Engineering Specification

Job Name _____ Contractor _____

Job Location _____ Approval _____

Engineer _____ Contractor's P.O. No. _____

Approval _____ Representative _____

LEAD FREE*

Series LF825YA

Angle Pattern
Reduced Pressure Zone Assemblies

¾" – 2"

FEBCO Series LF825YA Reduced Pressure Zone assemblies are used to protect against toxic fluids in water services to industrial plants, hospitals, morgues, mortuaries, and chemical plants. They are also used in irrigation systems, boiler feeds, water lines and other installations requiring the highest level of mechanical protection. The series features Lead Free* construction to comply with Lead Free* installation requirements.

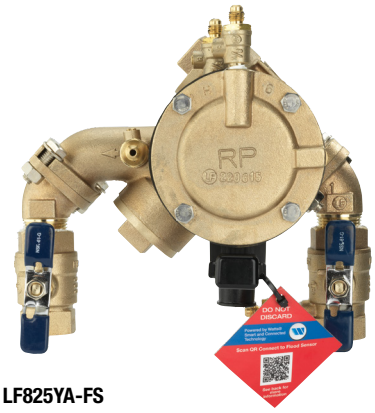
The series includes a flood sensor to detect excessive water discharges from the relief valve. The sensor is installed on the assembly exterior and does not alter assembly functions or certifications. The sensor relays a signal that triggers notification to service personnel for corrective action, thus limiting flooding and costly damage.

NOTICE

An add-on connection kit is required to activate the flood sensor. Without the connection kit, the sensor is a passive component that has no communication with any other device. (For more information download RP/IS-F-825YA.)

Features

- Versatiliity simplifies new and retrofit installations
- Eliminates pipe elbows, nipples and unions from the installation
- Reduces installation time, labor costs and materials
- Compact design simplifies retrofit
- Integral flanged union connections for assembly removal from the line for freeze protection or maintenance without the danger of spool substitution
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California
- Modular relief valve and check valve internal components for ease of maintenance
- Smaller, less costly protective enclosures to provide freeze and vandalism protection
- Field tested design for reliability and performance
- Replaceable seat rings for longer valve life



LF825YA-FS

- Low head loss for optimum performance
- Sensor on relief valve for flood detection
- Flood alerts feature activated with add-on sensor connection kit, compatible with BMS and cellular communication

Operation

In a flow condition, the check valves are open with the pressure between the checks, called the zone, being maintained at least 5 psi (34 kPa) lower than the inlet pressure. The relief valve is held closed by the pressure differential.

Should abnormal conditions arise under no flow or reversal of flow, the differential relief valve opens and discharges to maintain the zone at least 2 psi (14 kPa) lower than the supply.

When normal flow resumes, the differential pressure in the zone returns and the relief valve closes.

NOTICE

Use of the flood sensor does not replace the need to comply with all required instructions, codes, and regulations related to installation, operation, and maintenance of this product, including the need to provide proper drainage in the event of a discharge.

Watts® is not responsible for the failure of alerts due to connectivity or power issues.

NOTICE

The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

Inquire with governing authorities for local installation requirements.

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

FEBCO®

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Specification

The reduced pressure zone assemblies shall consist of two independently operating, spring loaded, "Y" pattern check valves and one hydraulically dependent differential relief valve. Should the differential between the upstream and the zone of the unit drop to 2 psi (14 kPa), the differential relief valve shall open and maintain the proper differential.

Mainline valve body and caps including relief valve body and cover shall be Lead Free* cast copper silicon alloy. Check valve moving members shall be center stem guided. Relief valve shall have a removable seat ring. Check valve and relief valve components shall be constructed so they may be serviced without removing the valve body from the line. All seat discs shall be reversible.

The assembly shall include flanged unions located between the mainline valve body and the ball valve shutoffs to allow for field removal for freeze protection or maintenance without danger of spool replacement. The Lead Free* Angle Pattern Reduced Pressure Zone Assemblies shall comply with state codes and standards, where applicable, requiring reduced lead content. End connection: NPT ANSI/ASME B1.20.1.

The assembly shall be rated to 175 psi (12.1 bar) water working pressure and water temperature range from 32ºF to 140ºF (0ºC to 60ºC). The assembly shall meet the requirements of the USC Foundation of Cross-connection Control and Hydraulic Research, Eighth Edition.

The assembly shall be FEBCO Series LF825YA, or prior approved equal, and shall include a sensor on the relief valve for flood detection.

Pressure – Temperature

Maximum working pressure	175 psi (12.1 bar)
Hydrostatic test pressure	350 psi (24.1 bar)
Temperature range	32ºF to 140ºF (0ºC to 60ºC)

Materials

Main valve body	Lead Free* cast copper silicon alloy
Relief valve body	Lead Free* cast copper silicon alloy
Elastomers	Nitrile seat discs
Diaphragms:	Nitrile, fabric reinforced
Springs	Stainless steel

Model/Option

FS	Flood detection sensor

Approvals – Standards

Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California

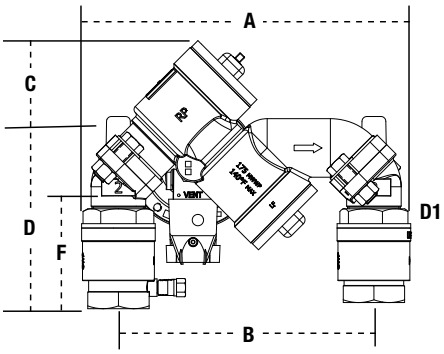
AWWA C511 Conformance

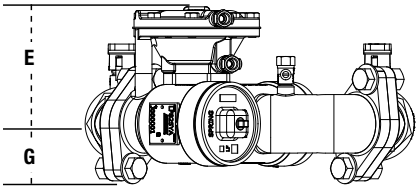
1013 B64.4

Vertical Up Flow In/Vertical Down Flow Out

Legend

- **A** Overall lay length, outside dimension
- **B** Centerline of inlet shutoff to centerline of outlet shutoff
- **C** Centerline of assemble to top
- **D** End of inlet shutoff to centerline of assembly
- **D1** Centerline of assembly to end of outlet shutoff
- **E** Centerline of assembly to outside of relief valve
- **F** Bottom of relief port to end of inlet shutoff
- **G** Centerline of assembly to outside of flange





Dimensions – Weights

Call customer service if you need assistance with technical details.

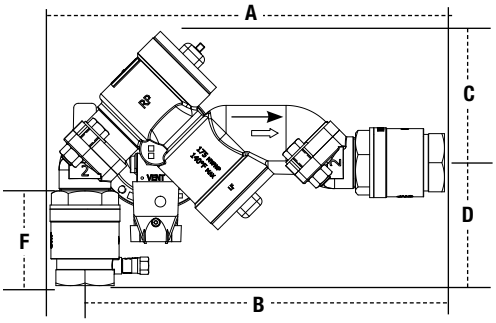
SIZE	DIMENSIONS																WEIGHT	
	A		B		C		D		D1		E		F		G†			
in.	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*In.*	*mm*	*lb*	*kg*
¾	10	254	8½	216	3¼	83	4⅞	124	4⅝	118	4⅛	105	3½	89	1⅝	41	15.0	6.8
1	10¼	260	8½	216	3¼	83	5¼	133	5	127	4⅛	105	3⅞	98	1⅝	41	16.5	7.5
1½	14¼	362	11½	292	4⅞	124	6⅞	175	6½	165	5⁷⁄₁₆	138	4⅝	118	2⅝	67	38.2	17.3
2	14⅞	378	11½	292	4⅞	124	7½	191	7⅛	181	5⁷⁄₁₆	138	5¼	133	2⅝	67	41.2	18.7

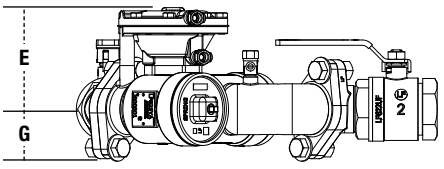
†G Dimension are based on standard vertical flow in / vertical flow out configuration.
Note: All dimensions are approximate. Allowances must be made for normal manufacturing tolerances.

Vertical Up Flow In/Horizontal Flow Out

Legend

- **A** Overall lay length, outside dimension
- **B** Centerline of inlet shutoff to centerline of outlet shutoff
- **C** Centerline of assemble to top
- **D** End of inlet shutoff to centerline of assembly
- **E** Centerline of assembly to outside of relief valve
- **F** Bottom of relief port to end of inlet shutoff
- **G** Centerline of assembly to outside of flange





Dimensions – Weights

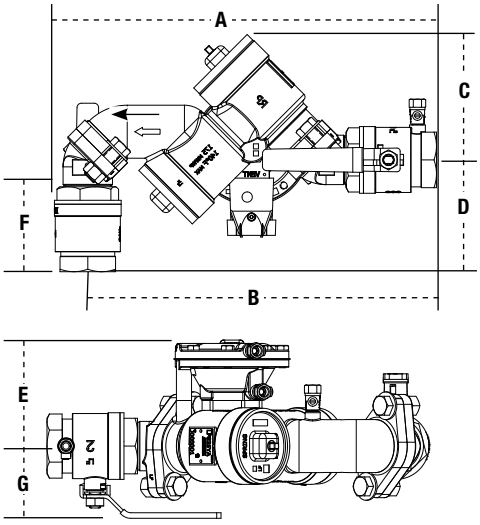
SIZE	DIMENSIONS																WEIGHT	
	A		B		C		D		D1		E		F		G†			
in.	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lb*	*kg*
¾	12⅝	321	11⅞	302	4½	114	3⅝	92	n/a	n/a	4⅛	105	3½	89	1⅝	41	15.0	6.8
1	13⅓	339	12¼	311	4½	114	4	102	n/a	n/a	4⅛	105	3⅞	98	1⅝	41	16.5	7.5
1½	18	457	16⅝	422	6	152	5¼	133	n/a	n/a	5⁷⁄₁₆	138	4⅝	118	2⅝	67	38.2	17.3
2	19	483	17¼	438	6	152	5⅞	149	n/a	n/a	5⁷⁄₁₆	138	5¼	133	2⅝	67	41.2	18.7

†G Dimension are based on standard vertical flow in / vertical flow out configuration.
Note: All dimensions are approximate. Allowances must be made for normal manufacturing tolerances. Metric Dimensions are nominal pipe diameter.
This product is produced with NPT threaded end connections.

Horizontal Flow In/Vertical Down Flow Out

Legend

- **A** Overall lay length, outside dimension
- **B** Centerline of inlet shutoff to centerline of outlet shutoff
- **C** Centerline of assemble to top
- **D** End of outer shutoff to centerline of assembly
- **E** Centerline of assembly to outside of relief valve
- **F** Bottom of relief port to end of inlet shutoff
- **G** Centerline of assembly to outside of flange



Dimensions – Weights

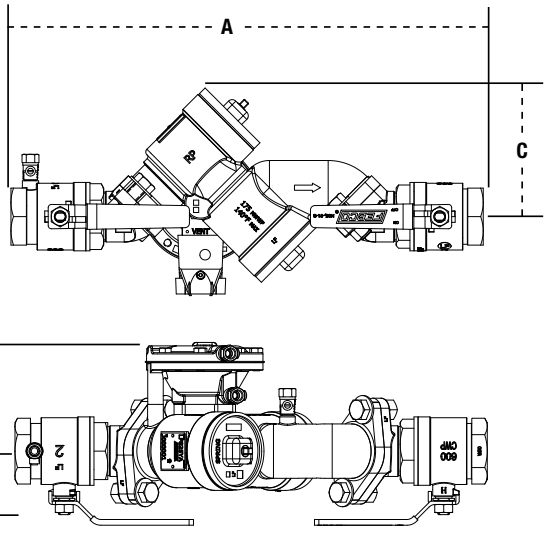
SIZE	DIMENSIONS																WEIGHT	
	A		B		C		D		D1		E		F		G†			
in.	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lb*	*kg*
¾	12⅞	327	12⅛	308	4½	114	3⅝	92	n/a	n/a	4⅛	105	3½	89	1⅝	41	15.0	6.8
1	13⅜	340	12½	318	4½	114	4	102	n/a	n/a	4⅛	105	3⅞	98	1⅝	41	16.5	7.5
1½	18⅜	467	17	432	6	152	5¼	133	n/a	n/a	5 7⁄16	138	4⅝	118	2⅝	67	38.2	17.3
2	19⅜	492	17⅝	448	6	152	5⅞	149	n/a	n/a	5 7⁄16	138	5¼	133	2⅝	67	41.2	18.7

†G Dimension are based on standard vertical flow in / vertical flow out configuration.
Note: All dimensions are approximate. Allowances must be made for normal manufacturing tolerances. Metric Dimensions are nominal pipe diameter.
This product is produced with NPT threaded end connections.

Horizontal

Legend

- **A** Overall lay length, outside dimension
- **C** Centerline of assemble to top
- **E** Centerline of assembly to outside of relief valve
- **G** Centerline of assembly to outside of flange



Dimensions – Weights

SIZE	DIMENSIONS																WEIGHT	
	A		B		C		D		D1		E		F		G†			
in.	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lb*	*kg*
¾	15½	394	n/a	n/a	4½	114	n/a	n/a	n/a	n/a	4⅛	105	n/a	n/a	1⅝	41	15.0	6.8
1	16¼	413	n/a	n/a	4½	114	n/a	n/a	n/a	n/a	4⅛	105	n/a	n/a	1⅝	41	16.5	7.5
1½	22	559	n/a	n/a	6	152	n/a	n/a	n/a	n/a	5 7⁄16	138	n/a	n/a	2⅝	67	38.2	17.3
2	23⅜	594	n/a	n/a	6	152	n/a	n/a	n/a	n/a	5 7⁄16	138	n/a	n/a	2⅝	67	41.2	18.7

†G Dimension are based on standard vertical flow in / vertical flow out configuration.
Note: All dimensions are approximate. Allowances must be made for normal manufacturing tolerances. Metric Dimensions are nominal pipe diameter.
This product is produced with NPT threaded end connections.

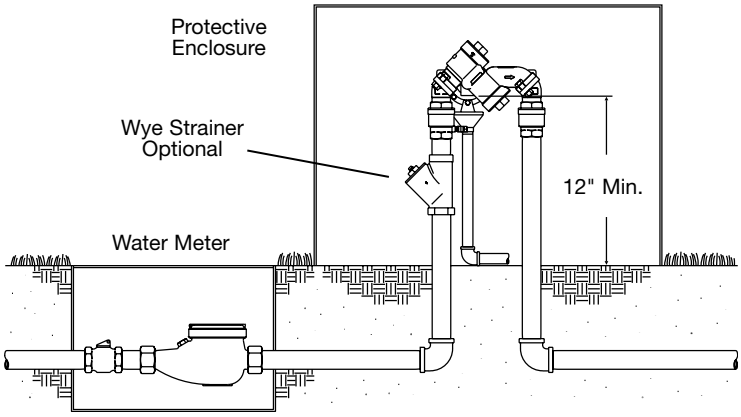
Typical Installation

FEBCO Series LF825YA provides versatility in installation because it can be installed in any of four configurations. The most typical configuration is shown in the vertical up flow in/ vertical down flow out diagram. This provides for an extremely short lay length which is advantageous in areas of limited space for installation within a protected enclosure. Cost savings can be realized due to the reduction in materials needed such as nipples, elbows, unions, and size of the enclosure. With the integral flanged union connections, the assembly can be removed from the line for freeze protection without a spool substitution. It is not recommended that any backflow prevention assembly be removed from the line for maintenance unless assurance can be made that a spool cross-connection cannot be substituted. The flanged union connection mounted at 45° provides this assurance. The series is shipped in the configuration shown in the vertical up flow/vertical down flow out diagram, but can easily be modified to the three other configurations (shown on inside of this specification sheet) simply by removing the bolts to rotate the end adapters.

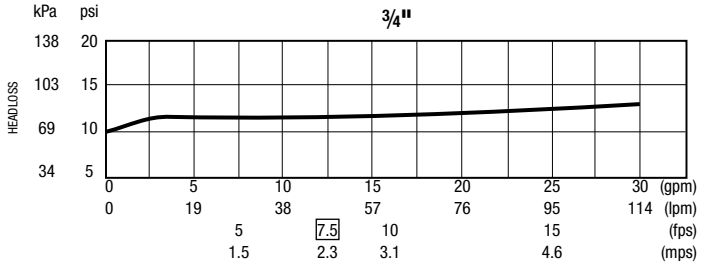
With any configuration, material and labor savings can be achieved. Series LF825YA is the only Reduced Pressure Zone assembly which provides these options in a compact, integral assembly. All internal components are interchangeable with FEBCO Series LF825Y providing the same ease of maintenance and reliable operation.

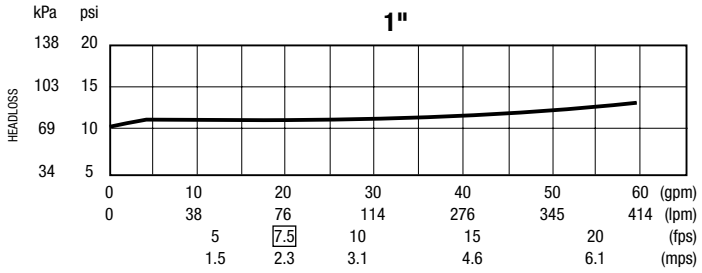
Reduced Pressure Zone assemblies should be installed with a minimum clearance of 12" between port and floor or grade. They must be installed where discharge is not objectionable and can be positively drained away. They should be installed where easily accessible for testing and maintenance and must be protected from freezing. Thermal water expansion and/or water hammer downstream of the backflow preventer can cause excessive pressure. Excessive pressure situations should be eliminated to avoid possible damage to the system and device.

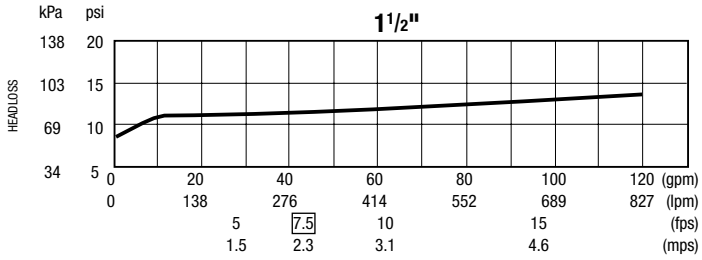
Side View of Assembly in Vertical In/Out Flow Configuration

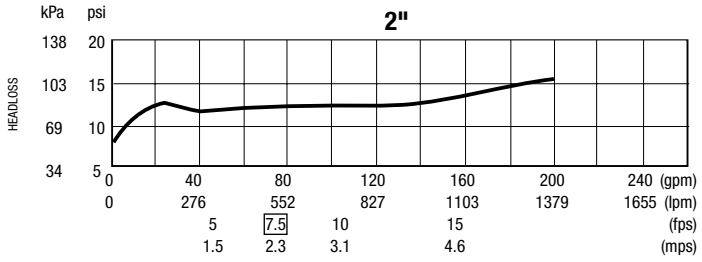


Capacity









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