



Spray Nozzle Maintenance Guide

- By performing regular nozzle maintenance, you can prevent significant quality problems and profit loss.



Do any of these damaged nozzles look familiar?

Nozzles

We can help.

Simple guidelines for extending nozzle life

1 Change nozzle material

If your nozzle is exposed to extreme temperatures, harsh environments, or is being sprayed with corrosive liquids, consider switching to another nozzle material. Spray nozzles made of harder materials with a higher abrasion resistance ratio, such as tungsten carbide; tend to have a longer life. Other nozzle materials, such as PTFE or PVDF, will work better for applications with corrosive chemicals being sprayed and can extend the nozzle life.

2 Add a line strainer or filter







The liquid source being used for spraying can contain particulates, dirt, or other minerals, which may clog the orifice and eventually cause premature deterioration. For this reason, a line strainer, or built in nozzle strainer (if available) is recommended with a screen mesh size that will prevent the particulates from entering the nozzle.

3 Use proper cleaning tools and care

Nozzle cleaning should be done on a regular basis but with proper care. Only use plastic bristle brushes, wooden or plastic probes when cleaning nozzles. Avoid using wire brushes and metal knives because these can damage the nozzle orifice shape, resulting in poor spray performance.

If the nozzle is clogged, soak the nozzle in a non-corrosive cleaning chemical, which will soften and eventually dissolve the particulate matter.








4 Detect irregular spray patterns

Nozzle type	Indication of low performance	Regular spray pattern	Irregular spray pattern
Flat fans	<ul style="list-style-type: none">• Heavy flow in center of pattern• Reduced coverage angle		
Full cones	<ul style="list-style-type: none">• Higher concentration of liquid will flow toward the center of pattern		
Hollow cones	<ul style="list-style-type: none">• Streaks in circular spray ring pattern• Changes in flow rate		

5 Schedule routine maintenance

Nozzles should be inspected on a regular basis and be a part of your standard operating procedure. The most common routine nozzle maintenance procedures include:

- Check nozzle alignment
- Inspect nozzle damage
- Check spray pattern quality
- Monitor changes in flow rate

Damaged nozzles	Types of damage	Description
	Wear / erosion	The nozzle material can gradually deteriorate due to abrasion and, as this occurs over time, the orifice or internal passage becomes enlarged.
	Corrosion	Nozzle material can wear due to the chemical reaction of the liquid being sprayed or the type of environment in which the nozzle is exposed. This can result in a build up of oxides or salt on the outside of the nozzle tip near the orifice. The effect is similar to that caused by wear/erosion.
	High temperature	Breakdown of the nozzle material due to the elevated temperatures of either the fluid being sprayed, the surrounding environment, or both.
	Caking / bearding	Build-up of material around the inside or outside of the orifice is due to the evaporation of the liquid being sprayed, causing obstruction to the orifice.
	Clogging	Unwanted particles from the liquid being sprayed which become lodged in the orifice and restrict the incoming flow.
	Accidental damage	Physical damage to the nozzle or its orifice caused by dropping the nozzle during installation or creating abrasions during cleaning with inappropriate tools.
	Improper assembly	Nozzles with accessories including caps, gaskets, O-rings, and valves can be installed incorrectly or nozzle tips can be inserted incorrectly into spray headers.



Indications of poor spray performance	Solution
<ul style="list-style-type: none">• Higher flow rates• Reduction in spray angle• Decrease in spray impact and pressure• Formation of larger droplets• Irregular spray patterns	<ul style="list-style-type: none">• Replace nozzle• Consider selecting a material with more abrasion resistance
<ul style="list-style-type: none">• Higher flow rates• Reduction in spray angle• Decrease in spray impact and pressure• Formation of larger droplets• Irregular spray patterns	<ul style="list-style-type: none">• Replace nozzle• Consider selecting a material with more corrosion resistance
<ul style="list-style-type: none">• Softened material• Unpredictable performance	<ul style="list-style-type: none">• Replace nozzle and ensure that material of replacement nozzle is more resistant to high temperatures
<ul style="list-style-type: none">• Reduced flow rate• Reduced spray angle• Irregular spray pattern	<ul style="list-style-type: none">• Thoroughly clean nozzle with cleansers and solvents which will not affect the nozzle material
<ul style="list-style-type: none">• Reduced flow rate• Reduced spray angle• Irregular spray pattern	<ul style="list-style-type: none">• Clean out the nozzle orifice and internals• Do NOT clean with metal utensil• Investigate possible filtration solutions
<ul style="list-style-type: none">• Noticeable damage to the outside of the nozzle• Possible leakage around the nozzle if threads are damaged• Unpredictable performance if the orifice is damaged	<ul style="list-style-type: none">• Replace nozzle
<ul style="list-style-type: none">• Possible leakage around the nozzle• Irregular spray pattern	<ul style="list-style-type: none">• Dissassemble and inspect for possible component or thread damage. Properly reassemble.



State-of-the-art technology to eliminate all risks

Data and facts that you can rely on

There are many reasons for our product's success. A very important one is that based on precise measurements, we are able to make reliable statements about the spray characteristic of a nozzle. This provides dependable data for development, and also simplifies the evaluation; even before the nozzle has been integrated into your system. This saves time, reduces costs and ensures planning reliability.



The performance data is determined with state-of-the-art measuring techniques and is documented accurately.



We employ the latest methods to cover the entire measurement spectrum

- Flow rate
- Spray angle
- Spray shape
- Air flow measurement
- Droplet size measurement
- Droplet speed measurement
- 3D spray impact measurement
- Liquid distribution
- Spray videos
- Noise level measurement

Ask the experts...

Lechler System Audits

Lechler offers nozzle and system audits for valued customers to ensure that your nozzles are working properly. Our trained experts will come to your facility and provide a detailed audit of your current system.

For more information, contact your Lechler Representative.



**ENGINEERING
YOUR SPRAY SOLUTION**



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