



# TUBE CLEANING SYSTEM

## Literature





Figure 1 STAUFF Tube Cleaning System

### Introduction:

Stauff Tube clean systems are tools designed to eradicate debris in the inner parts of tubes, hoses and pipes. Cleaning the internal components of fluid carrying connections helps increase the assembly's lifespan. The system consists of nozzles, projectiles and pneumatic launchers.

They are designed to operate with a variety of pipeline configurations. Stauff Tube Cleaning systems are produced in different types and series depending on your use case.

### Various tube cleaning methods:

When carrying out maintenance procedures, it is vital to clean the inner parts of tubes, pipes, and hoses. Over a while, contaminants are usually left in the pipe's inner walls, perhaps due to dirt in the working fluid or the pipe's material corrosion.

The process involved in cleaning can be classified into three.

- Mechanical process: This involves using a mechanical body to scrap the inner walls of pipes and take out debris and contaminants. The mechanical process would require a thorough involvement as the cleaning would depend on the areas where the mechanical body passes through.
- Chemical process: This process involves using chemicals to flush out dirt in a system. When the system is closed, it is done to ensure that the chemicals reach the system's nooks and crannies. A drawback to this process is that chemicals would involve many chemicals to clean the system properly.
- Thermal process: This process involves the use of heat to increase the temperature of the inner parts. This allows the debris to get dried up. They can easily be washed out afterward. The process is widely used in delicate procedures such as in the medical lab to sterilize tubes or in the food production industry to ensure. This way, they don't expose the tubes to harmful chemicals or external bodies.

### Projectile in Stauff Tube Clean Systems:

A projectile is an object initiated by some force and allowed to move freely under the influence of gravity. It is a vital part of the Stauff cleaning system. Foam pellets are fired into the tube at different densities. Projectiles fired into the tube are attached to the cleaning system such that they remove dirt from the pipe and return to their initial position afterward.



Figure 2 STAUFF Projectile Launcher

According to industrial standards, the force of the projectile is calculated from the force of compressed air in the industry as 7 bar of 100 psi. Projectiles of Staff tube cleaning systems are made in different series. The series are:

- Standard series (S): These series are primarily made for cleaning pipes, tubes, or hoses with no fittings at both ends.
- Abrasive series (A): This series is designed to clean pipes and tubes made of metal. They take off light rust and scales found in the metallic pipe walls. Metallic pipes tend to rust when they are not coated with anti-corrosive materials. Leaving this light rust in the system can cause a malfunction in the operation or the output from the system. The abrasive series is designed to clean such rust particles or scales.
- Coupling series (G): This type of Series is used to clean tubes and pipes with fittings at their ends.
- Grinding series (C): This is a special kind of series that is only made available upon request. When rusts are allowed to build up over time, they become weighty. Abrasive series may not be able to handle such heavy rusts. This is where the grinding series comes in. Grinding series are designed to handle heavier rusts that may be in pipe connections.

### How to select the correct sizes for both projectile and nozzle?

To get the best out of the cleaning system, it is critical to select the right kind of projectiles and nozzle. Nozzles are meant to be compatible with the tube or hose end fitting of the system you want to clean. They are made in different sizes depending on their application. Nozzle sizes come in JIC, BSP, and metric fittings.

In projectiles, you will need to consider whether or not there are end fittings and, if there are, the kind of fittings. To select a proper projectile, a rule of thumb is that the projectile should have a 15% larger diameter than the hose or pipe's inner diameter.

The table below is a tube and hose selection chart for nozzle and projectiles.

Hose or Tube Inches Size (Inner Diameter)	Hose or Tube Metric Size (Outer Diameter)	Nozzle Universal Style	Projectile No End Fittings	Projectile With End Fittings
1/4" ID	6MM OD	UV06	TCS07 to TCS10	TCC07 to TCC09
5/15" ID	8MM OD	UV08	TCS10 to TCS12	TCC10 to TCC12
3/8" ID	10MM OD	UV10	TCS12 to TCS14	TCC12 to TCC14
1/2" ID	13MM OD	UV13	TCS16 to TCS18	TCC14 to TCC16
5/8" ID	16MM OD	UV16	TCS18 to TCS22	TCC18 to TCC20

3/4" ID	19MM OD	UV19	TCS22 to TCS24	TCC20 to TCC22
1" ID	25MM OD	UV25	TCS30 to TCS33	TCC30 to TCC33
1 1/4" ID	32MM OD	UV32	TCS36 to TCS40	TCC36 to TCC40
1 1/2" ID	38MM OD	UV38	TCS45 to TCS50	TCC40 to TCC50
2" ID	50MM OD	UV50	TCS55 to TCS60	TCC55 to TCC60

The table below is a selection chart for metallic pipes.

<b>Inch (NB)</b>	<b>Inch (OD)</b>	<b>Metric (OD)</b>	<b>Universal Style</b>	<b>SCH40 Pipes without Fittings</b>	<b>SCH80 Pipes without Fittings</b>
1/4"	0.540" OD	13.7MM OD	UV06	TCS12 to TCS14	TCS09 to TCS10
3/8"	0.675" OD	17.1MM OD	UV10	TCS14 to TCS16	TCS12 to TCS14
1/2"	0.840" OD	21.3MM OD	UV13	TCS18 to TCS22	TCS16 to TCS20
3/4"	1.050" OD	26.7MM OD	UV19	TCS26 to TCS30	TCS22 to TCS26
1"	1.315" OD	33.4MM OD	UV25	TCS33 to TCS36	TCS24 to TCS30
1 1/4"	1.660" OD	42.2MM OD	UV32	TCS40 to TCS45	TCS36 to TCS40
1 1/2"	1.900" OD	48.3MM OD	UV38	TCS50	TCS45 to TCS50
2"	2.375" OD	60.3MM OD	UV50	TCS60	TCS60

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