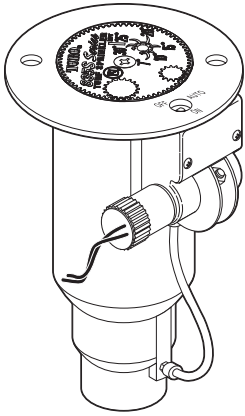


# 835S Series Sprinklers



## Specifying Information—835S Series Sprinklers

Body Inlet	Arc	Body Threads	Valve Type	Nozzle	Pressure Regulation*	Optional
3—1"	5—Full and Part circle	0—NPT 4—ACME 5—BSP	1—NO Hydraulic 2—Check-O-Matic 6—Electric	30 31 32 33 34 35 36 37	6—65 psi (4,5 Bar) 8—80 psi (5,5 Bar) 1—100 psi (6,9 Bar)	E—Effluent DL—Decoder N—Ni Plated Sol.

Example:  
When specifying a 835S Series Sprinkler with ACME threads, #34 nozzle, an electric valve and pressure regulation at 65 psi (4,5 Bar), you would specify:  
**835S-46-346**

\*Electric models only. Not all models are available. All electric models are equipped with a selectable pilot valve that provides settings at 50, 65, 80 and 100 psi (3,4, 4,5, 5,5 or 6,9 Bar).

## Specifications

- Radius: 42'–92' (12,8–28m)
- Flow rate: 7.1–45.3 GPM (26,9–171,5 LPM)
- Arc: Bidirectional, part-circle rotation, adjustable from 40°–330°, and true unidirectional 360° full-circle rotation.
- Pilot valve selectable at: 50, 65, 80 or 100 psi (3,5, 4,5, 5,5 or 6,9 Bar)
- Recommended operating pressure range: 65–100 psi (4,5–6,9 Bar)
- Maximum pressure: 150 psi (10,3 Bar)
- Minimum pressure: 40 psi (2,8 Bar)
- Activation options:
  - Electric valve-in-head
  - Normally open valve-in-head
  - Check-O-Matic: checks 37' (11,3m) of elevation change
- Electric valve-in-head solenoid: 24 VAC, 50/60 Hz
  - Inrush: 0.12 A
  - Holding: 0.10 A
- Stator variations: 2
- Inlet size: 1" (25mm) NPT, BSP or ACME
- Body height: 10" (254mm)
- Body flange diameter: 6 1/2" (165,1mm)
- Pop-up height to nozzle: 3 1/4" (83mm)
- Pop-up height overall: 4 3/8" (106,4mm)
- Weight: 2.98 lbs. (1,4 kg)
- Nozzle Variations: 8 (30, 31, 32, 33, 34, 35, 36 and 37)
- Three in-line nozzles with rotating stream pattern
- Precipitation rates:
  - Minimum: .37"/hr. (9,4mm/hr)
  - Maximum: .66"/hr. (16,8mm/hr)
- Trajectory: adjustable from 7°–30° in 1° increments (24 positions)
- Apex (at distance from sprinkler): (65 psi [4,5 Bar] @ 25° trajectory)
  - 31 - 11' (3,4m) at 33' (10,1m)
  - 32 - 12' (3,7m) at 34' (10,4m)
  - 33 - 13' (4,0m) at 35' (10,7m)
  - 34 - 14' (4,3m) at 39' (11,9m)
  - 35 - 15' (4,6m) at 43' (13,1m)
 (80 psi [5,5 Bar] @ 25° trajectory)
  - 36 - 17' (5,2m) at 45' (13,7m)
  - 37 - 18' (5,5m) at 45' (13,7m)

## Bidding Specifications

The sprinkler shall be capable of full- and part-circle operation and be a gear-driven rotary type. The sprinkler shall be of a pop-up design with an overall height of 10" (254mm), a body flange diameter of 6 1/2" (165,1mm), a cap diameter of 3 3/8" (85,7mm) and a pop-up height of 4 3/8" (106,4mm). The sprinkler shall have a 1" (25mm) NPT, BSP or ACME female-threaded inlet. The sprinkler shall be capable of covering \_\_\_ feet radius at \_\_\_ pounds per square inch pressure with a discharge rate of \_\_\_ gallons per minute.

Water distribution shall be via three nozzles mounted in a 2 1/4" (57mm) diameter plastic nozzle turret. The three nozzles shall be oriented in the same direction and elevate 3 1/4" (83mm) above the body when in operation. All of the sprinkler nozzles shall be of a thread-in type and color-coded for easy identification of radius and gallonage performance capabilities. All nozzles shall be sized to allow any particle capable of passing through the riser screen to pass through the nozzle. The sprinkler shall be capable of accepting a fourth nozzle that can be installed 180° from the main nozzle to provide coverage behind the sprinkler. The back nozzle position shall be manufactured with a factory-installed plug that can be removed to accept up to 200 different inner and intermediate nozzle combinations. The sprinkler shall be capable of accepting 7 different color-coded main nozzles, a main nozzle plug for short radius applications, and 39 different color-coded inner/intermediate nozzles.

The main nozzle shall incorporate a trajectory adjustment that provides main nozzle discharge angle from 7° to 30° in 1° increments. The sprinkler cap shall graphically depict trajectory adjustment points at 7°, 10°, 15°, 20°, 25° and 30°.

The cap shall also identify the main nozzle size installed and the date of manufacture.

The sprinkler shall include a ratcheting riser feature that allows the user to adjust the position of the riser in the body without disassembly.

The arc of the sprinklers shall be adjustable by the use of an adjustment band located between the nozzle base and riser. The left terminus of the arc shall be fixed, with the right position adjustable from 40° minimum, up to 360° maximum. When 360° arc adjustment position is reached, the sprinkler will rotate uni-directionally in the clockwise direction. The sprinkler arc shall be adjustable by hand (wet or dry); requiring no tools. The arc adjustment band shall identify the 90°, 180°, 270° and 360° arc positions.

The sprinkler shall include a nozzle base clutch feature that enables the user to rotate the nozzle base in either direction (wet or dry) and hold it in one position (during operation) for spot watering.

The electric models of the sprinkler shall be available with a selectable pressure-regulator capable of 50, 65, 80 and 100 psi (3,5, 4,5, 5,5 and 6,9 Bar) settings. The pilot valve case shall provide graphics to identify selection points and a locking feature to ensure the integrity of the selection. The date of manufacture shall also be indicated on the pilot valve case.

The internal valve assembly shall be a piston-type that vents to atmosphere, providing valve friction loss of less than 5.0 psi (0,34 Bar). The sprinkler shall be designed to provide smooth valve closure in excess of two seconds to minimize damage resulting from surges and water hammer. All valve seals shall be constructed of natural rubber.

(continued)

## Bidding Specifications (cont.)

The valve seat seal shall be constructed of fabric-reinforced natural rubber. The electric valve assembly shall incorporate a 100-mesh stainless steel screen for the control water; preventing entry of foreign materials into the pilot valve assembly. Rotation shall be accomplished by a water-lubricated gear drive. The drive assembly shall be driven by a spring loaded, poppet-type, variable stator, sized to provide three-minute, full-circle rotation speeds throughout the pressure range. The drive and stator assemblies shall be constructed of non-corrosive plastic and stainless steel components.

The body and cap of the sprinkler shall be injection molded from ABS: a corrosion-proof, impact-resistant, UV-resistant, heavy-duty engineering-grade plastic material. The body shall incorporate an indestructible, molded-in stainless steel valve seat, capable of withstanding debris contamination with no permanent damage. The valve seat shall never require servicing. The cap and nozzle base shall incorporate a pull-up feature that provides improved serviceability of the nozzles and riser assembly. The sprinkler shall have two plastic filter screens: a top-serviceable coarse rock screen in the body inlet, sized to prevent entry of larger foreign material from entering the body, and a finer screen threaded into the riser; sized to prevent foreign material from clogging the nozzle.

All internal components shall be serviceable from the top of the sprinkler without disturbing the body installation. The riser and internal valve assemblies shall each be retained by a single snap ring.

The sprinkler shall have a riser/body seal assembly that regulates flushing during pop-up and retraction, to clear any debris from around the riser, and a heavy-duty stainless steel spring, to ensure positive retraction. The riser seals to a durable over-molded urethane ring on the seal retainer. Sprinkler flush rate shall not exceed 5.0 GPM (18.9 LPM).

The sprinkler shall be capable of identifying the use of effluent water on the exposed cap of the sprinkler via a lavender-colored cap assembly. A patented insert shall also be available for providing numeric values for yardage marking.

The sprinkler cap shall indicate model designation, main nozzle number and manufacturing date code. The exposed body flange shall display warnings to ensure safe operation.

The sprinkler shall be available in three body styles/activation types as follows:

### Normally Open Valve-In-Head

The integrated hydraulic valve shall be activated remotely by relieving pressure to open and applying pressure to close. The control connection shall be a brass fitting with  $\frac{1}{4}$ " O.D. x  $\frac{1}{8}$ " I.D. polyethylene tubing and a push-on tube retainer.

### Check-O-Matic

The integrated check valve shall be capable of preventing low-head drainage up to 37' (11.2m) of elevation change. The check valve shall be vented to atmosphere via the sprinkler body bowl. The vent connection shall be a brass fitting with  $\frac{1}{4}$ " O.D. x  $\frac{1}{8}$ " I.D. polyethylene tubing and a push-on tube retainer.

### Electric Valve-In-Head

The sprinkler shall incorporate a low wattage, surge protected, electrical solenoid for activation of the integrated control valve. The solenoid operator shall be suitable for 24 VAC, 50/60 Hz service with inrush of .12 A @ 50/60 Hz, and holding of .10 A @ 50/60 Hz. The solenoid shall be capable of withstanding lightning surges in excess of 20,000 volts without damage. Separate models shall be available with low-wattage/high-surge performance, capable of performing in non-potable water applications, and with a DC-latching solenoid for use in 2-wire decoder systems. A manual selector switch with On-Off-Auto positions shall be provided and accessible above grade with a special key. Pressure regulation shall be factory preset and field-selectable to 50, 65, 80 or 100 psi (3.5, 4.5, 5.5 or 6.9 Bar).

The sprinkler shall be developed and manufactured by an ISO 9001-certified facility. The sprinkler shall be model number \_\_\_\_\_ and shall be manufactured by The Toro Company, Irrigation Division.

## Recommended Installation Procedures

The 835S Series sprinkler is designed specifically for turf areas requiring \_\_\_\_\_ coverage. These products offer the most economical method of irrigation where flows and system pressures are available to support a greater radius.

The 835S Series sprinklers should be specified for installation on a swing joint. The swing joint should be specified as a triple-swing type, allowing movement up, down, laterally, and at an angle to grade. The sprinkler should be installed with the body flange at grade.

Individual sprinkler head control is accomplished using a single 835S per controller station. Use of the valve-in-head sprinkler model will allow individual station control, and is particularly useful for irrigating in distinct turf regions using unique application rates.

Check-O-Matic models are generally found in block systems where one valve is used to activate two or more sprinklers. The spring-loaded check valve function will prevent low-head drainage and keep the lateral pipelines charged for the next irrigation cycle, thereby helping to eliminate water hammer.

*Note: Ensure that the hydraulics will accommodate the combined flow of all sprinklers on the lateral pipeline.*

835S Series sprinklers are engineered to provide a smooth, consistent curtain of water across the arc, with provision made for head-to-head coverage. For proper spacing, ensure that system design and installation accounts for prevailing wind conditions and body flange angle to grade.

It is recommended that sprinklers are installed 2" (5cm) from hardscaping and 6"-12" (15.2-30.5cm) from buildings or other vertical impediments to allow for normal maintenance procedures and to minimize overspray on buildings. Where possible, sprinklers should be installed in a manner that will minimize nozzle stream contact with trees, controller enclosures, shrubbery, or other obstructions.