

**Senninger®**

# Mechanized Irrigation

*Low Pressure - High Performance*

AGRICULTURAL IRRIGATION



*A Hunter Industries Company*

[senninger.com](http://senninger.com)

# WHAT'S INSIDE

## PARTNERING TOGETHER

Since 1963, Senninger has maintained a commitment to innovating and manufacturing quality sprinklers, spray nozzles, and pressure regulators to improve your crop yield. Our goal is to ensure that all products and enhancements are designed to make it easier and more profitable for you to provide food and fiber for a growing population.

Senninger is focused on conservation. Our high-performance sprinklers use low pressure to reduce water usage and energy costs, which is good for the growers and the planet.

As always, Senninger's products are backed by a two-year warranty on materials, workmanship, and performance. Nozzles are warranted to retain their orifice size for five years. Our technical support and customer service is second-to-none. We set the bar high because we know that you need more than a high-quality manufacturer, you need a partner.



### SPRINKLER PACKAGE SELECTION FACTORS:

- Soil types / potential runoff
- Crop type / value
- Available water / crop requirements
- Field elevation / pressure regulation
- Pumping costs / operating hours
- Wind / evaporative conditions
- Chemigation
- Machine characteristics
- Uniformity of water distribution
- Cost versus benefits of package
- Farming practices

### WOBBLERS

i-Wob	03
Xi-Wob	05
Xi-Wob TOP	07
Xcel-Wobbler TOP	08

### LDN & LEPA

LDN (Low Drift Nozzle)	09
Close Spacing	11
Quad Spray	12

### PART-CIRCLE

LDN Part-Circle	13
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### SPRAY NOZZLES

End Spray	14
Super Spray	15

### GOOSENECKS

Goosenecks	17
Truss Rod Hose Slings	18

### IMPACT SPRINKLER

Pivot Master Impact	19
---------------------	----

### PRESSURE REGULATORS

PRI	20
PMR-MF	20
PSR	21
PSR-2	21

### COMPONENTS

Pivot Boom System	22
Hose, Clamps, Crimp Tools, Ball Valve	23
Adapters & Fittings	23
Magnum Weight, One Weight	24
Pressure Gauges, Pressure Drops	24
Nozzles	25
Product Warranty	26

The information contained in this catalog is intended to be used as a general guideline only. Your local Senninger dealer will be happy to advise you about packages designed using these products.

**Senninger products are proudly made in the U.S.A.**

# UP3 | UNIVERSAL PIVOT PRODUCTS PLATFORM

Developed in 2008, Senninger's exclusive UP3 (Universal Pivot Products Platform) product line adds significant benefits to the proven technologies of the i-Wob, Xi-Wob, LDN, Super Spray and Xcel-Wobbler UP3 TOP making nozzle changes just a click away.

Growers may want to renozzle to utilize different flow rates on their sprinkler package. Lower flow rates are often used for germination and chemigation. Some growers experience frequent drops in well capacity or simply want to tailor-manage their resources. The UP3 nozzle design offers a quick solution for easy nozzle changes along with two convenient options for nozzle carriers so your next nozzle is always at hand when you're ready to make the change.



## EASY-CLEAN / EASY-CHANGE NOZZLE DESIGN *(Patented)*



Just pinch and pull to remove the nozzle then place and click to re-install. Cleaning and changing nozzles is easy and convenient. There is no need to disassemble or remove the sprinkler.

The color-coded nozzles are highly visible and easy to identify. The nozzle numbers (corresponding to orifice sizes in 64ths of an inch) are visible on the ears, with half sizes denoted beneath the second digit and the notches on the lower edge of the nozzle.

## UP3 DUAL NOZZLE CARRIER *(Patent Pending)*

To access the secondary nozzle, pinch and pull the nozzle from the applicator, flip the carrier over and click in the secondary nozzle. The carrier is marked to indicate high and low flow nozzles. When installed in the applicator, if HIGH is visible on the carrier, then the lower flow nozzle is in use. If LOW is visible on the carrier, the higher flow nozzle is in use.



## UP3 DUAL NOZZLE FITTING

Designed to be used instead of a standard barb x threaded fitting, this device carries two additional UP3 nozzles. Just pinch and pull to remove nozzles and place and click to reinstall. Nozzles are easily identifiable with numbers on the ears. The larger the number, the higher the flow.



# i-Wob®

WOBBLERS



The Senninger i-Wob combines its unique rotary action with the wobbling of grooved deflectors to deliver a consistent droplet size and outstanding uniformity over a large area of coverage. This provides a gentle, rain-like application of water to the soil.

### FEATURES

- Wobbler technology produces low application intensity to preserve soil integrity
- Low pressure operation - 10 to 15 psi (0.69 to 1.03 bar) - saves money and energy
- Four different models available based on desired trajectory and droplet size
- Exclusive below-the-nozzle weight eliminates the need for heavier, conventional drop weights
- UP3 snap-in nozzle is easy to remove for cleaning or changing. To remove the nozzle simply pinch and pull, then place and click to install. Dual Nozzle Carrier available: see pg. 2

### I-WOB SYSTEM ASSEMBLY

- The i-Wob must be mounted with a minimum of 2 ft (0.6 m) reinforced flexible hose above the applicator because of its off-center rotary action. The hose must always be on outlet end of semi-rigid or rigid drop.
- When using the Magnum Weight or One Weight, never use another weight above the i-Wob.
- If you are using a conventional weight above the i-Wob, only use a threaded weight weighing at least 1.5 lbs (0.7 kg), but not exceeding 1 ft (0.31 m) in length. A slipover drop weight is not recommended.



### FOUR MODELS AVAILABLE!

Standard Angle 9-Groove shown above

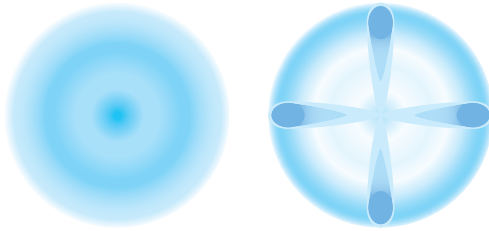


Use the Magnum Weight or The One Weight on flexible hose installations.

(See pg. 24)

*Note: Any modifications or deletions regarding installation requirements will void warranty.*

### INSTANTANEOUS AREA OF COVERAGE



i-Wob

Stream Driven

In this example, the i-Wob is spreading the same amount of water over an area five times greater than the area covered by the spray nozzle.

### LOW APPLICATION INTENSITY

Stream-driven applicators provide good throw distance, but their distinct streams instantaneously place the entire flow in a relatively small area. This more intense application can negatively impact the soil surface. In contrast, the i-Wob applies water to a larger area of soil surface, reducing the impact of the sprinkler's pattern on the soil structure. Larger instantaneous coverage offers a slower intake rate to help reduce runoff and wheel tracking.

### UNMATCHED UNIFORMITY

The i-Wob offers a gentle, more uniform delivery and an even droplet size. Consistently sized droplets help maintain a sprinkler's pattern integrity in wind conditions and are more resistant to evaporation. The i-Wob's droplet size can be tailored to the needs of the soil through the selection of proper deflectors and operating pressures.

WOBBLERS

Four different deflector models based on desired trajectory and droplet size.



I-WOB DESIGN CRITERIA	Standard Angle 6-Groove Small Droplets	Standard Angle 9-Groove Medium Droplets	Low Angle 9-Groove Medium Droplets	Low Angle 6-Groove Large Droplets
<b>Nozzle Sizes</b>				
Minimum	#10 5/23" (3.97 mm)	#6 3/32" (2.38 mm)	#6 3/32" (2.38 mm)	#12 3/16" (4.76 mm)
Maximum*	#26 13/32" (10.32 mm)	#26 13/32" (10.32 mm)	#26 13/32" (10.32 mm)	#26 13/32" (10.32 mm)
<b>Flows</b>				
Minimum	2.24 gpm (509 L/hr)	0.80 gpm (182 L/hr)	0.80 gpm (182 L/hr)	3.24 gpm (736 L/hr)
Maximum	18.35 gpm (4168 L/hr)	18.35 gpm (4168 L/hr)	18.35 gpm (4168 L/hr)	18.35 gpm (4168 L/hr)
<b>Diameters</b>				
Minimum at 3 ft (0.91 m)	36 ft (11.0 m)	31 ft (9.5 m)	31 ft (9.5 m)	40 ft (12.2 m)
Maximum at 3 ft (0.91 m)	46 ft (14.0 m)	53 ft (16.2 m)	47 ft (14.3 m)	49 ft (14.9 m)
Minimum at 6 ft (1.83 m)	35 ft (10.7 m)	34 ft (10.4 m)	35 ft (10.7 m)	44 ft (13.4 m)
Maximum at 6 ft (1.83 m)	50 ft (15.2 m)	57 ft (17.4 m)	50 ft (15.2 m)	53 ft (16.2 m)
Minimum at 9 ft (2.74 m)	39 ft (11.9 m)	38 ft (11.6 m)	39 ft (11.9 m)	49 ft (14.9 m)
Maximum at 9 ft (2.74 m)	47 ft (14.3 m)	59 ft (18.0 m)	55 ft (16.8 m)	57 ft (17.4 m)
<b>Maximum Spacing**</b>				
at 6 ft (1.8 m) ground clearance	18 ft (5.5 m)	20 ft (6.1 m)	18 ft (5.5 m)	15 ft (4.6 m)
at 9 ft (2.74 m) ground clearance	18 ft (5.5 m)	20 ft (6.1 m)	18 ft (5.5 m)	15 ft (4.6 m)
<b>Pressure at the Nozzle</b>				
Minimum	10 psi (0.69 bar)	10 psi (0.69 bar)	10 psi (0.69 bar)	10 psi (0.69 bar)
Maximum	15 psi (1.03 bar)	15 psi (1.03 bar)	15 psi (1.03 bar)	15 psi (1.03 bar)

\*It is recommended that larger nozzle sizes be used only on soils that can handle higher application rates.

\*\* For optimum performance, Senninger recommends the use of maximum spacing for 1-2 spans only.

**Note:** Keep i-Wobs above crop canopy when outlet spacing exceeds 10 ft (3.0 m). This is especially important on high profile crops.

# Xi-Wob®

WOBBLERS



(615 Model shown)

The Senninger Xi-Wob provides the same low application intensity and uniform distribution pattern that has made the i-Wob the leading pivot sprinkler on the market. The Xi-Wob's patented counter balance technology makes it ideal for installation on semi-rigid PE drops, steel drops, and flexible hose drops when used with the Magnum Weight.



### THREE MODELS AVAILABLE!

(610 Model shown above)



Use the Magnum Weight or The One Weight on flexible hose installations.

(See pg. 24)

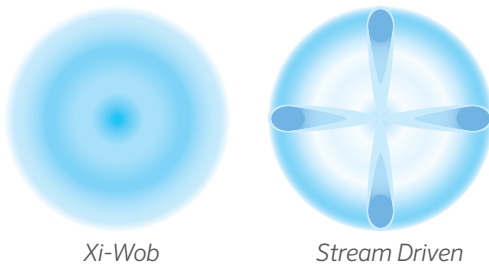
### FEATURES

- Wobbler technology produces low application intensity to preserve soil integrity
- Low pressure operation - 10 to 15 psi (0.69 to 1.03 bar) - saves money and energy
- Three different models available based on desired trajectory and droplet size
- UP3 snap-in nozzle is easy to remove for cleaning or changing. To remove the nozzle simply pinch and pull, then place and click to install. Dual Nozzle Carrier available see pg. 2

### XI-WOB SYSTEM ASSEMBLY

- The Xi-Wob must be mounted no more than 1 ft (0.3 m) below the truss rod on semi-rigid Polyethylene or steel drops. Do not use PVC drops.
- The Xi-Wob can also be mounted on flexible hose drops when used with the Magnum Weight.

### INSTANTANEOUS AREA OF COVERAGE



In this example, the Xi-Wob is spreading the same amount of water over an area five times greater than the area covered by the spray nozzle.

### LOW APPLICATION INTENSITY




Stream-driven applicators provide good throw distance, but their distinct streams instantaneously place the entire flow in a relatively small area. This more intense application can negatively impact the soil surface. In contrast, the Xi-Wob applies water to a larger area of soil surface, reducing the impact of the sprinkler's pattern on the soil structure. Larger instantaneous coverage offers a slower intake rate to help reduce runoff and wheel tracking.

### UNMATCHED UNIFORMITY

The Xi-Wob offers a gentle, more uniform delivery and an even droplet size. Consistently sized droplets help maintain a sprinkler's pattern integrity in wind conditions and are more resistant to evaporation. The Xi-Wob's droplet size can be tailored to the needs of the soil through the selection of proper deflectors and operating pressures.

WOBBLERS

Three different deflector models based on desired trajectory and droplet size.

XI-WOB DESIGN CRITERIA			
	Model 610 (Blue) 6-Groove 10° Trajectory Medium Droplets	Model 615 (Black) 6-Groove 15° Trajectory Large Droplets	Model 910 (Grey) 9-Groove 10° Trajectory Smaller Droplets
<b>Nozzle sizes</b>			
Minimum	#7 7/64" (2.78 mm)	#10 5/32" (3.97 mm)	#10 5/32" (3.97 mm)
Maximum*	#24 3/8" (9.53 mm)	#24 3/8" (9.53 mm)	#24 3/8" (9.53 mm)
<b>Flows</b>			
Minimum	1.09 gpm (248 L/hr)	2.24 gpm (509 L/hr)	2.24 gpm (509 L/hr)
Maximum	15.78 gpm (3584 L/hr)	15.78 gpm (3584 L/hr)	15.78 gpm (3584 L/hr)
<b>Diameters</b>			
Minimum at 3 ft (0.91 m)	30 ft (9.1 m)	38 ft (11.6 m)	33 ft (10.1 m)
Maximum at 3 ft (0.91 m)	41 ft (12.5 m)	43 ft (13.1 m)	36 ft (11.0 m)
Minimum at 6 ft (1.83 m)	35 ft (10.7 m)	43 ft (13.1 m)	38 ft (11.6 m)
Maximum at 6 ft (1.83 m)	45 ft (13.7 m)	50 ft (15.2 m)	43 ft (13.1 m)
Minimum at 9 ft (2.74 m)	37 ft (11.3 m)	46 ft (14.0 m)	43 ft (13.1 m)
Maximum at 9 ft (2.74 m)	47 ft (14.3 m)	55 ft (16.8 m)	50 ft (15.2 m)
<b>Maximum Spacing**</b>			
at 6 ft (1.8 m) ground clearance	18 ft (5.5 m)	20 ft (6.1 m)	18 ft (5.5 m)
at 9 ft (2.74 m) ground clearance	18 ft (5.5 m)	20 ft (6.1 m)	18 ft (5.5 m)
<b>Pressure at the Nozzle</b>			
Minimum	10 psi (0.69 bar)	10 psi (0.69 bar)	10 psi (0.69 bar)
Maximum	15 psi (1.03 bar)	15 psi (1.03 bar)	15 psi (1.03 bar)

\*It is recommended that larger nozzle sizes be used only on soils that are suited for higher application rates.

\*\* For optimum performance, Senninger recommends the use of maximum spacing for 1-2 spans only.

**Note:** When outlet spacing exceeds 10 ft (3.0 m), keep Xi-Wobs above crop canopy. This is especially important on high profile crops. Not warranted for rigid installation on offsets or booms larger than 10.5 ft (3.2 m). Longer offsets and booms require a minimum of 2 ft (0.61 m) reinforced flex hose.

# Xi-Wob® TOP



The Senninger Xi-Wob 605-TOP literally turns the popular Xi-Wob upside down. It is ideal for reducing over-watering by allowing wide spacing (up to 20 feet) and providing a more wind-resistant pattern with extremely uniform coverage. It is mounted on the top-of-pipe along the length of a center pivot or other mechanical-move systems.

WOBBLERS



## FEATURES

- Wobbler technology provides outstanding uniformity over a large wetted area
- Low pressure operation - 10 psi (0.69 bar) - saves money and energy
- UP3 snap-in nozzle is easy to remove for cleaning or changing. To remove the nozzle simply pinch and pull, then place and click to install.

## XI-WOB 605 TOP SYSTEM ASSEMBLY

- The Xi-Wob TOP must employ a 10 psi (0.69 bar) pressure regulator (PSR recommended).
- Use a 3/4" galvanized nipple or Senninger's impact-modified thermoplastic nipple into the mainline (maximum 2 feet length). PVC nipples are not recommended.
- The Xi-Wob TOP is designed specifically for upright installation on top-of-pipe
- The Xi-Wob is not recommended for a manifold installation of two or more units from a single outlet.



## XI-WOB TOP DESIGN CRITERIA

	(White) 6-groove 5-degrees Medium Droplets
<b>Nozzle sizes</b>	
Minimum	#10 5/32" (3.97 mm)
Maximum*	#24 3/8" (9.53 mm)
<b>Flows</b>	
Minimum	2.24 gpm (509 L/hr)
Maximum	12.88 gpm (2925 L/hr)
<b>Diameters</b>	
Minimum at 12 ft (3.66 m)	45 ft (13.7 m)
Maximum at 12 ft (3.66 m)	50 ft (15.2 m)
<b>Maximum Spacing at 12 ft (3.66 m) ground clearance</b>	
	20 ft (6.1 m)
<b>Pressure at the Nozzle</b>	
	10 psi (0.69 bar)

\* It is recommended that larger nozzle sizes be used only on soils that can handle higher application rates.

**Note:** Any modifications or deletions regarding installation requirements will void warranty.



# Xcel-Wobbler® TOP

Senninger has expanded their patented Wobbler technology with a new top-of-pipe Xcel-Wobbler employing the innovative UP3 nozzle. This new sprinkler is designed for low pressure to promote energy savings. It produces a wind-resistant larger droplet size. The gentle rain-like application is suitable for all soils and various terrains.



WOBBLERS

## XCEL-WOBBLER SYSTEM ASSEMBLY

- The Xcel-Wobbler TOP must employ a 10 psi (0.69 bar) pressure regulator (PSR or PSR-2 recommended).
- Use only 3/4" galvanized or stainless steel nipple or Senninger's impact-modified thermoplastic nipple into the mainline.
- The Xcel-Wobbler UP3 TOP is designed specifically for upright installation on top-of-pipe.
- The Xcel-Wobbler UP3 TOP is not recommended for a manifold installation of two or more units from a single outlet.

**Note:** Any modifications or deletions regarding installation requirements will void warranty.

XCEL-WOBBLER TOP DESIGN CRITERIA	(Blue) 6-groove 5-degrees Large Droplets
<b>Nozzle Sizes</b>	
Minimum	#6 3/32" (2.38 mm)
Maximum*	#26 13/32" (10.32 mm)
<b>Flows</b>	
Minimum	0.80 gpm (182 L/hr)
Maximum	14.98 gpm (3402 L/hr)
<b>Diameters</b>	
Minimum at 12 ft. (3.66 m)	44 ft (13.4 m)
Maximum at 12 ft. (3.66 m)	51 ft (15.5 m)
<b>Maximum Spacing</b>	
at 12 ft (3.66 m) ground clearance	20 ft (6.1 m)
<b>Pressure at the Nozzle</b>	
	10 psi (0.69 bar)

\* It is recommended that larger nozzle sizes be used only on soils that can handle higher application rates.

## FEATURES

- Wobbler technology provides outstanding uniformity over a large wetted area
- More economical than other sprinkler packages
- Low pressure operation – 10 psi (0.69 bar) – saves energy and provides larger droplet size
- UP3 snap-in nozzle is easy to remove for cleaning. To remove the nozzle, simply pinch and pull, then place and click to install.



LDN



The Senninger LDN (Low Drift Nozzle) was the first spray nozzle providing the option to stack multiple deflector-pads. This widens the wetted footprint of larger flows and produces more uniform droplets that helps match the soil's infiltration rate to reduce run-off.

**FEATURES**

- Different pad combinations deliver application versatility
- Controlled droplet size for greater efficiency
- Low application intensity to preserve soil integrity
- Low pressure operation - 6 to 20 psi (0.41 to 1.38 bar) - saves money and energy
- UP3 snap-in nozzle is easy to remove for cleaning or changing. To remove the nozzle simply pinch and pull, then place and click to install. Dual Nozzle Carrier available see pg. 2



*Use the Magnum Weight or The One Weight on flexible hose installations.*

*(See pg. 24)*

**PADS**

The surfaces of the LDN pads are specially designed to deliver different spray patterns and droplet sizes. Each surface (deep groove, medium groove, smooth) is available in three basic geometries based on the desired trajectory of throw - flat (black), concave (blue), and convex (green).

**DRAG HOSE ADAPTER**

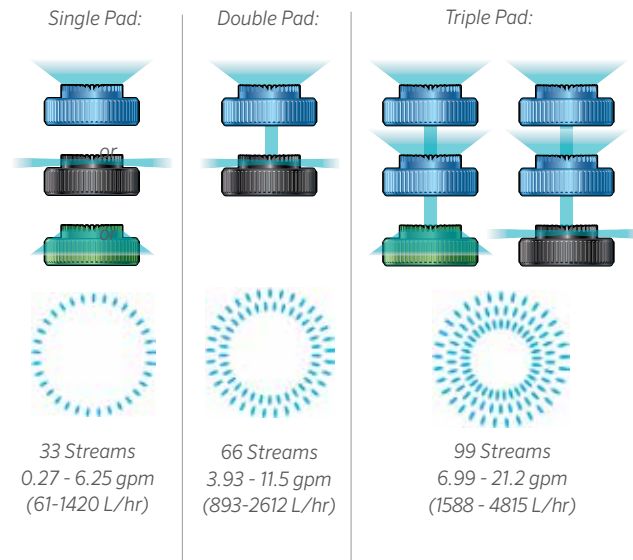
The LDN can be used with a drag hose to apply water directly into the furrow. The drag hose adapter is easy to install, snapping right onto the LDN bracket like the LDN pads.



### MULTI-PAD DESIGN

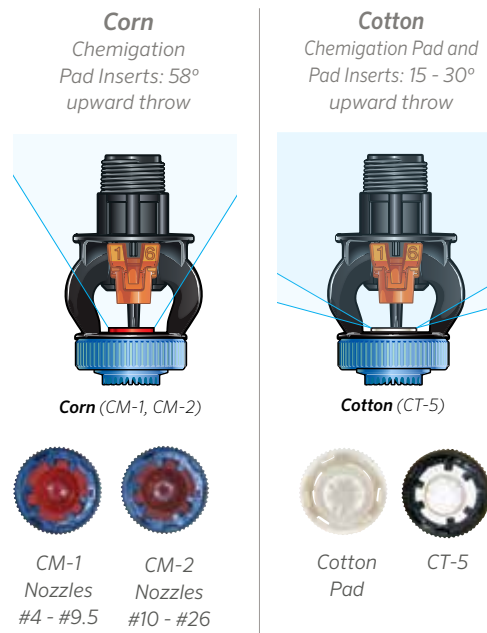
Multiple deflector pads can be used to divide larger flows into more streams as the flow and nozzle size increase along the length of the pivot. These streams are resistant to wind-drift and evaporation.

### STREAM PATTERNS



### CHEMIGATION OPTIONS

The LDN's design makes it easy to change from irrigation to chemigation. Simply twist and unlock the deflector pad, flip it over, then twist and lock it back on. Any LDN Pad can be backed with a corn chemigation pad or a cotton chemigation pad insert.



LDN

LDN DESIGN CRITERIA	MiniPad	24 Deep Groove	Single Pad	Double Pad	Triple Pad
Nozzle sizes					
Minimum	#4 1/16" (1.59 mm)	#4 1/16" (1.59 mm)	#10 5/32" (3.97 mm)	#15 19/64" (5.95 mm)	#20 5/16" (7.94 mm)
Maximum*	#9 9/64" (3.57 mm)	#9 9/64" (3.57 mm)	#14 7/32" (5.56 mm)	#19 19/64" (7.54 mm)	#26 13/32" (10.32 mm)
Flows					
Minimum	0.27 gpm (61 L/hr)	0.27 gpm (61 L/hr)	1.74 gpm (395 L/hr)	3.93 gpm (893 L/hr)	6.99 gpm (1588 L/hr)
Maximum	2.56 gpm (581 L/hr)	2.56 gpm (581 L/hr)	6.25 gpm (1420 L/hr)	11.53 gpm (2619 L/hr)	21.18 gpm (4811 L/hr)
Maximum Spacing at 6 ft (1.8 m) ground clearance					
	10 ft (3.0 m)	10 ft (3.0 m)	10 ft (3.0 m)	10 ft (3.0 m)	10 ft (3.0 m)
Pressure at the Nozzle					
Minimum	6 psi (0.41 bar)	6 psi (0.41 bar)	6 psi (0.41 bar)	6 psi (0.41 bar)	6 psi (0.41 bar)
Maximum	20 psi (1.38 bar)	20 psi (1.38 bar)	20 psi (1.38 bar)	20 psi (1.38 bar)	20 psi (1.38 bar)

\*It is recommended that larger nozzle sizes be used only on soils that can handle higher application rates. The LDN is not recommended for surface water or effluent application.

# Close Spacing

LEPA

Maximize water use with close spacing. Reducing the distance between hose drops and combining LEPA (Low Energy Precision Application) bubbler options with conservation tillage, growers can use less water and get higher yields.



- Reduce evaporation loss
- Avoid wetting crop leaves
- Prevent wind-drift losses
- Achieve a more uniform root zone coverage
- Maximize water usage

## CLOSE SPACING

Growers developed the practice as a way to combat wind-drift, evaporation loss and water shortages caused by severe drought. They found that by doubling their drops from traditional 60-inch increments to tighter 40-inch or less spacing between heads, they could:

## STRIP-TILL OR NO-TILL

Adding strip-till or no-till farming practices to Close Spacing, a grower can further protect water from wind and evaporation. The residue keeps the soil cool and traps the water, allowing it to pool over the soil until it can be soaked in. This helps increase soil moisture depth and reduces runoff and soil sealing.

## BUBBLER PAD

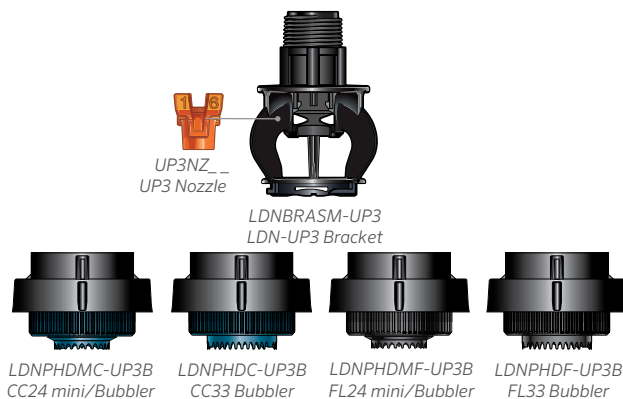
Gently deposits water directly into the furrow basins, to minimize evaporation and wind-drift losses.



The LDN Bubbler pad is Senninger's sprinkler for LEPA (Low Energy Precision Application) irrigation.

## LDN BUBBLER PAD ASSEMBLY OPTIONS

Gently deposits water directly into furrow, distributing water in a bubbling narrow stream that avoids wetting foliage.



To convert to spray irrigation, simply twist the LDN Bubbler pad to remove it. Flip the pad over and re-install it with the groove-side up, facing the upcoming stream. Convert back to LEPA irrigation with just a flip of the pad.

## FEATURES

- Deposits water straight down to the soil
- Flow Range: 0.27 to 14.98 gpm (61 to 3402 L/hr)
- Pressure Range: 6 to 10 psi (0.41 to 0.69 bar)
- Aerated bubble does not atomize water

### LDN SHROUD WITH PAD INSERT OPTIONS

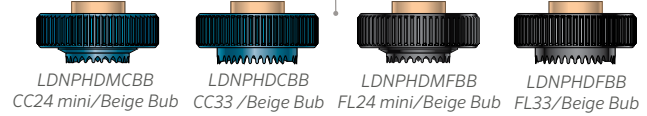
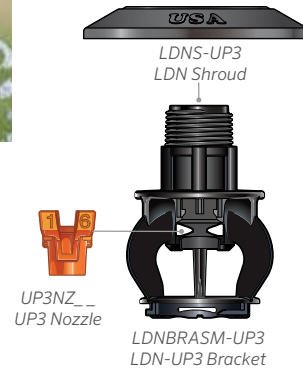
The LDN Shroud deflects water from the bubble pad insert down in a wide, dome-shaped pattern that gently distributes the water without spraying. Some growers prefer the tan bubbler pad insert. Others prefer the red CM1 pad insert.



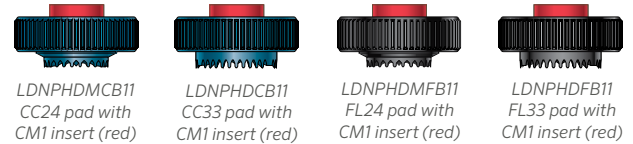
**Note:** When not using a weight, a spacer is available to retain shroud position

### FEATURES

- Ideal for germination and low crop watering
- Flow Range: 0.27 to 14.98 gpm (61 to 3402 L/hr)
- Pressure Range: 6 to 10 psi (0.41 to 0.69 bar)
- Applies water directly to the soil and/or plants



### CM1 PAD INSERT (RED)



To use the LDN Shroud, twist the LDN's deflector pad and remove it. Flip the deflector pad over and re-install it with the groove-side facing the soil. The deflector shroud include a tan bubbler or red CM1 pad insert to redirect the water upward into the Shroud when the system is on. There is no need to remove the Shroud from the applicator to switch between spray irrigation and LEPA irrigation.



Senninger introduced the Quad Spray specifically for LEPA (Low Energy Precision Application) back in the 1980's. Today, there is renewed interest in areas where water is limited because LEPA applicators require very little water and energy.

### FEATURES

- Four application modes - bubble, aerated bubble, spray and chemigation
- One device with varying applications reduces labor costs by eliminating the need to carry parts in and out of the field.
- Flows: 0.35 to 9.14 gpm (80 to 2076 L/hr)
- Pressures: 6 to 10 psi (0.41 to 0.69 bar)

**Quad Spray®**



# Part-Circle LDN<sup>®</sup>



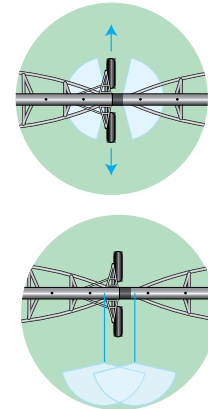
The Senninger Part-Circle LDN is specifically designed to distribute water away from wheel tracks to minimize tracking.

**THE PART-CIRCLE LDN DISTRIBUTES WATER AWAY FROM WHEEL TRACKS.**

For use on rigid drops only. Distribution pattern varies by nozzle size and pressure.

## FEATURES

- Can be used in conjunction with standard full circle LDNs or other Senninger sprinklers on the remainder of a pivot
- Distributes water in a 170° pattern with 17 streams at a 10° trajectory for minimum evaporative loss
- Integrated base allows the applicator to be installed directly into a pressure regulator or onto a standard 3/4" NPT female connection with no special threads or fittings required.
- Maximum radius of throw- up to 29 ft (8.8 m)
- UP3 snap-in nozzle is easy to remove for cleaning or changing. To remove the nozzle simply pinch and pull, then place and click to install. Dual Nozzle Carrier available see pg. 3



LDN PART-CIRCLE DESIGN CRITERIA	Part-Circle
<b>Nozzle sizes</b>	
Minimum	#6 3/32" (2.38 mm)
Maximum*	#18 9/32" (7.14 mm)
<b>Flows</b>	
Minimum	0.62 gpm (141 L/hr)
Maximum	10.35 gpm (2351 L/hr)
<b>Radius</b>	
Minimum at 3 ft (0.91 m)	9 ft (2.7 m)
Maximum at 3 ft (0.91 m)	25 ft (7.6 m)
Minimum at 6 ft (1.83 m)	11 ft (3.4 m)
Maximum at 6 ft (1.83 m)	28 ft (8.5 m)
Minimum at 9 ft (2.74 m)	13.5 ft (4.1 m)
Maximum at 9 ft (2.74 m)	29 ft (8.8 m)
<b>Pressure at Nozzle</b>	
Minimum	6 psi (0.41 bar)
Maximum	15 psi (1.03 bar)

*\*It is recommended that larger nozzle sizes be used only on soils that can handle higher application rates.*

PART-CIRCLE

# End Spray



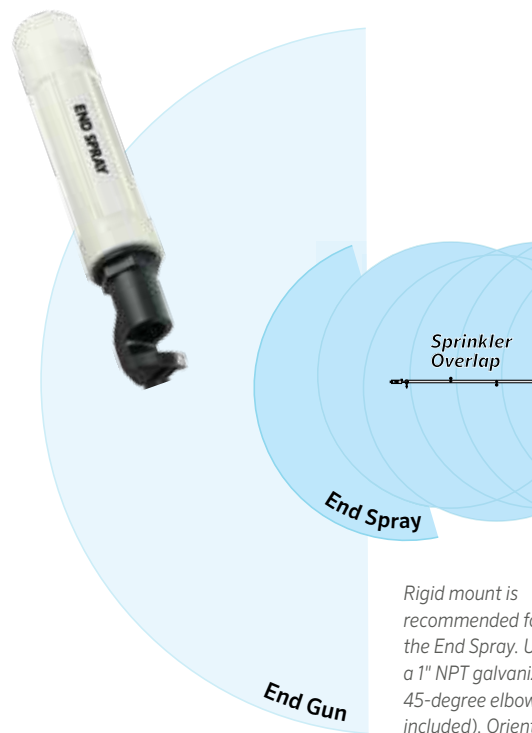
Senninger's low pressure End Spray is designed for use at the end of a machine. It can help irrigate the area between the last sprinkler and the end gun. The low angle design resists the effects of wind and the large orifice resists clogging.

## FEATURES

- No moving parts for longer product life
- Provides a 180° distribution with good uniformity over large area to help reduce compaction and run-off
- End Spray must be installed on a 1" F NPT connection
- One-year warranty on materials and workmanship

SPRAYS

END SPRAY DESIGN CRITERIA	
Nozzle Sizes	
Minimum	#20 5/16" (7.94 mm)
Maximum	#38 19/32" (15.08 mm)
Flows	
Minimum	8.1 gpm (1840 L/hr)
Maximum	48.9 gpm (11106 L/hr)
Average Radius at 7 - 12 ft (2.13 - 3.66 m)	
	25 - 29 ft (7.6 - 8.8 m)
Pressure at the Nozzle	
Minimum	10 psi (0.69 bar)
Maximum	25 psi (1.72 bar)



Rigid mount is recommended for the End Spray. Use a 1" NPT galvanized 45-degree elbow (not included). Orient pad of End Spray nozzle to face up.

# Super Spray®

SPRAYS



The Senninger Super Spray has interchangeable deflector pad options to meet various droplet size, crop, climatic, and soil requirements. Its design makes it ideal for surface water due to the distance between the nozzle, deflector and bracket legs.

### FEATURES

- Twenty-two versatile, easily changeable snap-in pads are available
- No moving parts for longer product life
- Can be mounted on top-of-pipe or on hose drops
- UP3 snap-in nozzle is easy to remove for cleaning or changing. To remove the nozzle simply pinch and pull, then place and click to install. Dual Nozzle Carrier available, see pg. 2



Use the Magnum Weight or The One Weight on flexible hose installations.

(See pg. 24)

SUPER SPRAY DESIGN CRITERIA	Flat (Black)	Concave (Blue)	Convex (Green)
<b>Nozzle sizes</b>			
Minimum	#4 1/16" (1.59 mm)	#4 1/16" (1.59 mm)	#4 1/16" (1.59 mm)
Maximum*	#26 13/32" (10.32 mm)	#26 13/32" (10.32 mm)	#26 13/32" (10.32 mm)
<b>Flows</b>			
Minimum	0.27 gpm (61 L/hr)	0.27 gpm (61 L/hr)	0.27 gpm (61 L/hr)
Maximum	29.96 gpm (6805 L/hr)	29.96 gpm (6805 L/hr)	29.96 gpm (6805 L/hr)
<b>Maximum Spacing</b>			
at 6 ft (1.8 m) ground clearance	10 ft (3.0 m)	10 ft (3.0 m)	10 ft (3.0 m)
at 9 ft (2.74 m) ground clearance	10 ft (3.0 m)	10 ft (3.0 m)	10 ft (3.0 m)
<b>Pressure at the Nozzle</b>			
Minimum	6 psi (0.41 bar)	6 psi (0.41 bar)	6 psi (0.41 bar)
Maximum	40 psi (2.76 bar)	40 psi (2.76 bar)	40 psi (2.76 bar)

\*It is recommended that larger nozzle sizes be used only on soils that can handle higher application rates.





Flat-Grooved



Concave-Grooved



Convex-Grooved



Flat-Smooth



Concave-Smooth



Convex-Smooth

Super Spray deflector pads are identified by their shape (flat, concave, or convex) and surface type (smooth, medium-grooved, or deep-grooved). The shape and surface help control spray pattern and droplet size. Chemigation pads are available in high profile (corn) and low profile (cotton) to reach the underside of foliage. These snap-in pads and UP3 nozzles can be easily changed during the season to fit varying field, flow, and growing conditions.

SPRAYS

**DEFLECTOR PADS**

	Flat (Black)	Concave (Blue)	Convex (Green)	Chemigation
Deep Groove # of grooves	24 36 48	24 36 48	24 36 48	CORN
Medium Groove # of grooves	36	36	36	mini pad
Smooth	mini pad	mini pad	mini pad	min pad

Mini deflectors recommended for nozzles #4 through #9.5

COTTON



**DRAG HOSE ADAPTER**

You can apply water directly into the furrow with the Super Spray drag hose adapter and a drag line. The adapter snaps right into the Super Spray, replacing the deflector pad.

# Goosenecks



Senninger goosenecks are constructed of non-corrosive, UV-resistant thermoplastic materials for long life. This reduces plugging from rust flaking sometimes associated with galvanized goosenecks.

## GOOSENECK SYSTEM ASSEMBLY

- Max recommended pressure: 120 psi (8.27 bar).
- Max recommended flow: 20 gpm (4543 L/hr) or 15 gpm per side for the double model.
- Max recommended water temperature: 110° F (43° C).
- Ambient temperatures to 150° F (66° C) will not damage goosenecks.
- Attaches to mainline using galvanized nipple or Senninger's impact-modified thermoplastic nipple (PVC nipples not recommended).
- Wrench tighten using nipple hex until snug. Overtightening may cause issues.
- If using a sealant, use only Teflon tape.
- When using rigid drops in high profile crops, drop length should not exceed one foot below truss rod.

GOOSENECKS



180° Single

## FEATURES

- Three models available: 180° single, 125° single, and 125° double
- Lightweight for easier handling and installation
- Lower freight costs
- Available with either a 3/4" hose or 3/4" NPT male threaded outlet connection or the 180° single is also available with 19mm barb outlet connection

The Senninger line of 125° goosenecks and truss rod hose slings allow the conversion of wide-spaced machines to closer drop spacing and reduces or eliminates the need for adding extra outlets.



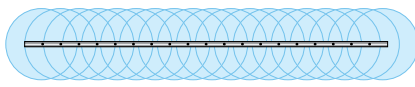
125° Double

Use only with Truss Rod Hose Slings

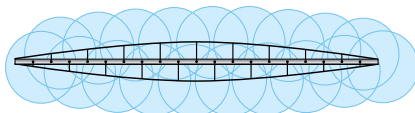


125° Single

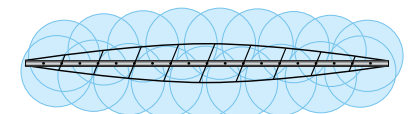
## Water Patterns



Conventional Applicators



Single 125° Goosenecks (with Truss Rod Hose Slings)



Double 125° Goosenecks (with Truss Rod Hose Slings)



**Note:** Any modifications or deletions regarding installation requirements will void warranty.

Goosenecks shown are pre-assembled with Senninger's impact-modified thermoplastic nipple. Use of other plastic nipples is not recommended. Also available without nipple.

# Truss Rod Hose Slings

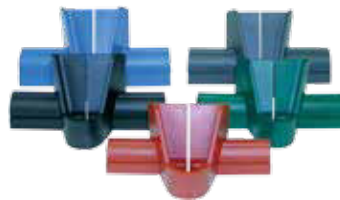


GOOSENECKS

Senninger's single and double 125° goosenecks used with truss rod hose slings provide easy positioning of drops along the span. They help lower application intensity by increasing the wetted area of coverage to promote better soil infiltration.

## FEATURES

- Easy to install
- Color coded models for various truss rod sizes: 5/8" (rust), 11/16" (green), 3/4" (black), 13/16" (grey), 7/8" (blue)
- Securely fastens 3/4" flexible hose to the truss rod to maintain the drop/sprinkler position and allows for easy adjustments
- Supports flexible hose to prevent kinking and abrasive wear
- Used in conjunction with the 125° model goosenecks
- Helps reduce pattern interruption from colliding streams



# Pivot Master®

IMPACT SPRINKLER



Senninger's Pivot Master impact sprinklers distribute water in a low 6° trajectory and are designed to resist wind-drift. Their large diameter of throw means fewer sprinklers are needed.



**NOW With Hand-Tight Nozzles!**

### FEATURES

- Color-coded band identifies each model based on flow (see chart below)
- Durable design with an enclosed splasharm spring and bearing for protection from the elements
- 3/4" NPT brass connection for use in galvanized steel fittings
- Hand Tight Nozzles eliminate the need for tools during renozzling; simply place and twist to install. Nozzles sizes are easily identified with color-coding. Warranted to maintain their correct orifice size for five years



PIVOT MASTER IMPACT DESIGN CRITERIA	3006 - Orange	4006 - White	5006 - Blue	5006-2 - Blue
<b>Nozzle sizes</b>				
Minimum	#7 7/64" (2.78 mm)	#10 5/32" (3.97 mm)	#13 13/64" (5.16 mm)	#13 x 12 13/64" x 3/16" (5.16 x 4.76 mm)
Maximum*	#9 9/64" (3.57 mm)	#12 3/16" (4.76 mm)	#18 9/32" (7.14 mm)	#18 x 18 9/32" x 9/32" (7.14 x 7.14mm)
<b>Flows</b>				
Minimum	1.87 gpm (425 L/hr)	3.80 gpm (863 L/hr)	6.20 gpm (1408 L/hr)	11.34 gpm (2576 L/hr)
Maximum	4.35 gpm (988 L/hr)	7.70 gpm (1749 L/hr)	16.0 gpm (3634 L/hr)	36.0 gpm (8177 L/hr)
<b>Diameters</b>				
Minimum at 12 ft (3.66 m)	73 ft (22.3 m)	80 ft (24.4 m)	80 ft (24.4 m)	84 ft (25.6 m)
Maximum at 12 ft (3.66 m)	87 ft (26.5 m)	93 ft (28.3 m)	93 ft (28.3 m)	105 ft (32.0 m)
<b>Pressure at the nozzle</b>				
Minimum	30 psi (2.07 bar)	30 psi (2.07 bar)	30 psi (2.07 bar)	30 psi (2.07 bar)
Maximum	60 psi (4.14 bar)	60 psi (4.14 bar)	60 psi (4.14 bar)	60 psi (4.14 bar)

\*It is recommended that larger nozzle sizes be used only on soils that can handle higher application rates. Larger flow models available.

# PRL

PRL DESIGN CRITERIA	Preset Operating Pressure	Maximum Inlet Pressure	Flow Range
PRL06	6 psi (0.41 bar)	80 psi (5.51 bar)	0.5 - 5 gpm 114 - 1136 L/hr
PRL10	10 psi (0.69 bar)	90 psi (6.20 bar)	0.5 - 8 gpm 114 - 1817 L/hr
PRL12	12 psi (0.83 bar)	90 psi (6.20 bar)	
PRL15	15 psi (1.03 bar)	95 psi (6.55 bar)	
PRL20	20 psi (1.38 bar)	100 psi (6.89 bar)	
PRL25	25 psi (1.72 bar)	105 psi (7.24 bar)	
PRL30	30 psi (2.07 bar)	110 psi (7.58 bar)	
PRL35	35 psi (2.41 bar)	115 psi (7.93 bar)	
PRL40	40 psi (2.76 bar)	120 psi (8.27 bar)	

The pressure regulator shall maintain the predetermined operating pressure provided that the inlet pressure is at least 5 psi (0.34 bar) above the expected outlet pressure, but not exceeding the maximum inlet pressure as shown above.

## FEATURES

- Flows: 0.5 to 8.0 gpm (114 to 1817 L/hr) depending on model
- Each regulator maintains a constant preset outlet pressure based on its flow/inlet pressure.
- Outlet pressures: 6 to 40 psi (0.41 to 2.76 bar)
- Tamper-proof housing
- Very low hysteresis and friction losses
- 100% water-tested for accuracy



**PRL-**  
Low Flow

PRESSURE REGULATORS

# PMR

PMR-MF DESIGN CRITERIA	Preset Operating Pressure	Maximum Inlet Pressure	Flow Range
PMR06 MF	6 psi (0.41 bar)	80 psi (5.51 bar)	4 - 16 gpm 909 - 3634 L/hr
PMR10 MF	10 psi (0.69 bar)	90 psi (6.20 bar)	
PMR12 MF	12 psi (0.83 bar)	90 psi (6.20 bar)	2 - 20 gpm 454 - 4542 L/hr
PMR15 MF	15 psi (1.03 bar)	95 psi (6.55 bar)	
PMR20 MF	20 psi (1.38 bar)	100 psi (6.89 bar)	
PMR25 MF	25 psi (1.72 bar)	105 psi (7.24 bar)	
PMR30 MF	30 psi (2.07 bar)	110 psi (7.58 bar)	
PMR35 MF	35 psi (2.41 bar)	115 psi (7.93 bar)	
PMR40 MF	40 psi (2.76 bar)	120 psi (8.27 bar)	
PMR50 MF	50 psi (3.45 bar)	130 psi (8.96 bar)	
PMR60 MF	60 psi (4.14 bar)	140 psi (9.65 bar)	

The pressure regulator shall maintain the predetermined operating pressure provided that the inlet pressure is at least 5 psi (0.34 bar) above the expected outlet pressure, but not exceeding the maximum inlet pressure as shown above.

## FEATURES

- Flows: 2.0 to 20 gpm (454 to 4542 L/hr) depending on model
- Each regulator maintains a constant preset outlet pressure based on its flow/inlet pressure.
- Outlet pressures: 6 to 60 psi (0.41 to 4.14 bar)
- Very low hysteresis and friction losses
- 100% water-tested for accuracy



**PMR-**  
Medium Flow

# PSR & PSR-2



**Ask about the patented PSR-2 for systems pumping surface water!**

Senninger introduced the first high-quality in-line pressure regulator to the irrigation industry in 1966.

### FEATURES

- Flows: 0.5 to 15 gpm (114 to 3407 L/hr) allows the use of the same model along the entire machine.
- Each regulator maintains a constant preset outlet pressure based on its flow/inlet pressure.
- Outlet pressures: 6 to 50 psi (0.41 to 3.45 bar)
- Tamper-proof housing
- Very low hysteresis and friction losses
- 100% water-tested for accuracy

Senninger pressure regulators maintain a constant preset outlet pressure that can be matched to the applicator design, regardless of variations in inlet pressure. This helps maintain sprinkler pattern integrity and performance.

PSR & PSR-2 DESIGN CRITERIA		Preset Operating Pressure	Maximum Inlet Pressure	Flow Range
PSR06	PSR-2-06	6 psi (0.41 bar)	80 psi (5.51 bar)	0.5 - 15 gpm 114 - 3407 L/hr
PSR10	PSR-2-10	10 psi (0.69 bar)	90 psi (6.20 bar)	
PSR12	PSR-2-12	12 psi (0.83 bar)	90 psi (6.20 bar)	
PSR15	PSR-2-15	15 psi (1.03 bar)	95 psi (6.55 bar)	
PSR20	PSR-2-20	20 psi (1.38 bar)	100 psi (6.89 bar)	
PSR25	PSR-2-25	25 psi (1.72 bar)	105 psi (7.24 bar)	
PSR30	PSR-2-30	30 psi (2.07 bar)	110 psi (7.58 bar)	
PSR35	PSR-2-35	35 psi (2.41 bar)	115 psi (7.93 bar)	
PSR40	PSR-2-40	40 psi (2.76 bar)	120 psi (8.27 bar)	
PSR50	PSR-2-50	50 psi (3.45 bar)	130 psi (8.96 bar)	

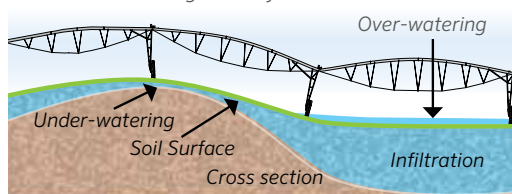
*The pressure regulator shall maintain the predetermined operating pressure provided that the inlet pressure is at least 5 psi (0.34 bar) above the expected outlet pressure, but not exceeding the maximum inlet pressure as shown above.*

### APPLICATION INTENSITY

Uncontrolled pressure fluctuations in irrigation systems result in unwanted flow deviations and over and under-watering. These fluctuations occur with the cycling on/off of an end gun, activation of a corner arm, variations in field elevation or water supply. Proper use of pressure regulators helps maintain the overall efficiency of an irrigation system.

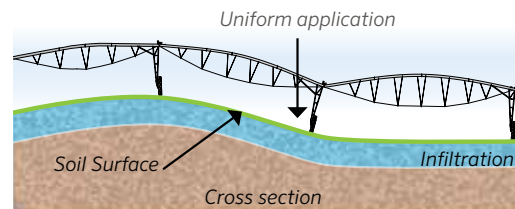
#### Without Pressure Regulators

Many irrigation systems have the potential to experience elevation and pressure changes, which cause flow fluctuations on unregulated systems.



#### With Pressure Regulators

Distribution remains uniform even as elevation changes.



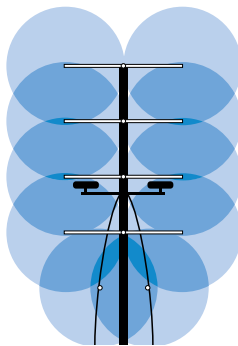
The Senninger Boom System is ideal for lowering application intensity on overhangs and pivot towers by widening the wetted area. This allows more time for water to infiltrate the soil, reducing wheel tracking, runoff, and surface soil compaction.



*Sprinkler height can be varied by drop hose length.*

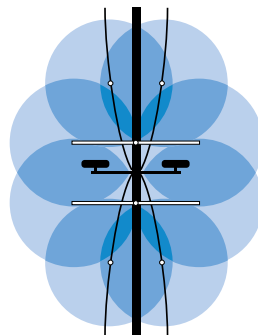
**FOOTPRINT OVERVIEW**

Booms on overhang



*The number of Boom Systems needed on the overhang will vary based on overhang length, system design and management practice.*

Booms at Pivot Tower



*Booms installed at the towers and on overhangs help reduce wheel tracking regardless of pivot travel direction.*



*The Senninger Double Gooseneck attaches to the 3/4" x 4" galvanized nipple through a pre-drilled hole in the aluminum channel and into an existing outlet.*



*The Hinged Hose Holder clasps around the flexible hose and snaps into the aluminum tubing to protect it from pulling, kinking and wear.*

**FEATURES**

- Uniquely Designed Components**  
Channel and tubular suspension arms provide lightweight strength and durability. Galvanized, stainless steel and aluminum hardware and components combat corrosion. Patented thermoplastic double gooseneck and hinged hose holder are warranted for two years specifically for this application
- Simple, Effective Design**  
The 24 ft (7.3 m) overall boom length utilizes existing outlets to apply the same amount of water over a wider area
- High Profile Clearance**  
The complete boom is level with the top of the mainline, keeping the structure clear of high profile crops like corn and sugar cane
- Strength & Durability**  
Constructed from strong structural aluminum, extruded channel coupled with 1.5" diameter aluminum tubing, cast aluminum saddle with galvanized and stainless steel hardware
- Lightweight Design**  
Heavy duty construction in a lightweight package. The boom and hardware weigh a total of 23 lbs (10.43 kg)
- Quick and Easy Installation**  
Components are pre-cut, pre-drilled and packaged with step-by-step instructions. Installs using readily available tools
- Mounting Options**  
The boom system is compatible with various diameter mainlines. Locking pins allow for versatility of adjusting boom angle. Designed for installation on pivot towers and overhangs

COMPONENTS



**HOSE**

Extremely durable 3/4" reinforced flex hose

**FEATURES**

- Long lasting construction with a UV-resistant PVC cover, polyester reinforcement yarns, and a PVC core tube
- Lightweight with good abrasion resistance

*Hose for use with LDN or Super Spray drag hose adapters also available*



**HOSE CLAMPS/CRIMP TOOLS**

**FEATURES**

- Hose Clamps: Stainless steel, one-ear design with mechanical interlock
- Size range: 0.945" to 1.067" (24 to 27.1 mm) to fit various hose and poly drop sizes
- Crimp tools: Specifically designed to be used for one-ear clamps. Available in 8 7/8" or 11 1/8" lengths



**BALL VALVE**

The dial shut-off knob makes changing or cleaning sprinklers and spray nozzles easy while the system is still operating.

**FEATURES**

- Streamlined design reduces snagging and unintentional operation
- Smooth-bore design maximizes bi-directional flow efficiency
- UV-resistant
- 125 psi pressure rating
- Available with a 3/4" NPT female x 3/4" NPT male connection



(See price list for all models)

**ADAPTERS & FITTINGS**

Constructed from non-corrosive UV-resistant thermoplastic for a longer life.

**FEATURES**

- Models also available for PE tubing (grey): 3/4" barb inlet x NPT male or NPT female outlets
- Variety of thermoplastic pipe couplings, reducing couplings, nipples and plugs also available.
- Backed by a two-year warranty



**WEIGHTS**

Unique fit technology allows the weight to fit securely onto the i-Wob, Xi-Wob, LDN, Super Spray, and even some other manufacturer’s applicators.

**FEATURES**

- Design allows weight to remain on applicator during nozzle changes
- Easy to install
- 0.85 lbs. (0.39 kg)

**MAGNUM WEIGHT**



UV-resistant thermoplastic construction prevents corrosion and deters metal theft. Threaded and slip models available

**THE ONE WEIGHT**



Constructed entirely of zinc alloy for strength and resistance to corrosion

COMPONENTS

**PRESSURE GAUGES**

**FEATURES**

- 2.5" Bourdon Tube Gauge is filled with glycerine, comes with a stainless steel case and has a ¼" NPT male connection. It is vibration and shock-resistant. Several models available.
- 3.5" Bourdon Tube Industrial Gauge is filled with glycerine, comes with a Zytel nylon case, and has a ¼" NPT male connection. It is corrosion-resistant and impact-resistant. Several models available.
- Regular and freeze-proof models available
- Backed by a one-year warranty.



**PRESSURE DROP**

Provides a quick and easy check of end-of-system pressure

**FEATURES**

- Includes either a 0-30 psi or 0-60 psi glycerin-filled 2.5" diameter gauge
- ¾" NPT (F) inlet by ¾" F NPT outlet connection
- One year warranty



FEATURES

- Easy change nozzle introduced in 2008
- Color-coded for easy size identification
- Excellent durability
- Warranted to maintain correct orifice size for five years

Nozzle # Nozzle color	Nozzle Size	6 psi 0.41 bar		10 psi 0.69 bar		15 psi 1.03 bar		20 psi 1.38 bar		25 psi 1.72 bar		30 psi 2.07 bar		35 psi 2.42 bar		40 psi 2.76 bar	
		gpm (L/hr)	gpm (L/hr)	gpm (L/hr)	gpm (L/hr)	gpm (L/hr)	gpm (L/hr)	gpm (L/hr)	gpm (L/hr)	gpm (L/hr)	gpm (L/hr)	gpm (L/hr)	gpm (L/hr)	gpm (L/hr)	gpm (L/hr)	gpm (L/hr)	gpm (L/hr)
#2 Pink	1/32" (0.031)	0.07	0.09	20	0.11	25	0.12	27	0.14	32	0.15	34	0.16	36	0.18	41	
#2.5	5/128" (0.039)	0.11	0.14	32	0.17	39	0.19	43	0.22	50	0.24	55	0.26	59	0.28	64	
#3 Ice	3/64" (0.047)	0.15	0.20	45	0.24	55	0.28	64	0.34	77	0.37	84	0.40	91			
#3.5	7/128" (0.055)	0.21	0.27	61	0.33	75	0.38	86	0.43	98	0.47	107	0.50	114	0.54	123	
#4 Light Blue	1/16" (0.063)	0.27	0.35	79	0.43	98	0.50	114	0.56	127	0.61	139	0.66	150	0.70	159	
#4.5	9/128" (0.070)	0.35	0.45	102	0.55	125	0.63	143	0.71	161	0.77	175	0.84	191	0.89	202	
#5 Beige	5/64" (0.078)	0.43	0.55	125	0.68	154	0.78	177	0.87	198	0.96	218	1.04	236	1.11	252	
#5.5	11/128" (0.085)	0.52	0.67	152	0.82	186	0.95	216	1.06	241	1.16	263	1.26	286	1.34	304	
#6 Gold	3/32" (0.094)	0.62	0.80	182	0.98	223	1.13	257	1.26	286	1.38	313	1.50	341	1.60	363	
#6.5	13/128" (0.102)	0.73	0.94	213	1.15	261	1.33	302	1.49	338	1.63	370	1.76	400	1.88	427	
#7 Lime	7/64" (0.109)	0.85	1.09	248	1.34	304	1.54	350	1.73	393	1.89	429	2.04	463	2.18	495	
#7.5	15/128" (0.117)	0.97	1.26	286	1.54	350	1.77	402	1.98	450	2.17	493	2.35	534	2.51	570	
#8 Lavender	1/8" (0.125)	1.11	1.43	325	1.75	397	2.02	459	2.26	513	2.48	563	2.68	609	2.86	650	
#8.5	17/128" (0.133)	1.25	1.62	368	1.98	450	2.29	520	2.56	581	2.80	636	3.02	686	3.23	734	
#9 Grey	9/64" (0.141)	1.40	1.81	411	2.22	504	2.56	581	2.87	652	3.14	713	3.39	770	3.63	824	
#9.5	19/128" (0.148)	1.57	2.02	459	2.48	563	2.86	650	3.20	727	3.50	795	3.78	859	4.04	918	
#10 Turquoise	5/32" (0.156)	1.74	2.24	509	2.75	625	3.17	720	3.55	806	3.88	881	4.20	954	4.49	1020	
#10.5	21/128" (0.164)	1.92	2.47	561	3.03	688	3.50	795	3.91	888	4.29	974	4.63	1052	4.95	1124	
#11 Yellow	11/64" (0.172)	2.10	2.72	618	3.33	756	3.84	872	4.30	977	4.71	1070	5.08	1154	5.43	1233	
#11.5	23/128" (0.180)	2.30	2.97	675	3.64	827	4.20	954	4.70	1067	5.15	1170	5.56	1263	5.94	1349	
#12 Red	3/16" (0.188)	2.51	3.24	736	3.97	902	4.58	1040	5.12	1163	5.61	1274	6.06	1376	6.48	1472	
#12.5	25/128" (0.195)	2.72	3.52	799	4.31	979	4.97	1129	5.56	1263	6.09	1383	6.58	1494	7.03	1597	
#13 White	13/64" (0.203)	2.95	3.81	865	4.66	1058	5.38	1222	6.02	1367	6.59	1497	7.12	1617	7.61	1728	
#13.5	27/128" (0.211)	3.18	4.11	933	5.03	1142	5.81	1320	6.49	1474	7.11	1615	7.68	1744	8.21	1865	
#14 Blue	7/32" (0.219)	3.42	4.42	1004	5.41	1229	6.25	1420	6.99	1588	7.65	1738	8.27	1878	8.84	2008	
#14.5	29/128" (0.227)	3.67	4.74	1077	5.81	1320	6.71	1524	7.50	1703	8.21	1865	8.87	2015	9.48	2153	
#15 Dk. Brown	15/64" (0.234)	3.93	5.08	1154	6.22	1413	7.18	1631	8.03	1824	8.79	1996	9.50	2158	10.15	2305	
#15.5	31/128" (0.242)	4.20	5.42	1231	6.64	1508	7.67	1742	8.57	1946	9.39	2133	10.14	2303	10.84	2462	
#16 Orange	1/4" (0.250)	4.48	5.78	1313	7.08	1608	8.17	1856	9.14	2076	10.01	2274	10.81	2455	11.56	2626	
#16.5	33/128" (0.258)	4.76	6.15	1397	7.53	1710	8.69	1974	9.72	2208	10.65	2419	11.50	2612	12.30	2794	
#17 Dk. Green	17/64" (0.266)	5.06	6.53	1483	7.99	1815	9.23	2096	10.32	2344	11.31	2569	12.21	2773	13.06	2966	
#17.5	35/128" (0.273)	5.36	6.92	1572	8.47	1924	9.78	2221	10.94	2485	11.98	2721	12.94	2939	13.84	3143	
#18 Purple	9/32" (0.281)	5.67	7.32	1663	8.96	2035	10.35	2351	11.57	2628	12.68	2880	13.69	3109	14.64	3325	
#18.5	37/128" (0.289)	5.99	7.73	1756	9.47	2151	10.93	2482	12.22	2775	13.39	3041	14.46	3284	15.46	3511	
#19 Black	19/64" (0.297)	6.31	8.15	1851	9.98	2267	11.53	2619	12.89	2928	14.12	3207	15.25	3464	16.30	3702	
#19.5	39/128" (0.305)	6.65	8.58	1949	10.51	2387	12.14	2757	13.57	3082	14.86	3375	16.05	3645	17.16	3897	
#20 Dk. Turquoise	5/16" (0.313)	6.99	9.02	2049	11.05	2510	12.76	2898	14.27	3241	15.63	3550	16.88	3834	18.05	4100	
#20.5	41/128" (0.320)	7.34	9.47	2151	11.60	2635	13.40	3043	14.98	3402	16.41	3727	17.72	4025	18.95	4304	
#21 Mustard	21/64" (0.328)	7.70	9.93	2255	12.17	2764	14.05	3191	15.71	3568	17.21	3909	18.59	4222	19.87	4513	
#21.5	43/128" (0.336)	8.06	10.40	2362	12.74	2894	14.71	3341	16.45	3736	18.02	4093	19.46	4420	20.80	4724	
#22 Maroon	11/32" (0.344)	8.43	10.88	2471	13.33	3028	15.39	3495	17.20	3907	18.85	4281	20.36	4624	21.76	4942	
#22.5	45/128" (0.352)	8.81	11.37	2582	13.92	3162	16.08	3652	17.98	4084	19.69	4472	21.27	4831	22.74	5165	
#23 Cream	23/64" (0.359)	9.19	11.87	2696	14.54	3302	16.78	3811	18.77	4263	20.56	4670	22.20	5042	23.74	5392	
#23.5	47/128" (0.367)	9.58	12.37	2810	15.15	3441	17.49	3972	19.56	4443	21.43	4867	23.14	5256	24.74	5619	
#24 Dk. Blue	3/8" (0.375)	9.98	12.88	2925	15.78	3584	18.22	4138	20.37	4627	22.31	5067	24.10	5474	25.77	5853	
#24.5	49/128" (0.383)	10.38	13.40	3043	16.41	3727	18.95	4304	21.18	4811	23.20	5269	25.06	5692	26.79	6085	
#25 Copper	25/64" (0.391)	10.78	13.92	3162	17.05	3872	19.69	4472	22.01	4999	24.11	5476	26.04	5914	27.84	6323	
#25.5	51/128" (0.398)	11.19	14.45	3282	17.69	4018	20.43	4640	22.84	5188	25.02	5683	27.03	6139	28.89	6562	
#26 Bronze	13/32" (0.406)	11.60	14.98	3402	18.35	4168	21.18	4811	23.68	5378	25.94	5892	28.02	6364	29.96	6805	

## Warranty & Disclaimer

This warranty is the full and complete product warranty and is expressly in lieu of any and all representations or warranties, expressed or implied, including any implied warranties of merchantability or fitness for particular purpose, whether arising from statute, common law, custom, course of dealing, usage of trade, or otherwise. No person has the authority to incur or assume for Senninger any other liability as to products manufactured by Senninger.

This warranty shall not apply to any product which shall have been repaired or altered in any way outside the Senninger factory so as to affect its use or operation as determined by Senninger, nor shall it apply to any such product which has been subject to misuse, negligence or accident, or has been operated contrary to Senninger's printed instructions.

Senninger shall not be liable for any consequential and incidental damages resulting from the use of said products or caused by any defects, failure or malfunction, whether a claim for such damages is based on warranty, product design, system engineering, contract negligence or otherwise. Senninger makes no warranty whatsoever with respect to products manufactured by others to which Senninger's products may be attached, whether or not warranted by such other manufacturers.

## Materials and Workmanship

Products manufactured by Senninger Irrigation Inc. are warranted for a period of two years from date of original shipment to be free of any defects in material or workmanship. The End Spray, PRLV regulators and mining models are warranted for one year.

## Performance

Products manufactured by Senninger and used for ag, turf and nursery irrigation are warranted to maintain their original nozzle

orifice size for a period of five years. Senninger also warrants these products to maintain their original performance for a period of two years from date of original shipment when installed and operated in accordance with Senninger's written specifications and used for their ordinary purpose. The End Spray, PRLV regulators and mining models are warranted for materials and workmanship only.

## Repair or Replacement

If a product is suspected of failure under terms of the above provisions, it must first be reported in writing to the attention of the Material Review Engineer at the company's Clermont, Florida office. An authorization may then be issued to return the product(s), shipping charges prepaid, to Clermont for inspection. If in the opinion of the Material Review Engineer the product has failed, a repair or replacement will be authorized as required.

Senninger's obligation with respect to the above provisions concerning material, workmanship and performance is limited to the repair or replacement of the particular product involved. Senninger is not obligated to pay for repairs or replacements made by anyone other than itself. No labor allowances will be made for removal or replacement of said parts nor for any travel to and from the product to make said repairs or replacement without prior written authorization from an officer of Senninger Irrigation.

## Suitability

There is positively no warranty relating to the fitness of the product(s) for any particular purpose or use. It is the sole responsibility of the purchaser to consider and analyze the product and its design to be suitable for specific applications.



We strive to create the best low pressure, high performance agricultural irrigation products in the world while maintaining the highest level of quality and reliability. In every instance we will back our innovations with the unwavering support our customers need to succeed.

A handwritten signature in white ink that reads "James E. Burks". The signature is fluid and cursive, with a large initial 'J'.

James E. Burks, President of Senninger Irrigation