Installation, Operation, and Maintenance Manual Series LFF113FP

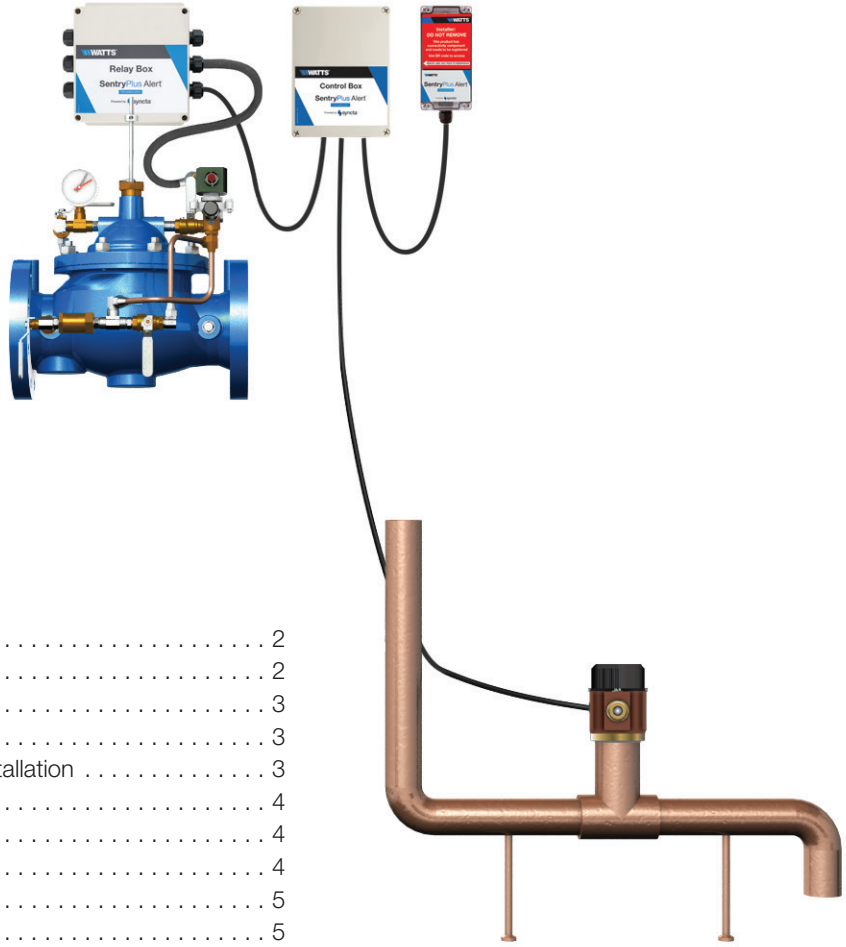
Wireless Smart Universal Flood Protection ACV System with SentryPlus Alert™ Technology

⚠ WARNING

Read this Manual BEFORE using this equipment.

Failure to read and follow all safety and use information can result in death, serious personal injury, property damage, or damage to the equipment.

Keep this Manual for future reference.



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Important Safety Information

⚠ WARNING

To avoid death, serious personal injury, property damage, or damage to the equipment:

- **Learn how to properly and safely use the equipment BEFORE installing, setting up, using, or servicing.**
- **Keep the manual available for easy access and future reference.**
- **Replace missing, damaged, or illegible manual and product labels.**
- **Read the manual and all product labels and follow all safety and other information.**
- **Replacement manuals available at Watts.com.**

Understanding Safety Information

This safety-alert symbol is shown alone or used with a signal word (DANGER, WARNING, or CAUTION). A pictorial and/or safety message to identify hazards and alert you to the potential for death or serious personal injury.

⚠ DANGER Identifies hazards which, if not avoided, will result in death or serious injury.

⚠ WARNING Identifies hazards which, if not avoided, could result in death or serious injury.

⚠ CAUTION Identifies hazards which, if not avoided, could result in minor or moderate injury.

NOTICE Identifies practices, actions, or failure to act which could result in property damage or damage to the equipment.

This pictorial alerts you to the need to read the manual.

This pictorial alerts you to electricity, electrocution, and shock hazards.

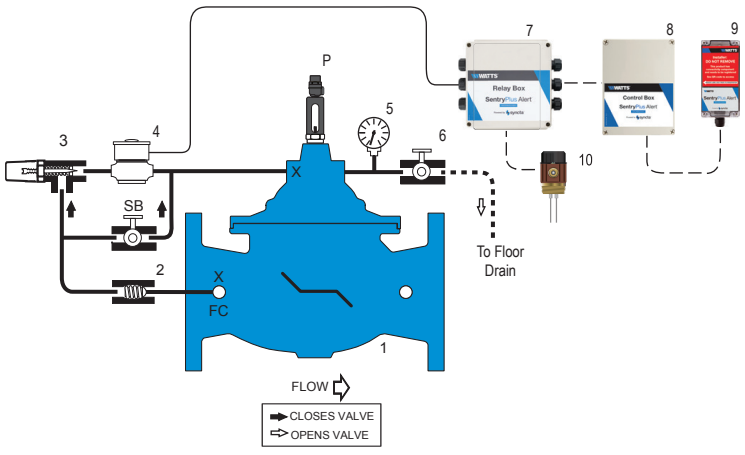
Description

- The Series LFF113FP Wireless Smart Universal Flood Protection ACV System with SentryPlus Alert™ Technology detects continuous water discharge from a Reduced Pressure Zone (RPZ) Backflow Preventer and shuts down the valve in case of abnormality.
- SentryPlus Alert wirelessly alerts the user of the problem via text, call, or email, as well as optional connection to a BMS system.
- The system is installed upstream of the RPZ Backflow Preventer with the valve normally open. It closes when continuous discharge from the RPZ Relief Valve is sensed or by engaging the Solenoid Bypass.
- The Position Indicator provides local visual indication of valve closure.
- The valve is reset manually. Pressure Gauge (provided) indicates valve reset for automatic service.
- Reverse Flow Main Valve closes in the event of diaphragm failure for fail-safe operation.
- The Relay Box is pre-mounted to the valve body, but can be mounted remotely in field.
- The Flood Sensor, Control Box, and the SentryPlus Alert Cellular Gateway require field installation.

List of Parts

The Series LFF113FP Wireless Universal Flood Protection ACV System with SentryPlus Alert Technology includes the following standard components:

(1) Main Valve (Single Chamber)
(2) Check Valve
(3) Adjustable Closing Speed
(4) 2-Way Solenoid
(5) Pressure Gauge
(6) Manual Reset Ball Valve
(7) Relay Box
(8) Control Box
(9) Cellular Gateway
(10) Flood Sensor
(P) Position Indicator
(SB) Solenoid Bypass
(X) Isolation Cocks
(FC) Flow Clean Strainer



Required Tools and Materials for Installation

- ❏ Small Phillips head screwdriver
- ❏ Pressure gauges to monitor inlet and outlet pressure
- ❏ 300V, 14-24 AWG cable (length required varies on installation)

Installation and Operation

Installing the ACV

- Prior to installation, flush the line to remove any debris.
- Install valve horizontally “in line” with the cover facing up, so the flow arrow matches the flow through the line. Avoid installing valves 6” and larger vertically. If installing the valve vertically, make sure you have contacted the factory and ordered a system that is designed for that type of application.
- Install inlet and outlet isolation valves.

NOTE: When using butterfly valves, ensure disc does not contact control valve. Damage or improper valve seating may occur.

- Provide adequate clearance for valve servicing and maintenance.
- Install pressure gauges (not included) to monitor valve inlet and outlet pressure.

NOTICE

For information on connecting the LFF113FP to the SentryPlus Alert Flood Protection System, see Installation and Operation Manual for the SentryPlus Alert Upgrade Kit.

Start-up Instructions

Proper Automatic Control Valve start-up requires bringing the valve into service in a controlled manner. All adjustments to control pilots and speed controls should be made slowly, allowing the valve to respond and the system to stabilize. NOTE: Control Valves should be set up in a dynamic (flowing) condition for proper start-up. Provisions for flow must be made to ensure proper settings.

NOTE: Refer to valve schematic on page 3 for components identified in parentheses.

1. Close Solenoid Bypass Valve (SB). Locate and open Manual Reset Ball Valve (6). Open upstream and downstream isolation valves to allow controlled filling of the Valve and Backflow Assembly. Open all Isolation Ball Valves.
2. Inlet pressure will open the valve fully. Close Manual Reset Ball Valve.
3. Open Solenoid Bypass Valve to simulate electrical shutdown signal. Inlet pressure will be indicated on Pressure Gauge (5) and valve will begin to close. Due to low / no flow condition, valve closure may be slower than normal operation.
4. Close Solenoid Bypass Valve and open Manual Reset Ball Valve. Pilot System Pressure Gauge will drop to zero. Valve will open fully and is ready for electrical activation. Allow for cover volume to discharge to floor drain. Refer to the chart below for Valve Cover Chamber Capacity. Close Manual Reset Ball Valve.
5. Ensure electrical components of SentryPlus Alert system are properly connected and powered according to the SentryPlus Alert Upgrade Kit installation instructions.
6. Pour an adequate amount of water into the RPZ Relief Valve Air Gap until the DELAY counter begins to count down. This indicates the Flood Sensor is properly installed and is sensing water in the discharge piping.
7. Trap water in the discharge piping. The Solenoid will energize when the duration of time delay elapses. The FLOOD LED will be solid orange. The valve will close and must be manually reset. Adjust the Time Delay to the customer/project specifications.
8. As a final test, simulate an actual RPZ Relief Valve discharge and observe the floor drain for excessive pooling or flooding. Re-adjust the time delay and Adjustable Closing Speed Control as needed to achieve the desired valve closure time.

Valve Travel

VALVE SIZE - INCHES	1 1/4	1 1/2	2	2 1/2	3	4	6	8	10
Travel - Inches	⅜	⅜	⅜	⅝	¾	1	1½	2	2½

Valve Cover Chamber Capacity

VALVE SIZE - INCHES	1 1/4	1 1/2	2	2 1/2	3	4	6	8	10
fl.oz.	4	4	4	10	10	22	70		
U.S. Gal								1 1/4	2 1/2

Performance and Specifications

OPERATING PRESSURE
Threaded = 400 psig
150 Flanged = 250 psig
300 Flanged = 400 psig
Grooved End = 400 psig

OPERATING TEMPERATURE
Buna-N: 160°F Maximum
EPDM: 300°F Maximum
Viton: 250°F Maximum

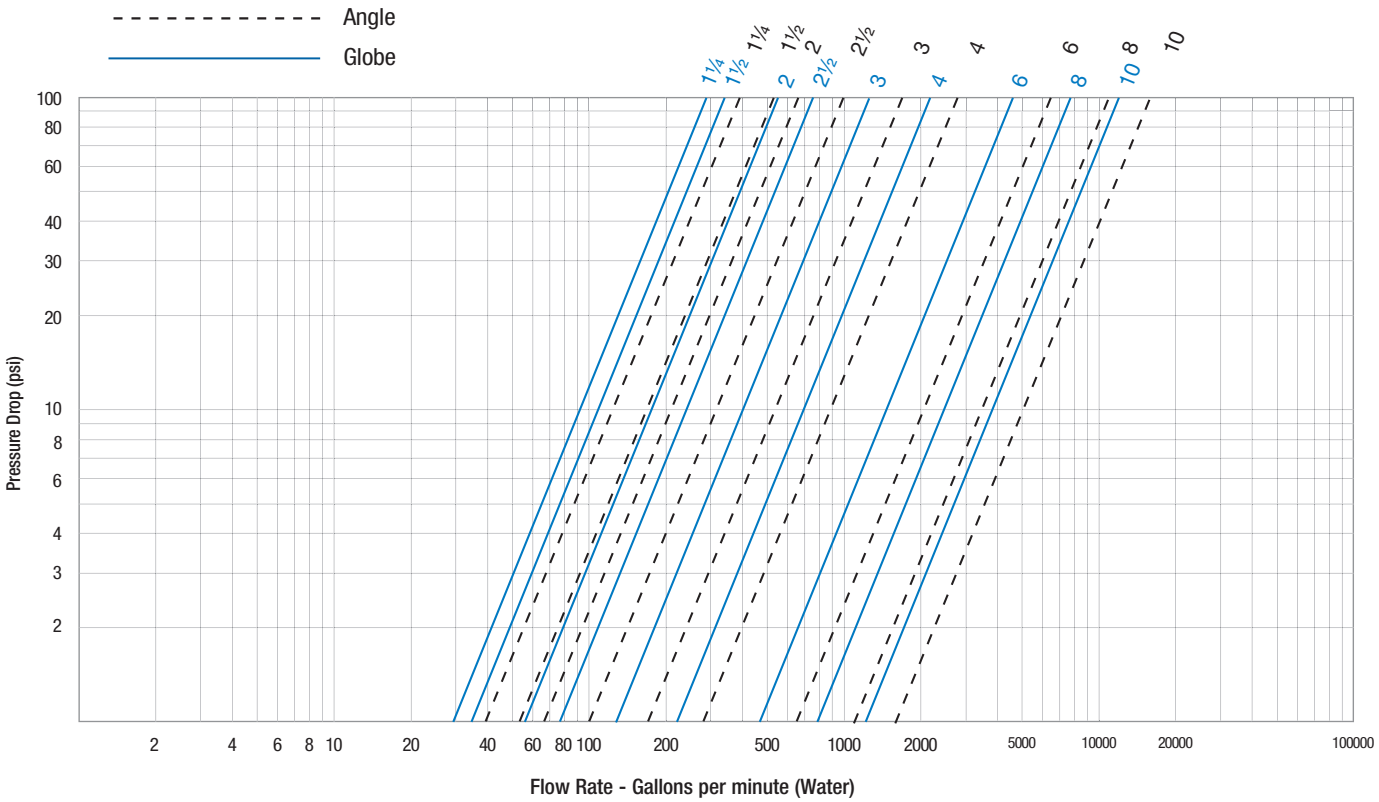
Flow Data

	VALVE SIZE - INCHES	1 1/4	1 1/2	2	2 1/2	3	4	6	8	10
SUGGESTED C_V	Maximum Continuous Flow Rate gpm (Water)	93	125	208	300	460	800	1800	3100	5000
	Maximum Intermittent Flow Rate gpm (Water)	115	158	260	370	570	1000	2300	3900	6250
	Minimum Flow Rate gpm (Water)	3	5	6	9	15	16	17	25	55
	Factor gpm (Globe)	29	34	55	75	125	220	460	775	1215
	Factor gpm (Angle)	39	53	66	99	170	280	650	1100	1530

- Maximum continuous flow based on velocity of 20 ft. per second.
- Maximum intermittent flow based on velocity of 25 ft. per second.
- Minimum flow rates based on a 20-30psi pressure drop.
- The C_V factor of a value is the flow rate in US gpm at 60°F that will cause a 1psi drop in pressure.
- C_V factor can be used in the following equations to determine Flow (Q) and Pressure Drop (ΔP):

  Q (Flow) = $C_V\sqrt{\Delta P}$ ΔP (Pressure Drop) = $(Q/C_V)^2$
- The C_V factors stated are based upon a fully open valve.
- Many factors should be considered in sizing control valves including inlet pressure, outlet pressure, and flow rates.
- For sizing questions including cavitation analysis, consult Watts with system details.

Headloss



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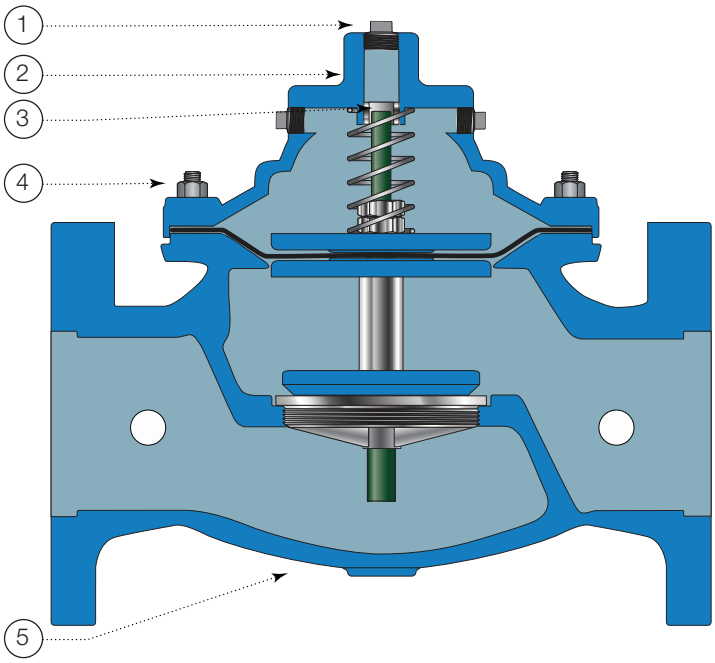
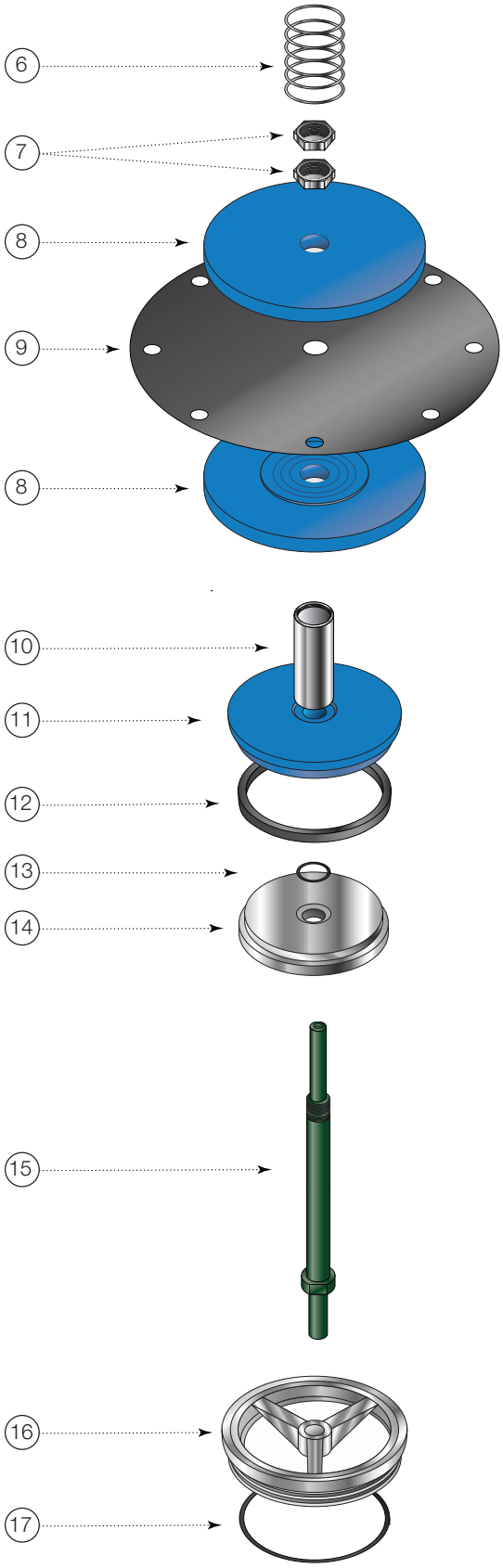
Performance and Specifications

Typical Main Valve

Threaded and Flanged Designs





ITEM	DESCRIPTION	MATERIAL
1	Pipe Plug	Lead Free Brass
2	Cover	ASTM A536 65-45-12 Epoxy Coated Ductile Iron
3	Cover Bearing	ASTM A276 304 Stainless Steel
4	Stud with Cover Nut and Washer	ASTM A570 Gr.33 Zinc Plated Steel
5	Body	ASTM A536 65-45-12 Epoxy Coated Ductile Iron
6	Spring	ASTM A276 302 Stainless Steel
7	Stem Nut	ASTM A276 304 Stainless Steel
8	Diaphragm Washer	ASTM A536 65-45-12 Epoxy Coated Ductile Iron
9	Diaphragm*	Buna-N (Nitrile)
10	Spacer	ASTM A276 304 Stainless Steel
11	Quad Seal Retainer	ASTM A536 65-45-12 Epoxy Coated Ductile Iron
12	Quad Seal*	Buna-N (Nitrile)
13	O-Ring*	Buna-N (Nitrile)
14	Quad Seal Plate	ASTM A743 CF8M (316) Stainless Steel
15	Shaft / Stem	Xylan coated ASTM A276 304 Stainless Steel
16	Seat Ring	ASTM A743 CF8M (316) Stainless Steel
17	Seat Gasket*	Buna-N (Nitrile)

* Contained in Main Valve Repair Kit

Maintenance

We recommend establishing a periodic maintenance schedule to inspect the ACV's valve stem for calcium or hard water deposits and to check the condition of the diaphragm, seat disc, strainers, and port openings.

An annual preventative maintenance schedule can help to identify potential problem situations before emergency repairs are needed.

For more severe service, semi-annual or quarterly inspections may be required.

The normal replacement parts are the seat disc and diaphragm. These are available individually or together in a rubber repair kit. Rubber repair kits for control pilots are sold separately.

For maximum life expectancy, all rubber repair parts should be stored in a cool, dry environment and not be exposed to direct sunlight.

In the event a non-rubber component part is required, review the cross-sectional drawing in the product specification sheet and consult your local representative or the factory.

Limited Warranty: Watts (the "Company") warrants each product to be free from defects in material and workmanship under normal usage for a period of one year from the date of original shipment. In the event of such defects within the warranty period, the Company will, at its option, replace or recondition the product without charge.

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The remedy described in the first paragraph of this warranty shall constitute the sole and exclusive remedy for breach of warranty, and the Company shall not be responsible for any incidental, special or consequential damages, including without limitation, lost profits or the cost of repairing or replacing other property which is damaged if this product does not work properly, other costs resulting from labor charges, delays, vandalism, negligence, fouling caused by foreign material, damage from adverse water conditions, chemical, or any other circumstances over which the Company has no control. This warranty shall be invalidated by any abuse, misuse, misapplication, improper installation or improper maintenance or alteration of the product.

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