



Count on it.

835S and 855S Series Rotary Sprinklers Installation & Service Instructions

Installation Procedure

To assure maximum performance from your 800S series sprinklers, read these instructions completely prior to installation or service.

Constructing Swing Joints

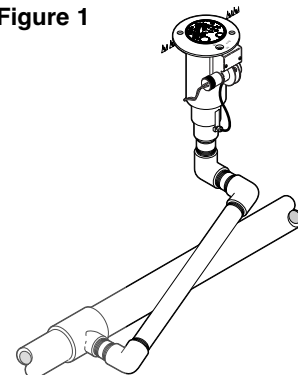
1. Construct or provide triple swing joints for each sprinkler as shown in **Figure 1**. Use PVC or ABS pipe nipple for the sprinkler connection.

Note: On sites where the possibility of heavy equipment rolling over a sprinkler exists, the swing joint will flex preventing damage to the lateral or main lines. On a new installation in raw ground where the sprinklers are to be initially installed above the finished grade and lowered when new turf is established, the swing joint allows sprinkler repositioning without changing risers.

2. Flush lines thoroughly prior to installing sprinkler.
3. Apply Teflon™ tape on riser threads (not required on ACME threads). Install sprinkler to the riser and tighten.

▲ CAUTION: Use only Teflon tape on riser threads. Use of pipe dope or other types of sealing compounds can cause deterioration of sprinkler body threads.

Figure 1



Connecting Control Wires (Electric Models Only)

1. Route control wires to sprinklers. Provide extra wire at sprinkler to allow for height adjustment. One common wire and station wire is required for each sprinkler. See Wire Sizing Chart, **Table 1** for proper application.

Table 1: Wire Sizing Chart

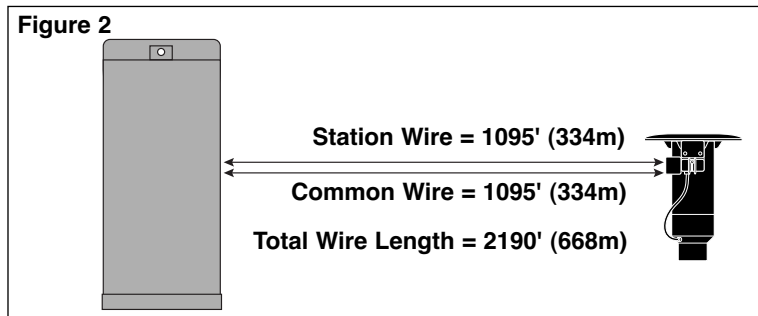
					Total Wire Length Between Controller and Sprinkler							
Voltage	AWG	mm ²	Voltage Drop	Circular Mils	1 Sprinkler		2 Sprinklers		3 Sprinklers		4 Sprinklers	
23	14/14	2.5/2.5	4	4100	6571'	2003 m	3285'	1001 m	2190'	668 m	1643'	501 m
23	14/12	2.5/4.0	4	5315	8518'	2596 m	4259'	1298 m	2839'	865 m	2129'	649 m
23	14/10	2.5/5.5	4	7250	11619'	3541 m	5809'	1771 m	3873'	1180 m	2905'	886 m
23	12/12	4.0/4.0	4	6530	10465'	3190 m	5232'	1595 m	3488'	1063 m	2616'	798 m
23	12/10	4.0/5.5	4	8465	13566'	4135 m	6783'	2067 m	4522'	1378 m	3391'	1034 m
23	12/8	4.0/7.0	4	11515	18454'	5625 m	9227'	2812 m	6151'	1875 m	4613'	1406 m
23	10/10	5.5/5.5	4	10400	16667'	5080 m	8333'	2540 m	5556'	1693 m	4167'	1270 m
24	14/14	2.5/2.5	5	4100	8213'	2503 m	4107'	1252 m	2738'	835 m	2053'	626 m
24	14/12	2.5/4.0	5	5315	10647'	3245 m	5324'	1623 m	3549'	1082 m	2662'	812 m
24	14/10	2.5/5.5	5	7250	14523'	4427 m	7262'	2213 m	4841'	1476 m	3631'	1107 m
24	12/12	4.0/4.0	5	6530	13081'	3987 m	6540'	1993 m	4360'	1329 m	3270'	997 m
24	12/10	4.0/5.5	5	8465	16957'	5168 m	8479'	2584 m	5652'	1723 m	4239'	1292 m
24	12/8	4.0/5.5	5	11515	23067'	7031 m	11533'	3515 m	7689'	2344 m	5767'	1758 m
24	10/10	5.5/5.5	5	10400	20833'	6350 m	10417'	3175 m	6944'	2117 m	5208'	1581 m

Note: Wire length data provided in **Table 1** is the sum of the station and common wire legs. See example in **Figure 2**.

2. Attach control wires to solenoid leads using an approved waterproof splicing method.

▲ CAUTION: All wire splices and field connections must be waterproofed to prevent short circuit to ground and subsequent controller damage.

Figure 2



Connecting Hydraulic Control Tubing (Hydraulic Models Only)

1. Route control tubing from the controller to the sprinkler location(s).

Note: Leave an 18" (45.7 cm) service loop of tubing at each sprinkler to facilitate movement of sprinkler and service operations. Refer to **Table 2** for tubing run length and sprinkler elevation information.

2. Flush tubing thoroughly to remove all air and debris.
3. Remove the tube retainer and poly cap from the tubing adapter at the base of the sprinkler.
4. Slide the tube retainer over the end of the control tubing and attach tubing to adapter.
5. Slide tube retainer over the adapter area to secure tubing.

Table 2: Hydraulic Control Systems

Type of System*	Maximum Distance From Controller	Elevation Restrictions
Normally Open (01) with 3/16" Control Tubing	500'	Valve elevation should not exceed 25' ABOVE controller elevation or 70' BELOW controller elevation.
Normally Open (01) with 1/4" Control Tubing	1000'	Valve elevation should not exceed 25' ABOVE controller elevation or 70' BELOW controller elevation

- * All hydraulic connections on Toro valves are 1/4" insert type.
- Control line pressure must be equal to or greater than mainline pressure.
- Control line pressure range is 40 to 150 PSI.

System Start Up



WARNING

NEVER STAND OR LEAN OVER THE SPRINKLER WHILE THE IRRIGATION SYSTEM IS BEING FILLED, DURING MANUAL OR AUTOMATIC OPERATION OR WHEN PERFORMING SPRINKLER SERVICE PROCEDURES. DIRECT CONTACT WITH IRRIGATION SPRAY, A FAILED OR IMPROPERLY INSTALLED SPRINKLER CONNECTION OR SPRINKLER COMPONENTS FORCIBLY EJECTED UPWARD UNDER PRESSURE CAN CAUSE SERIOUS INJURY.

The following is a recommended procedure that will protect system components during system start-up. The procedure is based on a velocity fill rate of less than 2' (0.61 m) per second. See **Table 3** below.

1. Use jockey pump only to fill the system at a velocity fill rate of less than 2' (0.61 m) per second.

▲ CAUTION: Failure to comply with recommended fill rate will increase line pressure resulting in a water hammer effect that could damage sprinklers and piping components.

2. Use quick coupler keys at all tees and greens with quick coupler valves to bleed air from the system lines during the filling process. For best results, do not compress air and then relieve it – bleed the air continuously while filling the system.
3. After water has filled all lines and all air is removed, remove the quick coupler keys.

Table 3: Recommended System Fill Rate

Pipe Size		Flow		Velocity		Pipe Size		Flow		Velocity	
in.	cm	GPM	LPM	ft/sec	m/sec	in.	cm	GPM	LPM	ft/sec	m/sec
1/2	1.3	2	7.6	1.60	0.49	3	7.6	45	170.3	1.86	0.57
3/4	1.9	3	11.4	1.92	0.59	4	10.1	75	283.9	1.87	0.57
1	2.5	5	18.9	1.50	0.46	6	15.2	150	567.8	1.73	0.53
1-1/4	3.1	10	37.9	1.86	0.57	8	20.2	250	946.3	1.70	0.52
1-1/2	3.8	10	37.9	1.41	0.43	10	25.4	450	1703.0	1.97	0.60
2	5.0	20	75.7	1.80	0.55	12	30.5	500	1893.0	1.55	0.47
2-1/2	6.4	30	113.6	1.84	0.56						

Arc Adjustment Procedure



WARNING

DUE TO THE HIGH OPERATING PRESSURE, NEVER STAND OR LEAN DIRECTLY OVER THE TOP OF THE SPRINKLER OR COME IN CONTACT WITH THE SPRAY. FAILURE TO COMPLY MAY RESULT IN SERIOUS INJURY.

The 835S and 855S sprinkler models can be operated in full-circle or part circle operation. In part-circle operation, the sprinkler arc can be adjusted from 40°– 330°. When full-circle (360°) operation is selected, the sprinkler will rotate in a clockwise direction only. The arc is factory preset at 180°. The left side of the arc, located at the end of the counterclockwise rotation, is non-adjustable (fixed). Therefore, all arc adjustments, whether increasing or decreasing, will change the right side of the arc, located at the end of the clockwise rotation.

1. Using the sprinkler Multi-Purpose Tool (P/N 995-83), pull the sprinkler riser up from the body. See **Figure 3**.
2. Find the sprinkler left stop by rotating the turret counterclockwise until it stops. The left stop indicates the fixed stop of the arc. See **Figure 4**.
3. Check the left stop alignment with the left most area being irrigated. Adjust by ratcheting the riser clockwise or counterclockwise until the sprinkler left stop points to the correct area. See **Figure 5**.

▲ CAUTION: The riser can only ratchet when the sprinkler is not operating. Attempting to ratchet the riser during operation may damage the sprinkler.

The turret can also be used to adjust the left stop. If the left stop falls short of the desired border, rotate the turret counterclockwise until it is aligned with the left watering border. See **Figure 4**.

If the left stop exceeds the border, rotate the turret clockwise until the right stop. Continue to advance the turret the same distance that the left stop exceeded the border. See **Figure 6**.

4. Find the sprinkler right stop by rotating the turret clockwise until it stops. See **Figure 6**.
Note: If the sprinkler is set at 360° (full-circle), it will rotate clockwise only.
5. Adjust the arc while the turret is pointing at the right stop. Hold the sprinkler riser firmly while pressing the release on the adjustment band. Rotate the turret counterclockwise or clockwise to the desired right stop. See **Figure 7**.
6. Activate the sprinkler to check proper arc setting and adjust as necessary.

Figure 3

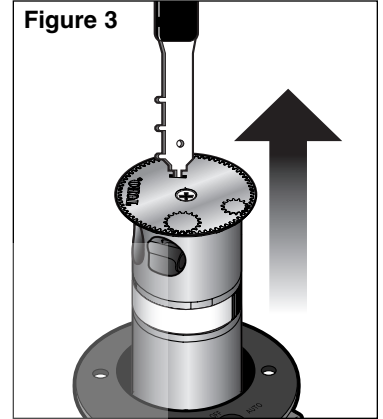


Figure 4

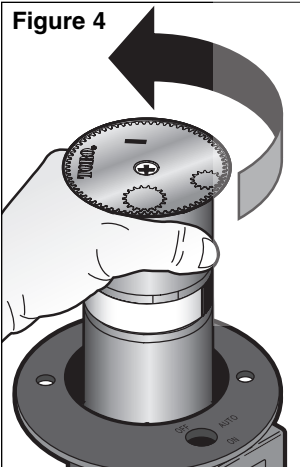


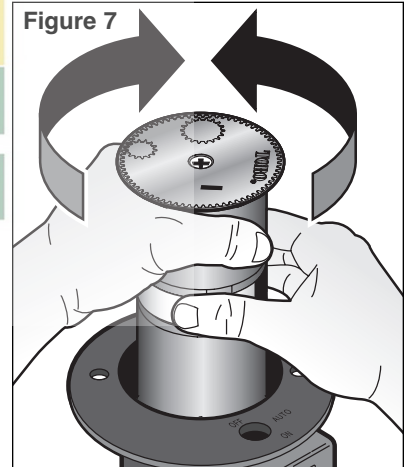
Figure 5



Figure 6

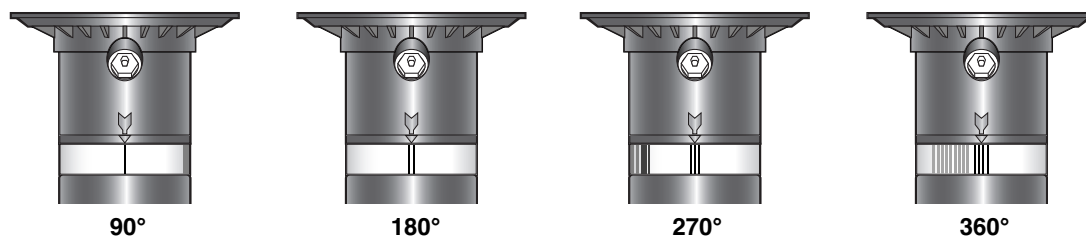


Figure 7



Adjustment Band Angle Indicators

Figure 8



The adjustment band of the 835S and 855S have markers at predetermined arcs. By aligning the adjustment band indicators to the turret arrow, you can set the sprinkler arc to 90°, 180°, 270° or 360°.

Trajectory Adjustment Procedure

The 835S and 855S sprinkler models are equipped with the Trajectory™ nozzle spray angle adjustment feature. The trajectory adjusts from the top of the sprinkler enabling fine-tuning from 7°–30° to compensate for windy conditions, spraying under low-hanging obstructions, up bunker faces and along natural habitats.

To adjust the nozzle spray trajectory angle, use a 5/16" socket (Figure 9). Turn the trajectory adjustment clockwise to decrease (Figure 10) or counter-clockwise to increase (Figure 11).

Figure 9

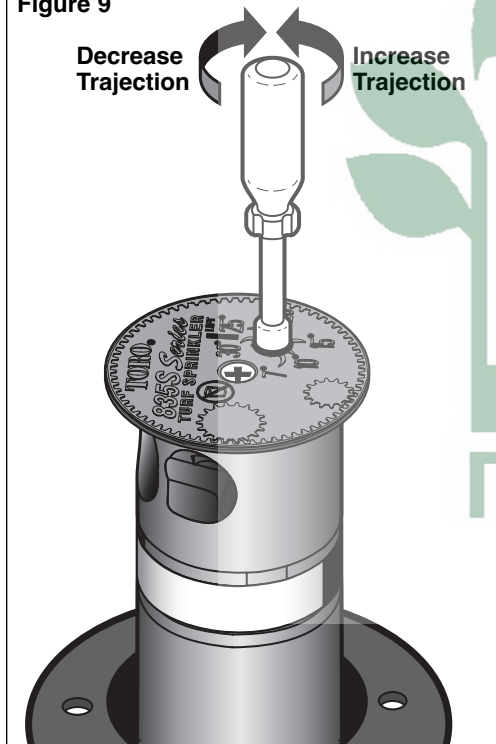


Figure 10

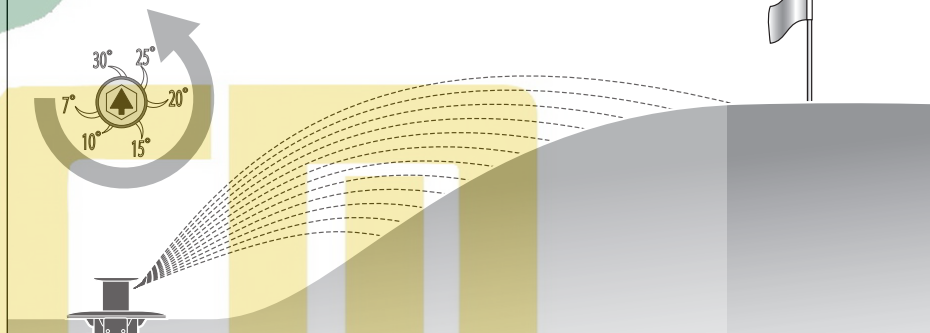


Figure 11

