



TS120 Pop-up Impact Sprinkler

Operating Manual



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1. General

We presume that you are experienced in the field of irrigation. We have therefore kept these instructions brief and included only the information that it is imperative for you to have to use this product.

Any warranty claims can be accepted only if the sprinkler is used in accordance with these operating instructions and if any defect emerges within the warranty period.

We reserve the right to make changes in line with technological advances, including without prior notice.

2. Safety

These operating instructions contain some fundamental instructions that must be followed when installing, operating, servicing and maintaining the sprinkler. It is therefore imperative that these instructions are read by the fitter and the relevant specialised staff / operators prior to installation and commissioning.

Attention must be paid not just to the general safety information set out in this 'Safety' section, but also to the special safety instructions included in the other sections.

2.1. Use of symbols in these operating instructions

Where failure to follow safety information can place individuals at risk, such information is specifically marked in these operating

instructions with the general danger symbol:



Warning of potential hand injuries



Warning of potential automatic start-up

In the case of safety information, where failure to follow it can damage the sprinkler and/or impair its function, you will see the word:

WARNING!

2.2 Proper use

The sprinkler is used for the even distribution of water onto lawns, green spaces and sports fields laid with natural or artificial grass. The water should be pre-cleaned and free of any coarse or fibrous contamination. The water and ambient temperatures must be below the limits specified in the technical data.

2.3 Clearly improper use

- Operation of the pop-up sprinkler by unauthorised personnel (if the control unit is freely accessible).
- Operation of the sprinkler with the sector to be watered wrongly set, e.g. as the result of vandalism. This can result in the jet of water being directed to the side away from the grassed area.

2.4 Safety information



Read the operating instructions, especially the safety information, before starting any work on or with the sprinkler.

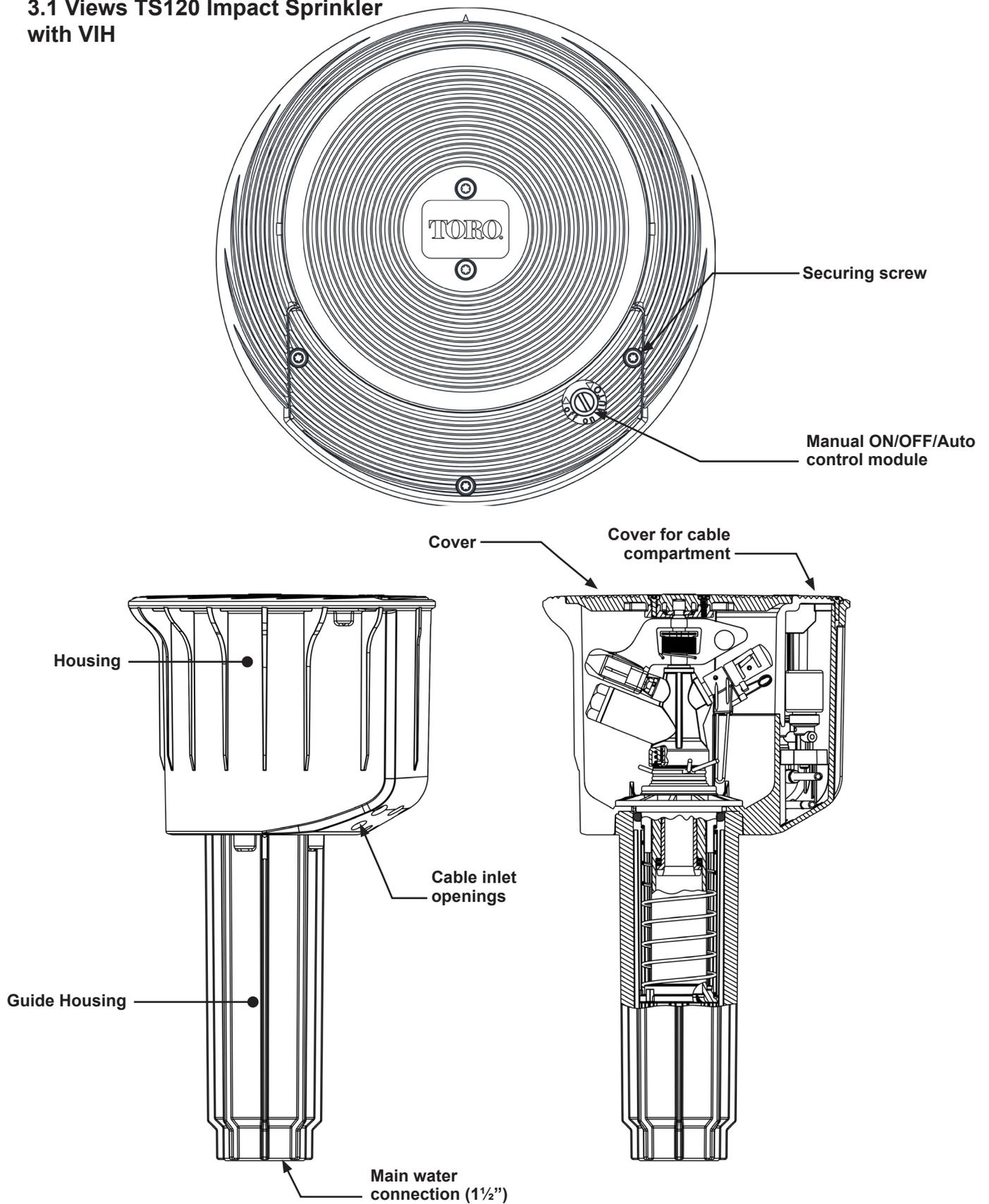
The specific safety instructions appear at the start of each section.

2.5 Dangers of failing to observe safety instructions

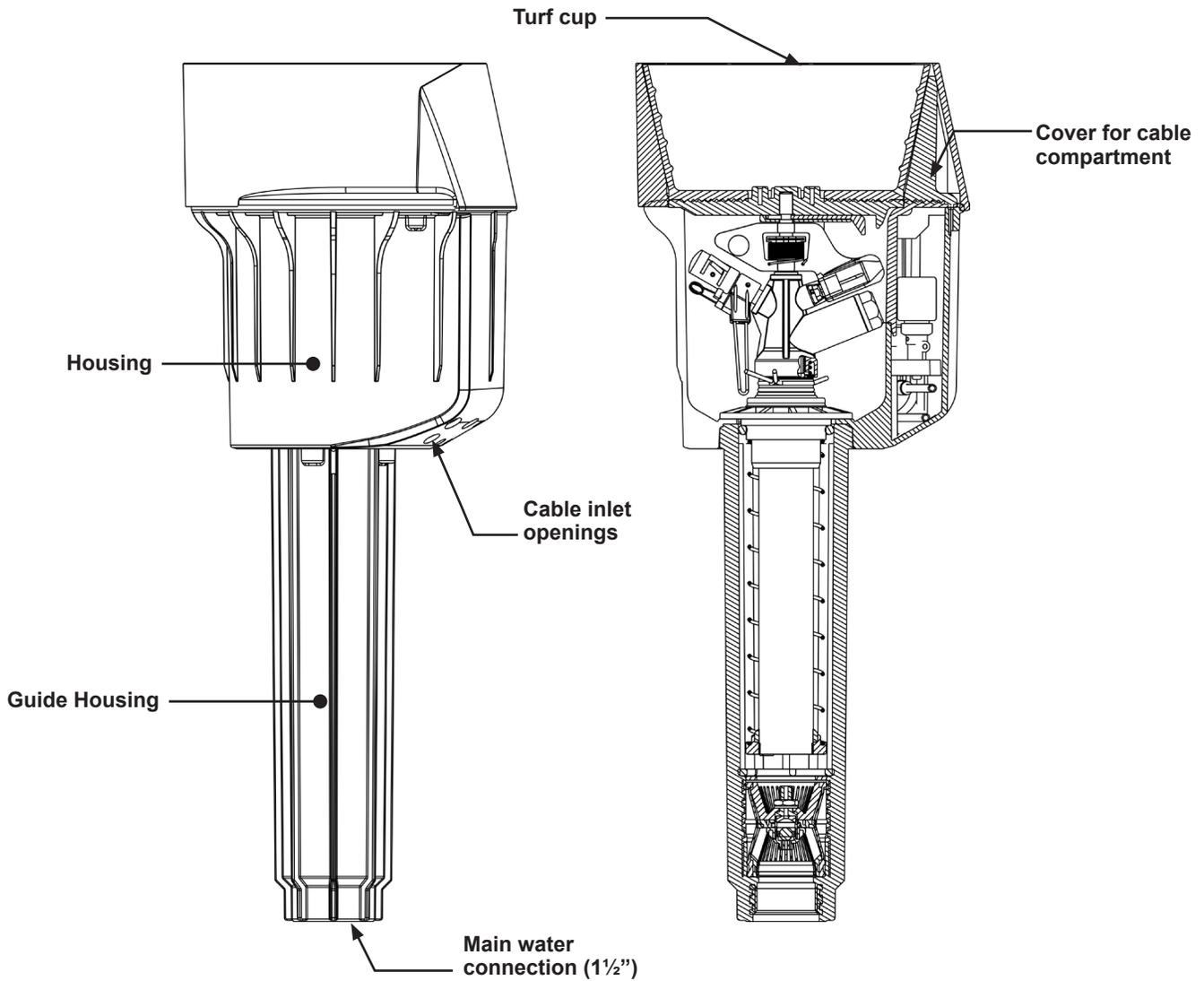
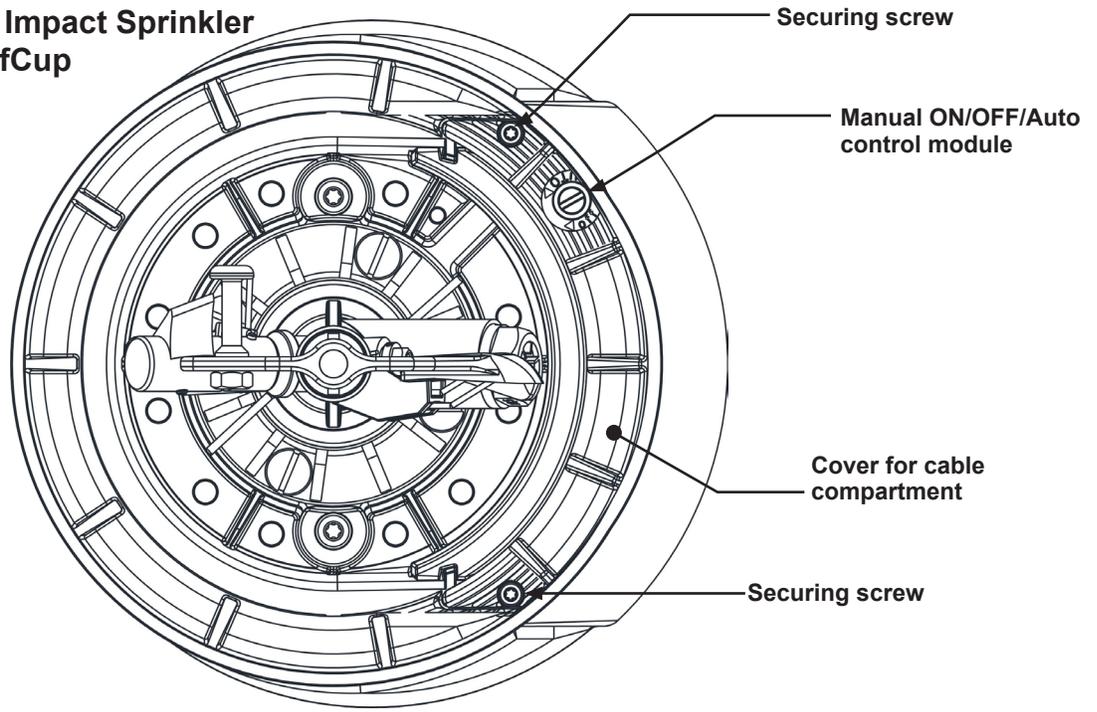
Failure to observe safety instructions can result both in people being placed at risk and in damage to the environment and machine. Failure to observe safety instructions can lead to the loss of any rights to claim compensation.

3. Description

3.1 Views TS120 Impact Sprinkler with VIH



3.2 Views TS120 Impact Sprinkler with VIH and TurfCup



3.3 Special tools

RT19789	TS120 Assembly Key	Disassembly of sprinkler head and pipe axle	
RT15745	TS120 SW 10 Socket Wrench DIN 3125	Changing driving nozzle	
RT17623	TS120 Flushing Equipment	Flushing pipes	
RT17839	Retaining Ring Removal Hook	Removing retaining ring	
RT17843	TS120 Valve Lifter	Changing valve insert	
RT17844	Retaining Ring Pliers	Installation of retaining ring	
ZB98291	TS120 Expanding Screwdriver	Screw / unscrew flange	
RB17698	TS120 Flange for Guide Housing	Plugging the guide housing	
RT83226	TS120 Assembly Key	Disassembly of sprinkler head and pipe axle	
RT17845	TS120 Valve Lifter	Changing valve insert	
ZB98289	TORX-key T20	For screws at the compartment lid	
ZB98297	TORX-key T25	For screws at the housing – guide housing	

4. Technical data

Recommended operating pressure	72.5 to 116 psi
Permitted operating pressure	43.5 to 145 psi



WARNING! *The pressure at the sprinkler must not exceed 145 psi.*

Connection thread:	G1½" NPT
Liquids:	Water
Liquid temperature:	104° F max.
Ambient temperature:	140° F max.

For further data see separate data sheet.

5. Assembly, set-up and installation

5.1 Hazard warnings



If any impurities get into the sprinkler, it is possible that the sprinkler could be destroyed and that fitters could be injured. Flush out the line thoroughly before connecting the water supply.



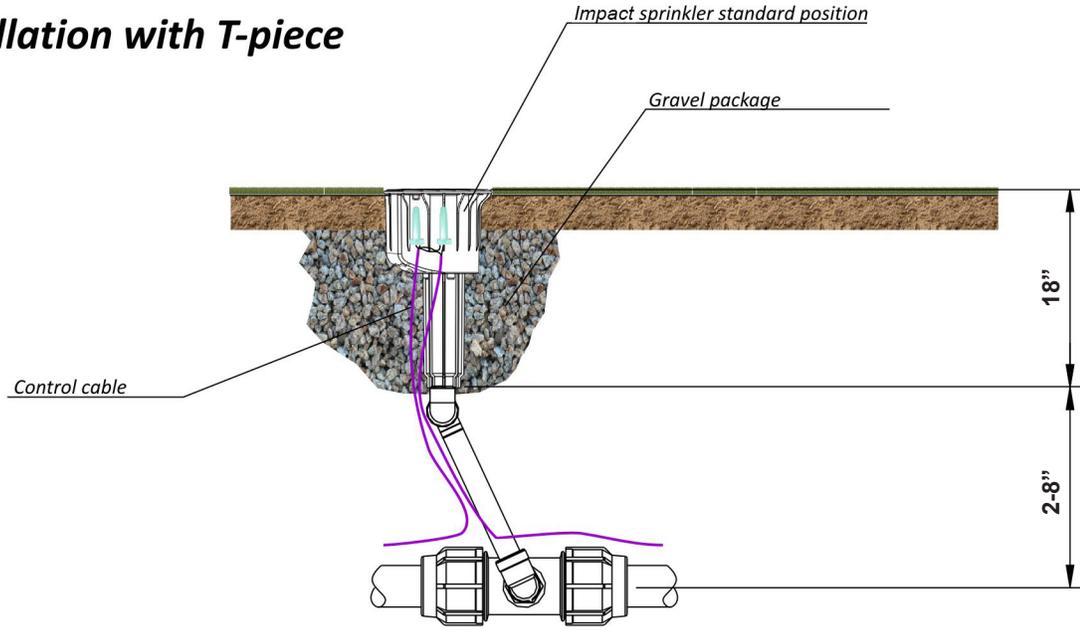
Any unexpected emergence of a jet of water can lead to serious injury. Make sure that the installation has been fully completed before turning on the water supply.

5.2 Installation instructions

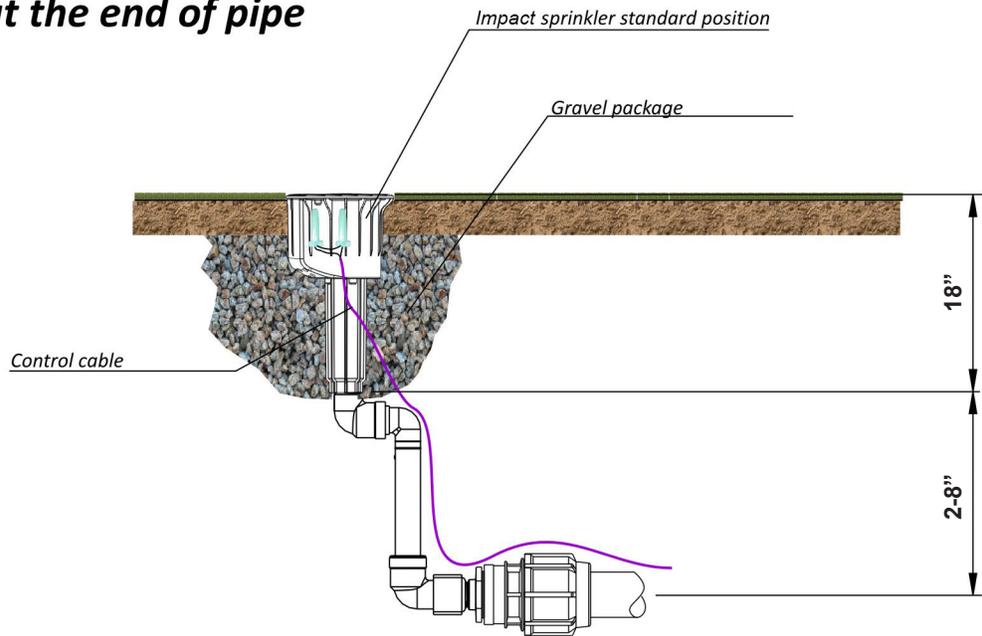
- The thread connection on the pop-up sprinkler is 1½" NPT.
- For the thread seal, use hemp and sealing compound, e.g. Fermit Spezial or teflon tape.
- The pop-up sprinkler should be fitted in accordance with the 'Triton-L pop-up sprinkler installation diagram' (see next page). In order to avoid any load pressure on the main line, you should definitely use a flexible connection.
- Providing a drainage pit directly connected to the drainage, as shown in the installation diagram, is strongly recommended.
- For screwing in the connection joint the housing or housing edge of the pop-up sprinkler can be firmly held or clamped.

5.3 TS120 Impact sprinkler installation diagram

Installation with T-piece

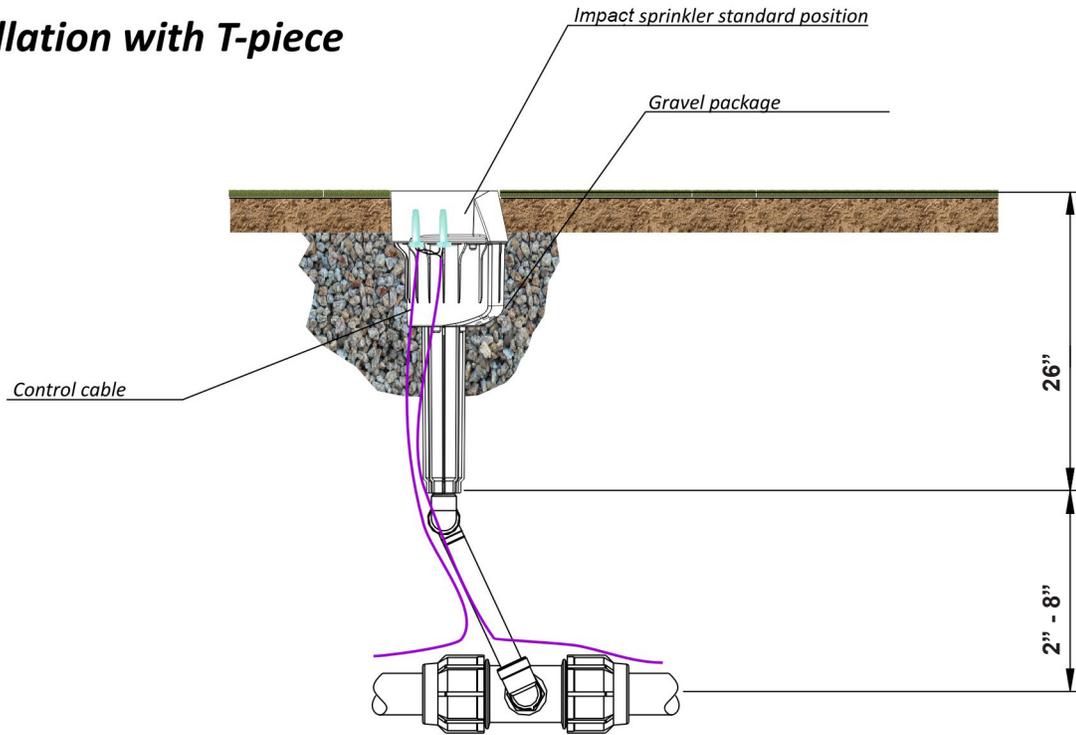


Sprinkler at the end of pipe

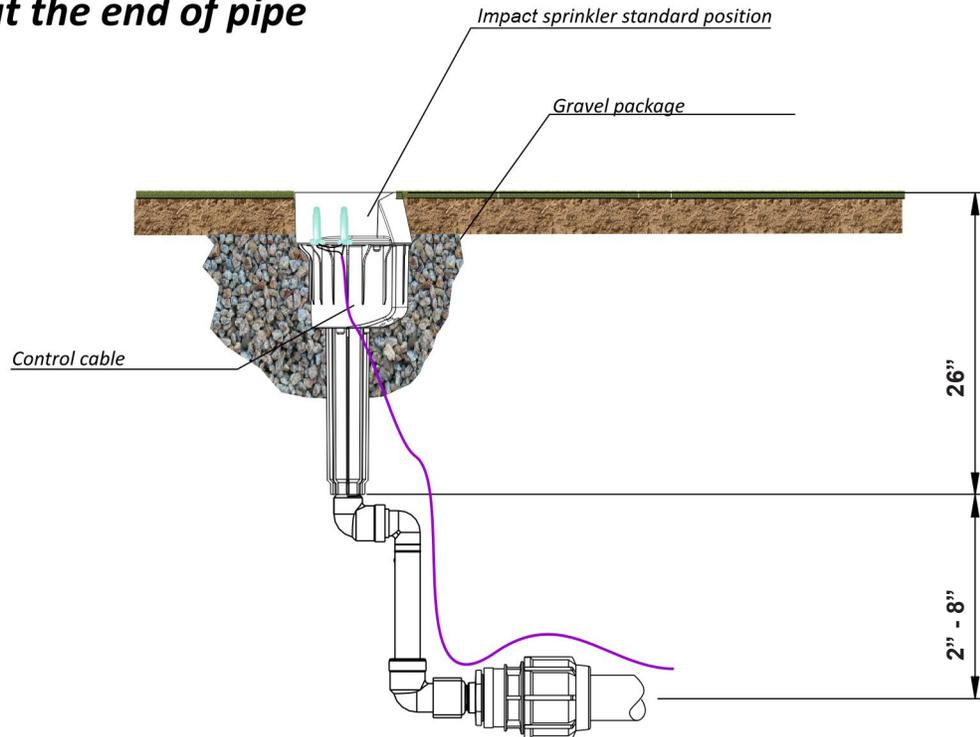


5.4 TS120 impact sprinkler installation diagram

Installation with T-piece



Sprinkler at the end of pipe



5.5 Cabling

The laid 2-core cable is installed for the electrical connection of the TS120 impact sprinkler. The cable is pulled through the right or left opening on the bottom of the housing into the cable compartment.



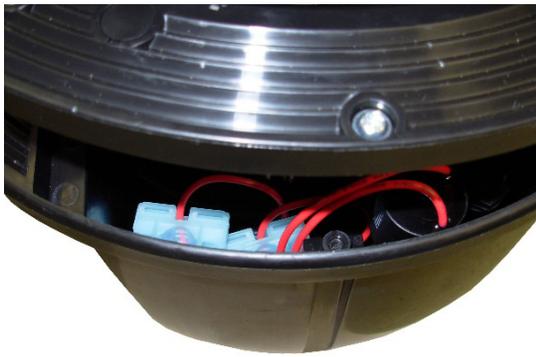
**Possible location
for pulling in the control cable
into the sprinkler**



The DBR/Y-6 cable connector kit (article no.: ZH90032) for connecting the control cable to the coil fitted inside the sprinkler.



Open the cover of the cable compartment and connect the solenoid cable. Please use the DBR/Y-6 connector kit for the connection.



Put back the cables into the cable compartment and close the cover.



The electrical connection is thus not exposed to the soil, but is instead protectively integrated inside the sprinkler and accessible again at any time. This simplifies any search for faults and any maintenance work can be carried out at any time without any earthwork.

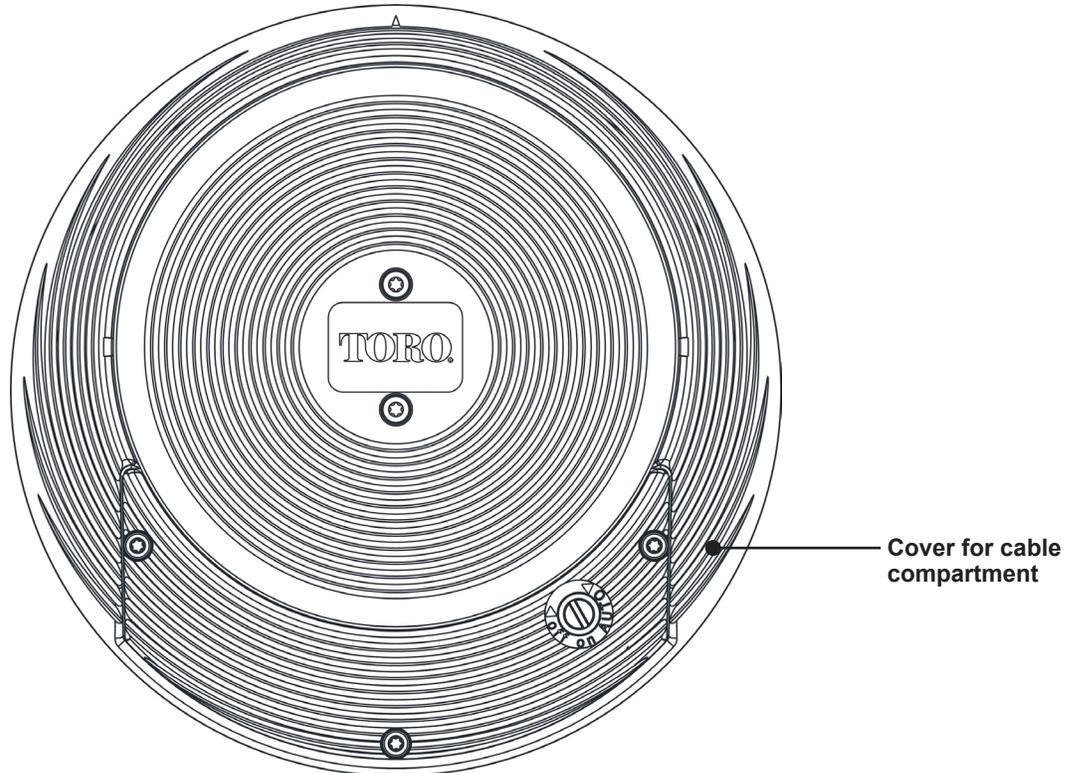
6. Commissioning and Operation

6.1 Potential danger



When it starts up, the impact sprinkler rises up out of the housing and builds up full pressure within about 5 seconds. The jet of water emitted can cause injury. For this reason the following guidance must be followed when commissioning and operating the sprinkler:

- *When the sprinkler is being operated in automatic mode, there must be nobody present in the area.*
- *Operating personnel must not stand in the direction of the sprinkler's jet.*



If the sprinkler is not installed flush with the ground, people may be injured by a fall as a result of stumbling or tripping. Therefore check prior to commissioning and regularly during ongoing use whether the sprinkler cover shuts flush with the surrounding ground.



The sprinkler must not be operated without a closed cover for the cable compartment. During operation the sprinkler head props itself against the edge of the cover and cannot rotate freely without the cover.

6.2 Commissioning

a) Check electrical function:

Before any water supply to the sprinkler is opened, activate the coil by means of the controller. If you hear a 'clicking' sound from the coil, the electrics are working properly. (The click is produced by the movement of the armature.)

b) Ensure that <Manual opening> is set to AUTO (turn screw for <Manual opening> as far as it will go to the left). This setting ensures that after water is supplied the sprinkler closes if it has no power.

c) Slowly open supply of water to the valve until operating pressure is built up.

It is possible that the sprinkler will briefly open, but should then automatically close after at most 30 seconds.

d) Once the water supply has been opened and max. operating pressure has been reached, check sprinkler and connection for leaks.

e) Check that sprinkler is working properly: Open sprinkler using <Manual opening> by moving the screw for <Manual opening> into the position between AUTO and OFF (approx. 1 rotation). Sprinkler head rises and starts to rotate.



Do not stand in front of the nozzle opening!

f) Close <Manual opening> and put into AUTO position (see point 6.2b). Sprinkler must stop water flow within 30 seconds.

g) Keep repeating steps 'e' and 'g' until the sprinkler is working faultlessly.

h) Check once again that it works correctly when activated electrically from the controller.

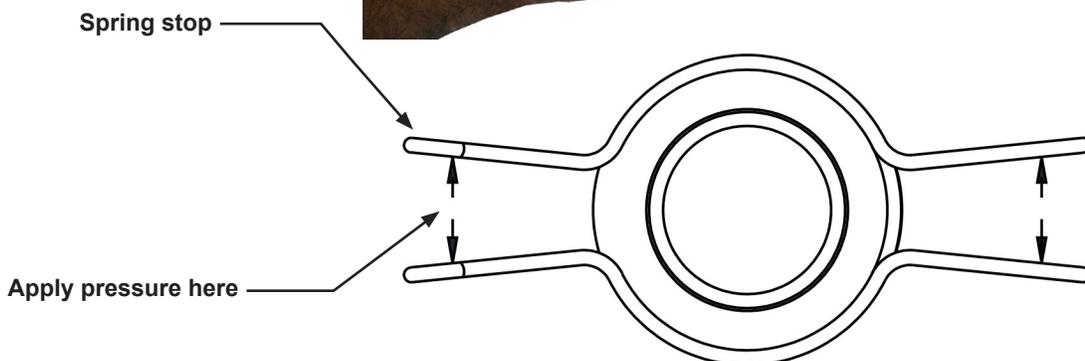
6.3 Setting the sector

With this impact sprinkler the sector setting is infinitely variable. You can adjust the area to be watered by pulling or pressing on the relevant end of the top or bottom spring stop.

Setting the sector angle



Infinitely variable setting is possible by pulling (not pressing) on the relevant end of the top or bottom spring stop



7. Decommissioning and preparing for winter

For decommissioning please turn off the water supply and electricity supply of the pump.

During times of possible frost please ensure that there is no standing water in the sprinkler.

The TS120 impact sprinkler has an automatic emptying system.

The sprinkler has a discharge valve and can thus be emptied by gravity. To do this, the water is let out at the deepest point of the main pipe, as a result of which the sprinkler empties itself. (Deep point emptying)

The remaining water does not any causes in the event of freezing.



Electrically activate the solenoid several times so that any residual water is pushed out of the coil cavity.

During the winter we recommend activating the coil for approx. 1 minute twice a week.

For springtime commissioning, see section 6.2.

8 Maintenance and repair work



An unexpected jet of water can cause serious injury. Prior to any maintenance or repair work ensure that the water supply is securely turned off.

8.1 Maintenance

- Clean out the inside of the sprinkler housing using an industrial vacuum cleaner or similar (as necessary).
- Cut sprinkler housing free of any overgrowing grass. It makes sense to carry out these jobs prior to spring commissioning.
- Regularly check that the sprinkler is flush with the surface, especially in the case of natural grass.

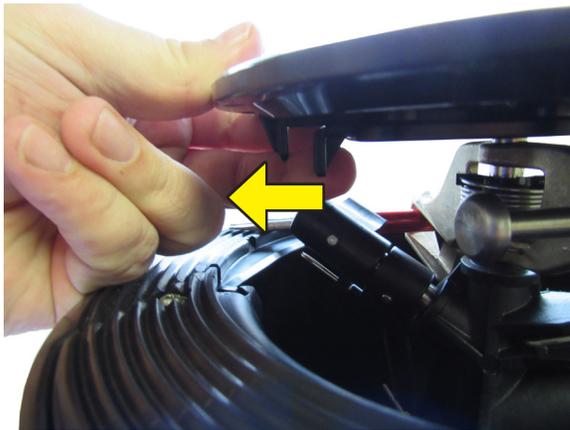
8.2 Changing the nozzles

Please use the socket wrench for changing the nozzle.

Use SW10 for the driving nozzle and SW26 for the main nozzle.

8.3 Changing the nozzles

The sprinkler module needs to be taken out of the housing in order to carry out the repairs described below.



- Lift the cover and secure the insert, with a screw driver against snapping back. Then clip off the cover.

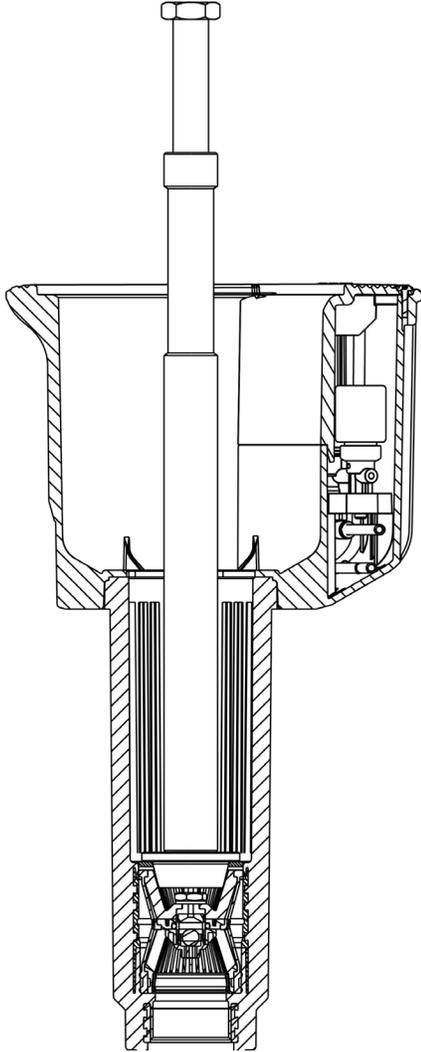


- Unscrew the 4 flange screws.

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- Pull sprinkler module out of the housing.
 - Remove retaining ring in the housing bottom using removal hook RT17839.



- Screw valve lifter in the housing base onto the valve and pull upwards. A few gentle hits may be necessary in order to take off the valve.



8.4 Removing the Valve Insert

- Fitting the valve using valve lifter RT17843 (TC version RT17845).
- Prior to fitting, check valve for any damage to the membrane.
- Check for any dirt and clear away.
- Screw the valve insert with the stainless steel disc onto the valve lifter.
The chamfered surface of the stainless steel disc must point to the valve insert.



- In order to make fitting easier, the valve insert can be slightly lubricated with oil or grease.
- Insert the valve down into the guide housing by applying some gentle taps.
- Using pliers RT17844, now fit the retaining ring into the groove provided for it above the thrust washer.

WARNING! *The sprinkler insert is fitted in reverse order.*

8.5 Removal / installation of the control unit



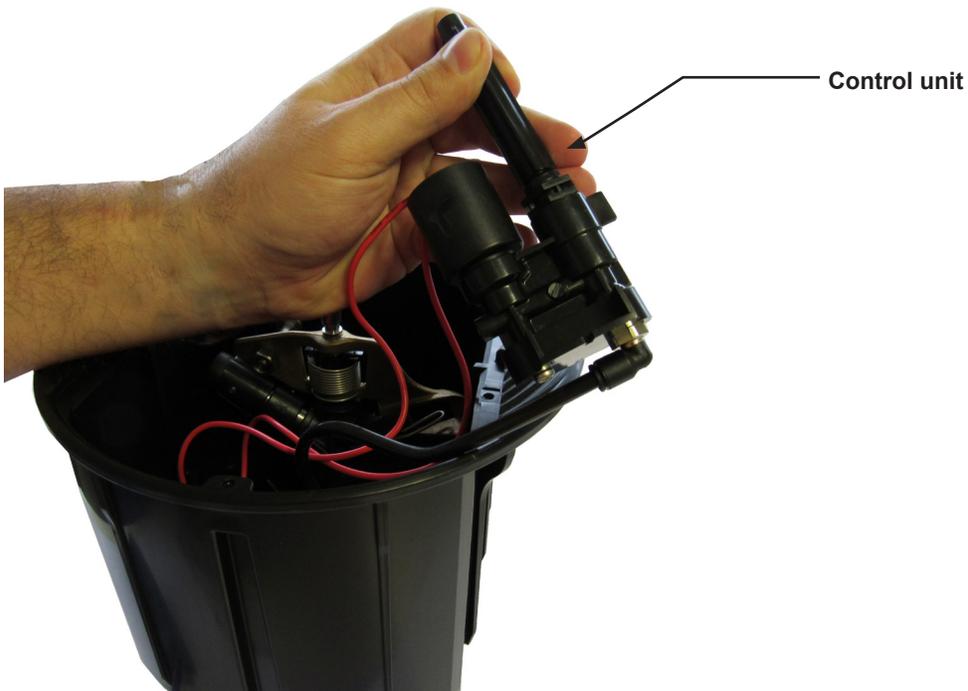
Ensure sprinkler is not under pressure.

Taking out the control unit

- Lift the cover and secure the insert with a screw driver against snapping back. Then clip off the cover.



- Unscrew all 3 locking screws (2 screws at TC version) and take off cable compartment cover.
- Unclip control unit from protective casing and lift up.
- Twist out coil.
- When replacing the control unit, press back the clamp ring at the plug-in connector and pull out the hose.



Fitting the control unit

- When buying a replacement part, the control unit is supplied with plug-and-socket connections. Push hoses into plug-in grommets as far as they will go and ensure that the mounting ring springs back.
- Screw in coil.
- Clip control unit into protective casing.
- Secure housing cover using all three screws. (2 screws for TC version.)
- Check sprinkler is working properly as per point 6.2.

9. Troubleshooting

9.1 Sprinkler malfunctions

Malfunction	Cause	Remedy
Sprinkler not rotating or only very slowly. Sprinkler not rotating at all.	Sealing disc worn out	Change sealing disc
	Driving nozzle clogged	Unscrew driving nozzle and clean
	Minimum pressure of 43.5 psi not reached	Increase pressure
Sprinkler has poor jet	Nozzle is blocked	Unscrew nozzle, remove and clean.
Sector angle gets bigger during operation.	Spring stop is loose. Spring force has slackened. Spring stop has been overextended.	Fit new spring stop.
Valve opens/closes only with manual opening, but not on any electric signal	Screw for <Manual opening> is set to OFF	Turn screw to the left as far as it will go, to Auto.
	Core is jammed in the coil	Remove coil and clean core
	No / inadequate power supply	Establish 24V AC power supply
	Defective coil	Check coil resistance (should be approx. 35 ohms). Replace if necessary.
	Relief channel for coil blocked	Clean channel
	Control pipe to the solenoid clogged or bent	Replace control pipe
Valve fails to open even with manual opening	Control water hole or relief hole blocked	Clean control water / relief hole
	Supply line under no / insufficient pressure	Establish pressure supply
Valve fails to close	Coil seat dirty	Clean coil seat
	Bits of dirt between valve seat and sealing plate	Clean valve seat and sealing plate
	Defective membrane	Remove valve and replace membrane
	Control water filter dirty or Control water filter of the valve filter dirty	Clean control water filter
	Control pipe defect	Change control pipe
Output pressure at sprinkler nozzle too low or casting range too short	Stones and bits of dirt are hindering an unimpeded passage of water	Clean valve and flush sprinkler
	Valve insert is blocked	Clean valve insert see point 8.3

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Count on it.