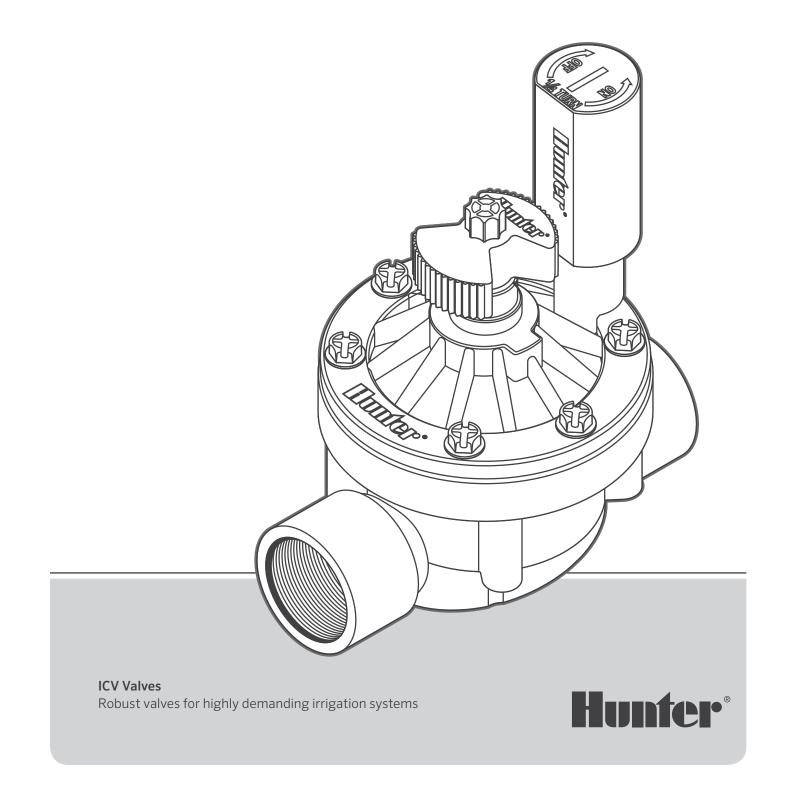
ICV VALVES

PRODUCT INFORMATION AND USER GUIDE



Overview

Durable, glass-filled Hunter ICV series valves are the leading solution for irrigation systems worldwide. Industrial strength, unmatched reliability, and advanced technologies make the ICV an ideal choice for commercial and high-end residential projects. Every ICV valve is loaded with professional features for maximum reliability.

The maintenance-friendly ICV is designed with captive parts, common components such as a single solenoid for all valves, and a convenient triple-tool design for easy accessibility. Since all Hunter valves are 100% water-tested prior to shipping, you can be sure they are working properly before ever coming into your hands.



This guide explains the key benefits of ICV valves, as well as our best-in-class Accu Sync® pressure regulators. You will also find helpful installation details, a parts list, and a troubleshooting section.

Please read the guide carefully to fully understand the top-quality products you have invested in. Thank you for choosing Hunter Industries as your partner for irrigation needs.

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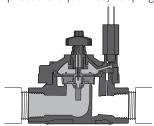
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Principles of Valve Operation

Valve mechanics are based on the formula $F = P \times A$ where:

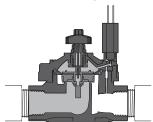
- P = Water pressure within the valve
- A = Surface area of the diaphragm (top or bottom)
- F = Amount of force exerted on either side of diaphragm

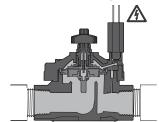
Since the top of the diaphragm is larger than the bottom, the force is higher on the diaphragm top when pressure equalizes, keeping the valve closed.



Opening a Valve Electrically

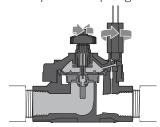
When operating a valve electrically, 24 VAC flows to the solenoid and lifts the solenoid plunger. The pressurized water then vacates downstream through an exhaust port. With pressure released on the top of the diaphragm, the force below pushes the diaphragm up, opening the valve.

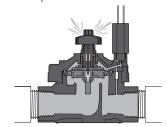




Opening a Valve Manually

Turn the bleed screw (above the flow control knob) counterclockwise to externally bleed water from the upper chamber to open the valve or rotate the solenoid a ¼-turn to internally bleed the water from the top of the diaphragm downstream to open the valve.



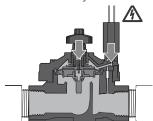


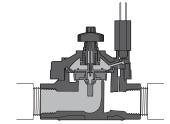


Note: Example of opening valve using external bleed.

Closing a Valve

- When the controller shuts off the electricity from the solenoid, the solenoid plunger is released and forced downward to cover the exhaust port.
- Covering the port stops the discharge of water from the upper chamber and allows the chamber to pressurize to mainline pressure once again.
- As the pressure above the diaphragm increases, the diaphragm slowly closes.
- The valve will fully close when the diaphragm sits completely on the body of the valve.







Product Details

Heavy-Duty Construction

Designed to operate within highly demanding systems up to 220 PSI (15 bar; 1518 kPa) for many years of operation:

- Body and bonnet made with glass-filled nylon to provide extra strength and durability
- Diaphragm manufactured from fabric-reinforced EPDM rubber highly resistant to abrasion
- Through-hole brass inserts in the body provide greater strength between body and bonnet

Reliability and durability proven through grueling tests:

- High-pressure surge
- · Sand and grit
- Cyclical burst
- · Life cycle
- · Heat/freeze

Flow Range

Incredibly versatile with wide flow range:

- Flows starting at 0.1 GPM and reaching up to 300 GPM (0.03 to 68 m³/hr; 0.4 to 1,135 l/min)
- · Designed for minimal friction loss
- Use for micro irrigation systems as well as large turf projects



Page 4

Robust Solenoid

Provides dependable operation and long life:

- · Common AC solenoid for all Hunter valves
- Common DC-latching solenoid for all Hunter valves having one black (common) wire and one red (station) wire
- Contractors/distributors only need to stock one solenoid for Hunter valves
- Eliminate damage from pressure surges with Hunter's innovative reverse-flow solenoid design
- The most dependable and efficient solenoids on the market:
 - Only 370 mA (8.9 VA) inrush current, 190 mA (4.5 VA) holding current at 60 Hz
 - Allows for longer wire runs between the valve and controller



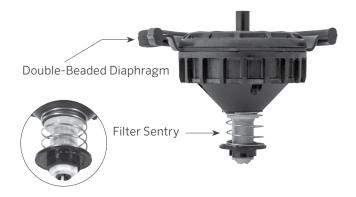
Large Filtering Area

Excellent choice for dirty water applications:

 Large filtering surface area assists in ensuring consistent opening/closing of valve

Optional Filter Sentry®

- Scrapes filter fully and continuously while valve is open
- Cleans full screen regardless of flow control adjustments
- Filter Sentry cleaning system is uniquely attached to the diaphragm, not the valve; the valve body does not need to be removed to replace the diaphragm



Debris Tolerant

- "Knife-edged" body seat helps eliminate weeping due to debris caught under the diaphragm
- EPDM diaphragm seat assembly provides substantial grit tolerance and wear resistance



White Support Ring

"Knife-Edged" Body Seat

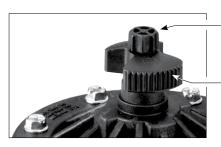
Fully Supported, Slow-Closing Diaphragm

Minimizes water hammer:

- Slow closing speed helps prevent water hammer
- Support ring protects the fabric-reinforced diaphragm from additional stresses
- Small holes in the support ring flush around the diaphragm and prevent sticking
- Double-beaded diaphragm seal design ensures leak-free performance
- Offered in purple reclaimed version designed to withstand high levels of chlorine and chloramines in the water

Adjustable Flow Control with Non-Rising Handle

- Flow adjustment and servicing made easy
- All sizes equipped with non-rising flow control



External Bleed Screw

Flow Control Knob

Two Methods to Manually Bleed Valve

Internal bleed for completely dry operation:

- Quick ¼-turn of solenoid allows water to bleed downstream and open valve
- All the exhaust water stays in the valve

External bleed using easy access bleed screw:

- Turn the bleed screw on top of the flow control stem
- · Water will vent outside the valve

Captive Parts

No more lost bolts, nuts, or solenoid plungers:

- Captive diaphragm remains on bonnet until you remove it
- · Captive solenoid plunger remains intact
- Captive bonnet bolts stay in the bonnet even when tipped upside down
- With the bolts having a combination of slot/Phillips/hex for easy servicing, this is the easiest valve in the industry to maintain without losing the parts in a muddy valve box



Captive Bonnet Bolts

Brass Inserts

Adding strength where it matters:

- Contribute to serviceability by preventing dirt from packing into the hole as in other valves
- Dirt falls through the inserts, allowing the bonnet to fully tighten on the body

Warranty Information

The date code is located on top of the bonnet (mo/yr)

Warranty period: 5 years

Top of Bonnet



Accu Sync Pressure Regulators

Pressure Regulation for Any Hunter Valve

- · Accu Sync can be used to regulate pressure for any type of applications to meet optimum pressure level
- Offered in fixed outlet pressure options of either 30 or 40 PSI (2 or 2.75 bar; 200 or 275 kPa)
- Offered in adjustable outlet pressure setting from 20 to 100 PSI (1.4 to 7.0 bar; 140 to 700 kPa)
- Required dynamic pressure differential: 15 PSI (1.0 bar; 100 kPa) above outlet selection
- · Works with all Hunter valves and both AC solenoids and DC-latching solenoids
- Consistent outlet pressure regardless of incoming pressure fluctuations
- · Ideal for any Hunter valve as long as appropriate pressure and flow is met
- No need for cumbersome gauge to double-check pressure. Every Accu Sync is calibrated and tested for appropriate pressures.

RECOMMEN VALVES WIT			OR ICV
Valve		Flow	
	GPM	m³/hr	l/min
ICV-101G	5-40	1.2-9.0	19-150
ICV-151G	20-150	4.5-31	75-510
ICV-201G	40-200	9.0-34	150-560
ICV-301G	150-300	34-68	565-1135



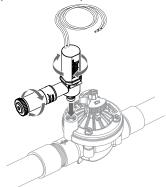
Note: When activating the valve by twisting the solenoid counterclockwise, the valve will continue to regulate pressure. If using the bleed screw to activate, the valve will not regulate pressure.

Installation Instructions

 After shutting off the water supply, remove the solenoid from the Hunter valve.



- 2. Thread the Accu Sync into the side inlet of the adapter.
- 3. Thread the solenoid into the top port of the adapter.



 Thread the solenoid adapter into place by inserting it and holding it steady while rotating the solenoid in its socket.



ACCU-SYNC-ADJ Adjustment

 Turn the outer black dial until the white line is next to the desired downstream pressure. 2. Accu Sync shows PSI on one side and bar on the other. For kPa, multiply bar by 100.



VALVE COMPARISON CHART

FEATURES	HUNTER ICV	HUNTER ICV FILTER SENTRY	COMPETITOR 1	COMPETITOR 2
220 PSI (15.0 bar; 1500 kPa)rated operating pressures	•	•		•
Pressure regulation	•	•	•	•
Common AC solenoids and DC-latching solenoids	•	•		
Low power requirement solenoids; minimal inrush current	8.9 VA	8.9 VA	9.9 VA	11.5 VA
Reverse-flow solenoid design to reduce line surges	•	•		
Internal manual bleed	•	•	•	•
Three-tool (standard or Phillips screwdriver, nut driver) stainless steel bonnet bolts	•	•		
Captive bonnet bolts with brass inserts in the body	•	•		
Continuous self-cleaning diaphragm filter		•		•
Easy field-installed filter cleaning options	•			
Debris-tolerant, "knife-edged" body seat	•	•		
Flow control with non-rising handle	•	•		



Technical Information

Operating Specifications

· Flow:

ICV-101G / ICV-101G-FS: 0.1 to 40 GPM; (0.03 to 9 m³/hr; 0.4 to 150 l/min) ICV-151G / ICV-151G-FS: 0.1 to 150 GPM; (0.03 to 34 m³/hr; 0.4 to 568 l/min) ICV-201G / ICV-201G-FS: 0.1 to 200 GPM (0.03 to 45 m³/hr; 0.4 to 757 l/min) ICV-301 / ICV-301W-FS: 0.1 to 300 GPM; (0.03 to 68 m³/hr; 0.4 to 1,135 l/min)

- Recommended pressure range: 20 to 220 PSI (1.5 to 15.0 bar; 150 to 1500 kPa)
- Temperature rating: 150°F (66°C)
- Warranty period: 5 years



ICV-101G-FS

Inlet diameter: 1" (25 mm) Height: 5½" 14 cm) Length: 4¾" (12 cm) Width: 4" (10 cm)



ICV-201G-FS

Inlet diameter: 2" (50 mm) Height: 71/8" (18 cm) Length: 67/8" (17 cm) Width: 51/2" (14 cm)



ICV-151G-FS

Inlet diameter: 1½" (40 mm) Height: 7½" (18 cm) Length: 6½" (17 cm) Width: 5½" (14 cm)



ICV-301-FS

Inlet diameter: 3" (80 mm) Height: 10¾" (27 cm) Length: 9" (22 cm) Width: 7¾" (19 cm)

ICV SPECIF	FICATION BUILDER				
Model		Thread	ling	Options	;
ICV-101G	1" (25 mm) globe valve	Blank	NFPT	FS	Filter Sentry
ICV-151G	1½" (40 mm) globe valve	В	BSP	FS-R	Filter Sentry, Reclaimed
ICV-201G	2" (50 mm) globe valve				
ICV-301G	3" (80 mm) globe/angle valve				

Examples: ICV-201G-FS-R=2" (50 mm) ICV globe valve with Filter Sentry and reclaimed components ICV-101G-DC=1" (25 mm) ICV globe valve with installed DC-latching solenoid

Technical Information

User-Installed Option Only

• Accu Sync pressure regulation at the valve

User-Installed or Factory-Installed Options

- LS: Valve without solenoid
- DC: DC-latching solenoid for battery-powered controllers (P/N 458200)
- FS: Filter Sentry mechanism easily added to an installed valve
- FS-R: Reclaimed option with Filter Sentry, purple control knob, and purple chlorineresistant diaphragm



AS-30 (Red) Height with solenoid: 3¼" (8 cm)



AS-40 (Gray) Height with solenoid: 3½" (8 cm)





AS-ADJ Height with solenoid: 3¼" (8 cm)

ACCU SYNC MODELS	
ACCU-SYNC-30	30 PSI valve regulator (2.1 bar; 210 kPa)
ACCU-SYNC-40	40 PSI valve regulator (2.8 bar; 280 kPa)
ACCU-SYNC-ADJ	20-100 adjustable regulator (1.4-6.9 bar; 140-690 kPa)



Product Performance

ICV PR	ESSURE	LOSS (AT C	PTIMAL F	LOWS) IN F	PSI
Flow	1"	11/2"	2"	3"	3"
(GPM)	Globe	Globe	Globe	Globe	Angle
0.1	2.0				
0.5	2.0				
1	2.0				
5	2.5				
10	3.0				
15	3.0				
20	3.0	1.5			
30	9.0	1.5			
40	20.0	1.7	0.8		
50		2.2	1.2		
60		3.0	1.7		
75		3.9	2.4		
90		5.5	3.2		
100		7.0	4.2		
120		10.9	6.5		
135		12.7	7.9		
150		16.2	9.8	2.5	1.9
175			13.3	3.0	2.4
200			17.7	4.1	3.3
225				5.3	4.3
250				6.7	5.5
275				8.3	6.9
300				10.1	8.5



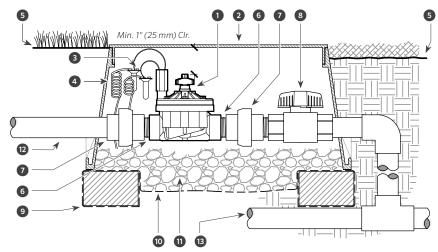
ICV PRESSURE LOSS (AT OPTIMAL FLOWS) IN BAR

Flow m³/hr	1" (25 mm) Globe	1½" (40 mm) Globe	2" (50 mm) Globe	3" (80 mm) Globe	3" (80 mm) Angle
0.05	0.1				
0.1	0.1				
0.3	0.1				
1.0	0.2				
2.5	0.2				
3.5	0.2				
4.5	0.2	0.1			
7.0	0.4	0.1			
9.0	1.0	0.1	0.1		
11.0		0.2	0.1		
13.5		0.2	0.1		
17.0		0.3	0.1		
20.5		0.4	0.2		
23.0		0.5	0.3		
27.0		0.7	0.4		
30.5		0.9	0.5		
34.0		1.2	0.6	0.2	0.1
40.0			0.9	0.2	0.2
45.5			1.2	0.3	0.2
51.0				0.3	0.3
57.0				0.4	0.4
62.5				0.5	0.5
68.0				0.6	0.6

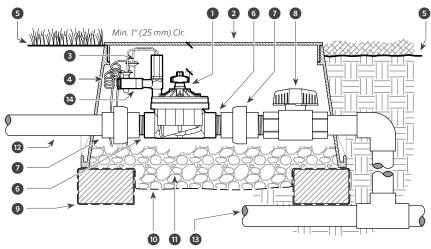
ICV PRESSURE LOSS (AT OPTIMAL FLOWS) IN kPa

	Flow I/min	1" (25 mm) Globe	1½" (40 mm) Globe	2" (50 mm) Globe	3" (80 mm) Globe	3" (80 mm) Angle
	1	14				
	2	14				
	4	14				
	20	17				
	40	20				
	60	20				
	75	20	9.6			
	115	62	10			
	150	139	12	5.0		
	190		15	7.0		
ĺ	225		18	9.3		
	280		26	14		
	340		37	20		
	380		46	26		
	450		65	36		
	510		84	47		
	565		104	57	16	12
	660			79	22	17
	750			103	29	23
	850				38	30
	950				47	38
	1,050				58	47
	1,135				69	56

In-line valve (ICV-151G) with unions and shutoff valve



In-line valve (ICV-151G) with unions, shutoff valve, and ACCU SYNC



ICV IN	ISTALLATION DETAILS
1	Hunter remote control valve (ICV) with flow
2	Irrigation valve box: Heat stamp lid with 'RCV' in 2" (51 mm) letters
3	Waterproof connectors (2)
4	18"-24" (46-61 cm) coiled wire to controller
5	Finish grade at adjacent surface (turf or mulch)
6	Schedule 80 close nipple, size per RCV
7	PVC slip (or FPT) x FPT union
8	Isolation valve, size and type per plan
9	Brick supporters (4)
10	Filter fabric; wrap twice around brick supports
11	³ / ₄ " (20 mm) washed gravel; 4" (10 cm) min. depth
12	Irrigation lateral
13	Mainline and fittings
14	Accu Sync pressure regulator

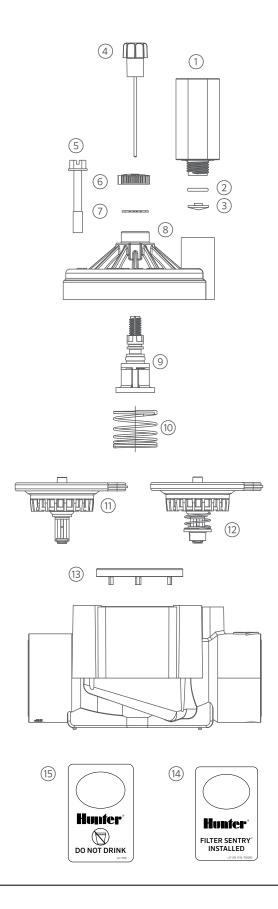
For a complete list of ICV details, visit **hunter.direct/icvresources**



Replacement Parts

ICV-101G: PLASTIC VALVE

ITEM	DESCRIPTION		CATALOG NO.
1	Solenoid Assembly	AC Solenoid	606800
ı	(Includes 2 & 3)	DC Solenoid	458200
2	O-Ring		262600
3	Solenoid Seal		364400
4	Bleed Assembly		561400
5	Bonnet Bolt		386900
6	Flow Control Knob		561200SP
O	Flow Colltrol Kriob		561205SP
7	E-Clip Retainer		387200
8	Bonnet		387700
9	Flow Control Stem Asser (Includes Stem, Stem Nu		387900
	Flow Control Stem		560900
	Flow Control Stem Nut		386000
	Flow Control Stem O-Rin	g	387100
10	Spring		386700
11	Diaphragm Assembly, St	andard	387800SP
12	Diaphragm Assembly with Sentry Mechanism	th Filter	461503SP
13	Diaphragm Support Ring	5	711900
14	Filter Sentry Tag, Yellow	(10-Pack)	700392SP
15	Purple Reclaimed ID Tag	(10-Pack)	LIT-700

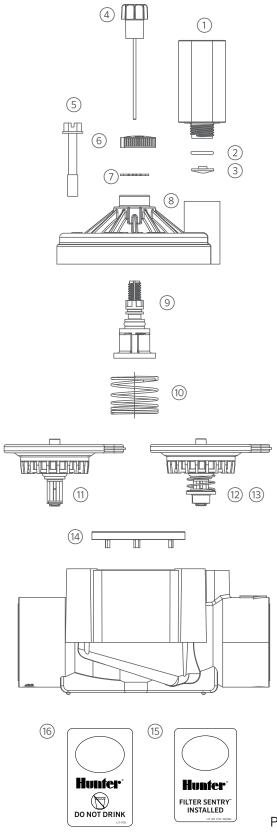


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Replacement Parts

ICV-151G AND 201G: PLASTIC VALVE

ITEM	DESCRIPTION		CATALOG NO.
1	Solenoid Assembly	AC Solenoid	606800
ı	(Includes 2 & 3)	DC Solenoid	458200
2	O-Ring		262600
3	Solenoid Seal		364400
4	Bleed Assembly		561500SP
5	Bonnet Bolt		366700
6	Flow Control Knob		561200SP
O	Flow Control Knob		561205SP
7	E-Clip Retainer		387200
8	Bonnet		380600SP
9	Flow Control Stem Asse (Includes Stem, Stem N	•	374600SP
10	Spring		365400SP
11	Diaphragm Assembly, S	tandard	460026SP
12	Diaphragm Assembly w Sentry Mechanism	ith Filter	460027SP
13	Diaphragm Assembly, R	eclaimed	676902SP
14	Diaphragm Support Rin	g	365900SP
15	Filter Sentry Tag, Yellow	(10-Pack)	700392SP
16	Purple Reclaimed ID Tag	g (10-Pack)	LIT-700



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Replacement Parts

ICV-301G: PLASTIC VALVE

1	DESCRIPTION		CATALOG NO.
	Solenoid Assembly	AC Solenoid	606800
ı	(Includes 2 & 3)	DC Solenoid	458200
2	O-Ring		262600
3	Solenoid Seal		364400
4	Bleed Assembly (2015 and	d Older)	836200
	Bleed Assembly, for Old-S Threaded Flow Control St		518800
	Flow Control Knob,	Black	515000
	(2015 and Older)	Purple	515005
5	Flow Control Knob,	Black	836500
3	for Use with Current Production Flow Control Stem with Male Threads	Purple	836501SP
6	Bonnet Bolt		386900
7	Bonnet Assembly (incl. 4,	5, 8)	856300SP
8	Flow Control Stem Assem (2015 and Older)	bly	836200
0	Flow Control Stem Assem Old-Style with Female Th		516100
9	Diaphragm Spring		518000
10	Diaphragm Assembly		518900SP
11	Filter Sentry Diaphragm A	Assembly	518905SP
12	Diaphragm Support		514600
	Port Plug Assembly	NPT	514900
13	including O-Ring	BSP	514905
14	Filter Sentry Tag, Yellow (700392SP
15	Purple Reclaimed ID Tag (LIT-700
16	Diaphragm Filter Sentry	. ,	365200

Installing the Valve

An arrow molded on the valve indicates the direction of flow. The solenoid is positioned downstream or the outlet side of the valve. Always verify the direction of water flow while installing.



Flow Indication

Threaded Valves

- Wrap the threads of the male adapter or fitting clockwise with three to four full wraps of Teflon® tape.
- Thread together without bottoming out the connection (hand tightening is fine).
- Too much Teflon tape may cause unnecessary stress on the valve inlet and outlet.

"Tuning the Valve" Using Flow Control

The flow control system opens or restricts water passing through the valve by limiting the stroke of the diaphragm. The flow control fine-tunes the performance of the irrigation zone.

Tuning a valve should be a regular part of valve installation. The flow control system:

- Lowers the effects of water hammer
- Increases the life of system and components
- Calibrates the flows and pressures to system needs
- Assists in closing the valve, especially when oversized for the zone



Flow Control Knob

Tuning Methods

Sprays and Rotors:

With the system running, start with the flow control fully open. Watch the spray as you slowly adjust the flow control down. Once the sprays take a little dip, adjust the flow control up a half-turn.

Drip:

With the system running, start with the flow control fully open. As you slowly adjust the flow control down, you will hear and feel turbulence in the valve as the flow gets too low. Adjust back up a half-turn.

For more information about Accu Sync, see the illustration on page 6.



Troubleshooting

Valve Not Opening

There are several reasons why a valve would continue running or why you might see irrigation continuing to flow. Please review the following checklist before trying more advanced troubleshooting.

 \square Is the power from the controller off or unplugged?

☐ Is the valve installed correctly with arrow pointing downstream?

☐ Is the external bleed screw emitting water externally? If so, hand tighten.

☐ Are the valves opened manually (solenoid not closed to off position)?

 \square Is this low-head drainage (water leaking out of the lowest head in the zone)?

 \square Is the valve slow to close?

If the valve continues to weep after reviewing the list above, proceed with common troubleshooting techniques.

Debris Under Diaphragm

The most common reason for a valve to remain on, or weep, is debris. New installations without proper flushing, recent mainline repair, or well water can cause debris to flow into the valve and get caught between the diaphragm and the seat. Check for debris using the following steps:

- Remove the bonnet of the valve by loosening all bonnet bolts and lifting the bonnet up. The screws will remain captive in the bonnet.
- 2. Remove the diaphragm.
- 3. Run your finger around the white diaphragm support ring inside the valve body to check for any damage that may prevent the diaphragm from seating correctly. Replace if issue is found.
- 4. Examine the bottom of the diaphragm for debris. If debris is lodged in the diaphragm seal or deep indentations are found, replace the diaphragm.
- 5. Rinse the diaphragm and the diaphragm seat and reassemble, orienting the diaphragm on the valve body so that the solenoid port lines up correctly.

Check for damage or gouges



Diaphragm Support Ring



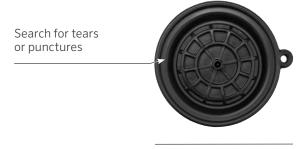
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Diaphragm Bottom View

Damage to the Diaphragm

The valve can remain in the "open" position if the diaphragm becomes punctured. Follow the steps at left and inspect the diaphragm (Step 3) looking for obvious tears or punctures.

For more information, visit hunter.direct/valvesupport.



Diaphragm Top View

Troubleshooting

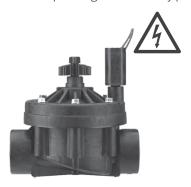
Valve Not Opening

There are several reasons why a valve might not open.

Insufficient Voltage

If the valve does not receive an appropriate level of voltage or the wire distance is too long, you may experience issues opening the valve.

- 1. Check the voltage at the controller screw terminals for proper voltage of 24–28 VAC.
- 2. Using the installed wire gauge size connected to the valve, review the maximum run in the chart compared to the actual install
 - For additional guidance, reference the wire sizing section in the Hunter catalog near the end of the book.
- 3. If there are other valves within the box, swap the valve wires to a known operating valve to verify proper voltage.



Clogged Solenoid Exhaust Ports

There is an entry port from the valve upper chamber to the solenoid and an exhaust port from the solenoid to downstream in the valve. If either port gets clogged with debris, the valve may not open or open fully.

- 1. Attempt to turn on the valve using the external bleed screw. If it turns on, there may be a port issue.
- 2. Remove the solenoid (or Accu Sync assembly if installed).
- Insert a thin piece of metal or 18 AWG (0.8 mm²) station wire (small paperclip size) down the center port in the solenoid chamber.
- 4. Insert the same piece down the side outlet port of the solenoid chamber.
- 5. Re-thread the solenoid or Accu Sync assembly onto the valve bonnet.



Solenoid Port

Check Flow Control

- Flow control should be adjusted for every system to maximize efficiency. (Please read section "Tuning the Valve" Using Flow Control on page 15.) Sometimes it can be inadvertently closed. Check by rotating the handle clockwise. If it will not turn, the flow control is completely down and the diaphragm is unable to fully open.
- 2. Turn the handle counterclockwise to make adjustments.



Flow Control Knob

For more information, visit hunter.direct/valvesupport.

Winterization

All irrigation systems in regions where the frost level extends below the depth of installed piping should receive a system blowout annually before the first freeze.

Always call a professional to prepare your irrigation system for winterization. For more information, visit

hunterindustries.com/winterizing-your-irrigation-system



Troubleshooting

Find other helpful information about your product, including installation tips and more.



? hunter.direct/valvesupport



hunter.direct/valvevideos

Notes

