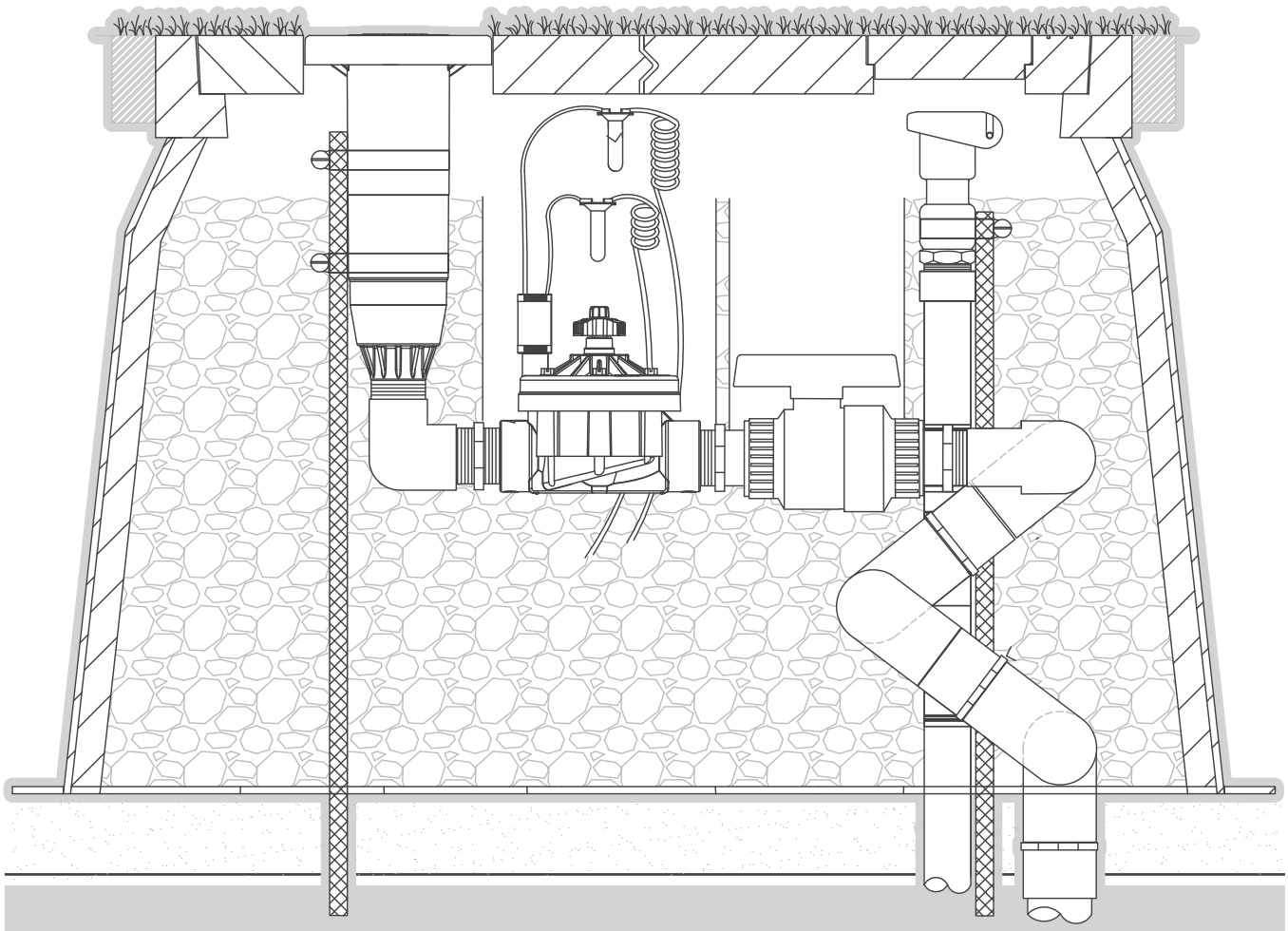
STG-900-KIT and STG-900-KIT-B

OWNER'S MANUAL



STG-900-KIT / STG-900-KIT-B
Synthetic Turf Rotor and Vault System
Valve Adjacent to Head System

Hunter®

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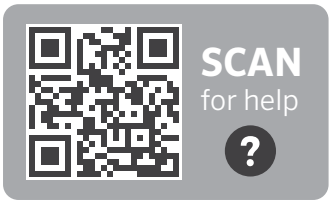

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Synthetic Turf Rotor and Vault System

The Hunter STG-900-KIT synthetic turf rotor and vault system is a special combination of products designed specifically to meet the unique needs of irrigation on synthetic turf fields. Synthetic turf fields are a non-serviceable surface, meaning they are not easily excavated and restored to original condition without huge expense and specialized procedures. As a result and to the extent possible, all serviceable components of the irrigation system must be accessible from the surface. The Hunter STG-900-KIT makes installation and adjustment straightforward and flexible. The STG-900-KIT also provides easy access for the ongoing maintenance needs of the end user.

Setting the ST-173026-B Vault

Set the vault according to the installation specifications provided by the irrigation consultant. It must rest upon a compacted base material per the field specifications. If the vault is to be set directly upon the gravel of the drainage system, the gravel should be compacted and the vault set upon six bricks for stabilization.

The elevation to grade of the vault must be precise and is determined by the field and irrigation specification. In many installations, the elevation for the vault is specified such that the upper rim of the vault is level with the tack/glue board that surrounds the field. The vault's elevation can also be affected by the type of material, if any, that will be attached to the vault's upper surface. Sometimes this will be the field's synthetic "carpet" or the adjacent running track material. Some customers prefer no attachments to the covers because they want a player running toward the vault to see it and take corrective action.

With the STG-900-KIT, there is a direct and required relationship between the location of the vault, the location of the incoming plumbing, and the location and depth of the drainage system. In order for the irrigation sprinkler (rotor) to be properly positioned within the hole in the vault's cover, the swing joint's inlet piping must be placed at the specified location and depth. In order for the quick coupler valve to be accessible and functional once installed, the quick coupler's supply pipe must be installed in the correct location and the valve must be at the correct height within the vault. In order for the vault to drain properly, it must have access to the drainage system, and the drainage system must be lower in elevation than the vault's base (26" or 66 cm).

Vault Dimensions:
Two-piece cover - Upper Rim 20" x 33" (50.8 cm x 83.8 cm), Cover 17" x 30" (43.2 cm x 76.2 cm), Depth 26" (66 cm), Base 27" x 41" (68.5 cm x 104.1 cm)

Incoming Plumbing Location

The swing joint's inlet piping location and depth is critical. This location and depth in conjunction with the special multi-axis vertical alignment (VA) swing joint allows the rotor to be placed and leveled within the hole in the vault's cover. Use the top view of the following installation detail as a reference. The bottom of the top view drawing represents the on-field side of the vault and the top of the drawing represents the off-field side. Next, note that the swing joint inlet is centered along the right side wall of the vault's upper rim (#23). The swing joint's inlet piping must not be any closer to the rotor hole in the cover than this location. The swing joint's inlet can move outward to the point where it is centered under the vault's upper rim.

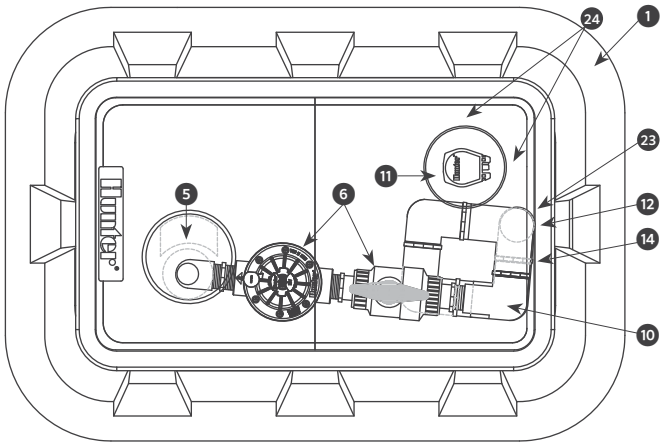
The quick coupler inlet piping must align with the quick coupler access hole in the vault's cover. Use the top view illustration as a reference below. The rim of the vault is the exposed upper surface that surrounds the vault's covers once they are installed. The quick coupler inlet piping needs to be 5" (12.7 cm) from the inner rim of the vault at the top and 5" (12.7 cm) from the inner rim of the vault on the right side (#24).

Incoming Plumbing Elevation

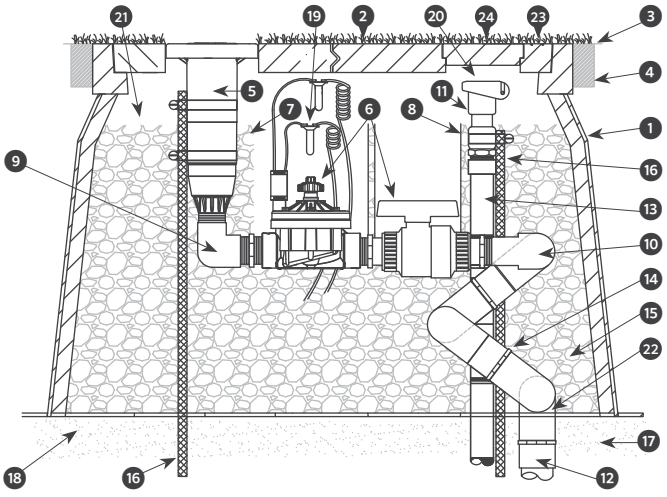
The swing joint's inlet piping location and depth is also crucial. This location and depth in conjunction with the VA swing joint allows the rotor to be placed and leveled within the hole in the vault's cover. Use the side view of the following installation detail as a reference. Note that the VA swing joint's first horizontal section is resting at a level that is at the same level as the bottom of the vault (#22). This depth is 26" (66 cm) from the top of the vault.

The quick coupler inlet piping (#13) must align with the quick coupler access hole in the vault's cover (#24). Also, in order for the quick coupler key with its handle attached to operate the quick coupler valve, the quick valve must be installed as close to the underside of the main cover as possible. Use the side view illustration shown below as a reference. The quick coupler must be installed so that the final elevation is approximately ½" (1.2 cm) below the underside of the main vault cover (#20).

Off-Field Side



On-Field Side



View from On-Field Side

Specification List for Installation Detail Drawings

ITEM	DESCRIPTION
1	Hunter ST-173026-B composite vault and two-piece polymer-concrete lid assembly with cast-in opening to support rotor lateral thrust plus cast in opening with circular cover for quick coupler access
2	Optional synthetic turf or running track material attached to covers
3	Finished grade set to field perimeter tack/glue board or as per specification
4	2"x 4" (5.1 cm x 10.1 cm) tack/glue board as per specification all sides
5	Hunter STG-900 rotor with rubber cover kit 473900 installed
6	Hunter ST-VBVF-K kit; includes Hunter ICV-151G, 1½" ball valve (235 PSI rated) plus Acme pivot connection fittings
7	Control valve sleeve, 8" (20.3 cm) diameter x 11" (27.9 cm) tall with two notched sections for piping
8	Ball valve sleeve, 6" (15.2 cm) diameter x 11" (27.9 cm) tall with two notched sections for piping
9	Hunter 239800 rotor adapter fitting with two Acme pivot points
10	Prefabricated 2" (5.1 cm) PVC Hunter ST-2008-VA swing joint with six Acme pivot points to provide multi-axis articulation and alignment of rotor to the opening in vault cover
11	Hunter HQ-5RC quick coupling valve
12	Supply piping and fitting – 2" (5.1 cm) minimum from mainline through to ST-2008-VA swing joint
13	Schedule 80 PVC riser supply piping and fitting; 1" (2.5 cm) minimum
14	Acme threaded pivoting points (nine total)
15	¾" (1.9 cm) minus washed gravel
16	⅝" x 30" (1.6 cm x 76.2 cm) rebar stake and stainless steel strapping
17	Compacted field base material as per specification
18	Provide drainage via access to field drainage system
19	Waterproof connections per specification
20	Top of quick coupler set ½" (1.3 cm) below underside of vault cover
21	Gravel level 5" (12.7 cm) below the underside of the vault cover (to bottom of rotor's compartment)
22	Elevation of swing joint's inlet: set second pivot point on swing joint with bottom of vault per side view detail drawing (26" (66 cm) below vault top)
23	Location of swing joint's inlet: set inlet at edge between vault covers and locate 5" (12.7 cm) from the top of cover per top view detail drawing – inlet must not be set closer to rotor than shown
24	Location of quick coupler inlet piping: measure inlet piping location at top right corner of vault, 5" (12.7 cm) from top edge and 5" (12.7 cm) from side edge

Installing the ST-2008-VA Swing Joint

The VA swing joint has six articulating pivot joints (#10). Add two more articulating pivot joints once the rotor is attached to the valve assembly. The eight total pivots are Acme-threaded fittings with O-ring seals. These pivot points do not require sealing compounds or Teflon® tape in order to create a seal. The O-rings in the fittings are designed to create the seal.

Prior to attaching the VA swing joint to the inlet piping, check all pivots to make sure they will provide adequate movement to allow alignment of the rotor to the hole in the vault's cover. The goal is to have each pivot threaded in as far as possible while still retaining the needed movement. The first pivot at the inlet of the swing joint is positioned vertically and provides the side-to-side articulation. The remaining pivot points provide the up and down plus forward and backward articulation. For future service considerations, it is also desirable that the rotor, valve assembly, and swing joint assembly be raised vertically out of the vault while still attached at the inlet. Test the swing to confirm there is adequate movement to bring the swing joint vertically up and out of the vault. Next, prime, glue, and attach the VA swing joint to the inlet piping.

The supply piping to the VA swing joint must be 2" (5.1 cm) minimum from mainline through to the VA swing joint.

Installing the Quick Coupler and Inlet Piping

Run quick coupler supply line to the appropriate location outlined above. Connect 1" (2.5 cm) schedule 80 piping vertically and attach quick coupler with appropriate fittings, making sure the quick coupler's upper surface is as close to the underside of the vault as possible. Confirm location aligns with quick coupler access hole in the vault's cover. Next, stake and band the quick coupler and inlet piping per specification.

Care needs to be taken to ensure the rebar stake does not penetrate subsurface piping or irrigation mainline.

Attaching the ST-VBF-K Kit to the ST-2008-VA Swing Joint

Remove the red protective cap from the inlet side of the ST-VBVF-K assembly. Next, thread the assembly onto the VA swing joint by hand clockwise until it stops. Now rotate the assembly counter-clockwise until it is vertically aligned.

Installing the Rotor Rubber Cover Kit

Remove the green logo cap on the rotor. It is much easier to align and install the rubber cover kit to the rotor before the rotor is attached to the ST-VBVF-K assembly. Note the general shape and orientation of the large circular rubber boot that must fit over the rotor's flange (rotor's upper surface). Also note that there are recessed areas on the underside of the boot that must align with the ribs on the underside of the rotor's flange. It is easiest to attach the boot at the narrowest section first. Hold the rotor so that the rotor's compartment is facing away from you and you can see ribs on the underside of the rotor's flange. Find the part on the boot where the hole in the boot is closest to the outer edge. Attach this narrow section first while taking care to align the boot to the ribs under the rotor's flange. Continue attaching the remaining sections. Once complete, confirm that all ribs on the rotor are aligned with the recessed areas on the boot.

Do not install the center logo cap from the rubber cover kit at this time.

Attaching the Rotor to the ST-VBVF-K Kit

Remove the red protective cap from the Acme outlet elbow attached to the ST-VBVF-K assembly. Next, thread the rotor onto the assembly by hand clockwise until it stops. Now rotate the rotor counter-clockwise until the rotor's side compartment faces toward the off-field side of the vault (see top view installation drawing). Lower rotor, valve, and swing joint assembly into the vault.

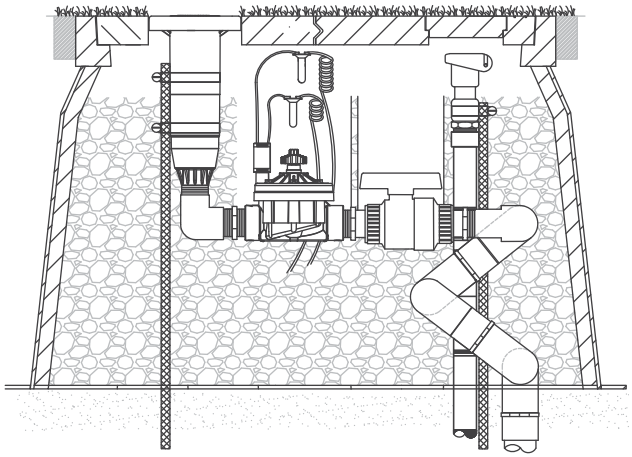
Setting the Rotor to Initial Grade

It is recommended that the rotor be set to grade in two phases: First, an initial setting with a partial backfilling of gravel and then, the final setting to grade later. Why? History has shown that the vaults are set to their grade prior to the final filling and compaction of the surrounding surface outside of the vault. The compacting process with large vibratory rollers can shift the vaults slightly. To avoid having to go back in and excavate gravel within the vault in order to reset the rotor grade, it is best to set the rotor's final position only after the surrounding surface has been leveled, compacted, and for the carpet and carpet sub-base cushion material.

To start the process of setting the rotor to grade, find the vault half-cover with the hole for the rotor and install it into position on the vault. Now pull the rotor up into position within the hole. If the riser assembly is pulled up, the rotor can be held in this position during the backfill process by hand. Or, the riser can be held up with a tool such as the Hunter wrench (PN 461720), the T-handle tool (included in rotor vault PN 319100), the snap ring tool (PN 052510), or a fabricated tool such as a screwdriver with a screw from the rotor's logo cap welded to the tip.

Route the controller station cables such that they can be pulled up into the sleeve for the control valve. With the rotor held within the vault cover by one person and the swing joint held by another person to make the rotor flush to the cover, start the backfilling of the vault. Fill gravel evenly and only enough to support the swing joint and rotor in this initial setting (to a level just below the ST-VBVF-K assembly). Backfilling the gravel during this phase will also serve to help support the vault's sidewalls during the heavy equipment compaction process of the surrounding surface.

Setting the Rotor to Final Grade



Route and position controller cables into the underside of the control-valve sleeve and install the valve sleeve. Next, position and install the ball-valve sleeve.

With the rotor held within the vault's cover, check to see if the swing joint needs adjustments in order to achieve a rotor grade that is level to the vault cover. If so, remove or add gravel as necessary to achieve the desired grade. Continue backfilling and packing the material. Finished level of the backfill is to be at the same level as the bottom of the rotor's compartment (approx. 5" (12.7 cm) from the underside of the vault's cover). Check to see if the rotor will remain in position if released. If not, pack more backfill material beneath the rotor.

Next, carefully lift and remove the cover from around the rotor. Now stake and band the rotor per specifications, taking care not to move the rotor's position. Once complete, replace the cover to confirm the rotor remains to grade. If not, adjust.

Take care to ensure the rebar stake does not penetrate the subsurface piping or irrigation mainline.

Cable Connections

Make wire splice connections per specifications using approved wire splice connectors.

Setting the Rotor's Arc Orientation and Arc Adjustment

In order to position the rotor so it will apply water in the intended area, the arc orientation (direction) and the adjustable arc must be set. These initial adjustments can be made without water running through the rotor. The first step is to remove the riser assembly so that the right fixed stop of the arc adjustment mechanism can be aligned to the right side of the area to be irrigated. In order to remove the riser assembly, the upper snap ring must be removed from the rotor.

Upper Snap Ring Removal

Prior to removal of the upper snap ring assembly, the rubberized logo cap must be removed and the riser assembly must be pressed below the snap ring's rubberized seal. If the procedure below is not followed, the upper snap ring assembly cannot be removed from the rotor.

Remove the stainless screw from the center of the rubberized logo cap using a Phillips screwdriver (figure 1). Prior to removing the rubberized logo cap, note that the arrows on the logo indicate the position of the nozzles on the riser assembly. As the rubberized logo cap is removed, a protruding pin on the underside of the logo cap (figure 2) will become visible. This pin is the alignment feature on the rubberized logo cap that must be inserted correctly during assembly in order for the arrows on the rubberized logo cap to be positioned over the nozzles below. Note which hole the pin fits into on top of the riser (figure 3).

Figure 1

Figure 2

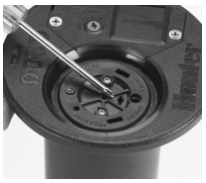


Figure 3

Once the rubberized logo cap is removed, use the heel on the palm of your hand to forcefully press the riser assembly down (figure 4) and below the rubberized wiper seal on the snap ring assembly (figure 5). When the rotor is dry (without water within), more force is required. If sprinkler is installed and has been activated, the water acts to lubricate the wiper, making the procedure much easier.

Figure 4

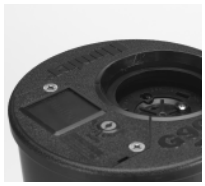


Figure 5

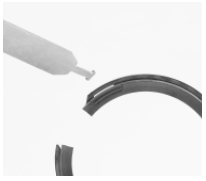


Figure 6

To remove the snap ring assembly, hold the snap ring tool vertically over the rotor's upper snap ring area. Align the metal end of the snap ring Tool to the indicator on the snap ring's rubberized wiper seal (figure 6). Use the palm of the other hand to press the tool downward and through the rubberized membrane (figure 7). Tool should penetrate about ¼" (6.4 mm) into the snap ring assembly. While holding the tool within the snap ring, press the handle of the tool downward and away from the rotor. As the tool is pressed downward, the snap ring will lift from the rotor. While using the tool to hold the snap ring in this elevated position, use the other hand to pull the snap ring from the rotor (figure 8). If the snap ring's rubberized wiper seal appears to be the only part that is lifting, the tool has not penetrated into the snap ring far enough.

Figure 7

Figure 8

Figure 9

Riser Assembly Removal

To remove the riser assembly, first remove the upper snap ring as outlined previously. Insert the Hunter wrench, T-handle tool, or the tip of the snap ring tool into the riser's lift socket, turn ¼ turn and lift the riser from the rotor's body. The STG-900 rotors have a lift-up socket that is accessed directly on top of the riser (figure 9).

Arc Adjustment Preparation

All Hunter adjustable arc rotors have a fixed stop on the right side of the arc and an adjustable stop on the left side of the arc. Arc adjustments can be made prior to installation with the riser in hand, after installation with the rotor not activated, or while the rotor is in operation. Before setting the arc, it is necessary to first establish where the right side fixed arc stop is located.

To expose the rotatable nozzle housing (also known as the turret), press down on the riser seal assembly to compress the riser's retraction spring (figure 10). The seal assembly must be held in this position. Rotate the nozzle housing back and forth until the right side arc stop is found. This is the fixed (non-adjustable) side of the arc. All adjustments should be made with the nozzle housing in this right stop position.

Figure 10

Figure 11

Arc Adjustment Procedure

All adjustments are initiated by inserting the small end of the T-handle tool or the plastic end of the Hunter wrench into the riser's adjustment socket. The adjustment socket can be found on the riser's upper surface (figure 11). Insert the tool into the socket to engage the adjustment mechanism. Again, all arc adjustments must be made with the turret oriented to the right fixed side of the arc as outlined in the previous section.

To increase or decrease the arc of coverage: Insert the tool into adjustment socket (figure 11), making sure the nozzle housing is at the right arc stop position. Each full turn of the tool to the right (clockwise) or left (counterclockwise) will increase or decrease the arc by 45°. The arc is infinitely adjustable from 40 to 260°. When the maximum or minimum arc is reached, the tool will stop turning, and a ratcheting sound will be heard. To check the arc setting, rotate the turret back and forth. If further adjustment is required, repeat the steps above.

Area to be irrigated: Set the arc to the estimated setting by first aligning the right fixed stop to the right boundary of the area to be irrigated. It is important to note that unlike natural turf irrigation, synthetic turf does not require water to keep it green. As a result, arc adjustments for synthetic turf rotors are only made with the intent to cover (cool) target areas on the synthetic surface. For instance, if the field is encircled by a running track, it is likely the arc adjustments will be set to cover well away from the running surface and targeted more to the actual playing surface. Also, since synthetic turf irrigation is more often applied during the day when there are prevailing winds, arc adjustments should take this factor into consideration as well.

Once the area to be irrigated is determined, align the right arc stop with that right boundary. Then, make adjustments to the left adjustable stop to align with the left boundary of the area to be irrigated.

Replacing the Riser into the Rotor Body

Adjustable part-circle risers must be inserted such that the arc setting aligns to the area to be irrigated. All Hunter adjustable arc rotors have a fixed stop on the right side of the arc and an adjustable stop on the left side of the arc. Rotate the nozzle housing (turret) back and forth to find the right fixed stop. With the riser positioned to the right fixed arc stop, orient and point the long-range nozzle to the right side of the area to be irrigated. Drop the riser into position within the rotor's body and press downward as far as it will go.

Upper Snap Ring Installation

Hold the snap ring in front of you with the wiper seal facing up and the snap ring open ends at the top. The snap ring end on the left must be installed first. Lay the snap ring on top of the rotor and use the left thumb to force the left open end of the snap ring into the upper snap ring groove within the body (figure 13). Once engaged, the remaining portion of the snap ring can be installed by pressing in a counter-clockwise motion around the snap ring (figure 14).

Prior to installing the rubberized logo cap, the riser assembly must be pulled up above the upper snap ring's rubberized seal. If this procedure is not followed, the rubberized logo cap's stainless steel screw cannot reach the riser assembly below and attachment will be impossible.

Figure 13

Figure 14

Figure 15

To pull the riser assembly above the upper snap ring's wiper seal, first locate the lift-up socket on top of the riser assembly. Using the T-handle tool, snap ring tool, or Hunter wrench, insert the tool into the lift-up socket, turn ¼ turn (figure 14). Next, lift the riser assembly up until the nozzles can been seen above the upper snap ring assembly (figure 15). Slowly release the riser assembly downward until the riser assembly rests on top of the upper snap ring assembly (figure 16).

Logo Cap Installation

Prior to installing the rubberized logo cap, find the protruding pin on the underside of the rubberized logo cap (figure 17). This pin is the alignment feature on the rubberized logo cap that must be oriented and inserted into the riser assembly correctly. Proper alignment and installation of the protruding pin allows the nozzle direction arrows on the rubberized logo cap to be positioned over the nozzles below. Note which hole in the top of the riser that the pin fits into (figure 18).

When installing the rubber cover kit's logo cap, it is highly recommended to first lift up the riser assembly with the T-handle tool and hold the riser in this raised position while installing the logo cap. Orient and place the logo cap on the top of the riser. Attach the rubberized logo cap using a Phillips screwdriver and the screw provided. Tighten the stainless steel screw clockwise until the screw is hand tight.

D

Figure 16

Figure 17

Figure 18

Tack/Glue Board for Vault

In most instances, a tack/glue board is specified to be constructed around the perimeter of the ST-173026-B vault. Building the tack/glue board may or may not be the responsibility of the irrigation contractor. The purpose of the tack/glue board is to provide a means to securely attach the synthetic "carpet" around the perimeter of the vault. Depending on the synthetic turf field contractor, the carpet will be attached with tack nails, glue, or both.

Use Hunter ST approved adhesive P/N ST-ADH-K

The most common tack/glue board construction material is Trex® type 2" x 4" (5.1 cm x 10.1 cm) lumber. Depending on the field design and the location of the vault, the tack board will be an independent perimeter board or attached to the field perimeter tack/glue board as shown below.

The tack/glue board rests upon the compacted field base material. The design can be a very close-fitting frame around the vault's exposed upper rim with adhesive between the frame and the vault or a looser framework with concrete between the frame and vault as shown below. The tack/glue board elevation is often equal to the field perimeter tack/glue board. Or it may be equal to the elevation of the vault's perimeter rim. It may also vary depending on the material (if any) that will be glued to the top of the vault's cover (field carpet, track surface, etc.). Refer to the field and irrigation specifications to determine the appropriate level.

Filling Irrigation Mainline Piping

When filling the irrigation mainlines with water, avoid filling them through the rotor. Instead, attach a quick coupler key to the quick coupler that is farthest from the mainline source. Open the water supply valve only enough to fill the mainline slowly. Run the system, discharging through the quick coupler until all air is relieved from the mainline.

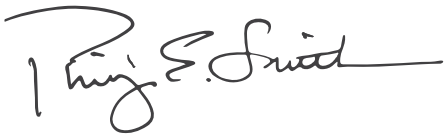
Control Valve Flow Adjustment

Sometimes the flow and pressure characteristics of the system cause the control valve to close too slowly. The Hunter ICV control valve comes from the factory with the flow control stem turned down a couple of turns to help prevent slow closing. If your control valves are closing too slowly, adjust the flow control as follows:

Activate the rotor by using the controller's manual feature or by using Hunter's handheld ROAM remote control. (Do not activate using the manual bleed feature on the valve.) Allow the pressure and flow to come up and stabilize. Once stabilized, turn the flow control knob ½ turn clockwise. The flow control knob is located on top of the valve in the center. The first ½ turn clockwise may be tight if the system is not stabilized. After the knob has been turned, wait approximately 5 seconds for the pressure to stabilize again. This waiting period makes it easier to turn the knob. Continue turning the knob using this turn-and-pause method until the rotor's water stream starts to be affected by the flow restriction (reduced radius). Now turn the knob ½ turn counter-clockwise. This will be the optimum flow control setting.

Helping our customers succeed is what drives us. While our passion for innovation and engineering is built into everything we do, it is our commitment to exceptional support that we hope will keep you in the Hunter family of customers for years to come.

Gregory R. Hunter, CEO of Hunter Industries



Gene Smith, President, Landscape Irrigation and Outdoor Lighting

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