Spraying Systems Co.®

A Guide to

Safe and Effective Tank Cleaning





AutoJet® TECHNOLOGIES

A Division of Spraying Systems Co.®

Defining Tank Cleaning

Tank cleaning can be defined as manual or automated. Cleaning can be a simple rinse with water, or cleaning with detergents and chemicals. Or cleaning can refer to sanitizing with cleaning agents that reduce microbial contaminants. No matter what, the end result of effective tank cleaning is the application of appropriate and consistent levels of rinsing, cleaning, or sanitizing at specified intervals. The goal is ultimately to prevent contamination that would alter the safety, identity, strength, quality, or purity of the final product.

Manual versus automated tank cleaning

Manually cleaning the inside of tanks can be an unproductive, low quality, and unsafe operation. That's why automated tank cleaning has now become more critical than ever before.

Not only do automated tank cleaning nozzles reduce downtime, which results in lower maintenance costs, they also create a shorter process cycle time for increased productivity.

Automatically cleaned tanks also provide less contamination of virgin product. Automated tank cleaning ensures process integrity from one cleaning cycle to the next, making tank washing nozzles a key component for maintaining superior end-product quality.

Meeting regulatory compliance while ensuring operator safety are also important concerns in tank cleaning operations. Automated tank cleaning operations, such as CIP (clean-in-place) systems, reduce the amount of cleaning chemicals needed while cutting costs associated with wastewater disposal. Automated tank cleaning nozzles also keep workers safely away from harmful chemicals and potentially dangerous cleaning operations.



About our credentials

Spraying Systems Co. manufactures more than 20,000 different spray nozzles and accessories. Included in our line is a large selection of tank washers and tank washing nozzles. As a result, we're more than likely to have available a nozzle to suit the needs of your tank washing application. And you can also be assured that the nozzle you select will be the most cost-efficient design possible.

We've recently expanded our service offering with AutoJet Technologies, a new division devoted to turnkey automated spray systems. Our experience has shown that a tank washer or spray nozzle can only perform properly if the entire spray system is operating properly. All system components must be accurately monitored and controlled.

We also have the technical background and expertise to assist you with your tank washing application. Our sales engineers, backed by a talented team of technical experts, have helped solve hundreds of different application problems — from cleaning paint tanks to washing dry powder tanks. And with sales offices conveniently located throughout the world, an answer to your spray nozzle, system or application question is just a phone call away.

How to Use This Guide

Featured on the following pages is a wealth of information to help you indentify the best tank washing nozzle for your application

1. Start with a thorough analysis of the requirements of your tank cleaning application. Some important considerations include what kind of cleaning will be required (i.e., low-impact rinsing, high-impact washing, etc.) and the size of the tank you will be cleaning.

2. Refer to the Selection Guide on page 11, or the "Designing the Best Automated Solution for Your Application" section that begins on page 6.

3. Should you need additional assistance in selecting the right tank washing nozzle for your application, simply contact your local Spraying Systems Co. sales engineer or visit our Web site at www.spray.com.

Table of Contents

Introduction to Tank Washing

Five Main Ways to Automate Tank Cleaning 4-5
Designing the Best Automated Solution for Your Application 6-7
Common Application Problems and Possible Solutions 8-10
A Selection Guide to Tank Wash Nozzles 11

AutoJet Tank Cleaning Systems 12-15

Motor-Driven Tank Washers

AA190 Tank Washers 16-19
AA090 AA190 and Accessories 20-21
AA090 Tank Washers 22-23
AA290 Tank Washers 24-25

Fluid-Driven Tank Washing Nozzles

27500 Tank Washing Nozzles 26-27
28500 Tank Washing Nozzles 28-29
Rokon Tank Washing Nozzles 30-34
18250A and 21400A Tank and Drum Washing Nozzles 35-36
23240, 36640, D25468 and 30473 Compact Keg Washing Nozzles 37-39
UltraClean Tank Machine 40-41

Fixed Tank Washing Nozzles

3150, 15498 and VSM Tank Washing Nozzles 42-43
6353 and 12900 Tank Washing Nozzles 44-45

Technical Information/Specifications

Technical Information 46
Tank Cleaning Specification Sheet 47

Five Main Ways to Automate Tank Cleaning

To meet the needs of a variety of tank cleaning applications, Spraying Systems Co. manufactures a variety of tank washing nozzles. Whether your tank requires a light rinse or a high-impact wash, we have the right nozzle for your application.

Types of tank washing nozzles available include:

High-Pressure (Motor-Driven) Tank Washers



These tank washers use high-pressure solid stream nozzles at pressures from 100 to 1000 psi (7 to 70 bar) with a separate motor for driving the nozzle assembly. Two to four nozzles rotate on a gear hub as they revolve around the central axis of the nozzle assembly.

Both the liquid pressure for cleaning and the rotational speed (i.e., cleaning cycle time) are fully independent to optimize both the pressure and time needed for completing the cleaning process.

The high-impact force delivered by the tank washer reduces the water required for effective tank cleaning. A range of nozzle sizes is available, which allows one unit to be used in more than one application. Lightweight in design, the unit is easily portable so it can be moved to other process tanks as required.

Types of Tank Washing Nozzles Available

- **High-Pressure (Motor-Driven)**
  Air or electric motors rotate the spray head for high-impact cleaning.
- **Fluid-Driven (Reactionary Force)**
  The reactionary force of the fluid leaving the nozzle orifices rotates the nozzles.
- **Fluid-Driven (Constant Speed)**
  The momentum of the liquid flow drives the nozzle's spray head while constant rotating speed is maintained.
- **Fluid-Driven (Turbine)**
  Solid stream sprays rotate around a turbine powered hub to provide complete cleaning coverage in large tanks.
- **Fixed Spray (Stationary)**
  Fixed position nozzles provide complete cleaning coverage using full cone nozzles.

Fluid-Driven (Reactionary Force) Tank Washing Nozzles



Increasingly popular, these fluid-driven spray nozzles use the reactionary force of the fluid exiting the nozzle orifices to rotate the spray head. For improved cleaning, some of the nozzles are available with solid stream or with flat fan spray patterns for gentle rinsing. Both spray patterns are offered in a variety of coverages.

The advantages of this type of design include higher impact, better overall coverage, and reduced fluid requirements. Plus, some of the nozzles are offered in TEFLON® fluoropolymer resin, which is chemically resistant in many applications with models engineered for sanitary clean-in-place applications.

TEFLON is a registered trademark of E.I. DuPont de Nemours and Company.

Fluid-Driven (Constant Speed) Tank Washing Nozzles

Fluid-driven (constant speed) nozzles use the momentum of the liquid flow to drive the spray head while maintaining constant rotating speed. Unlike conventional fluid-driven rotating nozzles where cleaning efficiency decreases as pressures increase, these nozzles increase their cleaning impact as the fluid pressure increases. This high-impact spray performance means that liquid consumption is minimized and cleaning efficiency is improved. The controlled rotational speed makes these nozzles highly useful for tank cleaning, sanitizing, and foaming applications.





Fluid-Driven (Turbine) Tank Washing Nozzles

This type of nozzle utilizes fluid to spin a turbine, which in turn powers a gear set. This allows two solid stream sprays to rotate as the hub revolves around the central axis to provide complete coverage. The most common applications for this fluid-driven nozzle are those requiring high-impact cleaning in larger vessels or tank cars.

Fixed Spray (Stationary) Tank Washing Nozzles

The fixed spray nozzle segment includes multi-nozzle spray assemblies and individual fixed position spray nozzles. The advantages of these types of nozzles are many: simplicity of design, reliability (no moving parts), and a wide range of spray coverages. They are ideal for a gentle washing or rinsing of an entire vessel.



How much can you save with an automated tank cleaning system?

Production downtime and labor are the most significant costs associated with tank cleaning. Automated tank cleaning minimizes downtime and enables workers to be employed more productively.

Annual Costs	Manual Scrub/Washdown	Fill & Drain	Automated System
Production downtime cost*	$50,000	$25,000	$10,000
Labor cost†	$12,000	$6,250	$1,250
Total cost[1]	$62,500	$31,250	$11,250

Save up to 82% with an automated tank wash system

80% less in production downtime

90% less in labor costs

Estimated Annual Savings..... US $51,250

Additional savings are possible through reduced chemical usage and energy costs.

* Downtime estimated at $100/hour
† Labor estimated at $25/hour
[1] Based on an average of 250 washes/year of a 1500 gallon (5600 liters) tank.

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The primary objective of any tank cleaning project is to design a system that will clean, maintain, and sanitize equipment at appropriate levels to prevent malfunctions or contamination that would alter the safety, identity, strength, quality, or purity of the finished product.

The degree to which this objective is to be met is inherent to a specific product or industry. For example, acceptable levels of contaminate for a pharmaceutical application are much lower than for a shampoo application.

To assist you in the design of a tank cleaning system for your application, the following are some key tank cleaning terms.

Definition of Terms

- **Rinsing – Water Only.** Removes the majority of previous product.
- **Cleaning – Water and Cleaning Agent.** Loosens and removes product residue.
- **Sanitizing – Water and Sanitizing Agent.** Reduces microbial contaminants to a safe level.
- **Disinfecting.** Kills 100 percent of most bacteria. Not spores.
- **Sterilizing.** Destroys or eliminates all forms of life.

Cycle Time

What is the minimum duration of each stage of the cleaning cycle? In many cases, more effective cleaning can be achieved by extending the time of a step. Here's a look at four of the typical cleaning stages.

1. **Pre-Rinse.** This stage removes 90 percent of the soil. Tests should be run during this stage to determine if debris and gross soil is being removed in the first cycle.
2. **Cleaning.** It is important to work with your chemical supplier to establish how long the chemical needs to be in contact with the vessel walls during the cleaning cycle. Water temperature and spray impact may also be important factors in the duration of this cycle.
3. **Post-Rinse.** During this stage, suspended residue and cleaning agents are removed. Rinse time should be adjusted so that no residue remains. Actual cycle time may be determined by nozzle selection, as tank wash devices with solid stream nozzles must complete a predetermined number of nozzle revolutions to complete one cycle. Depending on the corrosiveness of the cleaning agents used, a cold water rinse may be recommended.
4. **Sanitizing.** Application of sanitizing agents to all surfaces, per chemical supplier instructions, occurs during this stage. Micro-organisms are killed to an acceptable level.

Flow Design

System flow design can take either of two forms:

1. **Total loss.** This is where the sprayed liquid is used once and then discharged. In practice, this type of design is only applicable when cleaning is infrequent or very small volumes of liquid are needed. Single use of water may be considered in applications where cross contamination is an issue or soiling is very heavy.
2. **Partial or total recovery.** This is where the detergent or final rinse liquid is recovered and a water make up rate is determined for reuse. This maintains the effectiveness of the cleaning cycle while reducing water and chemical costs.

In addition, the amount of wastewater generated during tank cleaning operations can be minimized by:

- Segregating waste streams to capture the clean water while the dirty water is properly disposed.
- Recirculating the wash water or cleaning solutions.
- Capturing the water at the end of the cleaning cycle. For example, one tank's final rinse can be the next tank's pre-rinse.

Impact and Cleaning Effectiveness

How much impact is needed to clean your vessel? There are no firm guidelines as tank cleaning is application specific. Many vessels require little impact force, relying on chemical action, water temperature, and rinse down provided by the nozzle. Other applications require some level of mechanical force including high-pressure solid stream nozzles for aggressive cleaning.

Points to Remember:

- In generating extra impact, increasing flow rate is more effective than increasing pressure. Doubling pressure for a given flow provides approximately 40 percent more impact; doubling flow will increase impact up to 100 percent.

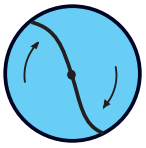
Comparison of the effects of increased flow and increased pressure on spray impact for a given nozzle

Flow Rate	Pressure	Approximate Relative Impact
13 gpm (50 l/min)	45 psi (3 bar)	1.0
13 gpm (50 l/min)	90 psi (6 bar)	1.4
26 gpm (100 l/min)	45 psi (3 bar)	2.0

- Liquid flow must be sufficient to provide required impact force for cleaning and carrying loose soil to the tank drain.
- Fluid-driven (reactionary force) nozzles are free spinning, increasing rotational velocity as pressure to the nozzle is increased. As speed increases, the spray will decrease in focus, thereby sacrificing cleaning energy.

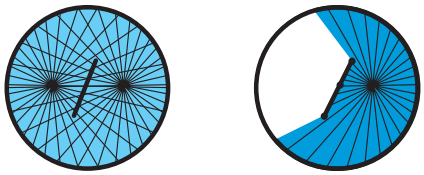


- Fluid-driven (constant speed) nozzles provide the most flexibility. Fluid pressure can be adjusted independently providing adjustments in impact force.



Spray Coverage and the Elimination of Shadows

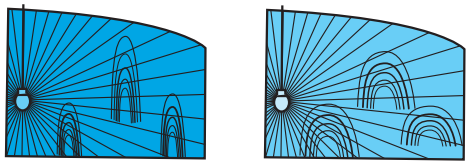
Shadowing is the term used when the spray cannot directly reach part of the vessel due to an internal obstruction, i.e., a mixer, agitator, or filling tube. Additional nozzles may be needed to clean the obstruction or the shadowed area.



SHADOWS

Water Quality and Chemicals

The water supply should be evaluated for potential problems, such as dissolved solids or suspended particulate, that may interfere with the cleaning process. In some cases, a chemical additive will increase wettability. Another option is to condition the water with water softeners.



WETTABILITY

Repeatable Cleaning

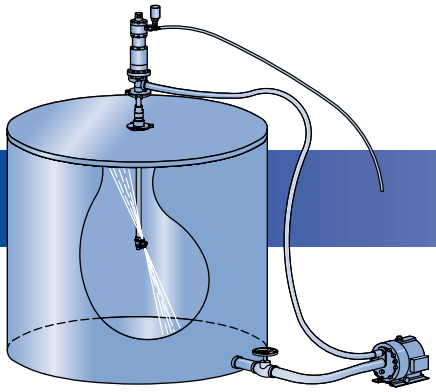
To provide consistent cleaning results, the following is recommended:

- **Establish and verify** that required cleaning is being conducted in a repeatable and effective manner.
- **Document procedures** for cleaning and record operating parameters so that every cleaning cycle can be identical.
- **Procedures** should include how often cleaning is to be conducted. If time between cleaning cycles is exceeded, additional instructions for longer cleaning cycles may be considered.
- **Maintenance** of tank cleaning equipment is an important part of the tank cleaning system's reliability. Tank wash nozzles should be visually checked to ensure nozzles are not clogged and that rotating nozzles move freely. Filters should be cleaned and screens should be replaced on a regular basis.

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Common Application Problems and Possible Solutions

Cleaning Mixing Tanks

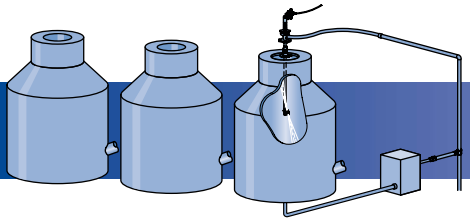


AA190AG Tank Washers

AA190AG Tank Washers are being used to clean heavily soiled mixing vats at an automotive manufacturer.



Cleaning Slurry Tanks

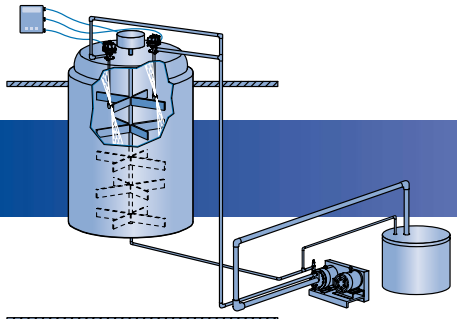


AA190AG Tank Washers

A large bread bakery is using AA190AG Tank Washers with an air motor and an adjustable flange to clean slurry mixing tanks.



Cleaning Paint Tanks

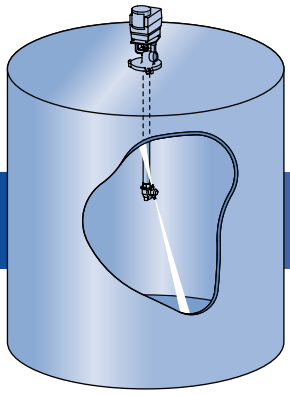


AA190EP Tank Washers

An AA190EP Tank Washer with an explosion-proof electric motor effectively cleans a paint processing tank at a chemical manufacturer.



Cleaning Fermentation Tanks



AA190E Tank Washers

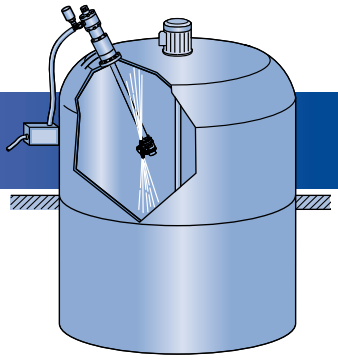
1/4MEG WashJet® spray nozzles mounted on an AA190E Tank Washer clean fermentation tanks for a beverage manufacturer.





AA290AG Tank Washers

Mixing Batch Process Tanks

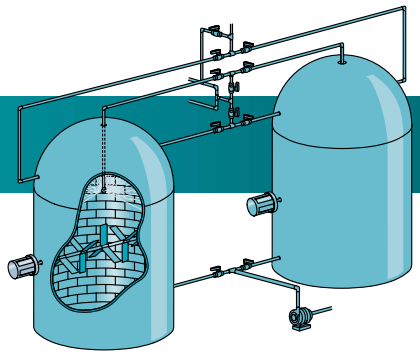


The AA290AG Tank Washer is used by a chemical manufacturer to add liquid to a batch in a reactor vessel and then rinse the vessel when the reaction is finished.

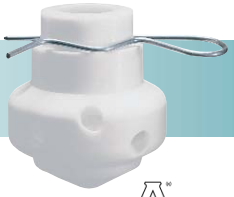


27500 Tank Washing Nozzles

Cleaning Broke Chests

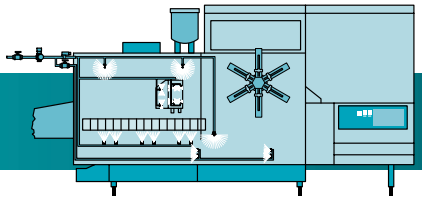


These TEFLON® tank washing nozzles proved to be just the solution for cleaning liquid and pigment material from broke chest ceilings at a pulp and paper mill.



28500R Tank Washing Nozzles

Cleaning Milk Filling Machines

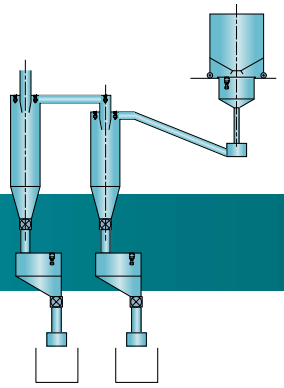


A dairy manufacturer is using 28500R tank washing nozzles in their clean-in-place system for a milk filling machine.



D26984-SS Rokon Tank Washing Nozzles

Washing Dry Powder Tanks

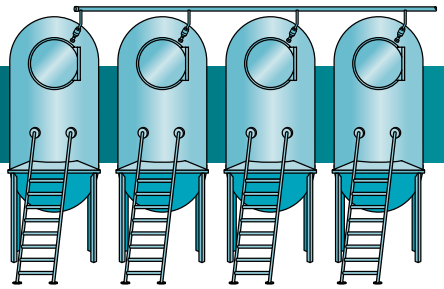


Rokon rotating nozzles clean the interior of dry powder tanks, between batches, to remove fine dust particles.

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Common Application Problems and Possible Solutions

Rinsing Mixing Tanks

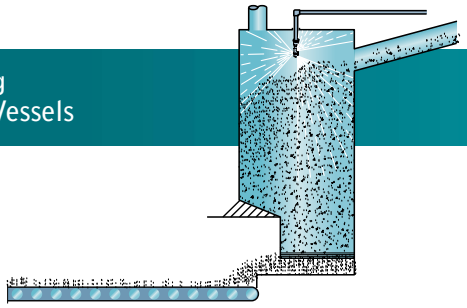


D40159-PVDF Rokon Tank Washing Nozzles



A popular choice for rinsing the inside of food mixing tanks is the Rokon nozzle. Not only does it thoroughly clean the tanks, it also helps prevent cross contamination.

Cleaning Textile Vessels

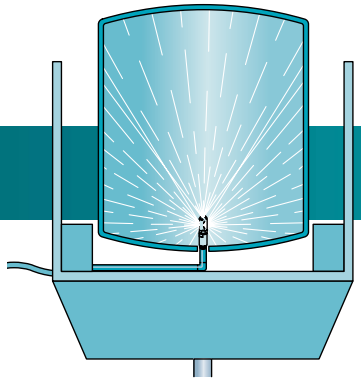


21400A Tank and Drum Washing Nozzles



21400A nozzles are being used by a textile manufacturer to keep the sides of their processing vessels free from dust particles.

Washing Dialysis Barrels

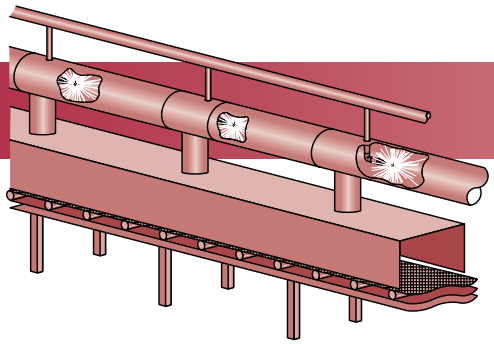


23240 Compact Keg Washing Nozzles



23240 compact keg washing nozzles provide complete coverage needed for cleaning and sterilizing the inside of kidney dialysis barrels.

Washing Ducts



15498 Stationary Keg Washing Nozzles



The 15498 keg washing nozzle uses 21 full cone spray tips to remove particles from a tobacco manufacturer's clean-in-place duct wash down system.

Model Type	Max. Tank Diameter	Inlet Connection	Spray Angle	Spray Pattern	Max. Liquid Pressure	Max. Temp.	Materials of Wetted Parts	Max. Flow	Page No.
Motor Driven									
AA090AG AA090E AA090EP	8.0 ft 2.4 m	1"	360°	Solid Stream	500 psi 35 bar	200°F 93°C	316SS PTFE	7.3 gpm 28 l/min	22
AA190AG AA190E AA190EP	12-25 ft 3.7-7.6 m	1"	360°	Solid Stream	500 psi 35 bar	200°F 93°C	316SS PTFE	44.5 gpm 168 l/min	16
AA190AGH	20-34 ft 6.0-10.4 m	1"	360°	Solid Stream	1000 psi 69 bar	200°F 93°C	316SS PTFE	20.4 gpm 77.2 l/min	18
AA290AG AA290EP	80 ft 24 m	2"	360°	Solid Stream	250 psi 17 bar	200°F 93°C	316SS PTFE	200 gpm 752 l/min	24
Fluid Driven (Constant Speed) Rokon™									
D26984-SS D26984-PVDF	13-20 ft 4.0-6.0 m	1/2", 3/8" 1/2"	360°	Flat Fan	290 psi 20 bar	160°F 70°C	303SS 316SS PVDF PE	31.2 gpm 128 l/min	30
D40159-PVDF D40159-SS D40159-316SS	13-20 ft 4.0-6.0 m	3/8", 1/2"	65°, 120°, 180°, 270°	Flat Fan	290 psi 20 bar	160°F 70°C	303SS 316SS PVDF PE	31.2 gpm 128 l/min	30
D41800E	13-20 ft 4.0-6.0 m	3/8", DN19	360°	Flat Fan	290 psi 20 bar	302°F 150°C	303SS 316LSS	34 gpm 128 l/min	30
Fluid Driven (Reactionary Force)									
23240	3.0 ft 0.9 m	1/2"	240°, 360°	Flat Fan	200 psi 14 bar	180°F 82°C	316SS HSS PTFE	22 gpm 79 l/min	37
36640	3.0 ft 0.9 m	1/4"	120°	Flat Fan	100 psi 7 bar	200°F 93°C	316SS HSS PTFE	2.2 gpm 7.9 l/min	37
21400A	5.0 ft, 1.5m	3/4"	360°	Flat Fan	100 psi, 7 bar	200°F, 93°C	316SS, HSS, PTFE	22 gpm, 82 l/min	35
21400AHT	5.0 ft, 1.5m	3/4"	360°	Flat Fan	100 psi, 7 bar	350°F, 177°C	316SS, HSS, PTFE	22 gpm, 82 l/min	35
D25468	6.5 ft 2.0 m	1/2"	240°	Flat Fan	70 psi 4 bar	160°F 70°C	DELRIN® 303SS	9.2 gpm 36 l/min	37
18250A	8.0 ft, 2.4m	3/4"	360°	Flat Fan	100 psi, 7 bar	200°F, 93°C	316SS, HSS, PTFE	55 gpm, 205 l/min	35
18250AHT	8.0 ft, 2.4 m	3/4"	360°	Flat Fan	100 psi, 7 bar	350°F, 177°C	316SS, HSS, PTFE	55 gpm, 205 l/min	35
30473	8.0 ft 2.4 m	1/4"	360°	Flat Fan	50 psi 4 bar	200°F 93°C	TEF	4.5 gpm 18 l/min	37
27500 27500R	10.3 ft 3.0-7.6 m	1/2", 3/4" 1", 2", 3"	180°, 270°, 360°	Solid Stream	50 psi 3.5 bar	200°F 93°C	PTFE	391 gpm 1490 l/min	26
28500 28500R	18 ft 5.5 m	3/4", 1" 1-1/2"	180°, 270°, 360°	Solid Stream	50 psi 3.5 bar	200°F 93°C	PTFE	59 gpm 226 l/min	28
Fluid Driven (Turbine)									
UltraClean	14-86 ft	1-1/2"	360°	Solid Stream	175 psi	200°F	316SS PTFE	130 gpm	40
Fixed Stationary									
15498	2.0 ft 0.6 m	1"	270°, 360°	Full Cone	150 psi 10 bar	212°F 100°C	BRASS 303SS 316SS	11.7 gpm 43 l/min	42
3150	3.0 ft 0.9 m	1"	270°, 360°	Full Cone	150 psi 10 bar	212°F 100°C	BRASS 303SS 316SS	26 gpm 91 l/min	42
VSM	5.0 ft 1.6 m	1/2", 3/4"	240°	Solid Stream	140 psi 10 bar	200°F 93°C	NYL SS	63 gpm 269 l/min	42
6353 6353-MFP	10 ft 3.0 m	1-1/2"	360°	Full Cone	60 psi 4 bar	212°F 100°C	BRASS 303SS 316SS	80 gpm 300 l/min	44
12900	15 ft 4.5 m	3"	360°	Full Cone	50 psi 3.5 bar	212°F 100°C	BRASS 303SS 316SS	385 gpm 1470 l/min	44

Note: Ratings are approximate. Actual coverage and performance will vary due to pressure and cleaning requirements.
DELRIN is a registered trademark of E.I. DuPont de Nemours.

Spraying Systems Co.®

System Benefits

AutoJet Technologies, the systems division of Spraying Systems Co., provides turnkey systems for tank washing and other industrial spray applications. As experts in spray technology, systems are a logical extension of our business.

After all, a tank washer or a spray nozzle can only perform properly if the entire spray system operates properly. All system components — nozzles, pumps, sensors and other hydraulic and pneumatic components must be accurately monitored and controlled.

We know the impact a tank wash system can have on your operations and we understand the critical issues you face when specifying turnkey systems.

Primary Objectives of a Tank Wash System

- **Increasing productivity and decreasing downtime**
- **Reducing cleaning chemical, water usage and the associated disposal costs**
- **Meeting regulatory compliance and ensuring operator safety**

The key to designing an effective tank wash system is selecting the right tank washing nozzle and then building a system around it. Our technical expertise has helped us solve hundreds of application problems — from cleaning tanker trucks to scrubbing resin tanks.

Let us put our experience to work for you.

AutoJet Tank Cleaning System Benefits



Performance & Reliability

- AutoJet Systems are designed to optimize the performance of Spraying Systems Co. tank washing nozzles.
- Quality components and an engineered process system ensure low maintenance.
- Built-in sensors assist in ensuring the pump is operating properly and is properly maintained.

Cost Savings

- All AutoJet System process cycles are precisely controlled to reduce cycle times while ensuring maximum cleaning efficiency.
- Recirculation option ensures economical water and chemical usage.

Convenience

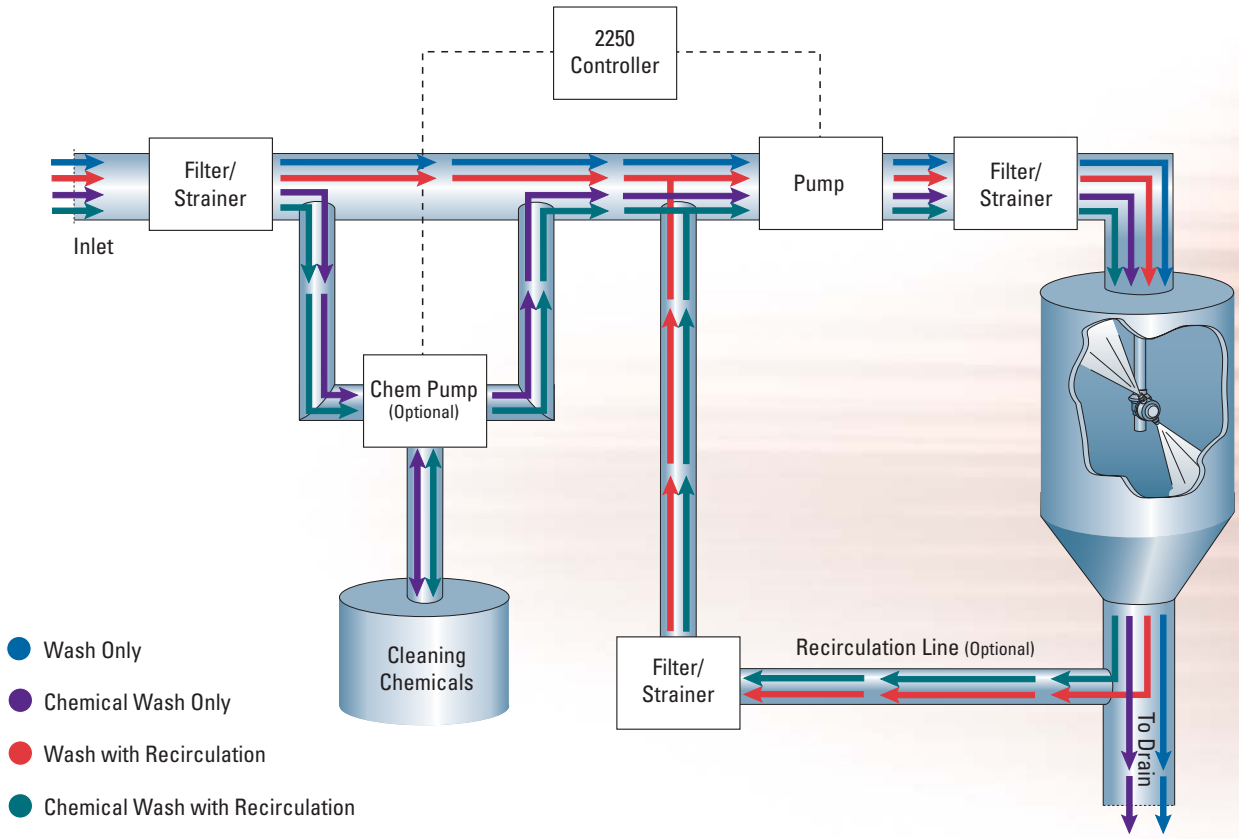
- AutoJet Systems are turnkey solutions — easy to install, easy to operate and easy to maintain.
- Single-source convenience: If you have a question once the system is installed, you know whom to contact. You don't have to worry about contacting multiple suppliers to solve your problem.
- Modular design allows system upgrades after installation.

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Configuration Options

For maximum versatility, AutoJet Tank Cleaning Systems are configured to meet your needs today while allowing future upgrades to enhance functionality. For example, chemical injection and liquid recirculation features can be added to basic tank cleaning systems after installation to improve cleaning results and further reduce operating costs.



Chemical Injection

When cleaning chemicals are used, your AutoJet System can be equipped to automatically inject the correct amount of chemical. Accurate chemical injection can greatly improve the consistency and effectiveness of your wash.

Liquid Recirculation

AutoJet Systems can also be equipped to recirculate cleaning liquid in a closed loop, allowing the reuse of a portion or all water and chemical cleaning solutions. Liquid recirculation can make your tank wash system much more cost efficient. Less water and chemical usage means lower disposal costs.

Note: *Custom designs including high pressure, solvent-based, explosion-proof and sanitary systems are available upon request.*

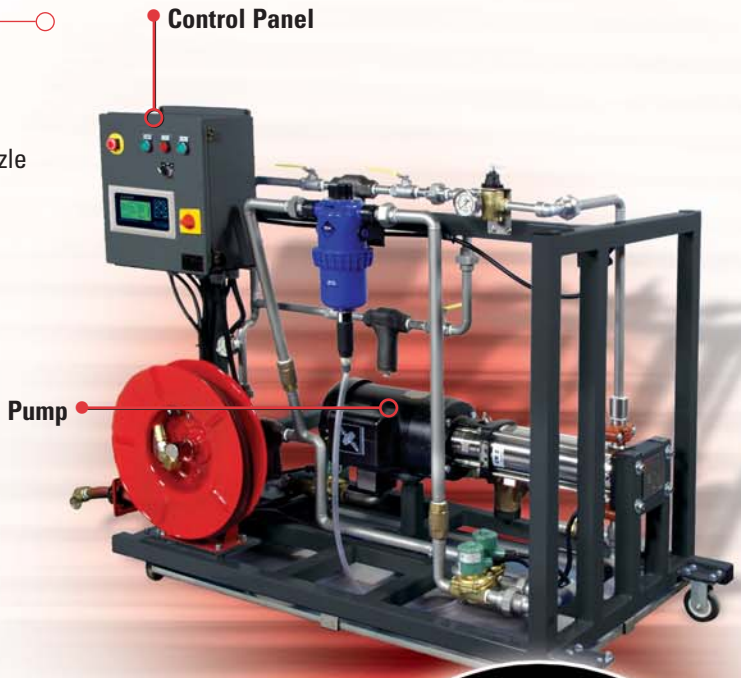
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System Components

An AutoJet Tank Cleaning System consists of four basic components:

- Spraying Systems Co. tank washer or tank cleaning nozzle
  (See pages 16-46 for nozzle features and performance data.)
- Control panel containing an AutoJet Spray Controller
- Specially selected pump ideal for your application
- Engineered process control package

Together, these components optimize tank washer performance to ensure effective tank cleaning. Based on the tank washer or tank washing nozzle chosen for your application, the proper pump is selected and the AutoJet Tank Cleaning System is configured to meet your application needs. Cycle times for all systems are precisely controlled by the AutoJet Spray Controller to ensure consistent cleaning and efficient use of cleaning liquids.





Control Panels

AutoJet System control panels are easy to use and are configured to meet the needs of your tank washing application. Built around the Model 2250 AutoJet Spray Controller and powered by patent-pending SprayLogic™ software, the control panel:

- Manages cleaning cycles and multiple tank wash routines with push button control
- Allows easy programming and adjustment of settings such as liquid pressure and flow rate
- Monitors system operation and can be programmed to shut down on specified faults
- Is field-upgradeable to add chemical injection and liquid recirculation functions

Electrical Specifications:

- 24VDC power supply for control components
- 230/460 VAC power contactor with thermal overload
- Power Supply Requirements:
  – 208-230/460VAC Three Phase
  – Freq: 50-60Hz
- Watertight NEMA 4X Control Panels

System Components

Pumps

- Multistage centrifugal pumps up to 160 gpm (605 l/min) at 175 psi (12 bar)
- Piston and plunger pumps also available
- Single-stage sanitary pumps available
- Single-stage ANSI chemical pumps available



Max Pump Capacity	HP	Pressure at Midpoint of Pump Flow Capacity
0.5 gpm - 7.0 gpm (1.9 l/min - 26.5 l/min)	1/3	20 psi (1.4 bar) at 4 gpm (15.1 l/min)
	1-1/2	160 psi (11 bar) at 4 gpm (15.1 l/min)
	2	250 psi (17 bar) at 4 gpm (15.1 l/min)
1.0 gpm - 13 gpm (3.8 l/min - 49.2 l/min)	1/3	26 psi (1.8 bar) at 6 gpm (22.7 l/min)
	1-1/2	125 psi (8.6 bar) at 6 gpm (22.7 l/min)
	3	316 psi (22 bar) at 6 gpm (22.7 l/min)
1.5 gpm - 24 gpm (5.7 l/min - 90.8 l/min)	1/3	22 psi (1.5 bar) at 12 gpm (45.4 l/min)
	2	150 psi (10 bar) at 12 gpm (45.4 l/min)
	5	290 psi (20 bar) at 12 gpm (45.4 l/min)
3 gpm - 45 gpm (11.4 l/min - 170 l/min)	3/4	22 psi (1.5 bar) at 25 gpm (94.6 l/min)
	5	130 psi (9 bar) at 25 gpm (94.6 l/min)
	7-1/2	286 psi (20 bar) at 25 gpm (94.6 l/min)

Note: *For specific data, please refer to pump curve. Larger pump capacities quoted upon request.*

Process Control Package

- 24VDC diaphragm and globe valves
- Spring loaded ball cone check valves
- Pressure switches on pump inlet and outlet
- Incoming supply "Y" strainer
- Parallel "Y" strainers on pump output
- Basket strainer on recirculation loop
- Pressure regulator
- Schedule 40 piping, 304 stainless steel welded
- Spring-driven powder coated hose reel



Skid

- Welded tubular frame is powder coated
- Storage for 5 gallon chemical container
- Non-marring polyurethane casters
- Full coverage stainless steel drip pan



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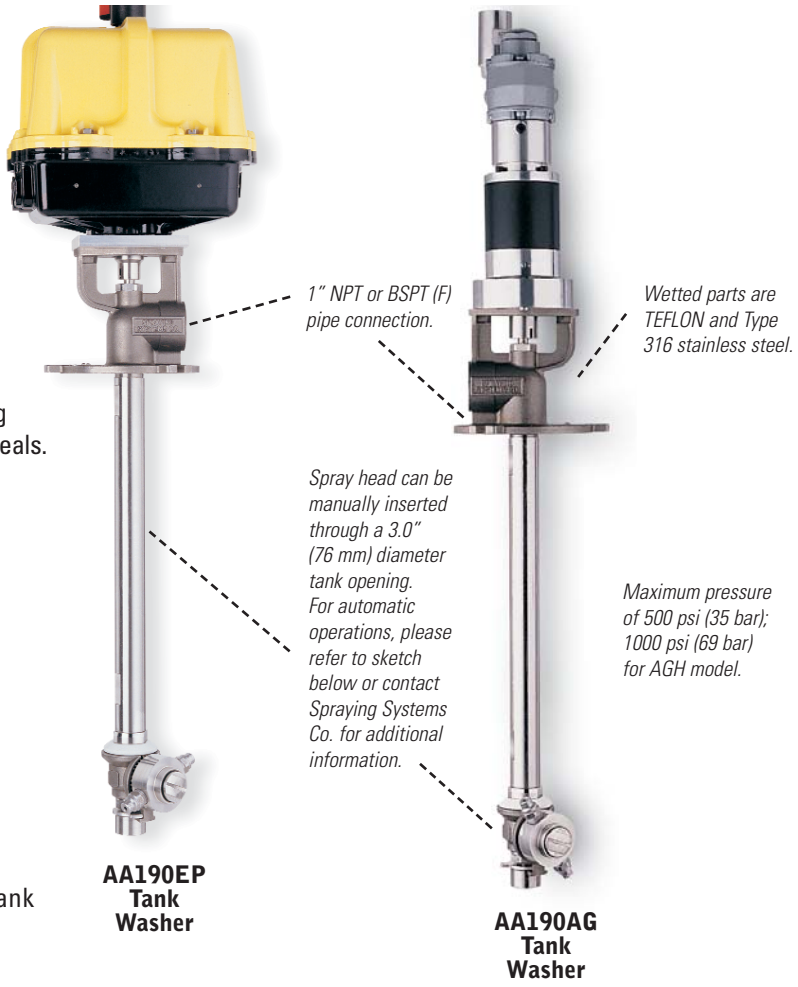
For Tanks to 34' (10.4 m) Diameter

Design Features

For medium to large tanks, the motor-driven AA190 Tank Washer offers powerful cleaning performance. The spray head fits through a 3.6" (76 mm) diameter tank opening. The unit uses high-impact solid stream MEG spray nozzles to achieve maximum cleaning performance with minimal liquid consumption.

- Motor options include air, electric, and explosion-proof electric.
- Lightweight and portable – under 20 lbs. (9 kg).
- Corrosion-resistant materials of construction, including 316 stainless steel and TEFLON® fluoropolymer resin seals.
- 3', 4', or 6' (0.9, 1.2, or 1.8 m) shaft lengths.
- 1'' NPT or BSPT (F) inlet connection.
- 500 psi (35 bar) maximum pressure.
- 200°F (93°C) maximum liquid temperature.
- Flow rates range from 3.1 to 44.5 gpm (12 to 168 l/min).
- One cycle equals 35 revolutions.
- Variable speed air motor flexible wash cycle time from 5 to 11 minutes.
- Optional adjustable flanges accurately position turret within tank.

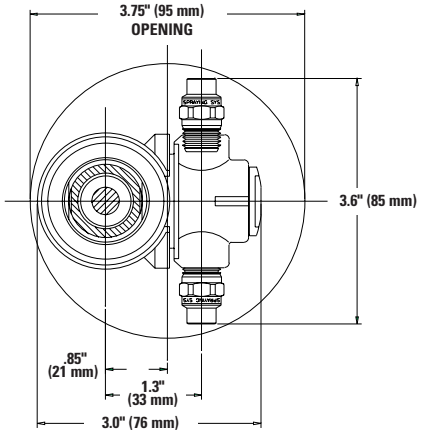
For those difficult material residues, the AA190AGH Tank Washer is the perfect choice. This high-pressure version of the standard AA190AG can be used at pressures up to 1000 psi (69 bar). The physical size of the unit is identical to the standard AA190AG.



AA190EP Tank Washer

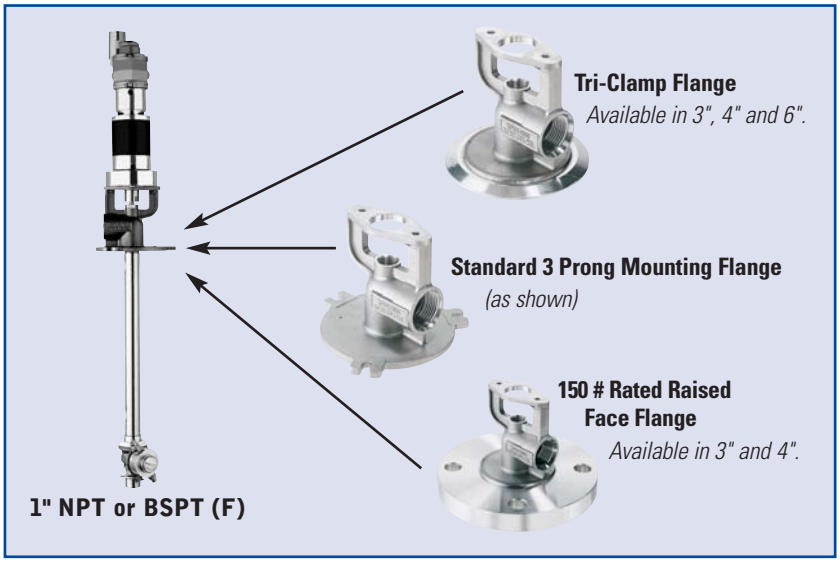
AA190AG Tank Washer

Spray Head Tank Diameter Opening



TEFLON is a registered trademark of E.I. DuPont de Nemours and Company.

AA190 Mounting Flange Options



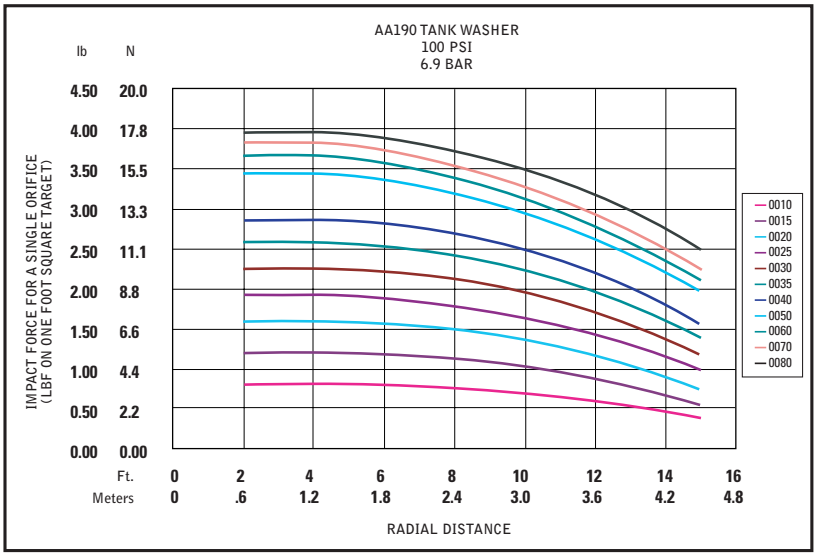
Spraying Systems Co.®

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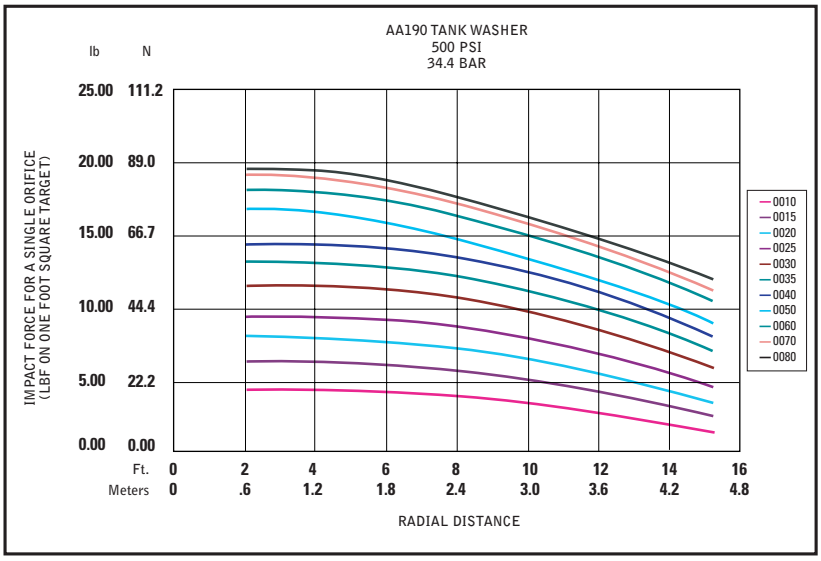
Impact and Coverage Data

The following charts show the decrease in impact as distance is increased from the orifice of the AA190 Tank Washer. A comparison of the two charts illustrates the increase in impact as pressure increases.

In generating extra impact, increasing flow rate is more effective than increasing pressure. Doubling pressure gives approximately 40 percent more impact; doubling flow will increase impact up to 100 percent.



Data Sheet No. 45899–100.



Data Sheet No. 45899–500.

Spraying Systems Co.®

Performance Data – AA190 (AG, E, and EP) Tank Washer

Total Flow of 2 Nozzles (Equal Capacity) gpm or l/min Liquid Inlet Pressure*

Nozzle No.	100 psi (7 bar)	200 psi (15 bar)	300 psi (20 bar)	400 psi (30 bar)	500 psi (35 bar)
1/4MEG-0010	3.1 (11.8)	4.4 (17.3)	5.4 (20)	6.3 (24)	7.0 (26)
1/4MEG-0015	4.7 (17.9)	6.6 (26)	8.1 (30)	9.4 (37)	10.5 (40)
1/4MEG-0020	6.2 (24)	8.8 (35)	10.8 (40)	12.4 (49)	13.9 (53)
1/4MEG-0025	7.7 (29)	10.9 (43)	13.3 (50)	15.4 (61)	17.2 (66)
1/4MEG-0030	9.1 (35)	12.9 (51)	15.8 (59)	18.2 (72)	20 (78)
1/4MEG-0035	10.5 (40)	14.8 (59)	18.1 (68)	21 (83)	23 (90)
1/4MEG-0040	11.8 (45)	16.7 (66)	20 (76)	24 (93)	26 (101)
1/4MEG-0050	14.2 (54)	20 (79)	25 (92)	28 (112)	32 (121)
1/4MEG-0060	16.4 (63)	23 (92)	28 (102)	33 (129)	37 (140)
1/4MEG-0070	18.3 (70)	26 (102)	32 (118)	37 (144)	41 (156)
1/4MEG-0080	19.9 (76)	28 (111)	34 (128)	40 (157)	44 (170)

*Note: Flow rates tabulated above include pressure drop through unit.

Pressure drop through the unit in shaded area should be evaluated when sizing pumps. Consult a Spraying Systems Co. rep for specific information.

Performance Data – AA190 (AGH) Tank Washer

Total Flow of 2 Nozzles (Equal Capacity) gpm or l/min Liquid Inlet Pressure*

Nozzle No.	500 psi (35 bar)	600 psi (40 bar)	700 psi (50 bar)	800 psi (55 bar)	900 psi (60 bar)	1000 psi (70 bar)
1/4MEG-0010	7.0 (26)	7.6 (29)	8.2 (32)	8.8 (34)	9.3 (35)	9.8 (38)
1/4MEG-0015	10.5 (40)	11.5 (43)	12.4 (48)	13.3 (50)	14.1 (52)	14.9 (57)
1/4MEG-0020	13.9 (53)	15.2 (57)	16.4 (63)	17.5 (66)	18.6 (69)	19.6 (75)
1/4MEG-0025	17.2 (66)	18.8 (70)	20 (78)	——	——	——
1/4MEG-0030	20 (78)	——	——	——	——	——

*Note: Flow rates tabulated above include pressure drop through unit.

Ordering Information

AA190 WITH STANDARD 3 PRONG FLANGE

TANK WASHER			+	NOZZLE NO.		
AA190AG	-	3	+	1/4	MEG -	0010
Tank Washer Type		Extension Length		Inlet Conn.	Nozzle Type	Capacity Size

AA190 WITH 150# RAISED FACE FLANGE

TANK WASHER				+	NOZZLE NO.		
AA190AG3	F	-	3	+	1/4	MEG -	0010
Tank Washer Type	150# Raised Face Flange		Extension Length		Inlet Conn.	Nozzle Type	Capacity Size

AA190 WITH SANITARY TRI-CLAMP FLANGE

TANK WASHER				+	NOZZLE NO.		
AA190AG3	SF	-	3	+	1/4	MEG -	0010
Tank Washer Type	Sanitary Tri-Clamp Flange		Extension Length		Inlet Conn.	Nozzle Type	Capacity Size

AA090E & AA190E Electric Motor Data

Air Pressure psi	Speed rpm	Air Consumption scfm	1 Complete Cycle min
5	3.2	1.4	11
7	6.0	2.0	6
10	8.2	3.1	5

Dimensions and Weights*

	Model No.	Extension Length	Overall Length	Weight
Standard 3 Prong Mounting Flange				
	AA190AG	3' (0.9 m)	54-1/4" (1.4 m)	14 lbs. (6.4 kg)
	AA190AG	4' (1.2 m)	66-1/4" (1.7 m)	15-1/2 lbs. (7 kg)
	AA190AG	6' (1.8 m)	90-1/4" (2.3 m)	18-1/2 lbs. (8.4 kg)
	AA190E	3' (0.9 m)	48-7/8" (1.2 m)	14 lbs. (6.4 kg)
	AA190E	4' (1.2 m)	60-7/8" (1.5 m)	15-1/2 lbs. (7 kg)
	AA190E	6' (1.8 m)	84-7/8" (2.1 m)	18-1/2 lbs. (8.4 kg)
	AA190E-EP	3' (0.9 m)	51-7/8" (1.3 m)	14 lbs. (6.4 kg)
	AA190E-EP	4' (1.2 m)	63-7/8" (1.6 m)	15-1/2 lbs. (7 kg)
	AA190E-EP	6' (1.8 m)	87-7/8" (2.2 m)	18-1/2 lbs. (8.4 kg)
	AA190AGH	3' (0.9 m)	54-1/4" (1.4 m)	14 lbs. (6.4 kg)
	AA190AGH	4' (1.2 m)	66-1/4" (1.7 m)	15-1/2 lbs. (7 kg)
	AA190AGH	6' (1.8 m)	90-1/4" (2.3 m)	18-1/2 lbs. (8.4 kg)
150# Raised Face Flange				
	AA190AG3F	3' (0.9 m)	54-1/4" (1.4 m)	24-1/2 lbs. (11.1 kg)
	AA190AG3F	4' (1.2 m)	66-1/4" (1.7 m)	26 lbs. (11.8 kg)
	AA190AG3F	6' (1.8 m)	90-1/4" (2.3 m)	29 lbs. (13.2 kg)
	AA190E3F	3' (0.9 m)	48-7/8" (1.2 m)	24-1/2 lbs. (11.1 kg)
	AA190E3F	4' (1.2 m)	60-7/8" (1.5 m)	26 lbs. (11.8 kg)
	AA190E3F	6' (1.8 m)	84-7/8" (2.1 m)	29 lbs. (13.2 kg)
	AA190AG4F	3' (0.9 m)	51-7/8" (1.3 m)	29-1/2 lbs. (13.4 kg)
	AA190AG4F	4' (1.2 m)	63-7/8" (1.6 m)	31 lbs. (14.1 kg)
	AA190AG4F	6' (1.8 m)	87-7/8" (2.2 m)	34 lbs. (15.4 kg)
	AA190AE4F	3' (0.9 m)	54-1/4" (1.4 m)	29-1/2 lbs. (13.4 kg)
	AA190AE4F	4' (1.2 m)	66-1/4" (1.7 m)	31 lbs. (14.1 kg)
	AA190AE4F	6' (1.8 m)	90-1/4" (2.3 m)	34 lbs. (15.4 kg)
Sanitary Tri-Clamp Flange				
	AA190AG3SF	3' (0.9 m)	54-1/4" (1.4 m)	14 lbs. (6.4 kg)
	AA190AG3SF	4' (1.2 m)	66-1/4" (1.7 m)	15-1/2 lbs. (7 kg)
	AA190AG3SF	6' (1.8 m)	90-1/4" (2.3 m)	18-1/2 lbs. (8.4 kg)
	AA190E3SF	3' (0.9 m)	48-7/8" (1.2 m)	14 lbs. (6.4 kg)
	AA190E3SF	4' (1.2 m)	60-7/8" (1.5 m)	15-1/2 lbs. (7 kg)
	AA190E3SF	6' (1.8 m)	84-7/8" (2.1 m)	18-1/2 lbs. (8.4 kg)
	AA190AG4SF	3' (0.9 m)	54-1/4" (1.4 m)	14-1/4 lbs. (6.5 kg)
	AA190AG4SF	4' (1.2 m)	66-1/4" (1.7 m)	15-1/2 lbs. (7 kg)
	AA190AG4SF	6' (1.8 m)	90-1/4" (2.3 m)	18-3/4 lbs. (8.5 kg)
	AA190E4SF	3' (0.9 m)	48-7/8" (1.2 m)	14-1/4 lbs. (6.5 kg)
	AA190E4SF	4' (1.2 m)	60-7/8" (1.5 m)	15-1/2 lbs. (7 kg)
	AA190E4SF	6' (1.8 m)	84-7/8" (2.1 m)	18-3/4 lbs. (8.5 kg)
	AA190AG6SF	3' (0.9 m)	54-1/4" (1.4 m)	17 lbs. (7.7 kg)
	AA190AG6SF	4' (1.2 m)	66-1/4" (1.7 m)	18-1/2 lbs. (8.4 kg)
	AA190AG6SF	6' (1.8 m)	90-1/4" (2.3 m)	21-1/2 lbs. (9.8 kg)
	AA190E6SF	3' (0.9 m)	48-7/8" (1.2 m)	17 lbs. (7.7 kg)
	AA190E6SF	4' (1.2 m)	60-7/8" (1.5 m)	18-1/2 lbs. (8.4 kg)
	AA190E6SF	6' (1.8 m)	84-7/8" (2.1 m)	21-1/2 lbs. (9.8 kg)

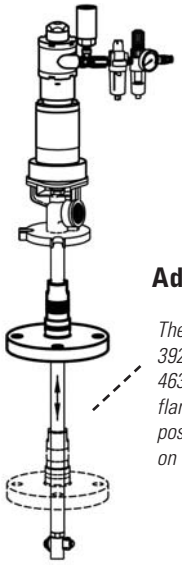
*For complete dimensions/specifications, request data sheets on the AA190 Tank Washer.

Spraying Systems Co.®

Model 22250 Adjustable Flange

The Model 22250 Adjustable Flange allows for user positioning of the tank washer spray head inside the tank. This can be used with the AA090 and AA190 series tank washers.





Adjustable Flange

The Model 22250, 39205, 43047 and 46395 adjustable flanges can be positioned anywhere on the shaft.

Model 39205 Adjustable Flange with Tri-Clamp® Fitting



The Model 39205 Adjustable Flange with Tri-Clamp Fitting is for tanks with Tri-Clamp Fittings. This 316 stainless steel adjustable flange can be specified with a 2-1/2", 3", 4", or 6" Tri-Clamp Fitting. It is 4-1/16" (103.2 mm) long. It weighs 2.5 lbs. (1.1 kg).

Model 43047 Ball Swivel Adjustable Flange

Similar to the Model 22250 Adjustable Flange, the Model 43047 features a ball swivel that allows adjustment of the angle of the insertion of the tank washer spray head by as much as 60°. Precise positioning means that the spray head can be inserted at various depths and angles to achieve the best possible cleaning effect. This enables tanks with internal obstructions to be cleaned quicker and easier. The Model 43047 can be used with the AA090 and AA190 series tank washers.



Model 45260 Tank Washer Adapter

The Model 45260 Tank Washer Adapter is also for use with the AA090 and AA190 tank washers with 2" to 4" tank inlet sizes. The unit can be easily installed on any air or electrically driven AA090 or AA190 Tank Washer. The CELCON® (acetal) material with 304 stainless steel screws resists a wide range of chemicals.



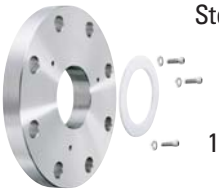
Model 46395 Adjustable Flange



The Model 46395 adjustable Flange for tanks with 150# flange connections. This adjustable flange can be specified with a 3" or 4" 150# raised face flange.

Model 39204 Mounting Kit

The Model 39204 Mounting Kit includes a 4" 316 Stainless Raised Faced Flange, Stainless Steel lock washers, bolts and TEFLON® gasket to be used for mounting the standard AA190 3 prong mounting flange (see page 16) to a 4", 150# flange on a tank.



Dimensions and Weights*

Model No.	Length	Diameter	Weight
43047	6-3/4" (172 mm)	9" (229 mm) 6" (152 mm)	14.5 lbs. (6.6 kg)
22250	4-1/16" (103 mm)	5" (127 mm)	2.8 lbs. (1.3 kg)
39205	4-1/12" (114 mm)	3" (76.2 mm) 4" (102 mm) 6" (152 mm)	2.1 lbs. (.95 kg) 2.5 lbs. (1.1 kg) 5.3 lbs. (2.4 kg)
45260	3-13/16" (97 mm)	6-1/4" (159 mm)	1 lb. (.45 kg)
39204	15/16" (24 mm)	4" (102 mm)	15 lbs. (6.8 kg)
49395	4-13/16" (122 mm) 4-15/16" (125 mm) 5" (127 mm)	2" (50.8 mm) 3" (76.2 mm) 4" (102 mm)	12 lbs. (5.4 kg) 12.9 lbs. (5.9 kg) 17.7 lbs. (8.0 kg)

Based on largest/heaviest version of each type.

Materials

Material	Material Code	Nozzle Type					
		43047	22250	39205	45260	39204	46395
304 Stainless Steel	304SS				●		
316 Stainless Steel	316SS	●	●	●		●*	●**
316 Stainless Steel							
CELCON	CE				●		

* Gasket is TEFLON®
** O-ring is Viton®

Ordering Information

COMPLETE ADJUSTABLE FLANGE

22250 – 316SS
(Model No. | Material Code)

COMPLETE ADJUSTABLE FLANGE WITH TRI-CLAMP FITTING

39205 – 3 – 316SS
(Model No. | Clamp | Material Code)

COMPLETE BALL JOINT ASSEMBLY

43047-4 – 316SS
(Model No. | Dia. | Material Code)

COMPLETE TANK WASHER ADAPTER

45260 – CE
(Model No. | Material Code)

MOUNTING KIT

39204-4 – 316SS
(Model No. | Size | Material Code)

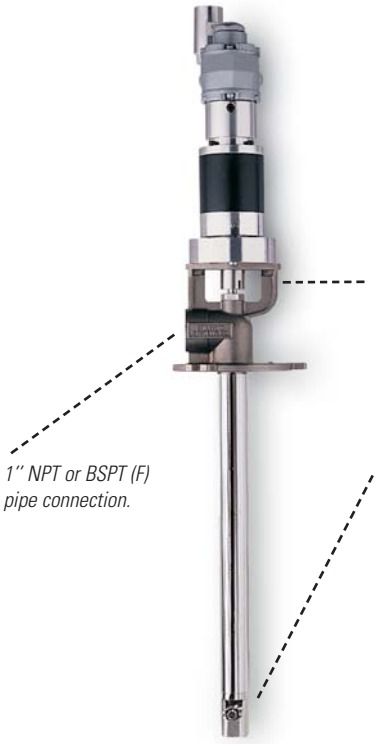
MOUNTING KIT

39205-4 – 316SS
46395-4 – 316SS
(Model No. | Size | Material Code)

Design Features

The motor-driven AA090 Tank Washer features a rotating spray head capable of fitting in standard 2.3'' (51 mm) tank openings and the pressure-balanced design provides high-impact cleaning with minimal liquid consumption.

- Motor options include air, electric, and explosion-proof electric.
- Lightweight and portable.
- Corrosion-resistant materials of construction, including 316 stainless steel and TEFLON® fluoropolymer resin seals.
- 1.5', 3', 4', or 6' (0.5, 0.9, 1.2, or 1.8 m) shaft lengths.
- 1'' NPT or BSPT (F) inlet connection.
- 500 psi (35 bar) maximum pressure.
- 200°F (93°C) maximum liquid temperature.
- Flow rates range from 1.5 to 7.3 gpm (5.7 to 28 l/min).
- One cycle equals 31 revolutions.
- Optional adjustable flange accurately positions turret within tank.



Wetted parts are TEFLON and Type 316 stainless steel.

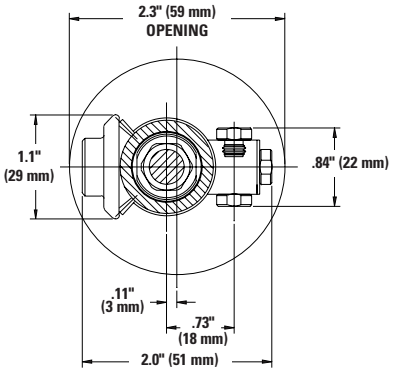
1'' NPT or BSPT (F) pipe connection.

Spray head can be manually inserted through a 2.0" (51 mm) diameter opening. For automatic applications, see sketch below or contact Spraying Systems Co. for additional information.

AA090AG Tank Washer

Maximum pressure 500 psi (35 bar).

Spray Head Tank Diameter Opening



See page 20 for **Adjustable Flange Options and Accessories**

Performance Data – AA090 (AG, E, and EP) Tank Washer

Total Flow of 2 Nozzles (Equal Capacity) gpm or l/min Liquid Inlet Pressure*

Nozzle No.	100 psi (7 bar)	200 psi (15 bar)	300 psi (20 bar)	400 psi (30 bar)	500 psi (35 bar)
W0005	1.5 (5.7)	2.0 (7.6)	2.4 (9.1)	2.8 (10.6)	3.2 (12.1)
W0010	2.7 (10.2)	3.7 (14.0)	4.5 (17.0)	5.1 (19.3)	5.8 (22.0)
W0014	3.5 (13.2)	4.7 (17.8)	5.8 (22.0)	6.6 (25.0)	7.3 (28.0)

*Note: Flow rates tabulated above include pressure drop through unit.

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Cycle Time Data – Air Motor

Air Pressure to Air Motor		Air Consumption		Approx. Speed rpm	Approx. Time for One Complete Cycle
psig	bar	scfm	l/min		
5	0.34	1.4	40	3.2	10
7	0.48	2.0	57	6	5.5
10	0.68	3.1	88	8.2	4

Cycle Time Data – Electric Motor

Motor Type	AC Frequency	Speed rpm	Current amps	Power watts	1 Complete Cycle min
Electric	50 Hz. 60 Hz.	4.0 4.8	0.6 0.6	40 34	9 8
Explosion-Proof	50 Hz. 60 Hz.	0.8 1.0	0.3 0.3	33 28	44 35

Dimensions and Weights*

AA090AG – Air Motor

Model No.	Extension Length	Overall Length	Weight
AA090AG-1.5	1.5' (0.5 m)	35" (0.8 m)	12-1/2 lbs. (5.7 kg)
AA090AG-3	3' (0.9 m)	53" (1.3 m)	14 lbs. (6.4 kg)
AA090AG-4	4' (1.2 m)	65" (1.6 m)	15-1/2 lbs. (7 kg)
AA090AG-6	6' (1.8 m)	89" (2.2 m)	18-1/2 lbs. (8.4 kg)

AA090E – Electric Motor

Model No.	Extension Length	Overall Length	Weight
AA090E-1.5	1.5' (0.5 m)	29-5/8" (0.7 m)	12-1/2 lbs. (5.7 kg)
AA090E-3	3' (0.9 m)	47-5/8" (1.2 m)	14 lbs. (6.4 kg)
AA090E-4	4' (1.2 m)	59-5/8" (1.5 m)	15-1/2 lbs. (7 kg)
AA090E-6	6' (1.8 m)	83-5/8" (2.1 m)	18-1/2 lbs. (8.4 kg)

AA090E-EP – Explosion-Proof Motor

Model No.	Extension Length	Overall Length	Weight
AA090E-EP-1.5	1.5' (0.5 m)	32-5/8" (0.8 m)	20 lbs. (9.1 kg)
AA090E-EP-3	3' (0.9 m)	50-5/8" (1.3 m)	22 lbs. (10 kg)
AA090E-EP-4	4' (1.2 m)	62-5/8" (1.6 m)	23 lbs. (10.5 kg)
AA090E-EP-6	6' (1.8 m)	86-5/8" (2.2 m)	26 lbs. (11.8 kg)

*For complete dimensions/specifications, request data sheets on the AA090.

Ordering Information

AA090 MOTORIZED TANK WASHER

TANK WASHER: AA090E-3 (AA090E = Tank Washer Type; -3 = Extension Length)

\+

NOZZLE NO.: W 0005 (W = Nozzle Type; 0005 = Capacity Size)

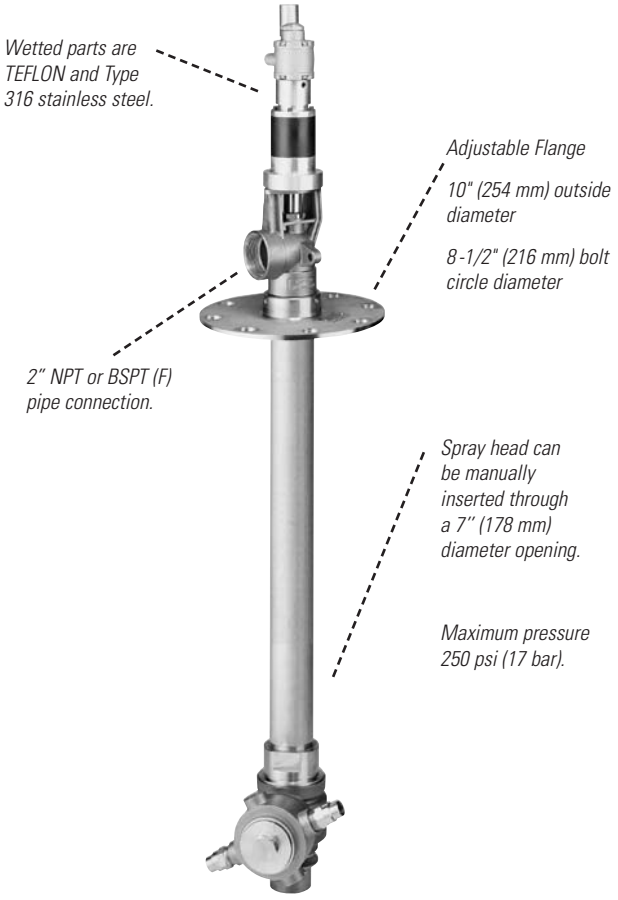
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Design Features

The motor-driven AA290 Tank Washer effectively cleans tanks up to 80' (24.4 m) in diameter. The larger tank diameter coverage is due to an improved design of the solid stream nozzles. The 55430 series solid stream nozzles feature improved solid stream integrity for optimum impact. These nozzles use stabilizer vanes that can be removed for maintenance purposes.

The AA290 can also be easily customized to accomplish specific tank cleaning requirements. For example, the flow rates can be changed through nozzle selection or by adjusting liquid inlet pressure. In addition, the turret can be fitted with four nozzles for more difficult cleaning applications instead of the standard two solid stream nozzles.

- Motor options include air, electric, and explosion-proof electric.
- Corrosion-resistant materials of construction, including 316 stainless steel and TEFLON® fluoropolymer resin seals.
- 3', 4', or 6' (0.9, 1.2, or 1.8 m) shaft lengths.
- 2'' NPT or BSPT (F) inlet connection.
- 250 psi (17 bar) maximum pressure.
- 200°F (93°C) maximum liquid temperature.
- Flow rates range from 22 to 200 gpm (85 to 752 l/min).
- One cycle equals 61 revolutions.
- Unit can be manually inserted into a 7" (178 mm) opening.



AA290AG Tank Washer

Performance Data – AA290 (AG and EP) Tank Washer

Total Flow of 2 Nozzles (Equal Capacity) gpm or l/min Liquid Inlet Pressure*

Nozzle No.	50 psi (3.5 bar)	100 psi (7 bar)	150 psi (10 bar)	200 psi (15 bar)	250 psi (17 bar)
55430-H3/4U-00100	22 (85)	32 (121)	39 (144)	45 (177)	50 (188)
55430-H3/4U-00200	45 (171)	63 (241)	77 (288)	89 (353)	100 (376)
55430-H3/4U-00250	56 (213)	79 (301)	97 (360)	112 (441)	125 (470)
55430-H3/4U-00350	78 (298)	111 (422)	136 (505)	157 (618)	175 (658)
55430-H3/4U-00400	89 (341)	126 (482)	155 (577)	179 (706)	200 (752)

*Note: Liquid inlet pressure measured near inlet connection of tank washing machine.

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Cycle Time Data – Air Motor

Air Pressure to Air Motor		Air Consumption		Approx. Speed rpm	Approx. Time For One Complete Cycle min
psig	bar	scfm	l/min		
5	0.34	1.4	39.6	3.2	19
7	0.48	2.0	56.6	6	11
10	0.68	3.1	87.7	8.2	8

Cycle Time Data – Explosion-Proof Motor

Approximate Speed rpm	Hp	Supply	1 Complete Cycle min
5	1/7	120 VAC 60 Hz	13

Dimensions and Weights*

AA290AG – Air Motor

Model No.	Extension Length	Overall Length	Weight
AA290AG-3	3' (0.9 m)	60-7/8" (1.5 m)	46 lbs. (20.9 kg)
AA290AG-4	4' (1.2 m)	72-7/8" (1.8 m)	50 lbs. (22.7 kg)
AA290AG-6	6' (1.8 m)	96-7/8" (2.5 m)	59 lbs. (26.8 kg)

AA290E-EP – Explosion-Proof Motor

Model No.	Extension Length	Overall Length	Weight
AA290E-EP-3	3' (0.9 m)	61-3/4" (1.6 m)	56 lbs. (25.5 kg)
AA290E-EP-4	4' (1.2 m)	73-3/4" (1.8 m)	60 lbs. (27.3 kg)
AA290E-EP-6	6' (1.8 m)	97-3/4" (2.5 m)	69 lbs. (31.4 kg)

*For complete dimensions/specifications, request data sheets on the AA290.

Ordering Information

AA290 MOTORIZED TANK WASHER

TANK WASHER		NOZZLE NO.			
AA290AG-3	+	55430-H	3/4	U	- 00100
Tank Washer Type	Extension Length	Nozzle Type Prefix	Nozzle Inlet Conn.	Nozzle Type	Capacity Size

For Tanks to 25' (7.6 m) Diameter

Design Features

The reactionary force of the cleaning liquid rotates the 27500 Series Rotary Tank Washing nozzles. Combining the nozzle's multiple solid stream orifice configuration with this rotating motion produces solid stream sprays for quick and effective automated cleaning of tanks, vessels, containers, and equipment. Since no external power source is required to rotate the nozzles, they are especially well suited for clean-in-place systems. The 27500 nozzles offer exceptional performance in low-pressure cleaning and rinsing applications.

- Constructed of TEFLON® fluoropolymer resin, making them perfect for use in harsh chemical and corrosive environments.
- Maximum operating temperature of 200°F (93°C).
- Spray coverage ranges from 180° to 360°.
- 1/2", 3/4", 1", 2", and 3" threaded inlet connections (NPT or BSPT).
- Flow rates range from 4 gpm (15 l/min) to 391 gpm (1480 l/min).
- Pressures range from 10 to 50 psi (0.7 to 3.5 bar).

Model 27500R features a removable VITON® o-ring that allows the spray ring to be easily detached from the nozzle body to simplify nozzle maintenance. The 27500R tank washing nozzle is available with 1/2", 3/4", and 1" threaded inlet connections (NPT and BSPT).



27500 Nozzle

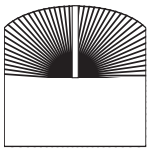
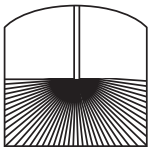
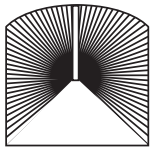
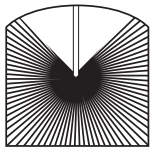
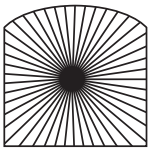


27500R Nozzle

27500 Nozzle Selection Tips

- Recommended operating pressure of 40 psi (3 bar).
- Filter liquid to approximately half of orifice diameter.
- Chemical-resistant TEFLON material is ideal for a wide range of applications.

Type of Coverage/Spray Angle Data

SPRAY ANGLE	180°	180°	270°	270°	360°
TYPE OF COVERAGE	 A	 B	 C	 D	 E

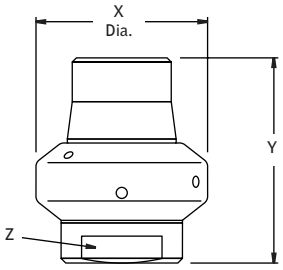
VITON is a registered trademark of DuPont Dow Elastomers.
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Performance Data

Nozzle No.	Max Free Passage (mm)	Capacity gpm (l/min)					Max. Tank Dia. (m)
		10 psi (0.7 bar)	20 psi (1.5 bar)	30 psi (2 bar)	40 psi (3 bar)	50 psi (3.5 bar)	
27500 (A thru E)-R-1/2-8-TEF	3/32" (2.4)	4.0 (15.3)	5.7 (22)	6.9 (26)	8.0 (32)	8.9 (34)	10' (3.0)
27500 (A thru E)-R-3/4-18-TEF	3/32" (2.4)	9.0 (34)	12.7 (50)	15.6 (58)	18 (71)	20 (77)	15' (4.3)
27500 (A thru E)-R-3/4-32-TEF	5/32" (4.0)	16 (61)	23 (89)	28 (103)	32 (126)	36 (136)	15' (4.3)
27500 (A thru E)-R-3/4-46-TEF	15/64" (6.0)	23 (88)	33 (130)	40 (148)	46 (182)	51 (196)	15' (4.3)
27500 (A thru E)-R-1-50-TEF	5/32" (4.0)	25 (95)	35 (140)	43 (161)	50 (197)	56 (215)	18' (5.5)
27500 (A thru E)-R-1-70-TEF	7/32" (5.6)	35 (133)	49 (195)	61 (225)	70 (275)	78 (300)	18' (5.5)
27500 (A thru E)-R-1-90-TEF	19/64" (7.5)	45 (172)	64 (250)	78 (290)	90 (355)	101 (385)	18' (5.5)
27500 (A thru E)-2-100-TEF	15/64" (6.0)	50 (191)	71 (280)	87 (320)	100 (395)	112 (425)	20' (6.0)
27500 (A thru E)-2-125-TEF	17/64" (6.7)	63 (240)	88 (350)	108 (400)	125 (495)	140 (530)	20' (6.0)
27500 (A thru E)-2-150-TEF	5/16" (7.9)	75 (285)	106 (420)	130 (480)	150 (590)	168 (640)	20' (6.0)
27500 (A thru E)-2-175-TEF	3/8" (9.5)	88 (335)	124 (490)	152 (560)	175 (690)	196 (745)	20' (6.0)
27500 (A thru E)-2-200-TEF	27/64" (10.7)	100 (380)	141 (560)	173 (645)	200 (790)	224 (850)	20' (6.0)
27500 (A thru E)-3-250-TEF	25/64" (9.9)	125 (475)	177 (700)	217 (805)	250 (985)	280 (1065)	25' (7.6)
27500 (A thru E)-3-300-TEF	27/64" (10.7)	150 (570)	212 (840)	260 (965)	300 (1180)	335 (1280)	25' (7.6)
27500 (A thru E)-3-350-TEF	31/64" (12.3)	175 (665)	247 (975)	303 (1130)	350 (1380)	391 (1490)	25' (7.6)

*Suggested optimum operating range — 20 to 40 psi (1.5 to 3 bar).

Dimensions



Nozzle Type	Inlet Dia. NPT or BSPT	X Dia.	Y	Z Flats
27500, 27500R	1/2"	1-15/16" (49.2 mm)	2-3/8" (60.3 mm)	1-1/8" (28.6 mm)
27500, 27500R	3/4"	2-1/4" (57.2 mm)	2-5/8" (66.6 mm)	1-5/16" (33.3 mm)
27500, 27500R	1"	2-3/4" (69.8 mm)	3" (76.2 mm)	1-5/8" (45.3 mm)
27500	2"	4-7/8" (123.8 mm)	4-3/8" (111 mm)	2-3/4" (69.8 mm)
27500	3"	6-7/8" (174.6 mm)	5-7/8" (149.2 mm)	3-7/8" (98.4 mm)

Ordering Information

27500 NOZZLE WITHOUT EXTERNAL O-RING

27500	E	-	3/4	-	18	-	TEF
Nozzle Type	Coverage Type		Inlet Conn.		Capacity Size		Material Code

27500R NOZZLE WITH EXTERNAL O-RING

27500	E	-	R	-	3/4	-	18	-	TEF
Nozzle Type	Coverage Type		O-Ring		Inlet Conn.		Capacity Size		Material Code

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Design Features

Like the 27500 Series, the 28500 Series Rotary Tank Washing nozzles rely on a rotating motion and solid stream sprays for efficient cleaning of tanks, vessels, containers, and equipment. The 28500 nozzle is threadless and features a 316 stainless steel locking pin to secure the nozzle to the inlet connection. Tapered interior surfaces promote self-draining in the downward vertical position. The unique tapered design in combination with the threadless inlet connection prevents buildup of material on the nozzle — a real advantage for sanitary applications.

- Constructed of TEFLON® fluoropolymer resin, making them ideal for applications that use harsh cleaning chemicals.
- Maximum operating temperature of 200°F (93°C).
- Spray coverage ranges from 180° to 360°
- 3/4", 1", 1-1/2", DN20, DN25, and DN40 sanitary tubing connections.
- Flow rates range from 11.5 to 59 gpm (43 to 223 l/min).
- Pressures range from 10 to 50 psi (0.7 to 3.5 bar).
- To simplify nozzle maintenance, the model 28500R features a removable VITON® O-ring that allows for easy detachment of the spray ring from the nozzle body.
- The 28500R sanitary tank washing nozzle conforms to 3A sanitary standard 78-00 for spray cleaning devices to remain in place (excluding Type A coverage nozzles shown below).



28500 Nozzle

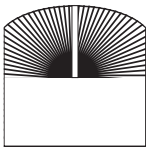
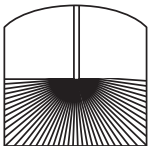
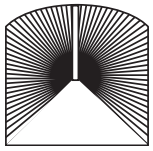
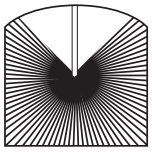
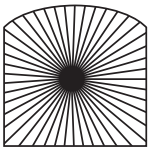


28500R Nozzle

28500 Nozzle Selection Tips

- Recommended operating pressure of 40 psi (3 bar).
- Filter liquid to approximately half of orifice diameter.
- Chemical-resistant TEFLON material is ideal for a wide range of applications.

Type of Coverage/Spray Angle Data

SPRAY ANGLE	180°	180°	270°	270°	360°
TYPE OF COVERAGE	 A	 B	 C	 D	 E

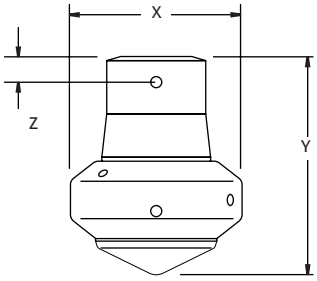
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TEFLON is a registered trademark of E.I. DuPont de Nemours and Company.

Performance Data

Nozzle No.	Nozzle Inlet ID	Capacity gpm (l/min)*				
		10 psi (1 bar)	20 psi (1.5 bar)	30 psi (2 bar)	40 psi (3 bar)	50 psi (3.5 bar)
28500 (A thru E)-3/4-23-TEF	3/4"	11.5 (44)	16.3 (64)	19.9 (74)	23 (91)	26 (98)
28500 (A thru E)-DN20-23-TEF	DN20	11.5 (44)	16.3 (64)	19.9 (74)	23 (91)	26 (98)
28500 (A thru E)-1-33-TEF	1"	16.5 (63)	23 (92)	29 (106)	33 (130)	37 (141)
28500 (A thru E)-DN25-33-TEF	DN25	16.5 (63)	23 (92)	29 (106)	33 (130)	37 (141)
28500 (A thru E)-1-1/2-53-TEF	1-1/2"	27 (101)	37 (148)	46 (171)	53 (209)	59 (226)
28500 (A thru E)-DN40-53-TEF	DN40	27 (101)	37 (148)	46 (171)	53 (209)	59 (226)

*Suggested optimum operating range — 20 to 40 psi (1.5 to 3 bar).

Dimensions



Nozzle Inlet ID	Inlet Dia.	X Dia.	Y	Z
3/4"	.76"	2-1/4" (57.2 mm)	2-5/8" (66.6 mm)	3/8" (9.5 mm)
DN20	22.2 mm			
1"	1.02"	2-3/4" (69.8 mm)	2-7/8" (73 mm)	1/2" (12.7 mm)
DN25	28.2 mm			
1-1/2"	1.52"	3-5/8" (92 mm)	3-5/8" (92 mm)	3/4" (19 mm)
DN40	40.2 mm			

Ordering Information

28500 NOZZLE WITHOUT EXTERNAL O-RING

28500	E	-	3/4	-	23	-	TEF
Nozzle Type	Coverage Type		Inlet Conn.		Capacity Size		Material Code

28500R NOZZLE WITH EXTERNAL O-RING*

28500	E	-	R	-	3/4	-	23	-	TEF
Nozzle Type	Coverage Type		O-Ring		Inlet Conn.		Capacity Size		Material Code

*28500R nozzles are not available with 1-1/2" and DN40 inlet connections.

Design Features

Unlike conventional fluid-driven rotating nozzles where cleaning efficiency decreases as pressures increase, the Rokon™ rotary tank washing nozzle increases its cleaning impact as the fluid pressure increases. Due to the nozzle rotating at a constant speed of approximately 10 rpm when fluid pressure is between 15 to 290 psi (1 to 20 bar), higher fluid pressure results in a direct increase in impact of the cleaning fluid. High-impact spraying means liquid consumption is minimized and cleaning efficiency is improved. The limited rotational speed makes the nozzle highly useful for cleaning, sanitizing, and foaming applications.

The nozzle's unique design uses the momentum of the liquid flow to drive the spray head to maintain a constant rotating speed where conventional fluid-driven nozzle designs use the reactionary forces at the nozzle orifices to drive the spray head. This design translates into an increase in cleaning impact that can be up to four times higher than a conventional rotating nozzle.

- Model D26984-PVDF and Model D40159-PVDF feature a nozzle body constructed of chemical- and corrosion-resistant KYNAR® (PVDF) with a TEFLON® washer and a polyethylene sleeve.
- Model D26984-SS features a 303SS or 316SS stainless steel body with a TEFLON sleeve and washer.
- Five capacity sizes are available to clean tanks up to 20' (6.0 m) in diameter.
- 3/8" and 1/2" NPT and BSPT inlet connections.
- Sanitary tubing connections also available upon request.
- 290 psi (20 bar) maximum operating pressure and 160°F (70°C) maximum liquid temperature.
- D26984-SS, D26984-316SS, and D26984-PVDF available only in 360°.
- D40159-PVDF, D40159-SS, D40159-316SS available in 65°, 120°, 180°, and 260° spraying down or up.
- Wall mount units available upon request.

For more information request Data Sheets 26984-SS, 26984-PVDF, and 40159-PVDF.



D26984-PVDF, D40159-PVDF Rokon Nozzle



D26984-SS D40159-SS D40159-316SS Rokon Nozzle



D41800E Rokon Nozzle

The Model D41800E Compact Rokon nozzle is designed to fit in tank openings as small as 1-1/4" (32 mm) while delivering high-impact flow rates up to 33 gpm at 230 psi (127 l/min at 16 bar). Constructed of 303 or 316L stainless steel, the nozzle is well suited for high-temperature tank cleaning and sanitizing applications.

- Patented self-flushing water bearing design eliminates internal bearings or races.
- Available in four capacity sizes – 3.2, 4.5, 9.9, and 13.6 – with 360° spray angle.
- Recommended operating pressure range of 30 to 230 psi (2.0 to 16 bar).
- Rotational speed varies with pressure, 2-30 RPM.
- Maximum operating temperature is 302°F (150°C).
- HASTELLOY® C material available upon request.

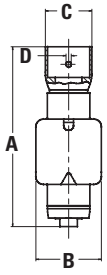
For more information request Data Sheet D41800E-3/8 or D41800E-19.

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Performance Data – D41800E Rokon Nozzle

Nozzle Inlet Connection	Nozzle Type		Capacity Size	Capacity gpm (l/min)				
	D41800E SS	D41800E 316SS		20 psi (1.4 bar)	40 psi (3 bar)	100 psi (5 bar)	150 psi (10 bar)	230 psi (16 bar)
3/8, DN19	•	•	3.2	2.7 (10)	3.5 (14)	5.3 (17)	6.5 (24)	7.9 (30)
	•	•	4.5	3.4 (13)	4.8 (19)	7.5 (24)	9.1 (34)	11.3 (43)
	•	•	9.9	7.2 (27.3)	10.1 (40)	16.1 (52)	19.7 (73)	24 (93)
	•	•	13.6	9.9 (37.7)	14.0 (55)	22 (71)	27 (101)	34 (128)

Dimensions and Weights



Nozzle Type	Inlet Conn.	A (mm)	B Dia. (mm)	C Dia. (mm)	D Dia. (mm)	Net Weight (kg)
D41800E	3/8"	3" (78)	1-3/16" (30)	27/32" (21)	.094 (2.4)	.28 lbs. (0.13)
	DN19	3-7/32" (82)	1-3/16" (30)	27/32" (21)	.094 (2.4)	.29 lbs. (0.13)

Materials

Constructed of all 303 or 316L Stainless Steel.
HASTELLOY® is available upon request.

Ordering Information

ROKON ROTARY TANK WASHING NOZZLE 3/8" CONNECTION			
D41800E –	3/8 –	316L	9.9
Nozzle Type	Inlet Conn.	Material Code	Capacity Size

ROKON ROTARY TANK WASHING NOZZLE DN19 CONNECTION			
D41800E –	19 –	316L	9.9
Nozzle Type	Inlet Conn.	Material Code	Capacity Size

HASTELLOY is a registered trademark of Haynes International, Inc.

For Tanks to 20' (6.0 m) Diameter

Performance Data – D26984 Rokon Nozzle

Nozzle Inlet Connection	Nozzle Type			Capacity Size	Capacity gpm (l/min)				
	D26984 PVDF	D26984 SS	D26984 316SS		15 psi (1 bar)	40 psi (3 bar)	100 psi (5 bar)	150 psi (10 bar)	230 psi (16 bar)
3/8	•			2.3	1.4 (5.3)	2.2 (8.8)	3.4 (11)	4.0 (15.3)	5.0 (19)
	•			3.2	2.2 (8)	3.5 (14)	5.3 (17)	6.5 (24)	7.9 (30)
	•			4.5	2.7 (10)	4.4 (17.0)	6.9 (22)	8.5 (32)	10.5 (40)
1/2	•			2.3	1.4 (5.3)	2.2 (8.8)	3.4 (11)	4.0 (15.3)	5.0 (19)
	•	•	•	3.2	2.2 (8)	3.5 (14)	5.3 (17)	6.5 (24)	7.9 (30)
	•	•	•	4.5	2.7 (10)	4.4 (17)	6.9 (22)	8.5 (32)	10.5 (40)
	•	•	•	9.9	5.9 (23)	9.7 (40)	15.5 (52)	19.1 (73)	24 (93)
	•	•	•	13.6	8.9 (32)	14.0 (55)	21 (71)	26 (101)	31 (128)

Dimensions and Weights



Nozzle Type	Inlet Conn.	A (mm)	B Dia. (mm)	C Dia. (mm)	Net Weight (kg)
D26984-PVDF	3/8", 1/2"	5-3/4" (146)	1-15/16" (49)	1-59/64" (49)	.43 lbs. (0.19)
D26984-SS, 316SS	3/8", 1/2"	5-3/4" (146)	2" (50)	1-3/5" (41)	1.62 lbs. (0.73)

Wetted Materials

Material	303SS	316SS	PVDF	TEFLON®	Polyethylene
D26984-PVDF*			•	•	•
D26984-SS	•			•	
D26984-316SS		•		•	

*Except for 2.3 capacity which has 303SS or 316SS orifices.

Ordering Information

ROKON ROTARY TANK WASHING NOZZLE
D26984 – 3/8 – PVDF – 3.2
Nozzle Type | Inlet Conn. | Material Code | Capacity Size

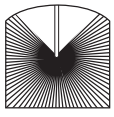
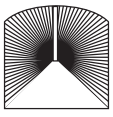
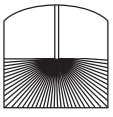
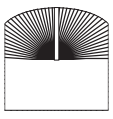
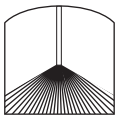
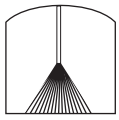
Spraying Systems Co.®

Phone 1-800-95-SPRAY • **Fax** 1-888-95-SPRAY • **Intl Phone** 1-630-665-5000 • **Intl Fax** 1-630-260-0842 • **Web Site:** www.spray.com

Performance Data – D40159 Rokon Nozzle

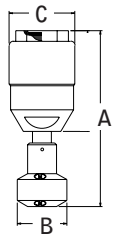
Nozzle Inlet Connection	Nozzle Type			Capacity Size	Capacity gpm (l/min)				
	D40159 PVDF	D40159 SS	D40159 316SS		15 psi (1 bar)	40 psi (3 bar)	100 psi (5 bar)	150 psi (10 bar)	230 psi (16 bar)
3/8	•			2.3	1.4 (5.3)	2.2 (8.8)	3.4 (11)	4.0 (15.3)	5.0 (19)
	•			3.2	2.2 (8)	3.5 (14)	5.3 (17)	6.5 (24)	7.9 (30)
	•			4.5	2.7 (10)	4.4 (17.0)	6.9 (22)	8.5 (32)	10.5 (40)
1/2	•			2.3	1.4 (5.3)	2.2 (8.8)	3.4 (11)	4.0 (15.3)	5.0 (19)
	•	•	•	3.2	2.2 (8)	3.5 (14)	5.3 (17)	6.5 (24)	7.9 (30)
	•	•	•	4.5	2.7 (10)	4.4 (17)	6.9 (22)	8.5 (32)	10.5 (40)
	•	•	•	9.9	5.9 (23)	9.7 (40)	15.5 (52)	19.1 (73)	24 (93)
	•	•	•	13.6	8.9 (32)	14.0 (55)	21 (71)	26 (101)	31 (128)

Spray Angle Data

D40159-PVDF, SS, 316SS								
								
Capacity Size	260° Spray Coverage	260° Spray Coverage	180° Spray Coverage	180° Spray Coverage	120° Spray Coverage	120° Spray Coverage	65° Spray Coverage	65° Spray Coverage
	Down	Up*	Down	Up*	Down	Up*	Down	Up*
2.3	•	•						
3.2	•	•	•	•	•		•	
4.5	•	•	•	•	•		•	
9.9	•	•	•	•	•		•	
13.6	•	•	•	•				

* Add "A" to the D40159 part number for upward spray toward inlet.

Dimensions and Weights



Nozzle Type	Inlet Conn.	A (mm)	B Dia. (mm)	C Dia. (mm)	Net Weight (kg)
D40159-PVDF	3/8", 1/2"	5-3/4" (146)	1-15/16" (49)	1-59/64" (49)	.43 lbs. (0.19)
D40159-SS, 316SS	1/2"	5-3/4" (146)	2" (50)	1-3/5" (44)	1.62 lbs. (0.73)

Wetted Materials

Material	303SS	316SS	PVDF	TEFLON®	Polyethylene
D40159-PVDF*		•	•	•	•
D40159-SS	•			•	
D40159-316SS		•		•	

*D40159-PVDF orifice inserts are 316SS.

Ordering Information

ROKON ROTARY TANK WASHING NOZZLE
D40159 – 3/8 – PVDF 3.2 – 260 A*
Nozzle Type | Inlet Conn. | Material Code | Capacity Size | Spray Angle | Spray Dir.

*Add "A" to the D40159 part number for upward spray toward inlet.

TEFLON is a registered trademark of E.I. DuPont de Nemours and Company.

Design Features

Both the 18250A and 21400A nozzles feature three high-impact flat sprays mounted in a rotating spray head that is driven by the flow of the cleaning liquid. These orifices are precisely positioned to provide complete orbital coverage of all interior surfaces to effectively scrub the interiors of small tanks, up to 8' dia. (2.4 m), and drums.

Select either 316 stainless steel nozzle material with bearings and races made of hardened stainless steel for maximum wear life or choose type 316 stainless steel throughout for maximum corrosion resistance. Bearing retainers are constructed of RYTON®; sleeves of TEFLON®.

The 18250A rotating type tank and drum cleaning nozzle fits through holes just 2-7/32'' (60 mm) in diameter and weighs 1.5 lbs. (0.68 kg). Slightly larger orifice capacities are available for effective cleaning of tanks, barrels, and drums.

The 21400A compact rotating type drum cleaning nozzle fits through openings just 2-1/4'' (60 mm) in diameter and weighs just 1 lb. (0.45 kg). This makes the nozzle perfect for drum and barrel washing.

Standard operating temperature is 200°F (93°C).



18250A Nozzle

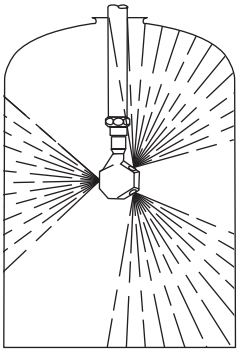


21400A Nozzle

18250A and 21400A Nozzles Selection Tips

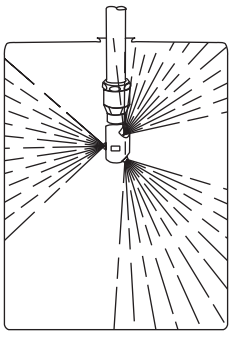
- Rough use application.
- High-impact cleaning in containers, drums, or totes up to 8' (2.4 m) in diameter.
- Cleaning liquid will be single pass or free of particulate.
- Use when controlled rotation of spray head is not required and liquid pressures are less than 100 psi (5 bar) for optimal cleaning.
- Both the 18250AHT and 21400AHT nozzles are high temperature versions which operate at a maximum temperature of 350°F (177°C).
- Nozzles can be installed in both vertical and horizontal position.

Coverage



18250A Nozzle

Maximum Tank Coverage = 8.0' (2.4 m)



21400A Nozzle

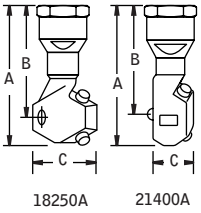
Maximum Tank Coverage = 5.0' (1.5 m)

RYTON is a registered trademark of Phillips Petroleum Company.
TEFLON is a registered trademark of E.I. DuPont de Nemours and Company.

Performance Data

Nozzle No.	Capacity gpm (l/min)					
	10 psi (1 bar)	20 psi (1.5 bar)	30 psi (2 bar)	40 psi (2.5 bar)	50 psi (3 bar)	60 psi (4 bar)
18250A-HSS21-316SS	10.5 (48)	14.8 (59)	18.2 (68)	21 (76)	23 (83)	26 (96)
18250A-HSS45-316SS	23 (103)	32 (126)	39 (145)	45 (162)	50 (178)	55 (205)
21400A-HSS10-316SS	5.0 (23)	7.1 (28)	8.7 (32)	10 (36)	11.2 (39)	12.2 (46)
21400A-HSS18-316SS	9.0 (41)	12.7 (50)	15.6 (58)	18 (65)	20 (71)	22 (82)

Dimensions and Weights



18250A 21400A

Nozzle No.	Inlet Conn. NPT or BSPT (F)	A	B	C	Hex.	Net Weight
18250A	3/4''	5-29/64" (138.4 mm)	4-35/64" (115.5 mm)	1-3/4" (44.5 mm)	1-3/4" (44.5 mm)	1.6 lb. (0.73 kg)
21400A	3/4''	5-9/32" (134 mm)	4-25/64" (111.5 mm)	1-3/4" (44.5 mm)	1-3/4" (44.5 mm)	1.5 lb. (0.68 kg)

Materials

Material	Material Code	Nozzle Body	Bearings and Races
316 Stainless Steel	316SS	•	•
Hardened Stainless Steel	HSS		•

Ordering Information

18250A ROTARY TANK WASHING NOZZLE						
18250A	HT	-	316SS	45	-	316SS
Nozzle Type	High Temperature Option		Bearings and Races Material Code	Capacity Size		Material Code

21400A ROTARY TANK WASHING NOZZLE						
21400A	HT	-	316SS	18	-	316SS
Nozzle Type	High Temperature Option		Bearings and Races Material Code	Capacity Size		Material Code

Design Features

The compact 23240 nozzle is designed to fit through a 1-1/32" (26 mm) diameter hole. The 23240-2 features two flat spray orifices positioned to produce the self-rotating force and provide side sprays. In the model 23240-3 a top orifice is added, resulting in a full spherical spray coverage.

The 23240 nozzle weighs nearly 1/2 lb. (0.23 kg) and two nozzle material choices are available. Select either 316SS nozzle material with bearings and races made of hardened stainless steel for maximum wear life or choose type 316 stainless steel throughout for maximum corrosion resistance. The maximum operating pressure is 200 psi (13.8 bar) and the maximum temperature is 180°F (82°C). An optional teflon sleeve can replace the nylon sleeve to withstand temperatures up to 350°F (177°C). Request data sheet 23240.

This 36640 keg washing nozzle is constructed of stainless steel with hardened stainless steel bearings and races and is an excellent choice for rinsing small containers. This mini rotating nozzle features two flat spray tips that provide cylindrical spray coverage and will spin in any mounted position. In addition to its compact size, it operates at lower pressures and flow rates than typical spinning nozzles. Like the 23240 nozzle, the 36640 can fit through a 1-1/32'' (26 mm) diameter hole.

The D25468 nozzle is used for rinsing chemical containers and tanks up to 6-1/2' (2.0 m) in diameter. The rotating head is driven by the flow of the rinsing liquid that starts at pressures less than 7 psi (0.5 bar). The D25468 nozzle has a self-cleaning sliding bearing. The body is constructed of DELRIN with flat spray inserts of 303 stainless steel. The nozzle fits through a 1-1/2" (37 mm) diameter hole.

The 30473 nozzle is our most compact fluid driven nozzle with a length of only 1-3/4" and a width of 7/8". It provides a 360° spray coverage and can cover tanks up to 8' (2.4 m) in diameter at 40 psi (2.8 bar). The 30473 nozzle is constructed of chemical resistant Teflon. It also contains a removable Viton o-ring that allows the rotating spray head to be easily removed from the body for inspection and maintenance. The maximum operating pressure is 50 psi (3.5 bar) and the maximum temperature is 200°F (93°C).

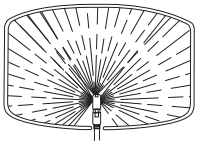


23240 Nozzle | **36640 Nozzle** | **D25468 Nozzle** | **30473 Nozzle**

23240, 36640, D25468 and 30473 Nozzles Selection Tips

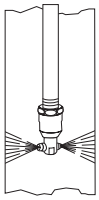
- General rinsing and light cleaning in small containers, cylinders, or duct work.

Coverage



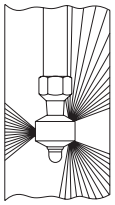
23240 Nozzle

Maximum Tank Coverage = 3.0' (1.0 m)



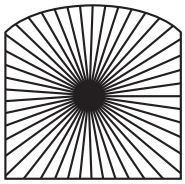
36640 Nozzle

Maximum Tank Coverage = 3.0' (1.0 m)



D25468 Nozzle

Maximum Tank Coverage = 6.5' (2.0 m)



30473 Nozzle

Maximum Tank Coverage = 8.0' (2.4 m)

VITON is a registered trademark of DuPont Dow Elastomers.
TEFLON is a registered trademark of E.I. DuPont de Nemours and Company.

Performance Data – 36640 Tank Washing Nozzle

Nozzle No.	Capacity gpm (l/min)					
	10 psi (1 bar)	20 psi (1.5 bar)	30 psi (2 bar)	40 psi (2.5 bar)	50 psi (3 bar)	60 psi (4 bar)
36640-1.7-SS	0.8 (3.4)	1.2 (4.9)	1.5 (5.3)	1.7 (6.1)	1.9 (6.8)	2.2 (7.9)

Performance Data - 23240 Tank Washing Nozzle

Nozzle No.	Capacity gpm (l/min)							
	20 psi (1.5 bar)	40 psi (3 bar)	60 psi (4 bar)	80 psi (5 bar)	100 psi (6 bar)	120 psi (8 bar)	150 psi (10 bar)	200 psi (12 bar)
23240-2-HSS-5-316SS	3.5 (14)	5.0 (19.7)	6.1 (23)	7.1 (25)	7.9 (28)	8.7 (32)	9.7 (36)	11.2 (39)
23240-2-HSS-8-316SS	5.7 (22)	8.0 (32)	9.8 (36)	11.3 (41)	12.6 (45)	13.9 (52)	15.5 (58)	17.9 (63)
23240-3-HSS-5.7-316SS	4.0 (15.9)	5.7 (22)	7.0 (26)	8.1 (29)	9.0 (32)	9.9 (37)	11.0 (41)	12.7 (45)
23240-3-HSS-7-316SS	4.9 (19.5)	7.0 (28)	8.6 (32)	9.9 (36)	11.1 (39)	12.1 (45)	13.6 (50)	15.7 (55)
23240-3-HSS-10-316SS	7.1 (28)	10.0 (39)	12.2 (46)	14.1 (51)	15.8 (56)	17.3 (64)	19.4 (72)	22 (79)

Performance Data – D25468 Rotary Tank Washing Nozzle

Nozzle No.	Capacity gpm (l/min)				
	20 psi (1.5 bar)	30 psi (2.0 bar)	40 psi (2.5 bar)	50 psi (3 bar)	70 psi (4 bar)
D25468-POM-7	4.9 (19.5)	6.0 (23)	7.0 (28)	7.8 (32)	9.2 (36)

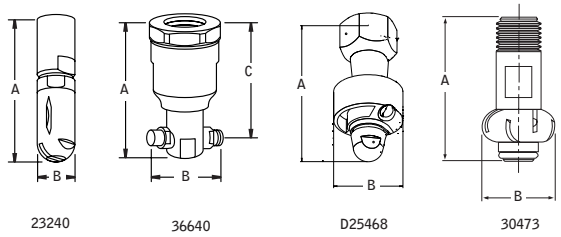
Performance Data – 30473 Mini Tank Washing Nozzle

Nozzle No.	Capacity gpm (l/min)				
	10 psi (0.7 bar)	20 psi (1.5 bar)	30 psi (2.0 bar)	40 psi (3.0 bar)	50 psi (4.0 bar)
30473-1/4-TEF	2.1 (7.8)	2.9 (11.3)	3.5 (13)	4.0 (15)	4.5 (18)

Materials

Material	Material Code	Nozzle Body				Bearings and Races			
		23240	36640	D25468	30473	23240	36640	D25468	30473
303 Stainless Steel	SS		•						
316 Stainless Steel	316SS	•	•			•			
Hardened Stainless Steel	HSS	•				•	•		
DELRIN	POM			•					
Teflon	TEF				•				

Dimensions and Weights



23240 36640 D25468 30473

Nozzle No.	Inlet Conn. NPT or BSPT	A	B Dia.	C	Hex.	Net Weight
23240-	1/2" F	3-1/2" (89 mm)	1" (25.4 mm)	—	—	8 oz. (0.23 kg)
36640-	1/4" F	1-7/8" (47.6 mm)	1" (25.4 mm)	1-9/16" (39.7 mm)	7/8" (22.2 mm)	3 oz. (0.09 kg)
D25468-	1/2" F	3-1/4" (83 mm)	1-1/2" (37 mm)	—	1-1/8" (27 mm)	1.4 oz. (0.04 kg)
30473-	1/4" M	1-3/4" (44.4 mm)	7/8" (22.3 mm)	—	—	0.5 oz (0.02 kg)

Ordering Information

23240 ROTARY TANK WASHING NOZZLE

23240-2 - HSS - 5 - 316SS

Nozzle Type	Bearings and Races Material Code	Capacity Size	Material Code

36640 ROTARY TANK WASHING NOZZLE

36640 - 1.7 - SS

Nozzle Type	Capacity Size	Material Code

D25468 ROTARY TANK WASHING NOZZLE

D25468 - POM - 7

Nozzle Type	Material Code	Capacity Size

30473 ROTARY TANK WASHING NOZZLE

30473 - 1/4 - TEF

Nozzle Type	Inlet. Conn.	Material Code

Spraying Systems Co.®

For Tanks to 86' (26 m) Diameter

Design Features



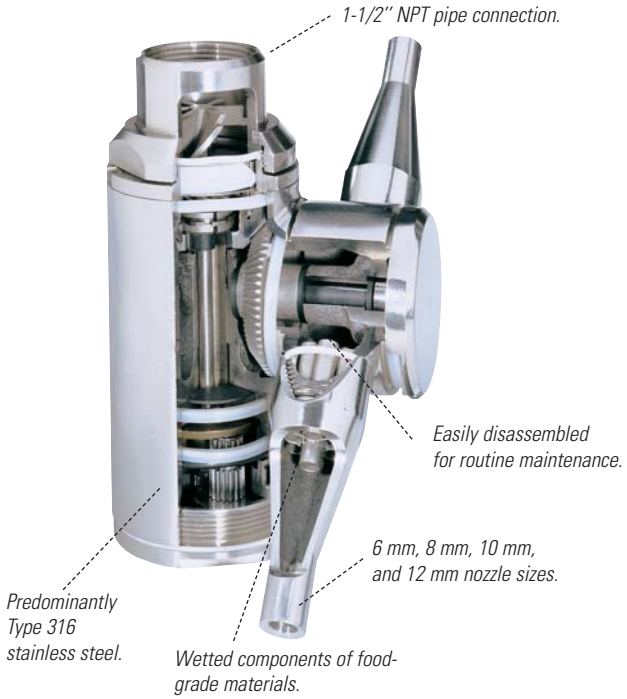
The fluid-driven UltraClean Tank Machine features crisscrossing, reproducible solid stream jets that provide exceptional high-impact cleaning of large tanks, vats, and vessels. The sleek, compact design fits in openings as small as 6'' (152 mm) and weighs just 15 lbs. (6.8 kg) — making this unit suitable for both clean-in-place and portable tank cleaning applications.

Constructed of predominantly 316 stainless steel with wetted components of food-grade materials, UltraClean offers excellent chemical and corrosion resistance. This means that the unit is well suited for tank cleaning applications that use strong cleaning agents.

UltraClean is available with four different nozzle sizes — 6 mm, 8 mm, 10 mm, and 12 mm — with 1-1/2'' NPT inlet connection. Flow rates range from 16 to 130 gpm (60 to 492 l/min) with pressures from 30 to 175 psi (2 to 12 bar). Cleaning diameters range from 14' to 86' (4 to 26 m) with cycle times from 6 minutes to 42 minutes. Maximum operating temperature is 200°F (93°C).

UltraClean FT (FlowThrough) is especially suited for applications requiring lubricant free tank cleaning equipment reducing potential product contamination.

UltraClean is available in the U.S. and some international countries. Please contact your sales engineer for further information.



UltraClean Tank Machine Selection Tips

- Match your vessel size against the Performance Data information.
- Check that the cycle time matches your needs.
- Verify that your tank opening is larger than 6".
- Check that your available liquid pressure is between 30 and 175 psi.
- Confirm that a high-impact spray will satisfy your cleaning needs.
- Verify that your cleaning diameter falls between 14' and 86'.

Cleaning Cycles



Light Rinse Cycle (16.25 revolutions)

Rinse Cycle (32.5 revolutions)

Wash Cycle (48.75 revolutions)

Heavy Wash Cycle (65 revolutions)

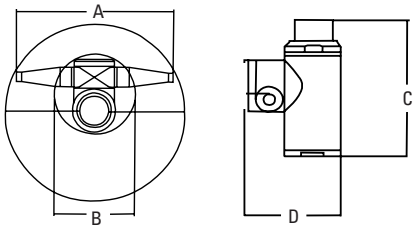
Performance Data

Nozzle Type/Size	Capacity gpm (l/min)						
	30 psi (2.1 bar)	50 psi (3.4 bar)	75 psi (5.2 bar)	100 psi (6.9 bar)	125 psi (8.6 bar)	150 psi (10.3 bar)	175 psi (12.1 bar)
UC or UCFT 6 mm	16 (61)	20 (76)	24 (91)	27 (102)	32 (121)	—	—
UC or UCFT 8 mm	—	32 (121)	40 (151)	47 (178)	54 (204)	58 (220)	63 (238)
UC or UCFT 10 mm	—	45 (170)	61 (231)	75 (284)	85 (322)	94 (356)	98 (371)
UC or UCFT 12 mm	—	70 (265)	90 (341)	106 (401)	118 (447)	125 (473)	130 (492)

Nozzle Type/Size	Cycle Time/Minutes (65 Revolutions) At Various Pressures in PSI (bar)						
	30 psi (2.1 bar)	50 psi (3.4 bar)	75 psi (5.2 bar)	100 psi (6.9 bar)	125 psi (8.6 bar)	150 psi (10.3 bar)	175 psi (12.1 bar)
UC or UCFT 6 mm	26	17	12	10	9	—	—
UC or UCFT 8 mm	—	13	11	9	8	7	6
UC or UCFT 10 mm	—	20	15	12	10	9.5	9
UC or UCFT 12 mm	—	42	32	26	22	20	18

Nozzle Type/Size	Cleaning Diameter in Feet (meters) At Various Pressures in PSI (bar)						
	30 psi (2.1 bar)	50 psi (3.4 bar)	75 psi (5.2 bar)	100 psi (6.9 bar)	125 psi (8.6 bar)	150 psi (10.3 bar)	175 psi (12.1 bar)
UC or UCFT 6 mm	14 (4.26 m)	18 (5.48 m)	24 (7.32 m)	30 (9.14 m)	32 (9.76 m)	—	—
UC or UCFT 8 mm	—	22 (6.70 m)	34 (10.36 m)	42 (12.80 m)	50 (15.24 m)	54 (16.46 m)	68 (20.72 m)
UC or UCFT 10 mm	—	24 (7.32 m)	36 (11 m)	44 (13.42 m)	52 (15.84 m)	60 (18.28 m)	80 (24.40 m)
UC or UCFT 12 mm	—	28 (8.54 m)	40 (12.20 m)	48 (14.64 m)	56 (17.06 m)	66 (20.12 m)	86 (26.22 m)

Dimensions and Weights



Pipe Conn. NPT	A	B	C	D	Net Weight
1-1/2" (38.1 mm)	11-7/8" (301.6 mm)	6" (152.4 mm)	7-3/4" (196.4 mm)	5-3/8" (136.5 mm)	15 lbs. (6.81 kg)

Note: For additional information request Datasheets 46270, 46270-1, 46270-2, 46270-3, 46270-4.
For optional cone filter request Datasheet 46318.

Ordering Information

ULTRACLEAN TANK MACHINE	
UC or UCFT	10
Unit Type	Nozzle Size in mm

Filter option available.



Spraying Systems Co.®

For Tanks to 5' (1.6 m) Diameter

Design Features

The 3150 drum washing nozzle and the 15498 keg washing nozzle are low capacity stationary tank washing nozzles that effectively clean the interior of small distribution or process vessels. Both nozzles feature multiple spray orifices that can spray several patterns and coverages for efficient tank cleaning. Strategic placement of these nozzles in tanks and vessels can maximize tank cleaning efforts.

The 3150 and the 15498 tank washing nozzles are available in a choice of 15 to 21 full cone spray tips. Both nozzles operate at pressures up to 150 psi (10 bar).

The 3150 nozzle is designed for optimal cleaning performance in drum washing systems. Made from brass, steel, 303 stainless steel, or 316 stainless steel, the nozzle is ideal for harsh operating conditions. The 3150 drum washing nozzle features a maximum spray head diameter of 1-5/8'' (41 mm) with a 3/4'' (19 mm) neck to allow drainage during washing.

The 15498 keg washing nozzle is designed to pass through a standard keg bung and to fit on automatic keg washers. Constructed of stainless steel, this nozzle is a good choice when maximum corrosion resistance is required. The 15498 nozzle features a reduced neck design that allows for drainage while washing. Machined flats on the base of each nozzle make inlet connections easy.

The Model VSM nozzle is ideal for rinsing smaller containers or vessels. Forty spray orifices combine to produce a 240° spray angle. Constructed of Nylon or 303 stainless steel, recommended operating pressure ranges from 30 to 60 psi (1 to 3 bar).



3150 Nozzle



15498 Nozzle

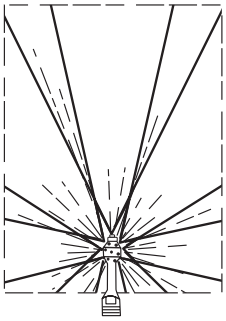


VSM Nozzle

3150, 15498 and VSM Nozzle Selection Tips

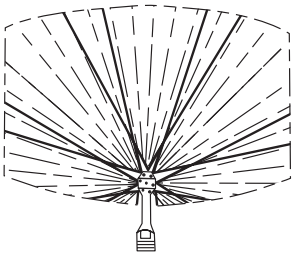
- Use when amount of liquid for rinsing is restricted.
- Liquid is single pass or all particulate is removed between applications.
- Durable, corrosion-resistant design.

Coverage



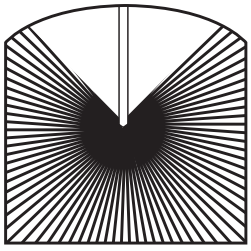
3150 Nozzle

Maximum Tank Coverage = 3.0' (0.9 m)



15498 Nozzle

Maximum Tank Coverage = 2.0' (0.6 m)



VSM Nozzle

Maximum Tank Coverage = 5.0' (1.6 m)

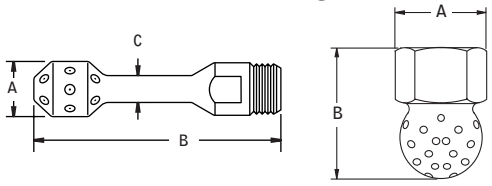
Performance Data – 3150 and 15498 Tank Washing Nozzles

Nozzle No.	Max Free Pass in. (mm)	Capacity gpm (l/min)							
		10 psi (1 bar)	20 psi (2 bar)	30 psi (3 bar)	40 psi (4 bar)	60 psi (5 bar)	80 psi (6 bar)	100 psi (7 bar)	150 psi (10 bar)
3150-15	0.040 (1.0)	5.2 (23)	7.2 (32)	8.7 (39)	9.9 (44)	12.1 (49)	13.8 (54)	15.3 (57)	19.0 (67)
3150-21	0.040 (1.0)	7.0 (31)	9.8 (43)	11.7 (52)	13.3 (59)	16.2 (66)	18.5 (73)	21 (77)	26 (91)
15498-15-SS	0.094 (2.4)	—	—	—	—	5.5 (23)	6.3 (25)	7.0 (26)	8.5 (31)
15498-21-SS	0.094 (2.4)	—	—	—	—	7.7 (31)	8.7 (34)	9.6 (36)	11.7 (43)

Performance Data – VSM Tank Washing Nozzle

Nozzle No.	Max Free Pass in. (mm)	Capacity gpm (l/min)							
		10 psi (0.7 bar)	20 psi (1.5 bar)	40 psi (3 bar)	60 psi (4 bar)	80 psi (5 bar)	100 psi (7 bar)	130 psi (9 bar)	150 psi (10 bar)
VSM-1/2-28	0.031 (0.8)	2.7 (10.4)	3.9 (15.3)	5.5 (22)	6.7 (25)	7.8 (28)	8.7 (33)	9.9 (38)	10.6 (40)
VSM-1/2-44	0.039 (1.0)	4.3 (16.3)	6.1 (24)	8.6 (34)	10.6 (39)	12.2 (44)	13.7 (52)	15.6 (59)	16.7 (62)
VSM-1/2-90	0.059 (1.5)	8.8 (33)	12.5 (49)	17.7 (70)	22 (81)	25 (90)	28 (107)	32 (121)	34 (127)
VSM-3/4-90	0.059 (1.5)	8.8 (33)	12.5 (49)	17.7 (70)	22 (81)	25 (90)	28 (107)	32 (121)	34 (127)
VSM-1/2-140	0.077 (1.95)	13.7 (52)	19.4 (77)	28 (108)	34 (125)	39 (140)	43 (166)	50 (188)	53 (198)
VSM-3/4-140	0.077 (1.95)	13.7 (52)	19.4 (77)	28 (108)	34 (125)	39 (140)	43 (166)	50 (188)	53 (198)
VSM-1/2-190	0.091 (2.3)	18.6 (71)	26 (104)	37 (147)	46 (170)	53 (190)	59 (225)	67 (254)	72 (269)
VSM-3/4-190	0.091 (2.3)	18.6 (71)	26 (104)	37 (147)	46 (170)	53 (190)	59 (225)	67 (254)	72 (269)

Dimensions and Weights



Nozzle No.	Inlet Conn. NPT or BSPT	A Dia.	B	C Dia.	Net Weight
3150-	1" M	1-11/16" (43 mm)	6-9/16" (167 mm)	3/4" (19 mm)	1-1/2 lb. (0.68 kg)
15498-	1" M	1-3/8" (35 mm)	6-1/8" (156 mm)	5/8" (16 mm)	1-1/8 lb. (0.51 kg)
VSM	1/2" F	1" (26 mm)	1-11/16" (45 mm)	—	3 oz. (0.08 kg)
VSM	3/4" F	1-1/2" (40 mm)	2-7/16" (62 mm)	—	1/2 lb. (0.225 kg)

Materials

Material	Material Code	Nozzle Type		
		3150	15498	VSM
Brass	(none)	•		
303 Stainless Steel	SS	•	•	
Mild Steel	I	•		
316 Stainless Steel	316SS	•	•	
Nylon	NY			•

Ordering Information

3150 STATIONARY TANK WASHING NOZZLE

3150 - SS 15

- 3150 — Nozzle Type
- SS — Material Code
- 15 — Number of Full Cone Spray Tips

15498 STATIONARY TANK WASHING NOZZLE

15498 - 15 - SS

- 15498 — Nozzle Type
- 15 — Number of Full Cone Spray Tips
- SS — Material Code

VSM TANK WASHING NOZZLE

VSM - 3/4 140

- VSM — Nozzle Type
- 3/4 — Inlet Pipe Conn.
- 140 — Capacity Size

Spraying Systems Co.®

Design Features

Two versions of high capacity stationary tank washing nozzles are available: the 6353 and the 12900. For thorough cleaning of tanks and vessels, both nozzle types feature 13 FullJet® nozzles that can spray numerous patterns and coverages at pressures up to 50 psi (3.5 bar). The 6353 and the 12900 are constructed in a choice of materials: brass, mild steel, and stainless steel.

The 6353 tank washing nozzle assembly features a large flow capacity for cleaning tanks up to 10' (3.1 m) in diameter. Flow rates range from 8.9 to 80 gpm (35 to 302 l/min). The 6353 assembly uses 1/4'' or 3/8'' full cone nozzles, including Spraying Systems Co.'s Maximum Free Passage FullJet nozzles. The nozzle's maximum free passage design improves reliability, while increasing the rinsing action of the tank wash nozzle.

For cleaning larger tanks where extra-large flow capacity is needed, choose the 12900 tank washing nozzle. This nozzle can be used to clean tanks up to 22' (6.7 m) in diameter with flow rates of 72 to 385 gpm (280 to 1470 l/min); the assembly uses 1/2'', 3/4'', or 1'' full cone nozzles.

For deep tanks, 12900-2 version is available with a 1-1/2'' bottom outlet connection for use with a pipe extension and a 6353 nozzle assembly.



6353 Nozzle

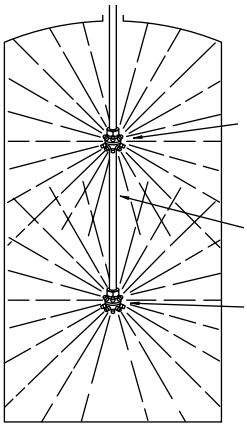


6353-3/8 Nozzle



12900 Nozzle

Coverage

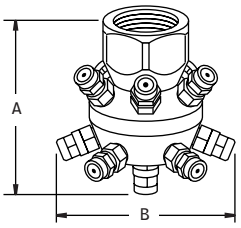


Maximum Tank Coverage = 15' (4.5 m)

Performance Data

Inlet Conn. NPT or BSPT (F)	Nozzle No.	With FullJet Nozzles Order No.	Max Free Pass in. (mm)	Capacity gpm (l/min)			
				20 psi (1.5 bar)	30 psi (2 bar)	40 psi (3 bar)	50 psi (3.5 bar)
1-1/2"	6353	1/4 GG5	0.050 (1.3)	8.9 (35)	10.8 (40)	12.3 (48)	13.6 (52)
	6353	1/4 GG10	0.063 (1.6)	17.9 (70)	22 (80)	25 (97)	27 (104)
	6353	3/8 GG22	0.109 (2.8)	39 (155)	48 (177)	55 (215)	60 (230)
1-1/2"	6353	3/8 HHMFP6014	0.125 (3.2)	25 (93)	29 (108)	31 (118)	33 (123)
	6353	3/8 HHMFP6022	0.156 (4.0)	38 (143)	44 (167)	49 (187)	54 (204)
	6353	3/8 HHMFP6032	0.188 (4.8)	55 (206)	65 (246)	73 (276)	80 (301)
3"	12900-1-1/2	1/2 HH40	0.141 (3.6)	72 (280)	86 (320)	99 (390)	109 (415)
	12900-1-3/4	3/4 HH7	0.203 (5.2)	148 (580)	180 (660)	205 (800)	225 (860)
	12900-1-1	1 HH12	0.250 (6.4)	252 (1000)	306 (1130)	350 (1370)	385 (1470)

Dimensions and Weights



Nozzle No.	Inlet Conn. NPT or BSPT (F)	A	B Dia.	Weight
6353-1/4GG5	1-1/2"	4-1/2" (114 mm)	4-1/2" (114 mm)	3.7 lbs (1.6 kg)
6353-1/4GG10	1-1/2"	4-1/2" (114 mm)	4-1/2" (114 mm)	3.7 lbs (1.6 kg)
6353-3/8GG22	1-1/2"	4-3/4" (121 mm)	5" (127 mm)	4.5 lbs (2.0 kg)
6353-3/8HHMFP 6014	1-1/2"	4-1/2" (114 mm)	4-1/2" (114 mm)	3.7 lbs (1.6 kg)
6353-3/8HHMFP 6022	1-1/2"	4-1/2" (114 mm)	4-1/2" (114 mm)	3.7 lbs (1.6 kg)
6353-3/8HHMFP 6032	1-1/2"	4-3/4" (121 mm)	5" (127 mm)	3.7 lbs (1.6 kg)
12900-1-1/2	3"	6-17/32" (166 mm)	7-1/2" (191 mm)	13.7 lbs (6.2 kg)
12900-1-3/4	3"	6-27/32" (174 mm)	8-1/4" (210 mm)	15.3 lbs (6.9 kg)
12900-1-1	3"	7-7/32" (183 mm)	9" (229 mm)	18.1 lbs (8.2 kg)

Materials

Material	Material Code	Nozzle Type		
		6353	6353-MFP	12900-1
Brass	(none)	•	•	
303 Stainless Steel	SS	•		
316 Stainless Steel	316SS	•	•	•
Cast Brass	(none)			•
Cast Iron	I			•

Ordering Information

6353 NOZZLE

6353 - 1/4GG - 316SS 5

Nozzle No.	Nozzle Type	Material Code	Capacity Size
6353	1/4GG	316SS	5

12900-1 NOZZLE

ASSEMBLY NOZZLE

12900-1 - 3/4 - I + 3/4HH - 316SS 7

Nozzle No.	Inlet Conn.	Material Code	Nozzle Type	Material Code	Capacity Size
12900-1	3/4	I	3/4HH	316SS	7

6353-3/8HHMFP NOZZLE

6353 - 3/8HHMFP - 316SS 14

Nozzle No.	Nozzle Type	Material Code	Capacity Size
6353	3/8HHMFP	316SS	14

Spraying Systems Co.®

Mesh Recommendations

Nozzle Type	Mesh Recommendation
Motor Driven Tank Washer	100 min.
Fluid Driven (Turbine)	30 – 50
Fluid Driven (Reactionary Force and Constant Speed)	200 min.
Fixed Stationary	Refer to max. free passage on pp. 43 and 44 and Mesh to Micron conversion chart

Mesh to Micron Conversion Chart*

Mesh	Micron	Inches
14	1307	0.0510 (1.3)
16	1191	0.0469 (1.2)
18	1000	0.0394 (1.0)
20	840	0.0331 (.84)
25	710	0.0280 (.71)
30	590	0.0232 (.58)
35	500	0.0197 (.50)
40	420	0.0165 (.41)
45	350	0.0138 (.35)
50	297	0.0117 (.29)
60	250	0.0098 (.24)
70	210	0.0083 (.21)
80	177	0.0070 (.17)
100	149	0.0059 (.14)
120	125	0.0049 (.12)
140	105	0.0035 (.08)
170	88	0.0041 (.10)
200	74	0.0035 (.08)

*Standard screen sizes: 16, 30, 50, 80, 100, and 200.

Strainer Compatibility Chart

Part No.	1/2TW	1TW	1-1/2TW	2-1/2TW	43019-3/4	8310A-1/2
Description	Heavy Duty Strainer	Heavy Duty Strainer	Heavy Duty Strainer	Heavy Duty Strainer	Heavy Duty Continuous Flow Dual Strainer	Heavy Duty High Pressure Strainer
15498/3150 Nozzle	•			•		
6353 Nozzle		•	•		•	
12900 Nozzle					•	
27500/28500 Nozzle	•	•	•		•	
36640 Nozzle	•				•	
23240 Nozzle	•	•			•	
21400 Nozzle		•			•	•
18250 Nozzle		•	•		•	
Rokon Nozzle		•				•
AA090 Tank Washer	•				•	•
AA190 Tank Washer		•			•	•
AA290 Tank Washer		•			•	•
Installation	Suction Or Pressure Side Of Pump Up To 130 psi (9 bar)				Only 130-1450 psi (9-100 bar)	Pressure Side
Max. flow rate with .035 bar pressure drop	11 gpm (42 l/min)	31.4 gpm (119 l/min)	71.6 gpm (271 l/min)	136.6 gpm (517 l/min)	502 gpm (1900 l/min)	80 l/min with 36.2 psi (2.5 bar) pressure

Tank Cleaning and Automation Specification Worksheet

Date _____

Company _____ Name _____

Address _____ Phone _____

City/State/Zip _____ Fax _____

Sales Office _____ Sales Rep _____

Type of Cleaning Required

☐ Rinsing ☐ Cleaning ☐ Sanitizing ☐ Disinfecting ☐ Sterilizing

☐ Other (Describe) _____

Tank Wash Unit Specification

Type of cleaning unit desired (if known): ☐ Fixed ☐ Motor-Driven ☐ Fluid-Driven

If motor driven, indicate type needed: ☐ Air Motor ☐ Electric 115VAC ☐ Explosion Proof

Material Requested: ☐ SS ☐ Teflon ☐ Brass ☐ Other

Pump pressure available at tank _____ ☐ psig ☐ barg

Capacity _____ ☐ gpm ☐ liters

Tank or Vessel to be Cleaned

☐ Horizontal ☐ Vertical Diameter _____ Height _____

Are there any obstructions such as mixers, blender or structural supports to consider? ☐ Yes ☐ No

If yes, describe _____

_____

System Automation/Pump Skid Specification

Skid Type: ☐ Stationary Skid ☐ Portable Skid on Casters

Skid Material: ☐ SS ☐ Steel ☐ Aluminum

Process Components i.e. valves, pump, casing, etc.: ☐ Brass ☐ SS

Chemical Metering Required: ☐ Yes ☐ No

Chemical to be injected _____ Dilution rate or ratio _____

Cycle Timing: ☐ Yes ☐ No

Connection Type: ☐ npt threads ☐ CAMLOCK ☐ Flanged

Hose Required: ☐ Yes ☐ No Length _____

Outlet Hose Reel: ☐ Yes ☐ No

SS Drip Pan: ☐ Yes ☐ No

Comments _____

_____

Spraying Systems Co.®

Spraying Systems Co.®
P.O. Box 7900
Wheaton, IL 60189-7900 USA
Tel: 1.800.95.SPRAY
Fax: 1.888.95.SPRAY
E-mail: info@spray.com

Outside the U.S., Tel: 1.630.665.5000
Outside the U.S., Fax: 1.630.260.0842

Visit our Web Site at www.spray.com

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AutoJet® TECHNOLOGIES
P.O. Box 7901
Wheaton, IL 60189-7901 USA
Tel: 630.665.5000
Fax: 630.665.9462
E-mail: info@autojet.com

AutoJet Technologies European Operations
Tel: +32 (0) 92.44.65.65
E-mail: info@autojet.be

Visit our Web Site at www.autojet.com

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