

SPRAY NOZZLE PEOPLE



Tank Cleaning



COMPLETE TANK CLEANING RANGE

The automated cleaning of tanks and vessels is a common process in a wide range of industries. The sheer variety of residues, environments and tank sizes that need cleaning warrants an equally wide range of tank cleaning nozzle. SNP offer a broad range of tank washing nozzles and machines. Our range is suitable for cleaning anything from the very smallest process tanks to very large storage tanks. Similarly our tank cleaners can be deployed to clean anything from very light water soluble residues to heavy or encrusted soiling.

Types of tank cleaner

Our range is divided into three classes of tank cleaner.

- 1- Static. These are either very wide angle spray nozzles or manifolds of multiple nozzles. The most common type of static cleaner in this class are spray balls.
- 2- Rotary spray. These cleaning heads spin under the fluid pressure and this rotation allows for a more directed spray to be distributed omni-directionality. The motion, combined with the more directed spray gives these heads a far greater scrubbing action than static nozzles.
- 3- Rotary Jet Cleaners. These cleaning heads have 2 or more nozzles that produce powerful straight jets of fluid. These impact on the surface of the tank blasting away tough residues. The nozzles will rotate in two dimensions over a set cleaning cycle so that the cleaning jets are brought to bear on each part of the tank.

Selecting a tank cleaner

A number of factors need to be considered when selecting the correct tank cleaning machine.

- 1- The size of tank. The size of the tank will dictate strongly which cleaners can be deployed. Each nozzle/ machine will have an upper limit to its effective cleaning radius and so as tanks get larger the choice of cleaning head becomes more limited. Tanks above about 10 metres in diameter can only really be cleaned well by rotary jet cleaners for example.
- 2- Residue type. Some residues simply require a rinse with water to remove them. Others require considerable impact to dislodge them from the tank wall. Typically harder residues will necessitate the use of impingement tank cleaners like the Orbitor range.
- 3- The tank environment. Corrosive or hot tanks may dictate heavily which type of tank cleaning nozzles can be deployed in the vessel. In particular this will dictate the material of construction.
- 4- Obstructions in the tank. Baffles, agitators and other internal structures may block the fluid of tank cleaners. This may necessitate the deployment of multiple machines.



CHOOSING A TANK WASHING SYSTEM

Adequate coverage and effective scrubbing are of prime importance in bottle, drum, and tank washing. Choosing from the variety of tank washing nozzles can be confusing. In selecting nozzles / machines you should consider the following factors: size and shape of vessel to be cleaned, vessel opening, type of material to be removed, and spray coverage.

Size and Shape of Vessel to be Cleaned

The nozzles and machines in this brochure can be used to clean, wash, and rinse every size of vessel from small bottles, moderately sized process tanks, to large swimming pool sized tanks.

Static nozzles will have a limited coverage and produce little impact but have the advantage of being cheap and very robust as they have no moving parts.

Rotary spray balls like the HWS and HWP give greater coverage and moderate impact so they can clean larger vessels up to 7.9 metres in diameter. They are also able to clean tougher residues and will use less water to do so.

Rotary jet cleaners can have jets over 20 metres in length meaning a centrally mounted unit could clean a 40m diameter tank. They will also be deployed in small and mid-szied tanks to clean really tough residues.

Tank Washing				CO\	/erage	e dista	ance i	n met	res (d	iamet	er)		
Nozzle	up to	2	3	4	5	7	9	12	16	18	20	30	40+
TW 12 - 20	1.8m												
TW 1	3.6m								Stat	io			
CLUMP	4.9m								Stat	IC			
LEM	4.9m												
SVSTW	6.0m												
HydroWhirl S	6.0m							Rot	arv S	Spra	v		
HydroWhirl Poseidon	7.6m												
Orbitor Compact	17m												
Orbitor 4	26m												
Orbitor 2	40m							RC	otary	Jet			
Storm Blaster	50m												

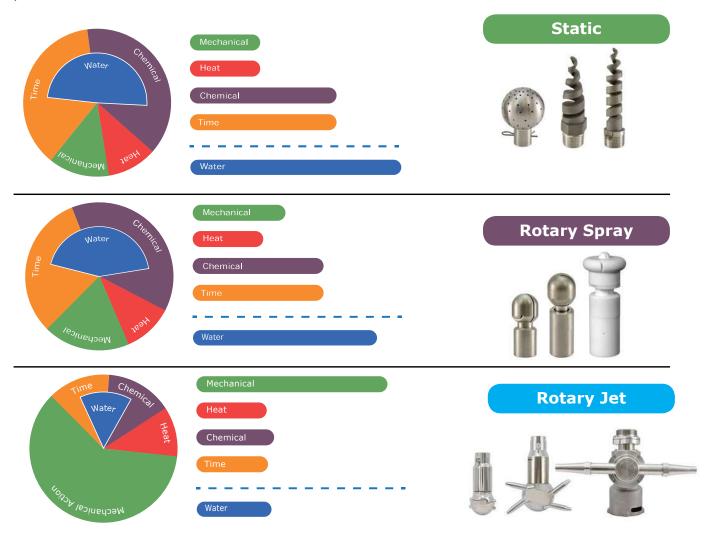
Visit www.spray-nozzle.co.uk/tankwash for more information on our tank washing nozzles.

THE CLEANING MIX

Effective tank cleaning consists of 4 elements: chemical action, time, mechanical action and heat. Each of these element contributes a certain amount of "cleaning power" in any given tank cleaning operation. An increase in one element means other elements can be reduced without compromising overall cleaning. Conversely a reduction in any given element must be compensated for by a corresponding increase in one or more of the other elements if cleaning is to be maintained. The relative contributions of each element varies considerably depending on which type of tank cleaning head or nozzle is deployed. These are illustrated in the sinner circle diagrams shown below.

WATER CONSUMPTION

Water consumption is driven by both the time element and the chemical element. The longer a tank cleaning system is running for then it is obvious that more water will be used. Water is known as a universal solvent, meaning it will dissolve more substances than any other chemical. As such it is an important component of the chemical part of the cleaning mix. Often, in fact, it is the only chemical used and so makes up the entire chemical component. So the overall water consumption will depend on how much cleaning power is derived from the chemical and time parts of the mix.



OPTIMISING TANK CLEANING

Optimising a tank cleaning system will depend very much on the residue and nature of the tank. The sinner circles for each system are a good place to start. The relative cost of each element should be assessed and then consideration can be given to the optimal mix. Increasing a cheaper element means a more expensive other element can be reduced thus improving efficiency. So, for example, reducing the cost of heating will mean either more time, chemicals or mechanical action will need to be increased.

SAVING WATER

Reducing water consumption is often a key driver for many businesses. Water is a costly resource. Not only does it need to be purchased it also needs to be pumped and then disposed of once contaminated. As discussed above the water consumption of any tank cleaning system is primarily a function of the time and chemical action elements. So if water reduction is a goal, it follows that the mechanical action and / or the heat element will need to be increased.

TANK WASHER SELECTION

Generally speaking the rotary jet cleaners will be more water efficient than rotary spray and static systems. This is because the mechanical action element of these tank cleaners is so much higher than other types of tank cleaner. However smaller tanks simply may not be able to accommodate larger rotary jets cleaners. In addition, lighter residues may only need relatively light cleaning and so impact jet cleaners will actually be wasteful. As with most real world applications there are always exceptions to the rules but nonetheless the following rules of thumb can be applied to tank cleaning selection

- 1 For tanks smaller than 1 metre in diameter with medium to light residues static nozzles will probably be the most efficient.
- 2- For tanks between 1 and 3 metre in diameter with light residues rotary spray balls will probably be most efficient
- 3- For tanks between 1 and 3 metres in diameter with medium or tough residues fast cycle rotary jet cleaners like the Orbitor Eco will probably be most efficient.
- 4- For tanks above 3 metres, even with light residues, rotary jet cleaners will probably be the most efficient.
- 5- For very tough residues, regardless of tank size, rotary jet cleaners will be the most efficient.
- 6- For tanks above 6 metres in diameter rotary jet cleaners are the only viable option as only they can reach the sides.

Rotary Jet- 2 Nozzle

The Orbitor 2 is the two-nozzle variant of the Orbitor tank cleaning system. This is a hygienic, self cleaning, self lubricating and highly versatile tank washing machine capable of cleaning tough residues from tanks from 2 - 35 metres in diameter.

The Orbitor 2 is typically used in food processing, beverage, pharmaceutical and chemical tank cleaning applications. Its versatile design, however, means it can be configured to clean tough residues in almost any industrial application.

Key product features

- Entirely fluid driven meaning no external power source is required
- Self lubricating
- Powerful jets up to 20 metres in length
- Easy to maintain. Can be stripped and reassembled in 15 minutes.
- ATEX certified zones 0 and T6
- Self cleaning and hygienic design suitable for food and pharmaceutical applications



Spray pattern builds up over a set cycle

Made in the UK



The Orbitor is manufactured in the UK exclusively for The Spray Nozzle People by Dasic Marine.



Spray characteristics:

Flow rates: 80 - 900 l/min Working Pressure: 4 - 10 bar Jet length: Up to 20 metres Wash pattern: 360° Cycle times: 15.5 - 33 minutes

Materials:

Housing: 316L Nozzle Head: 316L Gears: PEEK + 316 SS Bushings: Carbon Filled PTFE

Weight: 8Kg

Key Advantages

- Hygienic The Orbitor 2 is a fully self cleaning machine and is made from food / pharmaceutical grade hygienic materials.
- **Effectiveness** The Orbitor 2 is a highly effective cleaning machine delivering powerful cleaning jets up-to 20 metres in length.
- **Safe** The Orbitor 2 is one of the only tank cleaners that is ATEX certified for use in all zones and temperatures.
- **Powerful** The two nozzle configuration means that larger nozzles with higher flow rates can be deployed extending the jet length to over 20 metres

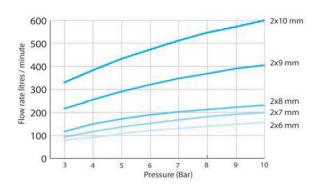
Rotary Jet- 2 Nozzle

How it works

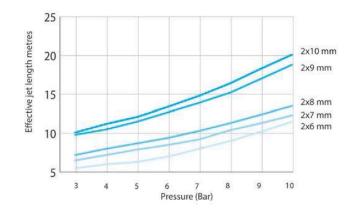
The Orbitor 2 is a fluid driven rotary jet cleaner. The cleaning fluid is pumped through the Orbitor and this first passes through a turbine which causes the two nozzle arms to spin. The fluid then passes through the nozzles forming a powerful cleaning jet. As the arms rotate the main body also rotates in a set pattern. This is geared so that over a specific period of time (the clean cycle) the cleaning jets are brought to bear on each part of the tank ensuring a thorough, methodical clean.

For each configuration of Orbitor there will a maximum jet length for any given fluid pressure. The max jet length is the overall reach of the resulting spray. The effective cleaning jet length is smaller than this and represents the distance from the machine where a reasonable cleaning action will be achieved. Clearly a more robust clean will be given the further within the effective jet length the target sits.

Flow rates



Effective Jet Lengths



Wash cycle times

Config		cle Tim Pressur		
	4	6	8	10
6mm	27.2	22.6	19.5	17.4
7mm	31.6	25.8	22.3	20
8mm	22.9	18.9	16.4	14.9
9mm	34.2	28	24.5	22
10mm	24	19.8	17.2	15.5

Configurations

Feature	Available Options
Hygienic	Non-hygienic as an option.
ATEX	ATEX options available
Clean Pattern	360° only
Nozzle Sizes	6.7.8.9 or 10mm

Rotary Jet- 4 Nozzle

The Orbitor 4 is the four nozzle variant of the Orbitor tank cleaning system. This is a hygienic, self cleaning, self lubricating and highly versatile tank washing machine capable of cleaning tough residues from tanks from 2 - 26 metres in diameter.

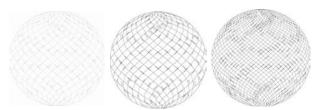
The Orbitor 4 is typically used in food processing, beverage, pharmaceutical and chemical tank cleaning applications. Its versatile design, however, means it can be configured to clean tough residues in almost any industrial application.

Key product features

- Entirely fluid driven meaning no external power source is required
- Self lubricating
- Powerful jets up to 13 metres in length
- Easy to maintain. Can be stripped and reassembled in 15 minutes.
- ATEX certified zones 0 and T6



- Self cleaning and hygienic design suitable for food and pharmaceutical applications



Spray pattern builds up over a set cycle

Made in the UK



The Orbitor is manufactured in the UK exclusively for The Spray Nozzle People by Dasic Marine.



Spray characteristics:

Flow rates: 80 - 458 L/min Working Pressure: 4 - 10 bar Jet length: Up to 13 metres Wash pattern: 360° Cycle times: 5.5- 15.5 minutes

Materials:

Housing: 316L Nozzle Head: 316L Gears: PEEK + 316 SS Bushings: Carbon Filled PTFE

Weight: 8Kg

Key Advantages

- **Hygienic** The Orbitor 4 is a fully self cleaning machine and is made from food / pharmaceutical grade hygienic materials.
- **Effectiveness** The Orbitor 4 is a highly effective cleaning machine delivering powerful cleaning jets up to 13 metres in length.
- **Safe** The Orbitor 4 is one of the only tank cleaners that is ATEX certified for use in all zones and temperatures.
- **Powerful** The four nozzle configuration means that cycle times are reduced when compared to the 2 nozzle machine.

Rotary Jet- 4 Nozzle

How it works

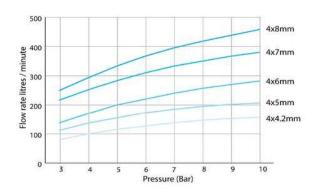
The Orbitor 4 is a fluid driven rotary jet cleaner. The cleaning fluid is pumped through the Orbitor and this first passes through a turbine which causes the two nozzle arms to spin. The fluid then passes through the nozzles forming a powerful cleaning jet. As the arms rotate the main body also rotates in a set pattern. This is geared so that over a specific period of time (the clean cycle) the cleaning jets are brought to bear on each part of the tank ensuring a thorough, methodical clean.

For each configuration of Orbitor there will a maximum jet length for any given fluid pressure. The max jet length is the overall reach of the resulting spray. The effective cleaning jet length is smaller than this and represents the distance from the machine where a reasonable cleaning action will be achieved. Clearly a more robust clean will be given the further within the the effective jet length the target sits.

Wash cycle times

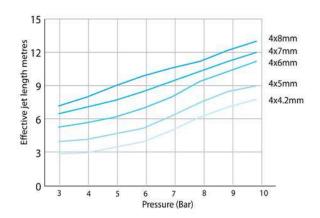
Config	Cycle Time (min) @ pressure (bar)								
	4	6	8	10					
4.2mm	9.3	6.9	5.8	5.5					
5mm	10.8	8	6.8	6.4					
6mm	12.9	9.5	7.6	6.9					
7mm	15.2	13	10.4	8.9					
8mm	12.9	9.5	7.8	6.9					

Flow rates



* Flow rates are for 360° clean pattern 180° patterns are typically 40% lower than shown

Effective Jet Lengths



Configurations

Feature	Available Options
Hygienic	As standard. Non- hygienic as an option.
ATEX	ATEX options available
Clean Pattern	360° and 180°
Nozzle Sizes	4.2, 5, 6, 7 and 8mm

Custom configurations are available upon request.

Orbitor Eco

Rotary Jet- Very Fast Cycle

The Orbitor Turbo is a new breed of impingement tank cleaners designed to vastly improve water and a time efficiency. Unlike conventional impingement cleaners that have been geared for power, this tank cleaning head has been geared to produce a very fast cleaning cycle that uses very little water.

Despite its very fast cycle time and low water consumption the Orbitor Turbo still delivers powerful impact cleaning. When compared to static spray balls and rotary spray balls the cleaning power of the Orbitor is far greater. This means that it is a far more efficient cleaning head.

Key product features

- Up to 95% water saving when compared to static spray balls
- Up to 75% water saving when compared to rotary spray balls
- Entirely fluid driven meaning no external power source is required
- Jets with up to 4 metres effective cleaning radius
- Easy to maintain. Can be stripped and reassembled in 15 minutes.
- Self cleaning and hygienic design suitable for food and pharmaceutical applications
- Very fast cycle times between 2 11 minutes

Made in the UK



The Orbitor is manufactured in the UK exclusively for The Spray Nozzle People by Dasic Marine.





Spray characteristics:

Flow rates: 45- 198 I/min Working Pressure: 4 - 12 bar Jet length: Up to 8.6 metres Wash pattern: 360° Cycle times: 1.7 - 6 minutes

Materials:
Housing: 316L
Nozzle Head: 316L
Gears: PEEK + 316 SS
Bushings: Carbon Filled PTFE

Weight: 2.5Kg

Key Advantages

- **Efficient** With fast cycles and low flow rate the 100 VFC is the most efficient way to clean and rinse light to moderately tough residues.
- **Hygienic** The Turbo is a fully self cleaning machine and is made from food / pharmaceutical grade hygienic materials.
- **Effectiveness** The Turbo is a highly effective cleaning machine delivering superior cleaning power to tanks up to 8 metres in diameter.
- **Fast** The 100 VFC can complete a cleaning cycle in under two minutes. This means that down time can be minimised.

Orbitor Eco

Rotary Jet- Very Fast Cycle

How it works

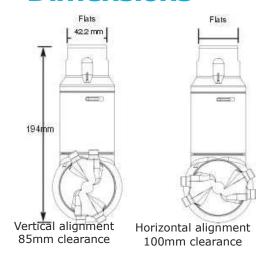
The Orbitor Turbo is a fluid driven rotary jet cleaner. The cleaning fluid is pumped through the Orbitor and this first passes through a turbine which causes the two nozzle arms to spin. The fluid then passes through the nozzles forming a powerful cleaning jet. As the arms rotate the main body also rotates in a set pattern. This is geared so that over a specific period of time (the clean cycle) the cleaning jets are brought to bear on each part of the tank ensuring a thorough, methodical clean.

For each configuration of Orbitor there will a maximum jet length for any given fluid pressure. The max jet length is the overall reach of the resulting spray. The effective cleaning jet length is smaller than this and represents the distance from the machine where a reasonable cleaning action will be achieved. Clearly a more robust clean will be given the further within the effective jet length the target sits.

Configurations

Feature	Available Options
Hygienic	As standard. Non- hygienic as an option.
ATEX	ATEX options available
Clean Pattern	360° only
Nozzle Sizes	3,4,5 or 6mm

Dimensions



Wash cycle times

		4x3mm			4x4mm			4x5mm			4x6mm	
BAR	Flow rate	Jet length	Cycle Time									
	L/min	Mtr	Min									
3	45.0	3.7	6	66.7	4.3	5.5	88.3	4.9	4.5	115.0	5.4	4
4	51.7	4.5	5.5	75.0	5.1	4.8	100.0	5.7	4	126.7	6.2	3.5
5	58.3	5.1	5	85.0	5.8	4.3	110.0	6.4	3.5	138.3	6.9	3
6	65.0	5.6	4.4	93.3	6.4	3.8	120.0	7.0	3	151.7	7.4	2.7
7	71.7	6.1	4	101.7	6.8	3.3	130.0	7.4	2.8	163.3	7.9	2.4
8	78.3	6.4	3.5	110.0	7.2	2.9	140.0	7.8	2.5	175.0	8.2	2.1
9	85.0	6.7	3.1	118.3	7.5	2.6	148.3	8.0	2.1	186.7	8.5	1.8
10	90.0	6.9	3	126.7	7.6	2.5	156.7	8.1	2	198.3	8.6	1.8

These are effective cleaning jet lengths so the Orbitor can clean a tank with a diameter approximately twice these lengths. It will produce wetting at a distance approximately 50% higher than those shown in the table above.

Orbitor Compact

Rotary Jet- Compact Model

The Orbitor Compact is a powerful impingement cleaning head. It is geared to rotate fairly slowly to deliver the optimum jet dwell time on the tank wall so as to ensure the maximum cleaning power. Despite its incredible cleaning power the compact design means that the Orbitor 100 can easily fit into a 100mm opening and, with the arms vertically aligned, will squeeze through an 85mm opening.

The Orbitor Compact is typically used in food processing, beverage, pharmaceutical and chemical tank cleaning applications. The compact design means it is suitable for deployment even in relatively small tanks. This means that the power of impingement cleaning can now be delivered to small batch tanks.



- Entirely fluid driven meaning no external power source is required
- Self lubricating
- Powerful jets up to 9 metres in length
- Easy to maintain. Can be stripped and reassembled in 15 minutes.
- ATEX certified zones 0 and T6
- Self cleaning and hygienic design suitable for food and pharmaceutical applications

Made in the UK



The Orbitor is manufactured in the UK exclusively for The Spray Nozzle People by Dasic Marine.



Spray characteristics:

Flow rates: 48.3 - 198 l/min Working Pressure: 4 - 12 bar Jet length: Up to 8.6 metres Wash pattern: 360° Cycle times: 9.5 - 22 minutes

Materials:
Housing: 316L
Nozzle Head: 316L
Gears: PEEK + 316 SS
Bushings: Carbon Filled PTFE

Weight: 2.5Kg

Key Advantages

 Hygienic The Orbitor Compact is a fully self cleaning machine and is made from food /

pharmaceutical grade hygienic materials.

- Effectiveness The Orbitor Compact is a highly effective cleaning machine delivering powerful cleaning jets up-to 9.5 metres in length.
- **Safe** The Orbitor Compact is one of the only tank cleaners that is ATEX certified for use in all zones and temperatures.
- **Powerful** The powerful cleaning jets are configured to rotate at the optimum speed to maximise cleaning power.

Orbitor Compact

Rotary Jet- Compact Model

How it works

The Orbitor Compact is a fluid driven rotary jet cleaner. The cleaning fluid is pumped through the Orbitor and this first passes through a turbine which causes the two nozzle arms to spin. The fluid then passes through the nozzles forming a powerful cleaning jet. As the arms rotate the main body also rotates in a set pattern. This is geared so that over a specific period of time (the clean cycle) the cleaning jets are brought to bear on each part of the tank ensuring a thorough, methodical clean.

For each configuration of Orbitor there will a maximum jet length for any given fluid pressure. The max jet length is the overall reach of the resulting spray. The effective cleaning jet length is smaller than this and represents the distance from the machine where a reasonable cleaning action will be achieved. Clearly a more robust clean will be given the further within the effective jet length the target sits.

Wash cycle times

Dimensions Flats Flats 194mm

Vertical alignment 85mm clearance

Horizontal alignment 100mm clearance

Configurations

Feature	Available Options
Hygienic	As standard. Non- hygienic as an option.
ATEX	ATEX options available
Clean Pattern	360° only
Nozzle Sizes	3,4,5 or 6mm

	4x3mm				4x4mm			4x5mm		4x6mm		
BAR	Flow rate	Jet length	Cycle Time									
	l/min	Mtr	Min									
3	48.3	3.7	20	61.7	4.3	26	90.0	4.9	17	115.0	5.4	22.0
4	53.3	4.5	17	71.7	5.1	22	101.7	5.7	14	126.7	6.2	19.0
5	57.5	5.1	14.5	80.0	5.8	19	110.0	6.4	12	138.3	6.9	16.5
6	64.2	5.6	13	90.0	6.4	16	120.0	7.0	11	151.7	7.4	14.5
7	70.0	6.1	12	98.3	6.8	14	128.3	7.4	10.5	163.3	7.9	13.0
8	76.7	6.4	10.8	106.7	7.2	12.5	138.3	7.8	10	175.0	8.2	12.0
9	83.3	6.7	10	113.3	7.5	11.5	146.7	8.0	9.5	186.7	8.5	11.0
10	90.0	6.9	9.5	120.0	7.6	11	155.0	8.1	9.5	198.3	8.6	10.0

These are effective cleaning jet lengths so the Orbitor can clean a tank with a diameter approximately twice these lengths. It will produce wetting at a distance approximately 50% higher than those shown in the table above.

Storm Blaster™

Rotary Jet- Storm Tank Cleaner

The Storm Blaster series has been specifically engineered for use in cleaning large storm water retention tanks. These machines are powerful, robust and are based on technology used for decades in cargo ship / tanker cleaning applications.

These machines can be deployed in cold, dirty and corrosive environments with little or no maintenance requirements. They will operate reliably and have a sufficient jet length to clean even the largest of storm tanks. These features also make them suitable for automated wet well / pump station cleaning.

Key product features

- -Entirely fluid driven meaning no external power source is required
- Fully sealed gear box allowing for muds and other high particulate fluids to be used as the cleaning media e.g. final effluent
- Powerful jets up-to 25 metres in length
- Stainless steel rugged design means almost no maintenance is required



Storm Blaster installed in a covered tank

Made in the UK



The Orbitor is manufactured in the UK exclusively for The Spray Nozzle People by Dasic Marine



Spray characteristics:

Flow rates: 100 - 570 L/min Working Pressure: 5 - 10 bar Jet length: Up to 25 metres Wash pattern: 180° or 360° Cycle times: 26 - 85 minutes

Materials:

Housing: 316 Nozzle Head: 316 Gears: PEEK + 316 SS

Bushing: Carbon Filled PTFE

Weight: 12 or 14 kg

Key Advantages

- **Efficient** It is by far the most water and energy efficient method of cleaning storm tanks.
- **Cost** When compared to the cost of other methods like tipping buckets and manned entry the Storm Blaster system is considerably cheaper in terms of both installation and operating cost.
- **Effectiveness** The Storm Blaster removes more residue than other methods like tipping buckets and eductor swirl systems. This reduces the risk of foul smelling odours causing complaints from nearby residents.

Storm Blaster™

Rotary Jet- Storm Tank Cleaner

How it works

The Storm Blaster is a fluid driven rotary jet cleaner. The cleaning fluid is pumped through the machine and this first passes through a turbine which causes the two nozzle arms to spin. The fluid then passes through the nozzles forming a powerful cleaning jet. As the arms rotate the main body also rotates in a set pattern. This is geared so that over a specific period of time (the clean cycle) the cleaning jets are brought to bear on each part of the tank ensuring a thorough, methodical clean.

For each configuration of Storm Blaster there will a maximum jet length for any given fluid pressure. The max jet length is the overall reach of the resulting spray. The effective cleaning jet length is smaller than this and represents the distance from the machine where a reasonable cleaning action will be achieved. Clearly a more robust clean will be given the further within the effective jet length the target sits.

Configurations

Feature	Available Options
Hygienic	No hygienic option
ATEX	No
Clean Pattern	180° (standard) 360° (as option)
Nozzle Sizes	6, 7, 8, 10, 12, 14 and 16mm

Wash cycle times

Pressure	Cycle time nozzle	
	6-12mm nozzle	14mm nozzles
2	85	85
4	50	72
6	36	60
8	29	48
10	26	37

Effective jet lengths and flow rates

	2x6mm 2x		2x7	mm	2x8	mm	2x10mm		2 x 12mm		2 x14mm	
BAR	Flow rate	Jet length										
	l/min	Mtr										
2	80	7	81	8	95	9.5	120	10	200	10	316	11
4	98	9.5	103	10	118	10.5	167	11	220	11.5	341	14
6	113	10.5	125	11	142	12	190	13	260	14	475	18.9
8	132	12	138	13	163	13.5	217	14	292	15	508	22.6
10	143	13	155	14	177	14.5	228	15	315	17	570	25.5

Orbitor -Dual

Rotary Jet- Dual Head

The Orbitor Dual is a double headed version of the Orbitor tank cleaning system. Each head can have 2 or 4 nozzles giving up to 8 powerful cleaning jets. The additional cleaning jets means that the cleaning cycle time is reduced when compared to the single headed machines in the range. Furthermore the Twin can be configured to give a restricted cleaning pattern as low as 85 degrees making it suitable for more targeted cleaning applications.

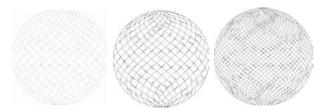


Key product features

- Entirely fluid driven meaning no external power source is required
- Self lubricating
- Powerful jets up to 20 metres in length
- Stainless steel rugged design means almost no maintenance is required
- ATEX certified zones 0 and T6



- Variable wash pattern
- Very fast cycle time



Spray pattern builds up over a set cycle

Made in the UK



The Orbitor is manufactured in the UK exclusively for The Spray Nozzle People by Dasic Marine

Spray characteristics:

Flow rates: 85 - 500 L/min Working Pressure: 5 - 10 bar Jet length: Up to 20 metres Wash pattern: 85° - 360° Cycle times: 6.8 - 19 minutes

Materials:

Housing: 316L Nozzle Head: 316L Gears: PEEK + 316 SS Bushings: Carbon Filled PTFE

Weight: 12Kg

Key Advantages

- **Fast** The extra cleaning jets mean that the cleaning cycle is considerably faster than other models meaning a faster turnover time.
- **Versatility** The double head design means that the cleaning pattern can be restricted to as low as 85° without compromising the rotation of the machine.
- **Effectiveness** The Orbitor Twin is a highly effective cleaning machine delivering powerful cleaning jets up to 11 metres in length in the quickest cycle times.

Orbitor -Dual

Rotary Jet- Dual Head

How it works

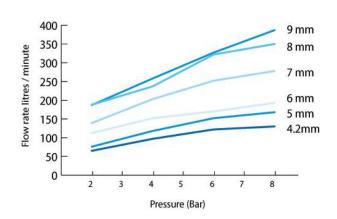
The Orbitor Dual is a fluid driven rotary jet cleaner. The cleaning fluid is pumped through the Orbitor and this first passes through a turbine which causes the two nozzle arms to spin. The fluid then passes through the nozzles forming a powerful cleaning jet. As the arms rotate the main body also rotates in a set pattern. This is geared so that over a specific period of time (the clean cycle) the cleaning jets are brought to bear on each part of the tank ensuring a thorough, methodical clean.

For each configuration of Orbitor there will a maximum jet length for any given fluid pressure. The max jet length is the overall reach of the resulting spray. The effective cleaning jet length is smaller than this and represents the distance from the machine where a reasonable cleaning action will be achieved. Clearly a more robust clean will be given the further within the the effective jet length the target sits.

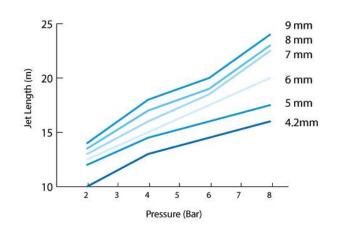
Wash cycle times (180° down)

Config		e Time ressur		
	2	4	6	8
4x4.2mm	18.8	9.1	7.3	6.8
4x5mm	17.7	10.3	8.5	7.6
4x6mm	15.5	9.1	7.4	6.6
4x7mm	16	8.8	7.4	6.2
4x8mm	14.6	9.9	7.7	6.7
4x9mm	18.1	11.6	9.2	7.5

Flow rates (180° down)



Jet Lengths (180° down)



Configurations

Feature	Available Options
Hygienic	As standard non-hygienic option
ATEX	Option
Clean Pattern	Anything between 85° and 360°
Nozzle Sizes	4.2, 5 ,6, 7, 8, 9mm

HydroWhirl[®] S

Rotary Nozzle - Stainless Steel

DESIGN FEATURES

- Cleans more quickly, and uses less water & lower pressure than static tank washers
- Surface finish of 0.8 microns Ra or better: ideal for sanitary applications
- Laser-welded design for durability

STANDARD CONNECTION SIZES

- Stainless steel construction corrosionresistant material
- Three connections: threaded, clip-on, and welded
- Made from FDA approved materials for use in Clean-In-Place (CIP) applications.

SPRAY CHARACTERISTICS

- Self-cleaning bearings
- Vigorous moving spray action
- Spray Angles: 360°, 90° Up, 90° Down, 180° Up, 180° Down, 270° Up, 270° Down

Flow rates: 4.39 - 338 l/min

All 360° HydroWhirl S nozzles are available with ATEX approval for Zone 0.





317111071110 COTT	ileno	1 JIZES				·		Auu	icionar		011 3120	3 availab	ic on re	quest
Connection							Nozzle N	Number						
Туре	HWS 20-3	HWS 20-4	HWS 20	HWS 30-5	HWS 30-6	HWS 30	HWS 40-7.5	HWS 40-8	HWS 40-9	HWS 40	HWS 40HF- 11	HWS 40HF	HWS 50-16	HWS 50
Pipe Clip On						3/8"				3/4"		3/4"		1-1/2"
Tube Clip On						3/4"				1"		1"		2"
Pipe Weld On			1/4"			3/8",				3/4", 1		3/4", 1		1-1/2",
Tube Weld On			1/2"			1/2" 3/4"				1"		1"		2" 2"
FBSP/FBSP	1/8"	1/8"	1/8"	3/8"	3/8"	1/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	1-1/2"	1-1/2"
DIN Clip On (mm)			8			15				20,25		20, 25		40, 50
DIN Weld On (mm)			8, 10			15				15, 20, 25		15, 20, 25		40, 50

Hydi	roWhirl S Flo	ow Ra	ites ai	nd Dir	nensi	ons						
Female Pipe	Nozzle		LITRE	S PER M	1INUTE	@BAR		Dime	nsions	(mm)	Mass	Coverage Diameter
Size	Number	0.5 bar	0.7 bar	1 bar	2 bar	3 bar	4 bar	Α	В	С	(g)	(m) @2.75 bar
	HWS-20-3	4.39	4.79	5.40	7.05	8.19	9.11					1.5
1/8"	HWS-20-4	7.41	8.10	9.20	12.2	14.2	15.9	16.6	42.7	69.1	24.9	1.8
	HWS-20	10.8	12.0	13.9	20.2	25.3	29.1					
3/8"	HWS-30-5	7.71	8.80	10.4	15.3	18.9	21.9					8
	HWS-30-6	19.5	21.0	23.4	29.8	34.2	37.6	27.9	59.4	83.3	93.0	2.4
1/4"	HWS-30	19.1	21.7	25.7	37.0	45.4	53.1					
	HWS-40-7.5	18.8	21.3	25.1	35.7	43.8	50.7					
3/4"	HWS-40-8	21.5	24.3	28.6	40.6	49.6	57.2	38.9	92.7	108	306	3.4
-,	HWS-40-9	26.6	30.2	35.7	51.5	63.0	72.7					
	HWS-40	30.2	34.6	41.2	59.9	71.8	82.5					
	HWS-40HF-11	40.9	46.4	54.5	77.3	95.0	109	38.9	92.7	108	302	4.0
	HWS-40HF	50.4	57.3	67.5	97.0	116	132					
1 1/2″	HWS-50-16	81.6	92.0	108	154	188	218	69.1	154.9	180	1524	5.5
	HWS-50	125	142	167	238	293	338					

HydroWhirl®Poseidon®

Rotary Nozzle - PTFE

DESIGN FEATURES

- Cleans more quickly, and uses less water and lower pressure than static tank washers
- PTFE construction:
 - Ideal for harsh chemical environments
 - Corrosion resistant
- Three connections: pipe, tube, or DIN clip-on.Threaded connections available upon request.
- Made from FDA-approved materials for use in Clean-In-Place (CIP) applications.

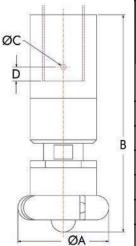
SPRAY CHARACTERISTICS

- Slow spinning, longer spray dwell time on the target surface increase impact over conventional rotating designs
- Complete 360° omnidirectional spray pattern

Flow rates: 58.3 to 333 I/min

Minimum Tank Opening: Small: 75mm, Large: 83mm





	erage Chart ng at 2.8 bar
Nozzle Num- ber	Washing Diameter (m)
HWP-32	4.5
HWP-37	3.5
HWP-48	5.5
HWP-55	6.5
HWP-65	6.0
HWP-73	5.0

HydroWhirl Poseidon®

CONNECTION SIZES												
Connection		Body Size										
Туре		SMALL LARGE										
Threaded	1/2″	3/4"	1"	1"								
Pipe Clip On	3/4"	1	"	1"								
Tube Clip On	1"	1" 1-1/4" 1-1/2"										
DIN Clip On	20mm	20mm 25mm 40mm										

Dimensions are approximate. Check with SNP for critical dimension applications.

Not recommended for applications over 4 bar.

Hydro	Whirl Pos	eidon	Nozz	le Flov	v Rate	s* and	l Dime	nsions	;				
Body	Nozzle	Spray		LITRI	ES PER M	1INUTE (DBAR		Dimensions (mm)				
Size	Number	Angle	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	А	В	С	D MAX	Mass (g)
SMALL	HWP-32		58.3	70.6	87.8	102	127	149	74.7	163	4.8	12.7	595
SMALL	HWP-37		67.9	81.9	101	118	146	170	74.7	103	4.0	12.7	393
	HWP-48		85.6	104	129	151	189	221					
LARGE	HWP-55	360°	100	121	150	175	217	253	82.6	185	4.8	12.7	822
LANGL	HWP-65		120	145	179	207	256	297	02.0	105	4.0	12.7	022
	HWP-73		135	163	201	233	287	333					

Standard Materials: Nozzle: PTFE; Retaining Clip: 316 stainless steel

^{*}Flow-rates lower with threaded connection. Contact SNP for more information.

EK

Pop-up rotary nozzle

How it works

The EK nozzles spinning head moves out from the nozzle body when fluid is turned on. In the retracted position the nozzle presents a smooth surface flush with the tank wall.

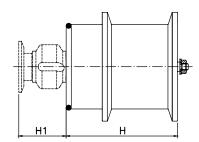
The nozzle will deliver two rotating fan jets giving 270° coverage side to side (see diagram below). This makes the EK ideal for spot cleaning the difficult to reach parts of the tank. Very often the EK is used in conjunction with a primary tank cleaner which will sit at the top of the tank above the product line. The EK will be positoned below the product line to hit spots the main cleaner cannot due to internal obstructions. The fact that the EZ is submerged when the tank is use is not a problem as the nozzle will be in the retracted position and thus protected.

Coverage	Spray
Type	Angle
D	270°



DESIGN FEATURES

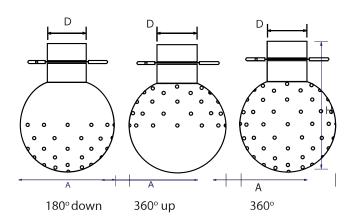
- The tank cleaner moves into position when fluid is turned on.
- When retracted the nozzle presents a smooth surface on the tank wall
- Surface finish of 0.8 microns Ra or better: ideal for sanitary applications
- Stainless steel construction corrosionresistant material
- Three connections: threaded, clip-on, and welded
- Made from FDA approved materials for use in Clean-In-Place (CIP) applications.



				Flow in l	itres at o	differnt pr	essures			
Model		Connection			Pressu	ıre Bar		Dimensions		
	Spray angle	Tri-clamp	1.5	2	3	5	7	Н	H1	
EK2.180.M2	270	2" TC	15.6	18.0	22.1	28.5	33.7	66mm	28mm	
EK2.220.M2	270	2" TC	19.1	22.0	26.9	34.8	41.2	66mm	28mm	
EK2.300.M2	270	2" TC	26.0	30.0	36.7	47.4	56.1	66mm	28mm	
EK2.400.M2	270	2" TC	34.6	40.0	49.0	63.3	74.8	66mm	28mm	

SVSTW

Static Nozzle - Clip on Spray Ball





As well as female threaded connections spray balls are also available with pipe or tube clip on connectors. The diameter D gives the outside diameter of the connecting tube with the inside diameter being 2mm lower.

SVS	TW	Clip	Conr	nection
-1		1.0		1 .

Flow rates, dimensions and rinse radius

	Tube		Flow ra	te (l/mir	n) at dif	ferent pi	ressures	(Bar)	Rinse diameter	Dime	nsions	(mm)
Model	Size D	Pattern	1	1.5	2	2.5	3	3.5	at (1 bar)	Α	H mm	Hole size mm
SVSTW290	60.3mm	180 down	148.3	181.7	209.8	234.5	256.9	277.5	3.4m	120	150	2
SVSTW290	38 mm	180 down	193.3	236.8	273.4	305.7	334.9	361.7	9.8m	65	94	2.5
SVSTW290	28mm	180 down	170.0	208.2	240.4	268.8	294.4	318.0	6.4m	65	91	2.5
SVSTW290	22mm	180 down	38.3	46.9	54.2	60.6	66.4	71.7	11.8m	40	65	1.6
SVSTW291	60.3mm	180 up	170.0	208.2	240.4	268.8	294.4	318.0	4.6m	120	150	2
SVSTW291	38mm	180 up	135.0	165.3	190.9	213.5	233.8	252.6	4.8m	65	94	2.5
SVSTW291	28mm	180 up	170.0	208.2	240.4	268.8	294.4	318.0	6m	65	91	2.5
SVSTW291	22mm	180 up	38.3	46.9	54.2	60.6	66.4	71.7	11m	40	65	1.6
SVSTW292	60.3mm	360	316.7	387.8	447.8	500.7	548.5	592.4	6m	120	150	2
SVSTW292	38mm	360	305.0	373.5	431.3	482.2	528.3	570.6	6m	65	94	2.5
SVSTW292	28mm	360	261.7	320.5	370.1	413.7	453.2	489.5	3.6m	65	91	2.5
SVSTW292	22mm	360	61.7	75.5	87.2	97.5	106.8	115.4	7.6m	40	65	1.6

Further spray ball options are available please contact SNP for further details

SVSTW

Static Nozzle - Threaded Spray Ball

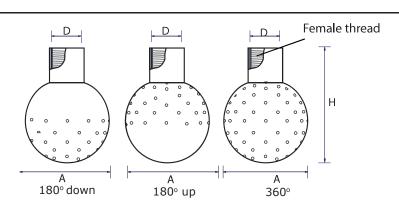
DESIGN FEATURES

- Multiple precision drilled holes give omni-directional spray pattern.
- No moving parts ensure long life and low maintenance
- A variety of female threaded and clip on connection type.
- Available in 360°, 180° up & down, 270° up and down

SPRAY CHARACTERISTICS

- Omni-directional coverage
- Low impact or rinse cleaning

Flow rates: 20 to 900 l/min





Spray balls are a versatile tank cleaning system that are very low maintenance. The selection in the table below is by no means exhaustive, by changing the position and pattern of the holes it is possible to design spray balls that meet the exact requirements of the tank cleaning application.

SVSTW Threaded Connections Flow rates, dimensions and rinse radius

Model	Thread	Pattern		F l ow rate (l	l/min) at di	fferent pre	ssures (Bar)		Rinse diameter at (1 bar)	С	Dimensi	ions
	(D)		1	1.5	2	2.5	3	3.5		A mm	H mm	Hole size mm
SVSTW293	1 1/4"	180 down	265.0	324.6	374.8	419.0	459.0	495.8	6.8m	90	150	2.5
SVSTW293	3/4"	180 down	153.3	187.8	216.8	242.4	265.6	286.9	5m	65	94	2.5
SVSTW293	1/2"	180 down	51.7	63.3	73.1	81.7	89.5	96.7	6.4m	50	91	1.6
SVSTW293	1/4"	180 down	23.3	28.6	33.0	36.9	40.4	43.7	4.4m	28	65	1.3
SVSTW294	1 1/4"	180 up	211.7	259.2	299.3	334.7	366.6	396.0	4.4m	90	150	2.5
SVSTW294	3/4"	180 up	145.0	177.6	205.1	229.3	251.1	271.3	4.4m	65	94	2.5
SVSTW294	1/2"	180 up	50.0	61.2	70.7	79.1	86.6	93.5	6m	50	91	1.6
SVSTW294	1/4"	180 up	20.0	24.5	28.3	31.6	34.6	37.4	3.2m	28	65	1.3
SVSTW295	1 1/4"	360	496.7	608.3	702.4	785.3	860.3	929.2	6.2m	90	150	2.5
SVSTW295	3/4"	360	220.0	269.4	311.1	347.9	381.1	411.6	2.6m	65	94	2.5
SVSTW295	1/2"	360	90.0	110.2	127.3	142.3	155.9	168.4	4.8m	50	91	1.6
SVSTW295	1/4"	360	30.0	36.7	42.4	47.4	52.0	56.1	2m	28	65	1.3



Static Nozzle - Spiral Tank Wash Nozzle

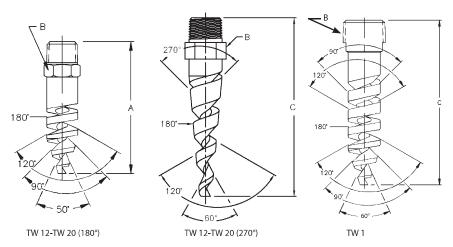
DESIGN FEATURES

- Clog-resistant spiral design
- Energy efficient
- Compact design; fits small openings

SPRAY CHARACTERISTICS

- Easy to maintain
- Unique patterns that spray in opposing directions

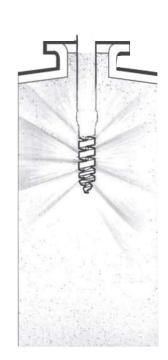
Flow rates: 11.4 to 260 l/min



Dimensions are approximate. Check with SNP for critical dimension applications.

Tank Washing TW Coverage Chart When Spraying at 2-3 bar

		_	_			
Pipe Size	Nozzle Number	Scrubbing Diameter (mm)	Rinsing Diameter (mm)			
	TW12	380	760			
3/8	TW14	460	1200			
3/0	TW16	610	1500			
	TW20	910	2100			
1	TW1	2400	6100			



Tank Washing TW	 Flow Rates 	and Dimensions
-----------------	--------------------------------	----------------

Spray Angles: 180° et 270° - Pipe sizes 3/8" et 1" BSP ou NPT

Male	Snrav				L		Orifice	Pass	Dim Metal (mm)			Weight			
Pipe Size	Num- ber	Angles	Factor	0.7 Bar	1 Bar	2 Bar	3 Bar	4 Bar	5 Bar	Dia	Dia	Α	В	С	(g)
	TW12	180°, 270°	13.7	11.4	13.7	19.3	23.7	27.3	30.6	4.83	3.30				
3/8	TW14	180°, 270°	18.5	15.4	18.5	26.1	32	36.9	41.3	5.59	3.30	73.0 17.5		49.6	
	TW16	180°, 270°	24.2	20.2	24.2	34.2	41.8	48.3	54.0	6.35	3.30				
	TW20	180°, 270°	37.6	31.5	37.6	53.2	65.1	75.2	84.1	7.87	3.30				
1	TW1	270°	116	97.2	116	164	201	232	260	14.2	5.08			146	

 $Spray\ angle\ performance\ varies\ with\ pressure.\ Contact\ BETE\ for\ specific\ data\ on\ critical\ applications.$

LEM

Static Nozzle - Spiral Nozzle Manifold

DESIGN FEATURES

- is a BETE clog-resistant spiral nozzle Six nozzles arranged in cluster to of the TF Series
- Can be supplied with various other BETE nozzles for any desired application
- Female connection

SPRAY CHARACTERISTICS

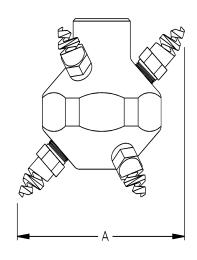
- Each nozzle in the stationary cluster Spherical omnidirectional coverage
 - project spray in all directions Flow rates: 16.0 to 597 I/min

(special flow rates available, special tips upon request)



LEM- Coverage Chart When Spraying at 3 - 4 bar

Female Pipe Size	Nozzle Number	Scrubbing Diameter(mm)	Rinsing Diameter ((mm)
	LEM6	450	900
3/4"	LEM8	900	1800
	LEM10	1400	2700
	LEM12	2000	4000
1"	LEM14	2100	4200
	LEM16	2200	4400
	LEM20	2400	4900





Typical LEM installation

Dimensions are approximate. Check with SNP for critical dimension applications.

LEM Flow rates and dimensions Spherical 360° Spray Angle 3/4" and 1" BSP or NPT

Female	Female	K	Flow Rate I/min							А	Weight		
Pipe Size	Pipe Size	Factor	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	(mm)	(kg) Metal	(g) Plas
	LEM6	19.1	16.0	19.3	23.4	27.1	33.2	38.3	42.8	50.6			
3/4"	LEM8	36.5	30.5	36.5	44.7	51.6	63.2	72.9	81.5	96.5	114	1.02	170
	LEM10	57.0	47.7	57.0	69.8	80.6	98.7	114	127	151			
	LEM12	82.0	68.6	82.0	100	116	142	164	183	217			
1"	LEM14	111	92.7	111	136	157	192	222	248	293	133	1.87	312
1	LEM16	144	120	144	176	203	249	287	321	380	133	1.07	312
	LEM20	226	189	226	276	319	391	451	504	597			

Flow rate $(I/min) = K(bar)^{1/2}$

Standard Materials: Brass, inox 316, PVC et PTFE

Spray angle performance varies with pressure. Contact SNP for specific data on critical applications.

CLUMP

Static Nozzle - Full Cone Nozzle Manifold

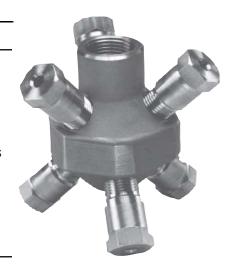
DESIGN FEATURES

- Each nozzle in the stationary cluster is a BETE clog-resistant full cone nozzle of the MaxiPass® series
- Can be supplied with various other BETE nozzles for any desired application
- Female connection

SPRAY CHARACTERISTICS

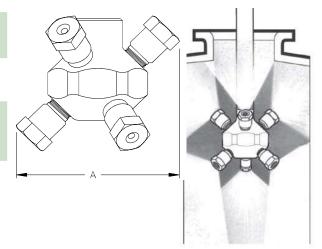
- Spherical omnidirectional coverage
- Six nozzles arranged in cluster to project spray in all directions

Flow rates: 28.1 to 290 l/min (Special flow rates available)



CLUMP Coverage Chart When spraying at 3 bar

Female Pipe Size	Nozzle Number	Scrubbing Diameter (mm)	Rinsing Diameter (mm)
	CLUMP125	1200	2400
3/4"	CLUMP156	1200	3700
	CLUMP187	1800	4300
	CLUMP187	1800	4300
1"	CLUMP218	2400	4300
	CLUMP2500	3000	4900



Typical CLUMP installation

Dimensions are approximate. Check with SNP for critical dimension applications.

CLUMP Flow Rates and Dimensions Spherical 360° - Spray Angle 3/4" et 1" BSP or NPT

	Female	Nozzle	K	Litres per minute at BAR							Weight		
	Pipe Size	Number	Factor	0.7 bar	1 bar	2 bar	3 bar	4 bar	5 bar	A (mm)	(kg) Metal	(g) Plas	
		CLUMP125	33.2	28.1	33.2	46.0	55.6	63.7	70.8				
	3/4"	CLUMP156	52.7	44.6	52.7	73.2	88.2	101	112	120	1.29	222	
		CLUMP187	76.2	65.7	76.2	106	128	146	163				
		CLUMP187	76.2	65.7	76.2	106	128	146	163				
1"	1"	CLUMP218	121	103	121	168	203	232	258	146	2.34	400	
		CLUMP250	136	115	136	188	228	261	290				

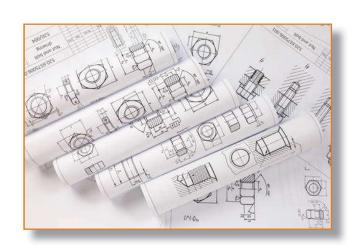
Flow Rate K $(1/min) = K(bar)^{1/2}$

Standard Materials: Brass, inox 316, PVC et PTFE

Spray angle performance varies with pressure. Contact SNP for specific data on critical applications.

Custom Products

Our standard range of products will accommodate the vast majority of tank cleaning scenarios. There are, however, niche cleaning situations which warrant the development of customs products. We have the technical expertise and engineering know how to quickly develop unique products to solve unique cleaning problems.



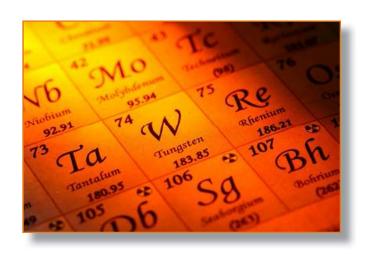
Engineering Excellence

We have a long history of working with a wide range of organisations from small specialists to the largest engineering houses in the world. Whatever the size or complexity of the project we have the expertise to cope.

We are ISO certified and are used to meeting the most stringent documentation requirements for projects. As such we are well positioned to design and supply almost any conceivable customer tank cleaning system.

Special materials

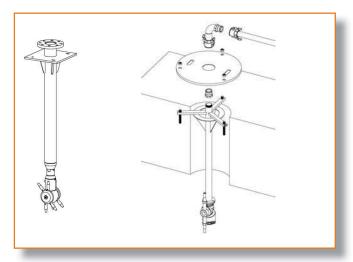
Some environments are particularly tough; either abrasive, very hot, or corrosive. The standard materials of construction in our off the shelf products may not be suitable for these extreme environments. We are able to manufacture many of our tank cleaners in special alloys or plastics to suit such scenarios. SNP can supply product in over 200 different alloys and plastics meaning even the toughest environmental conditions can be overcome.



Custom Products

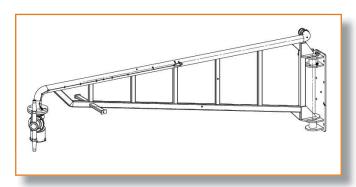
Special Cleaning Heads

Some tank cleaning applications require atypical cleaning. SNP can engineer custom products to concentrate cleaning power where it is needed most. We have helped customers with particularly tough cleaning applications like washing ready-mix concrete trucks and sticky resin vessels. Sometimes the requirement calls for a modification on a standard product but in other cases we have developed completely new products.



Swing arms

When attaching cleaning heads to open tanks we often deploy them on swing arms to allow the heads to be moved to the edge of the tank for maintenance .





Lances & downpipes

The positioning of tank cleaners within the vessel can be of critical importance. SNP have many years of expertise in the design and fabrication of lances and downpipes to hold all types of our cleaning heads.

