



# Metal Forming Lubrication Systems

*Intelligent Metal Forming Lubrication*

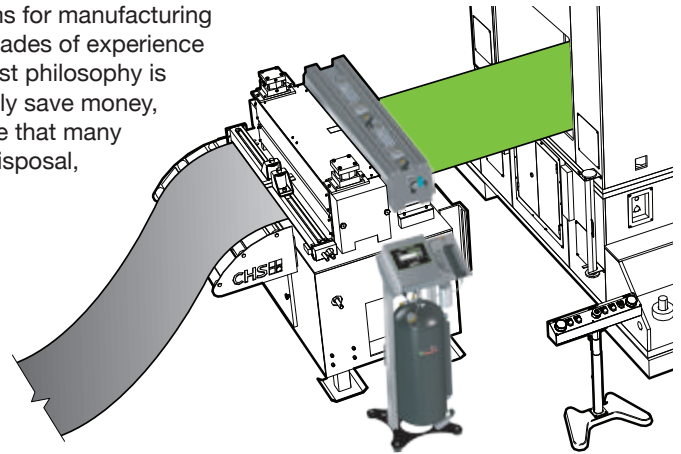




## Unist & Metal Forming Lubrication

Unist has long been recognized as a market leader in lubrication systems for manufacturing processes. Established in 1957, Unist (then known as Uni-Mist) has decades of experience designing and providing systems for manufacturing operations. The Unist philosophy is that if we reduce fluid consumption at the source, our customers not only save money, but the environment at the same time. This belief is fueled by knowledge that many manufacturers experience excessive fluid related costs including fluid disposal, fluid treating, and increased housekeeping.

In the 1990's Unist developed solutions specifically for coil stock in metal forming operations. The revolutionary Uni-Roller® applicator was introduced in 1993. In 1999, Unist greatly enhanced its offering with the addition of the SPR-2000™ programmable fluid controller. Unist has continually refined and expanded its offering to meet the ever-changing needs of our customers. The original Uni-Roller® was completely redesigned in 2017 and released as the Uni-Roller® S2. In 2020, Unist replaced the SPR-2000™ controller with the SmartFlow™ programmable fluid controller. The SmartFlow™ adds an enhanced set of user interface and control features to the time proven core of the SPR-2000™.



The Uni-Roller® continues to save manufacturers 50-90% on their lubricant costs, not to mention the associated benefits including waste reduction and a cleaner work environment. Since that first system in 1993, Unist has remained committed to developing the best products for applying fluids to metal forming operations. Unist sincerely appreciates your business as we work together towards improving your manufacturing processes while protecting the environment.



# Choosing your



is as easy as **1** - **2** - **3**



## 1 Choose your fluid controller

The SmartFlow™ programmable fluid controller is the key component for accurate control of the fluid in any roller or spray application. With the ability to save up to 250 jobs, the SmartFlow™ provides the flexibility required for a broad range of applications. With the SmartFlow™, creating, adjusting, and changing jobs is as simple as pushing a few buttons. Critical parameters such as fluid level, fluid pressure, and flow can be monitored. Precise fluid control starts with the best fluid controller.



## 2 What applicator is right for you?

While the SmartFlow™ programmable fluid controller delivers the proper amount of fluid, the applicator applies it where required. The applicator can be a Uni-Roller® lubricator, spray nozzles, or a combination of both.

### Internally-fed Uni-Roller® lubricator

The Unist Uni-Roller® lubricator applies a consistent coat of fluid in metal forming applications. A variety of models are available, with specific models for coil stock up to 72" [1829 mm] wide or blanks up to 69" [1753 mm] wide.

The Uni-Roller® lubricators use our unique internally-supplied roller design to apply the correct amount of fluid to both sides of the stock. This eliminates the mess and waste associated with in-die spray systems and externally-fed roller systems. The result is not only a cleaner shop, but also significant savings from decreased fluid waste, improved die life, better part quality and increased machine up-time. Many customers have reported savings resulting in a return on investment of less than six months!



### Spray nozzles

When a continuous coating of fluid is needed on a smooth surface, the Uni-Roller® excels. However, when the surface isn't smooth, when intermittent coverage is needed, or when additional fluid is needed at specific areas in the die, Unist spray nozzles deliver. Both Airless and Low Volume Spray nozzles are available, each with a variety of spray patterns and mounting options, guaranteeing you can find the right nozzle for your application.



## 3 Don't forget your fluid supply

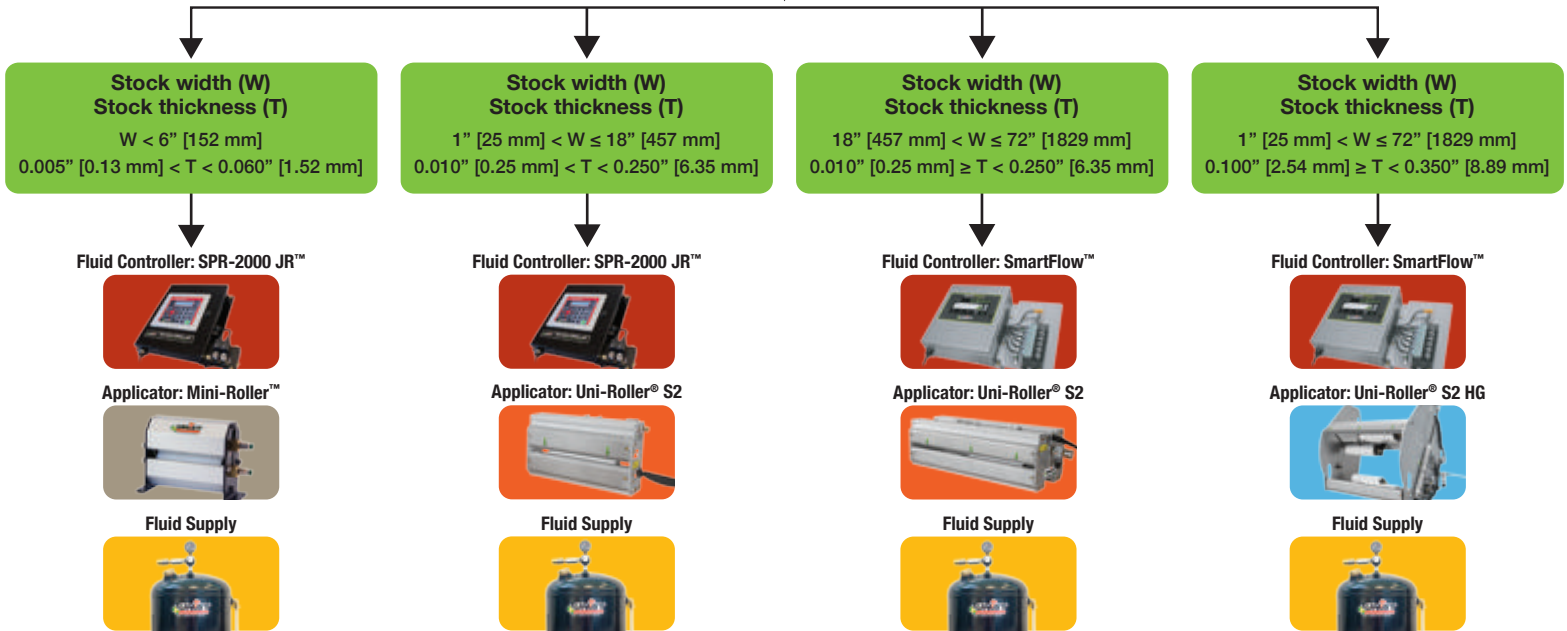
A consistent supply of pressurized fluid is required for any system that is controlled by a SmartFlow™ programmable fluid controller. To meet this need, Unist offers a variety of solutions including pressurized tanks from 4 to 30 gallons [15-113 liters], an air-operated diaphragm pump, and a pressure regulator for connection to an existing pressurized fluid supply.



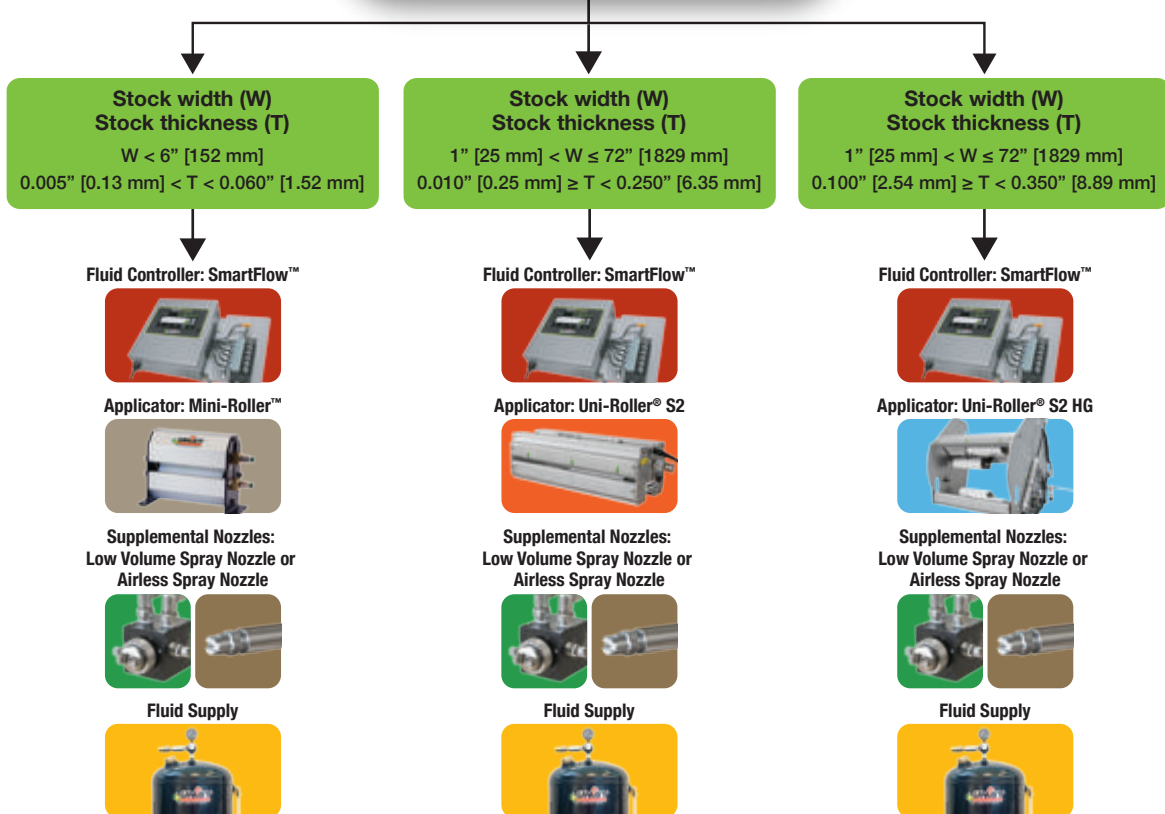
# System Selection Guide

- 1 Start at the top by selecting the appropriate chart for coil stock, blank, or non-contact coating.
- 2 Next, follow the chart based on the material width and thickness of your application. This will lead to a group of components which are required for a complete system.

## Coil stock coating Without supplemental spray nozzles (Average stock speeds up to 500 fpm)



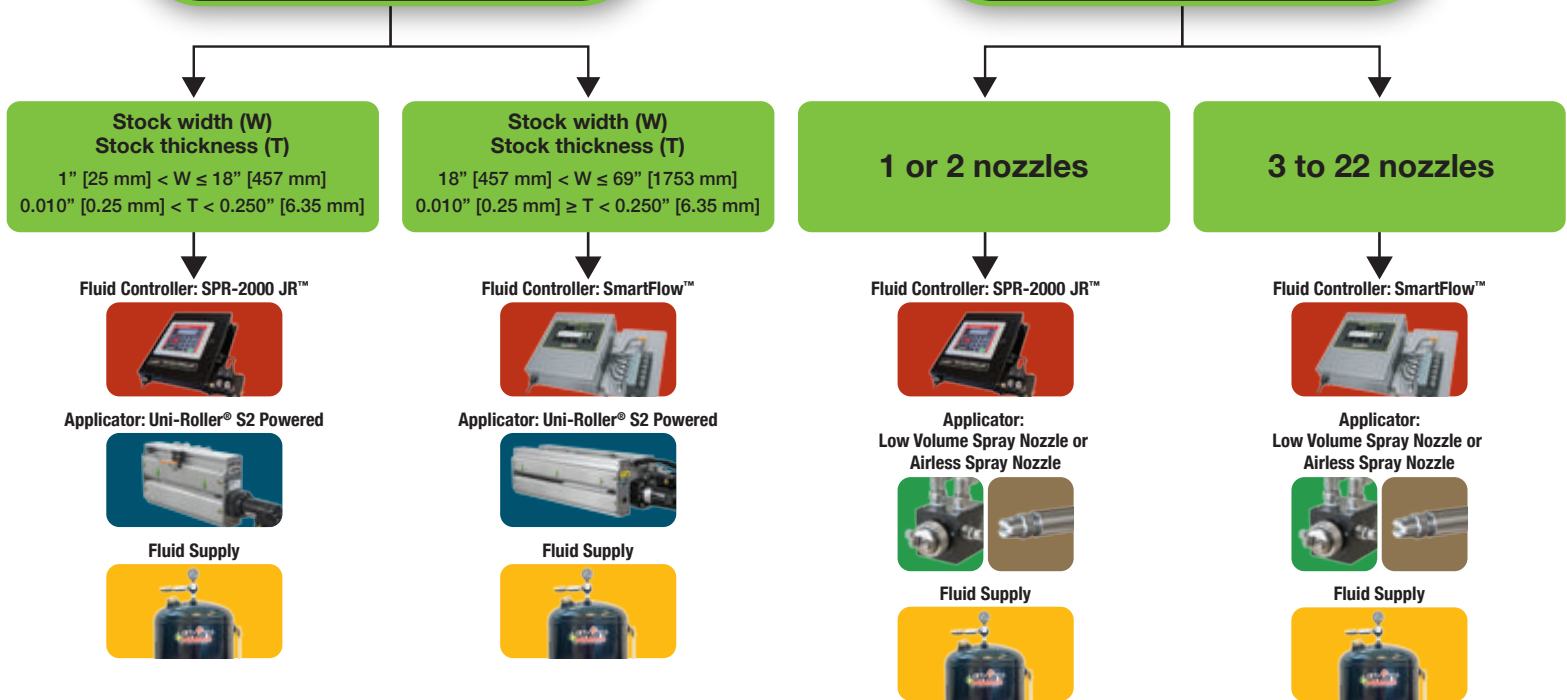
## Coil stock coating With supplemental spray nozzles (Average stock speeds up to 500 fpm)



## Blank or sheet coating

(Coating speeds up to 150 fpm)

## Non-contact, non-flat, or non-continuous coating



## Table Of Contents



### SmartFlow™ & SPR-2000 JR™ Fluid Controllers

1-2

The SmartFlow™ and SPR-2000 JR™ programmable fluid controllers are the key components for reliably and accurately controlling the application of metal forming lubricants.



### Uni-Roller® S2

3-4

The Uni-Roller® S2 delivers a smooth and consistent coat of fluid on continuous coil stock.



### Uni-Roller® S2 HG

5-6

The Uni-Roller® S2 HG features an articulating chassis. The upper rollers can be raised to accommodate deformities in the head or tail of coil stock.



### Uni-Roller® S2 Powered

7-8

The Uni-roller® S2 Powered evenly lubricates both sides of blanks or sheet stock.



### Mini-Roller™

9-10

The Mini-Roller™ coats thin and narrow coils. Perfect for high-speed presses and small press windows.



### Low Volume Spray Nozzles

11-12

Unist offers a complete line of Low Volume Spray Nozzles that connect directly to valves on the SmartFlow™ programmable fluid controllers. These are recommended for situations where roller use is not practical.



### Airless Spray Nozzles

13-14

Airless Spray Nozzles can be an essential component of a complete system when additional lubrication is required downstream of a Uni-Roller® S2.



### Fluid Supply

15-16

A consistent supply of pressurized fluid is a key component of any system that is controlled by a SmartFlow™ programmable fluid controller.



### Uni-Blend™

17-18

The Uni-Blend™ accurately mixes water with concentrated fluids and delivers the mixture to your piping network.

## The SmartFlow™ programmable fluid controller

is designed to precisely control lubricant supplied to Unist Uni-Rollers®, Unist spray nozzles, and in-die lubrication points.

- User-friendly controller
- Program up to 250 different die sets or jobs
- Alarm monitoring of critical parameters
- Press control integration interface
- Track fluid consumption

**i More information:** [unist.com/sflow](http://unist.com/sflow)

The SmartFlow™ allows metal formers to take full control of die and stock lubrication. This full-featured, programmable fluid controller makes configuring, controlling, monitoring, and tracking fluid application easier than ever, leading to increased profits from the stamping or forming operation.

Designed around an intuitive and easy-to-use operator interface, the SmartFlow™ provides simple and guided setup, advanced press control integration, fluid usage tracking, process monitoring, and enhanced diagnostic and maintenance tools.

Save and recall jobs manually or utilize the press control interface for easy, automatic changeover. Back up and transfer jobs and settings between lines with a USB flash drive and the SmartFlow's™ USB port.



**Intelligent  
programmable control**

Pair the SmartFlow™ controller with Unist's proven line of precision fluid applicators for an intelligent lubrication system that eliminates wasted fluid and mess, reduces scrap, and maximizes profits.

The automatic lubrication system intermittently actuates a bank of fluid solenoid valves (up to 22 outputs) that dispense a programmed quantity of fluid to specific lube points. The valve actuation on this electronic fluid dispenser is determined by production line rates so there is no under or over lubrication whether it is a stamping press or roll forming operation.

## Specifications

### Power supply:

To integral transformer: 120 VAC, 2.5A max or 240 VAC, 1.3A max, 50/60 Hz  
Direct to controls: 24 VDC, up to 150 watts

### Control inputs:

4 inputs, 24 VDC NPN, PNP, or dry contact (switch closure)

### Maximum cycle input rate:

50 cycles/second at 50% duty cycle, minimum contact open or closed time: 10 ms

### Alarm inputs:

2 inputs, 24 VDC NPN, PNP, or dry contact

### Outputs:

Up to 22 outputs, 24 VDC, 6.5 watts, for nozzles or rollers

### Alarm interlock relay:

Dry contact, normally open or normally closed, 2A max current

### Operating temperature range:

32°F-122°F [0°C-50°C]

### Storage temperature range:

-4°F-158°F [-20°C-70°C]

### Press control interface:

Modbus protocol over RS485 serial or Ethernet

### Job storage:

250 jobs

### Job transfer:

USB-A flash drive



### Save 50% on fluid

Combine the SmartFlow™ with a Uni-Roller® applicator to reduce fluid usage and save money. On average, a Unist automatic lubrication system can reduce stamping fluid consumption by 50% with some customers reporting reductions as high as 90%!

#### Main SmartFlow™ features:



**Touch screen interface**  
Easily access jobs, settings, maintenance reminders, and more. The intuitive menu allows for easy transition from box to production line



**Easily create jobs**  
The job setup wizard guides users through creating a job. Once created, simply increase or decrease the amount of lubricant desired for quick fine tuning of lubricant coatings



**Process monitoring**  
The SmartFlow™ controller can monitor pressure, flow, valve performance and line status to ensure lubrication is delivered as required

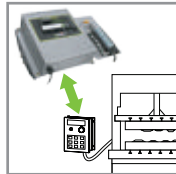


**Fluid tracking**  
Take the guesswork out of tracking fluid consumption. Directly measure how much fluid your process is consuming with the optional flow meter. With the SmartFlow™, you'll work smarter and know your exact lubricant cost per part

### Options



**Pressure transducer**  
Ensure the system is ready to dispense fluid by monitoring the fluid supply pressure. Configurable low pressure alarm point via the user interface



**Press control interface**  
Connect to production line controls to exchange information about jobs, settings, and alarms for easy job changeover and monitoring



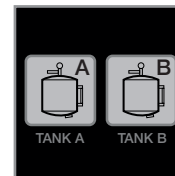
**Flow monitoring**  
Monitor fluid pressure while dispensing to detect fluid flow for confident operation



**Flow totalizer**  
Measure volumetric fluid flow to provide fluid consumption data



**Remote valve enclosure**  
Mount control valves up to 50 feet away from the main fluid controller for easy access to the operator panel



**Dual fluid supply**  
Program jobs to use fluid A or B when connected to dual fluid supply with solenoid fluid selector valve

### SPR-2000 JR™

The SPR-2000 JR™ programmable fluid controller is designed as a less costly alternative to the SmartFlow™ programmable fluid controller. For applications where only two outputs are required, the SPR-2000 JR™ serves as an economical option for programmable fluid control.



## The Uni-Roller® S2

is the ultimate solution for continuous stock lubrication. Combined with a SmartFlow™ or SPR-2000 JR™ programmable fluid controller, the Uni-Roller® S2 will consistently apply the correct amount of fluid to both the top and bottom of your coil, day after day.

- Reduce lubricant consumption by 50% or more
- Quick-change rollers for easy maintenance
- Cleaner floors & work area

**i More information:** [unist.com/s2](http://unist.com/s2)

The internally-supplied rollers are essential to precisely applying the fluid. Inside each of the rollers is a dispenser tube with small holes placed along its length. Fluid is injected into the dispenser tubes from the fluid controller and dispensed across the inside of the rollers.

The lubricant is transferred to the stock through durable polyester felt or polyurethane foam roller covers. These cover materials apply the lubricant smoothly and evenly across both the top and bottom of the stock.

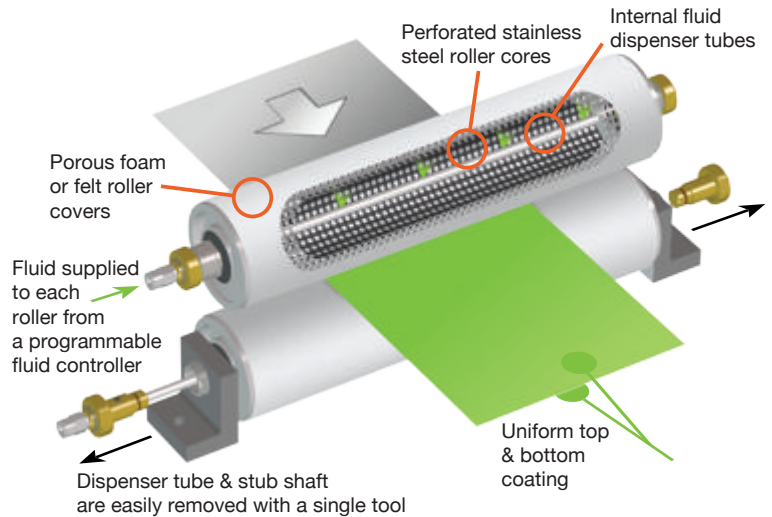
The Uni-Roller® S2 applies the exact amount of lubricant required. This eliminates the mess and waste associated with in-die spray systems and externally-fed roller systems. The result is not only a cleaner shop, but also significant savings from decreased fluid waste, improved die life, better part quality and increased machine up-time. Many customers have reported savings resulting in a return on investment of less than six months!

The brushed stainless steel guards protect the rollers and guide material when loading coil stock or feeding blanks. With the guards removed for better access, a roller can be changed in about a minute using a single wrench. The Uni-Roller® S2 is built to handle any manufacturing environment without sacrificing ease of maintenance.

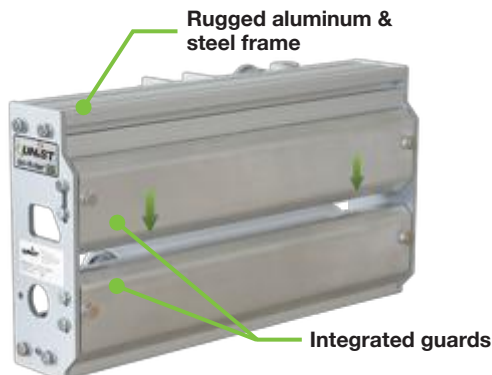


**Ultimate solution for continuous stock lubrication**

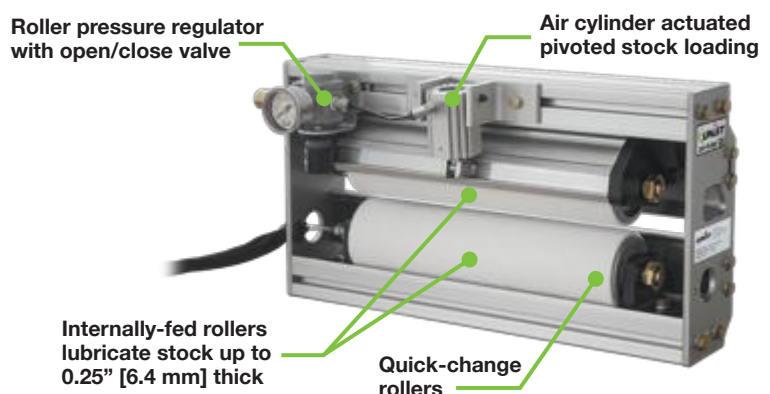
The Uni-Roller® S2 is modular in design. A single roller set is used for widths of 18" [457 mm] or less. For stock over 18" [457 mm] wide, multiple 12" [305 mm] wide roller sets are staggered and overlapped. Standard sizes are available to accommodate common stock widths, with custom sizes available on request.



### Single roller entry side



### Single roller exit side



Single roller unit shown above. Lubricators with multiple roller sets have guards on both entry and exit sides.

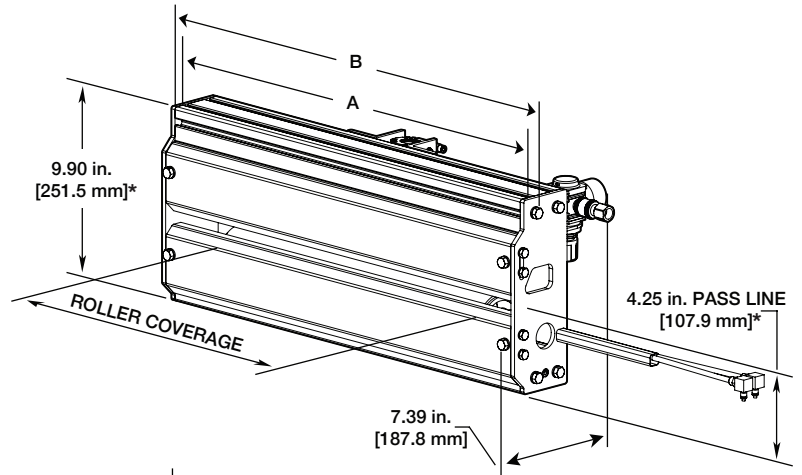


## Standard sizes

Single roller coverage up to 18" [457 mm]

Roller coverage	A (extrusion length)	B (overall width)
3" [76 mm]	12.00" [304.8 mm]	13.13" [333.5 mm]
6" [152 mm]	12.00" [304.8 mm]	13.13" [333.5 mm]
12" [305 mm]	18.00" [457.2 mm]	19.13" [485.9 mm]
18" [457 mm]	24.00" [609.6 mm]	25.13" [638.3 mm]

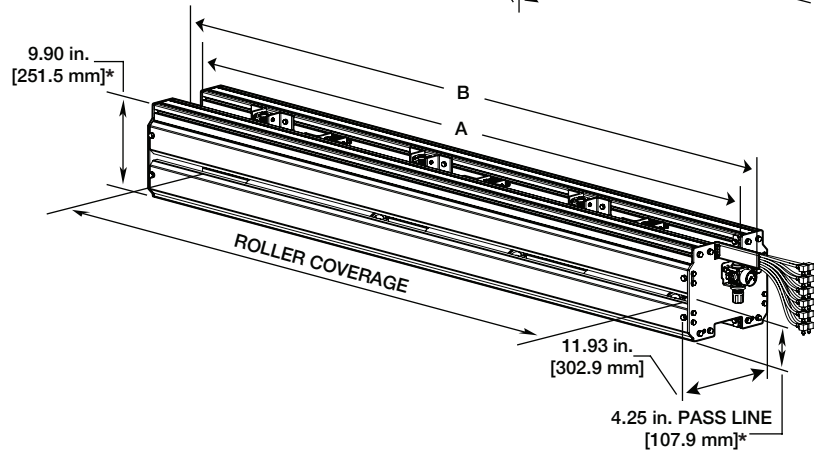
\*On units with double air cylinders add 1.40" [35.6 mm] to the pass line and overall height.










Multiple rollers coverage over 18" [457 mm]

Roller coverage	A (extrusion length)	B (overall width)
23.5" [597 mm]	30.00" [762.0 mm]	34.16" [867.7 mm]
35" [889 mm]	42.00" [1066.8 mm]	46.16" [1172.5 mm]
46.5" [1181 mm]	54.00" [1371.6 mm]	58.16" [1477.3 mm]
58" [1473 mm]	66.00" [1676.4 mm]	70.16" [1782.1 mm]
69.5" [1765 mm]	78.00" [1981.2 mm]	82.16" [2086.9 mm]

\*On units with double air cylinders add 1.40" [35.6 mm] to the pass line and overall height.



## Features & options

Standard features	Options
 <p><b>Polyester felt cover</b> Extremely durable and compatible with a broad range of fluids.</p>	 <p><b>Polyurethane foam cover</b> Reduces uneven wear on cover when a variety of stock widths and thicknesses are used. Due to limited fluid compatibility, consult Unist.</p>
<p><b>Standard fluid dispenser tube</b> Best choice for most applications with the widest range of fluid compatibility and flow rates.</p>	<p><b>Low volume fluid dispenser tube</b> For use in applications requiring coverage of 50 mg/ft<sup>2</sup> [538 mg/m<sup>2</sup>] or less.</p>
 <p><b>Manual valve</b> Manual open/close control of the roller set.</p>	 <p><b>Solenoid valve</b> To tie into control systems to automate opening of roller set.</p>
 <p><b>Single pneumatic air cylinder</b> Preferred method for maintaining pressure on stock and opening the rollers to load a new coil.</p>	 <p><b>Double pneumatic air cylinder</b> The double air cylinder is required for stock thickness over 0.25" [6.35 mm].</p>
	 <p><b>Proximity sensor</b> Used to provide an input signal to a SmartFlow™ controller based on roller rotation. Select when an intermittent signal from the press is not available.</p>

### The Uni-Roller® S2 HG

delivers the same smooth and consistent fluid application the industry has come to expect from Unist, and adds an articulating chassis. The upper rollers open a full 6" [152 mm] to avoid deformities in the head or tail of coil stock, making loading easier and preventing damage to the lubricator.

- Reduce lubricant consumption by 50% or more
- Quick-change rollers for easy maintenance
- Cleaner floors & work area

**i More information:** [unist.com/s2hg](http://unist.com/s2hg)

The internally-supplied rollers are essential to precisely applying the fluid. Inside each of the rollers is a dispenser tube with small holes placed along its length. Fluid is injected into the dispenser tubes from the fluid controller and dispensed across the inside of the rollers.

The lubricant is transferred to the stock through durable polyester felt or polyurethane foam roller covers. These cover materials apply the lubricant smoothly and evenly across both the top and bottom of the stock.

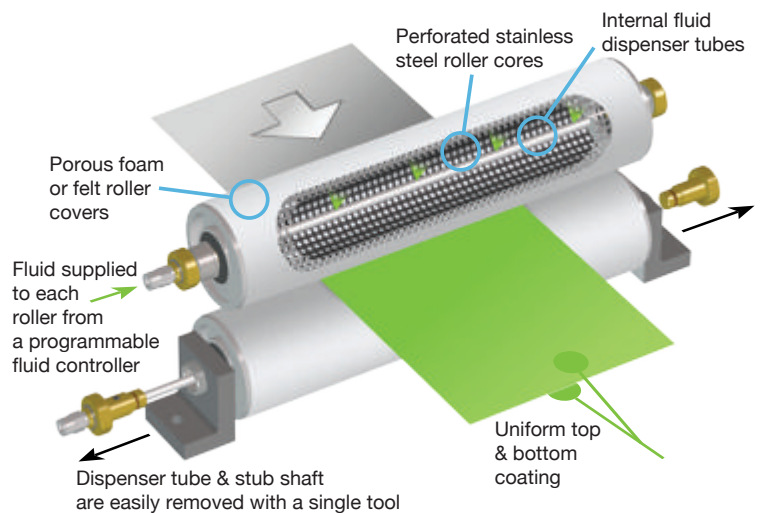
The Uni-Roller® S2 HG applies the exact amount of lubricant required. This eliminates the mess and waste associated with in-die spray systems and externally-fed roller systems. The result is not only a cleaner shop, but also significant savings from decreased fluid waste, improved die life, better part quality and increased machine up-time. Many customers have reported savings resulting in a return on investment of less than six months!

The brushed stainless steel guards protect the rollers and guide material when loading coil stock or feeding blanks. With the guards removed for better access, a roller can be changed in about a minute using a single wrench. The Uni-Roller® S2 HG is built to handle any manufacturing environment without sacrificing ease of maintenance.

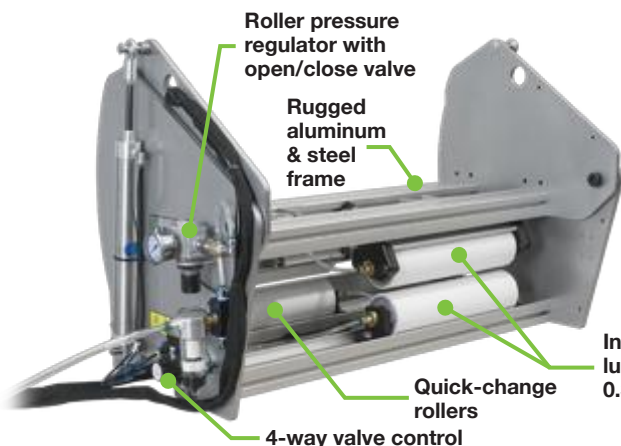
### Heavy gauge lubrication



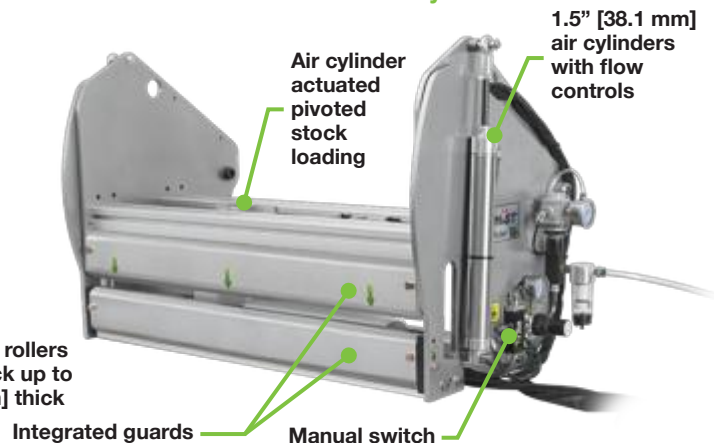
The Uni-Roller® S2 HG is modular in design. Opening and closing is controlled by a manual or solenoid valve. A single roller set is used for widths of 18" [457 mm] or less. For stock over 18" [457 mm] wide, multiple 12" [305 mm] wide roller sets are staggered and overlapped. Standard sizes are available to accommodate common stock widths, with custom sizes available on request.



### Uni-Roller® S2 HG exit side



### Uni-Roller® S2 HG entry side



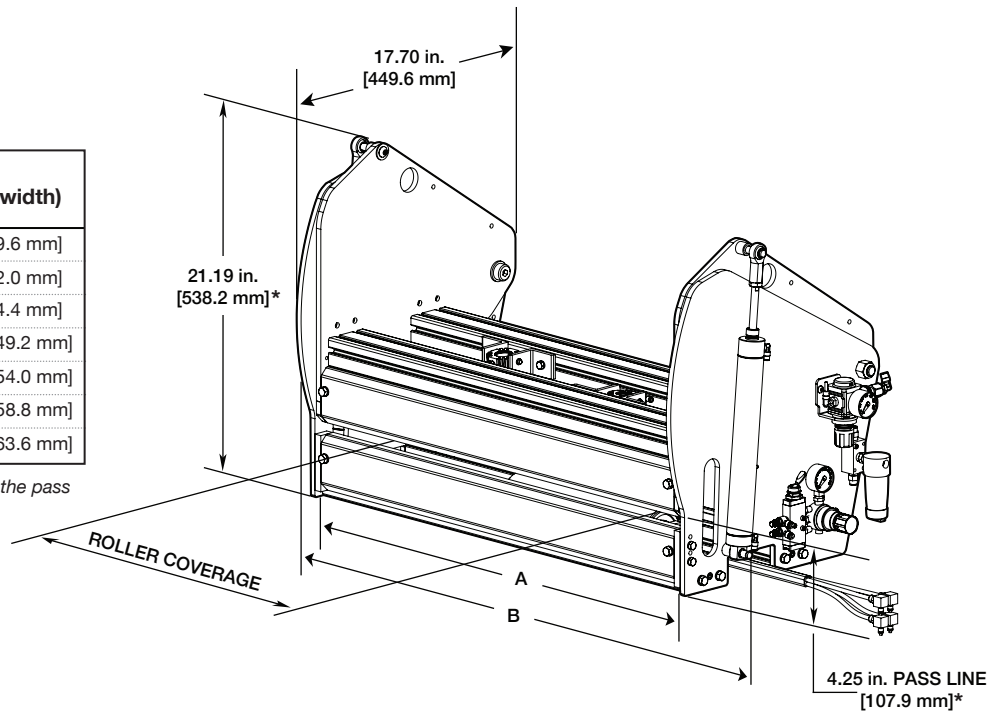
All Uni-Roller® S2 HG lubricators have guards on the entry side only.

**Standard sizes**








Single roller coverage up to 18" [457 mm]  
 Multiple rollers coverage over 18" [457 mm]

Roller coverage	A (extrusion length)	B (overall width)
12" [305 mm]	19.00" [482.6 mm]	25.18" [639.6 mm]
18" [457 mm]	25.00" [635.0 mm]	31.18" [792.0 mm]
23.5" [597 mm]	31.00" [787.4 mm]	37.18" [944.4 mm]
35" [889 mm]	43.00" [1092.2 mm]	49.18" [1249.2 mm]
46.5" [1181 mm]	55.00" [1397.0 mm]	61.18" [1554.0 mm]
58" [1473 mm]	67.00" [1701.8 mm]	73.18" [1858.8 mm]
69.5" [1765 mm]	79.00" [2006.6 mm]	85.18" [2163.6 mm]

\*On units with double air cylinders add 1.40" [35.6 mm] to the pass line and overall height.



**Features & options**

Standard features	Options
 <p><b>Polyester felt cover</b> Extremely durable and compatible with a broad range of fluids.</p>	 <p><b>Polyurethane foam cover</b> Reduces uneven wear on cover when a variety of stock widths and thicknesses are used. Due to limited fluid compatibility, consult Unist.</p>
<p><b>Standard fluid dispenser tube</b> Best choice for most applications with the widest range of fluid compatibility and flow rates.</p>	<p><b>Low volume fluid dispenser tube</b> For use in applications requiring coverage of 50 mg/ft<sup>2</sup> [538 mg/m<sup>2</sup>] or less.</p>
 <p><b>Manual switch</b> Manual open/close control of the roller set.</p>	 <p><b>Solenoid valve</b> To tie into control systems to automate opening of roller set.</p>
 <p><b>Single pneumatic air cylinder</b> Preferred method for maintaining pressure on stock and opening the rollers to load a new coil.</p>	 <p><b>Double pneumatic air cylinder</b> The double air cylinder is required for stock thickness over 0.25" [6.35 mm].</p>
	 <p><b>Proximity sensor</b> Used to provide an input signal to a SmartFlow™ controller based on roller rotation. Select when an intermittent signal from the press is not available.</p>

# Uni-Roller® S2 Powered

# Blank coating solution

## The Uni-Roller® S2 Powered

is the ultimate solution for blank stock lubrication. Combined with a SmartFlow™ or SPR-2000 JR™ programmable fluid controller, the Uni-Roller® S2 Powered will apply the correct amount of fluid for your application and do it consistently from one blank to the next.

- Reduce lubricant consumption by 50% or more
- Quick-change rollers for easy maintenance
- Cleaner floors & work area

**i More information:** [unist.com/s2pwr](http://unist.com/s2pwr)

The internally-supplied rollers are essential to precisely applying the fluid. Inside each of the rollers is a dispenser tube with small holes placed along its length. Fluid is injected into the dispenser tubes from the fluid controller and dispensed across the inside of the rollers.

The lubricant is transferred to the stock through durable polyester felt or polyurethane foam roller covers. These cover materials apply the lubricant smoothly and evenly across both the top and bottom of the stock.

The Uni-Roller® S2 Powered applies the exact amount of lubricant required. This eliminates the mess and waste associated with in-die spray systems and externally-fed roller systems. The result is not only a cleaner shop, but also significant savings from decreased fluid waste, improved die life, better part quality and increased machine up-time. Many customers have reported savings resulting in a return on investment of less than six months!

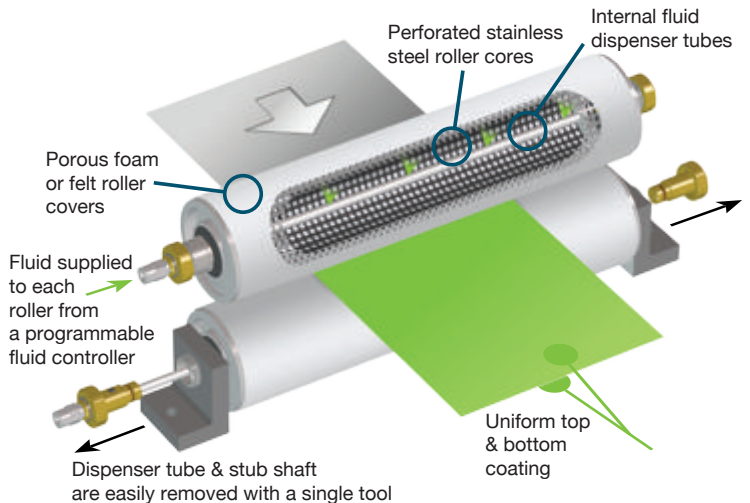
The brushed stainless steel guards protect the rollers and guide material when loading coil stock or feeding blanks. With the guards removed for better access, a roller can be changed in about a minute using a single wrench. The Uni-Roller® S2 Powered lubricator is built to handle any manufacturing environment without sacrificing ease of maintenance.



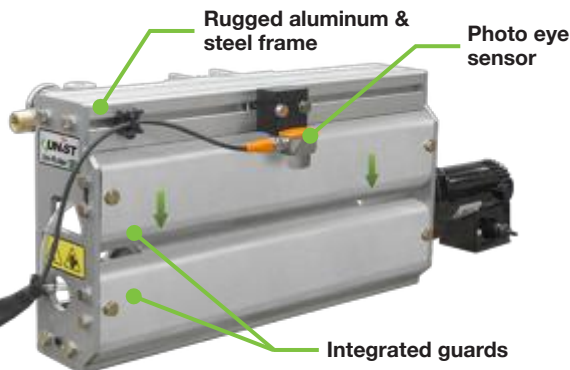
## The blank coating solution

The Uni-Roller® S2 Powered lubricator uses a photo eye sensor to detect blanks and provides an input to the SmartFlow™ programmable fluid controller.

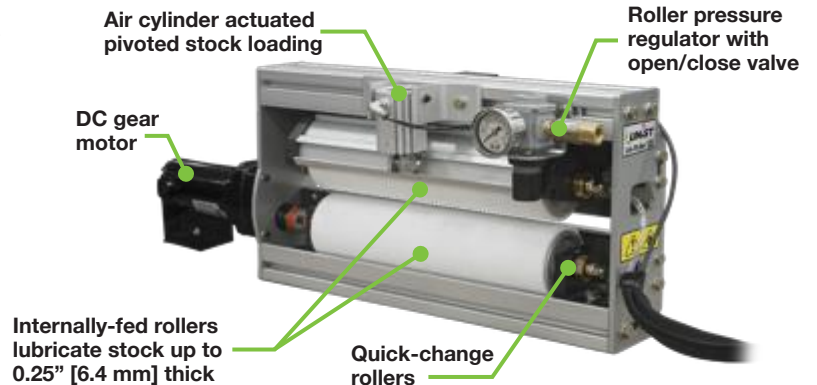
A single roller set is used for widths of 18" [457 mm] or less where the lower roller is directly driven. For blanks over 18" [457 mm] wide, multiple 12" [305 mm] wide roller sets are staggered and overlapped. Each lower roller is driven by a heavy-duty chain from a central shaft.



### Single roller entry side



### Single roller exit side

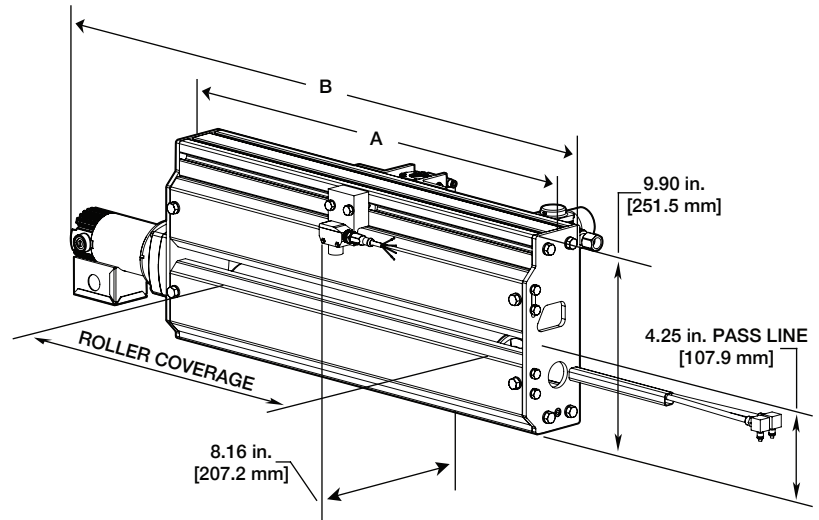


Single roller unit shown above. Lubricators with multiple roller sets have guards on both entry and exit sides.

## Standard sizes

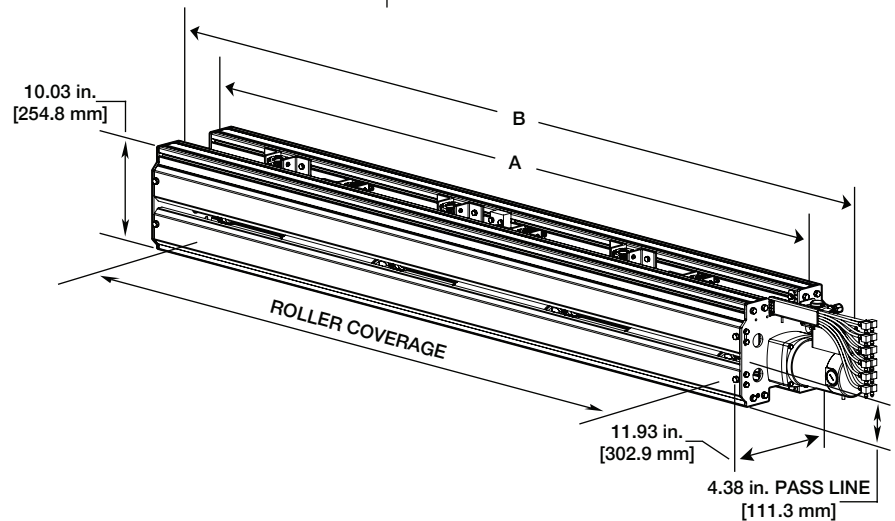
Single roller coverage of 6" [152 mm] to 18" [457 mm]

Roller coverage	A (extrusion length)	B (overall width)
6" [152 mm]	12.00" [304.8 mm]	20.24" [514.1 mm]
12" [305 mm]	18.00" [457.2 mm]	26.24" [666.5 mm]
18" [457 mm]	24.00" [609.6 mm]	32.24" [818.9 mm]







Multiple rollers coverage over 18" [457 mm]

Roller coverage	A (extrusion length)	B (overall width)
23.5" [597 mm]	30.00" [762.0 mm]	41.18" [1046.0 mm]
35" [889 mm]	42.00" [1066.8 mm]	53.18" [1350.8 mm]
46.5" [1181 mm]	54.00" [1371.6 mm]	65.18" [1655.6 mm]
58" [1473 mm]	66.00" [1676.4 mm]	77.18" [1960.4 mm]
69.5" [1765 mm]	78.00" [1981.2 mm]	89.18" [2265.2 mm]



## Features & options

Standard features	Options
 <p><b>Polyester felt cover</b> Extremely durable and compatible with a broad range of fluids.</p>	 <p><b>Polyurethane foam cover</b> Reduces uneven wear on cover when a variety of stock widths and thicknesses are used. Due to limited fluid compatibility, consult Unist.</p>
<p><b>Standard fluid dispenser tube</b> Best choice for most applications with the widest range of fluid compatibility and flow rates.</p>	<p><b>Low volume fluid dispenser tube</b> For use in applications requiring coverage of 50 mg/ft<sup>2</sup> [538 mg/m<sup>2</sup>] or less.</p>
 <p><b>Variable speed DC drive</b> Manual speed control through a potentiometer for speeds up to 145 ft/min [44 m/min].</p>	 <p><b>AC variable frequency drive</b> Automated speed control for speeds up to 150 ft/min [46 m/min]. Not available on single roller units.</p>

### The Mini-Roller™

is ideal for thin or narrow stock applications where a Uni-Roller® S2 is too large for the press window. When combined with a SmartFlow™ or SPR-2000 JR™ the Mini-Roller™ will apply the correct amount of fluid for your application and do it consistently day after day.

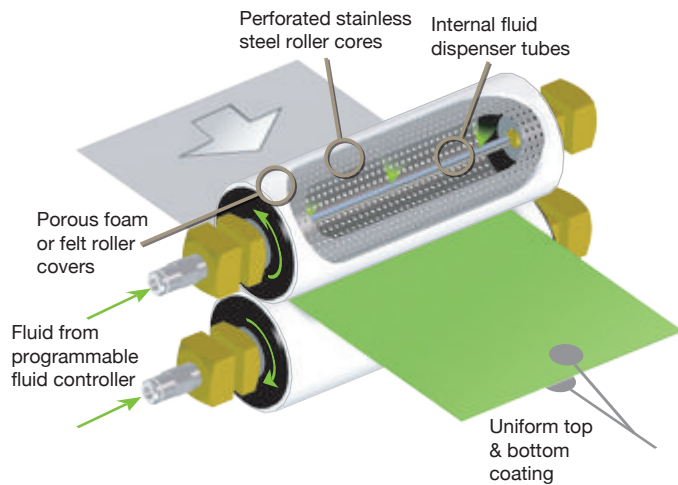
- Reduce lubricant consumption by 50% or more
- Cleaner floors & work area
- Increase production rates

**i More information:** [unist.com/mini](http://unist.com/mini)

The Mini-Roller™ is available in both horizontal and vertical configurations. Each uses internally-supplied rollers that are essential to precisely applying the fluid.

The horizontal configuration has a dispenser tube with small holes placed along its length inside each of the rollers. Fluid is injected into the dispenser tubes from the fluid controller and dispensed across the inside of the rollers.

The vertical configuration includes a baffle positioned inside each of the rollers near the top. Every time fluid is injected into the dispenser tube from the fluid controller, it spreads across the baffle where it is then redirected to the outside of the roller. The wicking action of the roller cover material then draws the fluid along the length of the roller.

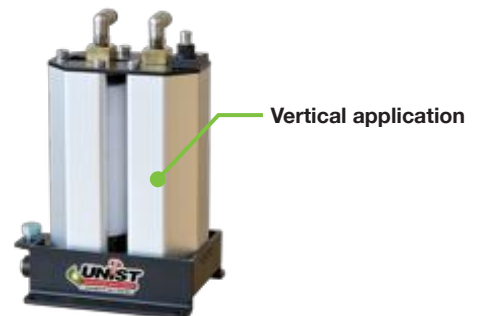
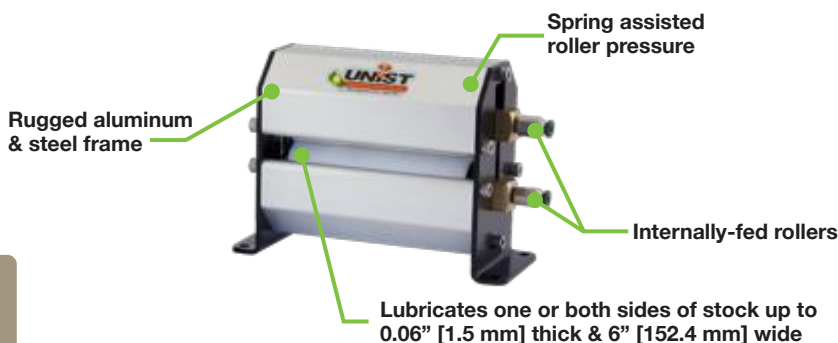
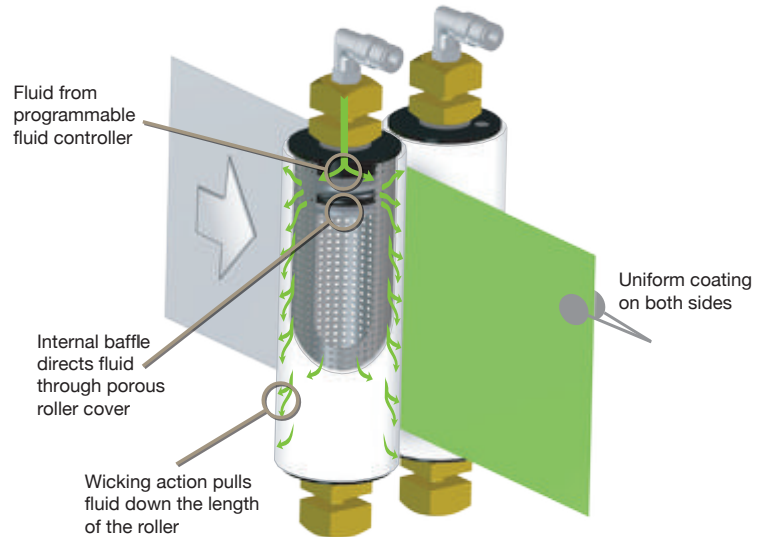


Perfect for thin & narrow stock

The lubricant is transferred to the stock through durable polyester felt or polyurethane foam roller covers. These cover materials apply the lubricant smoothly and evenly across both sides of the stock.

The Mini-Roller™ applies the exact amount of lubricant required. This eliminates the mess and waste associated with in-die spray systems and externally-fed roller systems. The result is not only a cleaner shop, but also significant savings from decreased fluid waste, improved die life, better part quality and increased machine up-time. Many customers have reported savings resulting in a return on investment of less than six months!

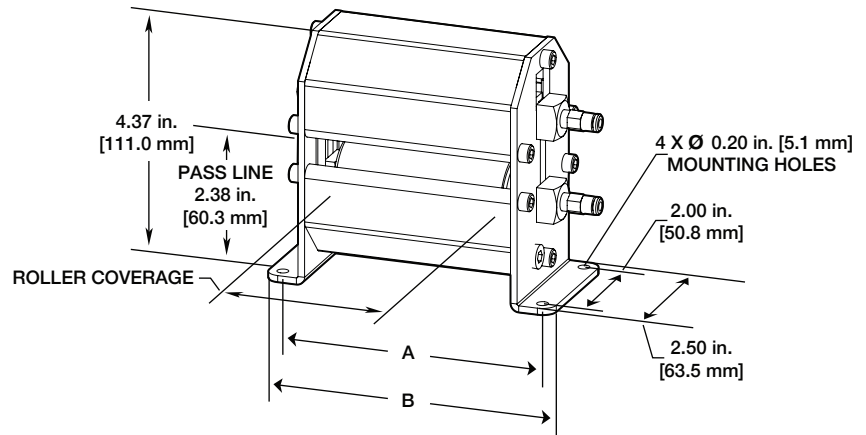
The Mini-Roller™ is available in six sizes ranging from 1" [25 mm] wide to 6" [152 mm] wide with a stock thickness up to 0.06" [1.5 mm].



### Standard sizes

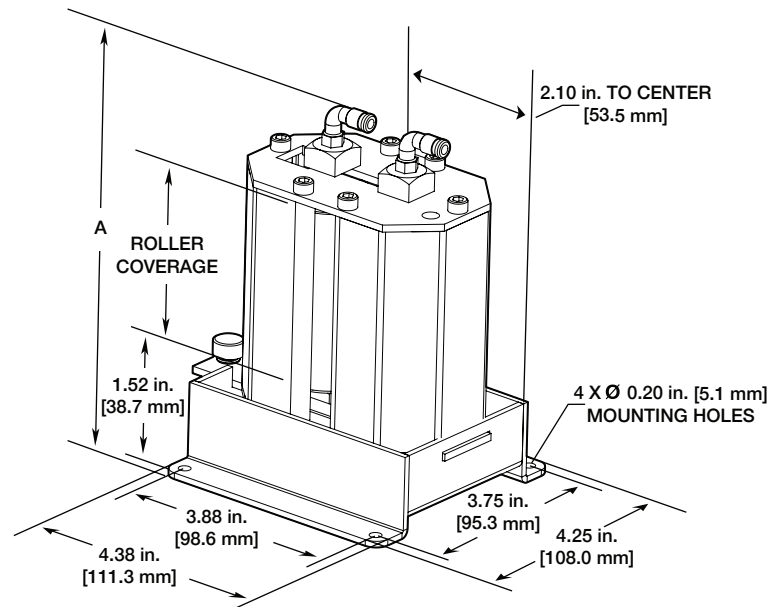
Horizontal Mini-Rollers™ coverage up to 6" [152 mm]

Roller coverage	A (mounting holes centers)	B (overall width)
1" [25 mm]	2.73" [69.3 mm]	3.23" [82.0 mm]
2" [51 mm]	3.73" [94.7 mm]	4.23" [107.4 mm]
3" [76 mm]	4.73" [120.1 mm]	5.23" [132.8 mm]
4" [102 mm]	5.73" [145.5 mm]	6.23" [158.2 mm]
5" [127 mm]	6.73" [170.9 mm]	7.23" [183.6 mm]
6" [152 mm]	7.73" [196.3 mm]	8.23" [209.0 mm]



Vertical Mini-Rollers™ coverage up to 6" [152 mm]

Roller coverage	A (overall height)
1" [25 mm]	4.11" [104.4 mm]
2" [51 mm]	5.11" [129.8 mm]
3" [76 mm]	6.11" [155.2 mm]
4" [102 mm]	7.11" [180.6 mm]
5" [127 mm]	8.11" [206.0 mm]
6" [152 mm]	9.11" [231.4 mm]



### Features & options

Standard features	Options
 <p><b>Polyester felt cover</b> Extremely durable and compatible with a broad range of fluids.</p>	 <p><b>Polyurethane foam cover</b> Reduces uneven wear on cover when a variety of stock widths and thicknesses are used. Due to limited fluid compatibility, consult Unist.</p>
	 <p><b>Rotation sensor</b> Used to provide an input to a SmartFlow™ or SPR-2000 JR™ controller based on roller rotation. Select when an intermittent input signal is not available.</p>

# Low Volume Spray Nozzles

For non-contact or supplemental applications

## Low Volume Spray Nozzles

When a continuous coating of fluid is needed on a smooth surface, Uni-Roller® applicators excel. However, when the surface isn't smooth or intermittent coverage is required, the Unist Low Volume Spray Nozzle is the answer. The Low Volume Spray Nozzle, when paired with the SmartFlow™ programmable fluid controller, delivers a consistent and controlled spray coating to any surface.

- Valve at nozzle tip eliminates messy drips
- Immediate on/off spray control
- Fine control of spray pattern

**i More information:** [unist.com/lv](http://unist.com/lv)

Precision spray for maximum efficiency



The Low Volume Spray Nozzle operates using a compressed air signal to control an internal valve at the nozzle tip. This allows crisp on/off control, eliminating lag and preventing messy fluid drips. The spray coverage can be finely tuned using precision needle valves that independently control the liquid and air output. These needle valves can be located on the spray nozzle, or at the SmartFlow™ controller, providing the option of adjusting the spray mix at the point of application or keeping all the controls in a central location.

### Standard adjustment



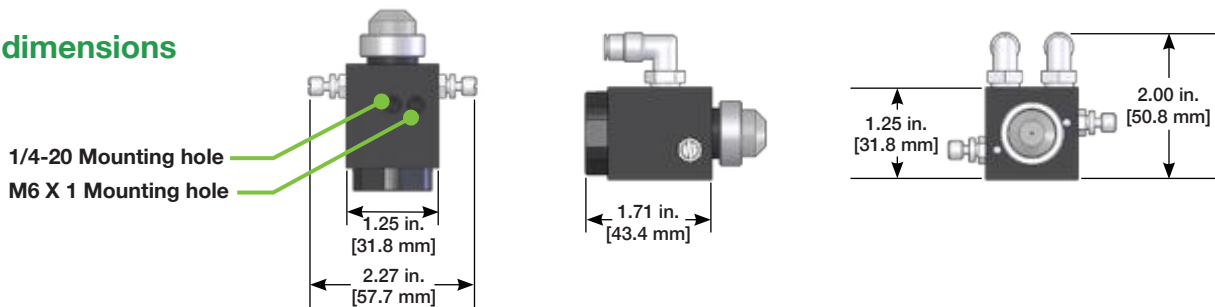
Adjust the fluid and air right at the nozzle

### Remote adjustment



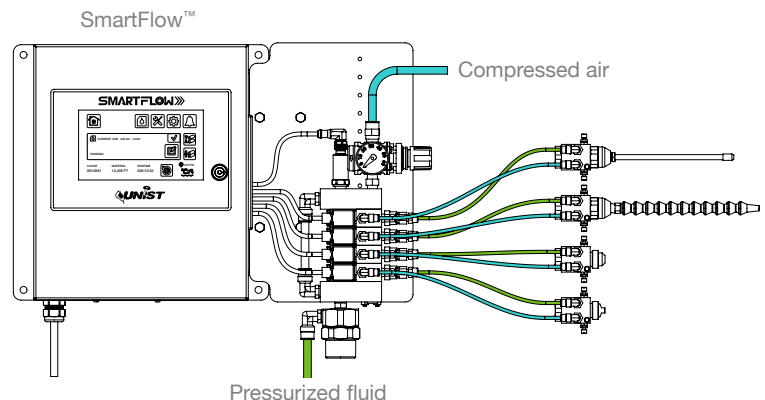
Adjust the fluid and air at the remote adjustment solenoid valve bank on the SmartFlow™ programmable fluid controller

## Nozzle dimensions



## System example

The Low Volume Spray Nozzles connect directly to the outputs on the SmartFlow™. Up to 22 Low Volume Spray Nozzles can be independently controlled, or they can be used in combination with a Uni-Roller® S2 applicator, giving maximum flexibility in coverage and control.

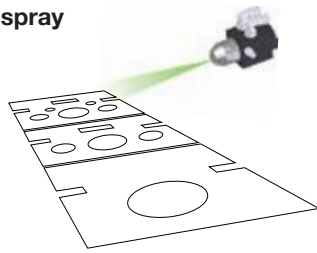




## Spray patterns

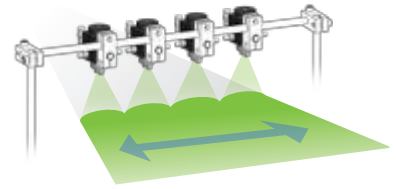
### Conical spray

The conical spray tip produces a round pattern that varies in size based on the distance of the nozzle from the surface.

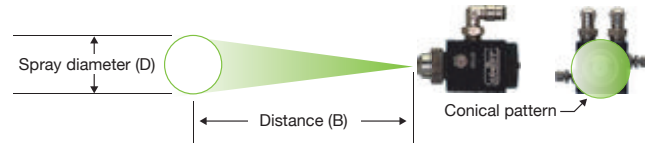


### Fan spray

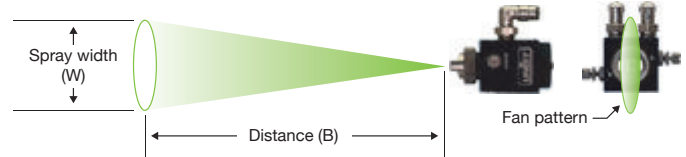
The fan spray tip produces a flat spray pattern that varies in size based on the distance of the nozzle from the surface.



Approximate spray dimensions	
B	D*
3" [76 mm]	1.25" [32 mm]
6" [152 mm]	2.25" [57 mm]
12" [305 mm]	3.50" [89 mm]
18" [457 mm]	4.25" [108 mm]
24" [610 mm]	5.50" [140 mm]
30" [762 mm]	6.75" [172 mm]



Approximate spray dimensions	
B	W*
3" [76 mm]	7.5" [191 mm]
6" [152 mm]	12" [305 mm]
9" [229 mm]	15" [381 mm]
12" [305 mm]	18" [457 mm]
15" [381 mm]	23" [584 mm]
18" [457 mm]	26" [660 mm]



\* Data approximates spray pattern for the Low Volume Spray Nozzles. Please note that these values are a guideline for initial nozzle setup. Actual spray pattern will vary depending on the applied fluid, air and fluid pressures, and metering screw settings.

## Options



Articulating arm



Adjustable magnet mount



Modular mounting system

Create your own mounting solution with our modular mounting system.



Nozzle stud



Mounting rod

Cut to size from 6-48"  
[152.4-1219.2 mm]  
Lengths in 6" [152.4 mm]  
increments



Bar clamp



Square base plate

**Extended nozzle options** allow the Low Volume Spray Nozzle to reach tight areas that otherwise might be difficult to access.



Semi-rigid copper



Loc-Line®

The **In-Die Quick Connect** allows Unist spray nozzles to be permanently mounted to the die, ensuring they remain in position with each die change. Each quick connect is keyed to assure operators reattach the lines correctly. Integral check valves prevent dripping. This is an ideal solution when die-mounted nozzles are necessary.



# Airless Spray Nozzles

For non-contact or supplemental applications

## Airless Spray Nozzles

The Unist Uni-Roller® S2 excels at applying a continuous even coating of fluid to coil stock or a blank. However, there are times when additional fluid is needed at specific areas in the die. Unist Airless Spray Nozzles provide this extra boost. When connected to the SmartFlow™ programmable fluid controller, they integrate seamlessly into the jobs lubrication profile.

- Versatile nozzle for in-die lubrication
- User-friendly design
- Requires no air to operate

**i More information:** [unist.com/airless](http://unist.com/airless)

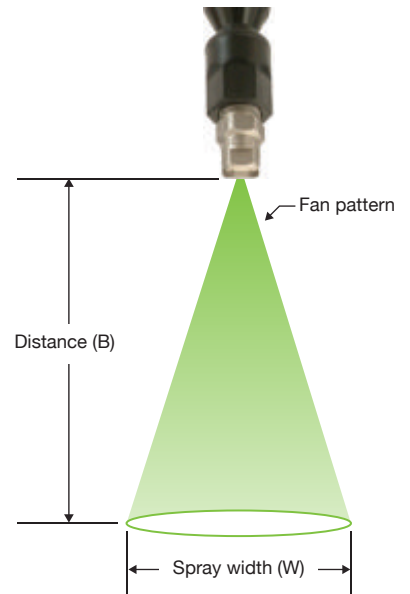
Additional fluid in tough applications



Because these nozzles rely on the velocity of the fluid to create the spray pattern, their proper operation requires a fluid which is close to the viscosity of water. As a result, they work extremely well with water based solutions and emulsions, but are generally not recommended for use with oils or viscous synthetic fluids.

All Unist Airless Spray Nozzles have a fan spray pattern. The spray diameter and flow rate of the fluid are controlled by specifying the spray angle and the nozzle orifice size. The available spray angles and corresponding coverage are shown below.

Approximate spray dimensions					
B	W				
	0°	30°	50°	80°	110°
3" [76 mm]	stream	1.6" [41 mm]	2.8" [71 mm]	5.1" [130 mm]	8.6" [218 mm]
6" [152 mm]	stream	3.2" [81 mm]	5.6" [142 mm]	10.1" [257 mm]	17.1" [434 mm]
9" [229 mm]	stream	4.9" [124 mm]	10.0" [254 mm]	18.1" [460 mm]	30.4" [772 mm]
12" [305 mm]	stream	6.4" [163 mm]	11.2" [284 mm]	20.2" [513 mm]	34.3" [871 mm]
15" [381 mm]	stream	8.1" [206 mm]	14.0" [356 mm]	25.2" [640 mm]	42.8" [1087 mm]
18" [457 mm]	stream	9.7" [246 mm]	16.8" [427 mm]	30.3" [770 mm]	51.4" [1306 mm]

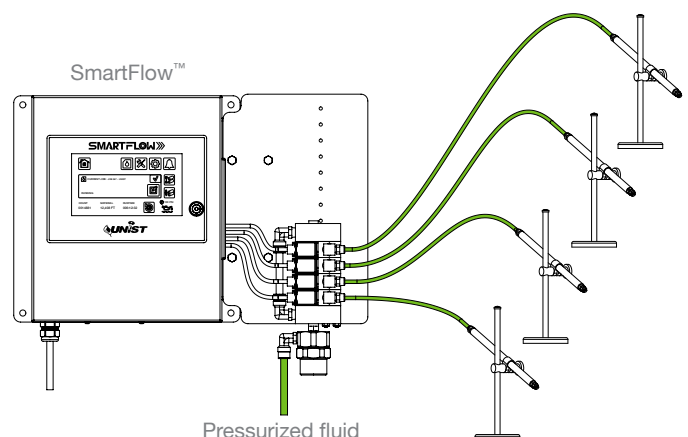


The available flow rates are:

Airless Spray Nozzle flow rate (based on water)	Orifice size	Flow rate range
	0.026" [0.66 mm]	2.21 cc/sec @ 5 psi [0.34 bar] to 10.1 cc/sec @ 100 psi [7 bar]
	0.031" [0.79 mm]	3.31 cc/sec @ 5 psi [0.34 bar] to 15.1 cc/sec @ 100 psi [7 bar]
	0.036" [0.91 mm]	4.42 cc/sec @ 5 psi [0.34 bar] to 20.2 cc/sec @ 100 psi [7 bar]

## System example

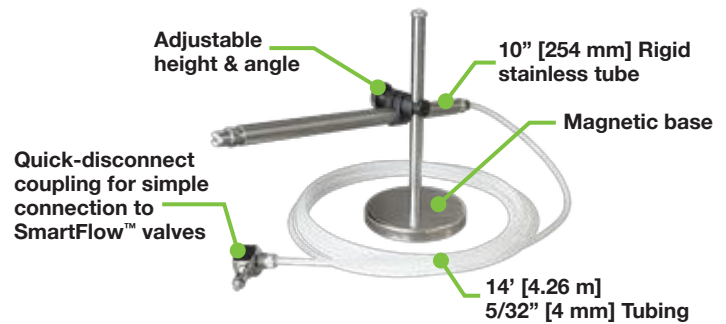
The Airless Spray Nozzles connect directly to the outputs on the SmartFlow™. Up to 22 nozzles can be independently controlled or used in combination with a Uni-Roller® S2 applicator, giving maximum flexibility in coverage and control.



## Nozzle styles

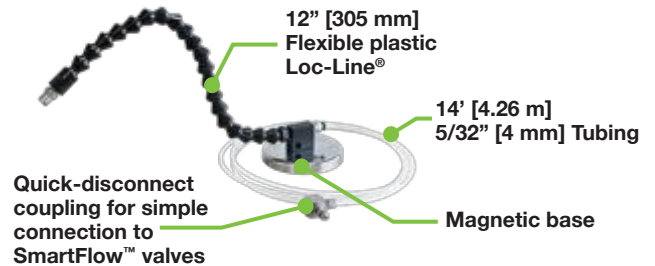
### Rigid Stainless Steel Nozzle

This 10" [254 mm] Rigid Stainless Steel Nozzle includes a vertical mount that allows height and application angles to be adjusted. The Rigid Stainless Steel Nozzle offers superior rigidity, making it the preferred choice when the nozzle position doesn't require frequent changes.



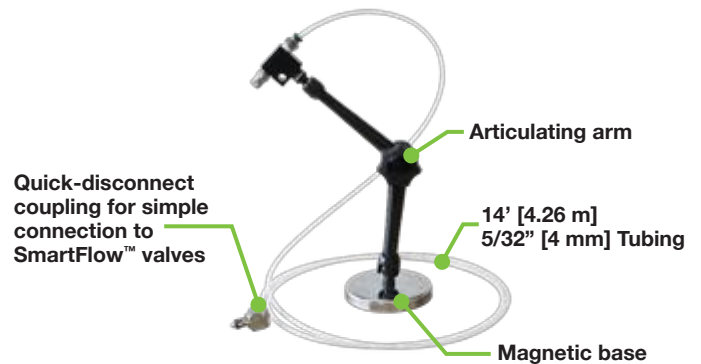
### Loc-Line® Nozzle

This 12" [305 mm] flexible plastic Loc-Line® Nozzle is easy to adjust, but less rigid than the other nozzle options.



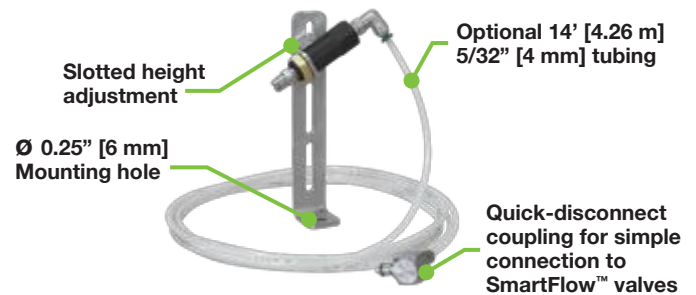
### Articulating Arm Nozzle

The Articulating Arm Nozzle provides rigid positioning and can easily be adjusted and locked in place with one knob.



### In-Die Nozzle

This nozzle rigidly attaches to the die. The slotted adjustment bracket allows for multiple nozzle positioning adjustments including nozzle height, fan spray orientation, rotation, and pivoting. Once positioned, it can be locked into position by tightening the hardware.



## Options

The **In-Die Quick Connect** allows Unist spray nozzles to be permanently mounted to the die, ensuring they remain in position with each die change. Each quick connect is keyed to assure operators reattach the lines correctly. Integral check valves prevent dripping. This is an ideal solution when die-mounted nozzles are necessary.



### Fluid supply systems & stands

A consistent supply of pressurized fluid is a key component of any system that is controlled by a SmartFlow™ or SPR-2000 JR™ programmable fluid controller. To meet this need, Unist has assembled a broad range of options suitable for most any application including:

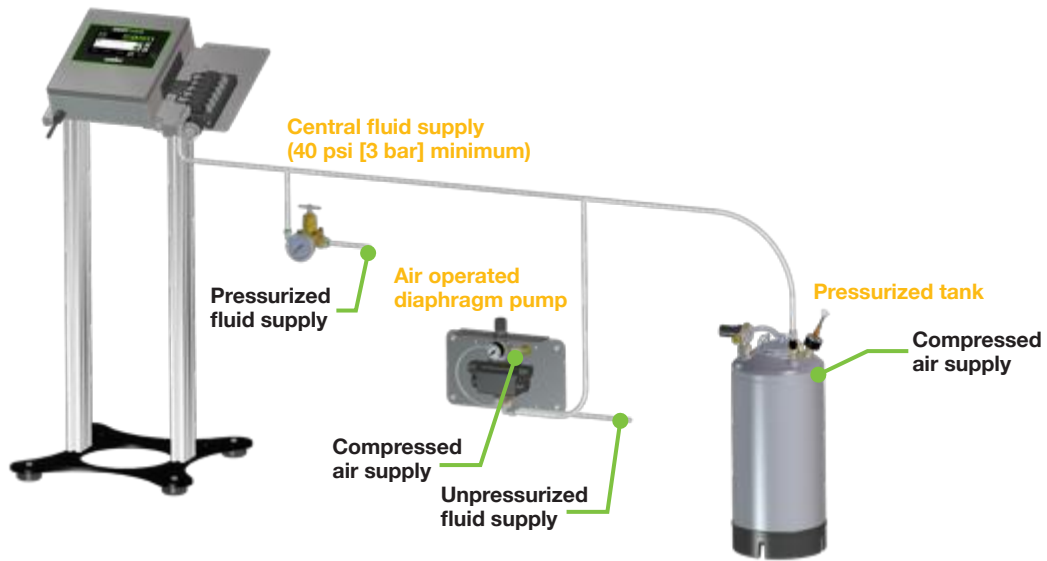
- Pressurized tanks from 4 to 30 gallons [15-113 liters]
- Air-operated diaphragm pump
- Fluid pressure regulator for connection to a customer's existing pressurized supply of fluid

**i More information:** [unist.com/tanks](http://unist.com/tanks)

An essential component



SmartFlow™ controller



### Options & accessories



The **fluid regulator assembly** can be used to reduce the pressure of an existing fluid supply system. The assembly allows for the fluid pressure to be set anywhere from 3-50 psi [0.21-3 bar] and includes a 0-60 psi [0-4 bar] pressure gauge.



The **air operated diaphragm pump** is available to supply pressurized fluid from a non-pressurized tote or drum. The pump includes an on/off valve, 0-60 psi [0-4 bar] regulator and fluid by-pass loop to prevent stalling.



The **25 micron filter assembly** can be used with any SmartFlow™ based system for superior fluid filtering.



The **sump tube** can be used in conjunction with the air operated diaphragm pump when drawing from a 55 gallon [208 liter] drum.

### Tank options



The **4 gallon [15 liter] stainless steel pressure tank** comes equipped with a 0-100 psi [0-7 bar] regulator and a low level switch.



The **6 gallon [22 liter] ASME rated pressure tank** comes equipped with a 0-100 psi [0-7 bar] regulator, low level switch and sight gauge.



The **15 gallon [56 liter] ASME rated pressure tank** comes equipped with a 0-100 psi [0-7 bar] regulator, low level switch and sight gauge.



The **20 gallon [75 liter] polyethylene tank** comes equipped with the 25 micron filter assembly, air operated diaphragm pump, and stand.



The **30 gallon [113 liter] ASME rated pressure tank** comes equipped with a 0-100 psi [0-7 bar] regulator, low level switch and sight gauge.



The **auto refill fluid supply system** incorporates a 10 gallon [38 liter] ASME rated stainless steel pressure tank with 0-60 psi [0-4 bar] precision regulator and integral high and low level switches. The system also includes PLC controls and an electric pump to automatically refill the tank, which eliminates down time. This system provides superior performance when drawing fluid from a tote or drum.

### The Uni-Blend™ mixing system

is designed to accurately mix water with concentrated fluids in any ratio from 1:1 to 50:1 and deliver the mixture under pressure to a customer-supplied piping network. The Uni-Blend™ automatically mixes batches and maintains a reserve supply of up to 50 gallons [190 liters] per ratio. Up to three batches of differing ratios can be maintained in separate tanks.

- Accurate flow control
- Maintain the perfect pressure & mix
- Easy setup & intuitive interface

**More information:** [unist.com/uniblend](http://unist.com/uniblend)

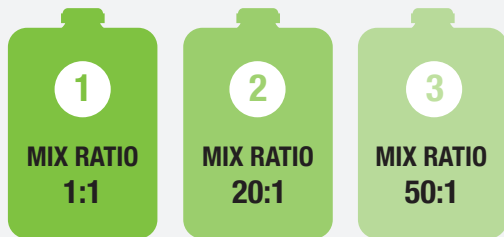
Fluid mixing technology



The Uni-Blend™ is the only fully programmable industrial fluid mixing system available on the market and is built for years of service in tough, industrial environments.

### 3 ratios

Maintain one, two, or three separate mix ratios



maintain any ratio between 1:1 and 50:1

### Specifications

- **Water supply requirements:** 30-60 psi [2-4 bar], 4 gallons/min [15 liters/min] minimum available flow
- **Power requirements:** 230 VAC, 60Hz, 3 phase with neutral tap, 30 amp
- **Holding tank capacity:** 50 gallons [190 liters] per tank
- **Mix ratio range:** 1:1 to 50:1
- **Number of mix ratios:** 1 to 3
- **Mixed fluid supply:** 2 gallons/min [8 liters/min] per ratio
- **Mixed fluid pressure:** 5-80 psi [0.34-6 bar]
- **Tote stand size:** 48" [1219 mm] x 40" [1016 mm] tote, 330 gallons [1250 liters] or 275 gallons [1040 liters]

### Accurate flow control

The Uni-Blend™ utilizes precise flow meters to ensure accurate mixing. Mixing is controlled by the PLC which opens a water valve and monitors the water flow rate. Simultaneously, the PLC controls the rotational speed of a gear pump which delivers concentrate at the proper rate for the programmed mix ratio. The flow rates are constantly monitored to maintain the proper rate regardless of viscosity, temperature, or downstream pressure. This level of precision allows the Uni-Blend™ system to deliver the perfect batch each and every time.



Large tank opening makes for easy cleaning & maintenance

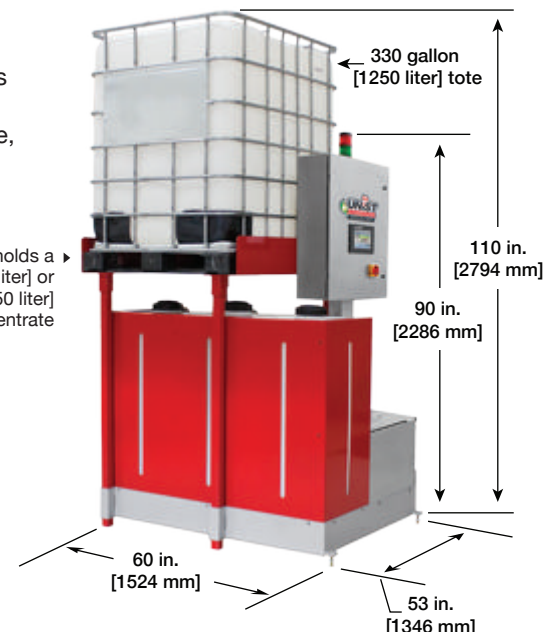


Durable, heavy-gauge steel construction



Reliable & accurate positive-displacement concentrate pump

Optional platform holds a 275 gallon [1040 liter] or 330 gallon [1250 liter] tote of concentrate

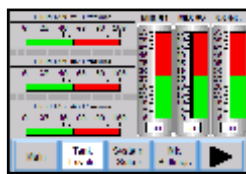


## Maintain the perfect pressure & mix

The Uni-Blend™ is designed to constantly circulate your fluid to maintain a homogeneous mixture. The mixed fluid in the tank is stored at atmospheric pressure and delivered to your piping network under pump pressure. To ensure continuous circulation, the piping network should be configured as a loop starting and returning to the Uni-Blend™. To set and maintain proper fluid pressure, a relief valve is installed in the return line of the loop.



View alarm details



View tank levels



Adjust mix settings

## Easy setup & intuitive interface

At the heart of its advanced control system is an industrial PLC and touch screen user interface which makes monitoring the operation and setting mix ratios easy.

## Continuous monitoring

The system is designed to constantly monitor the mixing operation and create an alarm condition if a fault occurs. The system features a warning light as well as an alarm output on the PLC which can be used for remote monitoring of the system.



### The Uni-Blend™ monitors:

- Low concentrate level
- Low water flow
- Low batch level (mix demand exceeds supply)
- Low concentrate flow
- Mix tank high level (back flow monitor)
- Low output pressure



Level sensors monitor fluid levels

## Automatic replenishment

The Uni-Blend™ maintains a continuous supply by monitoring fluid levels and automatically replenishing your batch when necessary. The holding tank(s) contains a level sensor that is monitored by the PLC. The tank will fill with the mixture until it reaches the appropriate level for the programmed batch size, at which time the water valve will close and the concentrate pump will stop. This process will repeat itself as necessary to refill the tank when the fluid drops to a pre-programmed level.

## Complete mixing

The Uni-Blend™ utilizes an in-line static mixer to ensure a complete blend of the water and concentrate. The design of the static mixer's internal fins force the water and concentrate to intermix. This results in a perfect homogeneous mixture.



If a standard roller or spray system does not meet your needs, contact Unist for a quotation on a special system. Whether it's a modified standard system, or a complete custom design, **Unist can engineer a solution for you!**

## Custom system examples





# Application Questionnaire

If you would like Unist to specify a system for your specific needs, please fill out a copy of this form, fax it at (616) 949-9503, email it to [salesupport@unist.com](mailto:salesupport@unist.com) or fill it out online at [unist.com/mfapp](http://unist.com/mfapp). Include a technical data sheet and a safety data sheet on the fluid you will use with the system. A Unist sales engineer will promptly reply with a system recommendation.

## Company information

Company name: \_\_\_\_\_

Date: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

\_\_\_\_\_

Fax: \_\_\_\_\_

\_\_\_\_\_

Contact person: \_\_\_\_\_

Distributor: \_\_\_\_\_

Email: \_\_\_\_\_

Contact: \_\_\_\_\_

## Operation information

Type of operation:

- |  |                                       |
|--|---------------------------------------|
| <input type="checkbox"/> Stamping      | <input type="checkbox"/> Roll forming |
| <input type="checkbox"/> Drawing       | <input type="checkbox"/> Cold rolling |
| <input type="checkbox"/> Fine blanking | <input type="checkbox"/> Other: _____ |

Telephone: \_\_\_\_\_

Fax: \_\_\_\_\_

### Coil coating

Machine used: \_\_\_\_\_

Press rate: \_\_\_\_\_ strokes/min

Material feed rate: \_\_\_\_\_

<input type="checkbox"/> inches/stroke	<input type="checkbox"/> mm/stroke
<input type="checkbox"/> feet/min	<input type="checkbox"/> mm/min

#### Material information

Type of material: \_\_\_\_\_

Material width range: \_\_\_\_\_  inches  mm

Material thickness range: \_\_\_\_\_  inches  mm

#### Supplemental lubrication

Requires additional in-die lubrication?  Yes  No

### Blank coating

Machine used: \_\_\_\_\_

Manually fed  Conveyor fed

Blank feed rate (pieces per min): \_\_\_\_\_

Conveyor speed (feet per min): \_\_\_\_\_

#### Blank size information

Type of material: \_\_\_\_\_

Material width range: \_\_\_\_\_  inches  mm

Material length range: \_\_\_\_\_  inches  mm

Material thickness range: \_\_\_\_\_  inches  mm

#### Supplemental lubrication

Requires additional in-die lubrication?  Yes  No

## Lubricant information

Lubricant used: \_\_\_\_\_

Manufacturer: \_\_\_\_\_

Lubricant type:

- |                                    |   |
|------------------------------------|---|
| <input type="checkbox"/> Petroleum | <input type="checkbox"/> Semi-synthetic |
| <input type="checkbox"/> Synthetic | <input type="checkbox"/> Other: _____   |

Is lubricant water soluble?:  Yes  No  If Yes: \_\_\_\_\_ : \_\_\_\_\_ Water:Concentrate ratio

Did you send a fluid sample kit to Unist?:

Yes  No

Present lubrication application system:

None  Spray  Roller  Other

Notes

Empty rounded rectangular box for notes.





Unist, Inc.  
4134 36th Street SE  
Grand Rapids, MI 49512 USA  
U.S. & Canada: 800.253.5462  
International: 616.949.0853  
Email: [salesupport@unist.com](mailto:salesupport@unist.com)