They offer excellent flushing action for large tubes that have thick wall scale or are completely blocked

GLBTKL Klaw Bits, available in sizes ranging from 31.8 mm (1 1/4") x 12 to 69.9 mm (2 3/4") x 12
[Call for Quantity Discounts and Prices](#)



*Note: Additional Sizes available.
 Bit should be 0.127 mm (0.005") smaller than tube I.D.*



PROSERIES™ LEAK DETECTORS

Step up your game... step up to ProSeries Leak Detectors and zero in on the source of your air leakage and tube leak problems!

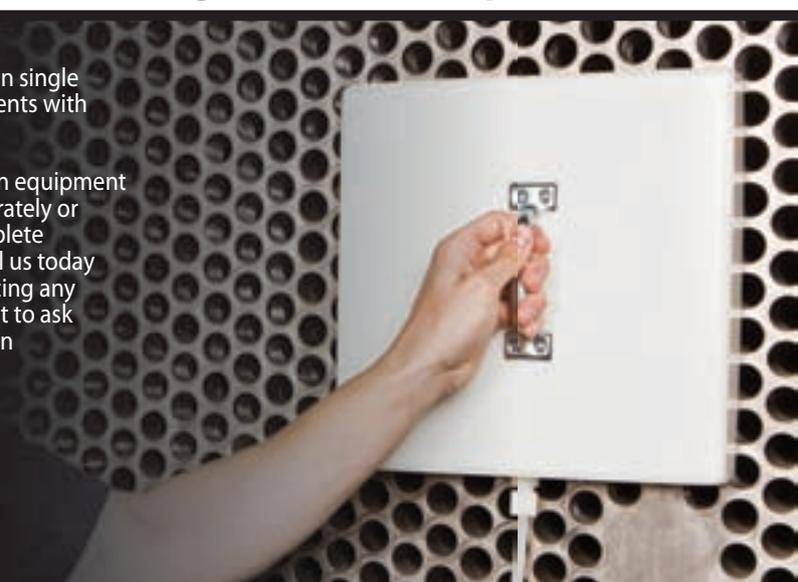
As a facility owner or operator now you can own the same dependable, Tracer Gas Leak Detection Systems that Conco pros use in the field. Conco first pioneered the use of tracer gas technology in 1978 to locate air leakages in power plants, and we are still innovators today.

For the best in leak detection technology, choose either a helium mass spectrometer or our exclusive SF₆ Fluorotracer™ system. Armed with either unit, you'll be ready to perform leak detection surveys on your own schedule.

On those occasions when tracer gas is not an option, Conco offers rugged, easy to use Vacuum Leak Detection System. It is primarily

used for locating leaks in single compartment components with no turbine vacuum.

All Conco leak detection equipment can be purchased separately or in convenient kits complete with carrying cases. Call us today for special package pricing any system, and don't forget to ask about our leak detection training program.



The Helium Mass Spectrometer

The Helium Mass Spectrometer is a rugged and dependable tool for finding and measuring leaks in the most demanding applications. With its low initial price and low cost of ownership, this unit is the most cost-effective leak detector available. With sensitivity to detect a minimum detectable leak at 1,000 ppm ambient helium being 2 x 10⁻⁹ atm-cc/sec helium. It is available in 115 V or 230 V, 50/60 Hz AC models.



LDHEDET ProSeries Helium Mass Spectrometer
Call for Price

HELIUM MASS SPECTROMETER KIT

Tracer Gas Leak Detection Kit including a helium mass spectrometer, off gas sampling unit, condenser tube inspection unit, strip chart recorder, communication system, and carrying cases

Call for Price

Note: See page 29 for complete item descriptions.

The Fluorotracer Analyzer

The Conco Fluorotracer Analyzer is a compact, easy to operate instrument designed to detect sulfur hexafluoride with sensitivity as low as one part per billion (1.0 ppb). This unit is capable of performing both air leakage and condenser tube leak inspections in addition to finding sources of dissolved oxygen. You can even perform online injections of SF₆ with your unit at full power to determine which unit has a leaking bundle saving you time and money! It is available in 115 V or 230 V, 50/60 Hz AC models.



LDLDET ProSeries Fluorotracer Analyzer
Call for Price

FLUOROTRACER ANALYZER KIT

Tracer Gas Leak Detection Kit including a Fluorotracer analyzer, SF₆-Pak, modified hydrogen regulator, off-gas sampling unit, online injection unit, strip chart recorder, communication system and carrying cases

Call for Price

Note: See page 29 for complete item descriptions.

The Vacuum Leak Detection System

Our Vacuum Leak Detection system provides a quick, method for locating leaks in tubes when you do not have a turbine vacuum. All it takes is compressed air. Simply place a temporary plug into the far end of the tube to be checked. Then firmly place the nozzle of the Vacuum Leak Detector Gun into the open end of the tube, forming an air tight seal, and pull the trigger. The unit then pulls a vacuum in the tube to a desired reading on the gauge. If the vacuum holds, the tube is in tact. If the reading on the gauge drops, you have found a leak and the tube should be plugged. See page 31 for a full selection of tube plugs.



LEAKDETKIT Vacuum Leak Detection Kit including a vacuum leak detector gun, two nozzles to test tubes from 15.9 to 31.8 mm (5/8" to 1 1/4") I.D., T-handle vacuum plug and carrying case

Call for Price





SF₆-Pak

The Model 202 SF₆-Pak is a 3.6 kg (8 lb), hand-held dispenser of sulfur hexafluoride gas in a refillable canister. Powered by a rechargeable battery, the SF₆-Pak can adjust gas concentrations from 30 ppm to 500 ppm, and the gas supply lasts approximately sixty hours at a continuous flow of 100 ppm concentration.



LDSF6P SF₆-Pak Hand-Held Sulfur Hexafluoride Dispenser **Call for Price**

Strip Chart Recorder

The recorder is required for accurate tracking and interpretation of leak detection data. Included are a single pen strip chart recorder, pens, chart paper and a carrying case for storage. It is available in 115 V, 50/60 Hz Ac only.



LDCHARTREC Strip Chart Recorder **Call for Price**

Condenser Tube Inspection Unit

This equipment is required for a successful condenser tube inspection utilizing the Conco Fluorotracer Analyzer or Helium Mass Spectrometer. Included is the SF₆ regulator, 3 plenums, 30 m (100') of polyethylene tubing, a tracer gas release gun and quick disconnect fittings. The isolation of a tube leak is accomplished by reducing the size of the plenums and then finally pinpointing the leaking tube with a "single tube shooter."



LDTUINUNHE Condenser Tube Inspection Unit **Call for Price**

Communications Unit

A communications unit is required for the isolation of leaks during all leak detection inspections. Included are two wireless headsets. They feature level dependent, external microphones to allow the user to hear environmental sounds such as warning signals. They have an external audio input to allow connection to an external phone or portable two-way radio and a noise-cancelling speech microphone with voice-operated transmission for hands free operation.



LDCOMP Communications Unit **Call for Price**

On-Line Injection Unit

This unit contains all of the equipment required to perform SF₆ injections into the circulating water train to determine the leaking water box. It includes a 0 to 15 scfm rotometer, 15.2 m (50') of 12.7 mm (1/2") flexible tubing, quick disconnects and an SF₆ regulator. On-line injections allow plant personnel to accurately select the water box to be drained for the "hands on" condenser tube inspection, thereby reducing downtime and maximizing plant efficiency.



LDONLINE On-Line Injection Unit **Call for Price**

Off-Gas Sampling Unit

The off-gas sampling unit is compatible with helium and sulfur hexafluoride gas (SF₆). The sample from the condenser off-gas is taken from the vacuum pump or air injector and pumped through the tubing, water trap and desiccant dryer using an air mover. The equipment is required for air leakage, condenser tube leak testing and on-line injections.



LDOFFGAS Off-Gas Sampling Unit **Call for Price**

Tube Markers

Once the location of a leaking tube has been identified, the tube must be marked for plugging or repair. Conco offers a line of plastic Tube Markers in a full range of sizes. While the nonabrasive plastic fins allow the marker to be easily inserted into and out of the tube, the over sized color coded base holds the marker against the tube sheet, preventing it from getting stuck inside the tube.



TMP Tube Markers **Call for Quantity Discounts and Prices**

Leak Detection Training

Conco will provide Leak Detection Training at your site. Training is performed on a time and material basis utilizing a senior staff member to train up to ten persons per our two-day training class. First day instruction includes startup, operation, maintenance and troubleshooting for either the Fluorotracer Analyzer or the Helium Mass Spectrometer Systems. Second day instruction includes "hands on" field-testing. For the establishment of a Leak Detection Program at your site, use our Consulting Services.





ALKASERTS® TUBE INSERTS AND CONCO PLUGS

Bring new life to older condensers and heat exchangers with these rejuvenating inserts and performance-proven plugs.

Widely used in electric utility power stations, industrial power plants, processing facilities and onboard ships – wherever inlet end erosion and impingement present a problem – Conco Alkaserts polyethylene plastic inserts are designed to assure lasting protection to the inlet ends of new tubes and to greatly prolong the life of worn tubes damaged by erosion and impingement.

The Conco line of industry-leading tube plugs are second to none. We offer a wide selection of tube plugs in different styles, materials and sizes to match your specific requirements. Whether you need a temporary or permanent tube plug or one that can handle vibrations, high temperatures or extreme pressures, Conco has you covered.



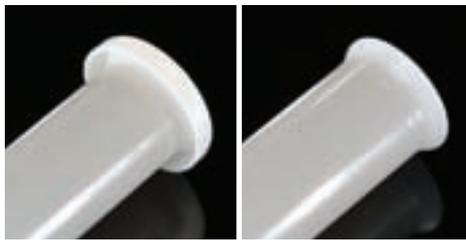
Alkaserts – Industrial Grade Polyethylene Tube Inserts

Conco Alkaserts are inert, highly resistant to abrasion and erosion, and unaffected by cleaning chemicals. They are dimensionally stable to 75° C (170° F), well above normal operating temperatures of steam condensers, and have a negligible effect on heat transfer. While their feathered edge design allows for the smooth flow of cooling water into the tubes, their minimum wall thickness and tapered design promotes maximum flow. Flexible enough to accommodate normal variations in tube bores, yet rigid enough for easy installation, these rugged inserts are designed to make a snug fit in the tube. Once in place, there is no danger of water seeping between the insert and tube preventing crevice corrosion attack.



Two Head Designs

Alkaserts are available in two head styles, bonnet and flush. While the bonnet head is designed to cover the ferrule in ferrule-type installations, the flush head is used for flush, rolled-in tubes and close-clearance tubesheet designs.



Bonnet Head

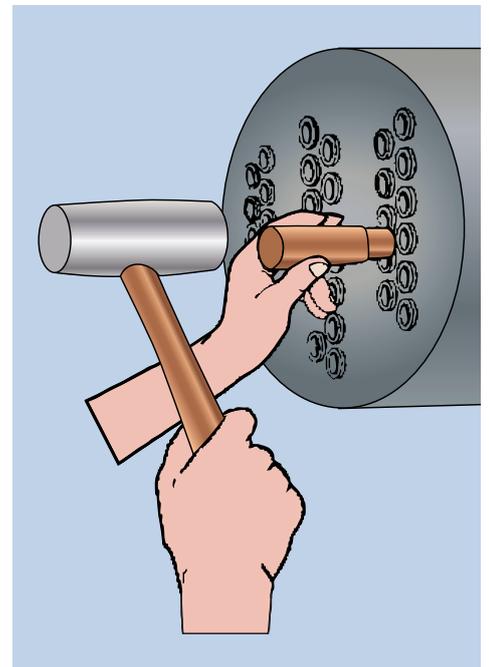
Flush Head

Features

- Negligible effect on heat transfer
- Flexible, sturdy construction
- Abrasion and erosion resistant
- Unaffected by cleaning chemicals
- Dimensionally stable to 75° C (170° F)
- Designed for maximum flow

Easy Installation

Alkaserts are quick to install. After inserting an Alkasert into a tube, simply tap it home with a wooden or Micarta “persuader,” using light, sharp blows of a light mallet. That’s it, no adhesives or power tools. Compression and friction will hold the Alkasert permanently in place.



Alkaserts Installation with a “Persuader” and a Light Mallet

ALK-B Alkasert Polyethylene Tube Insert with bonnet head

Call for Quantity Discounts and Prices

ALK-F Alkasert Polyethylene Tube Insert with flush head

Call for Quantity Discounts and Prices



High Confidence Tube Plugs

When you have to plug off leaking tubes in condensers and heat exchangers, the Conco patented High Confidence Tube Plugs are "Absolutely the Best" plugs you can use! Tested at pressures in excess of 70 BAR (1,000 PSI) and available in 19.1, 22.2, 25.4, 28.6 and 31.8 mm (3/4", 7/8", 1", 1 1/8" and 1 1/4") sizes, these tube plugs 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 in with metal components in titanium, stainless steel, brass and bronze



HC High Confidence Tube Plug

Call for Price

Expanding Tube Plugs

For temporary or permanent plugging of 15.9 to 31.8 mm (5/8" to 1 1/4") condenser and 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. Pressure ranges of these plugs vary from 17 to 26 BAR (240 to 375 PSI). The EX-F Tube Plug offers a separate gripping and sealing design in one plug and seals to 34 BAR (500 PSI).

FEATURES

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



EX-3 Expanding Tube Plug

EX-4 Expanding Tube Plug

EX-F Expanding Tube Plug

Call for Price

Call for Price

Call for Price

Fiber Tube Plugs

Easily installed for emergency and temporary plugging of condenser and 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 110° C (230° F).

FEATURES

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



FP Fiber Tube Plug

Call for Price

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 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



TYPE-1 Pin Tube Plug

TYPE-2 Pin and Collar Tube Plug

Call for Price

Call for Price



TUBE SIZE AND CLEANER SELECTION GUIDE

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

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

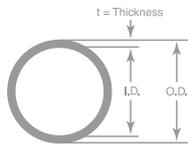
Tube Gauge in BWG / Tube Thickness in Inches

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													
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	0.920	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

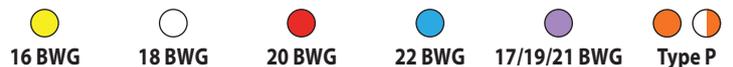
O.D. of Tube	12	13	14	15	16	17	18	19	20	21	22	23	24	25
in mm	Tube I.D. in Millimeters													
5/8 15.88	10.34	11.05	11.66	12.22	12.57	12.93	13.39	13.74	14.10	14.25	14.45	14.61	14.76	14.86
3/4 19.05	13.51	14.22	14.83	15.39	15.75	16.10	16.56	16.92	17.27	17.42	17.63	17.78	17.93	18.03
7/8 22.23	16.69	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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