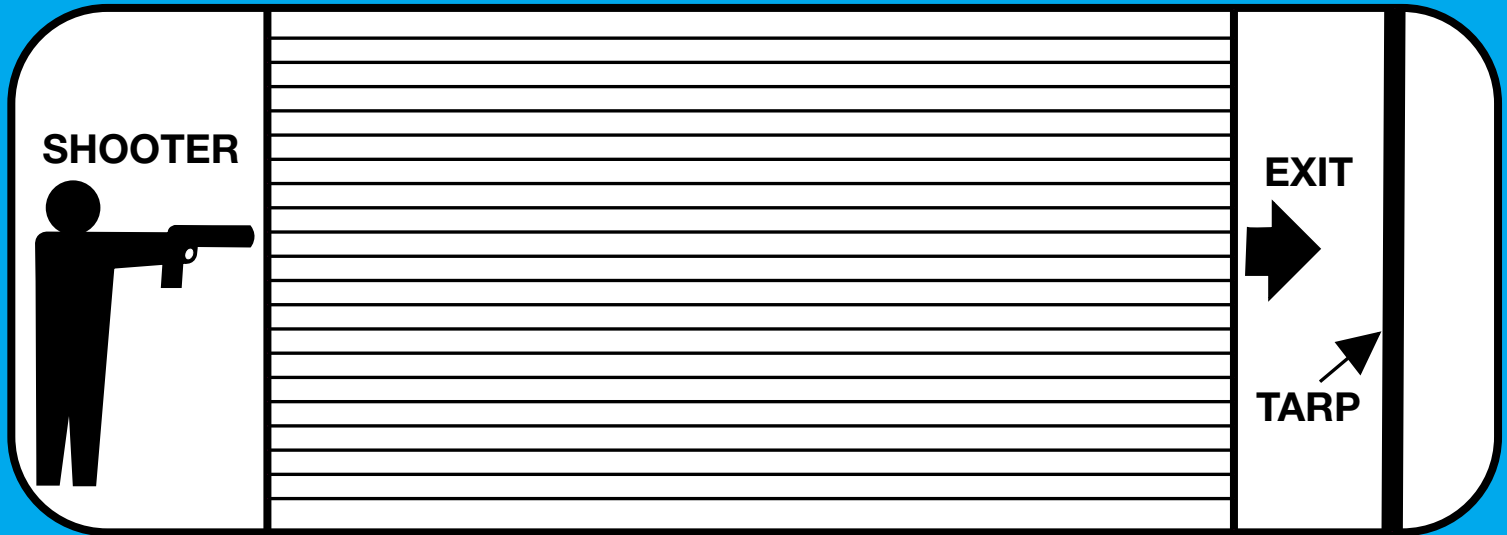


HOW TO USE CONCO

WATER POWERED TUBE CLEANERS



**THERE IS A CONCO CLEANER FOR EVERY
CONDENSER AND HEAT EXCHANGER TUBE—
TO GIVE YOU THESE RESULTS:**

- Increased condenser efficiency
- Additional power generation
- Energy conservation
- Increased plant availability



CONCO® SYSTEMS, INC.

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VERONA, PA 15147 USA
1-800-345-3476

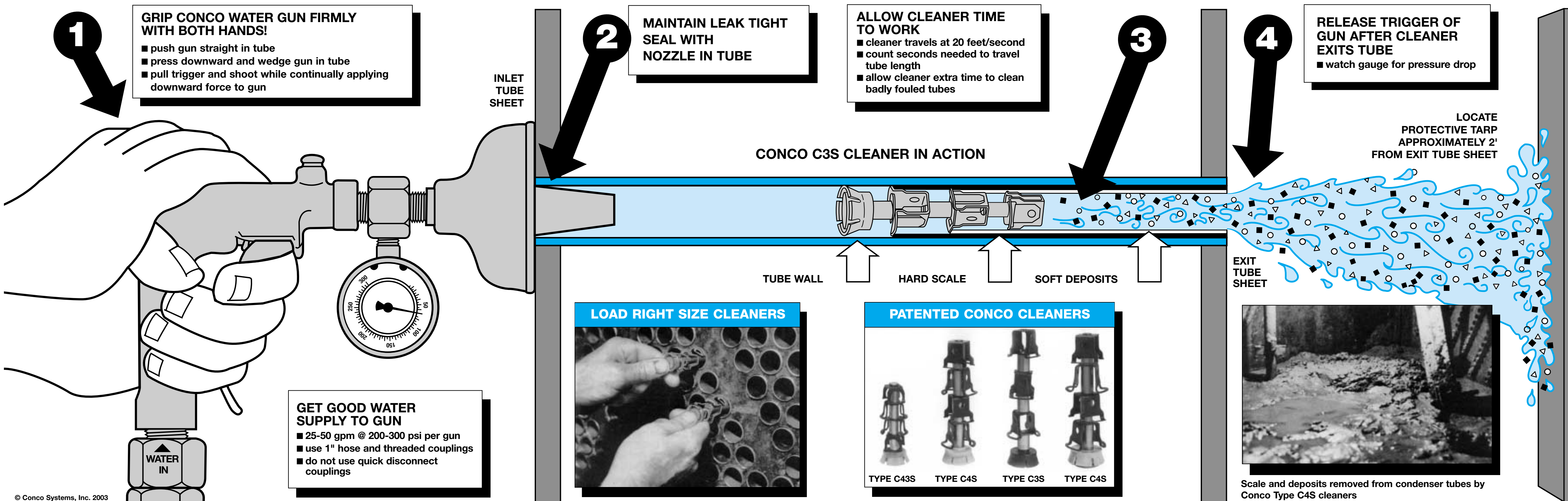
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CONCO SYSTEM OF MANUAL TUBE CLEANING

BETTER THAN ANY OTHER MANUAL, AUTOMATIC OR CHEMICAL METHOD OF CONDENSER AND HEAT EXCHANGER TUBE CLEANING!



CAUTION! NEVER USE AIR PRESSURE TO SHOOT CONCO METAL CLEANERS!

CONCO TUBE SHOOTING PROCEDURE

PREPARE CONDENSER

1. Drain and open water box and clean off tube sheet.
2. Install lights for both ends of condenser.
3. Install floor boards if needed.
4. Install scaffolding in inlet water box if needed or have scaffolding close by to use when needed. It is best to shoot in direction of water flow.
5. Hang tarp approximately 2 to 5 feet away from tube sheet in outlet water box.
6. Cover all drains and openings to prevent loss of cleaners.

PREPARE SYSTEM

You must have approximately 200 to 300 psi water pressure at 35 GPM at the gun for each water gun being used. Hook up guns to water source, eliminate all leaks and/or restrictions in lines.

1. Water source can be plant's water, condensate water or ash sluice system (Conco Booster Water Pump can increase water pressure to required 200-300 psi. Use a 1-1/2" or larger inlet hose to pump. Check pump directions.).
2. Recommended outlet hose to the gun must be 800 psi working pressure, with pressed on 1" O.D. NPT fittings.
3. Install guns at swivel base 1" NPT female fitting using the 1" hose (the combination of the swivel and hose reduces wrist fatigue for the shooter).
4. NEVER USE AIR PRESSURE. NEVER USE QUICK DISCONNECT HOSE CONNECTIONS.

SHOOTING THE CONDENSER

1. Test 5 to 10 cleaners before loading a large amount of cleaners just to make sure system is in working order.

2. Insert cleaners in tubes.

(a) It is best and fastest to load as many cleaners as possible and then shoot with as many guns as possible (2000 to 3000 or 25% to 50% of the total number of tubes).

3. Insert gun behind cleaner and "lock" gun into tube by pushing gun straight in and cock down and to the side all in one complete motion. Hold gun firmly and pull trigger.
4. Cleaners travel at about 10 to 20 feet per second. If these times are not met check hoses and water supply or tubes may be too fouled.
5. Make sure cleaners go all the way through the tubes. This is done by watching the gauge at the front of the gun. As the cleaner exits the tube, the gauge will show a back pressure drop of approximately 30 pounds. If the pressure does not drop or climbs to line pressure, the tube may be dented or totally clogged. Note: if the cleaner is left in an open tube, the cleaner will eventually deteriorate and exit tube.

CHECKING TUBES

1. After all the tubes have been shot, check tube with a high intensity light. Hold light at one end and have someone at the other end looking through the tubes. If one is blocked, you will see just a faint light or no light at all. Mark these tubes and reshoot, using only one gun to obtain the highest pressure possible.

CLEAN UP AND STORAGE

1. After the job is completed, wash off cleaners, air dry and store in oil or preservative.

HOW DO CONCO CLEANERS WORK?

The spring loaded steel tube cleaners are shot through the tubes with the Conco Water Gun at 200-300 psi water pressure. The cleaner travels through the tube, plowing off deposits and corrosion. Water flushes removed matter out ahead of the cleaner, and presto—a clean, polished bare metal inside diameter! The resulting clean surface is ideal for heat transfer efficiency.

Which cleaner is right for you? In most cases, the type C3S is used for the hard scale deposits. The type C4S is used for softer deposits.

We recommend an initial order to be 25% to 50% of the number of tubes in the condenser.

DO CONCO CLEANERS WORK?

HERE'S PROOF!



Typical deposits and calcium carbonate scale removed from different tubes.

Hard, thick deposits shot from tube after acid cleaning.



Asiatic clams (Corbicula) shot from tube.

TUBE SIZE DATA CHART

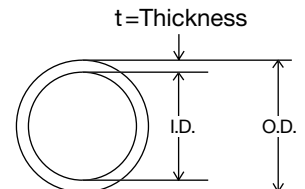
O.D.	BWG	t	I.D.	Conco Type	
5/8"	16	0.065	.495		C4S
.625	17	0.058	.509		
.625	18	0.049	.527		
.625	19	0.042	.541		
.625	20	0.035	.555		
.625	21	0.032	.561		
.625	22	0.028	.569		
3/4"	16	0.065	.620		C4S
.750	17	0.058	.634		
.750	18	0.049	.652		
.750	19	0.042	.666		
.750	20	0.035	.680		
.750	21	0.032	.686		
.750	22	0.028	.694		
7/8"	16	0.065	.745	C4S	
.875	17	0.058	.759		
.875	18	0.049	.777		
.875	19	0.042	.791		
.875	20	0.035	.805		
.875	21	0.032	.811		
.875	22	0.028	.819		
1"	16	0.065	.870	C4S	
1,000	17	0.058	.884		
1,000	18	0.049	.902		
1,000	19	0.042	.916		
1,000	20	0.035	.930		
1,000	21	0.032	.936		
1,000	22	0.028	.944		
1 1/8"	16	0.065	.995		C4S
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		C4S
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		

*For metric tube sizes, calculate the equivalent diameter in inches and use the nearest size cleaner. To convert metric to inches: multiply millimeters x .03937.

$$I.D. = O.D. - 2t$$

$$.527" = .625" - 2 (.049")$$

For example: 20 mm = 20 x .03937 = .7874" inside diameter. This tube size takes a Conco cleaner, Type C3S, for 7/8" O.D. x 19 BWG tube.



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