

Specifying Information – TS90 Series Sprinkler				
TS90TP-02XX-X-E				
Description	Threads	TurfCup™	Nozzle	Optional
TS90TP	02	XX	X	E
TS90TP—TS90TP 1” (25mm) Toro with TruJectory	02—NPT thread	TC--TurfCup™ option	1, 2, 3, 4, 5, 6, 7, 8, 9	E—Effluent
<p><b>Example:</b> A TS90 Series sprinkler with TruJectory, NPT threads, TurfCup™, and 82’ (25m) radius would be specified as:  <b>TS90TP-02TC-6</b></p>				

## Specifications

- Radius: 53'-95' at 25° (16,2 – 29,0m) trajectory
- Flow rate: 14.0-61.5 gpm (53-233 lpm)
- Precipitation rate: .56-.60"/hr (14,2-15,2mm/hr)
- Arc: Full- & Part-circle in one
  - Full-circle: 360° unidirectional clockwise rotation
  - Part-circle: 40°-330°
- Rotation Speed: 3 minutes ± 30 seconds
- Recommended operating pressure range: 40-100 psi (2,8-7,0 Bar)
- Inlet size: 1” (40mm) NPT or BSP
- Check valve capable of checking up to 10' (3m) of elevation difference
- Rubber cover for personnel safety and protection
- Available in TurfCup™ versions for seamless on-field installations on natural and artificial turf sports field installations
- Effluent indicator plug for installation on rubber cover
- Dimensions, non-TurfCup versions:
  - Body height: 10” (254mm)
  - Overall popped-up height: 12.5” (317mm)
  - Retracted height: 8.5” (216mm)
  - Overall pop-up height: 4” (402mm)
  - Pop-up height to main nozzle: 3” (75mm)
  - Exposed cap diameter: 2.2” (26mm)

- Body diameter: 4” (402mm)
- Dimensions, TurfCup versions:
  - Body height: 10” (254mm)
  - Overall popped-up height: 14.5” (37mm)
  - Retracted height: 10.7” (27mm)
  - Overall pop-up height: 4” (402mm)
  - Pop-up height to main nozzle from top of outer cover: 1” (25mm)
  - Body diameter: 4” (402mm)
  - Overall diameter with stabilizing spacer: 6.25” (16mm)
- Nozzle options: 9 main, 3 intermediate, 1 inner, 1 molded-in inner (no molded in inner on TurfCup™ versions)

## Bidding Specifications

The sprinkler shall be of gear-drive, rotary type, capable of covering a \_\_\_\_\_ foot (meter) radius at \_\_\_\_\_ PSI (bar; kPa) with a discharge rate of \_\_\_\_\_ GPM (lpm). The sprinkler shall be available with nine (9) distinct main nozzles for distance coverage, three (3) distinct intermediate nozzles for mid-range coverage, one (1) inner nozzle for close-in coverage and one (1) molded in inner nozzle (not available for TurfCup™ versions) for mid-close-range coverage. The nine (9) different nozzle sets shall be formed by combinations of the main, intermediate and inner nozzles. The main nozzle shall be adjustable from 7° to 30°, in 1° increments, from

horizontal. The option of a back nozzle shall be available.

The sprinkler shall have both full-circle and adjustable part-circle operation in a single unit. The sprinkler shall be minutely adjustable from 40° to 360° in part-circle mode. It shall be adjustable in all phases of installation (i.e., before installation, after installation while static, and after installation while in operation). When in 360° mode, it shall rotate only in the clockwise direction. The sprinkler shall be equipped with a self-adjusting stator to ensure constant rotation speed regardless of nozzle installed.

The sprinkler shall have a clutch mechanism to allow the nozzle turret to be manually advanced to the ends of its arcs, thus allowing quick determination of arc limits, without having to wait for the gear drive mechanism to drive the nozzle turret to the limits. The sprinkler shall have hard arc limits that provide the operator with positive end of arc stops when manually advancing the nozzle turret. The riser shall have a ratchet feature that allows the entire riser/nozzle turret assembly to be rotated to a new position, when not under water pressure.

The sprinkler shall be equipped with a drain check valve to prevent low head drainage, and be capable of checking up to 10 feet in elevation change. The sprinkler shall have a minimum of 4-inch pop-up stroke to

bring the rotating nozzle turret into a clean environment.

#### **Standard non-TurfCup™ only:**

The sprinkler shall have a black rubber cover firmly attached to the top of the riser. When specified, there shall be a lavender-colored TPE (thermoplastic elastomer) plug that can be affixed to the rubber cover to indicate the use of reclaimed water.

The sprinkler shall have an exposed surface diameter after installation of 2.2 inches (56mm) and have an overall height of 8.5 inches (216mm). The sprinkler shall be installed no more than 1/2" (13mm) below grade.

The sprinkler shall be serviceable after installation by unscrewing the cap locking screw on the side of the body cap, unscrewing the body cap, removing the riser assembly, and extracting the inlet filter screen. The retraction spring shall be removable by removing the inner seal retainer/o-ring assembly, which, in turn is retained by body cap.

#### **TurfCup™ versions only:**

The sprinkler shall have all the same features as the stock TS90, with the additional feature of a modified nozzle turret which allows the attachment of a TurfCup™ with a screw fastener. There shall be a form-fitting outer cover that fits over the body cap and the TurfCup™. There shall also be a stabilizing spacer that fits over the outer cover and prevents lateral movement of the sprinkler, after installation. There shall be pre-installed artificial turf firmly attached to the turf disk, which is attached to the bottom of the TurfCup™.

The TurfCup™, outer cover and stabilizing spacer shall all be

constructed of black rubber. The screw fastener that attaches the TurfCup™ to the top of the nozzle turret shall be constructed of stainless steel. The pre-installed artificial turf shall be made of green nylon or polypropylene fibers.

The sprinkler shall have an exposed surface diameter after installation of 2.6 inches (66mm), with only the edge of the TurfCup™, edge of the outer cover and strands of the pre-installed artificial turf visible. The sprinkler shall be installed such that the pre-installed artificial turf is even with the surrounding turf.

The sprinkler shall be serviceable after installation by removing the stabilizing spacer, prying off the outer cover, unscrewing the cap locking screw on the side of the body cap, unscrewing the body cap, removing the riser assembly, and extracting the inlet filter screen. The retraction spring shall be removable by removing the inner seal retainer/o-ring assembly, which, in turn is retained by body cap.

#### **All models:**

The unit shall have a 1-inch Female national Pipe Thread (FNPT) inlet. When specified, the unit shall have a 1-inch Female British Standard Pipe Thread inlet.

The body of the sprinkler shall be constructed of corrosion resistant, impact resistant, heavy-duty ABS plastic. It shall have a stainless steel spring for positive retraction of the riser when irrigation is complete. The sprinkler shall carry a five-year exchange warranty (not prorated).

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 TS90 Series sprinkler with optional TurfCup™ 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 medium- to long-range radius.

The TS90 Series sprinkler with optional TurfCup™ 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 top of the cap at finished grade.

The TS90 Series sprinkler with optional TurfCup™ is 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.

It is recommended that sprinklers are installed 2" (5 cm) from hardscaping and 6"-12" (15.2-30.5 cm) 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.

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