TANK AND EQUIPMENT CLEANING
Cleaning diversity of the highest quality
For over 140 years, we at Lechler have been researching drops and their applications. Our nozzles ensure optimum cleanliness particularly in locations that are difficult to access, where it is dangerous or where things have to be especially clean.

With more than 700 employees, we work worldwide to provide the right nozzle for every application. With our own Development and Technology Center in Metzingen we simulate complex spray characteristics, check nozzles in endurance tests and optimize cleaning patterns so that the ideal relationship between flow rate, range and spray force is achieved.

Over the course of all these years, we have developed a deep understanding of the processes in a large number of different industries. That is why we do not just support our customers with high-performance precision nozzles for tank and equipment cleaning, but also help them to optimize their processes.
An excellent understanding of cleaning processes, tank shapes and nozzle design is required in order to achieve optimum cleaning of tanks and equipment. We have been an industry leader in all three areas for decades, however, there are still always new challenges for us. Thanks to state-of-the-art CFD analysis and precise measuring instruments for droplet sizes and speeds, we are able to quickly develop suitable solutions for these applications.

With our proprietary TankClean software, we are able to simulate complex tank shapes and spray processes with different nozzles. Together with our extensive range of cleaning nozzles, we can develop tailor-made solutions for your tank and equipment cleaning requirements – particularly if complex applications are involved.

Why Lechler?

• Unique product variety
• Cleaning efficiency classes – for easy nozzle selection
• Reliable planning thanks to TankClean simulation software
• Solutions for agitator, filler neck and line cleaning
• Extensive accessories for complete solutions
• Individual advice – on-the-spot worldwide
• Short delivery times thanks to high stock availability
Effective tank and equipment cleaning cannot just be limited to the tanks. Lechler therefore offers a comprehensive and coordinated product range to allow fast, efficient and thorough cleaning from the feed lines through to the discharge lines.
Nobody likes dirt or contaminations: they reduce product quality. Removal takes time – and money.

As your partner, we help to minimize these costs as much as possible.

This is how efficient cleaning works – Sinner’s circle

Every cleaning process is based on four main factors:
• Chemical (choice and concentration of the cleaning agents)
• Mechanical (detachment of dirt by impact or shear stress)
• Temperature (at which cleaning takes place)
• Time (duration of the overall cleaning process)

The four cleaning factors can be clearly demonstrated by the Sinner’s circle. Together, they always result in 100% of the cleaning effort. Depending on the cleaning process, the individual factors may be of different magnitudes and they mutually influence each other. The cleaning nozzle directly influences the mechanical factor.

Example
Assumption: A given tank can be successfully cleaned with equal shares for the time, temperature, chemical and mechanical factors (Fig. 1). Choosing a different nozzle with more powerful cleaning force results in additional freedom for cleaning faster (Fig. 2) or with a lower temperature (Fig. 3) and more energy-efficiently.
The impact is sufficient for a rough assessment of the cleaning force. However, things are often much more complex during production. In specific applications, it is sometimes possible to find additional savings by conducting a more detailed analysis. Talk to us. We will gladly advise you: by phone on (800) 777-2926 or by email at info@lechlerusa.com.

**Good to know**

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Our promise: Lechler has the right cleaning nozzle for every application. We have separated our extensive range of nozzles into five different cleaning efficiency classes so that you can easily find the product that is right for your application. Below you will find the typical soiling types for the respective efficiency class. Here, the higher the efficiency class, the more powerful and efficient the mechanical cleaning effect (see page 8, Sinner’s circle).

### QUICK DECISION-MAKING AID

#### LECHLER CLEANING EFFICIENCY CLASSES

<table>
<thead>
<tr>
<th>Type</th>
<th>Cleaning effect</th>
<th>Drive</th>
<th>Typical soiling</th>
<th>Nozzle design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spray ball, static</td>
<td></td>
<td>No drive, no rotating parts</td>
<td>Light soiling such as non-adhering powder or liquids</td>
<td>Static spray pattern with solid stream impact</td>
</tr>
<tr>
<td>Rotating cleaner, free-spinning</td>
<td></td>
<td>By the medium</td>
<td>Low-viscosity to slightly viscous substances such as fresh ketchup</td>
<td>Slot design or bore layout with direct impact on the entire tank surface</td>
</tr>
<tr>
<td>Rotating cleaner, free-spinning</td>
<td></td>
<td>By the medium</td>
<td>More viscous substances such as chocolate sauce</td>
<td>Special flat fan design with direct impact on the entire tank surface</td>
</tr>
</tbody>
</table>
### Type
Rotating cleaner, controlled rotation

### Cleaning effect

### Drive
By the medium, drive unit with turbine and gear unit

### Typical soiling
Medium soiling such as high-viscosity creams

### Nozzle design
Special flat fan nozzle inserts with direct impact on the entire tank surface

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### Type
High impact tank cleaning machine, controlled rotation about two axes

### Cleaning effect

### Drive
By the medium, drive unit with turbine and gear unit

### Typical soiling
Persistent soiling such as make-up

### Nozzle design
Solid stream nozzles with controlled rotation about two axes, direct impact on the entire tank surface during a cleaning cycle

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**Good to know**

The individual cleaning efficiency classes are not sharply defined. Depending on application, nozzles from the next-higher or next-lower cleaning efficiency class may be suitable. Please ask us in case of doubt. We will gladly advise you: by phone on 800-777-2926 or by email at info@lechlerusa.com.
Different operating principles influence the impact and the cleaning effect. The cleaning efficiency can also be influenced by choosing the appropriate nozzle.

**Spray ball, static**

Static spray balls do not have any moving parts and are largely maintenance-free.

- The impact of the spray jets is solid stream and the surfaces are cleaned by the shear stress of the liquid running down the surface.
- The water consumption is comparatively high.
- Increased soiling results in a significantly longer cleaning time, and cleaning may not be complete.
- Simple, inexpensive solution.

**Rotating cleaner, free-spinning**

Thanks to their special nozzle design, free-spinning rotating cleaners permit area impact on the tank walls. They are particularly suitable for small to medium-sized tanks.

- Drive by cleaning fluid.
- Fast impact repetition.
- Optimum cleaning performance in the low pressure range.

**Rotating cleaner, controlled rotation**

These rotating cleaners are characterized by their controlled rotation and a stronger cleaning effect thanks to special flat fan design. They are particularly suitable for medium-sized to large tanks.

- Increased impact thanks to low rotation speed and resultant larger drops.
- Optimum cleaning performance in medium pressure ranges.

**High impact tank cleaning machines, controlled rotation about two axes**

High impact tank cleaning machines operate with few solid streams for maximum impact. The rotation of the nozzles about two axes means that every point on the tank wall is hit by the streams during the cleaning cycle.

- Solid stream impact over the entire tank surface.
- Maximum impact.
- Highest cleaning power.
A few rules of thumb

Flow rate and impact
The higher the flow rate, the greater the impact and the more intensive the cleaning effect. For the best possible results, the nozzles with the highest flow rate should be chosen from the suitable nozzles within a series.

Operating pressure
The best results can be achieved with the recommended operating pressure of the respective nozzle. Excessively high pressure leads to greater atomization and reduces the spraying range.

If there is more than one flow rate size within a series, the types with the largest and smallest spraying range are shown. If other flow rate sizes are available, their comparable curves run between the shown upper and lower limits. Information on the maximum tank diameter is provided in the table on the respective product page.

Cleaning cycle time
Rotating cleaners of cleaning efficiency classes 2 to 4 achieve fast, full-area impact in one revolution.

In contrast, high impact tank cleaning machines need several revolutions to complete a cleaning cycle. High impact tank cleaning machines of cleaning efficiency class 5 spray the tank wall in a defined pattern with their powerful solid jets. A certain number of revolutions of the high impact tank cleaning machine is needed to cover every point in the tank. The time required for this is referred to as “Cleaning cycle duration”.

Good to know
There is at least one exception to every rule of thumb. If you are unsure or need further support, make life easier for yourself and just ask us. You can contact us by phone on (800) 777-2926 or by email at info@lechlerusa.com.
FOR YOUR PLANNING

CRITERIA FOR NOZZLE SELECTION

The size of the tank, its shape and possible fittings are important factors for selection of the right cleaning nozzle. Fittings in particular determine the number of nozzles required for optimum cleaning.

**Fill level**
If possible, the nozzle should not come into contact with the product during production. It is therefore recommended to install nozzles above the maximum tank fill level.

**Tank size**
The diameter of the tank to be cleaned should be smaller than the maximum tank diameter recommended in the product tables. You can find the necessary information on the product pages.

**Arrangement**
The nozzle must be positioned in the upper part of the tank if possible. The following recommendation applies:

\[ H_{\text{nuzzle}} = \frac{1}{3} \cdot H_{\text{tank}} \]

Make sure that sufficient cleaning fluid strikes the tank ceiling.

\[ H_{\text{nuzzle}} < \frac{1}{3} \cdot D_{\text{max. nozzle}} \]

**Conversion**
Flow rate according to density:
If the density of the cleaning agent (\( \rho \)) differs from that of water (\( \rho_w \)), the flow rate is calculated as follows:

\[ \dot{V}_R = \dot{V}_W \cdot \sqrt{\frac{\rho_w}{\rho R}} \]

Flow rate according to differential pressure:
If the tank cleaning nozzle is operated with a deviating differential pressure, the flow rate is calculated as follows:

\[ \dot{V}_1 = \sqrt{\frac{p_2}{p_1}} \cdot \dot{V}_1 \]

Differential pressure according to volume flow:

\[ p_2 = \left( \frac{\dot{V}_2}{\dot{V}_1} \right)^2 \cdot p_1 \]

**Tank drainage rate**
The tank drainage rate must be chosen so that the liquid level does not rise during the cleaning process. The following values are recommended for gravity fed drains.

<table>
<thead>
<tr>
<th>Drain [&quot;]</th>
<th>Drainage rate [gal/min]</th>
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<tbody>
<tr>
<td>1</td>
<td>6</td>
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<td>1 1/2</td>
<td>13</td>
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<td>2</td>
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<td>2 1/2</td>
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<td>3</td>
<td>50</td>
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<td>4</td>
<td>87</td>
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</table>
Number of nozzles
When cleaning large tanks or complex installations, it is often necessary to install several nozzles. They must be positioned so that their spray jets overlap and that the jets strike every surface that is to be cleaned.

Avoidance of spray shadows
Obstacles such as agitators, baffle plates or pipes can prevent the areas behind them from being reached directly by the spray jet. Impact cleaning is not possible there. In these cases, it is necessary to install several nozzles so that the spray shadows of the individual nozzles are eliminated. In addition, static spray nozzles can also be used for targeted removal of deposits left as a result of spray shadows or in areas that are difficult to clean.

Pump and pipes
The pipe dimensions depend on the flow rate to be delivered. The size should be chosen so that the pressure losses in the feed pipe system are kept as low as possible. The required static operating pressure must be present directly at the nozzle. The pump power must be matched to this.
On the previous pages we provided you with the most important information for planning efficient tank and equipment cleaning. In many cases, this will already allow you to find the optimum solution for your requirements.

However, what if the situation is more complex? For example, due to fitting-related spray shadows – or if you want to be absolutely sure that every area in the tank has been fully cleaned? The solution here is simple: we will gladly support you with our TankClean simulation software.

With TankClean we can ...

- precisely simulate tank applications with a large number of fittings
- select the right number of optimum nozzles and position them freely
- simulate the cleaning process and show spray shadows or other problematic areas
- record the simulation as a PDF and video
YOUR ADVANTAGES

PLANNING RELIABILITY
We assist you in planning your tank cleaning solution to ensure cleaning without any gaps.

PROCESS OPTIMIZATION
By simulating the existing cleaning processes, we show you the optimization potentials for these processes.

PROCESS RELIABILITY
Thanks to realistic and individually customizable process simulation, we can offer you individual solution concepts.

COST AND TIME SAVINGS
Simulation makes it possible to detect any potential problem areas before final definition of the cleaning concept. This makes it possible to significantly reduce the number of time- and cost-intensive practical cleaning tests.

See and understand TankClean
Discover the possibilities of TankClean: Visit www.lechlerusa.com/en/tankclean or scan the QR code.
Perfect addition

- Cleaning efficiency class 1
- Cleaning efficiency class 2
- Cleaning efficiency class 3
- Cleaning efficiency class 4
- Cleaning efficiency class 5
FOR YOUR PLANNING
OPTIMUM PREPARATION

Every industry and every process has its own requirements. We know them all and supply the optimum cleaning nozzles for an extremely wide range of ambient conditions.

**FOOD CONFORMITY**

Many of the materials used for Lechler tank cleaning nozzles comply with the requirements of the FDA and conform to the regulation EU1935/2004.

**HYGIENE REQUIREMENTS**

Lechler cleaning nozzles meet the strictest hygiene requirements. Selected series are available as specially certified 3-A-compliant nozzles.

**ATEX**

Lechler offers specially approved nozzle series for use in explosive atmospheres.

**MAXIMUM OPERATING TEMPERATURE**

Maximum permitted temperature of the cleaning medium during operation.

**MAXIMUM AMBIENT TEMPERATURE**

Maximum permitted ambient temperature within the tank.

**INSTALLATION**

The installation symbol describes the position in which the nozzle must be installed so that it functions properly.

**BEARING**

The primary bearing used is described here.

**MATERIAL**

Here you can find all materials that are used in the nozzle. This list permits a simple check of the chemical resistance.

**WEIGHT**

The weight is specified from the lightest to the heaviest nozzle within a series.

**SURFACE QUALITY**

We distinguish between surfaces inside the cleaning nozzle and outside surfaces. Excepted from this are threads, weld seams and gear wheels as well as areas in which the cleaning medium flows very quickly.

**INSERTION DIAMETER**

This is the minimum diameter of the opening that is required to insert the cleaning nozzle in the tank. Since the exact insertion diameter depends on the selected type, a range is specified for some series. If the size of the insertion opening is within the specified range, the exact insertion diameter must be requested from Lechler.

**RECOMMENDED OPERATING PRESSURE**

The recommended operating pressure is the optimum pressure at which the nozzle cleans most efficiently. The recommended operating pressure must be determined directly in front of the nozzle.

**ADAPTER**

The HygienicFit adapter guarantees hygienic connection of the supply line. Compatible products are identified by this pictogram.

**ROTATION MONITORING**

These nozzles are compatible with the Lechler rotation monitoring sensor.

**MAINTENANCE**

All nozzles with the maintenance symbol can be maintained. You can find further information on pages 100–101.

**RECOMMENDED FILTER**

We recommend a filter with the specified mesh size in order to prevent clogging and excessive wear of the cleaning nozzle.

**STEAM SUITABILITY**

If the SIP process is based on the cleaning nozzle, the suitability for hot water or even steam operation should be taken into account. Our products have been tested in vertically downwards-facing installation position at a temperature of 362 °F and a pressure of 36 psi(g) specifically for the extreme conditions in steam operation. The wear behavior differs depending on the design and materials used. We therefore categorize the steam suitability of our products as follows:

- Suitable (only slight wear evident after test duration of 50 h)
- Conditionally suitable (clear wear already evident after test duration of 25 h)
- Not suitable (the tested type was worn so that it was no longer capable of operation within a very short time)

It must be noted that operation with steam means increased wear irrespective of suitability. The following rule of thumb therefore applies: The lower the pressure, the lower the rotation speed and load and also the lower the wear of the cleaning nozzle.

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## TANK CLEANING NOZZLES
### SERIES OVERVIEW

<table>
<thead>
<tr>
<th>Series</th>
<th>Spray ball 527</th>
<th>Spray ball 540/541</th>
<th>RinseClean 5B2/5B3</th>
<th>PicoWhirly 500.234</th>
<th>MicroWhirly 566</th>
<th>MiniWhirly 500.186</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning efficiency class</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

### Information on Page

<table>
<thead>
<tr>
<th>Series</th>
<th>30</th>
<th>32</th>
<th>34</th>
<th>38</th>
<th>40</th>
<th>42</th>
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### Operating principle

<table>
<thead>
<tr>
<th>Operating principle</th>
<th>Spray ball 527</th>
<th>Spray ball 540/541</th>
<th>RinseClean 5B2/5B3</th>
<th>PicoWhirly 500.234</th>
<th>MicroWhirly 566</th>
<th>MiniWhirly 500.186</th>
</tr>
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<tbody>
<tr>
<td>Max. tank diameter</td>
<td>17-27</td>
<td>21-31</td>
<td>6-18</td>
<td>3</td>
<td>5-5.5</td>
<td>4</td>
</tr>
<tr>
<td>[ft]</td>
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<tr>
<td>Insertion diameter</td>
<td>1.3-4</td>
<td>1.22</td>
<td>.79-3.54</td>
<td>.35</td>
<td>.79-1.89</td>
<td>1.14</td>
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<tr>
<td>[in]</td>
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<tr>
<td>Recommended operating pressure</td>
<td>20</td>
<td>45</td>
<td>30</td>
<td>45</td>
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<tr>
<td>[psi]</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Flow rate at recommended operating pressure</td>
<td>13.0-92.0</td>
<td>5.81-38.95</td>
<td>4.08-180.00</td>
<td>2.63</td>
<td>4.08-5.84</td>
<td>4.84</td>
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<td>[gal/min]</td>
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### Food-compliant

<table>
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<th>Spray ball 527</th>
<th>Spray ball 540/541</th>
<th>RinseClean 5B2/5B3</th>
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### ATEX available

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<th>ATEX available</th>
<th>Spray ball 527</th>
<th>Spray ball 540/541</th>
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### Surface quality (outside) [µm]

<table>
<thead>
<tr>
<th>Surface quality (outside) [µm]</th>
<th>Spray ball 527</th>
<th>Spray ball 540/541</th>
<th>RinseClean 5B2/5B3</th>
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<th>MicroWhirly 566</th>
<th>MiniWhirly 500.186</th>
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<tr>
<td>≤ 0.8 µm</td>
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### Steam suitability

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<th>RinseClean 5B2/5B3</th>
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<tr>
<td>suitable</td>
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### Max. operating temperature [°F]

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<tr>
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<th>Spray ball 527</th>
<th>Spray ball 540/541</th>
<th>RinseClean 5B2/5B3</th>
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### Max. ambient temperature [°F]

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<th>Max. ambient temperature [°F]</th>
<th>Spray ball 527</th>
<th>Spray ball 540/541</th>
<th>RinseClean 5B2/5B3</th>
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### Compatible with HygienicFit

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### Rotation monitoring

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### Weight [lbs]

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**Note:** The values and specifications listed are indicative and may vary. Always consult the manufacturer’s documentation for accurate and complete information.
### Cleaning efficiency class 2

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**Note:**
- PVDF MicroWhirly 500.191
- NanoSpinner 2 5M1
- MicroSpinner 2 5M2
- MiniSpinner 2 5M3
- MaxiSpinner 2 5M4
- PTFE Whirly 573/583
- Max. tank diameter
- Insertion diameter
- Recommended operating pressure
- Flow rate at recommended operating pressure
- Food-compliant
- ATEX available
- Surface quality (outside)
- Steam suitability
- Max. operating temperature
- Max. ambient temperature
- Compatible with HygienicFit
- Rotation monitoring
- Weight
# Cleaning efficiency class 3

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## Operating principle

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- 100% Food-compliant
- ATEX available
- Ra Surface quality (outside)
- Suitable for steam
- Max. operating temperature
- Max. ambient temperature
- Maintainable
- Rotation monitoring
- Weight
| Information on Page | 88 | 90 | 92 |

<p>| Perfect Additions | <strong>Series</strong> | <strong>PopUp Whirly</strong> | <strong>PopUp Whirly</strong> | <strong>PopUp Clean</strong> |
| | | <strong>5P2</strong> | <strong>5P3</strong> | <strong>5P5</strong> |
| <strong>Max. tank diameter [ft]</strong> | 2-3 | 7 | 10 |
| <strong>Insertion diameter [in]</strong> | 1.97-2.2 | 2.46-2.76 | 1.97-2.2 |
| <strong>Recommended operating pressure [psi]</strong> | 30 | 30 | 30 |
| <strong>Flow rate at recommended operating pressure [gal/min]</strong> | 4.03-5.37 | 10.75 | 13.43 |
| <strong>Food-compliant</strong> | ● | ● | ● |
| <strong>ATEX available</strong> | ● | ● | ● |
| <strong>Surface quality (outside) [µm]</strong> | ≤ 0.8 | ≤ 0.8 | ≤ 0.8 |
| <strong>Steam suitability</strong> | not suitable | not suitable | not suitable |
| <strong>Max. operating temperature [°F]</strong> | 284 | 284 | 203 |
| <strong>Max. ambient temperature [°F]</strong> | 302 | 302 | 302 |
| <strong>Compatible with HygienicFit Rotation monitoring</strong> | | | |
| <strong>Weight [lbs]</strong> | 1.1 | 1.2-4.52 | .75 |
| <strong>Maintainable</strong> | | | |</p>
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<td>302</td>
<td>149</td>
<td>302</td>
<td>140</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compatible with HygienicFit Rotation monitoring</th>
<th>★★★★★★</th>
<th>★★★★★★</th>
<th>★★★★★★</th>
<th>★★★★★★</th>
<th>★★★★★★</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Weight [lbs]</th>
<th>1.1</th>
<th>1.2-4.52</th>
<th>.75</th>
<th>9.9</th>
<th>.15-.66</th>
<th>.77</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintainable</td>
<td>27</td>
<td>95</td>
<td>10</td>
<td>27</td>
<td>95</td>
<td>10</td>
</tr>
</tbody>
</table>
CLEANING EFFICIENCY CLASS 1
RINSE EFFICIENTLY AND ACCURATELY

<table>
<thead>
<tr>
<th>Type</th>
<th>Spray ball, static</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning effect</td>
<td></td>
</tr>
<tr>
<td>Drive</td>
<td>No drive, no rotating parts</td>
</tr>
<tr>
<td>Typical soiling</td>
<td>Light soiling such as non-adhering powder or liquids</td>
</tr>
<tr>
<td>Nozzle design</td>
<td>Static spray pattern with solid stream impact</td>
</tr>
</tbody>
</table>
Efficiency class

1
Static spray balls
Series 527

Features:
- Complies with 3-A standards
- Powerful solid jet
- Resistant to high temperatures

Technical data:

- **Maximum operating temperature**: 400 °F
- **Maximum ambient temperature**: 400 °F
- **Installation**: Operation in every installation position
- **Bearing**: Static – no bearing
- **Material**: Stainless steel 1.4404 (316L)
- **Weight**: 1.11–1.43 lbs
- **Surface quality**: ≤ 0.8 µm
- **Insertion diameter**: 1.3–4 in
- **Recommended filter**: Smaller than the narrowest cross-section
- **Recommended operating pressure**: 20 psi

Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

Overview of maximum tank diameter depending on pressure

<table>
<thead>
<tr>
<th>Pressure [psi]</th>
<th>0</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>45</th>
</tr>
</thead>
</table>
| Max. tank diameter [ft] | 30.2 | 25.1 | 20.2 | 16.2 | 12.7 | 9.6 | 6.5 | 3.3 | 6.5 | 12.7 | 20.2 | 25.1 | 30.2 | 36.5

Graph showing the relationship between pressure and maximum tank diameter.
With the slip-on connection, the spray ball is pushed onto the connecting pipe and secured with the supplied cotter pin.

### Information on slip-on connection
- Cotter pin made of stainless steel 1.4404 (316L) included.
- Depending on the adapter diameter, the flow rate may increase due to the leakage between the adapter and spray ball.

### Information on operation
Use above the recommended pressure will have a negative effect on the cleaning result and wear.

---

**Dimensions of slip-on connection according to ASME-BPE (OD tube)**

**Insertion diameter \(D_A\) of slip-on connection**

---

<table>
<thead>
<tr>
<th>Type</th>
<th>Narrowest free cross section (0) [(\text{in})]</th>
<th>(\dot{V}) water [gal/min]</th>
<th>Dimensions approx. [(\text{in})]</th>
<th>Max. tank diameter [(\text{ft})]</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>40</td>
<td>60</td>
<td>23</td>
<td>.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 bar</td>
<td></td>
<td>B</td>
</tr>
<tr>
<td>360°</td>
<td>527.209.1Y.00.75</td>
<td>0.031</td>
<td>13</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
<td>23</td>
<td>.75</td>
</tr>
<tr>
<td>527.209.1Y.01.50</td>
<td>0.043</td>
<td>37</td>
<td>53</td>
<td>170</td>
</tr>
<tr>
<td>527.209.1Y.02.00</td>
<td>0.067</td>
<td>92</td>
<td>130</td>
<td>420</td>
</tr>
</tbody>
</table>

- Efficiency class 1
Static spray balls
Series 540/541

Features:
- Robust and especially compact design
- Threaded connection
- Suitable for very high temperatures
- Also suitable for steam and air operation

Technical data:
- Maximum operating temperature: 392 °F
- Maximum ambient temperature: 482 °F
- Material: Stainless steel 1.4305 (303)
- Weight: .20–.22 lbs
- Surface quality: ≤ 6.3 µm
- Steam suitability: Suitable
- Insertion diameter: 1.22 in
- Recommended filter: Smaller than the narrowest cross-section
- Recommended operating pressure: 45 psi

Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.
**Female thread**

**Insertion diameter**

**BSPP threads on request.**

**Information on operation**

Use above the recommended pressure will have a negative effect on the cleaning result and wear.

<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Ordering number</th>
<th>Connection</th>
<th>Narrowest free cross section</th>
<th>$V$ water [gal/min]</th>
<th>Max. tank diameter [in]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Type</td>
<td>1/2&quot; Female NPT</td>
<td>Ø [in]</td>
<td>p [psi] ($p_{max} = 145$ psi)</td>
<td>7</td>
</tr>
<tr>
<td>240°</td>
<td>540.909.16</td>
<td>BH</td>
<td>0.031</td>
<td>2.33</td>
<td>3.41</td>
</tr>
<tr>
<td></td>
<td>540.989.16</td>
<td>BH</td>
<td>0.039</td>
<td>3.60</td>
<td>5.27</td>
</tr>
<tr>
<td></td>
<td>541.109.16</td>
<td>BH</td>
<td>0.059</td>
<td>7.42</td>
<td>10.86</td>
</tr>
<tr>
<td></td>
<td>541.189.16</td>
<td>BH</td>
<td>0.079</td>
<td>11.66</td>
<td>17.06</td>
</tr>
<tr>
<td></td>
<td>541.239.16</td>
<td>BH</td>
<td>0.091</td>
<td>15.36</td>
<td>22.49</td>
</tr>
</tbody>
</table>

BSPP threads on request.

BSPP threads on request.
Features:
- No moving parts
- Self-draining
- Proven in numerous applications
- Suitable for very high temperatures and high hygiene requirements
- Also available in 2.4602 (Alloy 22)

Technical data:

- **Maximum operating temperature:** 392 °F
- **Maximum ambient temperature:** 492 °F
- **Material:** Stainless steel 1.4404 (316L), cotter pin made of stainless steel 1.4404 (316L) or 2.4602 (Alloy 22), cotter pin made of 2.4602 (Alloy 22)
- **Weight:** .02–.66 lbs
- **Surface quality:** 
  - Outside: Ra ≤ 0.8 µm
  - Inside: polished Ra ≤ 0.5 µm
- **Installation:** Operation in every installation position
- **Bearing:** Static – no bearing
- **Steam suitability:** Suitable
- **Insertion diameter:** .79–3.54 in
- **Recommended filter:** Smaller than the narrowest cross-section
- **Recommended operating pressure:** 30 psi

Max. tank diameter

The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

Overview of maximum tank diameter depending on pressure
Ordering Type + Material no. + Connection = Order no.

Example: 5B3.089 + 1Y + A1.00 = 5B3.089.1Y.A1.00

### Spray Balls

**Spray angle**
- Narrowest free cross section Ø [in]
- V water [gal/min] (p [psi] (p_{max} = 75 psi)
- Dimensions [in]
- Distance to bore A
- Connection Ø B
- Height H
- Ø D
- Pin
- Max. tank diameter [ft]

**Spray balls with other spray angles and connection options (various slip-on connections as well as threaded and welded connections) please reach out to us with your requirements.**

**Information about slip-on connections**
- Stainless steel 316L pin supplied.
- Depending on the diameter of the adapter, the flow rate can increase due to a leakage between the adapter and the spray ball.

### Threaded connection

**Spray balls with other spray angles and connection options (various slip-on connections as well as threaded and welded connections) please reach out to us with your requirements.**

**Threaded connection**

**Spray angle**
- Ordering number
- Connection ØB Female NPT
- Narrowest free cross section Ø [in]
- V water [gal/min]
- Dimensions [in]
- Height H
- Ø D
- Pin
- Max. tank diameter [ft]

**Slip-on connection**

- Dimensions slip-on connection according to DIN 10357 Series D (ASME BPE 1997.0OD tube compatible)

With the slip-on connection, the spray ball is pushed onto the customer's connection pipe and secured with the supplied cotter pin.
CLEANING EFFICIENCY CLASS 2
RINSING AND LIGHT CLEANING

<table>
<thead>
<tr>
<th>Type</th>
<th>Rotating cleaner, free-spinning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning effect</td>
<td>By the medium</td>
</tr>
<tr>
<td>Typical soiling</td>
<td>Low-viscosity to slightly viscous substances such as fresh ketchup</td>
</tr>
<tr>
<td>Nozzle design</td>
<td>Slot design or bore layout with direct impact on the entire tank surface</td>
</tr>
</tbody>
</table>
Rotating cleaning nozzle PicoWhirly
Series 500.234

Features:
• Cleaning with rotating solid jets
• Compact design for confined spaces
• Suitable for very high temperatures
• Made completely of stainless steel

Technical data:
- Maximum operating temperature: 392 °F
- Maximum ambient temperature: 392 °F
- Material: Stainless steel 1.4404 (316L)
- Weight: .03 lbs
- Insertion diameter: .35 in
- Steam suitability: Suitable
- Surface quality: Ra ≤ 1.6 µm
- Recommended filter: Line strainer with a mesh size of 0.3 mm/50 mesh
- Recommended operating pressure: 45 psi

Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

Overview of maximum tank diameter depending on pressure
The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only. The cleaning result is also affected by the type of soiling. Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear. Also available with an M6 metric connection.

<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Ordering number</th>
<th>Connection</th>
<th>Narrowest free cross section Ø [in]</th>
<th>( V ) water [gal/min]</th>
<th>Max. tank diameter [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>300°</td>
<td>500.234.G9</td>
<td>BA</td>
<td>0.07</td>
<td>1.52 2.15 2.63 9.8 3.40</td>
<td>3</td>
</tr>
</tbody>
</table>

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only. The cleaning result is also affected by the type of soiling.
Features:
• Cleaning with effective flat jets
• Robust slide bearing made of PEEK
• Equipped with a thread, slip-on or weld-on connection
• Food grade compatibility

Technical data:
- Maximum operating temperature: 302 °F (194 °F (ATEX))
- Maximum ambient temperature: 392 °F (248 °F (ATEX))
- Installation: Operation in every installation position
- Bearing: Slide bearing made of PEEK
- Material: Stainless steel 1.4404 (316L), PEEK ESD (only ATEX version)
- Weight: .11–.44 lbs
- Surface quality: Ra ≤ 1.6 µm
- Steam suitability: Suitable
- Insertion diameter: .78–1.89 in
- Recommended filter: Line strainer with a mesh size of 0.3 mm/50 mesh
- Recommended operating pressure: 30 psi

Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

Overview of maximum tank diameter depending on pressure

Lecher
## Dimensions of slip-on connection according to ASME-BPE (OD tube)

<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Type</th>
<th>Connection</th>
<th>Narrowest free cross section $\Omega$ [\text{in}]</th>
<th>$p$ [psi] ($p_{\text{max}} = 90$ psi)</th>
<th>V water [gal/min]</th>
<th>Max. tank diameter [\text{ft}]</th>
</tr>
</thead>
<tbody>
<tr>
<td>180°</td>
<td>566.873.1Y</td>
<td>BE BF TF07</td>
<td>0.04</td>
<td>2.85</td>
<td>4.03</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>566.933.1Y</td>
<td>BE BF TF07</td>
<td>0.09</td>
<td>3.99</td>
<td>5.64</td>
<td>21</td>
</tr>
<tr>
<td>360°</td>
<td>566.874.1Y</td>
<td>BE BF TF07</td>
<td>0.04</td>
<td>2.85</td>
<td>4.03</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>566.934.1Y</td>
<td>BE BF TF07</td>
<td>0.09</td>
<td>3.99</td>
<td>5.64</td>
<td>21</td>
</tr>
</tbody>
</table>

**Insertion diameter of slip-on connection ASME-BPE (OD tube)**

- Ø 1.89

**Efficiency class**

- Efficiency class 2

---

### Machine data

<table>
<thead>
<tr>
<th>Type</th>
<th>Connection</th>
<th>ATEX</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>566.873.1Y</td>
<td>BE</td>
<td></td>
<td>566.873.1Y.BE</td>
</tr>
</tbody>
</table>
Features:
- Economical entry-level model
- Cleaning with effective flat fan jets
- Specially designed for barrel and canister cleaning

Technical data:
- Maximum operating temperature: 122 °F
- Maximum ambient temperature: 212 °F
- Installation: Vertically downwards
- Bearing: Ball bearing made of stainless steel 1.4401 (316)
- Material: POM, stainless steel 1.4401 (316)
- Weight: 0.09 lbs
- Surface quality: Ra ≤ 1.6 µm
- Surface quality: Ra ≤ 1.6 µm
- Weight: .09 lbs
- Insertion diameter: 1.14 in
- Recommended filter: Line strainer with a mesh size of 0.3 mm/50 mesh
- Recommended operating pressure: 30 psi

Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

Overview of maximum tank diameter depending on pressure
Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

Also available with an 1/2" BSPP metric connection.

<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Ordering number</th>
<th>Narrowest free cross section Ø [in]</th>
<th>V water [gal/min]</th>
<th>Max. tank diameter [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>300°</td>
<td>500.186.56.AH</td>
<td>0.07</td>
<td>3.42</td>
<td>4.84</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p [psi] (p&lt;sub&gt;max&lt;/sub&gt; = 75 psi)</th>
<th>15</th>
<th>30</th>
<th>Liters per min.</th>
<th>2 bar</th>
<th>45</th>
<th>5.92</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>300°</td>
<td>18</td>
<td>18</td>
<td>18</td>
<td>18</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>

Efficiency class 2
Rotating cleaning nozzle PVDF
MicroWhirly
Series 500.191

Features:
• Designed for work in a corrosive environment
• Suitable for contact with food and the application of foam
• Very good price-performance ratio
• Made entirely of PVDF

Technical data:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum operating temperature</td>
<td>203 °F</td>
</tr>
<tr>
<td>Maximum ambient temperature</td>
<td>302 °F</td>
</tr>
<tr>
<td>Material</td>
<td>PVDF</td>
</tr>
<tr>
<td>Weight</td>
<td>0.03–0.07 lbs</td>
</tr>
<tr>
<td>Steam suitability</td>
<td>Not suitable</td>
</tr>
<tr>
<td>Insertion diameter</td>
<td>1.18 in</td>
</tr>
<tr>
<td>Surface quality</td>
<td>Ra ≤ 1.6 µm</td>
</tr>
<tr>
<td>Recommended filter</td>
<td>Line strainer with a mesh size of 0.3 mm/50 mesh</td>
</tr>
<tr>
<td>Recommended operating pressure</td>
<td>30 psi</td>
</tr>
</tbody>
</table>

Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

Overview of maximum tank diameter depending on pressure
## Standard version with female thread

<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Ordering number</th>
<th>Narrowest free cross section Ø [in]</th>
<th>V water [gal/min] p [psi] (p(_{\text{max}} = 75 \text{ psi}))</th>
<th>Max. tank diameter [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>180°</td>
<td>500.191.5E.02</td>
<td>0.09</td>
<td>2.47 3.49 13 4.28 2</td>
<td></td>
</tr>
<tr>
<td>180°</td>
<td>500.191.5E.01</td>
<td>0.09</td>
<td>2.47 3.49 13 4.28 2</td>
<td></td>
</tr>
<tr>
<td>270°</td>
<td>500.191.5E.31</td>
<td>0.09</td>
<td>3.80 5.37 20 6.58 3</td>
<td></td>
</tr>
<tr>
<td>360°</td>
<td>500.191.5E.00</td>
<td>0.09</td>
<td>3.80 5.37 20 6.58 3</td>
<td></td>
</tr>
</tbody>
</table>

## Compact version with male thread

<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Order no.</th>
<th>Narrowest cross-section Ø [in]</th>
<th>V water [gal/min] p [bar] (p(_{\text{max}} = 75 \text{ psi}))</th>
<th>Max. tank diameter [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>180°</td>
<td>500.191.5E.21</td>
<td>0.09</td>
<td>2.47 3.49 13 4.28 2</td>
<td></td>
</tr>
<tr>
<td>360°</td>
<td>500.191.5E.22</td>
<td>0.09</td>
<td>3.80 5.37 20 6.58 3</td>
<td></td>
</tr>
</tbody>
</table>

## Information on operation

The PVDF MicroWhirly is not suitable for operation with compressed air or another gas. Use above the recommended pressure will have a negative effect on the cleaning result and wear.
Rotating cleaning nozzle NanoSpinner 2
Series 5M1

Features:
- Compact design for confined spaces
- Hygienic design
- Suitable for high temperatures
- Made entirely of stainless steel

Technical data:

- Maximum operating temperature: 203 °F (ATEX)
- Maximum ambient temperature: 392 °F
- Installation: Operation in every installation position
- Bearing: Double ball bearing made of stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)
- Material: Stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)
- Weight: .04 lbs
- Surface quality: Ra ≤ 0.4 µm outside, Ra ≤ 0.8 µm inside
- Insertion diameter: .67-1.34 in
- Recommended filter: Line strainer with a mesh size of 0.1 mm/170 mesh
- Recommended operating pressure: 30 psi

Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

Overview of maximum tank diameter depending on pressure

<table>
<thead>
<tr>
<th>Pressure [psi]</th>
<th>Max. tank diameter [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5M1.879</td>
</tr>
<tr>
<td></td>
<td>5M1.929</td>
</tr>
</tbody>
</table>
### Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0°</td>
<td>1/8 Female NPT</td>
<td>5M1.879.1Y</td>
<td>BB TF04</td>
<td>0.016</td>
<td>2.85</td>
<td>4.03</td>
<td>15</td>
</tr>
<tr>
<td>90°</td>
<td>1/8 Female NPT</td>
<td>5M1.929.1Y</td>
<td>BB TF04</td>
<td>0.020</td>
<td>3.80</td>
<td>5.37</td>
<td>20</td>
</tr>
</tbody>
</table>

* The connection variant TF05 is not available as an ATEX variant.

### Information on slip-on connection

Cotter pin made of stainless steel 1.4404 (316L) included (Order no. 05M.130.1Y.00.00). For version made of 2.4602 (Alloy 22), bolt with head incl. cotter pin included (Order no. 05M.131.21.00.00).

- Depending on the adapter diameter, the flow rate may increase due to the leakage between the adapter and rotating cleaning nozzle.

### Ordering example with ATEX approval. FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:
- II 1G Ex h IIB T6...T2 Ga
- II 1D Ex h IIIC T85 °C...T250 °C Da

Important

The code for the connection changes for the ATEX version with slip-on connection.

Ordering example for slip-on connection: 5M1.879.1Y.T0.EX

<table>
<thead>
<tr>
<th>Type</th>
<th>Material no.</th>
<th>Connection</th>
<th>ATEX</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5M1.879.1Y.BB</td>
<td>1Y</td>
<td>BB</td>
<td>EX</td>
<td>5M1.879.1Y.BB.EX</td>
</tr>
</tbody>
</table>
Features:
- Hygienic design
- Suitable for high temperatures
- Made entirely of stainless steel

Technical data:
- Maximum operating temperature
  - 392 °F
  - 203 °F (ATEX)
- Maximum ambient temperature
  - 482 °F
  - 392 °F (ATEX)
- Installation
  - Operation in every installation position
- Bearing
  - Double ball bearing made of stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)
- Surface quality
  - Inner surface
    - Ra ≤ 0.4 µm
  - Outer surface
    - Ra ≤ 0.8 µm
- Weight
  - Threaded: 0.15 lbs
  - Slip-on: 0.23 lbs
- Surface quality
  - Inner surface
    - Ra ≤ 0.4 µm
  - Outer surface
    - Ra ≤ 0.8 µm
- Steam suitability
  - Conditionally suitable
- Insertion diameter
  - 1.10–1.89 in
- Recommended filter
  - Line strainer with a mesh size of 0.1 mm/170 mesh
- Recommended operating pressure
  - 30 psi
- Adapter
  - 3/8 BSPP is compatible with HygienicFit

Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

Overview of maximum tank diameter depending on pressure

Series 5M2
### Dimensions of slip-on connection according to ASME-BPE (OD tube)

**Insertion diameter of slip-on connection**
- Stainless steel 1.4404 (316L)
- 2.4602 (Alloy 22)

**BSPP thread, weld-on and further slip-on versions on request.**

**Important**
- The code for the connection changes for the ATEX version with slip-on connection.

**Ordering example with ATEX approval.**

**Unit group/Category/Zones:**
- II 1G Ex h IIB T6...T2 Ga
- II 1D Ex h IIIC T85 °C...T250 °C Da

**Important**
- The code for the connection changes for the ATEX version with slip-on connection.

**Ordering example for slip-on connection:** 5M2.952.1Y.BF.EX

---

### Table: Spray Angle, Mat. no., Connection, V water [gal/min], p [psi] (p<sub>max</sub> = 100 psi), Max. tank diameter [ft]

<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Type</th>
<th>1Y Mat. no.</th>
<th>21 Mat. no.</th>
<th>Connection</th>
<th>Narrowest free cross section Ø [in]</th>
<th>V water [gal/min]</th>
<th>p [psi]</th>
<th>Max. tank diameter [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>60°</td>
<td>5M2.952</td>
<td>1Y</td>
<td>21</td>
<td>BF</td>
<td>1/2&quot;-Slip-on</td>
<td>0.06</td>
<td>4.37</td>
<td>6.18</td>
</tr>
<tr>
<td></td>
<td>5M2.042</td>
<td>1Y</td>
<td>21</td>
<td>BF</td>
<td>1/2&quot;-Slip-on</td>
<td>0.12</td>
<td>7.60</td>
<td>10.75</td>
</tr>
<tr>
<td>180°</td>
<td>5M2.004</td>
<td>1Y</td>
<td>21</td>
<td>BF</td>
<td>1/2&quot;-Slip-on</td>
<td>0.04</td>
<td>6.08</td>
<td>8.60</td>
</tr>
<tr>
<td></td>
<td>5M2.969</td>
<td>1Y</td>
<td>21</td>
<td>BF</td>
<td>1/2&quot;-Slip-on</td>
<td>0.03</td>
<td>4.75</td>
<td>6.72</td>
</tr>
<tr>
<td></td>
<td>5M2.049</td>
<td>1Y</td>
<td>21</td>
<td>BF</td>
<td>1/2&quot;-Slip-on</td>
<td>0.04</td>
<td>7.41</td>
<td>10.48</td>
</tr>
</tbody>
</table>

---

### Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.

**Ordering number**

\[ \text{Type} + \text{Material no.} + \text{Connection} = \text{Order no.} \]

<table>
<thead>
<tr>
<th>Type</th>
<th>Material no.</th>
<th>Connection</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5M2.952</td>
<td>1Y</td>
<td>BF</td>
<td>5M2.952.1Y.BF</td>
</tr>
</tbody>
</table>
Rotating cleaning nozzle MiniSpinner 2
Series 5M3

Features:
- Hygienic design
- Suitable for high temperatures
- Made entirely of stainless steel

Technical data:

- Maximum operating temperature:
  - 392 °F
  - 203 °F (ATEX)

- Maximum ambient temperature:
  - 482 °F
  - 392 °F (ATEX)

- Material: Stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)

- Weight:
  - Threaded: 0.55 lbs
  - Slip-on: 0.75 lbs

- Insertion diameter: 1.54–2.28 in

- Surface quality:
  - Ra ≤ 0.4 µm

- Recommended filter: Line strainer with a mesh size of 0.1 mm/170 mesh

- Recommended operating pressure: 30 psi

- Adapter: 1/2 BSPP and 3/4 BSPP are compatible with HygienicFit

- Steam suitability: Conditionally suitable

- Insertion diameter: 1.54–2.28 in

Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

Overview of maximum tank diameter depending on pressure

- Observation: The graph shows the relationship between pressure and max. tank diameter. The max. tank diameter increases with increasing pressure, reaching a maximum at around 60 psi for the 5M3.209 model and 75 psi for the 5M3.999 model.

- Conclusion: Based on the graph, it can be inferred that selecting the appropriate operating pressure is crucial for maximizing the cleaning efficiency of the MiniSpinner 2 Series 5M3.

- Recommendation: Manufacturers and users should consider the specific requirements of their cleaning process and the type of soiling encountered to determine the optimal operating pressure for maximum tank diameter.
Dimensions of slip-on connection according to ASME-BPE (OD tube)

**Insertion diameter of slip-on connection**
- Stainless steel 1.4404 (316L)
- Insertion diameter: Ø 1.54
- Flats: 32

**Insertion diameter of slip-on connection**
- 2.4602 (Alloy 22)
- Insertion diameter: Ø 1.54
- Flats: 32

Efficiency class 2
### Unit group/Category/Zones:

- **II 1G Ex h IIB T6…T2 Ga**
- **II 1D Ex h IIIC T85 °C...T250 °C Da**

### Ordering example with ATEX approval.

**FDA and (EC) 1935/2004 conformity.**

**All materials are suitable for contact with food.**

<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Type</th>
<th>Material no.</th>
<th>Connection</th>
<th>Narrowest free cross section Ø [m]</th>
<th>V water [gal/min]</th>
<th>Max. tank diameter [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>60°</td>
<td>5M3.122.1Y</td>
<td>●</td>
<td>BH</td>
<td>TF07</td>
<td>0.102</td>
<td>11.97</td>
</tr>
<tr>
<td>180°</td>
<td>5M3.133.1Y</td>
<td>●</td>
<td>BL</td>
<td>TF07</td>
<td>0.047</td>
<td>12.73</td>
</tr>
<tr>
<td>180°</td>
<td>5M3.134.1Y</td>
<td>●</td>
<td>BL</td>
<td>TF07</td>
<td>0.061</td>
<td>12.73</td>
</tr>
<tr>
<td>360°</td>
<td>5M3.999.1Y</td>
<td>●</td>
<td>BL</td>
<td>TF07</td>
<td>0.016</td>
<td>5.70</td>
</tr>
<tr>
<td></td>
<td>5M3.089.1Y</td>
<td>●</td>
<td>BL</td>
<td>TF07</td>
<td>0.028</td>
<td>9.31</td>
</tr>
<tr>
<td></td>
<td>5M3.139.1Y</td>
<td>●</td>
<td>BL</td>
<td>TF07</td>
<td>0.031</td>
<td>13.11</td>
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<tr>
<td></td>
<td>5M3.209.1Y</td>
<td>●</td>
<td>BL</td>
<td>TF07</td>
<td>0.059</td>
<td>19.00</td>
</tr>
</tbody>
</table>

**Type + Material no. + Connection = Order no.**

- **5M3.122 + 1Y + BH = 5M3.122.1Y.BH**

### Information slip-on connection

- **Pin made of stainless steel 316L included (Ordering no. 05M.330.1Y.00.00.0).**
- **Depending on diameter of the adapter, the flow rate increase due to leakage between connecting pipe and rotating cleaning nozzle.**
- **Minimum insertion diameter (with mounted pin) is 2.32 in.**

---

**BSPP thread, weld-on and further slip-on versions on request.**

The max. tank diameter shown above applies for the recommended operating pressure and has to be seen as a recommendation. The cleaning result is also affected by the type of soiling.

**Operating with compressed air only for short-term usage. Operation above the recommended operating pressure has negative effects on the cleaning result and wear.**

---

**Ordering example with FDA and (EC) 1935/2004 conformity.**

<table>
<thead>
<tr>
<th>Type</th>
<th>Material no.</th>
<th>Connection</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5M3.122</td>
<td>1Y</td>
<td>BH</td>
<td>5M3.122.1Y.BH</td>
</tr>
</tbody>
</table>

---

**Important**

The code for the connection changes for the ATEX version with slip-on connection.

**Ordering example with slip-on connection:** 5M3.122.1Y.T2.EX

---

**Type + Material no. + Connection + ATEX = Order no.**

- **5M3.122 + 1Y + BH + EX = 5M3.122.1Y.BH.EX**

---

**52**
Rotating cleaning nozzle MaxiSpinner 2
Series 5M4

Features:
- Hygienic design
- Suitable for high temperatures
- Made entirely of stainless steel

Technical data:

- **Maximum operating temperature**: 392 °F (203 °F (ATEX))
- **Maximum ambient temperature**: 482 °F (392 °F (ATEX))
- **Installation**: Operation in every installation position
- **Bearing**: Double ball bearing made of stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)
- **Material**: Stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)
- **Weight**:
  - 1 1/4" threaded: 2.43 lbs
  - 1 1/2" threaded: 3.75 lbs
  - 1 1/2" slip-on: 3.3 lbs
  - 2" slip-on: 2.87 lbs
- **Surface quality**: Ra ≤ 0.4 µm (outside), Ra ≤ 0.8 µm (inside)
- **Steam suitability**: Conditionally suitable
- **Insertion diameter**: 2.72 in
- **Recommended filter**: Line strainer with a mesh size of 0.1 mm/170 mesh
- **Recommended operating pressure**: 30 psi
- **Adapter**: 1 1/4 BSPP and 1 1/2 BSPP are compatible with HygienicFit

Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

Overview of maximum tank diameter depending on pressure
The code for the connection changes for the ATEX version with slip-on connection. Ordering example for 1 1/2” slip-on connection: 5M4.253.1Y.T5.EX

Ordering example for 2” slip-on connection: 5M4.253.1Y.AQ.EX

All materials are suitable for contact with food.

Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.
**Rotating cleaning nozzle PTFE Whirly**

**Series 573/583**

**Features:**
- Made entirely of PTFE
- Slip-on connection conforms to 3-A
- Suitable for corrosive environments
- Suitable for very hygienic requirements (e.g., contact with food)

**Technical data:**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum operating temperature</strong></td>
<td>203 °F</td>
</tr>
<tr>
<td><strong>Maximum ambient temperature</strong></td>
<td>392 °F</td>
</tr>
<tr>
<td><strong>Material</strong></td>
<td>PTFE</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>3/4&quot; slip-on: 0.4 lbs, 1&quot; slip-on: 1.98 lbs, 3/4&quot; slip-on: 0.4 lbs, 1&quot; slip-on: 1.98 lbs</td>
</tr>
<tr>
<td><strong>Surface quality</strong></td>
<td>Ra ≤ 0.8 µm (outside), Ra ≤ 0.8 µm (inside)</td>
</tr>
<tr>
<td><strong>Steam suitability</strong></td>
<td>Not suitable</td>
</tr>
<tr>
<td><strong>Insertion diameter</strong></td>
<td>1.05–3.09 in</td>
</tr>
<tr>
<td><strong>Recommended filter</strong></td>
<td>Line strainer with a mesh size of 0.3 mm/50 mesh</td>
</tr>
<tr>
<td><strong>Recommended operating pressure</strong></td>
<td>30 psi</td>
</tr>
</tbody>
</table>

**Max. tank diameter**

The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

---

**Overview of maximum tank diameter depending on pressure**

- 583.119
- 583.349
1" slip-on connection pin 1 (3-A-compliant)
Dimensions of slip-on connection according to ASME-BPE (OD tube)

1" slip-on connection pin 2 (3-A-compliant)
Dimensions of slip-on connection according to ASME-BPE (OD tube)

Insertion diameter of slip-on connection according to ASME-BPE (OD tube)

3/4" slip-on connection pin 2 (3-A-compliant)
Dimensions of slip-on connection according to ASME-BPE (OD tube)

3/4 BSPP Flats
25.4 (1")

1 BSPP Flats
25.4 (1")

Insertion diameter of slip-on connection according to ASME-BPE (OD tube)

3/4 BSPP
21.9
74

1 BSPP
20.7
100

Efficiency class
2
### Ordering Type + Connection = Order no.

*example: 583.116.55 + BL = 583.116.55.BL*

BSPP thread available on request.

* Complies with and is authorized to use with

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.

The cleaning result is also affected by the type of soiling.

Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

**Information about slip-on connections**

- Pin made of stainless steel 316L supplied (Ordering no. Pin 1: 095.013.17.06.60, Pin 2: 095.013.17.06.61).
- Depending on the diameter of the adapter, the flow rate can increase due to a leakage between the adapter and the rotating cleaning nozzle.

<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Ordering number</th>
<th>Connection</th>
<th>Narrowest free cross section (\text{Ø} \text{[in]})</th>
<th>(\dot{V}) water [gal/min]</th>
<th>p [psi] ((p_{\text{max}} = 85 \text{ psi}))</th>
<th>Pin</th>
<th>Max. tank diameter [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>180°</td>
<td>583.114.55</td>
<td>BL TF07*</td>
<td>.083</td>
<td>12.73</td>
<td>18.00</td>
<td>67</td>
<td>22.05</td>
</tr>
<tr>
<td></td>
<td>583.264.55</td>
<td>BL TF07*</td>
<td>.129</td>
<td>27.55</td>
<td>38.95</td>
<td>145</td>
<td>47.71</td>
</tr>
<tr>
<td></td>
<td>583.344.55</td>
<td>BN</td>
<td>.279</td>
<td>42.74</td>
<td>60.45</td>
<td>225</td>
<td>74.03</td>
</tr>
<tr>
<td>180°</td>
<td>573.114.55</td>
<td>BL TF07*</td>
<td>.083</td>
<td>12.73</td>
<td>18.00</td>
<td>67</td>
<td>22.05</td>
</tr>
<tr>
<td></td>
<td>573.264.55</td>
<td>BL TF07*</td>
<td>.129</td>
<td>27.55</td>
<td>38.95</td>
<td>145</td>
<td>47.71</td>
</tr>
<tr>
<td></td>
<td>573.344.55</td>
<td>BN</td>
<td>.279</td>
<td>42.74</td>
<td>60.45</td>
<td>225</td>
<td>74.03</td>
</tr>
<tr>
<td>270°</td>
<td>583.116.55</td>
<td>BL TF07*</td>
<td>.090</td>
<td>12.73</td>
<td>18.00</td>
<td>67</td>
<td>22.05</td>
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<tr>
<td></td>
<td>583.266.55</td>
<td>BL TF07*</td>
<td>.133</td>
<td>27.55</td>
<td>38.95</td>
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<td>47.71</td>
</tr>
<tr>
<td></td>
<td>583.346.55</td>
<td>BN TF10*</td>
<td>.232</td>
<td>42.74</td>
<td>60.45</td>
<td>225</td>
<td>74.03</td>
</tr>
<tr>
<td>270°</td>
<td>573.116.55</td>
<td>BL TF07*</td>
<td>.090</td>
<td>12.73</td>
<td>18.00</td>
<td>67</td>
<td>22.05</td>
</tr>
<tr>
<td></td>
<td>573.226.55</td>
<td>BL TF07*</td>
<td>.133</td>
<td>27.55</td>
<td>38.95</td>
<td>145</td>
<td>47.71</td>
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<tr>
<td></td>
<td>573.346.55</td>
<td>BN TF10*</td>
<td>.232</td>
<td>42.74</td>
<td>60.45</td>
<td>225</td>
<td>74.03</td>
</tr>
<tr>
<td>360°</td>
<td>583.119.55</td>
<td>BL TF07*</td>
<td>.070</td>
<td>11.02</td>
<td>15.58</td>
<td>58</td>
<td>19.08</td>
</tr>
<tr>
<td></td>
<td>583.209.55</td>
<td>BL TF07*</td>
<td>.145</td>
<td>19.00</td>
<td>26.87</td>
<td>100</td>
<td>32.90</td>
</tr>
<tr>
<td></td>
<td>583.269.55</td>
<td>BL TF07*</td>
<td>.190</td>
<td>27.55</td>
<td>38.95</td>
<td>145</td>
<td>47.71</td>
</tr>
<tr>
<td></td>
<td>583.279.55</td>
<td>BN TF10*</td>
<td>.150</td>
<td>28.49</td>
<td>40.30</td>
<td>150</td>
<td>49.35</td>
</tr>
<tr>
<td></td>
<td>583.349.55</td>
<td>BN TF10*</td>
<td>.220</td>
<td>42.74</td>
<td>60.45</td>
<td>225</td>
<td>74.03</td>
</tr>
</tbody>
</table>

BSP thread available on request.

* Complies with and is authorized to use with

Information about slip-on connections

- Pin made of stainless steel 316L supplied (Ordering no. Pin 1: 095.013.17.06.60, Pin 2: 095.013.17.06.61).
- Depending on the diameter of the adapter, the flow rate can increase due to a leakage between the adapter and the rotating cleaning nozzle.
Efficiency class

2
CLEANING EFFICIENCY CLASS 3
LIGHT TO MEDIUM SOILING

<table>
<thead>
<tr>
<th>Type</th>
<th>Rotating cleaner, free-spinning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning effect</td>
<td></td>
</tr>
<tr>
<td>Drive</td>
<td>By the medium</td>
</tr>
<tr>
<td>Typical soiling</td>
<td>More viscous substances such as chocolate sauce</td>
</tr>
<tr>
<td>Nozzle design</td>
<td>Special flat fan geometry with direct impact on the entire tank surface</td>
</tr>
</tbody>
</table>
Efficiency class 3
Features:
- Cleaning with highly effective flat jets
- Good cleaning effect even at low pressure
- Suitable for the application of foam

Technical data:

- **Maximum operating temperature**: 302 °F
- **Maximum ambient temperature**: 302 °F
- **Installation**: Operation in every installation position
- **Bearing**: Slide bearing made of PEEK
- **Material**: Stainless steel 1.4404 (316L), PEEK, version with slip-on connection: O-ring made of EPDM
- **Steam suitability**: Suitable
- **Weight**:
  - 3/8" 0.21 lbs
  - 3/4" 0.64 lbs
- **Surface quality**:
  - Ra ≤ 0.8 µm
- **Recommended filter**: Line strainer with a mesh size of 0.3 mm/50 mesh
- **Recommended operating pressure**: 45 psi

Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soil- ing is also decisive for the cleaning result.

Overview of maximum tank diameter depending on pressure

![Graph showing max. tank diameter vs. pressure for Series 594/595]
Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

Information about slip-on connections
- Pin made of stainless steel 316L supplied (Ordering no.: 095.022.1Y.50.94.E).
- Depending on the diameter of the adapter, the flow rate can increase due to a leakage between the adapter and the rotating cleaning nozzle.

### Ordering Type + Connection = Order no.

<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Type</th>
<th>Connection</th>
<th>3/8&quot; Female BSPP</th>
<th>3/4&quot; Female BSPP</th>
<th>3/4&quot; slip-on</th>
<th>Narrowest free cross section Ø [in]</th>
<th>( \dot{V} ) water [gal/min] p [psi] (p(_{\text{max}} = 75) psi)</th>
<th>Max. tank diameter [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>360°</td>
<td>594.829.1Y</td>
<td>AF</td>
<td>67</td>
<td>0.07</td>
<td>1.48 2.17 3.07</td>
<td>3.76 14 4.96</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>594.879.1Y</td>
<td>AF</td>
<td>67</td>
<td>0.10</td>
<td>1.91 2.79 3.96</td>
<td>4.84 18 6.24</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>595.009.1Y</td>
<td>AF</td>
<td>67</td>
<td>0.16</td>
<td>4.13 6.05 8.56</td>
<td>10.48 39 13.53</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>595.049.1Y</td>
<td>AF</td>
<td>67</td>
<td>0.17</td>
<td>5.19 7.60 10.75</td>
<td>13.16 49 17.00</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>595.139.1Y</td>
<td>AL</td>
<td>67</td>
<td>2.00</td>
<td>8.69 12.72 17.99</td>
<td>22.03 82 28.44</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

NPT thread available on request.

Ordering Type + Connection = Order no.

example: 594.829.1Y + AF = 594.829.1Y.AF
Rotating cleaning nozzle Whirly 2
Series 5W9

Features:
- Popular hygienic design
- Cleaning with effective flat fan jets
- Flexible connection options
- Available with many different flow rates and spray angles

Technical data:
- Maximum operating temperature
  302 °F
  203 °F (ATEX)
- Maximum ambient temperature
  392 °F
  284 °F (ATEX)
- Installation
  Operation in every installation position
- Bearing
  Double ball bearing made of stainless steel
- Material
  Stainless steel 1.4404 (316L), PEEK
- Weight
  3/4" threaded: 0.66 lbs
  3/4" slip-on: 0.88 lbs
  1" slip-on: 1.10 lbs
  1 1/2" slip-on: 2.05 lbs
- Surface quality
  Ra ≤ 0.4 µm
- Surface quality
  Ra ≤ 0.8 µm
- Steam suitability
  Not suitable
- Insertion diameter
  2.74 in.
- Recommended filter
  Line strainer with a mesh size of 0.1 mm/170 mesh
- Recommended operating pressure
  30 psi
- Adapter
  3/4 BSPP is compatible with HygienicFit

Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

Overview of maximum tank diameter depending on pressure
Dimensions slip-on connection top view

<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Ordering number</th>
<th>Connection</th>
<th>Narrowest free cross section Ø [in]</th>
<th>p [psi] (p_{max} = 87 psi)</th>
<th>Max. tank diameter [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>270°</td>
<td>5W9.075.1Y BL</td>
<td>TF07 TF10 TF15</td>
<td>0.06</td>
<td>9.12</td>
<td>12.90</td>
</tr>
<tr>
<td></td>
<td>5W9.145.1Y BL</td>
<td>TF07 TF10 TF15</td>
<td>0.11</td>
<td>13.49</td>
<td>19.07</td>
</tr>
<tr>
<td></td>
<td>5W9.195.1Y BL</td>
<td>TF07 TF10 TF15</td>
<td>0.13</td>
<td>18.43</td>
<td>26.06</td>
</tr>
<tr>
<td>270°</td>
<td>5W9.076.1Y BL</td>
<td>TF07 TF10 TF15</td>
<td>0.06</td>
<td>9.12</td>
<td>12.90</td>
</tr>
<tr>
<td></td>
<td>5W9.106.1Y BL</td>
<td>TF07 TF10 TF15</td>
<td>0.10</td>
<td>11.02</td>
<td>15.58</td>
</tr>
<tr>
<td></td>
<td>5W9.196.1Y BL</td>
<td>TF07 TF10 TF15</td>
<td>0.13</td>
<td>18.43</td>
<td>26.06</td>
</tr>
<tr>
<td>360°</td>
<td>5W9.079.1Y BL</td>
<td>TF07 TF10 TF15</td>
<td>0.06</td>
<td>9.12</td>
<td>12.90</td>
</tr>
<tr>
<td></td>
<td>5W9.149.1Y BL</td>
<td>TF07 TF10 TF15</td>
<td>0.09</td>
<td>13.49</td>
<td>19.07</td>
</tr>
<tr>
<td></td>
<td>5W9.199.1Y BL</td>
<td>TF07 TF10 TF15</td>
<td>0.12</td>
<td>18.43</td>
<td>26.06</td>
</tr>
<tr>
<td></td>
<td>5W279.1Y BL</td>
<td>TF07 TF10 TF15</td>
<td>0.14</td>
<td>27.55</td>
<td>38.95</td>
</tr>
</tbody>
</table>

**Information about slip-on connections**
- Pin made of stainless steel 316L supplied (Ordering no.: 095.013.1Y.06.72.0).
- Depending on the diameter of the adapter, the flow rate can increase due to a leakage between the adapter and the rotating cleaning nozzle.
- Minimum insertion diameter (with mounted pin) is 2.68 in.

**Ordering example with FDA and (EC) 1935/2004 conformity.**

All materials are suitable for contact with food.

<table>
<thead>
<tr>
<th>Type</th>
<th>Connection</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5W9.075.1Y</td>
<td>BL</td>
<td>5W9.075.1Y.BL</td>
</tr>
</tbody>
</table>

**Ordering example with ATEX approval. FDA and (EC) 1935/2004 conformity.**

Unit group/Category/Zones:
- II 1G Ex h IIIB 16...3 Ga
- II 1D Ex h IIIC T85 °C...T170 °C Da

**Important**
The code for the connection changes for the ATEX version with slip-on connection.

Ordering example for 3/4” slip-on connection:
5W9.075.1Y.T2.EX

Ordering example for 1” slip-on connection:
5W9.075.1Y.T3.EX

<table>
<thead>
<tr>
<th>Type</th>
<th>Connection</th>
<th>ATEX</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5W9.075.1Y</td>
<td>BL</td>
<td>EX</td>
<td>5W9.075.1Y.BL.EX</td>
</tr>
</tbody>
</table>
Rotating cleaning nozzle Gyro
Series 577

Features:
- Cleaning with powerful nozzle inserts
- Suitable for very large tanks
- Available with a wide range of flow rates
- Non clogging and large free cross sections

Technical data:

- **Maximum operating temperature**: 203 °F
- **Maximum ambient temperature**: 392 °F
- **Installation**: Vertically downwards
- **Bearing**: Slide bearing made of PTFE
- **Material**: Stainless steel 1.4404 (316L), PTFE
- **Weight**:
  - 1" 1.62 lbs
  - 2" 4.19 lbs
- **Surface quality**:
  - Ra ≤ 0.8 µm outside
  - Ra ≤ 4.0 µm inside
- **Steam suitability**: Conditionally suitable
- **Insertion diameter**: 4.65–6.14 in
- **Recommended filter**: Line strainer with a mesh size of 0.3 mm/50 mesh
- **Recommended operating pressure**: 45 psi

Note: The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

Overview of maximum tank diameter depending on pressure: 577.289, 577.499
### Ordering Type + Connection = Order no.

Example: 577.283.1Y + BN = 577.283.1Y.BN

<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Type</th>
<th>Connection</th>
<th>1&quot; Female NPT</th>
<th>2&quot; Female NPT</th>
<th>V water [gal/min]</th>
<th>p [psi] (p&lt;sub&gt;max&lt;/sub&gt; = 75 psi)</th>
<th>Max. tank diameter [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>360°</td>
<td>577.289.1Y</td>
<td>BN</td>
<td>31.02</td>
<td>43.87</td>
<td>53.73</td>
<td>200</td>
<td>69.37</td>
</tr>
<tr>
<td></td>
<td>577.369.1Y</td>
<td>BN</td>
<td>49.01</td>
<td>69.32</td>
<td>84.89</td>
<td>316</td>
<td>109.60</td>
</tr>
<tr>
<td></td>
<td>577.409.1Y</td>
<td>BW</td>
<td>61.11</td>
<td>86.43</td>
<td>105.85</td>
<td>394</td>
<td>136.65</td>
</tr>
<tr>
<td></td>
<td>577.439.1Y</td>
<td>BW</td>
<td>73.37</td>
<td>103.75</td>
<td>127.07</td>
<td>473</td>
<td>164.05</td>
</tr>
<tr>
<td></td>
<td>577.499.1Y</td>
<td>BW</td>
<td>102.22</td>
<td>144.55</td>
<td>177.04</td>
<td>659</td>
<td>228.56</td>
</tr>
</tbody>
</table>

BSP thread available on request.

Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

The PTFE bearings can be replaced easily to extend the life of the unit. A rebuild kit contains: Bearing sleeves and complete instructions.

<table>
<thead>
<tr>
<th>Size</th>
<th>Product code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&quot;</td>
<td>057.701.55.01</td>
</tr>
<tr>
<td>2&quot;</td>
<td>057.702.55.01</td>
</tr>
</tbody>
</table>

### Contents of Gyro rebuild kit

- Bearing sleeves
- Complete instructions
## CLEANING EFFICIENCY CLASS 4
### MEDIUM TO HEAVY SOILING

<table>
<thead>
<tr>
<th>Type</th>
<th>Rotating cleaner, controlled rotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning effect</td>
<td>By the medium, drive unit with turbine and gear unit</td>
</tr>
<tr>
<td>Typical soiling</td>
<td>Medium soiling such as high-viscosity creams</td>
</tr>
<tr>
<td>Nozzle design</td>
<td>Special flat fan nozzle inserts with direct impact on the entire tank surface</td>
</tr>
</tbody>
</table>
Rotating cleaning nozzle
XactClean HP 2
Series 5S6/5S7

Features:

- Flat fan nozzle with high impact
- Uniform cleaning
- High efficiency due to controlled rotation
- Suitable for use with steam

Technical data:

- Maximum operating temperature: 302 °F
- Maximum ambient temperature: 302 °F
- Material: Stainless steel 1.4404 (516L), PEEK, EPDM
- Weight: 1.43 lbs - 1.98 lbs
- Insertion diameter: 3.19–5.51 in
- Recommended filter: Line strainer with a mesh size of 0.3 mm/50 mesh
- Adapter: 3/8 BSPP, 1/2 BSPP, 3/4 BSPP and 1 BSPP are compatible with HygienicFit
- Surface quality: Ra ≤ 0.8 µm
- Surface quality: Ra ≤ 1.6 µm
- Installation: Operation in every installation position
- Bearing: Double ball bearing
- Material: Stainless steel 1.4404 (316L), PEEK, EPDM
- Weight: 1.43 lbs - 1.98 lbs
- Insertion diameter: 3.19–5.51 in
- Recommended filter: Line strainer with a mesh size of 0.3 mm/50 mesh
- Adapter: 3/8 BSPP, 1/2 BSPP, 3/4 BSPP and 1 BSPP are compatible with HygienicFit
- Surface quality: Ra ≤ 0.8 µm
- Surface quality: Ra ≤ 1.6 µm
- Installation: Operation in every installation position
- Bearing: Double ball bearing

Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

Overview of maximum tank diameter depending on pressure

Series 5S6/5S7

Scan for Video
**Dimensions of 1/2" slip-on connection according to ASME-BPE (OD tube)**

<table>
<thead>
<tr>
<th>Connection</th>
<th>Dimensions [in]</th>
<th>Insertion diameter D₁</th>
<th>Interference circle diameter D₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>BF 3/8 NPT</td>
<td>L₁ = 5.55, L₂ = 0.35</td>
<td>1.97–2.60</td>
<td>1.97–2.64</td>
</tr>
<tr>
<td>BH 1/2 NPT</td>
<td>L₁ = 5.63, L₂ = 0.51</td>
<td>1.97–2.91</td>
<td>1.97–2.99</td>
</tr>
<tr>
<td>BL 3/4 NPT</td>
<td>L₁ = 5.63, L₂ = 0.52</td>
<td>1.97–3.11</td>
<td>1.97–3.19</td>
</tr>
<tr>
<td>BN 1 NPT</td>
<td>L₁ = 5.51, L₂ = 0.65</td>
<td>2.01–3.11</td>
<td>2.09–3.15</td>
</tr>
<tr>
<td>TF05 1/2&quot; slip-on connection</td>
<td>L₁ = 5.91, L₂ = 0.63</td>
<td>2.05–2.60</td>
<td>1.97–2.64</td>
</tr>
<tr>
<td>TF07 3/4&quot; slip-on connection</td>
<td>L₁ = 6.30, L₂ = 1.18</td>
<td>2.60–3.11</td>
<td>1.97–3.19</td>
</tr>
</tbody>
</table>

**Dimensions of 3/4" slip-on connection according to ASME-BPE (OD tube)**

<table>
<thead>
<tr>
<th>Connection</th>
<th>Dimensions [in]</th>
<th>Insertion diameter D₁</th>
<th>Interference circle diameter D₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>BF 3/8 NPT</td>
<td>L₁ = 5.55, L₂ = 0.35</td>
<td>1.97–2.60</td>
<td>1.97–2.64</td>
</tr>
<tr>
<td>BH 1/2 NPT</td>
<td>L₁ = 5.63, L₂ = 0.51</td>
<td>1.97–2.91</td>
<td>1.97–2.99</td>
</tr>
<tr>
<td>BL 3/4 NPT</td>
<td>L₁ = 5.63, L₂ = 0.52</td>
<td>1.97–3.11</td>
<td>1.97–3.19</td>
</tr>
<tr>
<td>BN 1 NPT</td>
<td>L₁ = 5.51, L₂ = 0.65</td>
<td>2.01–3.11</td>
<td>2.09–3.15</td>
</tr>
<tr>
<td>TF05 1/2&quot; slip-on connection</td>
<td>L₁ = 5.91, L₂ = 0.63</td>
<td>2.05–2.60</td>
<td>1.97–2.64</td>
</tr>
<tr>
<td>TF07 3/4&quot; slip-on connection</td>
<td>L₁ = 6.30, L₂ = 1.18</td>
<td>2.60–3.11</td>
<td>1.97–3.19</td>
</tr>
</tbody>
</table>

**Spray angle, Order number, Connection, Narrowest cross-section Ø [in], V water [gal/min], Max. tank diameter [ft]**

<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Type</th>
<th>Connection</th>
<th>Narrowest cross-section Ø [in]</th>
<th>V water [gal/min]</th>
<th>Max. tank diameter [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>180°</td>
<td>5S6.963.1Y BF BH</td>
<td>TF05</td>
<td>0.07</td>
<td>6.80</td>
<td>8.33</td>
</tr>
<tr>
<td></td>
<td>5S7.043.1Y BH</td>
<td>TF07</td>
<td>0.08</td>
<td>10.97</td>
<td>13.43</td>
</tr>
<tr>
<td></td>
<td>5S7.113.1Y BH BL</td>
<td>TF07</td>
<td>0.08</td>
<td>16.01</td>
<td>19.61</td>
</tr>
<tr>
<td></td>
<td>5S7.183.1Y BH BL</td>
<td>TF07</td>
<td>0.08</td>
<td>29.81</td>
<td>36.54</td>
</tr>
<tr>
<td></td>
<td>5S7.223.1Y BL</td>
<td>TF07</td>
<td>0.08</td>
<td>36.19</td>
<td>44.33</td>
</tr>
<tr>
<td></td>
<td>5S7.253.1Y BL BN</td>
<td>TF07</td>
<td>0.08</td>
<td>36.19</td>
<td>44.33</td>
</tr>
</tbody>
</table>

|                      | 180° | 5S6.964.1Y BF BH | TF05 | 0.07 | 6.80 | 8.33 | 31.0 | 10.75 | 14.96 | 11 |
|                      | 5S7.044.1Y BH     | TF07 | 0.08 | 10.97 | 13.43 | 50.0 | 17.34 | 24.11 | 13 |
|                      | 5S7.114.1Y BH BL  | TF07 | 0.08 | 16.01 | 19.61 | 73.0 | 25.32 | 35.20 | 19 |
|                      | 5S7.184.1Y BH BL  | TF07 | 0.08 | 29.81 | 36.54 | 136.0 | 47.17 | 65.59 | 24 |
|                      | 5S7.224.1Y BL     | TF07 | 0.08 | 36.19 | 44.33 | 165.0 | 57.23 | 79.57 | 26 |
|                      | 5S7.254.1Y BL BN  | TF07 | 0.08 | 36.19 | 44.33 | 165.0 | 57.23 | 79.57 | 26 |

|                      | 270° | 5S6.965.1Y BF BH | TF05 | 0.07 | 6.80 | 8.33 | 31.0 | 10.75 | 14.96 | 11 |
|                      | 5S7.045.1Y BH     | TF07 | 0.08 | 10.97 | 13.43 | 50.0 | 17.34 | 24.11 | 13 |
|                      | 5S7.115.1Y BH BL  | TF07 | 0.08 | 16.01 | 19.61 | 73.0 | 25.32 | 35.20 | 19 |
|                      | 5S7.185.1Y BH BL  | TF07 | 0.08 | 29.81 | 36.54 | 136.0 | 47.17 | 65.59 | 24 |
|                      | 5S7.225.1Y BL     | TF07 | 0.08 | 36.19 | 44.33 | 165.0 | 57.23 | 79.57 | 26 |
|                      | 5S7.255.1Y BL BN  | TF07 | 0.08 | 36.19 | 44.33 | 165.0 | 57.23 | 79.57 | 26 |

**Efficiency class**: 4
Ordering example with FDA
and (EC) 1935/2004 conformity.

All materials are suitable for contact
with food.

**Spray angle**

<table>
<thead>
<tr>
<th>Order number</th>
<th>Connection</th>
<th>Narrowest cross-section [in]</th>
<th>V water [gal/min]</th>
<th>Max. tank diameter [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>[Ø]</td>
<td></td>
<td>30 45 75 145</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>3/8&quot; Female NPT</th>
<th>1/2&quot; Female NPT</th>
<th>1&quot; Female NPT</th>
<th>1/2&quot; slip-on</th>
<th>3/4&quot; slip-on</th>
</tr>
</thead>
<tbody>
<tr>
<td>270°</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5S6.966.1Y</td>
<td>BF</td>
<td>BH</td>
<td>TF05</td>
<td>0.07</td>
<td>6.80</td>
</tr>
<tr>
<td>5S7.046.1Y</td>
<td>BF</td>
<td>BH</td>
<td>TF07</td>
<td>0.08</td>
<td>10.97</td>
</tr>
<tr>
<td>5S7.116.1Y</td>
<td>BF</td>
<td>BL</td>
<td>TF07</td>
<td>0.08</td>
<td>16.01</td>
</tr>
<tr>
<td>5S7.186.1Y</td>
<td>BH</td>
<td>BL</td>
<td>TF07</td>
<td>0.08</td>
<td>23.91</td>
</tr>
<tr>
<td>5S7.226.1Y</td>
<td>BL</td>
<td>TF07</td>
<td>0.08</td>
<td>29.85</td>
<td></td>
</tr>
<tr>
<td>5S7.256.1Y</td>
<td>BL</td>
<td>BN</td>
<td>TF07</td>
<td>0.08</td>
<td>36.19</td>
</tr>
<tr>
<td>360°</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5S6.969.1Y</td>
<td>BF</td>
<td>BH</td>
<td>TF05</td>
<td>0.06</td>
<td>6.80</td>
</tr>
<tr>
<td>5S7.049.1Y</td>
<td>BF</td>
<td>BH</td>
<td>TF07</td>
<td>0.08</td>
<td>10.97</td>
</tr>
<tr>
<td>5S7.119.1Y</td>
<td>BH</td>
<td>BL</td>
<td>TF07</td>
<td>0.08</td>
<td>16.01</td>
</tr>
<tr>
<td>5S7.189.1Y</td>
<td>BL</td>
<td>TF07</td>
<td>0.08</td>
<td>23.91</td>
<td></td>
</tr>
<tr>
<td>5S7.229.1Y</td>
<td>BL</td>
<td>TF07</td>
<td>0.08</td>
<td>29.85</td>
<td></td>
</tr>
<tr>
<td>5S7.259.1Y</td>
<td>BL</td>
<td>BN</td>
<td>TF07</td>
<td>0.08</td>
<td>36.19</td>
</tr>
</tbody>
</table>

BSPP thread available on request.

Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

**Information about slip-on connections**

- Pin made of stainless steel 316L supplied (Ordering no.: 095.013.1Y.06.45).
- Depending on the diameter of the adapter, the flow rate can increase due to a leakage between the adapter and the rotating cleaning nozzle.

<table>
<thead>
<tr>
<th>Type</th>
<th>Connection</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5S6.965.1Y</td>
<td>BF</td>
<td>5S6.965.1Y.BF</td>
</tr>
</tbody>
</table>

Ordering example with ATEX approval.
FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:

- 1G Ex h IIB T6...T190 °C Da
- 1D Ex h IIC T85 °C...T190 °C Da

**Important**
The code for the connection changes for the ATEX version with slip-on connection.

Ordering example for 1/2" slip-on connection:
5S6.963.1Y.T1.EX

Ordering example for 3/4" slip-on connection:
5S7.043.1Y.T2.EX

<table>
<thead>
<tr>
<th>Type</th>
<th>Connection</th>
<th>ATEX</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5S6.965.1Y</td>
<td>BF</td>
<td>EX</td>
<td>5S6.965.1Y.BF.EX</td>
</tr>
</tbody>
</table>
**Rotating cleaning nozzle XactClean HP+**

**Series 5S5**

**Features:**
- High impact and uniform cleaning due to specially developed flat fan nozzles
- Effective cleaning of larger tanks due to higher flow rates
- High dependability and operational reliability due to robust drive unit
- Compatible with Lechler rotation monitoring sensor

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**Technical data:**

- **Maximum operating temperature**
  - 302 °F

- **Material**
  - Stainless steel 1.4404 (316L), stainless steel 1.4401 (316), PEEK, EPDM

- **Weight**
  - 1" 4.05 lbs
  - 1 1/4" 3.97 lbs
  - 1 1/2" 3.58 lbs
  - 1 1/2" slip-on 3.97 lbs

- **Maximum ambient temperature**
  - 302 °F

- **Installation**
  - Operation in every installation position

- **Bearing**
  - Double ball bearing

- **Surface quality**
  - Outside: Ra ≤ 0.8 µm
  - Inside: Ra ≤ 1.6 µm

- **Steam suitability**
  - Suitable

- **Insertion diameter**
  - 3.19–5.51 in

- **Recommended filter**
  - Line strainer with a mesh size of 0.3 mm/50 mesh

- **Recommended operating pressure**
  - 45 psi

- **Adapter**
  - 1 BSPP, 1 1/4 BSPP and 1 1/2 BSPP are compatible with HygienicFit

- **Rotation monitoring**
  - Sensor-compatible, information: see pages 96–97

---

**Max. tank diameter**

The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

---

**Overview of maximum tank diameter depending on pressure**

- **Series 5S5**
  - 555.299
  - 555.399
### Dimensions of slip-on connection according to ASME-BPE (OD tube)

<table>
<thead>
<tr>
<th>Connection</th>
<th>Dimensions [in]</th>
<th>Insertion diameter</th>
<th>Interference circle diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>D₁</td>
<td>D₂</td>
<td></td>
</tr>
<tr>
<td>BN</td>
<td>1 NPT</td>
<td>7.28</td>
<td>3.19-3.62</td>
</tr>
<tr>
<td></td>
<td>3.23-3.86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BQ</td>
<td>1 1/4 NPT</td>
<td>7.28</td>
<td>3.19-3.62</td>
</tr>
<tr>
<td></td>
<td>3.23-3.86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BS</td>
<td>1 1/2 NPT</td>
<td>7.36</td>
<td>3.19-3.62</td>
</tr>
<tr>
<td></td>
<td>3.23-3.86</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Insertion diameter D₁ and interference circle diameter D₂ of the threaded connection

<table>
<thead>
<tr>
<th>Female thread</th>
<th>Ø D₁</th>
<th>Ø D₂</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ø 5.51</td>
<td>Ø 6.08</td>
</tr>
</tbody>
</table>

### Insertion diameter and interference circle diameter of the slip-on connection

<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Ordering number</th>
<th>Connection</th>
<th>Narrowest free cross section Ø [in]</th>
<th>V water [gal/min]</th>
<th>Max. tank diameter [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>180°</td>
<td>5S5.293.1Y</td>
<td>BN</td>
<td>0.12</td>
<td>44.31</td>
<td>54.27</td>
</tr>
<tr>
<td></td>
<td>5S5.323.1Y</td>
<td>BN</td>
<td>0.12</td>
<td>53.74</td>
<td>65.82</td>
</tr>
<tr>
<td></td>
<td>5S5.363.1Y</td>
<td>BN</td>
<td>0.12</td>
<td>67.12</td>
<td>82.21</td>
</tr>
<tr>
<td></td>
<td>5S5.294.1Y</td>
<td>BN</td>
<td>0.12</td>
<td>44.31</td>
<td>54.27</td>
</tr>
<tr>
<td></td>
<td>5S5.324.1Y</td>
<td>BN</td>
<td>0.12</td>
<td>53.74</td>
<td>65.82</td>
</tr>
<tr>
<td></td>
<td>5S5.364.1Y</td>
<td>BN</td>
<td>0.12</td>
<td>67.12</td>
<td>82.21</td>
</tr>
<tr>
<td></td>
<td>5S5.295.1Y</td>
<td>BN</td>
<td>0.12</td>
<td>44.31</td>
<td>54.27</td>
</tr>
<tr>
<td></td>
<td>5S5.325.1Y</td>
<td>BN</td>
<td>0.12</td>
<td>53.74</td>
<td>65.82</td>
</tr>
<tr>
<td></td>
<td>5S5.365.1Y</td>
<td>BN</td>
<td>0.12</td>
<td>67.12</td>
<td>82.21</td>
</tr>
<tr>
<td></td>
<td>5S5.296.1Y</td>
<td>BN</td>
<td>0.12</td>
<td>44.31</td>
<td>54.27</td>
</tr>
<tr>
<td></td>
<td>5S5.326.1Y</td>
<td>BN</td>
<td>0.12</td>
<td>53.74</td>
<td>65.82</td>
</tr>
<tr>
<td></td>
<td>5S5.366.1Y</td>
<td>BN</td>
<td>0.12</td>
<td>67.12</td>
<td>82.21</td>
</tr>
<tr>
<td></td>
<td>5S5.299.1Y</td>
<td>BN</td>
<td>0.12</td>
<td>44.31</td>
<td>54.27</td>
</tr>
<tr>
<td></td>
<td>5S5.329.1Y</td>
<td>BN</td>
<td>0.12</td>
<td>53.74</td>
<td>65.82</td>
</tr>
<tr>
<td></td>
<td>5S5.369.1Y</td>
<td>BN</td>
<td>0.12</td>
<td>67.12</td>
<td>82.21</td>
</tr>
<tr>
<td></td>
<td>5S5.399.1Y</td>
<td>BN</td>
<td>0.12</td>
<td>90.50</td>
<td>98.60</td>
</tr>
</tbody>
</table>

Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

**Information about slip-on connections**

- Pin made of stainless steel 316L supplied (Ordering no.: 095.013.1Y.06.45).
- Depending on the diameter of the adapter, the flow rate can increase due to a leakage between the adapter and the rotating cleaning nozzle.

**Ordering example:** 5S5.293.1Y + BN = 5S5.293.1Y.BN
### Cleaning Efficiency Class 5

**Persistent Soiling**

<table>
<thead>
<tr>
<th>Type</th>
<th>High impact tank cleaning machine, controlled rotation about two axes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning effect</td>
<td>By the medium, drive unit with turbine and gear unit</td>
</tr>
<tr>
<td>Typical soiling</td>
<td>Persistent soiling such as make-up</td>
</tr>
<tr>
<td>Nozzle design</td>
<td>Solid stream nozzles with controlled rotation about two axes, direct impact on the entire tank surface during a cleaning cycle</td>
</tr>
</tbody>
</table>
High impact tank cleaning machine
MeshClean
Series 5T2/5T3

Features:
• High degree of effectiveness due to particularly powerful solid stream nozzles
• Suitable for smaller tanks with stubborn dirt
• Active self-cleaning due to engineered nozzle design
• Low maintenance

Technical data:
- Maximum operating temperature: 302 °F (316L), PTFE, PEEK, EPDM
- Maximum ambient temperature: 302 °F (ATEX)
- Material: Stainless steel 1.4404
- Weight: 2.2 lbs
- Steam suitability: Suitable
- Insertion diameter: 2.65–3.23 in
- Recommended filter: Line strainer with a mesh size of 0.2 mm/80 mesh
- Recommended operating pressure: 75 psi
- Adapter: 3/4 BSPP is compatible with HygienicFit
- Rotation monitoring: Sensor-compatible, see pages 96–97
- Installation: Operation in every installation position
- Bearing: Ball bearing
- Surface quality: Ra ≤ 0.8 µm
- Surface quality: Ra ≤ 1.6 µm
- Bearing: Ball bearing
- Max. tank diameter: The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

Overview of maximum tank diameter depending on pressure

Duration of cleaning cycle depending on pressure
Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.

**Important**

The code for the connection changes for the ATEX version with slip-on connection.

Ordering example for 3/4" slip-on connection: 5T2.849.1Y.T2.EX

---

### Table: Dimensions and Water Flow Rate

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>360°</td>
<td>5T2.849.1Y BL TF07</td>
<td>.067</td>
<td>4 x .07</td>
<td>3.40</td>
<td>5.37</td>
<td>20</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>5T2.969.1Y BL TF07</td>
<td>.106</td>
<td>4 x .11</td>
<td>6.80</td>
<td>10.57</td>
<td>40</td>
<td>1.4</td>
</tr>
<tr>
<td></td>
<td>5T3.029.1Y BL TF07</td>
<td>.126</td>
<td>4 x .13</td>
<td>9.35</td>
<td>14.78</td>
<td>55</td>
<td>1.9</td>
</tr>
<tr>
<td></td>
<td>5T3.089.1Y BL TF07</td>
<td>.157</td>
<td>4 x .16</td>
<td>13.42</td>
<td>21.22</td>
<td>79</td>
<td>2.8</td>
</tr>
</tbody>
</table>

### Information about slip-on connections

- Pin made of stainless steel 316L supplied (Ordering no.: 095.022.1Y.50.60.E).
- Depending on the diameter of the adapter, the flow rate can increase due to a leakage between the adapter and the rotating cleaning nozzle.

---

### Ordering example with ATEX approval. FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:

- Ex II 1G Ex h IIB T6...T3 Ga
- Ex II 1D Ex h IIC T85 °C...T190 °C Da

**Important**

The code for the connection changes for the ATEX version with slip-on connection.

Ordering example for 3/4" slip-on connection: 5T2.849.1Y.T2.EX

---

### Table: Dimensions for Slip-on Connection

<table>
<thead>
<tr>
<th>Female thread</th>
<th>Slip-on connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø D₁</td>
<td>Ø D₂</td>
</tr>
<tr>
<td>30</td>
<td>17.3</td>
</tr>
<tr>
<td>30</td>
<td>17.3</td>
</tr>
<tr>
<td>Ø 19.2</td>
<td>Ø 3.3</td>
</tr>
</tbody>
</table>

### Notes

- All materials are suitable for contact with food.
- Dimensions of slip-on connection according to ASME-BPE (OD tube).
- Insertion diameter D₁ and interference circle diameter D₂ of the threaded connection.
- Insertion diameter D₁ and interference circle diameter D₂ of the slip-on connection.
High impact tank cleaning machine
MeshClean+
Series 5T5

Features:
- Powerful solid jet nozzles
- Suitable for large tanks with persistent soiling
- Active self-cleaning through special nozzle geometry
- Low maintenance

Technical data:
- Maximum operating temperature: 302 °F
  207 °F (ATEX)
- Maximum ambient temperature: 302 °F
  207 °F (ATEX)
- Installation: Operation in every installation position
- Bearing: Ball bearing
- Material: Stainless steel 1.4404 (316L), stainless steel 1.4532 (632), PTFE, PEEK, zirconium oxide, EPDM
- Weight: 8.12 lb
- Surface quality: Ra ≤ 0.8 µm
- Steam suitability: Suitable
- Insertion diameter: 5.12 in
- Recommended filter: Line strainer with a mesh size of 0.2 mm/80 mesh
- Recommended operating pressure: 75 psi
- Adapter: 1 1/2 BSPP is compatible with HygienicFit
- Rotation monitoring: Sensor-compatible
- Maintainable

Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

Duration of cleaning cycle
Overview of maximum tank diameter depending on pressure
Duration of cleaning cycle depending on pressure

Series 5T5
<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Ordering no.</th>
<th>Connection</th>
<th>Narrowest cross-section Ø nozzle [in]</th>
<th>Quantity x Ø nozzle [in]</th>
<th>V water [gal/min] p [psi] (p\text{max} = 218 psi)</th>
<th>V water [liters per min.] 5 bar</th>
<th>Max. tank diameter [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>360°</td>
<td>5T5.149.1Y</td>
<td>BS 45 TF15</td>
<td>34</td>
<td>0.17</td>
<td>4 x .17</td>
<td>18.86 23.10 29.82 111</td>
<td>3.9 50</td>
</tr>
<tr>
<td></td>
<td>5T5.219.1Y</td>
<td>BS 45 TF15</td>
<td>34</td>
<td>0.22</td>
<td>4 x .22</td>
<td>28.72 35.17 45.40 169</td>
<td>5.9 54</td>
</tr>
<tr>
<td></td>
<td>5T5.259.1Y</td>
<td>BS 45 TF15</td>
<td>34</td>
<td>0.25</td>
<td>4 x .25</td>
<td>35.51 43.49 56.15 209</td>
<td>7.4 56</td>
</tr>
<tr>
<td></td>
<td>5T5.279.1Y</td>
<td>BS 45 TF15</td>
<td>34</td>
<td>0.28</td>
<td>4 x .28</td>
<td>40.44 49.53 63.94 238</td>
<td>8.4 57</td>
</tr>
<tr>
<td></td>
<td>5T5.299.1Y</td>
<td>BS 45 TF15</td>
<td>34</td>
<td>0.31</td>
<td>4 x .31</td>
<td>45.71 55.98 72.27 269</td>
<td>9.5 55</td>
</tr>
</tbody>
</table>

BSPP thread available on request.
High impact tank cleaning machine
IntenseClean
Series 5TM

Features:
- Very robust design
- High efficiency thanks to especially powerful solid jet nozzles
- High efficiency due to gear-controlled rotation
- Proven in the petrochemical industry

Technical data:

- **Maximum operating temperature**: 203 °F (ATEX)
- **Maximum ambient temperature**: 284 °F (ATEX)
- **Material**: Stainless steel 1.4404 (316L), stainless steel 1.4301 (304), stainless steel 1.4310 (302), PTFE, PEEK
- **Weight**: 16.5 lbs
- **Surface quality**: Ra ≤ 0.8 µm outside, Ra ≤ 4.5 µm inside
- **Insertion diameter**: 6.30–9.06 in
- **Recommended filter**: Line strainer with a mesh size of 0.2 mm/80 mesh
- **Recommended operating pressure**: 75 psi
- **Rotation monitoring**: Sensor-compatible, information: see pages 96–97
- **Steam suitability**: Not suitable
- **Installation**: Operation in every installation position
- **Bearing**: Ball bearing
- **Surface quality**: Ra ≤ 0.8 µm
- **Surface quality**: Ra ≤ 4.5 µm

Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

Overview of maximum tank diameter depending on pressure

Duration of cleaning cycle depending on pressure

STM.208
STM.210
STM.406
STM.407
STM.408
STM.410
Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.

**Type** + Connection = Order no.

5TM.208.1Y + BS = 5TM.208.1Y.BS

Ordering example with ATEX approval. FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:

- II 1G Ex h IIB T6...T3 Gb
- II 1D Ex h IIC T85 °C...T150 °C Da

**Type** + ATEX = Order no.

5TM.208.1Y.BS + EX = 5TM.208.1Y.BS.EX
High pressure tank cleaning machine
PressureClean
Series 5TP

Features:
• Intense cleaning with minimal water and high pressure
• Ideal for small tanks with the persistent soiling
• Driven by an efficient 24 V motor
• “IP 65” certified motor housing
• Scope of delivery:
  - PressureClean
  - 16ft cable with matching plug and open cable end
  - Not included: power supply unit for power supply with 24 VDC/1.1 A

Technical data:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum operating temperature</td>
<td>194 °F</td>
</tr>
<tr>
<td>Maximum ambient temperature</td>
<td>122 °F</td>
</tr>
<tr>
<td>Installation</td>
<td>Operation in every installation position</td>
</tr>
<tr>
<td>Bearing</td>
<td>Ball bearing</td>
</tr>
<tr>
<td>Material</td>
<td>Process side: Stainless steel 316L, PTFE with carbon, PEEK, Si₃N₄, EPDM</td>
</tr>
<tr>
<td>Weight</td>
<td>6.4 -11.7 lbs</td>
</tr>
<tr>
<td>Surface quality</td>
<td>Ra ≤ 1.6 µm</td>
</tr>
<tr>
<td>Steam suitability</td>
<td>Not suitable</td>
</tr>
<tr>
<td>Insertion diameter</td>
<td>2.55 mm</td>
</tr>
<tr>
<td>Recommended filter</td>
<td>Line strainer with a mesh size of 0.2 mm/80 mesh</td>
</tr>
<tr>
<td>Recommended operating pressure</td>
<td>1450 psi</td>
</tr>
</tbody>
</table>

Dimensions [in]

<table>
<thead>
<tr>
<th>Type</th>
<th>L₁</th>
<th>L₂</th>
<th>L₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>5TP.xx9.1Y.01</td>
<td>22.3</td>
<td>9.8</td>
<td>8.6</td>
</tr>
<tr>
<td>5TP.xx9.1Y.02</td>
<td>32.1</td>
<td>19.7</td>
<td>18.4</td>
</tr>
</tbody>
</table>
### Adapter for IBC containers:
- Suitable for all types of PressureClean
- Fits into a G 2 female thread
- Scope of delivery:
  - Adapter with Tri-Clamp as interface for PressureClean
  - IBC cover (DN 150, thread S165 x 7) made of HDPE
  - Stainless steel joint clamp with EPDM seal

### Information on operation
The electric motor may only be switched on when liquid is flowing through the nozzles.

### Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

---

### Ordering number

<table>
<thead>
<tr>
<th>Type</th>
<th>Lance length</th>
<th>Ordering number</th>
</tr>
</thead>
<tbody>
<tr>
<td>360°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STP.469.1Y</td>
<td>01</td>
<td>02</td>
</tr>
<tr>
<td></td>
<td>03</td>
<td>1.87</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8.2</td>
</tr>
<tr>
<td>STM.589.1Y</td>
<td>01</td>
<td>02</td>
</tr>
<tr>
<td></td>
<td>03</td>
<td>3.73</td>
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<td></td>
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<td>3.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9.8</td>
</tr>
<tr>
<td>STM.659.1Y</td>
<td>01</td>
<td>02</td>
</tr>
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<td>7.02</td>
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<tr>
<td></td>
<td></td>
<td>4.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11.5</td>
</tr>
</tbody>
</table>
TANK CLEANING
PERFECT ADD
Extendable rotating cleaning nozzle
PopUp Whirly
Series 5P2

Features:
- Rotating cleaning nozzle extends automatically depending on pressure
- Flush wall installation possible
- Good suitability for cleaning pipes
- Particularly suitable for applications in the pharmaceutical, chemical and food industries

Technical data:

- **Maximum operating temperature**: 284 °F (284 °F (ATEX))
- **Material**: Stainless steel 1.4404 (316L), stainless steel 1.4571 (316Ti), stainless steel 1.4401 (316), FKM
- **Weight**: 1.1 lbs
- **Steam suitability**: Not suitable
- **Recommended filter**: Line strainer with mesh size of 0.3 mm/50 mesh
- **Recommended operating pressure**: 30 psi
  - Opening pressure approx. 15 psi, closing pressure approx. 7.25 psi
- **Surface quality**: Ra ≤ 0.8 µm on process side, remaining housing Ra ≤ 1.6 µm
- **Surface quality**: Ra ≤ 1.6 µm

Installation example

Spray distribution

Recommendation for nozzle positioning

<table>
<thead>
<tr>
<th>Type</th>
<th>Nozzle spacing L [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>5P2.873</td>
<td>2.6</td>
</tr>
<tr>
<td>5P2.923</td>
<td>3.3</td>
</tr>
</tbody>
</table>
Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.

<table>
<thead>
<tr>
<th>Type</th>
<th>Connection</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5P2.873.1Y</td>
<td>AP</td>
<td>5P2.873.1Y.AP</td>
</tr>
</tbody>
</table>

Information on operation

The PopUp Whirly is not suitable for operation with compressed air or another gas. Use above the recommended pressure will have a negative influence on the cleaning result and wear.

Weld-in socket for threaded connection

The thread is hygienically encapsulated with two O-rings (included in the scope of delivery of the PopUp Whirly).

Order no.: 050.020.1Y.AQ.00
Material: Stainless steel 1.4404 (316L)

Weld-in flange for Tri-Clamp connection

A joint clamp in accordance with DIN 32676-A DN50 with a connection diameter of 50.5 mm is required for connection of the nozzle at the weld-in flange. A gasket with a thickness of 2 mm is required if the flange is used in combination with the PopUp Whirly.

Order no.: 050.020.1Y.01.00
Material: Stainless steel 1.4404 (316L)

### Table of Spray Angles

<table>
<thead>
<tr>
<th>Type</th>
<th>Connection</th>
<th>Nanowest free cross section Ø [in]</th>
<th>p [psi] (p_{max} = 75 psi)</th>
<th>V water [gal/min]</th>
<th>Max. tank diameter [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 1/4&quot; Male BSPP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 1/2&quot; Male BSPP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tri-Clamp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5P2.873.1Y</td>
<td>AP</td>
<td>0.10</td>
<td>2.85</td>
<td>4.03</td>
<td>15</td>
</tr>
<tr>
<td>5P2.873.1Y</td>
<td>00</td>
<td>0.10</td>
<td>2.85</td>
<td>4.03</td>
<td>15</td>
</tr>
<tr>
<td>5P2.923.1Y</td>
<td>AP</td>
<td>0.14</td>
<td>3.80</td>
<td>5.37</td>
<td>20</td>
</tr>
<tr>
<td>5P2.923.1Y</td>
<td>00</td>
<td>0.14</td>
<td>3.80</td>
<td>5.37</td>
<td>20</td>
</tr>
</tbody>
</table>

Ordering example with ATEX approval. FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:
- Type II 1G Ex h IIB T6...T3 Ga
- Type II 1D Ex h IIC T85 °C...T170 °C Da

<table>
<thead>
<tr>
<th>Type</th>
<th>Connection</th>
<th>ATEX</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5P2.873.1Y</td>
<td>AP</td>
<td>EX</td>
<td>5P2.873.1Y.AP.EX</td>
</tr>
</tbody>
</table>
Extendable rotating cleaning nozzle
PopUp Whirly
Series 5P3

Features:
• Rotating cleaning nozzle extends automatically depending on pressure
• Flush wall installation possible
• Good suitability for cleaning pipes
• Particularly suitable for applications in the pharmaceutical, chemical, food and beverage industries

Technical data:

- Maximum operating temperature
  284 °F
  284 °F (ATEX)

- Maximum ambient temperature
  320 °F
  284 °F (ATEX)

- Installation
  Operation in every installation position

- Bearing
  Slide bearing

- Weight
  1 1/4" threaded: 1.2 lbs
  1 1/2" threaded: 2.54 lbs
  1 1/4" slip-on: 2.11 lbs
  1 1/2" slip-on: 4.52 lbs

- Material
  Stainless steel 1.4404 (316L), stainless steel 1.4571 (316Ti), stainless steel 1.4401 (316), FKM

- Steam suitability
  Not suitable

- Recommended filter
  Line strainer with mesh size of 0.3 mm/50 mesh

- Recommended operating pressure
  30 psi

  Opening pressure approx. 13.5 psi, closing pressure approx. 7.25 psi

Installation example

Spray distribution

Recommendation for nozzle positioning
Weld-in socket for threaded connection

The thread is hygienically encapsulated with two O-rings (included in the scope of delivery of the PopUp Whirly).

Order no.: 050.020.1YAS.00
Material: Stainless steel 1.4404 (316L)

Weld-in flange for Tri-Clamp connection

A joint clamp in accordance with DIN 32676-A DN50 with a connection diameter of 64.0 mm is required for connection of the nozzle at the weld-in flange. A gasket with a thickness of 2 mm is required if the flange is used in combination with the PopUp Whirly.

Order no.: 050.020.1Y01.01
Material: Stainless steel 1.4404 (316L)

<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Type</th>
<th>Connection</th>
<th>Narrowest cross section Ø [in]</th>
<th>V water [gal/min]</th>
<th>Max. tank diameter [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5P3.043.1Y</td>
<td>AR</td>
<td>0.13</td>
<td>7.60</td>
<td>0.013</td>
</tr>
<tr>
<td></td>
<td>5P3.043.1Y</td>
<td>00</td>
<td>0.13</td>
<td>7.60</td>
<td>0.013</td>
</tr>
</tbody>
</table>

Information on operation

The PopUp Whirly is not suitable for operation with compressed air or another gas. Use above the recommended pressure will have a negative influence on the cleaning result and wear.

Ordering example with ATEX approval. FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:
- II 1G Ex hIB T6…T3 Ga
- II 1D Ex h IIC T85 °C…T170 °C Da

Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.

Type + Connection = Order no.
5P3.043.1Y + AR = 5P3.043.1Y.AR

Type + Connection + ATEX = Order no.
5P3.043.1Y + AR + EX = 5P3.043.1Y.AR.EX
Extendable cleaning nozzle
PopUp Clean
Series 5P5

Features:
• Cleaning nozzle extends automatically depending on pressure
• Flush wall installation possible
• For cleaning agitators and other spray shadow areas
• Compact, robust design

Technical data:

- Maximum operating temperature: 203 °F (203 °F (ATEX))
- Maximum ambient temperature: 302 °F (284 °F (ATEX))
- Weight: 0.75 lbs
- Surface quality: Ra ≤ 0.8 µm on process side, remaining housing Ra ≤ 1.6 µm
- Steam suitability: Not suitable
- Recommended filter: Line strainer with mesh size of 0.3 mm/50 mesh
- Recommended operating pressure: 30 psi
- Opening pressure: approx. 4 psi, closing pressure: approx. 4 psi

Installation example

Spray height
Sprays upwards in vertical installation position.

Scan for Video
Male threaded connection

Tri-Clamp connection

Installation situation

Threaded connection

Tri-Clamp connection

Weld-in socket for threaded connection

The thread is hygienically encapsulated with two O-rings (included in the scope of delivery of the PopUp Clean).

Order no.: 050.020.1Y.AQ.00
Material: Stainless steel 1.4404 (316L)

Weld-in flange for Tri-Clamp connection

A joint clamp in accordance with DIN 32676-A DN50 with a connection diameter of 50.5 mm is required for connection of the nozzle at the weld-in flange. A gasket with a thickness of 2 mm is required if the flange is used in combination with the PopUp Clean.

Order no.: 050.020.1Y.01.00
Material: Stainless steel 1.4404 (316L)

<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Ordering number</th>
<th>Connection</th>
<th>Row Rate (Gallons Per Minute)</th>
<th>Max. tank diameter ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>30°</td>
<td>5P5.081.1Y.00.00.0 AP 00</td>
<td>G1 1/4A ISO 228 Tri-Clamp</td>
<td>20 psi 30 psi</td>
<td>10.97 13.43</td>
</tr>
</tbody>
</table>

Information on operation

The PopUp Clean is not suitable for operation with compressed air or another gas. Use above the recommended pressure will have a negative influence on the cleaning result and wear.

Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.

Type + Material + Connection = Order no.
5P5.081 + 1Y + AP = 5P5.081.1Y.AP

Ordering example with ATEX approval. FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:
II 1G Ex h IIB T6...T3 Ca
II 1D Ex h IIC T85 °C...T170 °C Da

Type + Material + Connection + ATEX = Order no.
5P5.081 + 1Y + AP + EX = 5P5.081.1Y.AP.EX
Extendable rotating cleaning nozzle
PopUp Whirly Air Hygienic
Series 5P7

Features:
- Position indication by means of sensor (IO-link capable)
- Self-draining in almost orientation
- Pneumatically extendable, independent of liquid pressure
- Flushable with air
- Installation flush with wall
- No additional installations in the process area

Technical data:
- Maximum operating temperature: 203 °F
- Maximum ambient temperature: 149 °F
- Installation operation in every installation position
- Bearing: Slide bearing made of PEEK
- Material: Stainless steel 1.4404 (316L), stainless steel 1.4301 (304), PEEK, PTFE, FPM, EPDM
- Weight: 9.9 lbs
- Surface quality: Ra ≤ 1.6 µm on process side
- Recommended filter: Line strainer with mesh size of 0.3 mm/50 mesh
- Recommended operating pressure: 36 psi

Installation example

Spray distribution

Recommendation for nozzle positioning
Installation situation

To connect the nozzle on the process side, the weld-in flange 500.605.1Y.00.08 and the retaining nut 095.011.1Y.00.89 (can be ordered from Lechler as an option) are required. The O-ring in the front area of the nozzle in conjunction with the weld-in flange ensures a reliable and hygienic seal.

Information on operation

Using more than the recommended pressure will have a negative influence on the cleaning result and wear.

Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.

<table>
<thead>
<tr>
<th>Spray angle</th>
<th>Ordering number</th>
<th>V water [gal/min]</th>
<th>p [psi] (p_max = 87 psi)</th>
<th>Max. tank diameter ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>75°</td>
<td>5P7.074.1Y.00</td>
<td>10.97</td>
<td>13.43</td>
<td>50</td>
</tr>
</tbody>
</table>

Ordering number: 5P7.074.1Y.00
Material: Stainless steel 1.4404 (316L)

Ordering number: 095.011.1Y.00.89
Material: Stainless steel 1.4404 (316L)
Adapter HygienicFit
Series 05C

Features:
• Hygienic threaded connection between equipment and nozzle
• Available for many thread sizes
• Weld-on side suitable for common pipe standards
• O-rings ensure a leak-tight connection
• O-rings fully encapsulate the thread

Technical data:
- Maximum operating temperature: 302 °F
- Maximum ambient temperature: 302 °F
- Installation: Operation in every installation position
- Material: 1.4404 (316L), EPDM (O-ring)
- Weight: .15–.66 lbs
- Surface quality OUTSIDE: Ra ≤ 0.8 µm
- Surface quality INSIDE: Ra ≤ 0.8 µm
- Steam suitability: Suitable

If you find this icon on our product pages, this means that the nozzle is compatible with the HygienicFit adapter.
### Spare parts set of O-rings, EPDM

<table>
<thead>
<tr>
<th>Thread type BSPP</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8</td>
<td>05C.000.E9.AE.00</td>
</tr>
<tr>
<td>1/2</td>
<td>05C.000.E9.AG.00</td>
</tr>
<tr>
<td>3/4</td>
<td>05C.000.E9.AK.00</td>
</tr>
<tr>
<td>1</td>
<td>05C.000.E9.AM.00</td>
</tr>
<tr>
<td>1 1/4</td>
<td>05C.000.E9.AP.00</td>
</tr>
<tr>
<td>1 1/2</td>
<td>05C.000.E9.AR.00</td>
</tr>
</tbody>
</table>

O-ring set also available in KRM on request.
**Rotation monitoring sensor**

**Features:**
- Reliable monitoring of cleaning processes
- Process connection EHEDG-compliant
- Simple operation and PLC connection possible
- Can be individually adapted to each cleaning task
- Operating principle: capacitive

**Technical data:**

- **Maximum operating temperature:** 212 °F
- **Maximum ambient temperature:** 140 °F
- **Installation:** Operation in every installation position
- **Material**
  - Sleeve (1/2 BSPP): Stainless steel 1.4404 (316L)
  - Probe tip: PEEK
  - Housing: 1.4305 (303)
- **Weight:** .77 lbs
- **Surface quality**
  - Ra ≤ 0.8 µm weld-in flange
  - Ra ≤ 1.6 µm PEEK tip
- **Steam suitability**
  - Max. 495 °F for max. 30 min. at ambient temperature ≤ 203 °F
- **Electrical data**
  - Supply voltage: Ub = 24 V +/- 20% (18 to 32 VDC)
  - Power requirement: < 20 mA
  - Output signal: PNP, 50 mA, short circuit protected, active

If you find this icon on our product pages, this means that the nozzle is compatible with the rotation monitoring sensor.
Rotation monitoring sensor with weld-in sleeve

Cable set for commissioning

<table>
<thead>
<tr>
<th>Ordering data</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotation monitoring sensor with</td>
<td>050.040.00.00</td>
</tr>
<tr>
<td>weld-in sleeve</td>
<td>00.00</td>
</tr>
<tr>
<td>Cable set for commissioning</td>
<td>050.040.00.01</td>
</tr>
</tbody>
</table>
Features:
- Optimum nozzle positioning and alignment in the tank
- Individual design possible depending on existing conditions
- Standard material 316L
- Different material versions optionally available

If you would like further information on our static lances, please contact us: (800) 777-2926 or info@lechlerusa.com.
Extendable cleaning lance

Features:
- Stroke length: .04 to 106.3 in
- Material: contact with process 316L
- Tank cleaning nozzle connection by means of EN 10226 R 3/4 thread
- Driven pneumatic rodless cylinder
- Position monitoring possible (optional)
- Sealed by rod seal on process side
- Process-side flange EN 1092-1
  DN 100 PN 16
- Process-side components are food-compliant

Good to know

Certain tank cleaning applications require the nozzle to be removed during operation. Lechler offers pneumatically extendable cleaning lances so that the tank cleaning nozzle is only in the tank when it is used for cleaning. We would be happy to discuss your requirements. Contact us today at: (800) 777-2926 or info@lechlerusa.com.
Your systems should operate reliably and efficiently in the long term. That is why we recommend regular maintenance. Lechler offers two options to ensure the shortest possible downtimes of your system and to guarantee prompt recommissioning of your tank cleaning products. We will gladly advise you in person on the best solution for your needs.

Two maintenance options for maximum uptime

**ZERO DOWNTIME SERVICE**

**Maintenance:** on-the-spot by the customer.

You independently maintain your cleaning system with the genuine Lechler spare parts on the basis of detailed maintenance instructions and can reduce possible downtimes to zero in an ideal case.

**YOUR ADVANTAGES**

- Zero downtime possible
- Simply perform maintenance yourself on the basis of detailed instructions
- Use of Lechler genuine parts
- No complex import and export processes
- Cost-efficient maintenance

**LECHLER FULL SERVICE**

**Maintenance:** at Lechler by Lechler.

You send in your cleaning equipment and our experts will take care of everything else.

**YOUR ADVANTAGES**

- Immediate feedback if there are any issues
- Use of Lechler genuine parts
- Lechler Service Points also in your vicinity

Please note that maintenance of ATEX-certified products is possible only within the scope of Lechler Full Service for safety reasons.

If you find this icon on our product pages, this means that maintenance is possible.
Do you have any questions about maintenance? Talk to us. We will gladly advise you. By phone on (800) 777-2926 or by email at info@lechlerusa.com.
FOR YOUR PLANNING
CERTIFICATES AND DECLARATIONS

We can issue various certificates and declarations for our products. It must be checked in advance whether the desired document can be issued for a certain product. We will gladly inform you about the conditions for the documents on request.

**Declaration of compliance EN 10204 - 2.1**

This declaration confirms that the products have been manufactured and tested in accordance with the specifications.

**Test report EN 10204 - 2.2**

The report can be issued for the material (including the non-specific material certificate of the supplier), surface quality or spray parameters (spray angle and flow rate, without additional document).

**Inspection certificate EN 10204 - 3.1**

The inspection certificate is usually issued for the material. It can be issued for selected tank cleaning nozzles on request. In this case, production of the parts takes place on an order-specific basis with restamping.

However, a specific certificate can also be issued for the flow rate, spray angle nozzle dimensions, surface quality, etc.

**FDA declaration of conformity**

Confirmation that the material used complies with the specifications of the FDA.

**3-A declaration of conformity**

Confirmation that the product complies with the requirements of 3-A Sanitary Standards No. 78-03.

**Declaration of conformity according to regulations (EC) No. 1935/2004 and (EC) No. 10/2011**

Confirmation that the supplied product is suitable for use in contact with food and that the material complies with the above regulations.

**ATEX type examination certificate**

The ATEX type examination certificate certifies approval of the tank cleaning nozzle for corresponding ATEX environments.

**Supplier declaration**

Declaration on certificates of origin of the European Union, issued by Lechler. A supplier declaration can be issued for a specific order (individual supplier declaration) or as a long-term supplier declaration with a validity of two years.

**Certificate of origin**

Official confirmation of the origin of a product.
FOR YOUR PLANNING
LECHLER ONLINE-SERVICES

3D design data

We can support you in your design work with the freely available 3D design data of Lechler nozzles and accessories.

- Time-saving, immediate download of 3D drawings and technical data
- Simple product selection like in Lechler print catalog
- Preview function with product photo and 3D graphics
- Available in all common 3D file formats

Ready at all times – the Lechler Industry app

The Lechler Industry app offers all important calculation and conversion functions in one place:

- Units converter for pressure, volume and flow rate
- Pressure/flow rate calculator for single fluid nozzles including axial-flow full cone nozzles
- Determination of the pipe diameter

Available free of charge in the Apple App Store and Google Play Store.

Current brochure

We are continuously developing our product range. You can always access the latest version of this brochure at www.lechlerusa.com/en/news-3/introducing-catalog-600.

Good to know

You can find current information about Lechler and our products and services online at www.lechlerusa.com.
EVERYTHING COVERED
CLEAN ALL OVER THE WORLD
Efficient cleaning requires controlled generation and distribution of every single drop.

With over 140 years of nozzle expertise and over 45,000 immediately available nozzles, spray systems and accessories, we can realize every spray jet application in a short time. The wide range of proven solid jet, flat fan and solid cone nozzles allows us to offer optimized cleaning solutions for every application.

Global representation

We are at home right at the heart of Europe. In Metzingen we develop highly-efficient cleaning nozzles and test them under practically-based conditions.

We do not just see ourselves as a supplier and manufacturer, however. Because we also support you in optimization of your cleaning processes on-site. Thanks to our international network of production locations, subsidiaries and sales offices/sales representatives, we can always guarantee fast part availability and short distances for service work. Contact us and experience this for yourself.

We look forward to hearing from you.