

# TS90 Series Sprinkler Installation & Adjustment Guide



## Specifications

- Threaded inlet: 1" NPT or 25mm BSP
- Pop-up height: 4" (12,7cm)
- Pop-up height to spray: 3.5" (8,89cm)
- Overall height: 12.5" (31,75cm)
- Retracted height: 8.5" (21,59cm)
- Ratcheting riser
- Spray arc: 360° and adjustable 40°–330°
- Main nozzle trajectory: adjustable 7°–30°
- Nozzle options: 9 Main, 3 Intermediate, 1 Inner
- Radius: 53'–95' (16,15m–28,97m) @ 25° trajectory
- Flow rate: 13.9–61.6 GPM (52,6–233,2 LPM)
- Precipitation rate: 0.56–0.60"/hr (14,2–15,2mm/hr)
- Minimum pressure: 40 psi (2,7 bar)
- Maximum pressure: 100 psi (6,9 bar)
- Recommended pressure: 50–100 psi (3,4–6,9 bar)
- Check valve elevation rating: 6' (1,8m)
- Stator/Drive: Constant velocity
- Rubber cover (nozzle turret)

## Performance Data - U.S.

Sprinkler Model Configuration	Nozzle Set Main / Intermediate		Stator Type	@ 50 psi		@ 60 psi		@ 70 psi		@ 80 psi		@ 90 psi		@ 100 psi	
				Radius (ft)	GPM	Radius (ft)	GPM	Radius (ft)	GPM	Radius (ft)	GPM	Radius (ft)	GPM	Radius (ft)	GPM
	#1 - Yellow	Blue	Low	53	13.9	54	15.2	55	16.4	55	17.4	54	18.5	56	19.4
	#2 - Blue	Red	Low	55	18.7	59	20.5	61	22.1	59	23.6	59	25.0	62	26.3
(§) TS90TP-02-14	#3 - Brown	Orange	Low	54	20.7	57	22.7	60	24.5	61	26.1	63	27.6	68	29.1
(‡) TS90TP-52	#4 - Orange	Orange	Low	69	27.7	72	30.2	74	32.7	80	35.1	81	36.9	82	38.9
	#5 - Green	Blue	Medium	69	29.7	73	32.6	78	35.2	79	37.7	82	39.9	84	41.8
	(f) TS90TP-02-58	#6 - Gray	Blue	Medium	72	31.1	76	34.3	81	36.9	82	39.6	86	41.9	87
	#7 - Black	Orange	Medium	71	34.8	78	38.1	79	41.1	80	43.6	87	46.2	84	48.6
	#8 - Red	Blue	Medium	73	38.4	78	42.0	83	45.3	86	48.5	88	51.4	88	54.1
	#9 - Beige	Blue	High	75	43.5	81	47.6	83	51.4	85	55.1	91	58.3	95	61.6

(§) NPT inlet, includes nozzle/stator set 1–4

(‡) BSP inlet, includes nozzle/stator set 1–6

(f) NPT inlet, includes nozzle/stator set 5–8

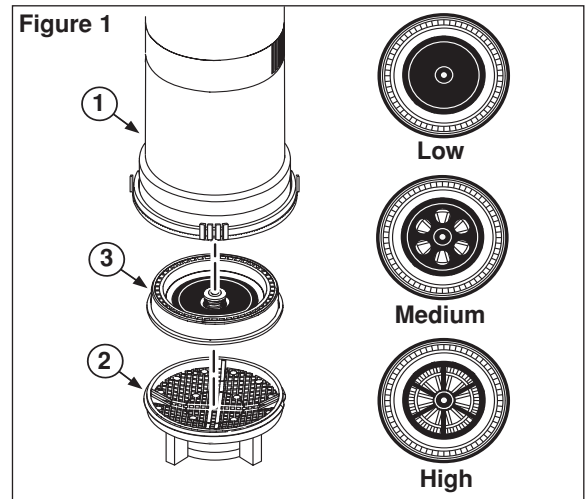
## Performance Data - Metric

Sprinkler Model Configuration	Nozzle Set Main / Intermediate		Stator Type	@ 3,4 bar		@ 4,1 bar		@ 4,8 bar		@ 5,5 bar		@ 6,2 bar		@ 6,9 bar	
				Radius (m)	LPM	Radius (m)	LPM	Radius (m)	LPM	Radius (m)	LPM	Radius (m)	LPM	Radius (m)	LPM
	#1 - Yellow	Blue	Low	16,2	53	16,5	58	16,8	62	16,8	66	16,5	70	17,1	74
	#2 - Blue	Red	Low	16,8	71	18,0	77	18,6	84	18,0	89	18,0	95	18,9	99
(§) TS90TP-02-14	#3 - Brown	Orange	Low	16,5	78	17,4	86	18,3	93	18,6	99	19,2	105	20,7	110
(‡) TS90TP-52	#4 - Orange	Orange	Low	21,0	105	21,9	114	22,6	124	24,4	133	24,7	140	25,0	147
	#5 - Green	Blue	Medium	21,0	112	22,3	123	23,8	133	24,1	143	25,0	151	25,6	158
	(f) TS90TP-02-58	#6 - Gray	Blue	Medium	21,9	118	23,2	130	24,7	140	25,0	150	26,2	159	26,5
	#7 - Black	Orange	Medium	21,6	132	23,8	144	24,1	156	24,4	165	26,5	175	25,6	184
	#8 - Red	Blue	Medium	22,3	145	23,8	159	25,3	171	26,2	184	26,8	195	26,8	205
	#9 - Beige	Blue	High	22,9	165	24,7	180	25,3	195	25,9	208	27,7	221	29,0	233

**Note:** Toro service tool model 995-99 (or 5/8" nut driver) is required for main nozzle exchange. For Intermediate nozzle exchange and main nozzle trajectory adjustment, Toro service tool model 995-105 (or 5/16" nut driver) is required.

## Stator Replacement

1. Remove cap set screw with a small slotted or phillips screwdriver.
2. Unscrew and remove cap. Remove seal assembly, spring, and riser assembly (1).
3. Unscrew debris screen/check valve assembly (2) and remove from riser assembly.
4. Slide stator assembly (3) out of riser assembly and replace with alternate stator.
5. Reassemble sprinkler components in reverse order.



## Sprinkler Installation

1. Construct or install manufactured triple swing joints for each sprinkler. See **Figure 2**.
2. Flush lines thoroughly prior to installing sprinkler.
3. Apply PTFE pipe thread tape to the sprinkler nipple threads. Install the sprinkler to the nipple, tightening by hand to a snug fit.

**▲ CAUTION: Use only PTFE tape on plastic thread connections. Applying pipe dope or other thread-sealing compounds can cause deterioration of plastic threads.**

## Arc Adjustment

The TS90 series sprinkler features both an adjustable arc from 40° to 330°, in 5° increments, and full-circle 360° operation. All TS90 series sprinklers are preset to half-circle (180°) arc when shipped from the factory.

The left side of the adjustable arc is fixed, and is aligned to the left watering border by turning the ratcheting riser assembly in the sprinkler body. The right side of the arc is aligned to the right watering border by turning the nozzle turret while compressing and holding the adjustment band in a stationary position.

1. Arc adjustment can be made wet or dry. For dry adjustment, insert the blade of the sprinkler tool (included in carton) through the slitted opening in the top of the nozzle turret. Twist the tool 1/2 turn to catch the inside of the nozzle turret, then pull the riser assembly out of the body until fully extended. Grasp the riser below the gray adjustment band and hold firmly to prevent retraction. See **Figure 3**.

**Note:** Specific arc settings of 90°, 180°, 270° and 360° are provided on the adjustment band to preset the sprinkler arc if desired. To use this adjustment option, simply compress the serrated portion of the adjustment band and turn it to align the preferred arc indicator with the nozzle turret arrow indicator. See **Figure 4**.

2. Find the sprinkler left and right arc limits by rotating the nozzle turret back and forth (**in the direction of free travel only**). The left stop indicates the fixed (non-adjustable) side of the arc. See **Figure 5**.

**▲ CAUTION: Do not force the nozzle turret past the arc travel limits. Permanent damage to the drive assembly can result.**

3. With the nozzle turret rotated to the left stop, align the nozzles to the left watering border by ratcheting the riser assembly in either direction. See **Figure 6**.
4. Find the sprinkler right stop by rotating the turret clockwise until it stops.
5. To adjust the arc, compress the ribbed area of the adjustment band, then rotate the nozzle turret to align the nozzles with the right watering border. For full-circle operation, rotate the nozzle turret to the right until it stops. See **Figure 7**.
6. With the sprinkler on, check arc setting again and fine tune arc setting as needed.

## Main Nozzle Trajectory Adjustment

The main nozzle trajectory angle is factory-set at 25°, and is adjusted between 7°—30° by turning the trajectory adjustment nut, accessible through the top of the nozzle turret. Typical uses of this feature are to increase trajectory to compensate for high-mounded turf, or to decrease trajectory to clear low-hanging tree branches.

**Note:** Prior to changing the nozzle trajectory, it is important to consider that increasing the trajectory increases the spray radius, and decreasing trajectory decreases the spray radius.

1. Using Toro service tool 995-105 or a 5/16" nut driver, turn the adjustment nut clockwise to decrease trajectory or counterclockwise to increase trajectory, as indicated by the bidirectional arrow. See **Figure 8**.

