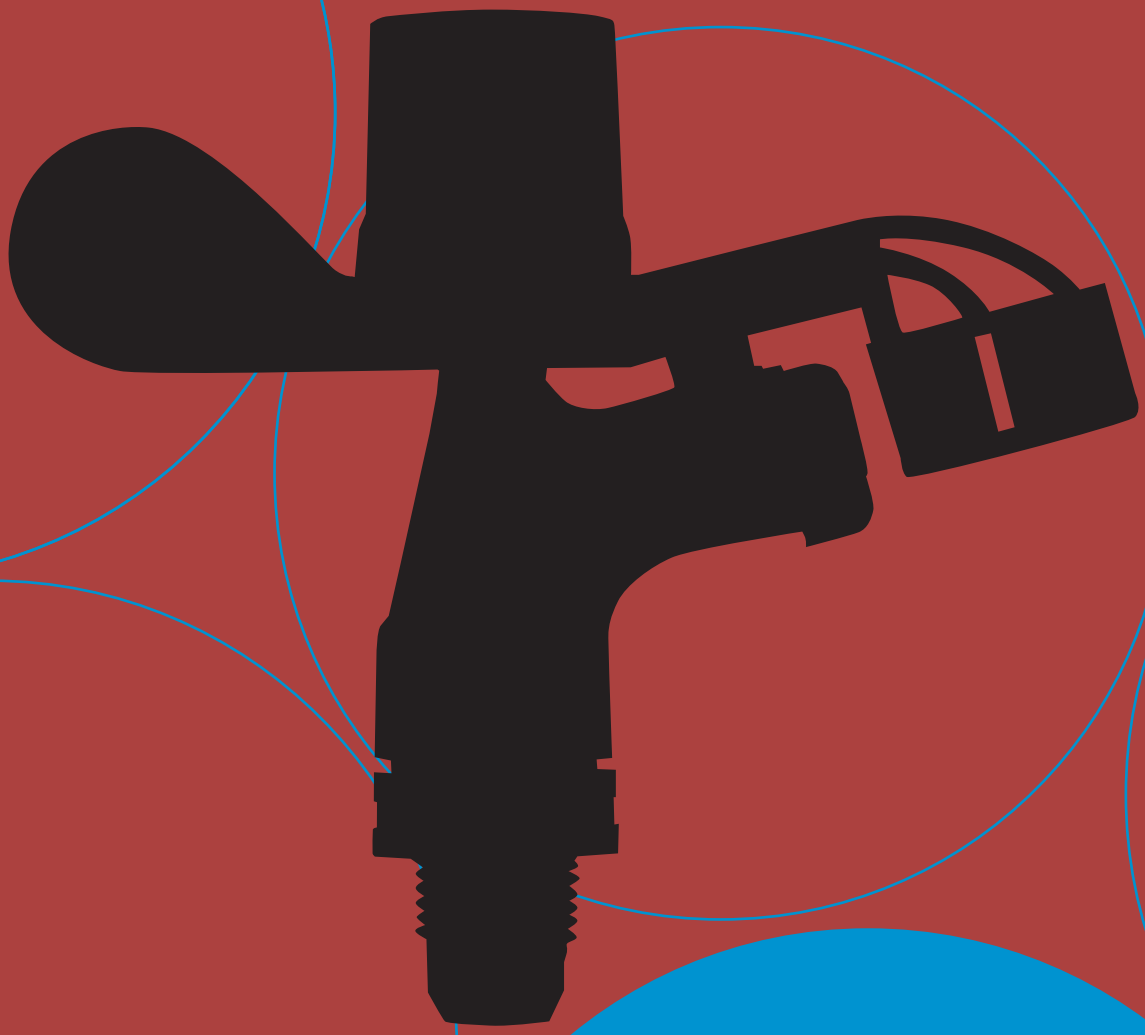
SOLID SET PRODUCTS



Senninger®
Irrigation, Inc.

Products]Contents

Since 1963 Senninger products have been constructed entirely of engineering-grade thermoplastics for strength and durability. They are warranted for two years on materials, workmanship and performance. Nozzles are color-coded for easy size identification and warranted to maintain correct orifice size for five years.

ASABE Figures reflect data from tests performed in accordance with the American Society of Agriculture and Biological Engineers (ASABE) standard S398.1.
Consult factory for availability of other nozzles.

Mister™ [Upright

NEW!

The new patented Senninger Mister is designed specifically for propagation or other low volume misting applications. It provides consistent system start-up delivering an instantaneous, highly uniform distribution, ideal for short-cycle applications.

FEATURES:

- Outstanding uniformity
- Bridge-less design for uninterrupted 360° pattern
- Easy to clean nozzle and check valve, quick twist tool-free disassembly
- Multiple connection options to retrofit existing systems
- Color-coded nozzles
- Engineering-grade UV-resistant thermoplastic construction
- Minimum operating pressure 30 psi or 2.07 bar

Red (R)
6.8 to 8.6 gph
[25.7 to 32.6 L/hr]

Orange (O)
10.8 to 14.0 gph
[40.9 to 53.0 L/hr]

Yellow (Y)
14.1 to 18.3 gph
[53.4 to 69.3 L/hr]

Green (G)
17.8 to 23.4 gph
[67.4 to 88.6 L/hr]

Nursery Wire Adapter (Also Available) See page 33

Provides easy installation for Misters to mount on 1/2" or 3/4" PVC risers and lock into the corner of wire mesh bed. Barb fits 0.345" ID tubing.
Fits up to 10-gauge wire, minimum 1" mesh.

Upright Recommended Spacing- at **12 in.** above crop

	Double Row	R	O	Y	G	Single Row	R	O	Y	G
4 ft [1.22 m] **Table**										
Head Spacing	2-4 ft [0.61-1.22 m]	●	●	●	●	2-3.5 ft [0.61-1.07 m]	●			
						2-3 ft [0.61-0.92 m]		●	●	●
Lateral Spacing	2 ft [0.61 m]	●								
	2-4 ft [0.61-1.22 m]		●	●	●					
5 ft [1.53 m] **Table**										
Head Spacing	2-3 ft [0.61-0.92 m]	●				3 ft [0.92 m]		●		
	2-4 ft [0.61-1.22 m]		●	●	●	2-3 ft [0.61-0.92 m]			●	●
Lateral Spacing	2-4 ft [0.61-1.22 m]	●	●	●	●					
6 ft [1.83 m] **Table**										
Head Spacing	2-3 ft [0.61-0.92 m]	●				2-3 ft [0.61-0.92 m]			●	●
	2-4 ft [0.61-1.22 m]		●	●	●					
Lateral Spacing	3-4 ft [0.82-1.22 m]	●								
	2.5-4 ft [0.76-1.22 m]		●							
	2-4 ft [0.61-1.22 m]			●	●					

Data shown at 30 psi [2 bar]. Other spacing options may produce higher uniformities and lower scheduling coefficiencies. Check valve option available with different spacing recommendations. Consult factory for details.

Connections: 3/8" M BSW, 1/4" F press  | 1/2" M NPT  | 1/4" M press fit 

Inverted]Mister™

The new patented Senninger Mister is designed specifically for propagation or other low volume misting applications. Innovative internal check valve prevents draining from inverted models immediately following each irrigation session. It also provides consistent system start-up delivering an instantaneous, highly uniform distribution, ideal for short-cycle applications.

FEATURES:

- Outstanding uniformity
- Bridge-less design for uninterrupted 360° pattern
- Easy to clean nozzle and check valve, quick twist tool-free disassembly
- Multiple connection options to retrofit existing systems
- Color-coded nozzles
- Engineering-grade UV-resistant thermoplastic construction
- Built-in check valve (inverted models)
- Minimum operating pressure 30 psi or 2.07 bar

Lt. Blue (LT BL)
7.5 to 9.7 gph
[28.4 to 36.7 L/hr]

Blue (BL)
12.5 to 16.2 gph
[47.3 to 61.3 L/hr]

Drop Assembly (Also Available)

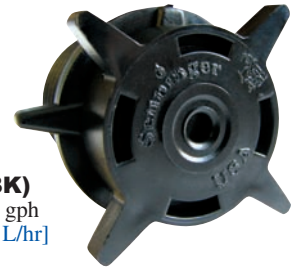
Overall lengths of 3, 4, or 6 ft (0.92, 1.22, or 1.83 m)
Components include: 1/4" barb x barb connector; 1/4" tubing; slip-over weight; Mister

Inverted Recommended Spacing- at **24 in.** above crop

	Double Row	LT BL	BL	P	BK	Single Row	LT BL	BL	P	BK
4 ft [1.22 m] **Table**										
Head Spacing	2-4 ft [0.61-1.22 m]	●				2-2.5 ft [0.61-0.76 m]			●	●
	2-3.5 ft [0.61-1.07 m]		●							
	2-3 ft [0.61-0.92 m]			●						
	2-2.5 ft [0.61-0.76 m]				●					
Lateral Spacing	2.5-3 ft [0.76-0.92 m]	●								
	2 ft [0.61 m]		●	●						
	2-3 ft [0.61-0.92 m]				●					
5 ft [1.53 m] **Table**										
Head Spacing	2-4 ft [0.61-1.22 m]	●				2-2.5 ft [0.61-0.76 m]				●
	2-3 ft [0.61-0.92 m]		●	●						
	2-2.5 ft [0.61-0.76 m]				●					
Lateral Spacing	2.5-3 ft [0.76-0.92 m]	●								
	2 ft [0.61 m]		●	●	●					
6 ft [1.83 m] **Table**										
Head Spacing	2-3.5 ft [0.61-1.07 m]	●								
	2.5 ft [0.76 m]		●							
	2-2.5 ft [0.61-0.76 m]			●	●					
Lateral Spacing	3-3.5 ft [0.92-1.07 m]	●								
	2.5-3.5 ft [0.76-1.07 m]		●							
	2.5 ft [0.76 m]			●						
	2 ft [0.61 m]				●					

Data shown at 30 psi [2 bar]. Other spacing options may produce higher uniformities and lower scheduling coefficiencies. Consult factory for details.

Purple (P)
15.9 to 20.5 gph
[60.2 to 77.6 L/hr]



Black (BK)
17.8 to 23.4 gph
[67.4 to 88.6 L/hr]

Connections: 1/4" barb | 3/8" M BSW 1/4" F press | 1/2" M NPT | 1/4" M press fit

SuperSpray®[Sprays

The Super Spray's interchangeable deflector pads allow customization of spray angle and droplet size.

FEATURES:

- For upright or inverted installations
- Standard inlet: 3/4" or 1/2" NPT male
- Flow rates: 0.54 to 6.54 gpm [123 to 1485 L/hr]
- Deflector pads available in flat, concave, convex and smooth, medium-grooved or deep-grooved
- Two-year warranty on materials, workmanship AND performance
- Color-coded nozzles for easy size identification; warranted to maintain correct orifice size for five years

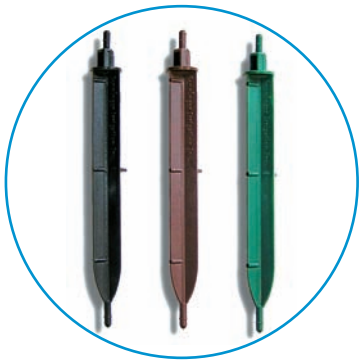
U.S. Data Sprinkler Base Press. [psi]	10	15	20	25	30	35	40
#5 Nozzle - Beige [5/64"]							
Flow [gpm]	0.54	0.66	0.77	0.86	0.94	1.01	1.08
Diam. at 3.0' ht. [ft.]	15.0	17.0	18.0	18.5	19.0	19.5	20.0
Diam. at 6.0' ht. [ft.]	15.5	17.5	19.5	21.5	22.5	23.5	24.5
#6 Nozzle - Gold [3/32"]							
Flow [gpm]	0.78	0.96	1.11	1.24	1.36	1.47	1.57
Diam. at 3.0' ht. [ft.]	16.0	17.5	18.5	19.5	20.0	20.5	21.0
Diam. at 6.0' ht. [ft.]	17.5	19.5	21.5	23.5	24.5	25.5	26.5
#7 Nozzle - Lime [7/64"]							
Flow [gpm]	1.08	1.32	1.52	1.70	1.87	2.02	2.15
Diam. at 3.0' ht. [ft.]	16.5	18.0	19.5	20.5	21.5	22.0	22.5
Diam. at 6.0' ht. [ft.]	19.5	21.5	23.5	25.5	26.5	27.5	28.5
#8 Nozzle - Lavender [1/8"]							
Flow [gpm]	1.42	1.74	2.01	2.25	2.46	2.66	2.84
Diam. at 3.0' ht. [ft.]	17.0	18.5	20.5	22.5	23.5	24.0	24.5
Diam. at 6.0' ht. [ft.]	21.0	23.0	25.0	27.0	28.0	29.0	30.0
#9 Nozzle - Grey [9/64"]							
Flow [gpm]	1.80	2.21	2.55	2.85	3.12	3.37	3.60
Diam. at 3.0' ht. [ft.]	17.5	19.5	21.5	23.5	25.0	26.0	26.5
Diam. at 6.0' ht. [ft.]	22.0	25.0	27.0	29.0	30.0	31.0	32.0
#10 Nozzle - Turquoise [5/32"]							
Flow [gpm]	2.25	2.75	3.18	3.56	3.90	4.21	4.50
Diam. at 3.0' ht. [ft.]	18.5	21.0	23.0	25.0	26.5	27.5	28.0
Diam. at 6.0' ht. [ft.]	23.0	26.0	28.0	30.0	31.0	32.0	33.0
#11 Nozzle - Yellow [11/64"]							
Flow [gpm]	2.73	3.35	3.87	4.33	4.74	5.12	5.47
Diam. at 3.0' ht. [ft.]	20.5	23.0	25.0	27.0	28.5	29.5	30.0
Diam. at 6.0' ht. [ft.]	24.0	27.0	29.0	31.0	32.0	33.0	34.0
#12 Nozzle - Red [3/16"]							
Flow [gpm]	3.27	4.01	4.63	5.18	5.67	6.13	6.54
Diam. at 3.0' ht. [ft.]	22.5	25.0	27.0	29.0	30.5	31.5	32.0
Diam. at 6.0' ht. [ft.]	25.0	28.0	30.0	32.0	33.0	34.0	35.0

Metric Data [bar] / [psi]	0.69 / 10	1.03 / 15	1.38 / 20	1.72 / 25	2.07 / 30	2.41 / 35	2.76 / 40
#5 Nozzle - Beige [1.98mm]							
Flow [L/s]	0.03	0.04	0.05	0.05	0.06	0.06	0.07
Diam. at 0.92m ht. [m]	4.6	5.2	5.5	5.6	5.8	5.9	6.1
Diam. at 1.83m ht. [m]	4.7	5.3	5.9	6.6	6.9	7.2	7.5
#6 Nozzle - Gold [2.38mm]							
Flow [L/s]	0.05	0.06	0.07	0.08	0.09	0.09	0.10
Diam. at 0.92m ht. [m]	4.9	5.3	5.6	5.9	6.1	6.2	6.4
Diam. at 1.83m ht. [m]	5.3	5.9	6.6	7.2	7.5	7.8	8.1
#7 Nozzle - Lime [2.78mm]							
Flow [L/s]	0.07	0.08	0.10	0.11	0.12	0.13	0.14
Diam. at 0.92m ht. [m]	5.0	5.5	5.9	6.2	6.6	6.7	6.9
Diam. at 1.83m ht. [m]	5.9	6.6	7.2	7.8	8.1	8.4	8.7
#8 Nozzle - Lavender [3.18mm]							
Flow [L/s]	0.09	0.11	0.13	0.14	0.16	0.17	0.18
Diam. at 0.92m ht. [m]	5.2	5.6	6.2	6.9	7.2	7.3	7.5
Diam. at 1.83m ht. [m]	6.4	7.0	7.6	8.2	8.5	8.8	9.1
#9 Nozzle-Grey [3.57]							
Flow [L/s]	0.11	0.14	0.16	0.18	0.20	0.21	0.23
Diam. at 0.92m ht. [m]	5.3	5.9	6.6	7.2	7.6	7.9	8.1
Diam. at 1.83m ht. [m]	6.7	7.6	8.2	8.8	9.1	9.4	9.8
#10 Nozzle - Turquoise [3.97mm]							
Flow [L/s]	0.14	0.17	0.20	0.22	0.25	0.27	0.28
Diam. at 0.92m ht. [m]	5.6	6.4	7.0	7.6	8.1	8.4	8.5
Diam. at 1.83m ht. [m]	7.0	7.9	8.5	9.1	9.4	9.8	10.1
#11 Nozzle - Yellow [4.37mm]							
Flow [L/s]	0.17	0.21	0.24	0.27	0.30	0.32	0.35
Diam. at 0.92m ht. [m]	6.2	7.0	7.6	8.2	8.7	9.0	9.1
Diam. at 1.83m ht. [m]	7.3	8.2	8.8	9.4	9.8	10.1	10.4
#12 Nozzle - Red [4.76mm]							
Flow [L/s]	0.21	0.25	0.29	0.33	0.36	0.39	0.41
Diam. at 0.92m ht. [m]	6.9	7.6	8.2	8.8	9.3	9.6	9.8
Diam. at 1.83m ht. [m]	7.6	8.5	9.1	9.8	10.1	10.4	10.7

Sprinkler performance may vary with actual field conditions. Performance data shown is based on the Super Spray being used with the flat smooth deflector pad. Other nozzle sizes and deflector pads are available; consult factory for specific performance data. Stream height is approximately the same as the nozzle height when using the flat smooth deflector pad under no wind conditions. Minimum recommended riser height is 1.5 ft. (0.46 m).

Sprays]SprayStakes

Senninger Spray Stakes are an intelligent choice for in-container irrigation.



FEATURES:

- Directional indicator for easy positioning
- Easy to remove for cleaning and maintenance
- Shut-off feature for non-use
- Large flutes for increased stability in soil
- Three color-coded flow rates to match application requirements
- Deflection surface provides a good application pattern
- Two-year warranty on materials, workmanship AND performance

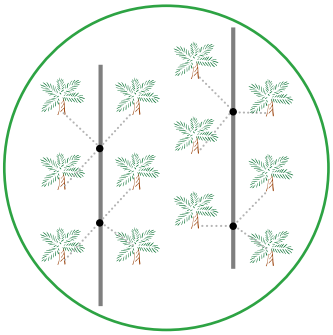
[For use with 0.125" I.D. Tubing]

Emitter Selection-based on container size or area

Container Size	Radius of Coverage	Spray Stake	Flow @20 psi [1.38 bar]	Distribution Pattern
10 gallon	12" [0.31m]	black	4 gph [15.1 L/hr]	90 Degrees
15 gallon	18" [0.46m]	brown	8 gph [30.3 L/hr]	120 Degrees
30 gallon	20" [0.51m]	green	12 gph [45.4 L/hr]	160 Degrees

Spray]Triad

The Triad is an excellent alternative to micro-irrigation. It's a unique 3-stream sprinkler for orchard irrigation that's ideal for irrigating small root zones associated with young trees.



The Senninger Triad uses one line of polyethelene tube every other row and one emitter for every three trees.*

FEATURES:

- Recommended for oil palms, pecans, coconuts, mangos, citrus, walnut and other fruit trees.
- 3 adjustable nozzles for precise direction and trajectory control.
- 3/4" slip F base solvent-welds directly to PVC riser, eliminating the need for a connecting fitting.
- Requires less filtration than traditional micro-irrigation.
- Reduces the number of laterals required by 50% compared to micro sprinklers.
- Fewer lateral requirements allow greater access to trees for harvesting and orchard maintenance.

Radii

Nozzle [psi]	10	15	20	25	30	35
0 Degree Trajectory						
Flow** [gpm]	0.94	1.16	1.36	1.52	1.68	1.82
Minimum throw [ft.]	9.5	12.0	13.0	13.0	13.0	13.0
Maximum throw [ft.]	10.0	13.5	15.0	16.5	17.0	17.5
30 Degrees Trajectory						
Flow** [gpm]	0.94	1.16	1.36	1.52	1.68	1.82
Maximum throw [ft.]	17.5	23.5	25.0	25.5	26.0	26.5
Maximum throw [ft.]	21.5	29.0	31.5	32.5	33.5	34.5

Metric [bar] / [psi]	0.69 / 10	1.03 / 15	1.38 / 20	1.72 / 25	2.07 / 30	2.41 / 35
0 Degree Trajectory						
Flow [L/hr]	213	263	309	345	382	413
Minimum throw [m]	2.9	3.7	4.0	4.0	4.0	4.0
Maximum throw [m]	3.1	4.1	4.6	5.0	5.2	5.3
30 Degrees Trajectory						
Flow [L/hr]	213	263	309	345	382	413
Minimum throw [m]	5.3	7.2	7.6	7.8	7.9	8.1
Maximum throw [m]	6.6	8.8	9.6	9.9	10.2	10.5

* Tree diking is recommended for best water retention. ** Flow rate is for all three nozzles combined. Riser height is 1.5ft. (0.46m)

SmoothDrive™ [Non-Impact

Senninger's new Smooth Drive is designed for under-tree, open-field and nursery irrigation. Its unique "walking diffuser" helps deliver an extremely uniform pattern, without distortion from bracket legs.

FEATURES:

- Precision-contoured deflector provides greater throw and enhanced distribution
- Advanced braking mechanism for smooth, consistent rotation speed and minimal riser stress
- Rugged design stands up in harsh field conditions
- User friendly method of assembly no tools required for accessing nozzle
- Flow rates: 1.22 to 2.79 gpm [277 to 634 L/hr]
- Operating pressures: 25 to 40 psi [1.72 to 2.76 bar]
- Standard Inlet: 1/2" M NPT; Optional Inlet: Combination 1/2" socket and 3/4" spigot, solvent-weld base for theft resistance
- Two-year warranty on materials, workmanship AND performance
- Color-coded nozzles for easy size identification; warranted to maintain correct orifice size for five years

Ordinary Devices	Smooth Drive
	
Shadows created by fixed bracket legs	Walking diffuser eliminates leg shadows

Ordinary rotating sprinklers have stationary legs that block water and create leg shadows (drier areas).
The Smooth Drive's walking diffuser eliminates bracket leg shadows resulting in unobstructed uniform distribution.

SD2214

U.S. Data Sprinkler Base Press. [psi]	25	30	35	40	Metric Data [bar] [psi]	1.72 25	2.07 30	2.41 35	2.76 40
#6 Nozzle - Gold [3/32"]					#6 Nozzle - Gold [2.38mm]				
Flow [gpm]	1.22	1.34	1.45	1.55	Flow [L/s]	0.08	0.08	0.09	0.10
Diam. at 1.5' ht. [ft.]	60	62	65	67	Diam. at 0.46m ht. [m]	18.3	18.9	19.8	20.4
#7 Nozzle - Lime [7/64"]					#7 Nozzle - Lime [2.78mm]				
Flow [gpm]	1.68	1.84	1.99	2.12	Flow [L/s]	0.11	0.12	0.13	0.13
Diam. at 1.5' ht. [ft.]	64	66	68	70	Diam. at 0.46m ht. [m]	19.5	20.1	20.7	21.3
#8 Nozzle - Lavender [1/8"]					#8 Nozzle - Lavender [3.18mm]				
Flow [gpm]	2.21	2.42	2.62	2.79	Flow [L/s]	0.14	0.15	0.17	0.18
Diam. at 1.5' ht. [ft.]	67	69	71	73	Diam. at 0.46m ht. [m]	20.4	21.0	21.6	22.3

Sprinkler performance may vary with actual field conditions. Other nozzle sizes are available; consult factory for specific performance data. Minimum recommended height is 1.5 ft. (0.46 m).

The Senninger T-Spray delivers a fine spray ideal for delicate stock. It can be mounted upright or inverted and is also available in a high angle model for upright installations only.

FEATURES:

- 360º Spray nozzle
- No moving parts for longer life
- High-angle upright T-stem provides larger diameter of coverage
- Removable T-stem for easy cleaning
- Flow rates: 0.98 to 2.85 gpm [223 to 647 L/hr]
- Operating pressures: 15 to 40 psi [1.03 to 2.76 bar]
- Inlet: 1/2" M NPT male
- Two-year warranty on materials, workmanship AND performance
- Color-coded stems for easy size identification

Upright & Inverted

Upright

Standard Angle for upright or inverted installations

U.S. Data Sprinkler Base Press. [psi]	15	20	25	30	35	40	Metric Data	[bar] [psi]	1.03 15	1.38 20	1.72 25	2.07 30	2.41 35	2.76 40
#6 Nozzle - Gold [3/32"]							#6 Nozzle - Gold [2.38mm]							
Flow [gpm]	0.98	1.14	1.27	1.40	1.52	1.63	Flow [L/hr]		223	259	288	318	345	370
Diam. at 1.5' ht. [ft.]	15.5	17.0	18.0	19.0	20.0	21.0	Diam. at 0.46m ht. [m]		4.7	5.2	5.5	5.8	6.1	6.4
Diam. at 3.0' ht. [ft.]	17.5	18.5	19.5	20.5	21.5	22.0	Diam. at .092m ht. [m]		5.3	5.6	5.9	6.3	6.6	6.7
#7 Nozzle - Lime [7/64"]							#7 Nozzle - Lime [2.78mm]							
Flow [gpm]	1.34	1.56	1.73	1.90	2.05	2.20	Flow [L/hr]		304	354	393	432	466	500
Diam. at 1.5' ht. [ft.]	17.0	18.5	19.5	20.5	21.0	21.5	Diam. at 0.46m ht. [m]		5.2	5.6	5.9	6.3	6.4	6.6
Diam. at 3.0' ht. [ft.]	18.5	19.5	20.5	21.5	22.5	23.0	Diam. at .092m ht. [m]		5.6	5.9	6.3	6.6	6.9	7.0
#8 Nozzle - Lavender [1/8"]							#8 Nozzle - Lavender [3.18mm]							
Flow [gpm]	1.73	2.01	2.23	2.45	2.65	2.85	Flow [L/hr]		393	457	506	556	602	647
Diam. at 1.5' ht. [ft.]	18.0	19.5	20.5	21.0	21.5	22.0	Diam. at 0.46m ht. [m]		5.5	5.9	6.3	6.4	6.6	6.7
Diam. at 3.0' ht. [ft.]	19.0	20.0	21.0	22.0	23.0	23.5	Diam. at .092m ht. [m]		5.8	6.1	6.4	6.7	7.0	7.2

High Angle for upright installations

U.S. Data Sprinkler Base Press. [psi]	15	20	25	30	35	40	Metric Data	[bar] [psi]	1.03 15	1.38 20	1.72 25	2.07 30	2.41 35	2.76 40
#8 Nozzle - Dark Lavender [1/8"]							#8 Nozzle - Dark Lavender [3.18mm]							
Flow [gpm]	1.73	2.01	2.23	2.45	2.65	2.85	Flow [L/hr]		393	457	506	556	602	647
Diam. at 1.5' ht. [ft.]	25.5	27.5	29.0	30.0	31.0	32.0	Diam. at 0.46m ht. [m]		7.8	8.4	8.8	9.2	9.5	9.8

Sprinkler performance may vary with actual field conditions. Minimum recommended riser height is 1.5 ft. (0.46 m).

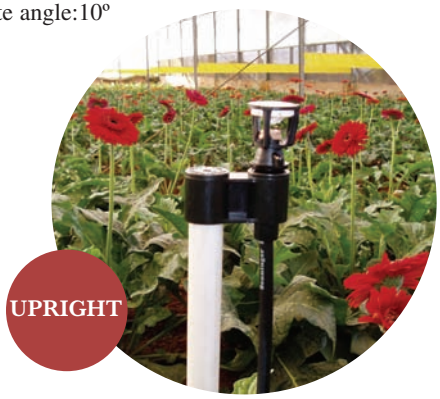
mini-Wobbler®[Wobblers

SEE PG. 33 FOR RISER ADAPTER!

The Senninger mini-Wobbler employs the same unique off-center rotary-action as the standard Wobbler. It provides extremely uniform coverage over a large diameter at low pressures.

FEATURES:

- Low evaporative loss
- Multi-level throw, approximate angle:10º
- Flow rates: 0.42 to 2.61 gpm [95 to 593 L/hr]
- Operating pressures: 15 to 35 psi [1.03 to 2.41 bar]
- Inlet: 1/2" M NPT
- Two-year warranty on materials, workmanship AND performance
- Color-coded nozzles for easy size identification; warranted to maintain correct orifice size for five years



The mini-Wobbler can be mounted on the Riser Adapter for installation versatility. [see pg. 33]

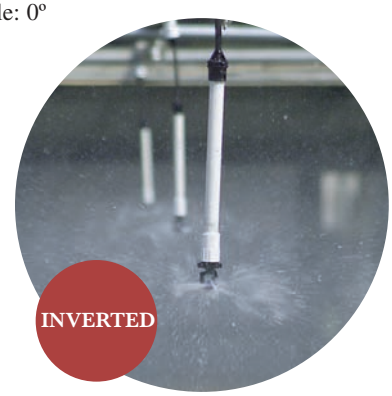
i-mini-Wobbler®[Wobblers

SEE PG. 34 FOR DROP ADAPTER!

The Senninger i-mini-Wobbler employs the same unique off-center rotary-action as the standard Wobbler. It produces a broad, rain-like application.

FEATURES:

- Low evaporative loss
- Multi-level throw, approximate angle: 0º
- Flow rates: 0.75 to 2.61 gpm [170 to 593 L/hr]
- Operating pressures: 20 to 35 psi [1.38 to 2.5 bar]
- Inlet: 1/2" M NPT
- Two-year warranty on materials, workmanship AND performance
- Color-coded nozzles for easy size identification; warranted to maintain correct orifice size for five years



The inverted mini-Wobbler produces a broad, rain-like application.

mini-Wobbler [Upright]

U.S. Data Sprinkler Base Press. [psi]	15	20	25	30	35
#4 Nozzle - Light Blue [1/16"]					
Flow [gpm]	0.42	0.50	0.56	0.62	0.68
Diam. at 1.5' ht. [ft.]	26.5	28.0	29.0	30.0	30.5
Diam. at 3.0' ht. [ft.]	31.0	32.0	33.0	33.5	34.0
#5 Nozzle - Beige [5/64"]					
Flow [gpm]	0.64	0.75	0.84	0.91	0.99
Diam. at 1.5' ht. [ft.]	31.0	33.5	35.0	35.5	36.0
Diam. at 3.0' ht. [ft.]	36.5	39.0	39.5	39.5	39.5
#6 Nozzle - Gold [3/32"]					
Flow [gpm]	0.95	1.10	1.25	1.36	1.47
Diam. at 1.5' ht. [ft.]	33.0	36.0	37.0	37.0	37.5
Diam. at 3.0' ht. [ft.]	39.5	42.0	42.0	42.0	42.0
#7 Nozzle - Lime [7/64"]					
Flow [gpm]	1.30	1.51	1.69	1.86	2.01
Diam. at 1.5' ht. [ft.]	35.0	37.5	38.5	39.0	39.0
Diam. at 3.0' ht. [ft.]	41.0	43.0	43.0	43.0	43.0
#8 Nozzle - Lavender [1/8"]					
Flow [gpm]	1.67	1.95	2.18	2.39	2.61
Diam. at 1.5' ht. [ft.]	35.5	38.5	39.0	39.5	40.0
Diam. at 3.0' ht. [ft.]	41.5	43.0	43.5	43.5	43.5

Metric Data [bar] [psi]	1.03 15	1.38 20	1.72 25	2.07 30	2.41 35
#4 Nozzle - Light Blue [1.59mm]					
Flow [L/hr]	95	114	127	141	154
Diam. at 0.46m ht. [m]	8.1	8.5	8.8	9.2	9.3
Diam. at 0.92m ht. [m]	9.5	9.8	10.1	10.2	10.4
#5 Nozzle - Beige [1.98mm]					
Flow [L/hr]	145	170	191	207	225
Diam. at 0.46m ht. [m]	9.5	10.2	10.7	10.8	11.0
Diam. at 0.92m ht. [m]	11.1	11.9	12.0	12.0	12.0
#6 Nozzle - Gold [2.38mm]					
Flow [L/hr]	216	250	284	309	334
Diam. at 0.46m ht. [m]	10.1	11.0	11.3	11.3	11.4
Diam. at 0.92m ht. [m]	12.0	12.8	12.8	12.8	12.8
#7 Nozzle - Lime [2.78mm]					
Flow [L/hr]	295	343	384	422	457
Diam. at 0.46m ht. [m]	10.7	11.4	11.7	11.9	11.9
Diam. at 0.92m ht. [m]	12.5	13.1	13.1	13.1	13.1
#8 Nozzle - Lavender [3.18mm]					
Flow [L/hr]	379	443	495	543	593
Diam. at 0.46m ht. [m]	10.8	11.7	11.9	12.0	12.2
Diam. at 0.92m ht. [m]	12.7	13.1	13.3	13.3	13.3

Also available with #9 and #10 Nozzle. Consult factory for specific performance data.
Sprinkler performance may vary with actual field conditions. Upright model stream heights range from 1.5 - 3.0 ft (0.46 - 0.91 m) above nozzle based on pressure and nozzle size. Minimum recommended riser height is 1.5 ft. (0.46 m).

i-mini-Wobbler [Inverted]

U.S. Data Sprinkler Base Press. [psi]	20	25	30	35
#5 Nozzle-Beige [5/64"]				
Flow [gpm]	0.75	0.84	0.91	0.99
Diam. at 3.0' ht. [ft.]	30.0	31.0	31.0	31.5
Diam. at 6.0' ht. [ft.]	32.0	32.5	33.0	33.0
#6 Nozzle-Gold [3/32"]				
Flow [gpm]	1.10	1.25	1.36	1.47
Diam. at 3.0' ht. [ft.]	31.0	31.4	31.8	32.0
Diam. at 6.0' ht. [ft.]	34.0	34.5	35.0	35.0
#7 Nozzle-Lime [7/64"]				
Flow [gpm]	1.51	1.69	1.86	2.01
Diam. at 3.0' ht. [ft.]	31.0	32.0	32.0	32.5
Diam. at 6.0' ht. [ft.]	35.0	35.5	36.0	36.5
#8 Nozzle-Lavender [1/8"]				
Flow [gpm]	1.95	2.18	2.39	2.61
Diam. at 3.0' ht. [ft.]	31.5	32.0	32.5	33.0
Diam. at 6.0' ht. [ft.]	35.5	36.0	36.5	37.0

Metric Data [bar] [psi]	1.38 20	1.72 25	2.07 30	2.41 35
#5 Nozzle - Beige [1.98mm]				
Flow [L/hr]	170	191	207	225
Diam. at 0.92m ht. [m]	9.2	9.5	9.5	9.6
Diam. at 1.83m ht. [m]	9.8	9.9	10.1	10.1
#6 Nozzle - Gold [2.38mm]				
Flow [L/hr]	250	284	309	334
Diam. at 0.92m ht. [m]	9.5	9.6	9.7	9.8
Diam. at 1.83m ht. [m]	10.4	10.5	10.7	10.7
#7 Nozzle - Lime [2.78mm]				
Flow [L/hr]	343	384	422	457
Diam. at 0.92m ht. [m]	9.5	9.8	9.8	9.9
Diam. at 1.83m ht. [m]	10.7	10.8	11.0	11.1
#8 Nozzle - Lavender [3.18mm]				
Flow [L/hr]	443	495	543	593
Diam. at 0.92m ht. [m]	9.6	9.8	9.9	10.1
Diam. at 1.83m ht. [m]	10.8	11.0	11.1	11.3

Sprinkler performance may vary with actual field conditions. Inverted model stream heights range from 0.5 - 1.5 ft (0.2 - 0.46 m) above nozzle based on pressure and nozzle size.

Wobblers® [Standard&Low Angle

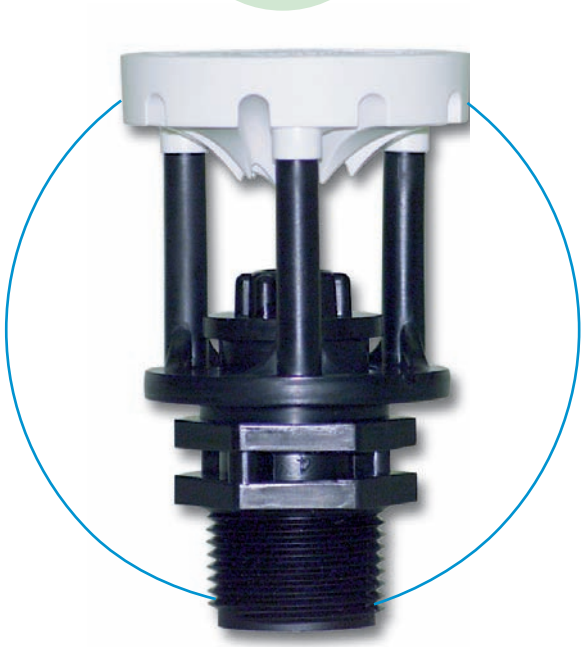
Standard-Angle

The Senninger Wobbler has a unique off-center rotary-action. This design provides extremely uniform coverage over a large diameter at low pressures.

FEATURES:

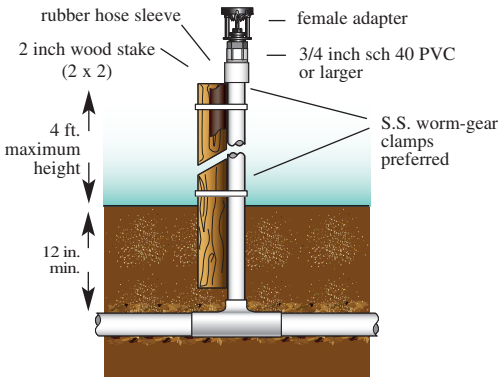
- Only one moving part for longer life
- Built for strength and durability
- Flow rates: 0.78 to 8.25 gpm [177 to 1874 L/hr]
- Low evaporative loss
- Inlet: 3/4" and 1/2" M NPT
- Two-year warranty on materials, workmanship AND performance
- Color-coded nozzles for easy size identification; warranted to maintain correct orifice size for five years.

NOTE:
Care must be taken to stabilize the riser. For other installation details, contact our factory.

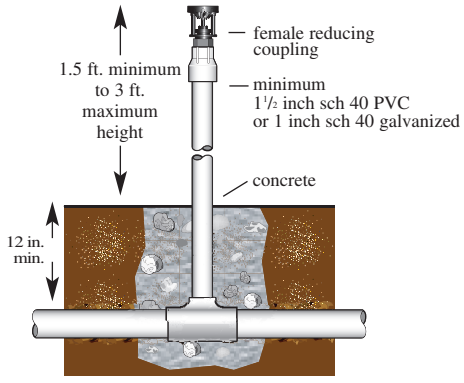


Low-Angle

WOBBLER ON RISER SUPPORTED WITH STAKE



WOBBLER ON RISER WITH CONCRETE



Standard&Low Angle]Wobblers®

The Wobbler produces droplets which resist wind drift.

U.S. Data Sprinkler Base Press. [psi]	10	15	20	25	30	35
#6 Nozzle - Gold [3/32"]						
Flow [gpm]	0.78	0.95	1.10	1.23	1.35	1.45
SA Diam. at 1.5' ht. [ft.]	34.0	39.0	41.5	43.5	44.0	45.0
LA Diam. at 1.5' ht. [ft.]	29.0	34.5	38.0	40.5	41.0	-
#7 Nozzle - Lime [7/64"]						
Flow [gpm]	1.06	1.30	1.50	1.68	1.84	1.99
SA Diam. at 1.5' ht. [ft.]	36.5	41.5	43.5	45.0	45.5	46.5
LA Diam. at 1.5' ht. [ft.]	31.5	37.0	40.0	41.5	42.0	-
#8 Nozzle - Lavender [1/8"]						
Flow [gpm]	1.40	1.71	1.98	2.21	2.42	2.62
SA Diam. at 1.5' ht. [ft.]	38.5	43.5	45.0	46.5	47.0	48.0
LA Diam. at 1.5' ht. [ft.]	34.0	39.0	41.5	42.5	43.0	-
#9 Nozzle - Grey [9/64"]						
Flow [gpm]	1.80	2.20	2.54	2.84	3.11	3.36
SA Diam. at 1.5' ht. [ft.]	40.5	45.5	46.5	47.5	48.0	49.0
LA Diam. at 1.5' ht. [ft.]	35.5	40.5	42.5	43.5	44.0	-
#10 Nozzle - Turquoise [5/32"]						
Flow [gpm]	2.22	2.72	3.14	3.51	3.85	4.16
SA Diam. at 1.5' ht. [ft.]	42.0	47.0	48.0	48.5	49.0	50.0
LA Diam. at 1.5' ht. [ft.]	36.0	41.0	43.0	44.0	44.5	-
#11 Nozzle - Yellow [11/64"]						
Flow [gpm]	2.69	3.30	3.81	4.26	4.67	5.05
SA Diam. at 1.5' ht. [ft.]	43.0	48.0	49.0	49.5	50.0	51.0
LA Diam. at 1.5' ht. [ft.]	36.5	42.0	43.5	44.5	45.0	-
#12 Nozzle - Red [3/16"]						
Flow [gpm]	3.23	3.96	4.57	5.11	5.60	6.05
SA Diam. at 1.5' ht. [ft.]	44.0	49.0	50.0	50.5	51.0	51.5
LA Diam. at 1.5' ht. [ft.]	37.0	42.5	44.0	45.0	45.5	-
#13 Nozzle - White [13/64"]						
Flow [gpm]	3.80	4.65	5.38	6.01	6.59	7.12
SA Diam. at 1.5' ht. [ft.]	44.5	49.5	50.5	51.0	51.5	52.0
LA Diam. at 1.5' ht. [ft.]	37.5	43.0	44.5	45.5	46.0	-
#14 Nozzle - Blue [7/32"]						
Flow [gpm]	4.40	5.39	6.23	6.97	7.64	8.25
SA Diam. at 1.5' ht. [ft.]	45.0	50.0	51.0	51.5	52.0	52.5
LA Diam. at 1.5' ht. [ft.]	38.0	43.5	45.0	46.0	46.5	-

Metric Data [bar]	0.69	1.03	1.38	1.72	2.07	2.41
[psi]	10	15	20	25	30	35
#6 Nozzle - Gold [2.38mm]						
Flow [L/s]	0.05	0.06	0.07	0.08	0.09	0.09
SA Diam. at 0.46m ht [m]	10.4	11.9	12.6	13.3	13.4	13.7
LA Diam. at 0.46m ht [m]	8.8	10.5	11.6	12.3	12.5	-
#7 Nozzle - Lime [2.78mm]						
Flow [L/s]	0.07	0.08	0.09	0.11	0.12	0.13
SA Diam. at 0.46m ht [m]	11.1	12.6	13.3	13.7	13.9	14.2
LA Diam. at 0.46m ht [m]	9.6	11.3	12.2	12.6	12.8	-
#8 Nozzle - Lavender [3.18mm]						
Flow [L/s]	0.09	0.11	0.12	0.14	0.15	0.17
SA Diam. at 0.46m ht [m]	11.7	13.3	13.7	14.2	14.3	14.6
LA Diam. at 0.46m ht [m]	10.4	11.9	12.6	13.0	13.1	-
#9 Nozzle - Grey [3.57mm]						
Flow [L/s]	0.11	0.14	0.16	0.18	0.20	0.21
SA Diam. at 0.46m ht [m]	12.3	13.9	14.2	14.5	14.6	14.9
LA Diam. at 0.46m ht [m]	10.8	12.3	13.0	13.3	13.4	-
#10 Nozzle - Turquoise [3.97mm]						
Flow [L/s]	0.14	0.17	0.20	0.22	0.24	0.26
SA Diam. at 0.46m ht [m]	12.8	14.3	14.6	14.8	14.9	15.2
LA Diam. at 0.46m ht [m]	11.0	12.5	13.1	13.4	13.6	-
#11 Nozzle - Yellow [4.37mm]						
Flow [L/s]	0.17	0.21	0.24	0.27	0.29	0.32
SA Diam. at 0.46m ht [m]	13.1	14.6	14.9	15.1	15.2	15.5
LA Diam. at 0.46m ht [m]	11.1	12.8	13.3	13.6	13.7	-
#12 Nozzle - Red [4.76mm]						
Flow [L/s]	0.20	0.25	0.29	0.32	0.35	0.38
SA Diam. at 0.46m ht [m]	13.4	14.9	15.2	15.4	15.5	15.7
LA Diam. at 0.46m ht [m]	11.3	13.0	13.4	13.7	13.9	-
#13 Nozzle - White [5.16mm]						
Flow [L/s]	0.24	0.29	0.34	0.38	0.42	0.45
SA Diam. at 0.46m ht [m]	13.6	15.1	15.4	15.5	15.7	15.8
LA Diam. at 0.46m ht [m]	11.4	13.1	13.6	13.9	14.0	-
#14 Nozzle - Blue [5.56mm]						
Flow [L/s]	0.28	0.34	0.39	0.44	0.48	0.52
SA Diam. at 0.46m ht [m]	13.7	15.2	15.5	15.7	15.8	16.0
LA Diam. at 0.46m ht [m]	11.6	13.3	13.7	14.0	14.2	-

Sprinkler performance may vary with actual field conditions. Other nozzle sizes are available; consult factory for specific performance data.
Stream heights range from 2.5 - 5.5 ft (0.8 - 1.7 m) above nozzle based on pressure and nozzle size. Minimum recommended riser height is 1.5 ft. (0.46 m).

Xcel-Wobbler®[Wobblers

High-Angle
New Increased Diameter

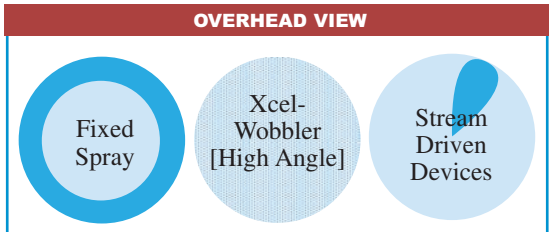
Mid-Angle
New Look & Stronger Design!

Senninger's Xcel-Wobbler maximizes the area of coverage. Its unique off-center rotary action provides extremely uniform coverage at low pressures with very low evaporative loss.

FEATURES:

- Counter-balance design produces smooth, stable performance
- Only one moving part for longer life
- Inlet sizes 3/4" or 1/2" M NPT
- Flow rates: 0.78 to 6.97 gpm [177 to 1583 L/hr]
- Low wind drift and evaporative loss at low pressures
- Two-year warranty on materials, workmanship AND performance
- Color-coded nozzles for easy size identification; warranted to maintain correct orifice size for five years

The Xcel-Wobbler provides a maximized area of coverage for under-tree applications and nursery canopy applications.



The larger area of instantaneous application of the Xcel-Wobbler minimizes the impact on the soil structure, helping to maintain infiltration capability.

U.S. Data Sprinkler Base Press. [psi]	10	15	20	25	Metric Data [bar] [psi]	0.69 10	1.03 15	1.38 20	1.72 25
#6 Nozzle - Gold [3/32"]					#6 Nozzle - Gold [2.38mm]				
Flow [gpm]	0.78	0.95	1.10	1.23	Flow [L/s]	0.05	0.06	0.07	0.08
HA Diam. at 1.5' ht. [ft.]	36.5	41.0	45.0	46.0	HA Diam. at 0.46m ht. [m]	11.1	12.5	13.7	14.0
MA Diam. at 1.5' ht. [ft.]	32.0	35.0	38.5	41.0	MA Diam. at 0.46m ht. [m]	9.8	10.7	11.7	12.5
#7 Nozzle - Lime [7/64"]					#7 Nozzle - Lime [2.78mm]				
Flow [gpm]	1.06	1.30	1.50	1.68	Flow [L/s]	0.07	0.08	0.09	0.11
HA Diam. at 1.5' ht. [ft.]	40.0	46.5	47.0	50.5	HA Diam. at 0.46m ht. [m]	12.2	14.2	14.3	15.4
MA Diam. at 1.5' ht. [ft.]	33.0	36.5	40.5	41.0	MA Diam. at 0.46m ht. [m]	10.1	11.1	12.3	12.5
#8 Nozzle - Lavender [1/8"]					#8 Nozzle - Lavender [3.18mm]				
Flow [gpm]	1.40	1.71	1.98	2.21	Flow [L/s]	0.09	0.11	0.12	0.14
HA Diam. at 1.5' ht. [ft.]	42.0	46.5	47.0	51.5	HA Diam. at 0.46m ht. [m]	12.8	14.2	14.3	15.7
MA Diam. at 1.5' ht. [ft.]	34.0	38.5	41.0	42.5	MA Diam. at 0.46m ht. [m]	10.4	11.7	12.5	13.0
#9 Nozzle - Grey [9/64"]					#9 Nozzle - Grey [3.57mm]				
Flow [gpm]	1.80	2.20	2.54	2.84	Flow [L/s]	0.11	0.14	0.16	0.18
HA Diam. at 1.5' ht. [ft.]	44.0	47.0	50.5	52.5	HA Diam. at 0.46m ht. [m]	13.4	14.3	15.4	16.0
MA Diam. at 1.5' ht. [ft.]	34.5	40.5	42.0	43.0	MA Diam. at 0.46m ht. [m]	10.5	12.3	12.8	13.1
#10 Nozzle - Turquoise [5/32"]					#10 Nozzle - Turquoise [3.97mm]				
Flow [gpm]	2.22	2.72	3.14	3.51	Flow [L/s]	0.14	0.17	0.20	0.22
HA Diam. at 1.5' ht. [ft.]	44.5	49.0	50.5	53.5	HA Diam. at 0.46m ht. [m]	13.6	14.9	15.4	16.3
MA Diam. at 1.5' ht. [ft.]	36.0	41.0	42.5	44.0	MA Diam. at 0.46m ht. [m]	11.0	12.5	13.0	13.4
#11 Nozzle - Yellow [11/64"]					#11 Nozzle - Yellow [4.37mm]				
Flow [gpm]	2.69	3.30	3.81	4.26	Flow [L/s]	0.17	0.21	0.24	0.27
HA Diam. at 1.5' ht. [ft.]	44.5	50.5	51.5	54.0	HA Diam. at 0.46m ht. [m]	13.6	15.4	15.7	16.5
MA Diam. at 1.5' ht. [ft.]	36.0	41.5	43.0	44.0	MA Diam. at 0.46m ht. [m]	11.0	12.6	13.1	13.4
#12 Nozzle - Red [3/16"]					#12 Nozzle - Red [4.76mm]				
Flow [gpm]	3.23	3.96	4.57	5.11	Flow [L/s]	0.20	0.25	0.29	0.32
HA Diam. at 1.5' ht. [ft.]	46.0	50.5	52.0	54.5	HA Diam. at 0.46m ht. [m]	14.0	15.4	15.8	16.6
MA Diam. at 1.5' ht. [ft.]	36.5	41.5	44.5	44.5	MA Diam. at 0.46m ht. [m]	11.1	12.6	13.6	13.6
#13 Nozzle - White [13/64"]					#13 Nozzle - White [5.16mm]				
Flow [gpm]	3.80	4.65	5.38	6.01	Flow [L/s]	0.24	0.29	0.34	0.38
HA Diam. at 1.5' ht. [ft.]	46.5	51.0	52.5	55.5	HA Diam. at 0.46m ht. [m]	14.2	15.5	16.0	16.9
MA Diam. at 1.5' ht. [ft.]	36.5	41.5	44.5	45.0	MA Diam. at 0.46m ht. [m]	11.1	12.6	13.6	13.7
#14 Nozzle - Blue [7/32"]					#14 Nozzle - Blue [5.56mm]				
Flow [gpm]	4.40	5.39	6.23	6.97	Flow [L/s]	0.28	0.34	0.39	0.44
HA Diam. at 1.5' ht. [ft.]	47.0	51.0	53.0	55.5	HA Diam. at 0.46m ht. [m]	14.3	15.5	16.2	16.9
MA Diam. at 1.5' ht. [ft.]	37.0	42.5	45.0	46.5	MA Diam. at 0.46m ht. [m]	11.3	13.0	13.7	14.2

Sprinkler performance may vary with actual field conditions. Other nozzle sizes are available; consult factory for specific performance data.
Stream heights range from 2.5 - 5.5 ft (0.8 - 1.7 m) above nozzle based on pressure and nozzle size. Minimum recommended riser height is 1.5 ft. (0.46).

20series[Impacts

The 20 series full-circle impacts are Senninger's most economical sprinklers. Effective for various overhead and undertree applications.

FEATURES:

- Single nozzle design for maximum throw
- Three trajectories available:
  2009 - 9° fights wind drift and evaporation
  2014 - 14° ideal for undertree irrigation
  2023 - 23° for maximum throw on overhead systems
- Wide range of nozzle and vane combinations for excellent distribution at all pressures
- Built-in hex wrench for easy in-the-field maintenance
- Standard lower bearing pipe thread:
  1/2" M NPT (female also available)
- Flow rates: 1.34 to 3.98 gpm [304 to 904 L/hr]
- Two-year warranty on materials, workmanship AND performance
- Color-coded nozzles for easy size identification; warranted to maintain correct orifice size for five years

Other Models:

- Wedgedrive for lower application rates.

2009HD-1-1/2" M

U.S. Data Sprinkler Base Press. [psi]	30	35	40	45	50
#6 Nozzle - Gold [3/32"]					
Flow [gpm]	1.34	1.45	1.55	1.64	_
Diam. at 1.5' ht. [ft.]	58	60	62	64	_
#7 Nozzle - Lime [7/64"]					
Flow [gpm]	1.84	1.99	2.12	2.25	2.37
Diam. at 1.5' ht. [ft.]	60	62	64	66	67
#8 Nozzle - Lavender [1/8"]					
Flow [gpm]	2.42	2.62	2.79	2.97	3.12
Diam. at 1.5' ht. ft. [ft.]	62	64	66	68	69
#9 Nozzle - Grey [9/64"]					
Flow [gpm]	3.08	3.33	3.56	3.78	3.98
Diam. at 1.5' ht. [ft.]	64	66	68	70	71

Metric Data [bar] [psi]	2.07 30	2.41 35	2.76 40	3.10 45	3.45 50
#6 Nozzle - Gold [2.38mm]					
Flow [L/s]	0.08	0.09	0.10	0.10	-
Diam. at 0.46m ht. [m]	17.7	18.3	18.9	19.5	-
#7 Nozzle - Lime [2.78mm]					
Flow [L/s]	0.12	0.13	0.13	0.14	0.15
Diam. at 0.46m ht. [m]	18.3	18.9	19.5	20.1	20.4
#8 Nozzle - Lavender [3.18mm]					
Flow [L/s]	0.15	0.17	0.18	0.19	0.20
Diam. at 0.46m ht. [m]	18.9	19.5	20.1	20.7	21.0
#9 Nozzle - Grey [3.57mm]					
Flow [L/s]	0.19	0.21	0.22	0.24	0.25
Diam. at 0.46m ht. [m]	19.5	20.1	20.7	21.3	21.6

Sprinkler performance may vary with actual field conditions. Diameters shown are for standard straight bore nozzles and stream straightening vanes. Other nozzles and/or vane combinations are available; Consult factory for specific performance data. Stream heights range from 1.5-3.0 ft. (0.46-0.91m) above nozzle based on pressure and nozzle size. Minimum recommended riser height is 1.5 ft. (0.46m).

Mounting Options:

- Vandal-resistant coupling and special wrench
- 3/4" slip with base swivel
- Quick-connect base and connector

2014HS-1-1/2" M

U.S. Data Sprinkler Base Press. [psi]	30	35	40	45	50	Metric Data [bar] [psi]	2.07 30	2.41 35	2.76 40	3.10 45	3.45 50
#6 Nozzle - Gold [3/32"]						#6 Nozzle - Gold [2.38mm]					
Flow [gpm]	1.34	1.45	1.55	1.64	-	Flow [L/s]	0.08	0.09	0.10	0.10	-
Diam. at 1.5' ht. [ft.]	66	68	70	72	-	Diam. at 0.46m ht. [m]	20.1	20.7	21.3	21.9	-
#7 Nozzle - Lime [7/64"]						#7 Nozzle - Lime [2.78mm]					
Flow [gpm]	1.84	1.99	2.12	2.25	2.37	Flow [L/s]	0.12	0.13	0.13	0.14	0.15
Diam. at 1.5' ht. [ft.]	68	70	72	74	75	Diam. at 0.46m ht. [m]	20.7	21.3	21.9	22.6	22.9
#8 Nozzle - Lavender [1/8"]						#8 Nozzle - Lavender [3.18mm]					
Flow [gpm]	2.42	2.62	2.79	2.97	3.12	Flow [L/s]	0.15	0.17	0.18	0.19	0.20
Diam. at 1.5' ht. [ft.]	70	72	74	76	77	Diam. at 0.46m ht. [m]	21.3	21.9	22.6	23.2	23.5
#9 Nozzle - Grey [9/64"]						#9 Nozzle - Grey [3.57mm]					
Flow [gpm]	3.08	3.33	3.56	3.78	3.98	Flow [L/s]	0.19	0.21	0.22	0.24	0.25
Diam. at 1.5' ht. [ft.]	71	73	75	77	78	Diam. at 0.46m ht. [m]	21.6	22.3	22.9	23.5	23.8

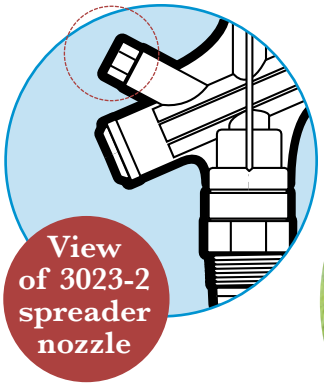
Sprinkler performance may vary with actual field conditions. Stream heights range from 3.0-5.0 ft. (0.91-1.5m) above nozzle based on pressure and nozzle size.
Minimum recommended riser height is 1.5 ft. (0.46m).

2023HS-1-1/2" M

U.S. Data Sprinkler Base Press. [psi]	30	35	40	45	50	Metric Data [bar] [psi]	2.07 30	2.41 35	2.76 40	3.10 45	3.45 50
#6 Nozzle - Gold [3/32"]						#6 Nozzle - Gold [2.38mm]					
Flow [gpm]	1.34	1.45	1.55	1.64	_	Flow [L/s]	0.08	0.09	0.10	0.10	-
Diam. at 1.5' ht. [ft.]	74	75	76	77	_	Diam. at 0.46m ht. [m]	22.6	22.9	23.2	23.5	-
#7 Nozzle - Lime [7/64"]						#7 Nozzle - Lime [2.78mm]					
Flow [gpm]	1.84	1.99	2.12	2.25	2.37	Flow [L/s]	0.12	0.13	0.13	0.14	0.15
Diam. at 1.5' ht. [ft.]	76	77	78	79	80	Diam. at 0.46m ht. [m]	23.2	23.5	23.8	24.1	24.4
#8 Nozzle - Lavender [1/8"]						#8 Nozzle - Lavender [3.18mm]					
Flow [gpm]	2.42	2.62	2.79	2.97	3.12	Flow [L/s]	0.15	0.17	0.18	0.19	0.20
Diam. at 1.5' ht. [ft.]	78	79	80	81	82	Diam. at 0.46m ht. [m]	23.8	24.1	24.4	24.7	25.0
#9 Nozzle - Grey [9/64"]						#9 Nozzle - Grey [3.57mm]					
Flow [gpm]	3.08	3.33	3.56	3.78	3.98	Flow [L/s]	0.19	0.21	0.22	0.24	0.25
Diam. at 1.5' ht. [ft.]	79	80	81	82	83	Diam. at 0.46m ht. [m]	24.1	24.4	24.7	25.0	25.3

Sprinkler performance may vary with actual field conditions. Stream heights range from 6.5-9.5 ft. (2.0-3.0m) above nozzle based on pressure and nozzle size.
Minimum recommended riser height is 1.5 ft. (0.46m).

30series[Impacts



Senninger impacts provide uniform water distribution and excellent reliability.

The 30 Series begins Senninger's line of full-circle 3/4" impact sprinklers. Designed specifically for lower flows and maximum efficiency.

FEATURES:

- Single and double nozzle designs available. Double nozzle only available in 23° model.
- Two trajectories available:
  3012- 12° ideal for undertree irrigation
  3023- 23° for maximum throw on overhead systems
- Wide range of nozzle and vane combinations for excellent distribution at all pressures
- Built-in hex wrench for easy in-the-field maintenance
- Standard lower bearing pipe thread: 3/4" M NPT (female also available)
- Flow rates: 1.84 to 4.93 gpm [0.12 to 0.31 L/s]
- Two-year warranty on materials, workmanship AND performance
- Color-coded nozzles for easy size identification; warranted to maintain correct orifice size for five years

3012-1-3/4" M

U.S. Data Sprinkler Base Press. [psi]	30	35	40	45	50
#7 Nozzle - Lime [7/64"]					
Flow [gpm]	1.84	1.99	2.12	2.25	2.37
Diam. at 1.5' ht. [ft.]	71	74	77	80	82
#8 Nozzle - Lavender [1/8"]					
Flow [gpm]	2.42	2.62	2.79	2.97	3.12
Diam. at 1.5' ht. [ft.]	73	76	79	82	84
#9 Nozzle - Grey [9/64"]					
Flow [gpm]	3.08	3.33	3.56	3.78	3.98
Diam. at 1.5' ht. [ft.]	75	78	81	84	86
#10 Nozzle - Turquoise [5/32"]					
Flow [gpm]	3.82	4.13	4.41	4.68	4.93
Diam. at 1.5' ht. [ft.]	76	79	82	85	87

Metric Data [bar] [psi]	2.07 30	2.41 35	2.76 40	3.10 45	3.45 50
#7 Nozzle - Lime [2.78mm]					
Flow [L/s]	0.12	0.13	0.13	0.14	0.15
Diam. at 0.46m ht. [m]	21.7	22.6	23.5	24.4	25.0
#8 Nozzle - Lavender [3.18mm]					
Flow [L/s]	0.15	0.17	0.18	0.19	0.20
Diam. at 0.46m ht. [m]	22.3	23.2	24.1	25.0	25.6
#9 Nozzle - Grey [3.57mm]					
Flow [L/s]	0.19	0.21	0.22	0.24	0.25
Diam. at 0.46m ht. [m]	22.9	23.8	24.7	25.6	26.2
#10 Nozzle - Turquoise [3.97mm]					
Flow [L/s]	0.24	0.26	0.28	0.29	0.31
Diam. at 0.46m ht. [m]	23.2	24.1	25.0	25.9	26.5

Sprinkler performance may vary with actual field conditions. Diameters shown are for standard straight bore nozzles and stream straightening vanes. Other nozzles and/or vane combinations are available; Consult factory for specific performance data. Stream heights range from rom 2.5-4.5 ft. (0.8-1.4m) above nozzle based on pressure and nozzle size. Minimum recommended riser height is 1.5 ft. (0.46m).

3023-1-3/4" M

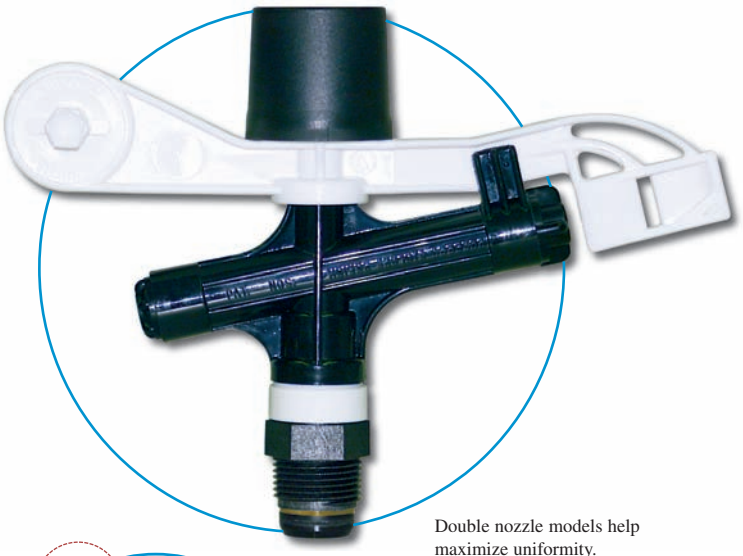
U.S. Data Sprinkler Base Press. [psi]	30	35	40	45	50	Metric Data [bar] [psi]	2.07 30	2.41 35	2.76 40	3.10 45	3.45 50
#7 Nozzle - Lime [7/64"]						#7 Nozzle - Lime [2.78mm]					
Flow [gpm]	1.84	1.99	2.12	2.25	2.37	Flow [L/s]	0.12	0.13	0.13	0.14	0.15
Diam. at 1.5' ht. [ft.]	80	82	84	86	87	Diam. at 0.46m ht. [m]	24.4	25.0	25.6	26.2	26.5
Diam. at 6.0' ht. [ft.]	83	84	85	86	88	Diam. at 1.83m ht. [m]	25.3	25.6	25.9	26.2	26.8
#8 Nozzle - Lavender [1/8"]						#8 Nozzle - Lavender [3.18mm]					
Flow [gpm]	2.42	2.62	2.79	2.97	3.12	Flow [L/s]	0.15	0.17	0.18	0.19	0.20
Diam. at 1.5' ht. [ft.]	83	85	86	87	88	Diam. at 0.46m ht. [m]	25.3	25.9	26.2	26.5	26.8
Diam. at 6.0' ht. [ft.]	86	87	88	89	90	Diam. at 1.83m ht. [m]	26.2	26.5	26.8	27.1	27.5
#9 Nozzle - Grey [9/64"]						#9 Nozzle - Grey [3.57mm]					
Flow [gpm]	3.08	3.33	3.56	3.78	3.98	Flow [L/s]	0.19	0.21	0.22	0.24	0.25
Diam. at 1.5' ht. [ft.]	85	87	88	90	91	Diam. at 0.46m ht. [m]	25.9	26.5	26.8	27.5	27.8
Diam. at 6.0' ht. [ft.]	87	89	90	91	92	Diam. at 1.83m ht. [m]	26.5	27.1	27.5	27.8	28.1
#10 Nozzle - Turquoise [5/32"]						#10 Nozzle - Turquoise [3.97mm]					
Flow [gpm]	3.82	4.13	4.41	4.68	4.93	Flow [L/s]	0.24	0.26	0.28	0.29	0.31
Diam. at 1.5' ht. [ft.]	87	89	90	91	92	Diam. at 0.46m ht. [m]	26.5	27.1	27.5	27.8	28.1
Diam. at 6.0' ht. [ft.]	88	90	92	93	94	Diam. at 1.83m ht. [m]	26.8	27.5	28.1	28.4	28.7

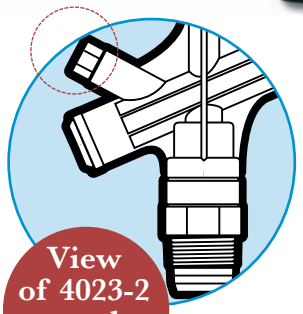
3023-2-3/4" M

U.S. Data Sprinkler Base Press. [psi]	30	35	40	45	50	Metric Data [bar] [psi]	2.07 30	2.41 35	2.76 40	3.10 45	3.45 50
7x4 #7 Range Noz.-Lime [7/64"] x #4 Spreader Noz. [1/16"]						7x4 #7 Range Noz.-Lime [2.78mm] x #4 Spreader Noz. [1.59mm]					
Flow [gpm]	3.01	3.25	3.48	3.69	3.89	Flow [L/s]	0.19	0.20	0.22	0.23	0.25
Diam. at 1.5' ht. [ft.]	80	82	84	86	87	Diam. at 0.46m ht. [m]	24.4	25.0	25.6	26.2	26.5
Diam. at 6.0' ht. [ft.]	83	84	85	86	88	Diam. at 1.83m ht. [m]	25.3	25.6	25.9	26.2	26.8
8x5 #8 Range Noz.-Lavender [1/8"] x #6 Spreader Noz. [5/64"]						8x5 #8 Range Noz.-Lavender [3.18mm] x #5 Spreader Noz. [1.98mm]					
Flow [gpm]	3.58	3.86	4.13	4.38	4.62	Flow [L/s]	0.23	0.24	0.26	0.28	0.29
Diam. at 1.5' ht. [ft.]	83	85	86	87	88	Diam. at 0.46m ht. [m]	25.3	25.9	26.2	26.5	26.8
Diam. at 6.0' ht. [ft.]	86	87	88	89	90	Diam. at 1.83m ht. [m]	26.2	26.5	26.8	27.1	27.5
8x6 #8 Range Noz.-Lavender [1/8"] x #6 Spreader Noz. [3/32"]						8x6 #8 Range Noz.-Lavender [3.18mm] x #6 Spreader Noz. [2.38mm]					
Flow [gpm]	3.84	4.14	4.43	4.70	4.95	Flow [L/s]	0.24	0.26	0.28	0.30	0.31
Diam. at 1.5' ht. [ft.]	83	85	86	87	88	Diam. at 0.46m ht. [m]	25.3	25.9	26.2	26.5	26.8
Diam. at 6.0' ht. [ft.]	86	87	88	89	90	Diam. at 1.83m ht. [m]	26.2	26.5	26.8	27.1	27.5
9x5 #9 Range Noz -Grey [9/64"] x #5 Spreader Noz. [5/64"]						9x5 #9 Range Noz.- Grey [3.57mm] x #5 Spreader Noz. [1.98mm]					
Flow [gpm]	4.16	4.50	4.81	5.10	5.38	Flow [L/s]	0.26	0.28	0.30	0.32	0.34
Diam. at 1.5' ht. [ft.]	85	87	88	90	91	Diam. at 0.46m ht. [m]	25.9	26.5	26.8	27.5	27.8
Diam. at 6.0' ht. [ft.]	87	89	90	91	92	Diam. at 1.83m ht. [m]	26.5	27.1	27.5	27.8	28.1
9x6 #9 Range Noz.-Grey [9/64"] x #6 Spreader Noz. [3/32"]						9x6 #9 Range Noz.-Grey [3.57mm] x #6 Spreader Noz. [2.38mm]					
Flow [gpm]	4.41	4.77	5.10	5.41	5.70	Flow [L/s]	0.28	0.30	0.32	0.34	0.36
Diam. at 1.5' ht. [ft.]	85	87	88	90	91	Diam. at 0.46m ht. [m]	25.9	26.5	26.8	27.5	27.8
Diam. at 6.0' ht. [ft.]	87	89	90	91	92	Diam. at 1.83m ht. [m]	26.5	27.1	27.5	27.8	28.1
10x5 #10 Range Noz.-Turquoise [5/32"] x #5 Spreader Noz. [5/64"]						10x5 #10 Range Noz.-Turquoise [3.97mm] x #5 Spreader Noz. [1.98mm]					
Flow [gpm]	4.97	5.37	5.74	6.09	6.42	Flow [L/s]	0.31	0.34	0.36	0.38	0.40
Diam. at 1.5' ht. [ft.]	87	89	90	91	92	Diam. at 0.46m ht. [m]	26.5	27.1	27.5	27.8	28.1
Diam. at 6.0' ht. [ft.]	88	90	92	93	94	Diam. at 1.83m ht. [m]	26.8	27.5	28.1	28.4	28.7

Sprinkler performance may vary with actual field conditions. Stream heights range from 6.0ft.-7.5ft. (1.8-2.3m) above nozzle based on pressure and nozzle size.
Minimum recommended riser height is 1.5 ft. (0.46m)

40series[Impacts





View of 4023-2 spreader nozzle

Double nozzle models help maximize uniformity.

The 40 Series full-circle impacts are designed for maximum efficiency at intermediate flows.

FEATURES:

- Single and double nozzle designs available. Double nozzle only available in 23° model.
- Two trajectories available: 12° ideal for undertree irrigation 23° for maximum throw on overhead systems
- Wide range of nozzle and vane combinations for excellent distribution at all pressures
- Built-in hex wrench for easy in-the-field maintenance
- Standard lower bearing pipe thread: 3/4" M NPT (female also available)
- Flow rates: 3.82 to 10.6 gpm [0.24 to 0.67 L/s]
- Two-year warranty on materials, workmanship AND performance
- Color-coded nozzles for easy size identification; warranted to maintain correct orifice size for five years

4012-1-3/4" M

U.S. Data	Sprinkler Base Pressure [psi] 30	35	40	45	50	55	60
#10 Nozzle - Turquoise [5/32"]							
Flow [gpm]	3.82	4.13	4.41	4.68	4.93	5.17	5.40
Diam. at 1.5' ht. [ft.]	73	77	80	83	86	89	91
#11 Nozzle - Yellow [11/64"]							
Flow [gpm]	4.63	5.00	5.34	5.67	5.98	6.27	6.55
Diam. at 1.5' ht. [ft.]	76	80	83	86	89	92	94
#12 Nozzle - Red [3/16"]							
Flow [gpm]	5.52	5.97	6.37	6.76	7.13	7.48	7.81
Diam. at 1.5' ht. [ft.]	78	82	85	88	91	94	96
#13 Nozzle - White [13/64"]							
Flow [gpm]	6.50	7.02	7.49	7.95	8.38	8.80	9.19
Diam. at 1.5' ht. [ft.]	80	84	87	90	93	96	98
#14 Nozzle - Blue [7/32"]							
Flow [gpm]	7.49	8.09	8.63	9.17	9.66	10.1	10.6
Diam. at 1.5' ht. [ft.]	82	86	89	93	96	99	101

Metric Data [bar] [psi]	2.07 30	2.41 35	2.76 40	3.10 45	3.45 50	3.79 55	4.14 60
#10 Nozzle - Turquoise [3.97mm]							
Flow [L/s]	0.24	0.26	0.28	0.29	0.31	0.33	0.34
Diam. at 0.46m ht. [m]	22.3	23.5	24.4	25.3	26.2	27.1	27.8
#11 Nozzle - Yellow [4.37mm]							
Flow [L/s]	0.29	0.32	0.34	0.36	0.38	0.40	0.41
Diam. at 0.46m ht. [m]	23.2	24.4	25.3	26.2	27.1	28.1	28.7
#12 Nozzle - Red [4.76mm]							
Flow [L/s]	0.35	0.38	0.40	0.43	0.45	0.47	0.49
Diam. at 0.46m ht. [m]	23.8	25.0	25.9	26.8	27.8	28.7	29.3
#13 Nozzle - White [5.16mm]							
Flow [L/s]	0.41	0.44	0.47	0.50	0.53	0.55	0.58
Diam. at 0.46m ht. [m]	24.4	25.6	26.5	27.5	28.4	29.3	29.9
#14 Nozzle - Blue [5.56mm]							
Flow [L/s]	0.47	0.51	0.54	0.58	0.61	0.64	0.67
Diam. at 0.46m ht. [m]	25.0	26.2	27.1	28.4	29.3	30.2	30.8

Sprinkler performance may vary with actual field conditions. Diameters shown are for standard straight bore nozzles and stream straightening vanes. Other nozzles and/or vane combinations are available; Consult factory for specific performance data. Stream heights range from 6.5-10.0 ft. (2.0-3.1m) above nozzle based on pressure and nozzle size. Minimum recommended riser height is 1.5 ft. (0.46m).

4023-1-3/4" M

U.S. Data	Sprinkler Base Pressure [psi] 30	35	40	45	50	55	60
#10 Nozzle - Turquoise [5/32"]							
Flow [gpm]	3.82	4.13	4.41	4.68	4.93	5.17	5.40
Diam. at 1.5' ht. [ft.]	86	89	91	93	95	96	97
Diam. at 6.0' ht. [ft.]	92	94	96	97	98	99	100
#11 Nozzle - Yellow [11/64"]							
Flow [gpm]	4.63	5.00	5.34	5.67	5.98	6.27	6.55
Diam. at 1.5' ht. [ft.]	89	92	94	96	98	99	100
Diam. at 6.0' ht. [ft.]	94	96	98	100	102	103	104
#12 Nozzle - Red [3/16"]							
Flow [gpm]	5.52	5.97	6.37	6.76	7.13	7.48	7.81
Diam. at 1.5' ht. [ft.]	92	95	97	99	101	102	103
Diam. at 6.0' ht. [ft.]	97	99	101	103	105	107	108
#13 Nozzle - White [13/64"]							
Flow [gpm]	6.50	7.02	7.49	7.95	8.38	8.80	9.19
Diam. at 1.5' ht. [ft.]	94	97	99	101	103	104	105
Diam. at 6.0' ht. [ft.]	100	103	106	109	112	115	117
#14 Nozzle - Blue [7/32"]							
Flow [gpm]	7.49	8.09	8.63	9.17	9.66	10.1	10.6
Diam. at 1.5' ht. [ft.]	96	99	101	103	105	106	107
Diam. at 6.0' ht. [ft.]	102	106	110	114	118	122	125

Metric Data	[bar] [psi] 2.07 30	2.41 35	2.76 40	3.10 45	3.45 50	3.79 55	4.14 60
#10 Nozzle - Turquoise [3.97mm]							
Flow [L/s]	0.24	0.26	0.28	0.29	0.31	0.33	0.34
Diam. at 0.46m ht. [m]	26.2	27.1	27.8	28.4	29.0	29.3	29.6
Diam. at 1.83m ht. [m]	28.1	28.7	29.3	29.6	29.9	30.2	30.5
#11 Nozzle - Yellow [4.37mm]							
Flow [L/s]	0.29	0.32	0.34	0.36	0.38	0.40	0.41
Diam. at 0.46m ht. [m]	27.1	28.1	28.7	29.3	29.9	30.2	30.5
Diam. at 1.83m ht. [m]	28.7	29.3	29.9	30.5	31.1	31.4	31.7
#12 Nozzle - Red [4.76mm]							
Flow [L/s]	0.35	0.38	0.40	0.43	0.45	0.47	0.49
Diam. at 0.46m ht. [m]	28.1	29.0	29.6	30.2	30.8	31.1	31.4
Diam. at 1.83m ht. [m]	29.6	30.2	30.8	31.4	32.0	32.6	32.9
#13 Nozzle - White [5.16mm]							
Flow [L/s]	0.41	0.44	0.47	0.50	0.53	0.55	0.58
Diam. at 0.46m ht. [m]	28.7	29.6	30.2	30.8	31.4	31.7	32.0
Diam. at 1.83m ht. [m]	30.5	31.4	32.3	33.2	34.2	35.1	35.7
#14 Nozzle - Blue [5.56mm]							
Flow [L/s]	0.47	0.51	0.54	0.58	0.61	0.64	0.67
Diam. at 0.46m ht. [m]	29.3	30.2	30.8	31.4	32.0	32.3	32.6
Diam. at 1.83m ht. [m]	31.1	32.3	33.6	34.8	36.0	37.2	38.1

4023-2-3/4" M

U.S. Data	Sprinkler Base Pressure [psi] 30	35	40	45	50	55	60
10x6 #10 Range Noz.-Turquoise [5/32"] x #6 Spreader Noz. [3/32"]							
Flow [gpm]	5.25	5.67	6.07	6.43	6.78	7.11	7.43
Diam. at 1.5' ht. [ft.]	86	89	91	93	95	96	97
Diam. at 6.0' ht. [ft.]	92	94	96	97	98	99	100
11x6 #11 Range Noz.-Yellow [11/64"] x #6 Spreader Noz. [3/32"]							
Flow [gpm]	6.10	6.59	7.05	7.47	7.88	8.26	8.63
Diam. at 1.5' ht. [ft.]	89	92	94	96	98	99	100
Diam. at 6.0' ht. [ft.]	94	96	98	100	102	103	104
12x6 #12 Range Noz.-Red [3/16"] x #6 Spreader Noz. [3/32"]							
Flow [gpm]	6.89	7.54	8.07	8.55	9.02	9.46	9.88
Diam. at 1.5' ht. [ft.]	92	95	97	99	101	102	103
Diam. at 6.0' ht. [ft.]	97	99	101	103	105	107	108
13x6 #13 Range Noz.-White [13/64"] x #6 Spreader Noz. [3/32"]							
Flow [gpm]	7.93	8.57	9.16	9.72	10.2	10.7	11.2
Diam. at 1.5' ht. [ft.]	94	97	99	101	103	104	105
Diam. at 6.0' ht. [ft.]	100	103	106	109	112	115	117
14x6 #14 Range Noz.-Blue [7/32"] x #6 Spreader Noz. [3/32"]							
Flow [gpm]	8.90	9.62	10.3	10.9	11.5	12.1	12.6
Diam. at 1.5' ht. [ft.]	96	99	101	103	105	106	107
Diam. at 6.0' ht. [ft.]	102	106	110	114	118	122	125

Metric Data	[bar] [psi] 2.07 30	2.41 35	2.76 40	3.10 45	3.45 50	3.79 55	4.14 60
10x6 #10 Range Noz.-Turquoise [3.97mm] x #6 Spreader Noz. [2.38mm]							
Flow [L/s]	0.33	0.36	0.38	0.41	0.43	0.45	0.47
Diam. at 0.46m ht. [m]	26.2	27.1	27.8	28.4	29.0	29.3	29.6
Diam. at 1.83m ht. [m]	28.1	28.7	29.3	29.6	29.9	30.2	30.5
11x6 #11 Range Noz. - Yellow [4.37mm] x #6 Spreader Noz. [2.38mm]							
Flow [L/s]	0.38	0.42	0.44	0.47	0.50	0.52	0.54
Diam. at 0.46m ht. [m]	27.1	28.1	28.7	29.3	29.9	30.2	30.5
Diam. at 1.83m ht. [m]	28.7	29.3	29.9	30.5	31.1	31.4	31.7
12x6 #12 Range Noz.-Red [4.76mm] x #6 Spreader Noz. [2.38mm]							
Flow [L/s]	0.43	0.48	0.51	0.54	0.57	0.60	0.62
Diam. at 0.46m ht. [m]	28.1	29.0	29.6	30.2	30.8	31.1	31.4
Diam. at 1.83m ht. [m]	29.6	30.2	30.8	31.4	32.0	32.6	32.9
13x6 #13 Range Noz.-White [5.16mm] x #6 Spreader Noz. [2.38mm]							
Flow [L/s]	0.50	0.54	0.58	0.61	0.64	0.67	0.71
Diam. at 0.46m ht. [m]	28.7	29.6	30.2	30.8	31.4	31.7	32.0
Diam. at 1.83m ht. [m]	30.5	31.4	32.3	33.2	34.2	35.1	35.7
14x6 #14 Range Noz.-Blue [5.56mm] x #6 Spreader Noz. [2.38mm]							
Flow [L/s]	0.56	0.61	0.65	0.69	0.72	0.76	0.79
Diam. at 0.46m ht. [m]	29.3	30.2	30.8	31.4	32.0	32.3	32.6
Diam. at 1.83m ht. [m]	31.1	32.3	33.6	34.8	36.0	37.2	38.1

Sprinkler performance may vary with actual field conditions. Diameters shown are for standard straight bore nozzles and stream straightening vanes. Other nozzles and/or vane combinations are available; Consult factory for specific performance data. Stream heights range from 6.5-10.0 ft. (2.0-3.1m) above nozzle based on pressure and nozzle size. Minimum recommended riser height is 1.5 ft. (0.46m).

50series[Impacts

View of 5023-2 spreader nozzle

Double nozzle models help maximize uniformity.

The 50 Series full-circle impacts handle the highest flow rates for Senninger's 3/4" sprinklers. High application rates and large diameter of coverage make these sprinklers suitable for a variety of applications.

FEATURES:

- Single and double nozzle designs available. Double nozzle only available in 23° model.
- Two trajectories available:
  12° - ideal for undertree irrigation
  23° - for maximum throw on overhead systems
- Wide range of nozzle and vane combinations for excellent distribution at all pressures
- Built-in hex wrench for easy in-the-field maintenance
- Standard lower bearing pipe thread: 3/4" M NPT (female also available)
- Flow rates: 6.5 to 17.5 gpm [0.41 to 1.10 L/s]
- Two-year warranty on materials, workmanship AND performance
- Color-coded nozzles for easy size identification; warranted to maintain correct orifice size for five years

5012-1-3/4" M

U.S. Data	Sprinkler Base Pressure [psi] 30	35	40	45	50	55	60	65
#13 Nozzle - White [13/64"]								
Flow [gpm]	6.50	7.02	7.49	7.95	8.36	8.80	9.19	9.55
Diam. at 1.5' ht. [ft.]	77	83	89	93	97	100	103	105
#14 Nozzle - Blue [7/32"]								
Flow [gpm]	7.49	8.09	8.63	9.17	9.66	10.1	10.6	11.0
Diam. at 1.5' ht. [ft.]	79	85	91	95	99	102	105	107
#15 Nozzle - Dark Brown [15/64"]								
Flow [gpm]	8.51	9.19	9.81	10.4	11.0	11.5	12.0	12.5
Diam. at 1.5' ht. [ft.]	81	87	93	97	101	104	107	109
#16 Nozzle - Orange [1/4"]								
Flow [gpm]	9.63	10.4	11.1	11.8	12.4	13.0	13.6	14.2
Diam. at 1.5' ht. [ft.]	83	89	95	99	103	106	109	111
#17 Nozzle - Dark Green [17/64"]								
Flow [gpm]	10.7	11.6	12.3	13.1	13.8	14.5	15.1	15.7
Diam. at 1.5' ht. [ft.]	85	91	96	100	105	108	111	113
#18 Nozzle - Purple [9/32"]								
Flow [gpm]	11.9	12.9	13.7	14.6	15.4	16.1	16.8	17.5
Diam. at 1.5' ht. [ft.]	87	92	97	101	107	110	113	114

Metric Data [bar] [psi]	2.07 30	2.41 35	2.76 40	3.10 45	3.45 50	3.79 55	4.14 60	4.48 65
#13 Nozzle - White [5.16mm]								
Flow [L/s]	0.41	0.44	0.47	0.50	0.53	0.55	0.58	0.60
Diam. at .046m ht. [m]	23.5	25.3	27.1	28.4	29.6	30.5	31.4	32.0
#14 Nozzle - Blue [5.56mm]								
Flow [L/s]	0.47	0.51	0.54	0.58	0.61	0.64	0.67	0.69
Diam. at .046m ht. [m]	24.1	25.9	27.8	29.0	30.2	31.1	32.0	32.6
#15 Nozzle - Dark Brown [5.95mm]								
Flow [L/s]	0.54	0.58	0.62	0.66	0.69	0.72	0.76	0.79
Diam. at .046m ht. [m]	24.7	26.5	28.4	29.6	30.8	31.7	32.6	33.2
#16 Nozzle - Orange [6.35mm]								
Flow [L/s]	0.61	0.66	0.70	0.74	0.78	0.82	0.86	0.89
Diam. at .046m ht. [m]	25.3	27.1	29.0	30.2	31.4	32.3	33.2	33.9
#17 Nozzle - Dark Green [6.75mm]								
Flow [L/s]	0.67	0.73	0.77	0.83	0.87	0.91	0.95	0.99
Diam. at .046m ht. [m]	25.9	27.8	29.3	30.5	32.0	32.9	33.9	34.5
#18 Nozzle - Purple [7.14mm]								
Flow [L/s]	0.75	0.81	0.86	0.92	0.97	1.01	1.06	1.10
Diam. at .046m ht. [m]	26.5	28.1	29.6	30.8	32.6	33.6	34.5	34.8

Sprinkler performance may vary with actual field conditions. Diameters shown are for standard straight bore nozzles and stream straightening vanes. Other nozzles and/or vane combinations are available; Consult factory for specific performance data. Stream heights range from 3.5-6.0 ft. (1.1-1.8m) above nozzle based on pressure and nozzle size. Minimum recommended riser height is 1.5 ft. (0.46m).

5023-1-3/4" M

U.S. Data	Sprinkler Base Pressure [psi] 30	35	40	45	50	55	60	65
#13 Nozzle - White [13/64"]								
Flow [gpm]	6.50	7.02	7.49	7.95	8.38	8.80	9.19	9.55
Diam. at 1.5' ht. [ft.]	92	95	98	100	102	103	104	105
Diam. at 6.0' ht. [ft.]	99	102	104	106	108	110	112	114
#14 Nozzle - Blue [7/32"]								
Flow [gpm]	7.49	8.09	8.63	9.17	9.66	10.1	10.6	11.0
Diam. at 1.5' ht. [ft.]	94	98	101	103	105	106	107	108
Diam. at 6.0' ht. [ft.]	101	104	107	110	112	114	116	118
#15 Nozzle - Dark Brown [15/64"]								
Flow [gpm]	8.51	9.19	9.81	10.4	11.0	11.5	12.0	12.5
Diam. at 1.5' ht. [ft.]	96	100	103	106	107	108	109	110
Diam. at 6.0' ht. [ft.]	102	106	109	112	114	116	118	120
#16 Nozzle - Orange [1/4"]								
Flow [gpm]	9.63	10.4	11.1	11.8	12.4	13.0	13.6	14.2
Diam. at 1.5' ht. [ft.]	98	102	105	108	109	110	111	112
Diam. at 6.0' ht. [ft.]	103	107	111	114	116	118	120	122
#17 Nozzle - Dark Green [17/64"]								
Flow [gpm]	10.7	11.6	12.3	13.1	13.8	14.5	15.1	15.7
Diam. at 1.5' ht. [ft.]	99	104	107	110	111	112	113	114
Diam. at 6.0' ht. [ft.]	104	108	112	115	118	120	122	124
#18 Nozzle - Purple [9/32"]								
Flow [gpm]	11.9	12.9	13.7	14.6	15.4	16.1	16.8	17.5
Diam. at 1.5' ht. [ft.]	100	105	109	112	113	114	115	116
Diam. at 6.0' ht. [ft.]	105	109	113	116	119	122	124	126

Metric Data	[bar] 2.07 [psi] 30	2.41 35	2.76 40	3.10 45	3.45 50	3.79 55	4.14 60	4.48 65
#13 Nozzle - White [5.16mm]								
Flow [L/s]	0.41	0.44	0.47	0.50	0.53	0.55	0.58	0.60
Diam. at 0.46m ht. [m]	28.1	29.0	29.9	30.5	31.1	31.4	31.7	32.0
Diam. at 1.83m ht. [m]	30.2	31.1	31.7	32.3	32.9	33.6	34.2	34.8
#14 Nozzle - Blue [5.56mm]								
Flow [L/s]	0.47	0.51	0.54	0.58	0.61	0.64	0.67	0.69
Diam. at 0.46m ht. [m]	28.7	29.9	30.8	31.4	32.0	32.3	32.6	32.9
Diam. at 1.83m ht. [m]	30.8	31.7	32.6	33.6	34.2	34.8	35.4	36.0
#15 Nozzle - Dark Brown [5.95mm]								
Flow [L/s]	0.54	0.58	0.62	0.66	0.69	0.72	0.76	0.79
Diam. at 0.46m ht. [m]	29.3	30.5	31.4	32.3	32.6	32.9	33.2	33.6
Diam. at 1.83m ht. [m]	31.1	32.3	33.2	34.2	34.8	35.4	36.0	36.6
#16 Nozzle - Orange [6.35mm]								
Flow [L/s]	0.61	0.66	0.70	0.74	0.78	0.82	0.86	0.89
Diam. at 0.46m ht. [m]	29.9	31.1	32.0	32.9	33.2	33.6	33.9	34.2
Diam. at 1.83m ht. [m]	31.4	32.6	33.9	34.8	35.4	36.0	36.6	37.2
#17 Nozzle - Dark Green [6.75mm]								
Flow [L/s]	0.67	0.73	0.77	0.83	0.87	0.91	0.95	0.99
Diam. at 0.46m ht. [m]	30.2	31.7	32.6	33.6	33.9	34.2	34.5	34.8
Diam. at 1.83m ht. [m]	31.7	32.9	34.2	35.1	36.0	36.6	37.2	37.8
#18 Nozzle - Purple [7.14mm]								
Flow [L/s]	0.75	0.81	0.86	0.92	0.97	1.01	1.06	1.10
Diam. at 0.46m ht. [m]	30.5	32.0	33.2	34.2	34.5	34.8	35.1	35.4
Diam. at 1.83m ht. [m]	32.0	33.2	34.5	35.4	36.3	37.2	37.8	38.4

5023-2-3/4" M

U.S. Data	Sprinkler Base Pressure [psi] 30	35	40	45	50	55	60	65
13x8 #13 Range Noz.-White [13/64"] x #8 Spreader Noz. [1/8"]								
Flow [gpm]	8.23	8.88	9.50	10.1	10.6	11.1	11.6	12.1
Diam. at 1.5' ht. [ft.]	92	95	98	100	102	103	104	105
Diam. at 6.0' ht. [ft.]	99	102	104	106	108	110	112	114
14x8 #14 Range Noz.-Blue [7/32"] x #8 Spreader Noz. [1/8"]								
Flow [gpm]	9.35	10.1	10.8	11.5	12.1	12.7	13.2	13.8
Diam. at 1.5' ht. [ft.]	94	98	101	103	105	106	107	108
Diam. at 6.0' ht. [ft.]	101	104	107	110	112	114	116	118
15x8 #15 Range Noz.-Dark Brown [15/64"] x #8 Spreader Noz. [1/8"]								
Flow [gpm]	10.3	11.2	11.9	12.7	13.4	14.0	14.6	15.2
Diam. at 1.5' ht. [ft.]	96	100	103	106	107	108	109	110
Diam. at 6.0' ht. [ft.]	102	106	109	112	114	116	118	120
16x8 #16 Range Noz.-Orange [1/4"] x #8 Spreader Noz. [1/8"]								
Flow [gpm]	11.5	12.4	13.3	14.1	14.8	15.5	16.2	16.9
Diam. at 1.5' ht. [ft.]	98	102	105	108	109	110	111	112
Diam. at 6.0' ht. [ft.]	103	107	111	114	116	118	120	122
17x8 #17 Range Noz.-Dark Green [17/64"] x #8 Spreader Noz. [1/8"]								
Flow [gpm]	12.5	13.5	14.4	15.3	16.1	16.9	17.7	18.4
Diam. at 1.5' ht. [ft.]	99	104	107	110	111	112	113	114
Diam. at 6.0' ht. [ft.]	104	108	112	115	118	120	122	124
18x8 #18 Range Noz.-Purple [9/32"] x #8 Spreader Noz. [1/8"]								
Flow [gpm]	13.7	14.8	15.8	16.7	17.6	18.5	19.3	20.1
Diam. at 1.5' ht. [ft.]	100	105	109	112	113	114	115	116
Diam. at 6.0' ht. [ft.]	105	109	113	116	119	122	124	126

Metric Data	[bar] 2.07 [psi] 30	2.41 35	2.76 40	3.10 45	3.45 50	3.79 55	4.14 60	4.48 65
13x8 #13 Range Noz. - White [5.16mm] x #8 Spreader Noz. [3.18mm]								
Flow [L/s]	0.52	0.56	0.60	0.64	0.67	0.70	0.73	0.76
Diam. at 0.46m ht. [m]	28.1	29.0	29.9	30.5	31.1	31.4	31.7	32.0
Diam. at 1.83m ht. [m]	30.2	31.1	31.7	32.3	32.9	33.6	34.2	34.8
14x8 #14 Range Noz.-Blue [5.56mm] x #8 Spreader Noz. [3.18mm]								
Flow [L/s]	0.59	0.64	0.68	0.72	0.76	0.80	0.83	0.87
Diam. at 0.46m ht. [m]	28.7	29.9	30.8	31.4	32.0	32.3	32.6	32.9
Diam. at 1.83m ht. [m]	30.8	31.7	32.6	33.6	34.2	34.8	35.4	36.0
15x8 #15 Range Noz.-Dark Brown [5.95mm] x #8 Spreader Noz. [3.18mm]								
Flow [L/s]	0.65	0.71	0.75	0.80	0.84	0.88	0.92	0.96
Diam. at 0.46m ht. [m]	29.3	30.5	31.4	32.3	32.6	32.9	33.2	33.6
Diam. at 1.83m ht. [m]	31.1	32.3	33.2	34.2	34.8	35.4	36.0	36.6
16x8 #16 Range Noz.-Orange [6.35mm] x #8 Spreader Noz. [3.18mm]								
Flow [L/s]	0.72	0.78	0.84	0.89	0.93	0.98	1.02	1.06
Diam. at 0.46m ht. [m]	29.9	31.1	32.0	32.9	33.2	33.6	33.9	34.2
Diam. at 1.83m ht. [m]	31.4	32.6	33.9	34.8	35.4	36.0	36.6	37.2
17x8 #17 Range Noz.-Dark Green [6.75mm] x #8 Spreader Noz. [3.18mm]								
Flow [L/s]	0.79	0.85	0.91	0.96	1.01	1.06	1.12	1.16
Diam. at 0.46m ht. [m]	30.2	31.7	32.6	33.6	33.9	34.2	34.5	34.8
Diam. at 1.83m ht. [m]	31.7	32.9	34.2	35.1	36.0	36.6	37.2	37.8
18x8 #13 Range Noz.-Purple [7.14mm] x #8 Spreader Noz. [3.18mm]								
Flow [L/s]	0.86	0.93	1.00	1.05	1.11	1.17	1.22	1.27
Diam. at 0.46m ht. [m]	30.5	32.0	33.2	34.2	34.5	34.8	35.1	35.4
Diam. at 1.83m ht. [m]	32.0	33.2	34.5	35.4	36.3	37.2	37.8	38.4

Stream heights range from 7.0-11.5 ft. (2.1-3.5m) above nozzle based on pressure and nozzle size. Minimum recommended riser height is 1.5 ft. (0.46m)

70series[Impacts

The 70 Series full-circle impacts distribute water over a large diameter for higher volume systems.

FEATURES:

- Single and double nozzle designs available. Spreader drive also available.
- Outlasts and costs less than brass sprinklers
- Built-in hex wrench for easy in-the-field maintenance
- Lower bearing pipe thread: 1" M NPT, 1" F NPT; 1" M BSP also available
- Flow rates: 8.11 to 31.6 gpm [0.51 to 1.99 L/s]
- Two-year warranty on materials, workmanship AND performance
- Color-coded nozzles for easy size identification; warranted to maintain correct orifice size for five years

7025RD-1-1" M

U.S. Data	Sprinkler Base Pressure [psi] 35	40	45	50	55	60	65	70
#14 Nozzle [7/32"]								
Flow [gpm]	8.11	8.66	9.20	9.69	10.2	10.6	11.0	11.5
Diam. at 1.5' ht. [ft.]	106	111	113	115	117	119	121	123
Diam. at 6.0' ht. [ft.]	114	118	121	124	126	128	129	130
#16 Nozzle [1/4"]								
Flow [gpm]	10.7	11.4	12.1	12.8	13.4	14.0	14.6	15.1
Diam. at 1.5' ht. [ft.]	111	117	120	123	126	129	131	133
Diam. at 6.0' ht. [ft.]	122	126	129	131	134	136	137	138
#18 Nozzle [9/32"]								
Flow [gpm]	13.3	14.2	15.0	15.9	16.6	17.4	18.1	18.8
Diam. at 1.5' ht. [ft.]	118	124	127	129	134	139	142	144
Diam. at 6.0' ht. [ft.]	128	132	135	137	141	144	146	147
#20 Nozzle [5/16"]								
Flow [gpm]	16.0	17.1	18.2	19.2	20.1	21.0	21.8	22.7
Diam. at 1.5' ht. [ft.]	124	130	134	137	142	146	150	153
Diam. at 6.0' ht. [ft.]	133	137	140	143	147	151	154	155
#22 Nozzle [11/32"]								
Flow [gpm]	19.3	20.5	21.8	22.9	24.1	25.1	26.1	27.1
Diam. at 1.5' ht. [ft.]	126	133	141	148	153	157	160	162
Diam. at 6.0' ht. [ft.]	136	141	146	150	155	159	162	164
#24 Nozzle [3/8"]								
Flow [gpm]	22.4	23.9	25.3	26.7	28.0	29.3	30.4	31.6
Diam. at 1.5' ht. [ft.]	130	138	145	151	156	160	166	169
Diam. at 6.0' ht. [ft.]	138	145	150	155	160	164	167	170

Metric Data [bar] / [psi]	2.41 35	2.76 40	3.10 45	3.45 50	3.79 55	4.14 60	4.48 65	4.83 70
#14 Nozzle [5.56mm]								
Flow [L/s]	0.51	0.55	0.58	0.61	0.64	0.67	0.69	0.72
Diam. at 0.46m ht. [m]	32.3	33.9	34.5	35.1	35.7	36.3	36.9	37.5
Diam. at 1.83m ht. [m]	34.8	36.0	36.9	37.8	38.4	39.0	39.3	39.7
#16 Nozzle [6.35mm]								
Flow [L/s]	0.67	0.72	0.76	0.81	0.84	0.88	0.92	0.95
Diam. at 0.46m ht. [m]	33.9	35.7	36.6	37.5	38.4	39.3	40.0	40.6
Diam. at 1.83m ht. [m]	37.2	38.4	39.3	40.0	40.9	41.5	41.8	42.1
#18 Nozzle [7.14mm]								
Flow [L/s]	0.84	0.89	0.95	1.00	1.05	1.10	1.14	1.18
Diam. at 0.46m ht. [m]	36.0	37.8	38.7	39.3	40.9	42.4	43.3	43.9
Diam. at 1.83m ht. [m]	39.0	40.3	41.2	41.8	43.0	43.9	44.5	44.8
#20 Nozzle [7.94mm]								
Flow [L/s]	1.01	1.08	1.15	1.21	1.27	1.32	1.37	1.43
Diam. at 0.46m ht. [m]	37.8	39.7	40.9	41.8	43.3	44.5	45.8	46.7
Diam. at 1.83m ht. [m]	40.6	41.8	42.7	43.6	44.8	46.1	47.0	47.3
#22 Nozzle [8.73mm]								
Flow [L/s]	1.22	1.29	1.37	1.44	1.52	1.58	1.64	1.71
Diam. at 0.46m ht. [m]	38.4	40.6	43.0	45.1	46.7	47.9	48.8	49.4
Diam. at 1.83m ht. [m]	41.5	43.0	44.5	45.8	47.3	48.5	49.4	50.0
#24 Nozzle [9.53mm]								
Flow [L/s]	1.41	1.51	1.59	1.68	1.76	1.85	1.92	1.99
Diam. at 0.46m ht. [m]	39.7	42.1	44.2	46.1	47.6	48.8	50.6	51.5
Diam. at 1.83m ht. [m]	42.1	44.2	45.8	47.3	48.8	50.0	50.9	51.9

Sprinkler performance may vary with actual field conditions. Diameters shown are for standard straight bore nozzles and stream straightening vanes. Other nozzles and/or vane combinations are available; Consult factory for specific performance data. Stream heights range from 8.5-15.5 ft. (2.6-4.7m) above nozzle based on pressure and nozzle size. Minimum recommended riser height is 1.5 ft. (0.46m).

7025RD-2-1" M

U.S. Data	Sprinkler Base Pressure [psi] 30	35	40	45	50	55	60	65
14x8 #14 Range Noz. [7/32"] x #8 Spreader Noz.- Lavender [1/8"]								
Flow [gpm]	10.7	11.4	12.1	12.7	13.3	13.9	14.5	15.1
Diam. at 1.5' ht. [ft.]	106	111	113	115	117	119	121	123
Diam. at 6.0' ht. [ft.]	114	118	121	124	126	128	129	130
16x8 #16 Range Noz. [1/4"] x #8 Spreader Noz.- Lavender [1/8"]								
Flow [gpm]	13.4	14.3	15.2	16.0	16.8	17.5	18.2	18.9
Diam. at 1.5' ht. [ft.]	111	117	120	123	126	129	131	133
Diam. at 6.0' ht. [ft.]	122	126	129	131	134	136	137	138
18x8 #18 Range Noz. [9/32"] x #8 Spreader Noz.- Lavender [1/8"]								
Flow [gpm]	15.9	17.0	18.0	19.0	19.9	20.8	21.6	22.5
Diam. at 1.5' ht. [ft.]	118	124	127	129	134	139	142	144
Diam. at 6.0' ht. [ft.]	128	132	135	137	141	144	146	147
18x10 #18 Range Noz. [9/32"] x #10 Spreader Noz.- Turquoise [5/32"]								
Flow [gpm]	17.0	18.2	19.3	20.3	21.3	22.3	23.1	24.0
Diam. at 1.5' ht. [ft.]	118	124	127	129	134	139	142	144
Diam. at 6.0' ht. [ft.]	128	132	135	137	141	144	146	147
20x10 #20 Range Noz. [5/16"] x #10 Spreader Noz.- Turquoise [5/32"]								
Flow [gpm]	19.6	20.9	22.2	23.4	24.6	25.7	26.7	27.7
Diam. at 1.5' ht. [ft.]	124	130	134	137	142	146	150	153
Diam. at 6.0' ht. [ft.]	133	137	140	143	147	151	154	155
20x12 #20 Range Noz. [5/16"] x #12 Spreader Noz.- Red [3/16"]								
Flow [gpm]	21.3	22.8	24.2	25.5	26.8	27.9	29.1	30.2
Diam. at 1.5' ht. [ft.]	124	130	134	137	142	146	150	153
Diam. at 6.0' ht. [ft.]	133	137	140	143	147	151	154	155
22x10 #22 Range Noz. [11/32"] x #10 Spreader Noz.- Turquoise [5/32"]								
Flow [gpm]	22.9	24.5	26.0	27.4	28.7	30.0	31.2	32.4
Diam. at 1.5' ht. [ft.]	126	133	141	148	153	157	160	162
Diam. at 6.0' ht. [ft.]	136	141	146	150	155	159	162	164
22x12 #22 Range Noz. [11/32"] x #12 Spreader Noz.- Red [3/16"]								
Flow [gpm]	24.6	26.3	27.9	29.4	30.9	33.6	32.3	34.8
Diam. at 1.5' ht. [ft.]	126	133	141	148	153	157	160	162
Diam. at 6.0' ht. [ft.]	136	141	146	150	155	159	162	164
24x12 #24 Range Noz. [3/8"] x #12 Spreader Noz.- Red [3/16"]								
Flow [gpm]	27.6	29.5	31.3	33.0	34.6	36.2	37.6	39.1
Diam. at 1.5' ht. [ft.]	130	138	145	151	156	160	166	169
Diam. at 6.0' ht. [ft.]	138	145	150	155	160	164	167	170

Metric Data	[bar] [psi] 2.07 30	2.41 35	2.76 40	3.10 45	3.45 50	3.79 55	4.14 60	4.48 65
14x8 #14 Range Noz. [5.56 mm] x #8 Spreader Noz.-Lavender [3.18mm]								
Flow [L/s]	0.67	0.72	0.76	0.80	0.84	0.88	0.91	0.95
Diam. at 0.46m ht. [m]	32.3	33.9	34.5	35.1	35.7	36.3	36.9	37.5
Diam. at 1.83m ht. [m]	34.8	36.0	36.9	37.8	38.4	39.0	39.3	39.7
16x8 #16 Range Noz. [6.35 mm] x #8 Spreader Noz.-Lavender [3.18mm]								
Flow [L/s]	0.84	0.90	0.96	1.01	1.06	1.10	1.15	1.19
Diam. at 0.46m ht. [m]	33.9	35.7	36.6	37.5	38.4	39.3	40.0	40.6
Diam. at 1.83m ht. [m]	37.2	38.4	39.3	40.0	40.9	41.5	41.8	42.1
18x8 #18 Range Noz. [7.14 mm] x #8 Spreader Noz.-Lavender [3.18mm]								
Flow [L/s]	1.00	1.07	1.13	1.20	1.25	1.31	1.36	1.42
Diam. at 0.46m ht. [m]	36.0	37.8	38.7	39.3	40.9	42.4	43.3	43.9
Diam. at 1.83m ht. [m]	39.0	40.3	41.2	41.8	43.0	43.9	44.5	44.8
18x10 #18 Range Noz. [7.14 mm] x #10 Spreader Noz.-Turquoise [3.97mm]								
Flow [L/s]	1.07	1.15	1.22	1.28	1.34	1.40	1.46	1.51
Diam. at 0.46m ht. [m]	36.0	37.8	38.7	39.3	40.9	42.4	43.3	43.9
Diam. at 1.83m ht. [m]	39.0	40.3	41.2	41.8	43.0	43.9	44.5	44.8
20x10 #20 Range Noz. [7.94 mm] x #10 Spreader Noz.- Turquoise [3.97mm]								
Flow [L/s]	1.23	1.32	1.40	1.47	1.55	1.62	1.68	1.75
Diam. at 0.46m ht. [m]	37.8	39.7	40.9	41.8	43.3	44.5	45.8	46.7
Diam. at 1.83m ht. [m]	40.6	41.8	42.7	43.6	44.8	46.1	47.0	47.3
20x12 #20 Range Noz. [7.94 mm] x #12 Spreader Noz.-Red [4.76mm]								
Flow [L/s]	1.34	1.44	1.52	1.61	1.69	1.76	1.83	1.90
Diam. at 0.46m ht. [m]	37.8	39.7	40.9	41.8	43.3	44.5	45.8	46.7
Diam. at 1.83m ht. [m]	40.6	41.8	42.7	43.6	44.8	46.1	47.0	47.3
22x10 #22 Range Noz. [8.73 mm] x #10 Spreader-Noz.-Turquoise [3.97mm]								
Flow [L/s]	1.44	1.54	1.64	1.73	1.81	1.89	1.97	2.04
Diam. at 0.46m ht. [m]	38.4	40.6	43.0	45.1	46.7	47.9	48.8	49.4
Diam. at 1.83m ht. [m]	41.5	43.0	44.5	45.8	47.3	48.5	49.4	50.0
22x12 #22 Range Noz. [8.73 mm] x #12 Spreader Noz.-Red [4.76mm]								
Flow [L/s]	1.55	1.66	1.76	1.85	1.95	2.12	2.03	2.19
Diam. at 0.46m ht. [m]	38.4	40.6	43.0	45.1	46.7	47.9	48.8	49.4
Diam. at 1.83m ht. [m]	41.5	43.0	44.5	45.8	47.3	48.5	49.4	50.0
24x12 #24 Range Noz. [9.53 mm] x #12 Spreader Noz.-Red [4.76 mm]								
Flow [L/s]	1.74	1.86	1.97	2.08	2.18	2.28	2.37	2.46
Diam. at 0.46m ht. [m]	39.7	42.1	44.2	46.1	47.6	48.8	50.6	51.5
Diam. at 1.83m ht. [m]	42.1	44.2	45.8	47.3	48.8	50.0	50.9	51.9

Sprinkler performance may vary with actual field conditions. Diameters shown are for standard straight bore nozzles and stream straightening vanes. Other nozzles and/or vane combinations are available; Consult factory for specific performance data. Stream heights range from 8.5-15.5 ft. (2.6-4.7m) above nozzle based on pressure and nozzle size. Minimum recommended riser height is 1.5 ft. (0.46m).

80series[Impacts

8025HR-1-1¼" M

The 80 Series are Senninger's largest impact sprinklers. Designed for maximum efficiency at high flow rates.

FEATURES:

- Single and double nozzle designs available.
  Double nozzle available in range drive (HR) or spreader drive (SD).
- Outlasts and costs less than brass sprinklers
- Lower bearing pipe thread:1¼" M NPT, 1¼" F NPT;
  1½" M NPT, 1¼" M BSP
- Flow rates: 23.6 to 91.8 gpm [1.49 to 5.78 L/s]
- Built-in hex wrench for easy in-the-field maintenance

U.S. Data	Sprinkler Base Pressure [psi] 35	40	45	50	55	60	65	70	75
#24 Nozzle [3/8"]									
Flow [gpm]	23.6	25.2	26.7	28.2	29.6	30.9	32.1	33.3	34.5
Diam. at 1.5' ht. [ft.]	128	134	139	144	149	154	157	159	160
Diam. at 6.0' ht. [ft.]	147	152	156	159	162	164	166	168	170
#26 Nozzle [13/32"]									
Flow [gpm]	24.4	29.3	31.0	32.7	34.3	35.9	37.3	38.7	40.1
Diam. at 1.5' ht. [ft.]	136	142	147	152	157	161	164	166	168
Diam. at 6.0' ht. [ft.]	152	157	161	164	167	169	171	173	175
#28 Nozzle [7/16"]									
Flow [gpm]	31.8	33.9	36.0	38.0	39.8	41.6	43.3	44.9	46.5
Diam. at 1.5' ht. [ft.]	142	148	153	157	161	166	169	171	173
Diam. at 6.0' ht. [ft.]	156	161	165	168	171	173	175	177	179
#30 Nozzle [15/32"]									
Flow [gpm]	36.1	38.6	40.9	43.1	45.2	47.2	49.2	51.0	52.8
Diam. at 1.5' ht. [ft.]	147	153	158	162	166	170	173	175	178
Diam. at 6.0' ht. [ft.]	160	165	169	172	175	177	179	181	183
#32 Nozzle [1/2"]									
Flow [gpm]	41.0	43.9	46.5	49.0	51.4	53.7	55.9	58.0	60.1
Diam. at 1.5' ht. [ft.]	150	156	161	165	169	173	176	179	183
Diam. at 6.0' ht. [ft.]	164	169	173	176	179	181	183	185	187
#34 Nozzle [17/32"]									
Flow [gpm]	46.3	49.5	52.5	55.4	58.1	60.7	63.1	65.5	67.8
Diam. at 1.5' ht. [ft.]	153	159	164	168	172	176	180	183	186
Diam. at 6.0' ht. [ft.]	167	172	176	179	182	184	186	188	190
#36 Nozzle [9/16"]									
Flow [gpm]	51.9	55.5	58.9	62.1	65.1	68.0	70.8	73.5	76.0
Diam. at 1.5' ht. [ft.]	155	161	166	170	174	178	183	187	190
Diam. at 6.0' ht. [ft.]	170	175	179	182	185	187	189	191	193
#38 Nozzle [19/32"]									
Flow [gpm]	56.0	59.9	63.5	66.9	70.2	73.3	76.3	79.2	82.0
Diam. at 1.5' ht. [ft.]	157	163	168	172	176	180	185	190	192
Diam. at 6.0' ht. [ft.]	173	178	182	185	188	190	192	194	196
#40 Nozzle [5/8"]									
Flow [gpm]	-	67.1	71.1	75.0	78.7	82.1	85.5	88.7	91.8
Diam. at 1.5' ht. [ft.]	-	165	170	174	178	182	187	192	194
Diam. at 6.0' ht. [ft.]	-	180	184	187	190	192	194	196	198

Metric Data [bar] / [psi]	2.41 / 35	2.76 / 40	3.10 / 45	3.45 / 50	3.79 / 55	4.14 / 60	4.48 / 65	4.83 / 70	5.17 / 75
#24 Nozzle [9.53mm]									
Flow [L/s]	1.49	1.59	1.68	1.78	1.86	1.95	2.02	2.10	2.17
Diam. at 0.46m ht. [m]	39.0	40.9	42.4	43.9	45.4	47.0	47.9	48.5	48.8
Diam. at 1.83m ht. [m]	45.1	46.4	47.6	48.5	49.4	50.0	50.6	51.2	51.9
#26 Nozzle [10.32mm]									
Flow [L/s]	1.54	1.85	1.95	2.06	2.16	2.26	2.35	2.44	2.53
Diam. at 0.46m ht. [m]	41.5	43.3	44.8	46.4	47.9	49.1	50.0	50.6	51.2
Diam. at 1.83m ht. [m]	46.4	47.9	49.1	50.0	50.9	51.5	52.2	52.8	53.4
#28 Nozzle [11.11mm]									
Flow [L/s]	2.00	2.14	2.27	2.39	2.51	2.62	2.73	2.83	2.93
Diam. at 0.46m ht. [m]	43.3	45.1	46.7	47.9	49.1	50.6	51.5	52.2	52.8
Diam. at 1.83m ht. [m]	47.6	49.1	50.3	51.2	52.2	52.8	53.4	54.0	54.6
#30 Nozzle [11.91mm]									
Flow [L/s]	2.27	2.43	2.58	2.72	2.85	2.97	3.10	3.21	3.33
Diam. at 0.46m ht. [m]	44.8	46.7	48.2	49.4	50.6	51.9	52.8	53.4	54.3
Diam. at 1.83m ht. [m]	48.8	50.3	51.5	52.5	53.4	54.0	54.6	55.2	55.8
#32 Nozzle [12.7mm]									
Flow [L/s]	2.58	2.77	2.93	3.09	3.24	3.38	3.52	3.65	3.79
Diam. at 0.46m ht. [m]	45.8	47.6	49.1	50.3	51.5	52.8	53.7	54.6	55.8
Diam. at 1.83m ht. [m]	50.0	51.5	52.8	53.7	54.6	55.2	55.8	56.4	57.0
#34 Nozzle [13.49mm]									
Flow [L/s]	2.92	3.12	3.31	3.49	3.66	3.82	3.98	4.13	4.27
Diam. at 0.46m ht. [m]	46.7	48.5	50.0	51.2	52.5	53.7	54.9	55.8	56.7
Diam. at 1.83m ht. [m]	50.9	52.5	53.7	54.6	55.5	56.1	56.7	57.3	58.0
#36 Nozzle [14.29mm]									
Flow [L/s]	3.27	3.50	3.71	3.91	4.10	4.28	4.46	4.63	4.79
Diam. at 0.46m ht. [m]	47.3	49.1	50.6	51.9	53.1	54.3	55.8	57.0	58.0
Diam. at 1.83m ht. [m]	51.9	53.4	54.6	55.5	56.4	57.0	57.6	58.3	58.9
#38 Nozzle [15.08mm]									
Flow [L/s]	3.53	3.77	4.00	4.21	4.42	4.62	4.81	4.99	5.17
Diam. at 0.46m ht. [m]	47.9	49.7	51.2	52.5	53.7	54.9	56.4	58.0	58.6
Diam. at 1.83m ht. [m]	52.8	54.3	55.5	56.4	57.3	58.0	58.6	59.2	59.8
#40 Nozzle [15.88mm]									
Flow [L/s]	-	4.23	4.48	4.73	4.96	5.17	5.39	5.59	5.78
Diam. at 0.46m ht. [m]	-	50.3	51.9	53.1	54.3	55.5	57.0	58.6	59.2
Diam. at 1.83m ht. [m]	-	54.9	56.1	57.0	58.0	58.6	59.2	59.8	60.4

Sprinkler performance may vary with actual field conditions. Diameters shown are for standard straight bore nozzles and stream straightening vanes. Other nozzles and/or vane combinations are available; Consult factory for specific performance data. Stream heights range from 12.5-28.0 ft. (3.8-8.5m) above nozzle based on pressure and nozzle size. Minimum recommended riser height is 1.5 ft. (0.46m).

FEATURES: continued...

- Two-year warranty on materials, workmanship AND performance
- Color-coded nozzles for easy size identification; warranted to maintain correct orifice size for five years

8025-SD The Booster Tube provides an increased radius of throw over standard range and spreader drive models by approximately 5 - 10%. Consult factory for specific performance data. Available only on **8025 Spreader Drive** double nozzle models.

8025HR-2-1¼" M

U.S. Data	Sprinkler Base Pressure [psi] 35	40	45	50	55	60	65	70	75
24x12 #24 Range Noz. [3/8"] x #12 Spreader Noz.- Red [3/16"]									
Flow [gpm]	28.9	30.8	32.7	34.5	36.2	37.8	39.3	40.8	42.2
Diam. at 1.5' ht. [ft.]	128	134	139	144	149	154	157	159	160
Diam. at 6.0' ht. [ft.]	147	152	156	159	162	164	166	168	170
26X14 #26 Range Noz. [13/32"] x #14 Spreader Noz.- Blue [7/32"]									
Flow [gpm]	36.8	39.4	41.8	44.0	46.2	48.2	50.2	52.1	53.9
Diam. at 1.5' ht. [ft.]	136	142	147	152	157	161	164	166	168
Diam. at 6.0' ht. [ft.]	152	157	161	164	167	169	171	173	175
28x14 #28 Range Noz. [7/16"] x #14 Spreader Noz.- Blue [7/32"]									
Flow [gpm]	39.3	42.0	44.5	46.9	49.3	51.4	53.5	55.6	57.5
Diam. at 1.5' ht. [ft.]	142	148	153	157	161	166	169	171	173
Diam. at 6.0' ht. [ft.]	156	161	165	168	171	173	175	177	179
30x14 #30 Range Noz. [15/32"] x #14 Spreader Noz.- Blue [7/32"]									
Flow [gpm]	43.0	45.9	48.7	51.4	53.9	56.3	58.6	60.8	62.9
Diam. at 1.5' ht. [ft.]	147	153	158	162	166	170	173	175	178
Diam. at 6.0' ht. [ft.]	160	165	169	172	175	177	179	181	183
32x16 #32 Range Noz. [1/2"] x #16 Spreader Noz.- Orange [1/4"]									
Flow [gpm]	50.2	53.7	56.9	60.0	63.0	65.8	68.4	71.0	73.5
Diam. at 1.5' ht. [ft.]	150	156	161	165	169	173	176	179	183
Diam. at 6.0' ht. [ft.]	164	169	173	176	179	181	183	185	187
34x16 #34 Range Noz. [17/32"] x #16 Spreader Noz.- Orange [1/4"]									
Flow [gpm]	55.4	59.2	62.8	66.2	69.4	72.5	75.4	78.3	81.1
Diam. at 1.5' ht. [ft.]	153	159	164	168	172	176	180	183	186
Diam. at 6.0' ht. [ft.]	167	172	176	179	182	184	186	188	190
36x16 #36 Range Noz. [9/16"] x #16 Spreader Noz.- Orange [1/4"]									
Flow [gpm]	60.9	65.1	69.0	72.7	76.3	79.7	82.9	86.1	89.1
Diam. at 1.5' ht. [ft.]	155	161	166	170	174	178	183	187	190
Diam. at 6.0' ht. [ft.]	170	175	179	182	185	187	189	191	193
38x18 #38 Range Noz. [19/32"] x #18 Spreader Noz.- Purple [9/32"]									
Flow [gpm]	67.0	71.7	76.0	80.1	84.1	87.8	91.3	94.9	98.1
Diam. at 1.5' ht. [ft.]	157	163	168	172	176	180	185	190	192
Diam. at 6.0' ht. [ft.]	173	178	182	185	188	190	192	194	196
40x18 #40 Range Noz. [5/8"] x #18 Spreader Noz.- Purple [9/32"]									
Flow [gpm]	-	78.0	82.8	87.2	91.5	95.6	99.4	103.2	106.8
Diam. at 1.5' ht. [ft.]	-	165	170	174	178	182	187	192	194
Diam. at 6.0' ht. [ft.]	-	180	184	187	190	192	194	196	198

Metric Data [bar] [psi]	2.41 35	2.76 40	3.10 45	3.45 50	3.79 55	4.14 60	4.48 65	4.83 70	5.17 75
24x12 #24 Range Noz. [9.53mm] x #12 Spreader Noz.-Red [4.76mm]									
Flow [L/s]	1.82	1.94	2.06	2.17	2.28	2.38	2.48	2.57	2.66
Diam. at 0.46m ht. [m]	39.0	40.9	42.4	43.9	45.4	47.0	47.9	48.5	48.8
Diam. at 1.83m ht. [m]	44.8	46.4	47.6	48.5	49.4	50.0	50.6	51.2	51.9
26x14 #26 Range Noz. [10.32mm] x #14 Spreader Noz.-Blue [5.56mm]									
Flow [L/s]	2.32	2.48	2.63	2.77	2.91	3.04	3.16	3.28	3.40
Diam. at 0.46m ht. [m]	41.5	43.3	44.8	46.4	47.9	49.1	50.0	50.6	51.2
Diam. at 1.83m ht. [m]	46.4	47.9	49.1	50.0	50.9	51.5	52.2	52.8	53.4
28x14 #128 Range Noz. [11.11mm] x #14 #14 Spreader Noz.-Blue [5.56mm]									
Flow [L/s]	2.48	2.65	2.80	2.95	3.11	3.24	3.37	3.50	3.62
Diam. at 0.46m ht. [m]	43.3	45.1	46.7	47.9	49.1	50.6	51.5	52.2	52.8
Diam. at 1.83m ht. [m]	47.6	49.1	50.3	51.2	52.2	52.8	53.4	54.0	54.6
30x14 #30 Range Noz. [11.91mm] x #14 Spreader Noz.-Blue [5.56mm]									
Flow [L/s]	2.71	2.89	3.07	3.24	3.40	3.55	3.69	3.83	3.96
Diam. at 0.46m ht. [m]	44.8	46.7	48.2	49.4	50.6	51.9	52.8	53.4	54.3
Diam. at 1.83m ht. [m]	48.8	50.3	51.5	52.5	53.4	54.0	54.6	55.2	55.8
32x16 #32 Range Noz. [12.7mm] x #16 Spreader Noz.-Orange [6.35mm]									
Flow [L/s]	3.16	3.38	3.58	3.78	3.97	4.15	4.31	4.47	4.63
Diam. at 0.46m ht. [m]	45.8	47.6	49.1	50.3	51.5	52.8	53.7	54.6	55.8
Diam. at 1.83m ht. [m]	50.0	51.5	52.8	53.7	54.6	55.2	55.8	56.4	57.0
34x16 #34 Range Noz. [13.49mm] x #16 Spreader Noz.-Orange [6.35mm]									
Flow [L/s]	3.49	3.73	3.96	4.17	4.37	4.57	4.75	4.93	5.11
Diam. at 0.46m ht. [m]	46.7	48.5	50.0	51.2	52.5	53.7	54.9	55.8	56.7
Diam. at 1.83m ht. [m]	50.9	52.5	53.7	54.6	55.5	56.1	56.7	57.3	58.0
36x16 #36 Range Noz. [14.29mm] x #16 Spreader Noz.-Orange [6.35mm]									
Flow [L/s]	3.84	4.10	4.35	4.58	4.81	5.02	5.22	5.42	5.61
Diam. at 0.46m ht. [m]	47.3	49.1	50.6	51.9	53.1	54.3	55.8	57.0	58.0
Diam. at 1.83m ht. [m]	51.9	53.4	54.6	55.5	56.4	57.0	57.6	58.3	58.9
38x18 #38 Range Noz. [15.08mm] x #18 Spreader Noz.-Purple [7.14mm]									
Flow [L/s]	4.22	4.52	4.79	5.05	5.30	5.53	5.75	5.98	6.18
Diam. at 0.46m ht. [m]	47.9	49.7	51.2	52.5	53.7	54.9	56.4	58.0	58.6
Diam. at 1.83m ht. [m]	52.8	54.3	55.5	56.4	57.3	58.0	58.6	59.2	59.8
40x18 #40 Range Noz. [15.88mm] x #18 Spreader Noz.-Purple [7.14mm]									
Flow [L/s]	-	4.91	5.22	5.49	5.76	6.02	6.26	6.50	6.73
Diam. at 0.46m ht. [m]	-	50.3	51.9	53.1	54.3	55.5	57.0	58.6	59.2
Diam. at 1.83m ht. [m]	-	54.9	56.1	57.0	58.0	58.6	59.2	59.8	60.4

Sprinkler performance may vary with actual field conditions. Diameters shown are for standard straight bore nozzles and stream straightening vanes. Other nozzles and/or vane combinations are available; Consult factory for specific performance data. Stream heights range from 12.5 - 28.0 ft (3.8 - 8.5 m) above nozzle based on pressure and nozzle size. Minimum recommended riser height is 1.5 ft. (0.46m).

PRLG[Regulators

The Senninger Landscape Grade Pressure Regulator is ideal for installations requiring lower flows [0.1 - 7.0 gpm] including low-volume and sprinkler irrigation systems connected to outdoor hose bibb faucets or other lawn and landscape applications.

FEATURES:

- Maintains a constant preset outlet pressure while handling varying inlet pressures
- Prevents wasteful misting when using small nozzles
- Tamper-proof housing
- Very low hysteresis and friction losses
- Maximum flow path resists plugging
- 100% water-tested for accuracy (no adjustments ever needed)
- Two-year warranty on materials, workmanship AND performance

CAUTION: Always install downstream from all shut off valves.

PRLG - Pressure Regulator Landscape Grade

Model Number	Preset Operating Pressure psi	[bar]	Maximum Inlet Pressure psi	[bar]	Flow Range gpm	[L/m]	Inlet Sizes	Outlet Sizes
PRLG-10	10	0.69	80	5.52	0.1 - 7	0.38 - 26.5	3/4" F hose, 3/4" F NPT	3/4" M hose, 3/4" M NPT
PRLG-15	15	1.03	90	6.21	0.1 - 7	0.38 - 26.5	3/4" F hose, 3/4" F NPT	3/4" M hose, 3/4" M NPT
PRLG-20	20	1.38	100	6.90	0.1 - 7	0.38 - 26.5	3/4" F hose, 3/4" F NPT	3/4" M hose, 3/4" M NPT
PRLG-25	25	1.72	120	8.28	0.1 - 7	0.38 - 26.5	3/4" F hose, 3/4" F NPT	3/4" M hose, 3/4" M NPT
PRLG-30	30	2.07	120	8.28	0.1 - 7	0.38 - 26.5	3/4" F hose, 3/4" F NPT	3/4" M hose, 3/4" M NPT
PRLG-35	35	2.41	120	8.28	0.1 - 7	0.38 - 26.5	3/4" F hose, 3/4" F NPT	3/4" M hose, 3/4" M NPT
PRLG-40	40	2.76	120	8.28	0.1 - 7	0.38 - 26.5	3/4" F hose, 3/4" F NPT	3/4" M hose, 3/4" M NPT

Regulated pressure is 1/2 psi (0.03 bar) higher with increasing inlet pressure than with decreasing inlet pressure

The Pressure Regulator Low Flow® is ideal for installations requiring lower flows [0.1 - 8.0 gpm] including solid-set, drip or other low-volume irrigation systems as well as center pivot and other mechanical-move irrigation systems.

FEATURES:

- Maintains a constant preset outlet pressure while handling varying inlet pressures
- Very low hysteresis and friction losses
- Maximum flow path resists plugging
- 100% water-tested for accuracy (no adjustments ever needed)
- Two-year warranty on materials, workmanship AND performance
- Can be installed above or below ground
- For use on mechanical move and sold set installations

PMR-LF - Pressure-Master Regulator® Low Flow

Model Number	Preset Operating Pressure psi	[bar]	Maximum Inlet Pressure psi	[bar]	Flow Range gpm	[L/m]	Inlet Sizes	Outlet Sizes
PMR-6 LF	6	0.41	100	6.90	0.5 - 5	0.38 - 18.93	3/4" F NPT, 3/4" hose	3/4" F NPT
PMR-10 LF	10	0.69	120	8.27	0.5 - 5	0.38 - 18.93	3/4" F NPT, 3/4" hose	3/4" F NPT
PMR-12 LF	12	0.83	135	9.31	0.1 - 8	0.38 - 30.28	3/4" F NPT, 3/4" hose	3/4" F NPT
PMR-15 LF	15	1.03	150	10.34	0.1 - 8	0.38 - 30.28	3/4" F NPT, 3/4" hose	3/4" F NPT
PMR-20 LF	20	1.38	150	10.34	0.1 - 8	0.38 - 30.28	3/4" F NPT, 3/4" hose	3/4" F NPT
PMR-25 LF	25	1.72	150	10.34	0.1 - 8	0.38 - 30.28	3/4" F NPT, 3/4" hose	3/4" F NPT
PMR-30 LF	30	2.07	150	10.34	0.1 - 8	0.38 - 30.28	3/4" F NPT, 3/4" hose	3/4" F NPT
PMR-35 LF	35	2.41	150	10.34	0.1 - 8	0.38 - 30.28	3/4" F NPT, 3/4" hose	3/4" F NPT
PMR-40 LF	40	2.76	150	10.34	0.1 - 8	0.38 - 30.28	3/4" F NPT, 3/4" hose	3/4" F NPT

Regulated pressure is 1/2 psi (0.03 bar) higher with increasing inlet pressure than with decreasing inlet pressure

PMR-MF[Regulators

The medium flow Pressure-Master Regulator® is ideal for installations requiring mid-range flows [2 - 20 gpm] including solid-set, drip or other low-volume irrigation systems as well as center pivot and other mechanical-move irrigation systems.

FEATURES:

- Maintains a constant preset outlet pressure while handling varying inlet pressures
- Very low hysteresis and friction losses
- Maximum flow path resists plugging
- 100% water-tested for accuracy (no adjustments ever needed)
- Two-year warranty on materials, workmanship AND performance
- Can be installed above or below ground.

PMR-MF CMS models are designed specifically for mining applications where pH solutions are less than or equal to 4.0

PMR-MF EFF models (lavender top) are designed specifically for wastewater applications.

CAUTION: Always install downstream from all shut off valves.

PMR-MF - Pressure-Master Regulator® Medium-Flow

Model Number	Preset Oper. Pressure psi	[bar]	Maximum Inlet Pressure psi	[bar]	Flow Range gpm	[L/hr]	Inlet Sizes	Outlet Sizes
PMR-6 MF	6	0.41	100	6.90	4 - 16	15.14 - 60.6	3/4" F NPT, 1" F NPT, 1" M NPT, 1" F BSP	3/4" F NPT, 1" F NPT, 1" F BSP
PMR-10 MF	10	0.69	120	8.28	4 - 16	15.14 - 60.6	3/4" F NPT, 1" F NPT, 1" M NPT, 1" F BSP	3/4" F NPT, 1" F NPT, 1" F BSP
PMR-12 MF	12	0.83	135	9.32	2 - 20	7.57 - 75.7	3/4" F NPT, 1" F NPT, 1" M NPT, 1" F BSP	3/4" F NPT, 1" F NPT, 1" F BSP
PMR-15 MF	15	1.03	150	10.35	2 - 20	7.57 - 75.7	3/4" F NPT, 1" F NPT, 1" M NPT, 1" F BSP	3/4" F NPT, 1" F NPT, 1" F BSP
PMR-20 MF	20	1.38	150	10.35	2 - 20	7.57 - 75.7	3/4" F NPT, 1" F NPT, 1" M NPT, 1" F BSP	3/4" F NPT, 1" F NPT, 1" F BSP
PMR-25 MF	25	1.72	150	10.35	2 - 20	7.57 - 75.7	3/4" F NPT, 1" F NPT, 1" M NPT, 1" F BSP	3/4" F NPT, 1" F NPT, 1" F BSP
PMR-30 MF	30	2.07	150	10.35	2 - 20	7.57 - 75.7	3/4" F NPT, 1" F NPT, 1" M NPT, 1" F BSP	3/4" F NPT, 1" F NPT, 1" F BSP
PMR-35 MF	35	2.41	150	10.35	2 - 20	7.57 - 75.7	3/4" F NPT, 1" F NPT, 1" M NPT, 1" F BSP	3/4" F NPT, 1" F NPT, 1" F BSP
PMR-40 MF	40	2.76	150	10.35	2 - 20	7.57 - 75.7	3/4" F NPT, 1" F NPT, 1" M NPT, 1" F BSP	3/4" F NPT, 1" F NPT, 1" F BSP
PMR-40 MF	50	3.45	150	10.35	2 - 20	7.57 - 75.7	3/4" F NPT, 1" F NPT, 1" M NPT, 1" F BSP	3/4" F NPT, 1" F NPT, 1" F BSP
PMR-40 MF	60	4.14	150	10.35	2 - 20	7.57 - 75.7	3/4" F NPT, 1" F NPT, 1" M NPT, 1" F BSP	3/4" F NPT, 1" F NPT, 1" F BSP

Regulated pressure is 1/2 psi (0.03 bar) higher with increasing inlet pressure than with decreasing inlet pressure

The high flow Pressure Regulator is ideal for installations requiring higher flows [10 - 32 gpm] including solid-set sprinkler, low-volume manifolds and mechanical-move irrigation systems.

FEATURES:

- Maintains a constant preset outlet pressure while handling varying inlet pressures
- Very low hysteresis and friction losses
- Maximum flow path resists plugging
- 100% water-tested for accuracy (no adjustments ever needed)
- Two-year warranty on materials, workmanship AND performance

Pressure regulators are recommended if there is a 10% pressure and/or 5% flow variation. The lower a system's design pressure, the more critical it is to accurately control its pressure.

DESIGN PRESSURE	PRESSURE VARIATIONS				
	0.5 psi 0.034 bar	1 psi 0.069 bar	2 psi 0.138 bar	3 psi 0.207 bar	4 psi 0.276 bar
6 psi [0.41 bar]	4.2	8.3	16.7	25.0	33.3
10 psi [0.69 bar]	2.5	5.0	10.0	15.0	20.0
15 psi [1.03 bar]	1.7	3.3	6.7	10.0	13.3
% FLOW VARIATION					

All Senninger pressure regulators are constructed of durable high-impact engineering-grade thermoplastics with a high quality stainless steel compression spring and securing screws. This durable construction coupled with their outstanding design and precision parts make them suitable for a variety of different applications.

PR-HF - Pressure Regulator High-Flow

Model Number	Preset Operating Pressure psi	[bar]	Maximum Inlet Pressure psi	[bar]	Flow Range gpm	[L/m]	Inlet Sizes	Outlet Sizes
PR-10 HF	10	0.69	60	4.14	10 - 32	37.85 - 121.1	1¼" F NPT	1" F, 1¼" F NPT
PR-15 HF	15	1.03	80	5.52	10 - 32	37.85 - 121.1	1¼" F NPT	1" F, 1¼" F NPT
PR-20 HF	20	1.38	100	6.90	10 - 32	37.85 - 121.1	1¼" F NPT	1" F, 1¼" F NPT
PR-25 HF	25	1.72	100	6.90	10 - 32	37.85 - 121.1	1¼" F NPT	1" F, 1¼" F NPT
PR-30 HF	30	2.07	100	6.90	10 - 32	37.85 - 121.1	1¼" F NPT	1" F, 1¼" F NPT
PR-40 HF	40	2.76	100	6.90	10 - 32	37.85 - 121.1	1¼" F NPT	1" F, 1¼" F NPT
PR-50 HF	50	3.45	100	6.90	10 - 32	37.85 - 121.1	1¼" F NPT	1" F, 1¼" F NPT

Regulated pressure is 1/2 psi (0.03 bar) higher with increasing inlet pressure than with decreasing inlet pressure

PRXF[Regulators

The Extended Flow Pressure Regulator is designed to handle flows up to 100 gpm. Ideal for installation requiring accurate zone pressure regulation.

FEATURES:

- Maintains a constant preset outlet pressure while handling varying inlet pressures
- Inlet / outlet configuration is 3" ID solvent weld socket x socket.
- Very low hysteresis and friction losses
- Maximum flow path resists plugging
- 100% water-tested for accuracy (no adjustments ever needed)
- Two-year warranty on materials, workmanship AND performance

INSTALLATION GUIDELINES:

- Never allow solvent or cement to drip into regulator.
- Make sure the flow arrows on the regulator match the direction of the system flow.
- Installation of a union is recommended for easy removal of PRXF.

PRXF - Pressure Regulator Extended-Flow™

Model Number	Preset Operating Pressure psi	[bar]	Maximum Inlet Pressure psi	[bar]	Flow Range gpm	[L/m]	Inlet Sizes	Outlet Sizes
PRXF-10	10	0.69	80	5.52	20 - 80	75.71 - 302.8	3" F	3" F
PRXF-15	15	1.03	85	5.87	20 - 85	75.71 - 321.8	3" F	3" F
PRXF-20	20	1.38	90	6.21	20 - 90	75.71 - 340.7	3" F	3" F
PRXF-25	25	1.72	95	6.56	20 - 95	75.71 - 359.6	3" F	3" F
PRXF-30	30	2.07	100	6.90	20 - 100	75.71 - 378.5	3" F	3" F
PRXF-35	35	2.41	110	7.59	20 - 100	75.71 - 378.5	3" F	3" F
PRXF-40	40	2.76	125	8.63	20 - 100	75.71 - 378.5	3" F	3" F
PRXF-50	50	3.45	125	8.63	20 - 100	75.71 - 378.5	3" F	3" F
PRXF-60	60	4.14	125	8.63	20 - 100	75.71 - 378.5	3" F	3" F

Regulated pressure is 1/2 psi (0.03 bar) higher with increasing inlet pressure than with decreasing inlet pressure

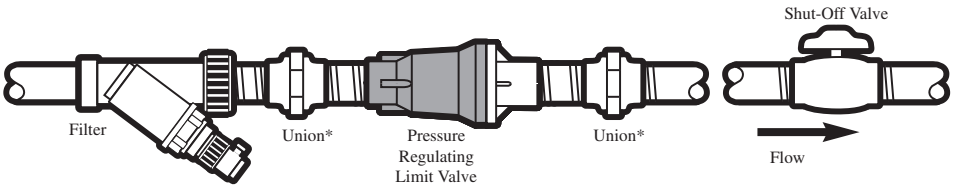
The Pressure Regulating Limit Valve™ is used in place of standard pressure regulators to limit static [no flow] water pressure when a shut-off valve is used downstream of regulation point. Limits downstream pressure and protects downstream components.

FEATURES:

- Maintains a constant preset outlet pressure while handling varying inlet pressures
- Limits downstream pressure to no more than 15 psi above regulated pressure rating during static (no flow) conditions
- Very low hysteresis and friction losses
- Maximum flow path resists plugging
- 100% water-tested for accuracy (no adjustments ever needed)
- One-year warranty on materials, workmanship AND performance

CAUTION:
Recommended for outdoor use only.

PRLV - Pressure Regulating Limited Valve™ Recommended Installation



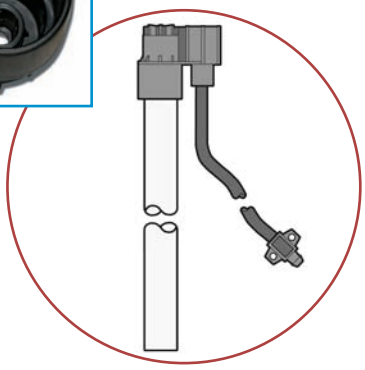
*Unions recommended for ease of maintenance

PRLV - Pressure Regulating Limited Valve™

Model Number	Preset Operating Pressure psi	[bar]	Maximum Inlet Pressure psi	[bar]	Flow Range gpm	[L/m]	Inlet Sizes	Outlet Sizes
PRLV-30	30	2.07	150	10.35	0.5 - 15	1.89 - 56.8	3/4" F, 1" F NPT	3/4" F, 1" F NPT
PRLV-40	40	2.76	150	10.35	0.5 - 15	1.89 - 56.8	3/4" F, 1" F NPT	3/4" F, 1" F NPT
PRLV-50	50	3.45	150	10.35	0.5 - 15	1.89 - 56.8	3/4" F, 1" F NPT	3/4" F, 1" F NPT

Regulated pressure is 1/2 psi (0.03 bar) higher with increasing inlet pressure than with decreasing inlet pressure

RiserAdapter[Accessories



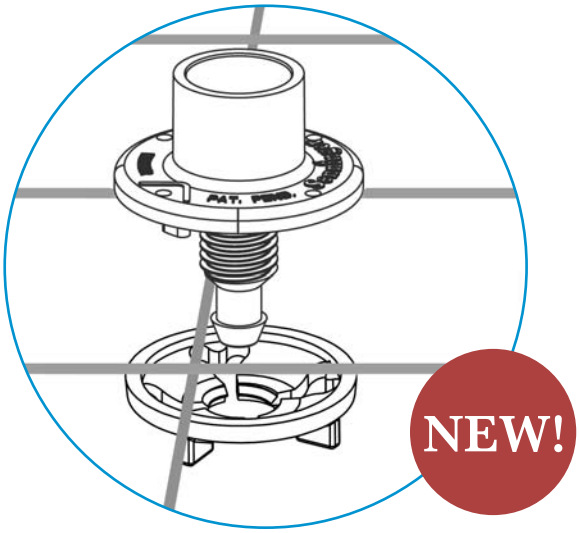
The Riser Adapter's installation versatility makes it ideal for temporary portable systems.

FEATURES:

- Allows sprinklers and sprays with 1/2" M NPT connection to be mounted securely on to either a 1/2" or 3/4" PVC or 5/16" steel rod stakes and connected to low pressure polyethylene laterals
- Allows for easy installation in hard-to-reach places such as side slopes
- No gluing or fusing required
- Two models available: for 0.270" ID tubing or 0.345" ID tubing
- Available as individual components or as an assembly. (Assembly includes: Riser Adapter, three feet of tubing, and connection adapter.)
- Friction loss through the assembly (using 0.345" tubing) is 1.25 psi at 1.5 gpm [0.1 bar at 0.1 L/s]

NurseryWire Adapter[Accessories

Patent Pending



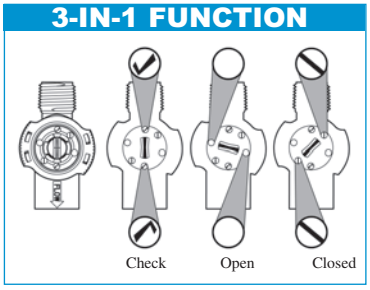
The Nursery Wire Adapter provides easy installation for Misters or other non-impact applicators.

FEATURES:

- Easy installation on wire mesh plant beds
- Fits up to 10 gauge wire
- Locks into corner of wire
- Multiple installation options
- Minimum 1" mesh
- Specifications:
  1/2" F slip ID 3/4" M slip OD;
  Barb fits 0.345" ID tubing

Accessories]DrainStopPlus™

Senninger's new Drain Stop Plus is specifically designed for overhead irrigation to prevent draining from applicators when system is shut down. This protects plants beneath applicators from damage and over-watering. The Drain Stop Plus allows lines to remain full to help expedite system start-up time and maximize initial zone coverage.



The multiple functions of Senninger's new Drain Stop Plus make it an excellent choice for overhead irrigation.

FEATURES:

- Unique 3-mode design – open, check, and closed
- Easy clean feature – device and applicator remain in place, a simple twist releases bonnet for debris removal
- Two models available:1/2" M NPT inlet x 1/2" F NPT outlet; 3/4" M barb inlet x 1/2" F NPT outlet
- Can be used directly on any 1/2" M NPT base applicator
- Low friction loss – less than 4.25 psi total loss through device at 5 gpm [0.29 bar at 19 L/m]
- Minimum opening pressure: 13.5 psi [0.93 bar]
  Minimum closing pressure: 3.5 psi [0.24 bar]
- Maximum operating pressure: 50 psi [3.45 bar]
- Flow: 0.25 to 5 gpm [1 to 19 L/m]
- Two-year warranty on materials, workmanship AND performance

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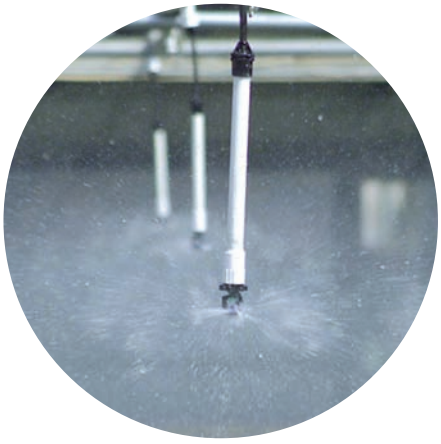


Accessories]DropAdapter

The Senninger Drop Adapter offers simple, fast and economical installation of drops.

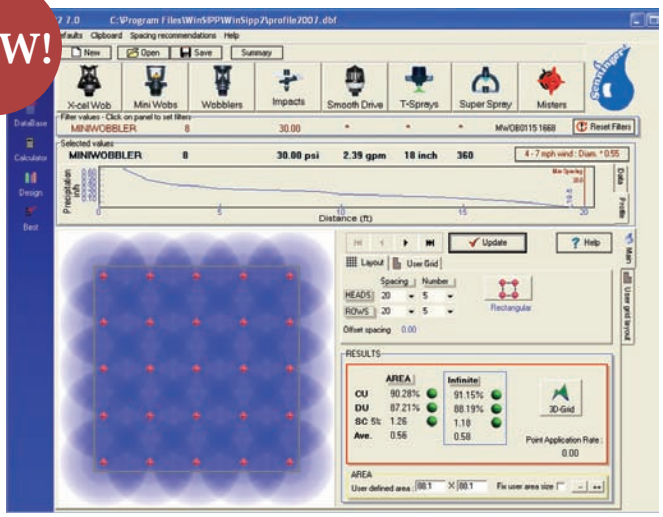
FEATURES:

- Available as an assembly or as individual components (assembly includes: Two super barb connectors, One 1/2" slip x NPT connector, 12 inches of 0.345" tubing, 12 inches of 1/2" PVC)
- Available with either a 1/2" F slip, 3/4" M slip, or 1/2" M NPT outlet connection
- Friction loss through the assembly (24" length) is 0.67 psi at 1.5 gpm [less than 0.05 bar at 0.1 L/s]

WinSIPP2™ [Software

Use WinSIPP2 software by Senninger to calculate the precipitation rate of your irrigation system.

NEW!



Densograms illustrate the uniformity of a given profile to show water distribution of multiple overlapping devices in graphic form.

FEATURES:

- Aids in the selection and application of best irrigation products
- Tests the application uniformity of sprinkler layouts before the system is installed
- Compares different spacings, sprinkler models, nozzle sizes, and operating pressures to determine which would be best for your specific application

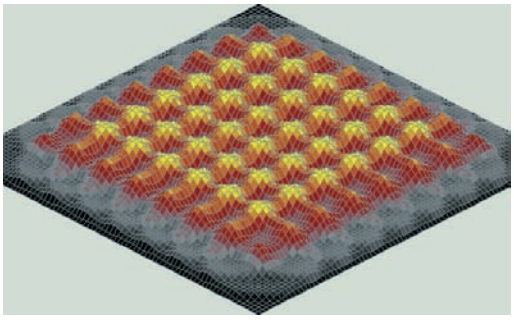
Ask for this program by contacting the Senninger Technical Support Department.

DISTRIBUTION PROFILES

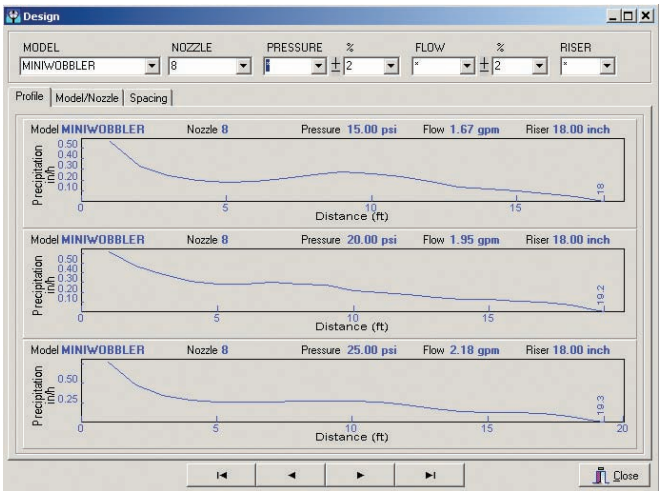
A distribution profile is the illustration of results from "catch can" tests performed in accordance with the American Society of Agricultural and Biological Engineers (ASABE) standard S398.1. This data shows how uniformly a device distributes water within its diameter of throw. WinSIPP utilizes the numerous distribution profiles available for Senninger products.

DENSOGRAMS

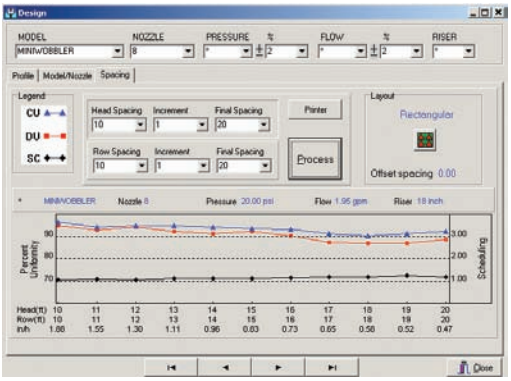
Data from distribution profiles is used to create densograms based on spacing dimensions, layout, and riser height. Densograms are useful in illustrating the uniformity in which water is distributed by multiple overlapping devices.



Graphics illustrate the water application pattern in 3-D format.



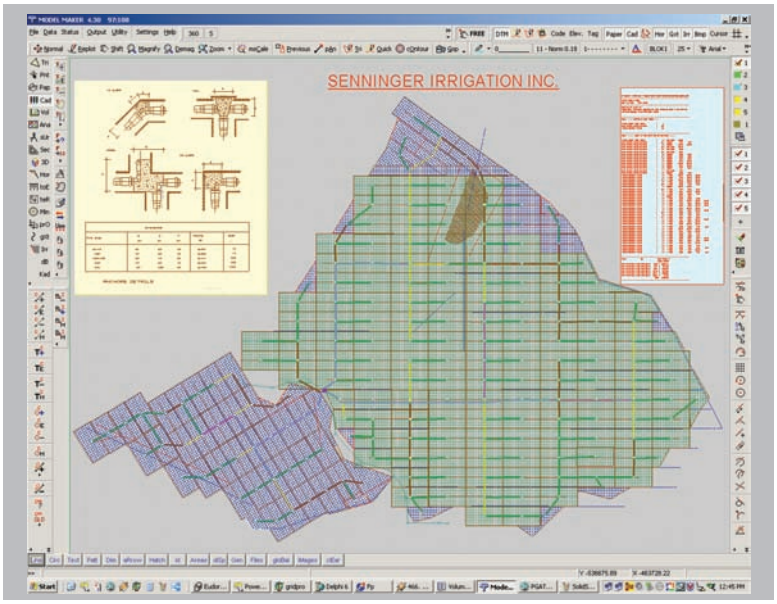
Sprinkler profile takes specific data and illustrates the amount of water that would be delivered at various intervals as well as the exact radius.



The WinSIPP2 program provides profiles illustrating the coefficient of uniformity, distribution uniformity, and the scheduling coefficient to determine which spacing would be optimum.

Software]Irri-Maker™

Senninger's Irri-Maker™ software evaluates installation alternatives in advance, surveys any terrain, produces a contour plan, draws the details, and applies the irrigation design.



FEATURES:

- Optimizes irrigation system design by combining survey, Digital Terrain Modeling (DTM) and Computer Aided Design (CAD), with many hydraulic analysis functions
- Allows importation of information from many other programs
- Saves time at repeatable routines

Survey Data Manipulation (DTM)

Irri-Maker's flexible structure and user-friendly layout makes converting survey data into a computerized DTM format quick and easy. It is no longer necessary to manually calculate coordinates, reduce survey field books, or do manual plotting of the proposed terrain. Irri-Maker can produce a contour plan from virtually any type of survey data.

CAD Advantages

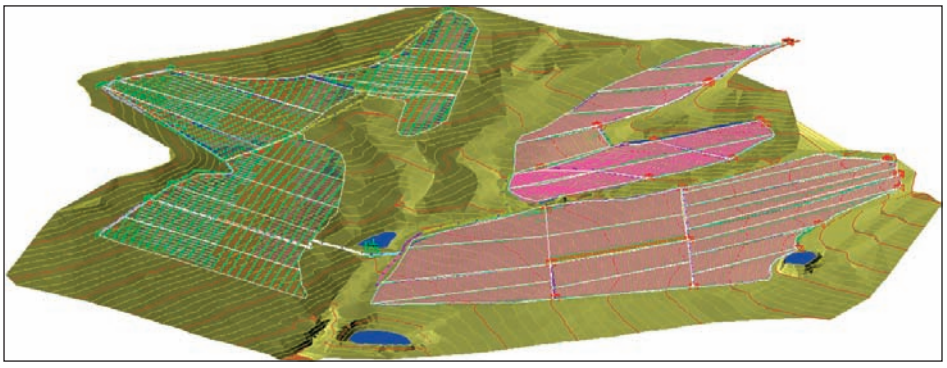
The built-in CAD module allows you to add specific details to the contour plan, including text and bitmap images. Details like roads, fences, boundaries, rivers, and trees can also be incorporated. Irri-Maker employs various modules working together with the same set of commands. There is no need to learn different programs or menu layouts to add CAD elements and irrigation designs to your contour plan. Everything can be plotted independently or in combination.

Flexible Irrigation Designs

Irri-Maker can be used for everything from simple irrigation designs to complex systems. Each element of the design can be controlled,whether it's defining block areas, adding emitters and pipes, sizing the pipes, or calculating the hydraulics. A comprehensive list of materials along with detailed hydraulic reports can be produced as well.

Other Applications

Irri-Maker operates within the larger Model Maker™ environment. This means any of the other Model Maker modules can be added to your software package. With this, civil earthwork calculation tasks can be performed for various applications including dams, canals, drainage, and roads.



The program provides a three-dimensional model for your specific application.

U.S. [Precipitation Rates inches per/hour

SPAC-ING	FLOW																			
(feet)	(gpm) 0.30	0.50	0.75	1.00	1.50	2.00	3.00	4.00	5.00	6.00	8.00	10.00	15.00	20.00	25.00	30.00	35.00	40.00	45.00	50.00
	1.16	1.93	2.89	3.85	5.78	7.70	11.55									◀ T-Spray				
5 x 5	0.80	1.34	2.01	2.67	4.01	5.35	8.02													
6 x 6	0.59	0.98	1.47	1.96	2.95	3.93	5.89									◀ Super-Spray				
7 x 7	0.45	0.75	1.13	1.50	2.26	3.01	4.51	6.02												
8 x 8	0.36	0.59	0.89	1.19	1.78	2.38	3.56	4.75	5.94											
9 x 9	0.29	0.48	0.72	0.96	1.44	1.93	2.89	3.85	4.81	5.78						◀ i-mini-Wobbler				
10 x 10	0.20	0.33	0.50	0.67	1.00	1.34	2.01	2.67	3.34	4.01	5.35	6.68								
12 x 12	0.13	0.21	0.32	0.43	0.64	0.86	1.28	1.71	2.14	2.57	3.42	4.28	6.42			◀ Xcel-Wob HA, MA,SA, LA				
15 x 15		0.12	0.18	0.24	0.36	0.48	0.72	0.96	1.20	1.44	1.93	2.41	3.61	4.81	6.02	Wobbler				
20 x 20			0.12	0.15	0.23	0.31	0.46	0.62	0.77	0.92	1.23	1.54	2.31	3.08	3.85	mini-Wobbler				
25 x 25				0.11	0.16	0.21	0.32	0.43	0.53	0.64	0.86	1.07	1.60	2.14	2.67					
30 x 30					0.12	0.16	0.24	0.31	0.39	0.47	0.63	0.79	1.18	1.57	1.96	◀ Impact Sprinklers				
35 x 35						0.12	0.18	0.24	0.30	0.36	0.48	0.60	0.90	1.20	1.50	1.80	2.11	2.41		
40 x 40						0.10	0.14	0.19	0.24	0.29	0.39	0.48	0.72	0.96	1.20	1.44	1.68	1.93	2.17	
40 x 50							0.12	0.16	0.20	0.24	0.32	0.40	0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.01
40 x 60							0.09	0.12	0.15	0.18	0.24	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	1.50
40 x 80							0.14	0.19	0.24	0.29	0.38	0.48	0.71	0.95	1.19	1.43	1.66	1.90	2.14	2.38
45 x 45							0.11	0.15	0.19	0.23	0.31	0.39	0.58	0.77	0.96	1.16	1.35	1.54	1.73	1.93
50 x 50								0.13	0.16	0.19	0.26	0.32	0.48	0.64	0.80	0.96	1.12	1.28	1.44	1.60
50 x 60								0.11	0.14	0.17	0.22	0.28	0.41	0.55	0.69	0.83	0.96	1.10	1.24	1.38
50 x 70								0.10	0.12	0.14	0.19	0.24	0.36	0.48	0.60	0.72	0.84	0.96	1.08	1.20
50 x 80								0.13	0.16	0.19	0.25	0.32	0.48	0.64	0.80	0.95	1.11	1.27	1.43	1.59
55 x 55								0.11	0.13	0.16	0.21	0.27	0.40	0.53	0.67	0.80	0.94	1.07	1.20	1.34
60 x 60									0.11	0.14	0.18	0.23	0.34	0.46	0.57	0.69	0.80	0.92	1.03	1.15
60 x 70									0.10	0.12	0.16	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
60 x 80									0.10	0.12	0.16	0.20	0.29	0.39	0.49	0.59	0.69	0.79	0.88	0.98
70 x 70										0.10	0.14	0.17	0.26	0.34	0.43	0.52	0.60	0.69	0.77	0.86
70 x 80											0.12	0.15	0.23	0.31	0.38	0.46	0.53	0.61	0.69	0.76
70 x 90											0.12	0.15	0.23	0.30	0.38	0.45	0.53	0.60	0.68	0.75
80 x 80											0.11	0.13	0.20	0.27	0.33	0.40	0.47	0.53	0.60	0.67
80 x 90											0.10	0.12	0.18	0.24	0.30	0.36	0.42	0.48	0.54	0.60
80 x 100												0.10	0.14	0.19	0.24	0.29	0.34	0.39	0.43	0.48

PRODUCT	PATTERN SPACINGS*
T-Spray	up to 6 feet
Super-Spray	up to 12 feet
Xcel Wob HA	up to 30 feet
Xcel Wob MA	up to 25 feet
Wobbler SA	up to 30 feet
Wobbler LA	up to 25 feet
mini-Wobbler	up to 20 feet
i-mini-Wobbler	up to 12 feet
Smooth Drive	up to 40 feet
20 Series Impact	up to 40 feet
30 Series Impact	up to 60 feet
40 Series Impact	up to 65 feet
50 Series Impact	up to 70 feet
70 Series Impact	up to 90 feet
80 Series Impact	up to 100 feet

* Distance between sprinklers and rows in square or triangular patterns.

Maximum Precipitation Rates for Level Ground

Soil	in/hr
Coarse Sands	0.75 in. - 1.00 in./hr
Fine Sands	0.50 in. - 0.75 in./hr
Fine Sandy Loams	0.35 in. - 0.50 in./hr
Silt Loams	0.25 in. - 0.40 in./hr
Clay Loams	0.10 in. - 0.30 in./hr

Maximum Sprinkler Spacings

Wind Speed	Spacing
5 mph or less	60% of wetted diameter
5-10 mph	50% of wetted diameter
over 10 mph	25-30% of wetted diameter

(Consult factory for specific information on uniformity based on your particular application)

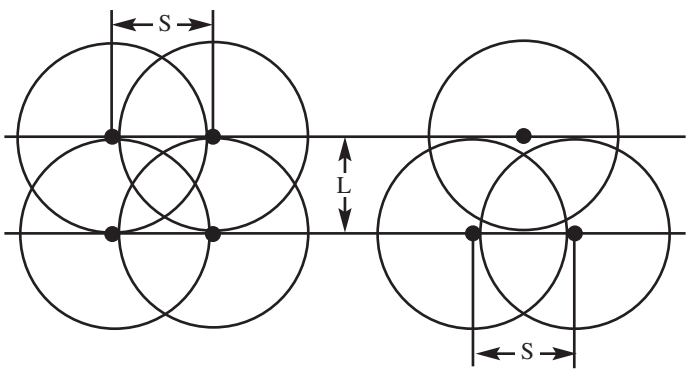
Precipitation Rate Formula

Application Rate = (inches per hour) $\dfrac{\text{GPM} \times 96.3}{\text{S} \times \text{L}}$

GPM = flow per sprinkler
S = spacing of sprinklers along the lateral (in feet)
L = spacing between laterals (in feet)

(This applies to square, rectangular, or triangular spacing)

Square Spacing **Triangular Spacing**



millimeters per/hour Precipitation Rates] Metric

SPACING (meters)	FLOW (m^3/hr)	0.07	0.11	0.18	0.36	0.56	0.72	0.90	1.08	1.44	1.80	2.16	2.52	2.88	3.24	3.60	3.96	4.32	5.40	6.40	7.20	
	(L/s)	0.02	0.03	0.05	0.10	0.15	0.20	0.25	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.50	1.80	2.00	
1.5 x 1.5		32.0	48.0	80.0	160.0	240.0	320.0															◀ T-Spray
2 x 2		18.0	27.0	45.0	90.0	135.0	180.0															
2.5 x 2.5		11.5	17.3	28.8	57.6	86.4	115.2	144.0														◀ Super-Spray
3 x 3		8.0	12.0	20.0	40.0	60.0	80.0	100.0	120.0	160.0												
3.5 x 3.5		5.9	8.8	14.7	29.4	44.1	58.8	73.5	88.2	117.6	146.9	176.3										
4 x 4		4.5	6.8	11.3	22.5	33.8	45.0	56.3	67.5	90.0	112.5	135.0										◀ i-mini-Wobbler
5 x 5		2.9	4.3	7.2	14.4	21.6	28.8	36.0	43.2	57.6	72.0	86.4										
6 x 6		2.0	3.0	5.0	10.0	15.0	20.0	25.0	30.0	40.0	50.0	60.0										◀ Xcel-Wobbler
6 x 9				3.3	6.6	10.0	13.3	16.6	20.0	26.6	33.3	40.0	46.6	53.0								Wobbler
6 x 12				2.5	5.0	7.5	10.0	12.5	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0						mini-Wobbler
8 x 8				2.8	5.6	8.4	11.2	14.0	16.9	22.5	28.1	33.7	39.4	45.0	50.0							
9 x 9				2.2	4.4	6.6	8.9	11.1	13.3	17.8	22.2	26.6	31.1	35.5	40.0	44.4	48.8	53.3				◀ Impact Sprinklers
9 x 12				1.6	3.3	5.0	6.6	8.3	10.0	13.3	16.6	20.0	23.3	26.6	30.0	33.3	36.6	40.0	50.0	59.2		
9 x 14				1.4	2.8	4.3	5.7	7.1	8.6	11.4	14.3	17.1	20.0	22.8	25.7	28.5	31.4	34.3	42.8	50.8		
9 x 15				1.3	2.7	4.0	5.3	6.6	8.0	10.6	13.3	16.0	18.6	21.3	24.0	26.6	29.4	32.0	40.0	47.4		
9 x 18					2.2	3.3	4.4	5.5	6.6	8.9	11.1	13.3	15.5	17.8	20.0	22.2	24.4	26.6	33.3	39.5	44.4	
12 x 12					2.5	3.7	5.0	6.2	7.5	10.0	12.5	15.0	17.5	20.0	22.5	25.0	27.5	30.0	37.5	44.4	50.0	
12 x 15					2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	30.0	35.5	40.0	
12 x 18					1.6	2.5	3.3	4.2	5.0	6.6	8.3	10.0	11.6	13.3	15.0	16.6	18.3	20.0	25.0	29.6	33.3	
15 x 18							3.2	4.0	4.8	6.4	8.0	9.6	11.2	12.8	14.4	16.0	17.6	19.2	24.0	28.4	32.0	
15 x 50							2.6	3.3	4.0	5.3	6.6	8.0	9.3	10.6	12.0	13.3	14.6	16.0	20.0	23.7	26.6	
15 x 21							2.3	2.8	3.4	4.6	5.7	6.8	8.0	9.1	10.3	11.4	12.6	13.7	17.1	20.3	22.8	
18 x 18									3.3	4.4	5.5	6.6	7.8	8.9	10.0	11.1	12.2	13.3	16.6	20.0	22.2	
18 x 21									2.8	3.8	4.7	5.7	6.6	7.6	8.6	9.5	10.5	11.4	14.3	16.9	19.0	
18 x 24									2.5	3.3	4.2	5.0	5.8	6.6	7.5	8.3	9.1	10.0	12.5	14.8	16.6	
21 x 21									2.4	3.2	4.1	4.9	5.7	6.5	7.3	8.1	8.9	9.8	12.2	14.5	16.3	
21 x 24										2.8	3.6	4.3	5.0	5.7	6.4	7.1	7.8	8.6	10.7	12.7	14.3	
21 x 27										2.5	3.2	3.8	4.4	5.1	5.7	6.3	7.0	7.6	9.5	11.3	12.7	
24 x 24											3.1	3.7	4.3	5.0	5.6	6.2	6.9	7.5	9.4	11.1	12.5	
24 x 30											2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	7.5	8.9	10.0	
28 x 33												2.3	2.7	3.1	3.5	3.9	4.3	4.7	5.8	6.9	7.8	
30 x 30												2.4	2.8	3.2	3.9	4.0	4.4	4.8	6.0	7.1	8.0	

PRODUCT	PATTERN SPACINGS*
T-Spray	up to 2.0 meters
Super-Spray	up to 3.5 meters
Xcel Wob HA	up to 9.2 meters
Xcel Wob MA	up to 7.5 meters
Wobbler SA	up to 9.2 meters
Wobbler LA	up to 7.5 meters
mini-Wobbler	up to 6.0 meters
i-mini-Wobbler	up to 3.5 meters
Smooth Drive	up to 9.3 meters
20 Series Impact	up to 12.0 meters
30 Series Impact	up to 18.5 meters
40 Series Impact	up to 20.0 meters
50 Series Impact	up to 21.5 meters
70 Series Impact	up to 27.5 meters
80 Series Impact	up to 30.5 meters

* Distance between sprinklers and rows in square or triangular patterns.

Maximum Precipitation Rates for Level Ground

Soil	mm/hr
Coarse Sands	19.0 mm - 25.4 mm/hr
Fine Sands	12.7 mm - 19.0 mm/hr
Fine Sandy Loams	8.9 mm - 12.7 mm/hr
Silt Loams	6.3 mm - 10.2 mm/hr
Clay Loams	2.5 mm - 7.6 mm/hr

Maximum Sprinkler Spacings

Wind Speed	Spacing
8 kph or less	60% of wetted diameter
8-16 kph	50% of wetted diameter
over 16 kph	25-30% of wetted diameter

(Consult factory for specific information on uniformity based on your particular application)

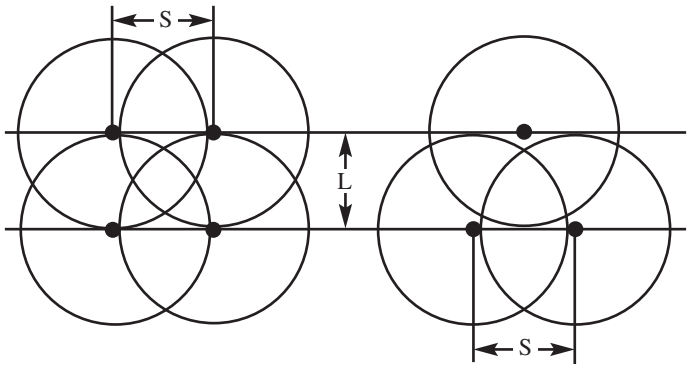
Precipitation Rate Formula

$$\text{Application Rate (mm per hour)} = \frac{\text{LPS} \times 3600}{S \times L}$$

LPS = flow per sprinkler
S = spacing of sprinklers along the lateral (in meters)
L = spacing between laterals (in meters)

(This applies to square, rectangular, or triangular spacing)

Square Spacing **Triangular Spacing**



Factors[Conversion

FLOW

TO CONVERT	INTO	MULTIPLY BY
Acre-Inch/hr	Gallons/Min (gpm)	452.6
Acre-Inch/hr	Gallons/hr	27,154.0
Cubic Feet/hr	Gallons/hr (US)	7.481
Cubic Feet/Sec	Gallons/Min (gpm)	448.831
Cubic Meters/hr	Gallons/hr (US)	264.2
Cubic Meters/hr	Gallons/Min (gpm)	4.403
Cubic Meters/hr	Liters/Sec (L/s)	0.278
Gallons/hr	Liters/hr	3.785
Gallons/Min. (gpm)	Cubic Meter/hr (m^3/hr)	0.227
Gallons/Min. (gpm)	Liters/Sec (L/s)	0.063
Liters/hr	Gallons/hr (US)	0.264
Liters/Second	Gallons/Min (gpm)	15.85
Liters/Second	Cubic Meters/hr (m^3/hr)	3.600

PRESSURE

TO CONVERT	INTO	MULTIPLY BY
Atmospheres	Kilograms/Sq. Cm	1.033
Atmospheres	Pounds/Sq. In. (psi)	14.70
Bar	Pounds/Sq. In. (psi)	14.50
Feet Head (of Water)	Pounds/Sq. In. (psi)	0.433
Gallons of Water	Pounds	8.33
Kilograms/Sq. Cm	Pounds/Sq. In. (psi)	14.22
Kilopascals (kPa)	Pounds/Sq. In. (psi)	0.145
Pounds/Sq. In. (psi)	Atmospheres	0.068
Pounds/Sq. In. (psi)	Bar	0.069
Pounds/Sq. In. (psi)	Feet Head (of Water)	2.307
Pounds/Sq. In. (psi)	Kilopascals (kPa)	6.895

AREA & LINEAR

TO CONVERT	INTO	MULTIPLY BY
Acres	Hectares	0.405
Acres	Square Feet	43,560.0
Centimeters	Inches	0.394
Feet	Meters	0.305
Hectares	Acres	2.471
Inches	Millimeters	25.40
Meters	Feet	3.281
Miles	Kilometers	1.609
Miles	Feet	5,280.0
Millimeters	Inches	0.0394

POWER

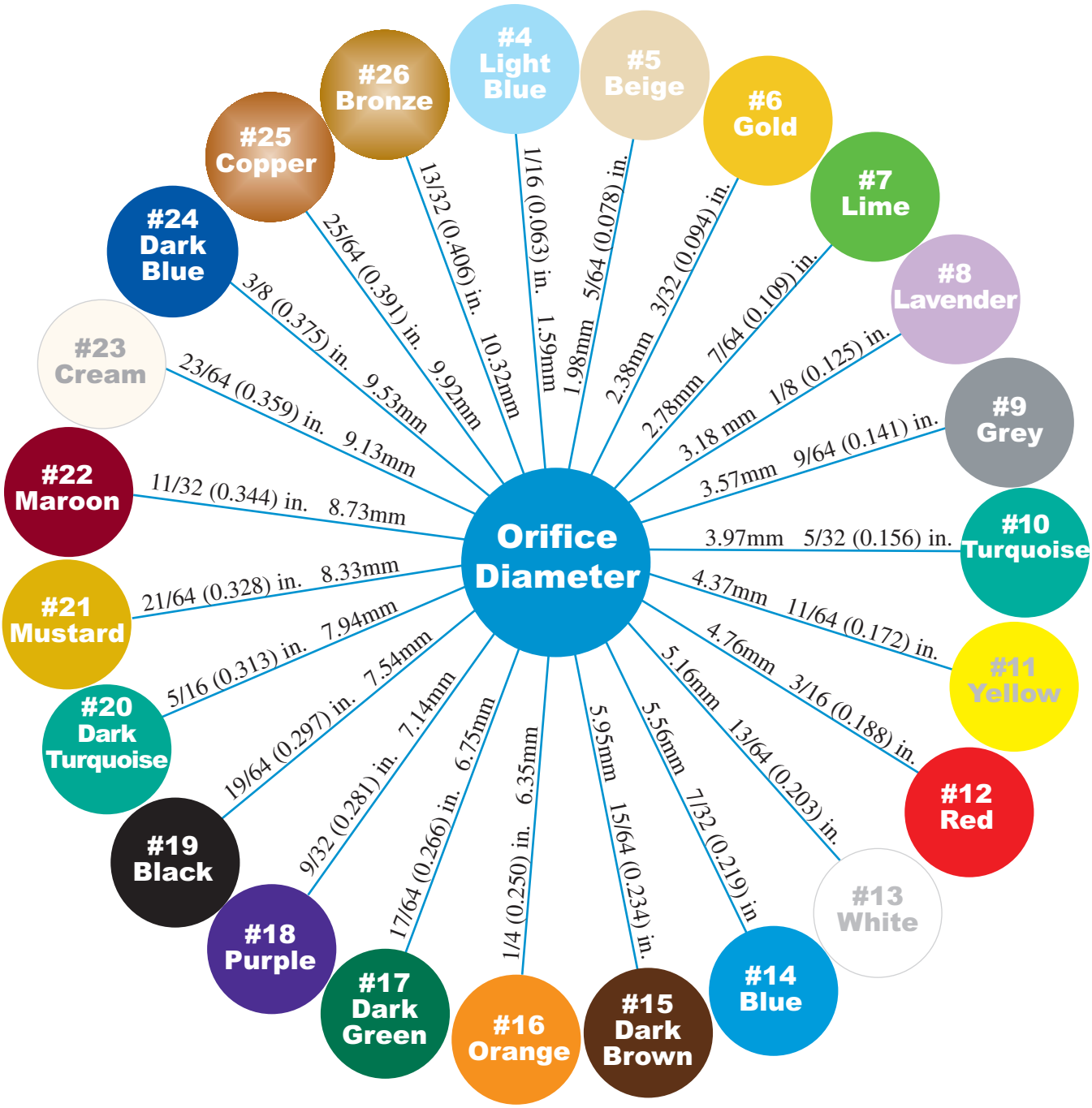
TO CONVERT	INTO	MULTIPLY BY
Horsepower	Kilowatts	0.746
Kilowatts	Horsepower	1.341

Nozzles

Nozzle and vane combinations are a critical factor in how a sprinkler performs. Senninger offers a wide range of nozzle and vane options to customize sprinklers for peak performance. For more information see our website.

FEATURES:

- Color-coded for easy size identification
- Excellent durability
- Warranted to maintain correct orifice size for five years



NOTE: Half sizes (1/128th inch increments) are also available in some models.
Range nozzles for 70 and 80 series sprinklers are not color-coded. Consult factory for more information.

Formulas[Estimation

Inside Diameters for PVC (IPSmm)

Size	125 [SDR-32.5]		160 [SDR-26]		200 [SDR-21]	
3/4"	-	-	-	-	0.950 in.	24.13 mm
1"	-	-	1.195 in.	30.35 mm	1.190 in.	30.22 mm
1-1/4"	-	-	1.532 in.	38.91 mm	1.502 in.	38.15 mm
1-1/2"	1.783 in.	45.29 mm	1.754 in.	44.55 mm	1.719 in.	43.66 mm
2"	2.229 in.	56.61 mm	2.193 in.	55.70 mm	2.149 in.	54.58 mm
2-1/2"	2.698 in.	68.53 mm	2.655 in.	67.44 mm	2.601 in.	66.07 mm
3"	3.284 in.	83.41 mm	3.230 in.	82.04 mm	3.166 in.	80.42 mm
4"	4.224 in.	107.29 mm	4.154 in.	105.51 mm	4.072 in.	103.43 mm
6"	6.217 in.	157.91 mm	6.115 in.	155.32 mm	5.993 in.	152.22 mm
8"	8.095 in.	205.61 mm	7.961 in.	202.21 mm	7.805 in.	198.25 mm
10"	10.088 in.	256.23 mm	9.924 in.	252.07 mm	9.726 in.	247.05 mm
12"	11.966 in.	303.93 mm	11.770 in.	298.95 mm	11.536 in.	293.01 mm

Calculating Friction Loss of Pipe [Hazen - Williams]

$$Hf = 1045 \frac{(GPM \div C)^{1.852}}{ID^{4.857}}$$

Hf	=	Friction Loss in Feet of Water (head) per 100 Feet of Pipe
GPM	=	Flow (gallons/minute)
C	=	Pipe Coefficient (PVC = 150; Aluminum w/couplers = 120; Galv.Steel/Asb. - Cement = 140; Cast Iron = 100)
ID	=	Pipe Inside Diameter (inches)

$$Hf = 1.22 \times 10^{12} \frac{(LPS \div C)^{1.852}}{ID^{4.857}}$$

Hf	=	Friction Loss in Meters of Water (head) per 100 Meters of Pipe
LPS	=	Flow (liters/second)
C	=	Pipe Coefficient (PVC = 150; Aluminum w/couplers = 120; Galv.Steel/Asb. - Cement = 140; Cast Iron = 100)
ID	=	Pipe Inside Diameter (millimeters)

Estimating System Pumping Requirements

$$GPM = \frac{IN \times ACRES \times 452.6}{DAYS \times HRS \times EFF}$$

GPM	=	Total flow required to operate system (gallons/minute)
IN	=	Net application depth per irrigation event (inches) *
ACRES	=	Area to be irrigated per irrigation event (acres)
DAYS	=	Number of irrigation days per irrigation event
HRS	=	Number of irrigation hours per day of irrigation event
EFF	=	System efficiency (see table below)

$$LPS = \frac{CM \times HA \times 27.8}{DAYS \times HRS \times EFF}$$

LPS	=	Total flow required to operate system (liters/second)
CM	=	Net application depth per irrigation event (centimeters)
HA	=	Area to be irrigated per irrigation event (hectares)
DAYS	=	Number of irrigation days per irrigation event
HRS	=	Number of irrigation hours per day of irrigation event
EFF	=	System efficiency (see table below)

Estimating Irrigation System Efficiencies:

Arid Regions	65%
Semi-Arid Regions	70%
Semi-Humid Regions	75%
Humid Regions	80%

Estimating Brake Horse Power Required

$$BHP = \frac{GPM \times TDH}{3960 \times EFF}$$

BHP	=	Brake horse power required
GPM	=	Flow required (gallons/minute)
TDH	=	Total dynamic head (in feet)
EFF	=	Pump efficiency stated as a decimal

$$BHP = \frac{LPS \times TDH}{102 \times EFF}$$

BHP	=	Brake horse power required
LPS	=	Flow required (liters/second)
TDH	=	Total dynamic head (in meters)
EFF	=	Pump efficiency stated as a decimal

Warning – 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 & 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, with the exception of PRLV and mining models, which 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.

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.

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