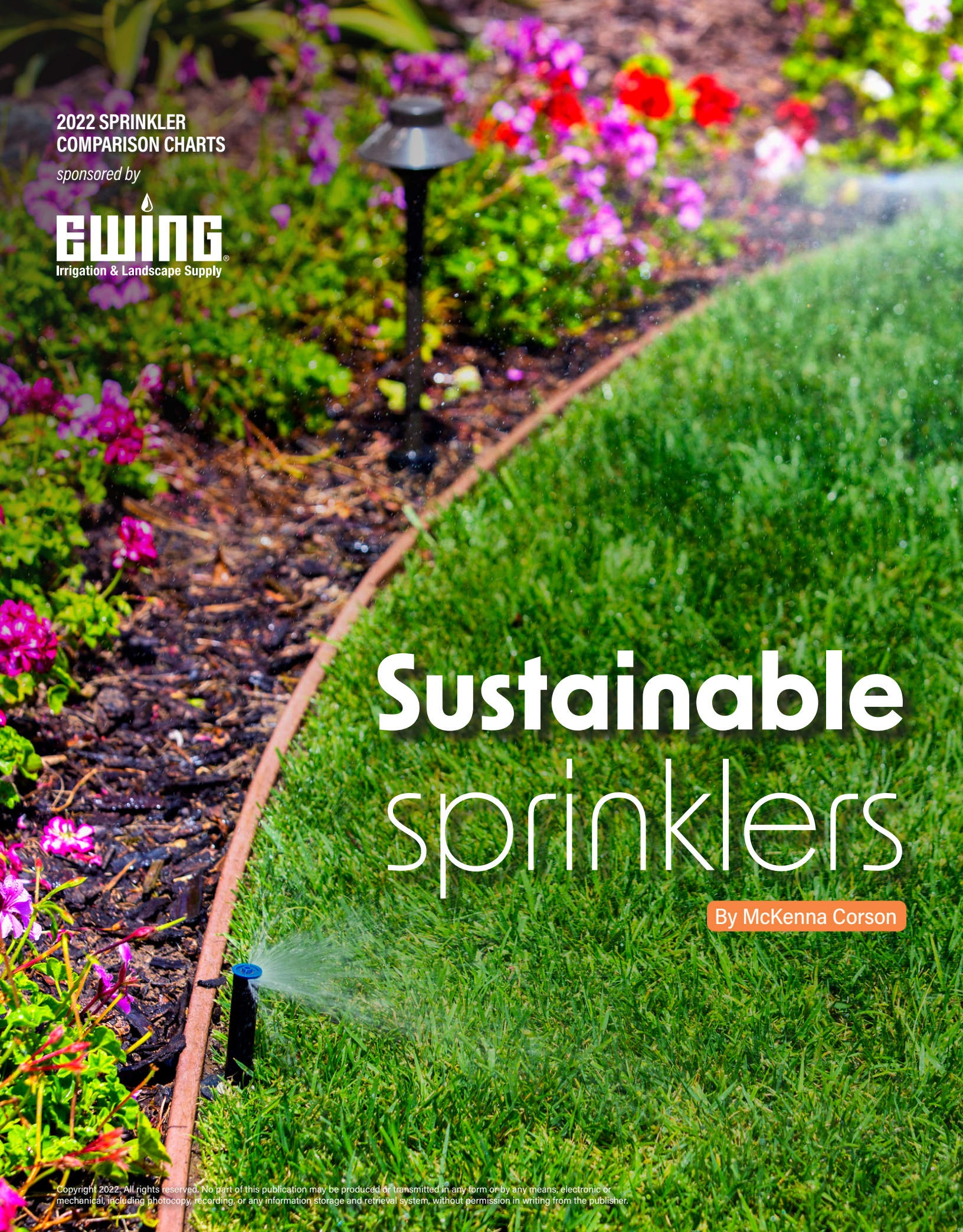

2022 SPRINKLER COMPARISON CHARTS

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Sustainable sprinklers

By McKenna Corson

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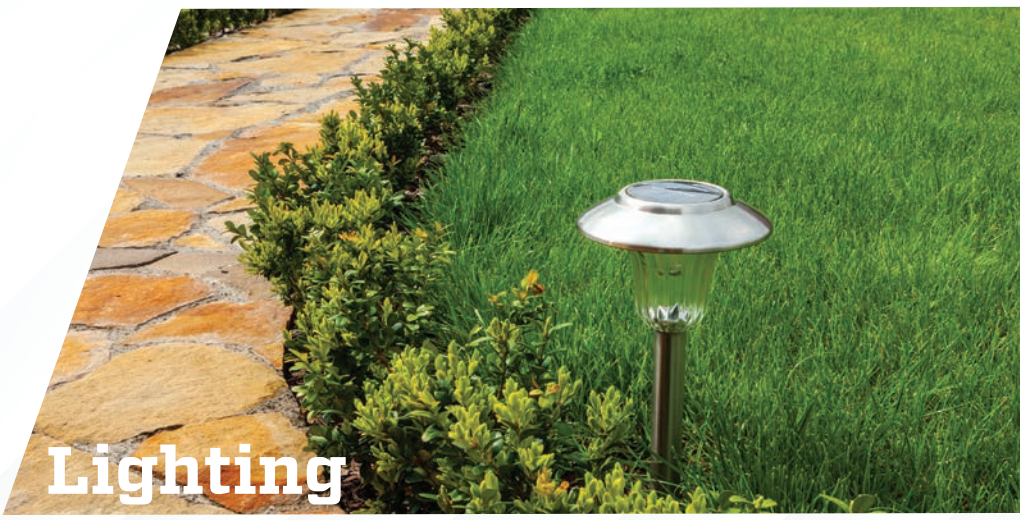

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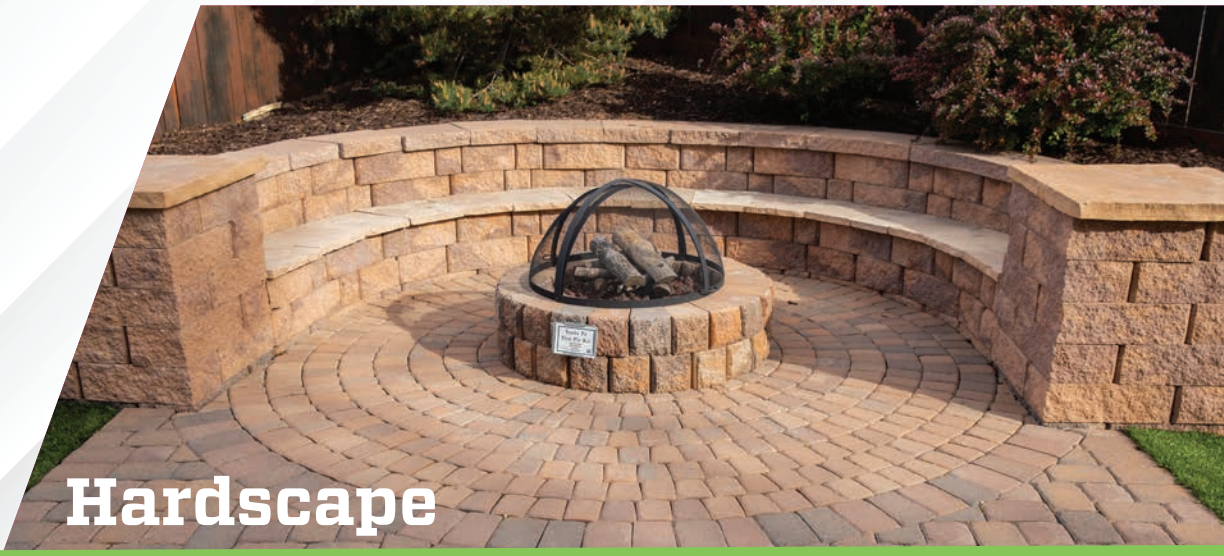

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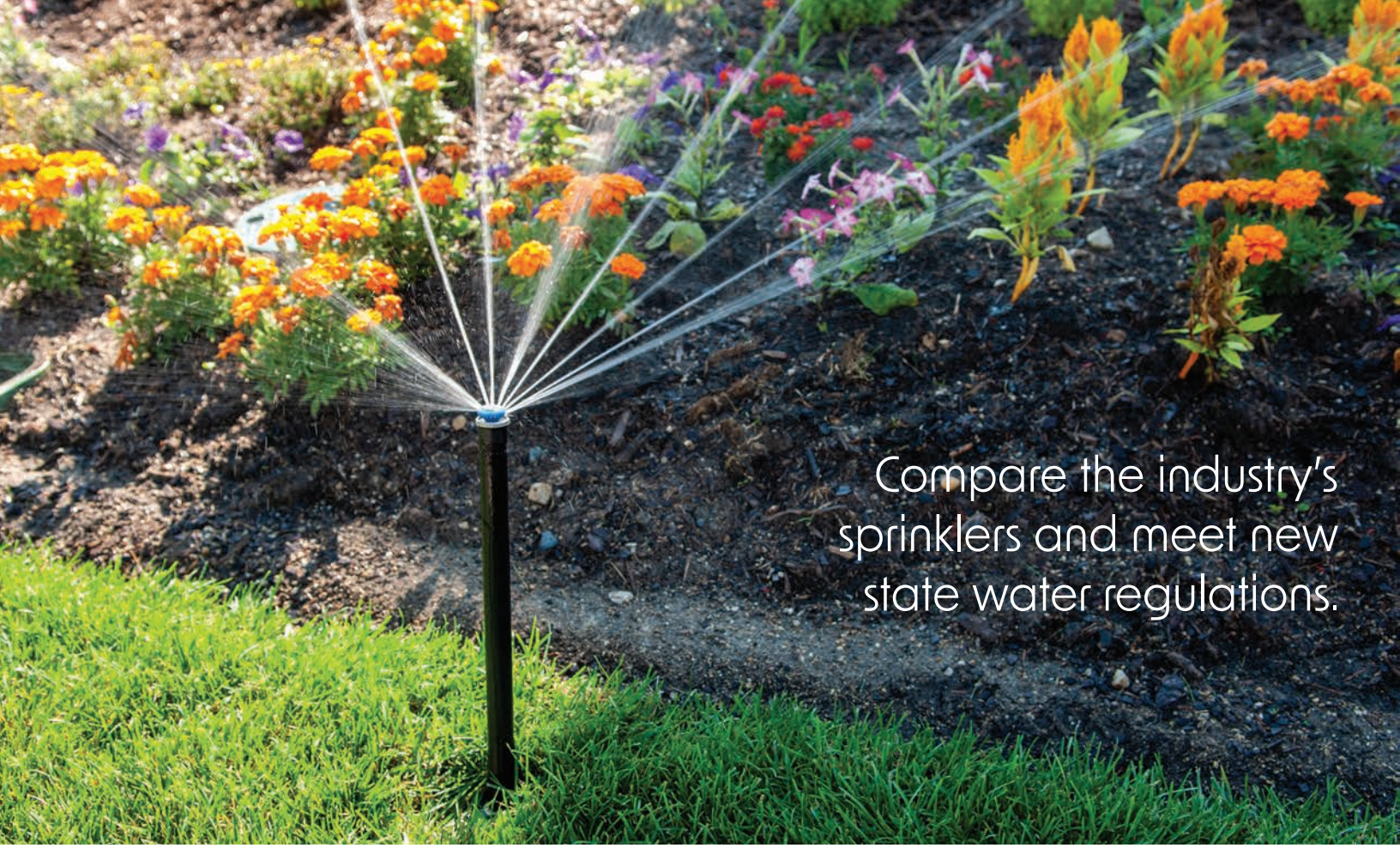


Compare the industry's sprinklers and meet new state water regulations.

Photo: Hunter Industries Inc.

Purchasing efficient sprinklers is an always changing process. Technology improves, land changes, water conservancy movements grow and states crack down on pressure regulation. Add record-level landscape irrigation demand brought on by the COVID-19 pandemic, and buying efficient sprinklers can suddenly feel daunting and unfamiliar.

Feeling the pressure

One of the biggest changes in sprinklers is this recent movement of replacing traditional sprinkler systems with water pressure-regulated models.

Pressure-regulating sprinklers manage the water pressure flowing from a sprinkler to maintain consistency throughout the overarching system. Pressure-regulating spray body sprinklers make sure the water pressure at the nozzle is either at 30 psi for standard spray nozzles or 40 to 45 psi for rotary spray nozzles, says Jack York, director of product line management at Ewing Irrigation & Landscape Supply, Phoenix, Arizona.

Sprinkler spray heads that run with a pressure above 45 to 50 psi run into fogging issues, where the water is misted into the air and doesn't reach the intended plant material.

By operating nozzles at their ideal pressure, York says sprinklers produce consistent water application for healthier lawns, last longer and use less water than non-pressure-regulating sprinklers in most applications.

"This leads to water bill savings for the property owner, a huge benefit to using these pressure-regulating sprinklers," York says.

States across the U.S. are enacting pressure regulation requirements for irrigation spray bodies to maximize water-use efficiency. This means states with related legislation prohibit distributors and retailers from selling irrigation equipment that doesn't have a pressure-regulation system.

"We continue to see states pass laws that require spray sprinkler bodies contain pressure-regulating stems," says Jessica Case, senior product manager at Rain Bird, Azusa, California. "We know (pressure regulation) saves water; it's a technology that reduces water pressure and flow with measurable water savings."

Vermont; California; Colorado; Hawaii; Maine; Massachusetts; Washington and Washington, D.C., have all introduced pressure regulation requirements. Frank Salamone, marketing manager at K-Rain Manufacturing, Riviera Beach, Florida, says additional states like Rhode Island and Maine are set to join that list in 2023.

"This will continue to expand," Salamone says.

Chris Davey, product manager at Toro, Bloomington, Minnesota, has a similar outlook on the future of pressure regulation.

"We are seeing greatly increased demand for pressure-regulated spray heads," Davey says. "The increase in demand is due to several state ordinances requiring this feature, and there are more states adopting such ordinances in the following years."

But even if a homeowner or contractor's state doesn't require pressure regulation, Case urges they still do some research and check out its benefits.

"Change can be overwhelming, but it's also an opportunity to try something new — to see how a product

Increased product demand and supply chain challenges mean contractors should plan further in the future.

you've never used might save you time, water and money," Case says.

Sprinkler type trends

While this increased need for pressure regulation drives sprinkler design trends upward, irrigation contractor purchases are also in the front seat, says Kelsey Jacquard, mechanical irrigation products manager at Hunter Industries, San Marcos, California.

When it comes to trends in sprinklers, the industry is seeing a shift in pop-up heights. Most pop-up sprinkler head heights come in shrub, 2, 3, 4, 6 or 12 inches. Four-inch pop-ups remain the most popular option, Jacquard says, but there's a shift toward 6-inch pop-ups for both spray bodies and rotors.

"Contractors want taller pop-ups as a benefit to clearing taller turfgrass and to prevent sprinklers from settling over time in the ground," Jacquard says.

There's also a continued move toward low precipitation rate, high uniformity nozzles as more states require pressure-regulated spray sprinklers to reduce water flows and optimize system efficiency.

"Low precipitation rate, high-uniformity nozzles help contractors maximize system efficiency and eliminate runoff while allowing more heads per zone for less trenching," Jacquard says. "Low-precipitation-rate rotary nozzles come in spray nozzle distances to short-radius rotor distances, all with low flows to ensure less pressure loss through the system."

Sprinkler types are also seeing new trends, particularly highlighted by a movement toward sprinklers better suited for less surface area, says Brodie Bruner, executive vice president of Weathermatic, Garland, Texas.

"The increasing cost of land is driving developers to create smaller lots sizes, which has a direct impact on the type of sprinklers being used: less rotors and more sprays and drip irrigation," Bruner says.

On top of sprinkler design and type trends, Bruner says sprinklers are seeing an increased focus on water conservation driven by consumer demand, regulations and rebates. Especially in water-starved areas, Bruner notes a shift is underway in buying behavior from "good enough quality at a low price" to "a higher standard of water use efficiency and performance providing a lower, more sustainable cost of system ownership."

"Irrigation contractors are more frequently being driven by customer demand for water conservation and building code requirements," Bruner says. "Therefore, professionals are upgrading traditional sprinkler purchases to more full-featured models with pressure regulation, check valves and low volume drip irrigation and microsprays."

But as the world witnesses growing water costs and supply and labor shortages, Bruner says that putting in new water-conserving systems can alleviate installation and maintenance prices.

"As inflation is driving up the cost of materials and labor, the increased water use efficiency provided by progressive irrigation contractors is helping add value that justifies increased prices when viewed in context of rising water costs," Bruner says.

Also impacted by the shortage in supplies and work force is how contractors schedule and go about their work, Case says.

"Increased demand for irrigation products and supply chain challenges generally have irrigation contractors planning projects further in the future," says Case.

A promising future

While the pandemic unleashed a bevy of negatives, the irrigation industry found a renewed, possibly long-lasting niche.

"Declared an essential industry, the irrigation industry as a whole continued and continues to work during the pandemic," Salamone says. "And considering that there is money in the economy being spent on commercial construction and in the housing market, with that comes new installation as well as upgrading and repairing existing systems."

The author is the digital content editor for *Irrigation & Lighting* and can be reached at mckennacorson@irrigation.org.

> Change can be overwhelming, but it's also an opportunity to try something new — to see how a product you've never used might save you time, water and money.
>
> – Jessica Case, Rain Bird

States across the nation are introducing water pressure regulation requirements for irrigation spray bodies. Experts in the irrigation industry predict legislation of this nature to increase as water conservancy efforts only grow.

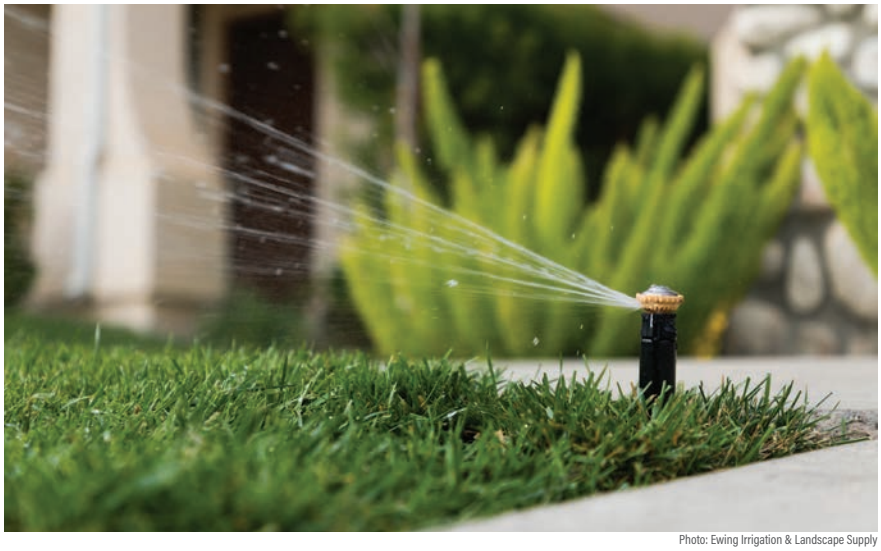


Photo: Ewing Irrigation & Landscape Supply

Photo: Rain Bird

2022 SPRINKLER COMPARISON CHARTS

Editor's note: Information presented in these charts was provided by manufacturers. Please contact the manufacturer directly for more details.

Legend

B.....brass
CT.....continuous
CV.....check valve
F.....full
FC.....full circle
FSO.....flow shut-off
HS.....high speed
LA.....low angle
NP.....nonpotable
ON.....opposing nozzle
P.....part
Pl.....plastic
sh.....spray head
SS.....stainless steel
STD.....standard
ZDC.....zinc die cast

To download a copy of these comparison charts, go to irrigationandlighting.org/2022-sprinkler-comparison-charts.

VARIABLE ARC NOZZLES

Inlet size (in.)	M or F thread	Manufacturer	Model	Series	Nozzle	Pattern (degrees)	Operation pressure (psi)	Radius	Discharge rate (gpm)	Precipitation rate (in./hr.)
n/a	F	Hunter	4A	Pro-adjustable	4-ft. adj.	0-360	20-40	3-4	0.11-0.9	~ 4.0
n/a	F	Hunter	6A	Pro-adjustable	6-ft. adj.	0-360	20-40	4-6	0.15 -1.4	~ 3.5
n/a	F	Hunter	8A	Pro-adjustable	8-ft. adj.	0-360	20-40	7-9	0.18-2	~ 2.65
n/a	F	Hunter	10A	Pro-adjustable	10-ft. adj.	0-360	20-40	9-11	0.2-2.36	~ 1.9
n/a	F	Hunter	12A	Pro-adjustable	12-ft. adj.	0-360	20-40	11-13	0.25-3.36	~ 1.7
n/a	F	Hunter	15A	Pro-adjustable	15-ft. adj.	0-360	20-40	14-17	0.39-4.52	~ 1.6
n/a	F	Hunter	17A	Pro-adjustable	17-ft. adj.	0-360	20-40	16-19	0.49-5.52	~ 1.6
5/8	F	Hydro-Rain	HRN-200-04-ADJ	Adjustable nozzle	4-ft. adj.	0-360	15-70	4-6	0.61-3.36	8.97-17.03
5/8	F	Hydro-Rain	HRN-200-08-ADJ	Adjustable nozzle	8-ft. adj.	0-360	15-70	7-9	0.39-2.11	2.33-3.49
5/8	F	Hydro-Rain	HRN-200-10-ADJ	Adjustable nozzle	10-ft. adj.	0-360	15-70	9-11	0.39-2.11	1.68-2.11
5/8	F	Hydro-Rain	HRN-200-12-ADJ	Adjustable nozzle	12-ft. adj.	0-360	15-70	11-13	0.51-2.6	1.37-1.71
5/8	F	Hydro-Rain	HRN-200-15-ADJ	Adjustable nozzle	15-ft. adj.	0-360	15-70	13-16	0.59-3.17	1.19-1.54
5/8	F	Hydro-Rain	HRN-200-18-ADJ	Adjustable nozzle	18-ft. adj.	0-360	15-70	15-19	0.68-3.84	1.02-1.34
n/a	F	Irritrol	PRO-VAN8	Variable Arc	8-ft. VAN	0-360	20-50	8-10	0.53-2.78	2.59-5.42
n/a	F	Irritrol	PRO-VAN10	Variable Arc	10-ft. VAN	0-360	20-50	10-13	0.62-3.59	1.19-4.45
n/a	F	Irritrol	PRO-VAN12	Variable Arc	12-ft. VAN	0-360	20-50	11-14	0.75-3.62	1.51-3.74
n/a	F	Irritrol	PRO-VAN15	Variable Arc	15-ft. VAN	0-360	20-50	14-17	1.0-4.31	1.18-3.08
n/a	F	Irritrol	PRO-VAN17	Variable Arc	17-ft. VAN	0-360	20-50	15-18	1.2-4.6	0.97-2.92
n/a	F	K-Rain	KVF8	High Efficiency KVF Nozzles	8-ft. adj.	0-360	20-40	9-11	0.39-2.3	1.62-2.59
n/a	F	K-Rain	KVF10	High Efficiency KVF Nozzles	10-ft. adj.	0-360	20-40	10-12	0.45-2.8	1.65-2.16
n/a	F	K-Rain	KVF12	High Efficiency KVF Nozzles	12-ft. adj.	0-360	20-40	12-14	0.65-3.5	1.47-2.04
n/a	F	K-Rain	KVF15	High Efficiency KVF Nozzles	15-ft. adj.	0-360	20-40	14-17	0.75-4.6	1.45-1.88
n/a	F	K-Rain	KVF17	High Efficiency KVF Nozzles	17-ft. adj.	0-360	20-40	17-18	0.85-4.8	1.13-1.65
n/a	M	K-Rain	KV8	KV Nozzles	8-ft. adj.	0-360	20-50	7-9	0.3-2.3	1.9-3.82
n/a	M	K-Rain	KV10	KV Nozzles	10-ft. adj.	0-360	20-50	10-13	0.7-3.5	1.87-3.68
n/a	M	K-Rain	KV12	KV Nozzles	12-ft. adj.	0-360	20-50	11-15	1.1-3.9	2.02-3.42
n/a	M	K-Rain	KV15	KV Nozzles	15-ft. adj.	0-360	20-50	14-19	1.3-5.3	1.58-2.57
n/a	M	K-Rain	KV17	KV Nozzles	17-ft. adj.	0-360	20-50	15-20	1.7-5.4	1.27-2.47
1/2	F	Rain Bird	HE-VAN-08	HE-VAN Series	8-ft. HE-VAN	0-360	15-30	5-8	0.21-1.17	1.76-3.19
1/2	F	Rain Bird	HE-VAN-10	HE-VAN Series	10-ft. HE-VAN	0-360	15-30	7-10	0.32-1.78	1.72-2.48
1/2	F	Rain Bird	HE-VAN-12	HE-VAN Series	12-ft. HE-VAN	0-360	15-30	9-12	0.42-2.37	1.58-1.99
1/2	F	Rain Bird	HE-VAN-15	HE-VAN Series	15-ft. HE-VAN	0-360	15-30	11-15	0.65-3.7	1.58-2.08
1/2	F	Rain Bird	4VAN	VAN	4-ft. VAN	0-330	15-30	3-4	0.21-0.88	4.93-10.27
1/2	F	Rain Bird	6VAN	VAN	6-ft. VAN	0-330	15-30	4-6	0.26 -1.2	3.21-6.34
1/2	F	Rain Bird	8VAN	VAN	8-ft. VAN	0-330	15-30	6-8	0.51-1.7	2.79-5.46
1/2	F	Rain Bird	10VAN	VAN	10-ft. VAN	0-360	15-30	7-10	0.48-2.6	2.5-3.8
1/2	F	Rain Bird	12VAN	VAN	12-ft. VAN	0-360	15-30	9-12	0.39-2.36	1.58-1.86
1/2	F	Rain Bird	15VAN	VAN	15-ft. VAN	0-360	15-30	11-15	0.65-3.7	1.58-2.07
1/2	F	Rain Bird	18VAN	VAN	18-ft. VAN	0-360	15-30	14-18	1.05-5.32	1.59-2.07
n/a	M	Toro	TVAN8	Variable Arc	8-ft. VAN	0-360	20-50	7-9	0.58-1.96	2.08-5.26
n/a	M	Toro	TVAN10	Variable Arc	10-ft. VAN	0-360	20-50	9-10	0.59-2.69	2.06-4.18
n/a	M	Toro	TVAN12	Variable Arc	12-ft. VAN	0-360	20-50	10-13	0.76-3.47	2.00-3.38
n/a	M	Toro	TVAN15	Variable Arc	15-ft. VAN	0-360	20-50	13-16	1.06-4.33	1.40-2.88
n/a	M	Toro	TVAN17	Variable Arc	17-ft. VAN	0-360	20-50	15-18	1.25-4.71	1.02-2.57
1/2	F	Weathermatic	6700	6700	6-12, 7LA, 10LA	20-360	25-60	23-43	1.5-6.3	0.24-1.3

ROTATING NOZZLES

Manufacturer	Model	Series	Nozzle	M or F thread	Pattern (degrees)	Operating pressure (psi)	Radius (ft.)	Discharge rate (gpm)	Precipitation rate (in./hr.)
Hunter	MP-1000	MP-1000	adj. arc/radius	M or F	90-210, 210-270, 360	30-55	8-15	0.17-1.01	~ 0.4
Hunter	MP-2000	MP-2000	adj. arc/radius	M or F	90-210, 210-270, 360	25-55	13-21	0.34-1.74	~ 0.4
Hunter	MP-3000	MP-3000	adj. arc/radius	M or F	90-210, 210-270, 360	25-55	22-30	0.71-4.27	~ 0.4
Hunter	MP-3500	MP-3500	adj. arc/radius	F	90-210	25-55	31-35	1.04-3.94	~ 0.4
Hunter	MP Corner	MP Specialty	adj. arc/radius	M or F	45-105	30-55	8-15	0.17-0.53	~ 0.4
Hunter	MP Left Corner Strip	MP Specialty	adj. radius	M or F	strip	30-55	5×15	0.19-0.26	—
Hunter	MP Side Strip	MP Specialty	adj. radius	M or F	strip	30-55	5×30	0.38-0.51	—
Hunter	MP Right Corner Strip	MP Specialty	adj. radius	M or F	strip	30-55	5×15	0.19-0.26	—
Hunter	MP-800SR	MP-800SR	adj. arc/radius	F	90-210, 360	30-55	6-12	0.16-0.98	~ 0.8
Hunter	MP-815	MP-815	adj. arc/radius	F	90-210, 210-270, 360	30-55	8-16	0.42-2.26	~ 0.8
K-Rain	RN100 – options available	Rotary Nozzle	adj. arc/radius, fixed 360	F	90-270, fixed 360	30-50	13-15	0.22-1.2	0.46-0.51
K-Rain	RN200 – options available	Rotary Nozzle	adj. arc/radius, fixed 360	F	90-270, fixed 360	30-50	16-19	0.34-1.88	0.45-0.51
K-Rain	RN300 – options available	Rotary Nozzle	adj. arc/radius, fixed 360	F	90-270, fixed 360	30-50	26-30	0.8-3.7	0.39-0.55
K-Rain	RNS-RES-515	Rotary Nozzle	fixed	F	fixed-right end strip	30-50	4×15 - 6×15	0.3-0.4	—
K-Rain	RNS-LES-515	Rotary Nozzle	fixed	F	fixed-left end strip	30-50	4×15 - 6×16	0.3-0.4	—
K-Rain	RNS-SS-530	Rotary Nozzle	fixed	F	fixed-side strip	30-50	4×29 - 7×32	0.5-0.7	—
K-Rain	RN-100ADJ	Rotary Nozzle	adj. arc/radius	F	80-360	30-50	13-15	0.22-1.2	0.49-0.51
K-Rain	RN-200ADJ	Rotary Nozzle	adj. arc/radius	F	80-360	30-50	16-19	0.34-1.9	0.49-0.51
K-Rain	RN-300ADJ	Rotary Nozzle	adj. arc/radius	F	80-360	30-50	26-30	0.8-3.8	0.41-0.48
Rain Bird	R-VAN14 – options available	R-VAN	8 to 14 ft. adj. R-VAN	F	45-360	30-55	8-14	0.28-1.45	0.6-0.67
Rain Bird	R-VAN18 – options available	R-VAN	13 to 18 ft. adj. R-VAN	F	45-360	30-55	13-18	0.42-2.11	0.6-0.68
Rain Bird	R-VAN24 – options available	R-VAN	17 to 24 ft. adj. R-VAN	F	45-360	30-55	17-24	0.6-3.74	0.6-0.63
Rain Bird	R-VAN-LCS	R-VAN	left corner strip R-VAN	F	left strip	30-55	5×15	0.18-0.28	0.56-0.64
Rain Bird	R-VAN-RCS	R-VAN	right corner strip R-VAN	F	right strip	30-55	5×15	0.18-0.28	0.56-0.64
Rain Bird	R-VAN-SST	R-VAN	side strip R-VAN	F	side strip	30-55	5×30	0.36-0.56	0.56-0.64
Toro	PRN-TA	Precision	gear-driven rotary	M	45-270	20-75	14-26	0.17-2.6	0.6
Toro	PRN-TF	Precision	gear-driven rotary	M	360	20-75	14-26	1.81-3.68	0.6

IMPACT SPRINKLERS

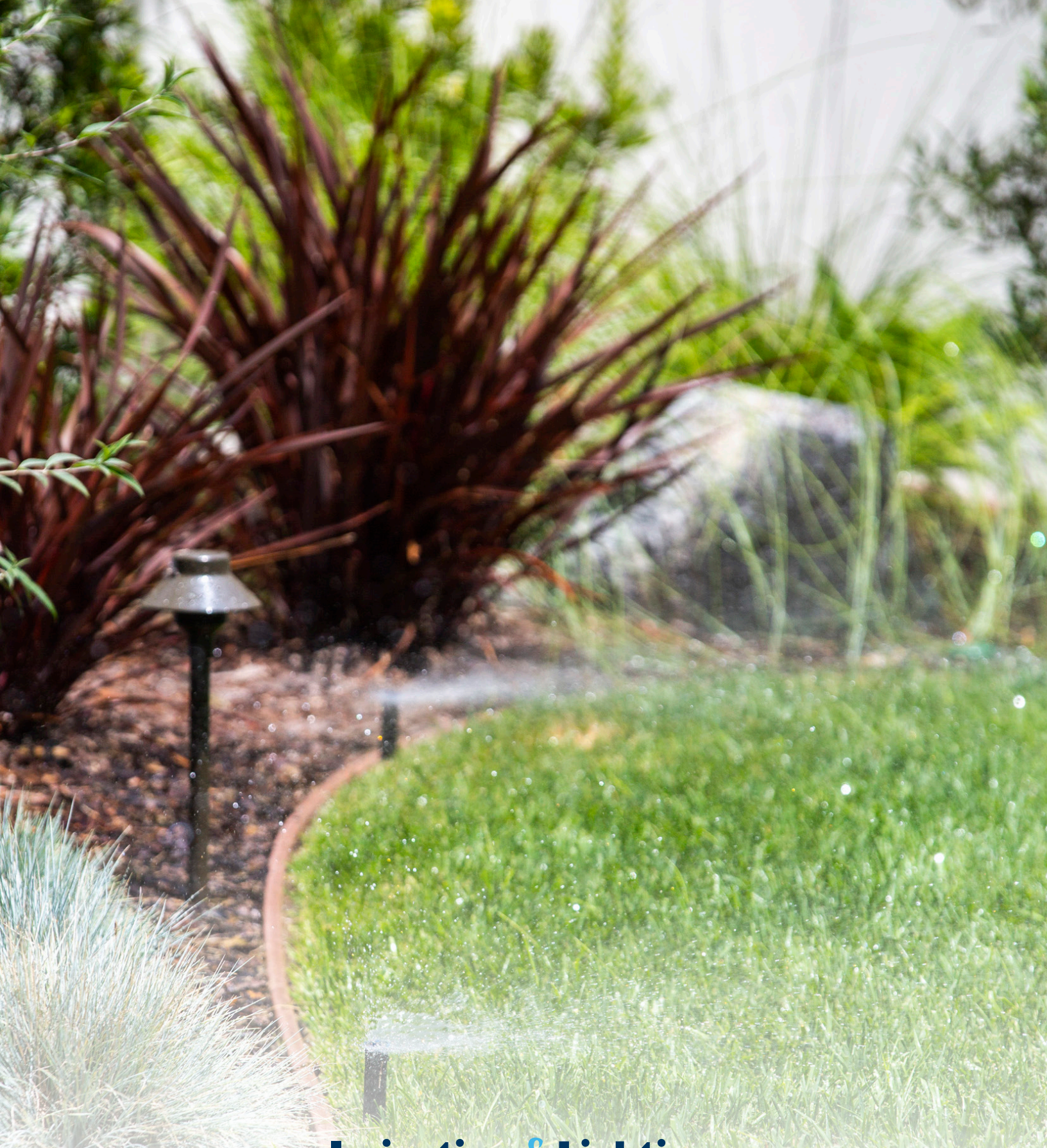
Inlet size (in.)	Manufacturer	Model	Series	Nozzle	Pattern	Operation pressure (psi)	Radius (ft.)	Discharge rate (gpm)	Precipitation rate (in./hr.)	Gear drive
1/2	Buckner	17023W	n/a	B	F	25-60	33-44	1.28-5.48	n/a	no
1/2	Buckner	17023R	n/a	B	F	25-60	33-44	1.28-5.48	n/a	no
1/2	Buckner	170W-23W	n/a	B	F	25-60	31-41	0.33-3.51	0.03-0.16	no
1/2	Buckner	170W-23R	n/a	B	F	25-60	29-38	0.56-2.67	0.05-0.17	no
1/2	Buckner	170W-15RP	n/a	B	F	25-50	25-35	0.56-2.45	0.04-0.27	no
1/2	Buckner	90SD	n/a	B	F/P	25-55	35-48	3.54-5.44	0.28-0.35	no
1/2	Buckner	65P	n/a	PI	F/P	25-60	33-47	3.54-5.64	0.34-0.29	no
1/2	Buckner	90DZ	n/a	ZDC	F/P	25-55	34-47	2.11-5.64	0.2-0.28	no
3/4	Buckner	2000SX	n/a	B	F	35-80	40-60	2.53-15.71	0.32-0.56	no
3/4	Buckner	261SDX	n/a	B	F/P	30-60	41-50	3.94-13.73	0.26-0.61	no
1	Buckner	300SAX	n/a	B	F	40-80	47-80	14.61-46.59	0.47-0.89	no
1	Buckner	350SAX	n/a	B	F	40-80	47-80	6.32-46.59	0.29-0.73	no
1	Buckner	360SA	n/a	B	F/P	35-100	49-82	7.75-44.01	0.36-0.73	no
1 1/4	Buckner	AI120	n/a	B	F	55-95	75-113	24.9-121	0.52-1.05	no
1 1/4	Buckner	400S	n/a	B	F	65-100	85-117	34.62-132.18	0.35-0.7	no
1 1/4	Buckner	AI123	n/a	B	F/P	55-95	73-113	24.9-121	0.52-1.05	no
1 1/4	Buckner	AI120	n/a	B	F	55-95	73-113	24.9-121	0.52-1.05	no
1 1/4	Buckner	400S	n/a	B	F	65-100	85-117	34.62-132.18	0.35-0.7	no
1 1/4	Buckner	AI123	n/a	B	F/P	55-95	73-113	24.9-121	0.52-1.05	no
1/2 or 3/4	Irritrol	Titan	Titan	PI	partial/FC	30-50	32-45	1.5-7.5	0.14-0.42	no
1/2 or 3/4	K-Rain	ST-IS45	SureThrow	2.9-4.0	15- 360	28-57	37-42	2.0-5.2	0.28-0.56	no
1/2 or 3/4	Rain Bird	2045A	Maxi-Paw P/FC	6-12 Std., 7-10 LA	20-360	25-60	22-45	1.5-8.4	0.28-1.21	no
1/2 or 3/4	Rain Bird	2045A-SAM	Maxi-Paw P/FC w/CV	6-12 Std., 7-10 LA	20-360	25-60	22-45	1.5-8.4	0.28-1.21	no
1/2 or 3/4	Rain Bird	2045A-SAM-NP	Maxi-Paw NP P/FC w/CV	6-12 Std., 7-10 LA	20-360	25-60	22-45	1.5-8.4	0.28-1.21	no
1/2	Rain Bird	2045PJ	Maxi-Bird	6-12 Std., 7-10 LA	20-360	25-60	22-45	1.5-8.4	0.28-1.21	no
2	Rain Bird	XLR	XLR P/FC	12-28	20-360	30-120	80-202	35-379	n/a	no
11/2	Toro	TS120V	TS120	PI	partial/FC	45-120	62-125	21-121	n/a	no

ROTORS

Inlet size (in.)	Manufacturer	Model	Series	Nozzle	Pattern (degrees)	Operation pressure	Radius (ft.)	Discharge rate (gpm)	Precipitation rate (in./hr.)	Gear drive
1/2	Hunter	SRM	4" Plastic	8PI	adj. 40-360	30-50	14-34	0.42-4.3	~ 0.49	yes
1/2	Hunter	PGJ	Shrub, 4", 6", 12" Plastic	8 PI	adj. 40-360	30-50	14-34	0.42-4.3	~ 0.49	yes
3/4	Hunter	PGP-ADJ	4" Plastic	27 PI	adj. 40-360	30-70	22-52	0.5-14.1	~ 0.4	yes
3/4	Hunter	PGP Ultra	Shrub, 4", 6", 12" Plastic	34 PI	adj. 50-360	30-70	22-52	0.36-14.8	~ 0.4	yes
3/4	Hunter	I-20	Shrub, 4", 6", 12" Plastic or stainless	30 PI	adj. 50-360	30-70	17-47	0.36-14.8	~ 0.4	yes
1	Hunter	I-25	4", 6" Plastic or stainless	12 PI	adj. 50-360	40-100	40-71	3.8-31.5	~ 0.4	yes
1	Hunter	I-40	4", 6" Stainless, opposing nozzle	6 PI	adj. 50-360	40-100	45-76	7.0-33.7	~ 0.4	yes
1	Hunter	I-50	6" Stainless, opposing nozzle	6 PI	adj. 50-360	40-100	45-76	7.0-33.7	~ 0.4	yes
1	Hunter	I-80	3-3/4" Plastic, opposing nozzle	7 PI	adj. 60-360	40-100	63-97	20.2-59.6	~ 0.6	yes
1 1/2	Hunter	I-90	3" Plastic, opposing nozzle	8 PI	adj. 40-360	60-100	66-103	29.5-83.3	~ 0.6	yes
3/4	Hydro-Rain	HRX-075-ADJ	HRX - 4" Plastic	5 STD, 5 LA	Adj. 40-360	20-70	24-52	0.7-9.6	0.18-1.03	yes
1/2	Irritrol	430R	430R	PI	partial/FC	30-50	20-35	0.8-3.4	0.28-0.65	yes
3/4	Irritrol	550R	550R	PI	partial/FC	25-65	25-50	0.74-9.7	0.2-0.99	yes
1/2	K-Rain	13003	MiniPro 4"	5 STD	adj. 40-360	20-70	18-33	0.8-3.8	0.26-0.60	yes
1/2	K-Rain	13006	MiniPro 6"	5 STD	adj. 40-360	20-70	18-33	0.8-3.8	0.26-0.60	yes
1/2	K-Rain	13012	MiniPro 12"	5 STD	adj. 40-360	20-70	18-33	0.8-3.8	0.26-0.60	yes
1/2	K-Rain	RPS50	RPS50	5 STD	adj. 40-360	20-70	18-33	0.8-3.8	0.26-0.60	yes
3/4	K-Rain	RPS75 - options available	RPS75	8 STD, 4 LA	adj. 40-360	20-70	22-51	0.7-8.3	0.16-1.01	yes
3/4	K-Rain	60003	RPS Select	4 built-in	adj. 40-360	20-70	33-46	1.3-6.8	0.23-0.71	yes
3/4	K-Rain	RPS75i - options available	RPS 75i	9 STD, 4 LA	adj. 40-360	20-70	26-48	0.9-9.7	0.22-0.98	yes
3/4	K-Rain	11003	ProPlus	9 STD, 4 LA	adj. 40- continuous 360	20-70	22-50	0.5-10	0.12-0.88	yes
3/4	K-Rain	10003 - options available	SuperPro	9 STD, 4 LA	adj. 40-continuous 360	20-70	26-46	1.1-11.1	0.21-1.22	yes
1	K-Rain	14053 - options available	ProSport High Speed	6 STD	adj. 40-continuous 360	40-90	43-77	5.9- 32.5	0.61-1.56	yes
1	K-Rain	14003 - options available	ProSport	6 STD	adj. 40-continuous 361	40-90	43-77	5.1-29.2	0.48-1.34	yes
1/2	Rain Bird	3500SPCSAM	3500 shrub PC w/CV	0.75-4	40-360	25-55	15-35	0.54-4.6	0.37-0.83	yes
1/2	Rain Bird	3504 - options available	3500 4" PC	0.75-4	40-360	25-55	15-35	0.54-4.6	0.37-0.83	yes
3/4	Rain Bird	5000SPCSAM - options available	5000 shrub PC w/CV	1-8 Std, 1-3 LA, MPR	40-360	25-65	25-50	0.76-9.63	0.2-1.5	yes
3/4	Rain Bird	5004 (PC or FC) - options available	5000 (PC or FC) 4"	1-8 Std, 1-3 LA, MPR	40-360	25-65	25-50	0.76-9.63	0.2-1.5	yes
3/4	Rain Bird	5006PC - options available	5000 6"	1-8 Std, 1-3 LA, MPR	40-360	25-65	25-50	0.73-9.63	0.2-1.5	yes
3/4	Rain Bird	5012+PCSAMR - options available	5000+ 12" w/PR	1-8 Std, 1-3 LA, MPR	40-360	25-65	25-50	0.73-9.63	0.2-1.5	yes
1	Rain Bird	6504 (PC or FC) - options available	Falcon 6504 (PC or FC) w/CV	4-18	40-360	30-90	39-65	2.9-21.7	0.37-1.31	yes
1	Rain Bird	8005 - options available	8005 P/FC w/CV	4-26	50-360	50-100	39-81	3.8-36.3	0.48-1.28	yes
1/2	Toro	Mini8-4P	Mini 8	PI	partial/FC	30-60	20-35	0.8-3.4	0.24-0.54	yes
3/4	Toro	Stream Rotor	300	PI	9 arcs	35-50	15-33	0.57-7.5	0.33-1.35	yes
3/4	Toro	T5P-RS	T5 RapidSet	PI	partial/FC	25-65	25-50	0.76-9.63	0.2-0.99	yes
1	Toro	T7P	T7	PI	partial/FC	40-100	40-75	1.7-30.6	0.62-1.42	yes
1	Toro	640	640	PI	partial/FC	40-90	47-67	6-25	0.26-4.91	yes
1	Toro	TS90	TS90	PI	partial/FC	40-100	53-95	14-61.5	0.46-0.63	yes
2	Toro	TS170V	TS170	PI	partial/FC	60-115	111-177	113-303	n/a	piston
2 1/2	Toro	P2S	P2	PI	partial/FC	60-115	105-180	70-267	n/a	piston
3	Toro	P2M	P2	PI	partial/FC	70-115	138-226	131-535	n/a	piston
3/4	Weathermatic	T3	T	1, 1.5, 2, 3, 3.5, 4, 6, 8, 9, 13	40-360	30-70	28-61	0.7-14.9	0.17-0.89	yes
3/4	Weathermatic	T3	T	2.0LA, 2.5LA, 3.5LA, 4.5LA	40-360	30-50	29-37	1.6-4.1	0.34-0.67	yes
3/4	Weathermatic	T3-36	T	1, 1.5, 2, 3, 3.5, 4, 6, 8, 9, 13	360	30-70	28-61	0.7-14.9	0.17-0.89	yes
3/4	Weathermatic	T3-36	T	2.0LA, 2.5LA, 3.5LA, 4.5LA	360	30-50	29-37	1.6-4.1	0.34-0.67	yes
3/4	Weathermatic	T3SS	T- SS	1, 1.5, 2, 3, 3.5, 4, 6, 8, 9, 13	40-360	30-70	28-61	0.7-14.9	0.17-0.89	yes
3/4	Weathermatic	T3SS	T- SS	2.0LA, 2.5LA, 3.5LA, 4.5LA	40-360	30-50	29-37	1.6-4.1	0.34-0.67	yes
3/4	Weathermatic	T3-36SS	T-SS	1, 1.5, 2, 3, 3.5, 4, 6, 8	360	30-70	28-61	0.7-14.9	0.17-0.89	yes
3/4	Weathermatic	T3-36SS	T-SS	2.0LA, 2.5LA, 3.5LA, 4.5LA	360	30-50	29-37	1.6-4.1	0.34-0.67	yes
3/4	Weathermatic	T3S	T-shrub	1, 1.5, 2, 3, 3.5, 4, 6, 8, 9, 13	40-360	30-70	28-61	0.7-14.9	0.17-0.89	yes
3/4	Weathermatic	T3S	T-shrub	2.0LA, 2.5LA, 3.5LA, 4.5LA	40-360	30-50	29-37	1.6-4.1	0.34-0.67	yes
3/4	Weathermatic	T35	T	1, 1.5, 2, 3, 3.5, 4, 6, 8, 9, 13	40-360	30-70	28-61	0.7-14.9	0.17-0.89	yes
3/4	Weathermatic	T35	T	2.0LA, 2.5LA, 3.5LA, 4.5LA	40-360	30-50	29-37	1.6-4.1	0.34-0.67	yes
1	Weathermatic	CT70	CT	71-73	40-360	40-80	49-61	8.1-17.8	0.65-1.06	yes
3/4	Weathermatic	6000	6000	4, 5, 6, 7, 8, 9, 10, 11	40-360	20-65	30-51	1.0-9.5	0.21-0.88	yes
3/4	Weathermatic	6000	6000	4LA, 5LA, 6LA, 7LA, 8LA, 9LA, 10LA	40-360	20-65	26-42	0.9-7.5	0.26-1.02	yes
1	Weathermatic	6500	6500	61, 62, 63, 64	40-360	45-75	44-60	2.8-13.2	0.23-0.84	yes
1	Weathermatic	6513	6500	61, 62, 63, 64	40-360	45-75	43-51	2.8-13.2	0.29-1.13	yes
1	Weathermatic	7500	7500	3, 4, 5, 6, 7, 8	40-360	45-90	53-74	9.4-27.5	0.64-1.21	yes
1	Weathermatic	7513	7500	3, 4, 5, 6, 7, 8	40-360	45-90	48-64	9.4-27.5	0.79-1.61	yes
1	Weathermatic	CT70	CT	74, 75	40-360	60-90	59-74	16.6-28	0.92-1.15	yes
1	Weathermatic	CT70-36	CT	71, 72, 73, 74, 75	360	40-90	49-74	8.1-28	0.65-1.15	yes
1	Weathermatic	CT70SS	CT SS	71, 72, 73, 74, 75	40-360	40-90	49-74	8.1-28	0.65-1.15	yes
1	Weathermatic	CT70-36SS	CT SS	71, 72, 73, 74, 75	360	40-90	49-74	8.1-28	0.65-1.15	yes

SPRAY HEADS

Inlet size (in.)	Manufacturer	Model	Series	Nozzle	M or F thread	Pattern (degrees)	Operation pressure (psi)	Radius (ft.)	Discharge rate (gpm)	Precipitation rate (in./hr.)	Gear drive
1/2	Hit Products	907T	900 Telescopic	fixed/adj.	M	20-360	20-70	5-17	0.02-4.2	2.01-02.7	sh
1/2	Hit Products	913T	900 Telescopic	fixed/adj.	M	20-360	25-70	5-17	0.02-4.2	2.01-02.7	sh
1/2	Hit Products	902-906	900	fixed/adj.	M/F	20-360	15-70	5-17	0.02-4.2	2.01-2.7	sh
1/2	Hit Products	904 CKV	900	fixed/adj.	M/F	20-360	25-70	5-17	0.02-4.2	2.01-2.7	sh
1/2	Hit Products	912	900	fixed/adj.	M/F	20-360	15-70	5-17	0.02-4.2	2.01-2.7	sh
1/2	Hit Products	702-706	700	fixed/adj.	M/F	20-360	15-70	5-17	0.02-4.2	2.01-2.7	sh
1/2	Hit Products	712	700	fixed/adj.	M/F	20-360	15-70	5-17	0.02-4.2	2.01-2.7	sh
1/2	Hit Products	HP02	HP	fixed/adj.	M	20-360	25-70	5-17	0.02-4.2	2.01-2.7	sh
1/2	Hit Products	HP04	HP	fixed/adj.	M	20-360	25-70	5-17	0.02-4.2	2.01-2.7	sh
1/2	Hunter	PS Ultra	2", 4", 6"	female-threaded	F	fixed and adj.	20-70	8-17	varies	1.6	no
1/2	Hunter	Pro-Spray	Shrub, 2", 3", 4", 6", 12"	female-threaded	F	fixed and adj.	15-100	2-17	varies	–	no
1/2	Hunter	Pro-Spray PRS30	Shrub, 4", 6", 12"	female-threaded	F	fixed and adj.	15-100	2-17	varies	–	no
1/2	Hunter	Pro-Spray PRS40	Shrub, 4", 6", 12"	female-threaded	F	fixed and adj.	15-100	2-35	varies	–	no
1/2	Hydro-Rain	HRS-150-04	Slim Spray Body	all spray/rotary nozzles	F	fixed and adj.	15-70	4-18	varies	varies	no
1/2	Hydro-Rain	HRS-200 - options available	Commercial Spray Body	all spray/rotary nozzles	F	fixed and adj.	15-70	4-18	varies	varies	no
1/2	Hydro-Rain	HRS-200-PR - options available	Adj. PR w/CV Commercial Spray Body	all spray/rotary nozzles	F	fixed and adj.	15-70	4-18	varies	varies	no
1/2	Hydro-Rain	HRS-200-NP - options available	NP Commercial Spray Body	all spray/rotary nozzles	F	fixed and adj.	15-70	4-18	varies	varies	no
1/2	Hydro-Rain	HRS-200-NP-PR - options available	NP & Adj. PR w/CV Commercial Spray Body	all spray/rotary nozzles	F	fixed and adj.	15-70	4-18	varies	varies	no
1/2	Irritrol	I-PR0400-I-PR01200	I-PRO	female thread	M	fixed	20-50	5-17	0.06-4.75	0.97-5.42	no
1/2	K-Rain	73001	3" K-Spray	male thread	F	fixed and adj.	20-70	8-17	0.3-5.4	1.9-3.82	no
1/2	K-Rain	74001	4" K-Spray	male thread	F	fixed and adj.	20-70	8-17	0.3-5.4	1.9-3.82	no
1/2	K-Rain	76001	6" K-Spray	male thread	F	fixed and adj.	20-70	8-17	0.3-5.4	1.9-3.82	no
1/2	K-Rain	71201	12" K-Spray	male thread	F	fixed and adj.	20-70	8-17	0.3-5.4	1.9-3.82	no
1/2	K-Rain	NP2	2" NP	female threaded nozzles	M	fixed and adj.	20-70	8-17	varies	varies	no
1/2	K-Rain	NP4	4" NP	female threaded nozzles	M	fixed and adj.	20-70	8-17	varies	varies	no
1/2	K-Rain	78002 – options available	2" Pro-S	female threaded nozzles	M	fixed and adj.	20-70	8-17	varies	varies	no
1/2	K-Rain	78003 – options available	3" Pro-S	female threaded nozzles	M	fixed and adj.	20-70	8-17	varies	varies	no
1/2	K-Rain	78004 – options available	4" Pro-S	female threaded nozzles	M	fixed and adj.	20-70	8-17	varies	varies	no
1/2	K-Rain	78006 – options available	6" Pro-S	female threaded nozzles	M	fixed and adj.	20-70	8-17	varies	varies	no
1/2	K-Rain	78012 – options available	12" Pro-S	female threaded nozzles	M	fixed and adj.	20-70	8-17	varies	varies	no
1/2	K-Rain	78004-PR30	4" Pro-S PR30	female threaded nozzles	M	fixed and adj.	20-70	8-17	varies	varies	no
1/2	K-Rain	78006-PR30	6" Pro-S PR30	female threaded nozzles	M	fixed and adj.	20-70	8-17	varies	varies	no
1/2	K-Rain	78012-PR30	12" Pro-S PR30	female threaded nozzles	M	fixed and adj.	20-70	8-17	varies	varies	no
1/2	K-Rain	78004-PR40	4" Pro-S PR40	female threaded nozzles	M	fixed and adj.	20-70	8-17	varies	varies	no
1/2	K-Rain	78006-PR40	6" Pro-S PR40	female threaded nozzles	M	fixed and adj.	20-70	8-17	varies	varies	no
1/2	K-Rain	78012-PR40	12" Pro-S PR40	female threaded nozzles	M	fixed and adj.	20-70	8-17	varies	varies	no
1/2	Rain Bird	1804 - options available	4" 1800	all spray/rotary nozzles	F	fixed and adj.	15-70	2.5-24	varies	varies	no
1/2	Rain Bird	1806 – options available	6" 1800	all spray/rotary nozzles	F	fixed and adj.	15-70	2.5-24	varies	varies	no
1/2	Rain Bird	1812 – options available	12" 1800	all spray/rotary nozzles	F	fixed and adj.	15-70	2.5-24	varies	varies	no
1/2	Rain Bird	RD04 - options available	4" RD1800	all spray/rotary nozzles	F	fixed and adj.	15-100	2.5-24	varies	varies	no
1/2	Rain Bird	RD06 - options available	6" RD1800	all spray/rotary nozzles	F	fixed and adj.	15-100	2.5-24	varies	varies	no
1/2	Rain Bird	RD12 - options available	12" RD1800	all spray/rotary nozzles	F	fixed and adj.	15-100	2.5-24	varies	varies	no
1/2	Rain Bird	PA8S Shrub Adapters - options available	Shrub Adapter	all spray/rotary nozzles	F	fixed and adj.	15-70	2.5-24	varies	varies	no
1/2	Rain Bird	US400	UNI-Spray (Body Only)	all spray/rotary nozzles	F	fixed and adj.	15-70	2.5-24	varies	varies	no
1/2	Rain Bird	US410	4" UNI-Spray w/Pre-Installed 10VAN	10 ft. VAN	F	0-360	15-70	7-10	0.48-2.6	2.5-3.8	no
1/2	Rain Bird	US412	4" UNI-Spray w/Pre-Installed 12VAN	12 ft. VAN	F	0-360	15-70	9-12	0.39-2.36	1.58-1.86	no
1/2	Rain Bird	US415	4" UNI-Spray w/Pre-Installed 15VAN	15 ft. VAN	F	0-360	15-70	11-15	0.65-3.7	1.58-2.07	no
1/2	Rain Bird	US418	4" UNI-Spray w/Pre-Installed 18VAN	18 ft. VAN	F	0-360	15-70	14-18	1.05-5.32	1.59-2.07	no
1/2	Toro	570Z - options available	570Z Standard	Precision/MPR/TVAN	F	0-360	15-75	0-26	0.04-4.58	0.6-1.73	no
1/2	Toro	LPS 2XX	LPS 200 with TVAN nozzle	TVAN	F	0-360	20-50	0-26	0.04-4.58	0.6-1.73	no
1/2	Toro	LPS 4XX	LPS 400 with TVAN nozzle	TVAN	F	0-360	20-50	0-26	0.04-4.58	0.6-1.73	no
N/A	Toro	0-T-X-X	Precision	fixed spray	M	60-360	20-75	5-15	0.04-2.4	1	no
N/A	Toro	0-X-X	Precision	fixed spray	F	60-360	20-75	5-15	0.04-2.4	1	no
N/A	Toro	0-T-X-XP	Precision	pressure-comp. fixed spray	M	60-360	20-75	5-15	0.06-2.68	1	no
N/A	Toro	0-X-XP	Precision	pressure-comp. fixed spray	F	60-360	20-75	5-15	0.06-2.68	1	no
N/A	Toro	XX-XXX-PC	MPR PLUS	pressure-comp. fixed spray	M	90-360	20-75	5-15	0.05-4.58	1.5	no
N/A	Toro	TVANXX	TVAN	variable arc	M	0-360	20-50	8-17	0.58-4.71	2.2	no
1/2	Weathermatic	MAX4 – options available	Pop-up	various	F	fixed 90-360/adj. 0-360	15-100	5-18	0.3-7.5	1.18-5.74	no
1/2	Weathermatic	MAX6 – options available	Pop-up	various	F	fixed 90-360/adj. 0-360	15-100	5-18	0.3-7.5	1.18-5.74	no
1/2	Weathermatic	MAX12 – options available	Pop-up	various	F	fixed 90-360/adj. 0-360	15-100	5-18	0.3-7.5	1.18-5.74	no
1/2	Weathermatic	MAXS	Shrub Adapter	various	F or M	fixed 90-360/adj. 0-360	15-70	5-18	0.3-7.5	1.18-5.74	no



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