



Replacement rubber components, gaskets and solenoids are available for Champion valves in repair kits at your Champion dealer.

Note: The Champion automatic adapters are referred to as either actuators or adapters throughout the document. When the word "valve" is used, it refers to the anti-siphon body in which these adapters are normally installed.

Problem: There is a slow leak at the lowest sprinkler head. The actuator is not seating completely.

Check the following:

- **Flow adjustment:** (see appendix re: flow control adjustment).
- **Solenoid:** If the solenoid is not seating properly, there will be water leakage (See Appendix re: checking the mechanical operation of the solenoid.)
- **Diaphragm:** If the diaphragm has lost its elasticity or if there is a pinhole leak in the diaphragm, there will be water leakage. Replace the diaphragm.
- **Diaphragm Support and Diaphragm Support O-Ring** (model AA & AB only): If there is a crack on the diaphragm support, or if the diaphragm support a-ring has become worn out, there will be water leakage. Replace the diaphragm support and a-ring. (Contact Champion for replacement diaphragm supports)
- **Seat Washer and Meter Screw:** If the rubber seat washer is worn or cracked, water leakage will occur. You can turn the seat washer over to the unused side, and this may temporarily fix the water leakage. Polish out any blemishes on the valve seat with 400–600 grit wet/dry sandpaper. Observe the impression the valve seat makes on the seat washer to verify the alignment of the seat washer and the valve seat. If the hole through the center of the meter screw has become enlarged through normal usage, it will have to be replaced. (See appendix re: seat washer and meter screw for additional information.)
- **Water Pressure** (see appendix re: water pressure): Are there any obvious leaks on the actuator itself? It should be completely dry. If there are any leaks, try to determine which O-ring has worn out. That O-ring will need to be replaced to stop the leakage at the lowest sprinkler head. If the screws holding the upper and lower portions of the diaphragm chamber together are leaking, tighten the screws firmly (150 ft. lbs. of torque).
- **Anti-siphon Valve Seat:** If the valve seat in the anti-siphon valve body is worn out, there will be water leakage. Brass anti-siphon valves have a service life of anywhere from 5 to 10 years, with many in service over 25 years. However, these valves can eventually wear out (see the appendix under anti-siphon valves).

Problem: The automatic adapter will not turn on.

Check the following:

- **Flow adjustment** (see appendix re: flow control adjustment): Use the manual bleed screw to turn the adapter on. If the adapter operates normally, there is either an electrical problem or a meter screw problem (see appendix re: seat washer and meter screw).
- **Wire gauge:** If you are using the improper wire gauge for your sprinkler system, you may not be getting enough power to the automatic valves. When the distance between the timer and valve is 0–100 feet, #16-gauge direct burial wire is recommended. For distances of less than 50 feet, #18-gauge direct burial wire can be used. For distances over 100 feet, use #14-gauge direct burial wire. Single stand or braided wire can be used. The best wire for a professional installation is # 14-gauge single strand direct burial wire.



Is there power to the solenoid?

Set the sprinkler timer to manual mode. Turn on the valve manually from the sprinkler controller. Check the solenoid for a slight vibration. This indicates the solenoid is getting power. You can feel the solenoid directly.

DO NOT CHECK FOR POWER BY SPARKING THE WIRES! YOUR TIMER MAY BE DAMAGED!

If the solenoid is not getting power, there is either a problem with the wiring to the automatic actuator or with the timer itself.

You can use a voltmeter to check for 24 volts $\pm 2v$ present at the solenoid. If you have another 24V solenoid you know works, connect it across the circuit and listen to see if the solenoid "clicks" to indicate sufficient power is getting through.

The solenoid may be screwed too deeply into the seat. Turn off the water to the valve and remove the solenoid. Ensure that the solenoid a-ring is in place. Replace the solenoid by turning clockwise until it is firmly seated, and turn on the water supply. Turn on the valve from the controller. Back off the solenoid (counterclockwise) until it begins to leak. Re-tighten $1/2$ to 1 turn.

Is the timer working properly? Do other actuators on the same timer work?

If the solenoid is getting power and all of the other actuators turn on and off, then the problem is the actuator, not the timer. If none of the actuators operate properly from the timer, the problem is either the timer or the wiring to the actuators. Check the wiring to be sure the common wire has not become severed.

You can connect the "hot lead" (numbered 1 - 6 on the terminal strip) directly to either terminal marked 24v on your timer. If the station turns on when connected directly to 24V, but will not turn on when in manual mode, then the timer is bad.

What brand of sprinkler controller timer is being used?

If your timer is not a Champion timer, and the automatic valves will not turn on, it is possible that your timer is not compatible with Champion automatic actuators. This problem occurs in the lowest-priced timers from other sprinkler companies. Due to cost considerations, the power supply in these timers is not sufficient to power the solenoid in Champion actuators. Before concluding that your timer is not compatible, double-check all of your wiring and connections. and see the section on water pressure in the appendix.

Remove the automatic adapter from the anti-siphon valve and check for an internal blockage that is preventing water from flowing through the plumbing. Check the water pressure at the valve. If the pressure exceeds 125 PSI, you cannot use plastic actuators; you must use a brass adapter. If the pressure exceeds 150 PSI, you must use Champion Classic actuators (the larger diaphragm model). If the pressure exceeds 200 PSI, you must use a pressure regulator upstream of the valves (*see appendix re: water pressure*).



Problem: The automatic valve does not shut off automatically. The valve continues to run at full volume (not a slow leak).

Check the following:

Is the valve getting power from the timer?

Check the timer to see if it is sending power to the station. If the timer is malfunctioning, you can always unplug it, and all Champion valves will shut off.

The valve is not getting power from the timer, and it continues to run.

Try tapping gently on the adapter with a rubber mallet or other tool that will not damage the valve or the adapter. If the adapter closes after tapping it, the adapter may need a thorough cleaning to prevent it from sticking. You may also wish to check the seat washer and meter screw, the solenoid (see appendix), and clean the seat of the anti-siphon valve.



If the valve will not shut off after tapping it.

You can always shut the center flow control screw completely on a Champion valve to shut the water flow off. Turn the center screw down until the valve shuts off. The valve will remain off until it can be serviced either by you or a service person. You can also try turning off the water supply to the valve, removing the automatic adapter from the anti-siphon valve, and checking for an internal blockage that is keeping the valve open.

The solenoid may be stuck open: *(See appendix re: checking the operation of the solenoid)*

The diaphragm may be ruptured or have a pinhole in it.

Check the water usage in gallons per minute (GPM) at the station. If the station is using less than 4 GPM (such as in a drip irrigation system), Champion actuators will not be able to close correctly. To correct this problem, add to the volume of water being used on each station experiencing this problem by adding more spray heads or misters.



Problem: There is a loud buzzing sound from the solenoid when the valves are on.

Check the following:

The wire size may be too small to allow enough voltage to turn on the actuator. If the solenoid is not getting sufficient voltage from the timer, the solenoid will buzz. You can determine if the timer is the problem by switching the hot wires at the timer (for example, switch the wires between stations 1 and 2). If the problem is corrected by switching the wires, and the station that worked fine before the wires were changed is now buzzing, the problem is in the timer.

This problem can often be solved on models with square solenoids by changing the orientation of the solenoid coil assembly. It can be rotated on the solenoid tube by turning it from side to side. To see if this will correct the problem, turn the valve on manually from the sprinkler timer. With the valve on, reorient the coil assembly until the buzzing sound is very faint or gone. If this does not solve the problem, refer to the appendix on checking the mechanical operation of the solenoid.



If you need further assistance troubleshooting your
Champion automatic valves, contact our customer service department:

Headquarters

2993 Fleetbrook Dr.
Memphis, TN 38116

Phone

323-221-9137

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APPENDIX

Flow Control Adjustment

When installing a new Champion sprinkler adapter in an anti-siphon valve (or replacing a rebuilt adapter in the valve body), it is necessary to "fine-tune" the actuator to your system flow and pressure requirements, as well as bleed any air out of the diaphragm chamber. By following these steps, you can eliminate many problems associated with automatic adapters due to improper flow adjustment. These steps can also be used at any time a slow leak is encountered.

1. Close the flow adjustment screw completely.
 2. Open the bleed screw completely. There will be a continuous spray of water from the bleed screw, but the sprinklers will not come on.
 3. Let the valve run for approximately one (1) minute to flush any air from the diaphragm chamber.
 4. Slowly open the flow adjustment screw until full coverage from the sprinkler heads is obtained (generally three (3) to five (5) turns of the flow adjustment screw). If the flow adjustment screw is opened too far a leak may occur because the valve will fail to shut off completely. If the flow adjustment screw is too far closed, the adapter will not be able to open.
 5. Close the bleed screw completely. The adapter and sprinkler heads will shut off.
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Checking the Mechanical Operation of the Solenoid

Turn off the water supply to the valve.

Square Solenoid:

- Remove the black cap on top of the coil/yoke assembly. Remove the coil/yoke assembly by pulling it up and off the solenoid tube assembly.
- Remove the solenoid tube assembly from the actuator top using a flat-blade screwdriver. There will be a cylinder-shaped armature with a spring around it inside the solenoid tube assembly.

Round Solenoid:

Remove the encapsulated solenoid assembly from the actuator top using a flat-blade screwdriver. There will be a cylinder-shaped armature with a spring around it inside the solenoid tube assembly.

The spring should extend just over half the length of the armature. If the spring has become compressed, you can stretch it slightly.

Check the solenoid for dirt or debris. There should be no dirt or rust on the inside of the solenoid tube or the armature, itself. Clean with water if necessary.

In the impression where the solenoid tube assembly seats, there are two (2) ports passing into the top of the actuator. Both of these should be completely clear so that water can pass through them. If the ports have become blocked, the actuator will not turn on. You can clear the ports using a paper clip or similar object. If the ports are extremely clogged, you will have to disassemble the adapter and flush out the ports from the inside.

Ensure that the a-ring in the bottom of the solenoid seat is in good condition and not overly compressed. If the a-ring is crushed and the solenoid is screwed in too deeply, the armature will not rise high enough for the actuator to open. If the a-ring is broken and allows water to seep out, the solenoid seat threads, the valve will weep when shut off.



APPENDIX

Seat Washer and Meter Screw

Turn off the water supply to the valve.

Unscrew the automatic actuator from the anti-siphon valve body.

Note: On some models, you will have to loosen and remove the anti-siphon cap at the same time to remove the actuator from the anti-siphon body.

Inspect the rubber seat washer for cracks or swelling. The seat washer should be flat except for a round impression from the valve seat. If not, replace the seat washer.

Inspect the hole in the meter screw for signs of enlargement through normal wear and tear. It should be symmetrically round. If worn, replace.

If the meter screw has become obstructed, the valve will not open. Remove and clean the meter screw passage.

Water Pressure

Automatic actuators are rated to a maximum of between 25 PSI and 200 PSI, depending on the model. The optimal pressure, however, is between 80 PSI and 100 PSI for the best performance and optimal water conservation. Once above 100 PSI, problems may be encountered by any model. You can contact your local Department of Water and Power for the approximate water pressure in your area if you are unable to precisely measure your pressure with a pressure gauge.

If you suspect high water pressure is the problem, first adjust the valve according to the Flow Control Adjustment in this appendix. Additionally, you can reduce the pressure on the inlet side of the valve by turning on a hose bib or other faucet on the same supply line. If reducing the pressure by opening a hose bib causes the valve to operate, a pressure regulator needs to be installed in your system

Water Hammer (a loud vibrating noise when opening or closing)

Water hammer indicates an imbalance between the pressure and flow requirements of the system as installed and the capabilities of the available pressure and flow. To reduce or eliminate water hammer, a special fitting called a water hammer arrester needs to be installed on the supply line.

Anti-Siphon Valves

To determine if the anti-siphon valve or the adapter is the problem, follow these steps:

- Turn off the water supply to the valve.
- Unscrew the automatic actuator from the anti-siphon valve body.

Note: On some models, you will have to loosen and remove the antisiphon cap at the same time to remove the actuator from the antisiphon body.



APPENDIX

Anti-Siphon Valves (Continued)

- With the actuator removed from the anti-siphon valve, inspect the valve seat. It should look like a smooth, raised circle. If one side of the circle is excessively worn, pitted, or damaged, the anti-siphon body will need to be replaced.

A good test to perform before replacing an anti-siphon valve body is to take a properly functioning actuator from another valve, if available, and install it in the leaking anti-siphon valve. If the valve stops leaking and begins to function properly, then the problem is with the actuator. If the valve continues to leak with an actuator known to operate properly, then the anti-siphon body needs to be replaced.

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