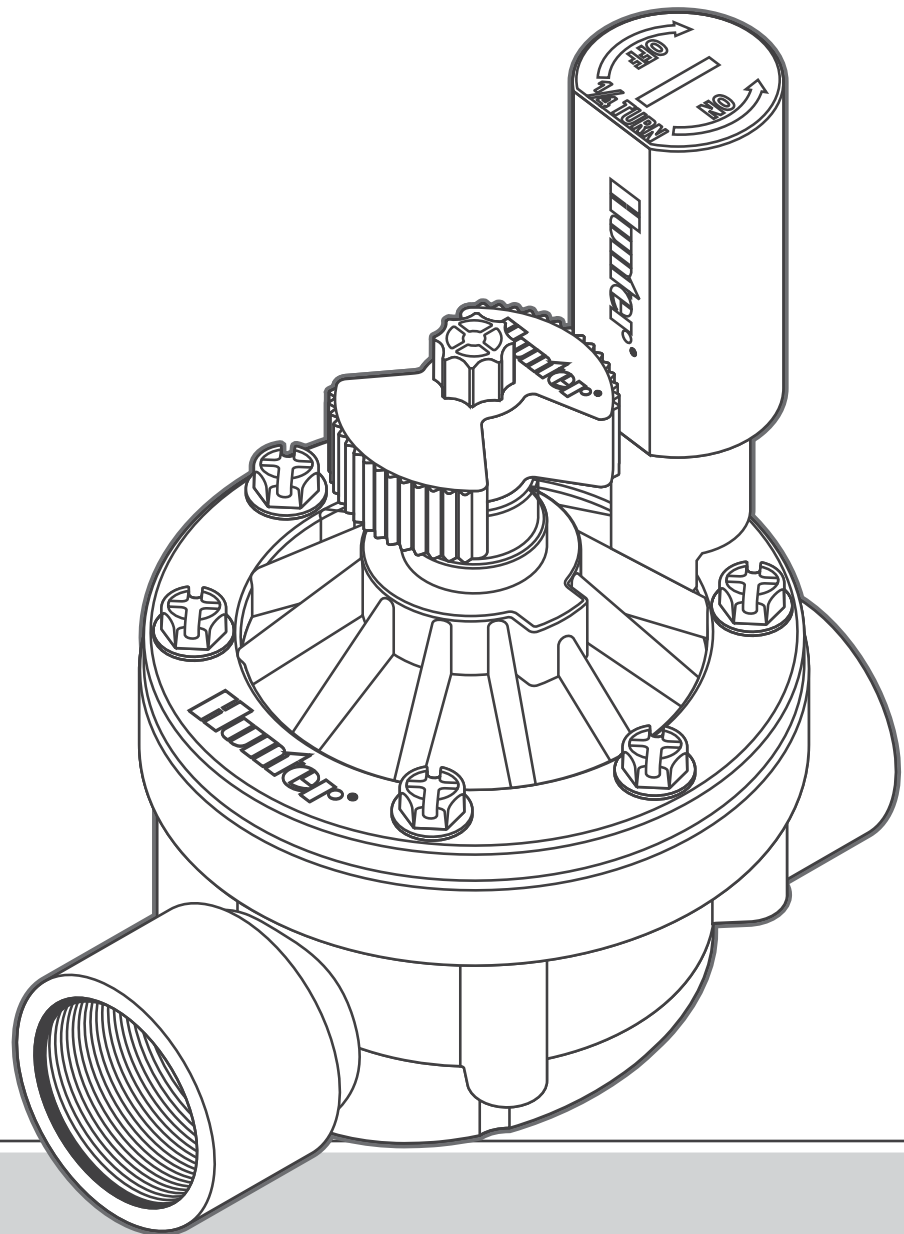


ICV VALVES

PRODUCT AND INSTALLATION GUIDE



ICV Valves

Robust valves for highly demanding irrigation systems

Hunter®

Durable, glass-filled Hunter ICV Valves are built for dependable performance in irrigation systems worldwide. With a rugged construction, proven reliability, and a contractor-friendly design, they're a smart choice for commercial sites and high-end residential projects.

Designed for easier maintenance, the ICV features captive parts, shared components like a single solenoid across the line, and a triple-tool design for fast access in the field. Every Hunter valve is 100% water-tested before it ships, so it arrives ready to perform.



Inside this guide, you'll find key ICV features and benefits, plus details about our best-in-class Accu Sync® Pressure Regulators. You'll also find installation tips, a parts list, and troubleshooting support.

Use this guide to get the most from your ICV Valves, and thank you for choosing Hunter Industries for your irrigation projects.

Table of Contents

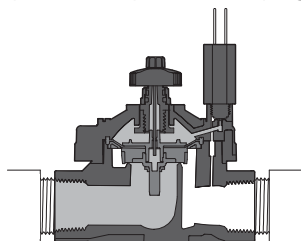
- 2** Overview
- 3** Valve Operation
- 4** Product Details
- 6** Accu Sync Pressure Regulators
- 7** Valve Comparison
- 8** Technical Information
- 10** Product Performance
- 11** Installation Details
- 12** Replacement Parts
- 13** Installation
- 14** Troubleshooting

Principles of Valve Operation

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

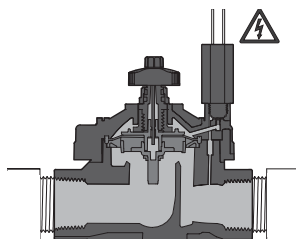
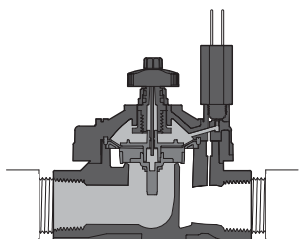
- P = Water pressure within the valve
- A = Surface area of the diaphragm (top or bottom)
- F = Amount of force exerted on either side of diaphragm

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.



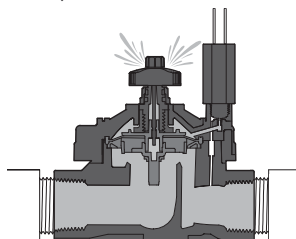
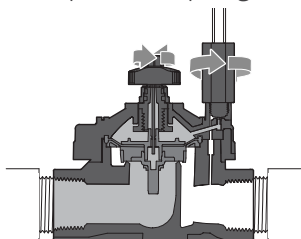
Opening a Valve Electrically

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

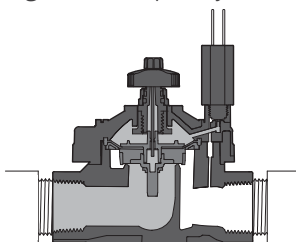
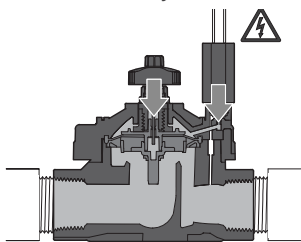
Turn the bleed screw (above the flow control knob) counterclockwise to externally bleed water from the upper chamber to open the valve or rotate the solenoid a ¼-turn to internally bleed the water from the top of the diaphragm downstream to open the valve.



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.



Heavy-Duty Construction

Built to perform in demanding systems up to 220 PSI (15 bar; 1,500 kPa).

- Glass-filled nylon body and bonnet provide rugged durability for tough jobsite conditions
- Fabric-reinforced EPDM diaphragm resists abrasion and wear for dependable operation
- Superior solutions for harsh reclaimed water applications
- Brass through-hole inserts reinforce the body-to-bonnet connection to help maintain a secure seal under pressure

Proven reliability and durability through rigorous testing:

- High-pressure surge testing
- Sand and grit testing
- Cyclic burst testing
- Life cycle testing
- Heat/freeze testing

Flow Range

Engineered for flexibility across a wide range of irrigation applications:

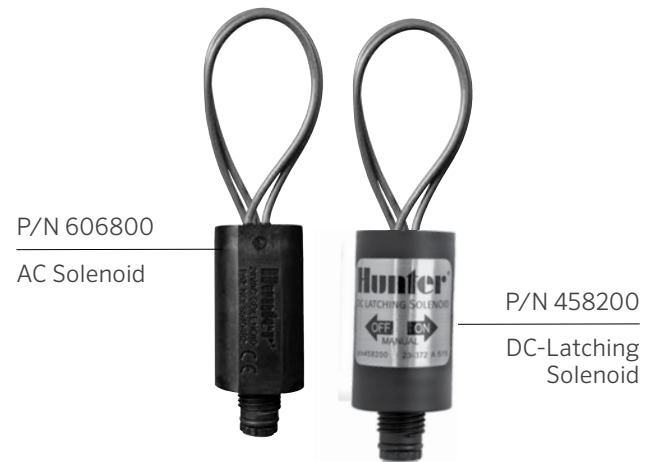
- Supports flows from 0.1 to 300 GPM (0.03 to 68 m³/hr; 0.4 to 1,135 l/min)
- Optimized internal design helps reduce friction loss and maintain system efficiency
- Ideal for micro irrigation systems to large commercial turf projects



Robust Solenoid

Engineered for reliable operation and simplified service.

- Common AC and DC-Latching Solenoids across the entire Hunter valve family (*DC-Latching Solenoids carry black common wire and red station wire*)
- Reverse-flow design helps protect against damage from pressure surges and water hammer
- Low inrush and holding current (370 mA; 8.9 VA / 190 mA; 4.5 VA at 60 Hz) supports efficient performance
- Allows longer wire runs between the valve and controller for greater installation flexibility

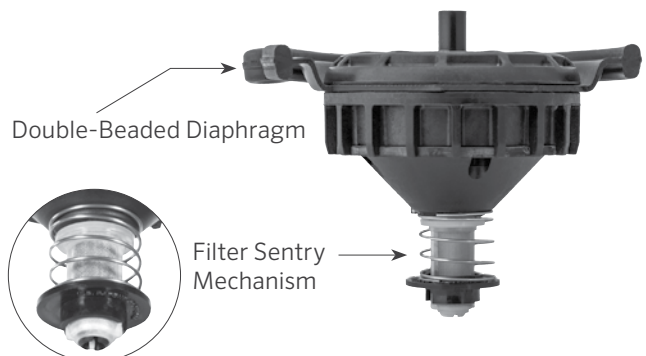


Large Filtering Area

- Performs reliably in dirty water conditions
- Large filtering surface area helps ensure smooth, consistent valve operation

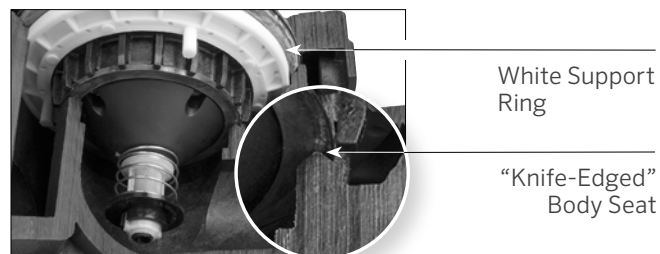
Optional Filter Sentry® Mechanism

- 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



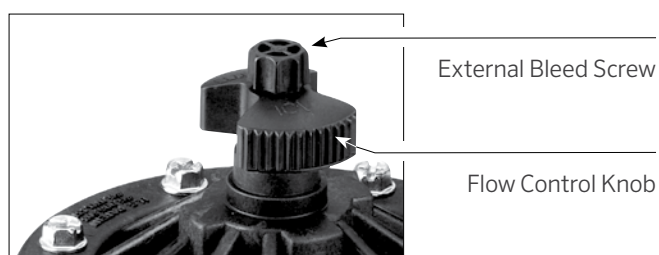
Fully Supported, Slow-Closing Diaphragm

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 allow debris to flush out from 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



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

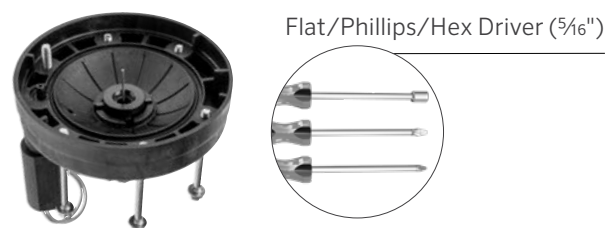
External bleed using easy access bleed screw:

- 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
- Combination slot, Phillips, and hex bolt heads simplify servicing and prevent lost parts in muddy valve boxes



Captive Bonnet Bolts

Brass Inserts

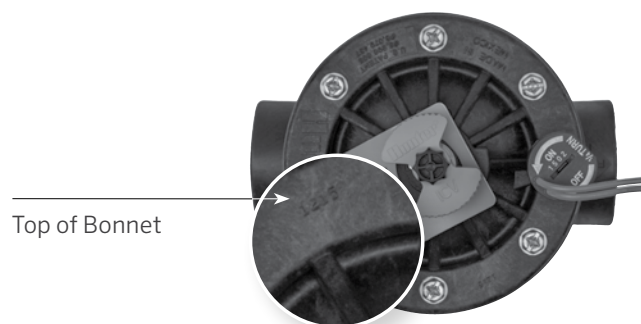
Designed to ensure secure assembly and easier service.

- Prevent dirt from packing into bolt holes during installation or service
- Allow debris to fall through so the bonnet can fully tighten against the valve body for a proper seal

Warranty Information

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

Warranty period: 5 years



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 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.

RECOMMENDED FLOW RANGES FOR ICV VALVES WITH ACCU SYNC

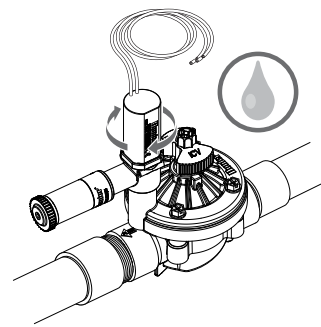
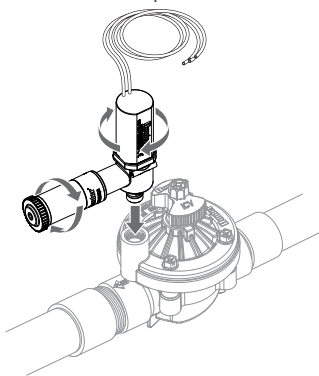
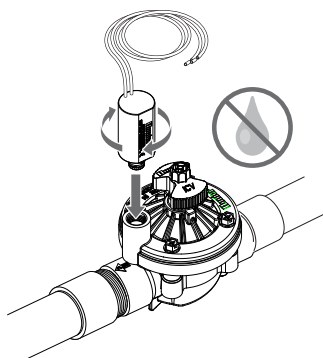
Valve	Flow		
	GPM	m ³ /hr	l/min
ICV-101G	5-40	1.2-9.0	19-150
ICV-151G	20-150	4.5-31	75-510
ICV-201G	40-200	9.0-34	150-560
ICV-301G	150-300	34-68	565-1,135



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.

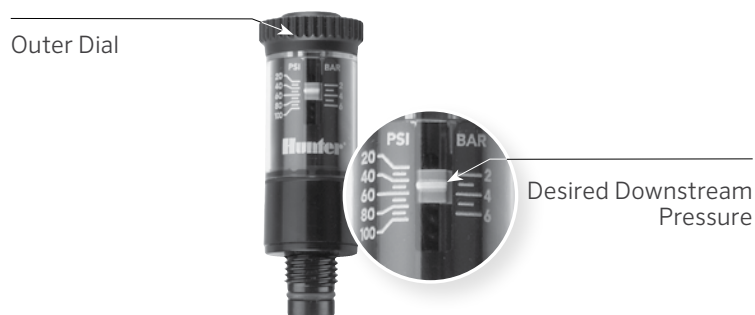
Installation Instructions

1. 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.
4. Thread the solenoid adapter in place by inserting it and holding it steady while rotating the solenoid in its socket.



ACCU-SYNC-ADJ Adjustment

1. 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

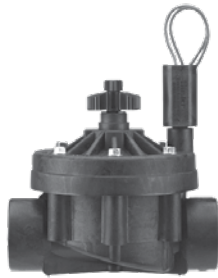
FEATURES	HUNTER ICV 	HUNTER ICV + FILTER SENTRY 	COMPETITOR 1 	COMPETITOR 2 
220 PSI (15.0 bar; 1,500 kPa) rated operating pressures	●	●		●
Pressure regulation	●	●	●	●
Common AC Solenoids and DC-Latching Solenoids	●	●		
Low power requirement solenoids; minimal inrush current	8.9 VA	8.9 VA	9.9 VA	11.5 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	●	●		

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 1,500 kPa)
- Temperature rating: 150°F (66°C)
- Warranty period: 5 years



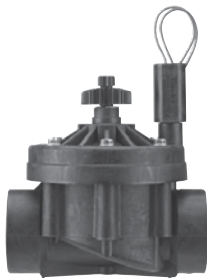
ICV-101G-FS
Inlet diameter: 1" (25 mm)
Height: 5½" (14 cm)
Length: 4¾" (12 cm)
Width: 4" (10 cm)



ICV-151G-FS
Inlet diameter: 1½" (40 mm)
Height: 7⅞" (18 cm)
Length: 6⅞" (17 cm)
Width: 5½" (14 cm)



ICV-R VALVES
Inlet diameter: 1" (25mm),
1½" (40mm); 2" (50mm),
3" (80mm)



ICV-201G-FS
Inlet diameter: 2" (50 mm)
Height: 7⅞" (18 cm)
Length: 6⅞" (17 cm)
Width: 5½" (14 cm)



ICV-301-FS
Inlet diameter: 3" (80 mm)
Height: 10¾" (27 cm)
Length: 9" (22 cm)
Width: 7⅞" (19 cm)

ICV SPECIFICATION BUILDER				
Model		Threading		Options
ICV-101G	1" (25 mm) globe valve	Blank	NFPT	FS Filter Sentry
ICV-151G	1½" (40 mm) globe valve	B	BSP	FS-R Filter Sentry, Reclaimed
ICV-201G	2" (50 mm) globe valve			
ICV-301	3" (80 mm) globe/angle valve			

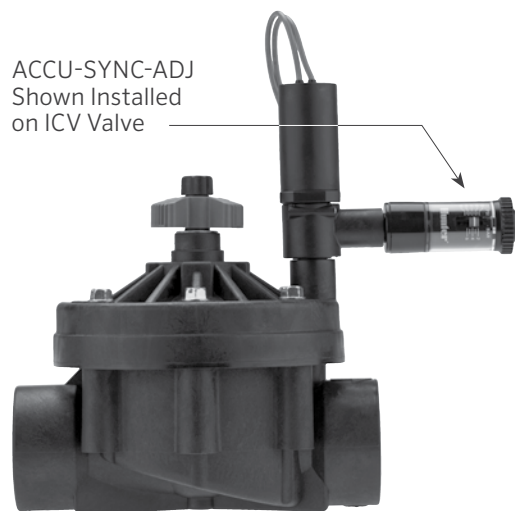
Examples: ICV-201G-FS-R = 2" (50 mm) ICV globe valve with Filter Sentry and reclaimed components
ICV-101G-DC = 1" (25 mm) ICV globe valve with installed DC-Latching Solenoid

User-Installed Option Only

- Accu Sync pressure regulation at the valve
- Adjustable 20 to 100 PSI (1.4 to 7.0 bar; 140 to 700 kPa)

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 chlorine-resistant diaphragm



AS-ADJ

Height with solenoid:
3¼" (8 cm)

ACCU SYNC MODELS

ACCU-SYNC-ADJ	20-100 adjustable regulator (1.4-6.9 bar; 140-690 kPa)
---------------	--

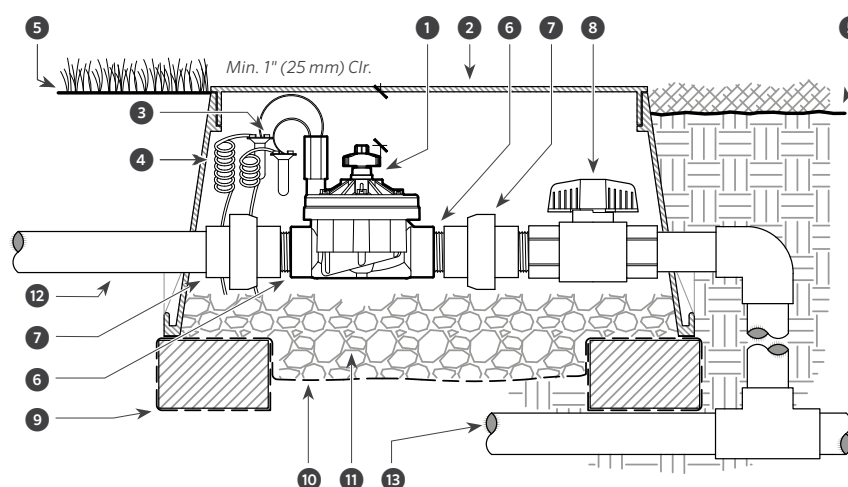
ICV PRESSURE LOSS (AT OPTIMAL FLOWS) IN PSI					
Flow (GPM)	1" Globe	1½" Globe	2" Globe	3" Globe	3" Angle
0.1	2.0				
0.5	2.0				
1	2.0				
5	2.5				
10	3.0				
15	3.0				
20	3.0	1.5			
30	9.0	1.5			
40	20.0	1.7	0.8		
50		2.2	1.2		
60		3.0	1.7		
75		3.9	2.4		
90		5.5	3.2		
100		7.0	4.2		
120		10.9	6.5		
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 kPa					
Flow l/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		
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

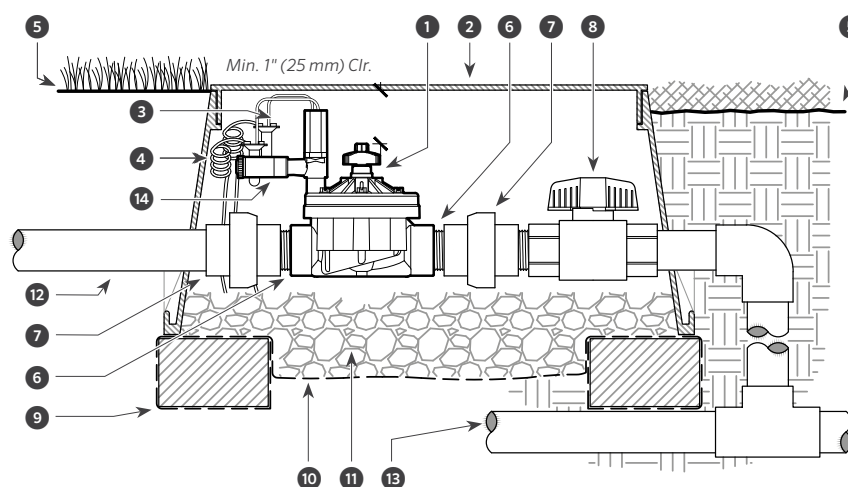
ICV PRESSURE LOSS (AT OPTIMAL FLOWS) IN BAR					
Flow m³/hr	1" (25 mm) Globe	1½" (40 mm) Globe	2" (50 mm) Globe	3" (80 mm) Globe	3" (80 mm) Angle
0.05	0.1				
0.1	0.1				
0.3	0.1				
1.0	0.2				
2.5	0.2				
3.5	0.2				
4.5	0.2	0.1			
7.0	0.4	0.1			
9.0	1.0	0.1	0.1		
11.0		0.2	0.1		
13.5		0.2	0.1		
17.0		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

ACCU SYNC VALVE RECOMMENDED FLOW RANGE			
Valve	Flow		
	GPM	m³/hr	l/min
PGV-100/101	15 to 40	4.5 to 9.1	76 to 151
PGV-151	20 to 120	4.5 to 28	76 to 454
PGV-201	40 to 150	9.1 to 34	151 to 568
ICV-101	15 to 40	3.4 to 9.1	57 to 151
ICV-151	20 to 150	4.5 to 34	76 to 568
ICV-201	40 to 200	34 to 68	151 to 757
ICV-301	150 to 300	3.4 to 68	568 to 1,136
IBV-101	15 to 40	3.4 to 9.1	57 to 151
IBV-151	20 to 150	4.5 to 34	76 to 568
IBV-201	40 to 200	34 to 68	151 to 757
IBV-301	150 to 300	34 to 68	568 to 1,136

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



In-line valve (ICV-151G) with unions, shutoff valve, and Accu Sync Pressure Regulator



ICV INSTALLATION 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 | ¾" (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.

ICV-101G: PLASTIC VALVE



hunter.info/ICV101Parts

ICV-151G AND 201G: PLASTIC VALVE



hunter.info/ICV151and201Parts

ICV-301G: PLASTIC VALVE



hunter.info/ICV301Parts

Installing the Valve

An arrow molded on the valve indicates the direction of flow. The solenoid is positioned downstream on 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

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.

Sprays and Rotors:

1. Turn flow control knob clockwise until you feel it bottom out (do not crank tight).
2. Turn flow control knob counterclockwise **one** full turn.
3. Rotate the solenoid counterclockwise ¼-turn (as indicated on the solenoid) to manually bleed the valve. The valve will open. Do not fully unscrew the solenoid.
4. Slowly turn the flow control counterclockwise in ½-turn (180°) increments.
5. Observe the sprays as they reach maximum operation and listen for a slight sound of flow restriction from the valve.
6. Once set, turn solenoid back ¼-turn to allow valve to turn off.
7. Once off, make a final ½-turn (180°) counterclockwise with the flow control knob. **It is now set!**
8. Confirm that the valve closes smoothly in about 6-8 seconds by turning on the valve manually from the solenoid.



Note: If valve closes too quickly, the Flow control needs to be adjusted counterclockwise. If valve closes too slowly, the Flow control needs to be adjusted clockwise.

Always make your adjustments by 180° turns at a time.

Teflon is a trademark of The Chemours Company.

Valve Not Closing

There are several reasons a valve may continue running or irrigation may continue to flow. Review the following checklist before attempting more advanced troubleshooting.

- ☐ Is the controller powered off or unplugged?
- ☐ Is the valve installed correctly, with the arrow pointing downstream?
- ☐ Is the external bleed screw leaking water? If so, hand-tighten it.
- ☐ Is the valve opened manually (solenoid not fully closed)?
- ☐ Is this low-head drainage (water leaking from the lowest head in the zone)?
- ☐ Is the valve slow to close?

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

Debris Under the 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:

1. Loosen all bonnet bolts and lift the bonnet straight up to remove it. The screws 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, then reassemble. Orient the diaphragm on the valve body so the solenoid port lines up correctly.

Damage to the Diaphragm

The valve may remain open if the diaphragm is punctured. Follow the steps at left and inspect the diaphragm (Step 3) for tears or punctures.

For more information, visit [hunter.direct/valvesupport](https://hunterdirect.com/valvesupport).

Search for tears
or punctures



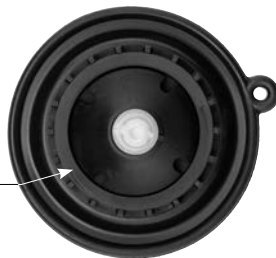
Diaphragm Top View

Check for damage or gouges



Diaphragm Support Ring

Check for lodged
debris or dents



Diaphragm Bottom View

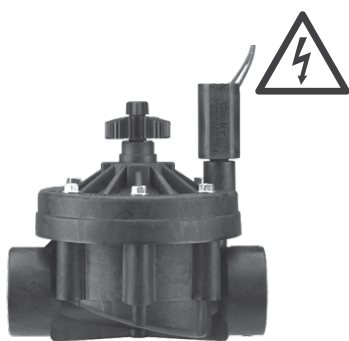
Valve Not Opening

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 to 28 VAC.
2. Using the installed wire gauge connected to the valve, compare the maximum run listed in the chart with the actual installation.
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

The valve has an entry port from the upper chamber to the solenoid and an exhaust port from the solenoid to the downstream side of the valve. If either port becomes clogged with debris, the valve may not open or may not 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).
3. Insert a thin piece of metal or 18 AWG (0.8 mm²) station wire (small paperclip size) down the center port of the solenoid chamber.
4. Insert the same piece into 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

1. Flow control should be adjusted for each 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 fully closed and the diaphragm cannot 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:



hunter.info/winterize

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



hunterirrigation.com/support/valves



hunter.direct/ValveVideos



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.

A handwritten signature in black ink, appearing to read "G. R. Hunter", with a long horizontal stroke extending to the right.

Gregory R. Hunter, CEO of Hunter Industries

A handwritten signature in black ink, appearing to read "Denise S. Mullikin", written in a cursive style.

Denise Mullikin, President, Landscape Division