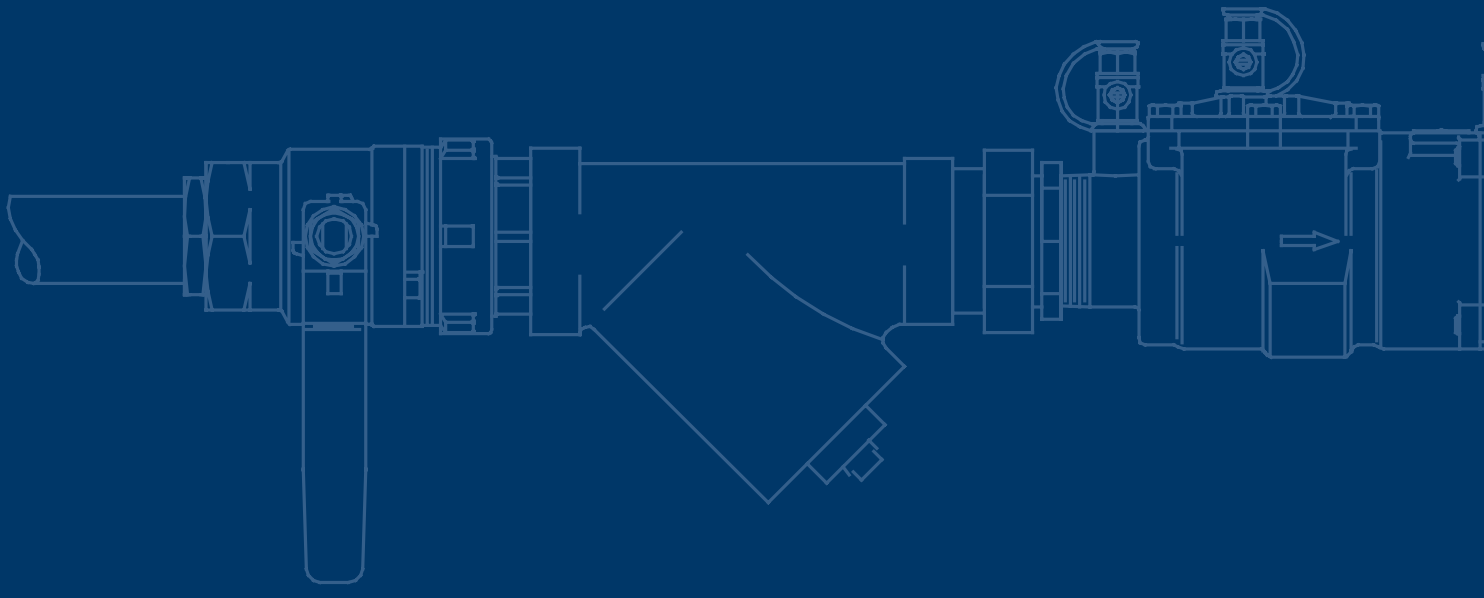
Backflow Prevention Reference



FEBCO® BACKFLOW PREVENTION

reece™ Plumbing Centres

Preface

The potable (drinking) water supply is one of our most precious resources and needs protection.

As supply systems become more complex there is ample chance for contaminants or pollutants to enter the potable water supply through cross connections at point of use.

This applies to industry, manufacturing, institutional and domestic connections where substances that are not protected from entering mains supplied potable water, may have the potential to cause sickness or death.

Backflow prevention devices are designed to protect the potable water supply so that if a cross connection exists and a backflow incidence does occur any contamination is prevented.

There have been many cases of backflow incidents that have been documented with many resulting in illness and some even resulting in death.

Reece continues its commitment to the plumbing industry and dedicated support to customers by continuing to develop backflow protection.

Our commitment includes the support from FEBCO an innovative world manufacturer in providing the latest products, education and resources as they become available throughout our network of Plumbing Centres in Australia.

FEBCO MasterSeries Valves referred to in this document are WaterMark Approved.
AS/NZS 2845.1:1998 - Water supply
LIC. No. WMKA21050

Certified Product

FEBCO Valves referred to in this document are Australian Standards Approved and comply with:
MP 52-2001 Manual of Authorisation Procedures for Plumbing and Drainage Products
AS 2845.1: 1998 - Water supply
LIC. No. 1049

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FEBCO® BACKFLOW PREVENTION

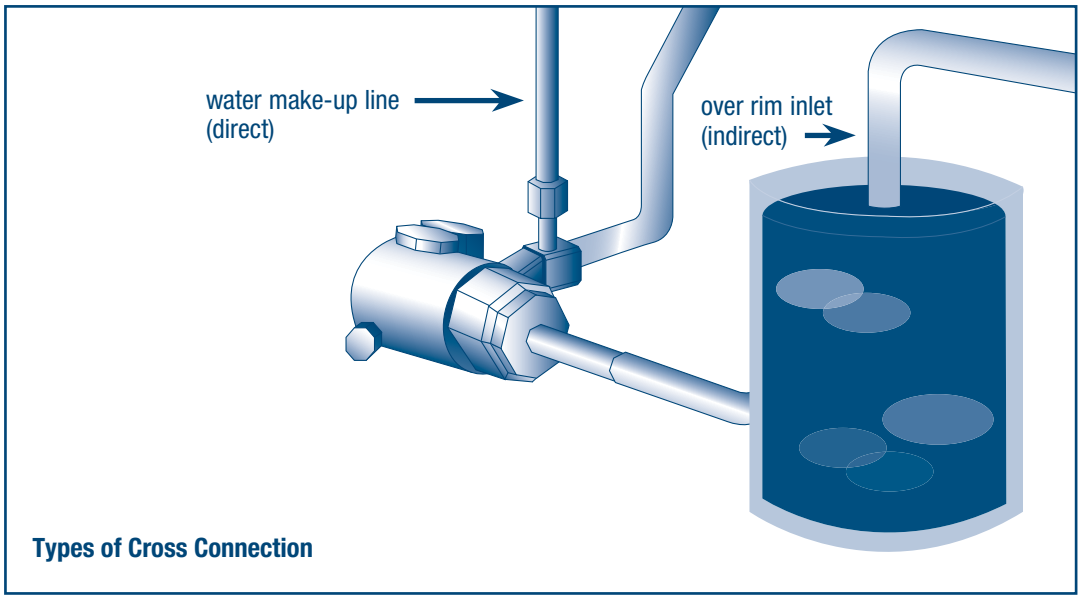
Introduction to Backflow Prevention

The term backflow means an unwanted flow of treated or non-potable water substance from any domestic, industrial or institutional piping system into the pure, potable water distribution system. Backflow may be caused by numerous specific conditions; but, basically the reverse pressure gradient may be due to a loss of pressure in the supply main called backsyphonage, or by the flow from a pressurised system through an un-protected cross connection, which is called backpressure. Thus the term backflow covers both a backsyphonage condition and a backpressure condition.

types of cross connection

A cross-connection is any actual or potential connection or structural arrangement between a public or private potable water system and another source or system through which it is possible to introduce contaminated or polluted substance into any part of the potable water system. There are two basic types of cross-connections: a direct cross-connection and an indirect cross connection. The difference between these two types is quite simple.

A direct cross-connection is subject to backpressure and backsyphonage; an indirect cross-connection is not subject to backpressure. An example of a direct cross-connection would be the make-up water line feeding a recirculating system. An over the rim inlet used to fill an open receiving vessel would be an example of an indirect cross-connection. Backpressure could not be introduced into the supply with this type of connection.



Types of Cross Connection

degree of hazard

The type of backflow device used to prevent backflow from occurring at the point of a cross-connection depends on the type of substance which may flow into the potable water supply. A pollutant is any substance considered a health hazard if it causes illness or death if ingested.

High Hazard - Any condition, device or practice which in connection with the potable water supply system has the potential to cause death.

Medium Hazard - Any condition, device or practice which in connection with the potable water supply system has the potential to endanger health.

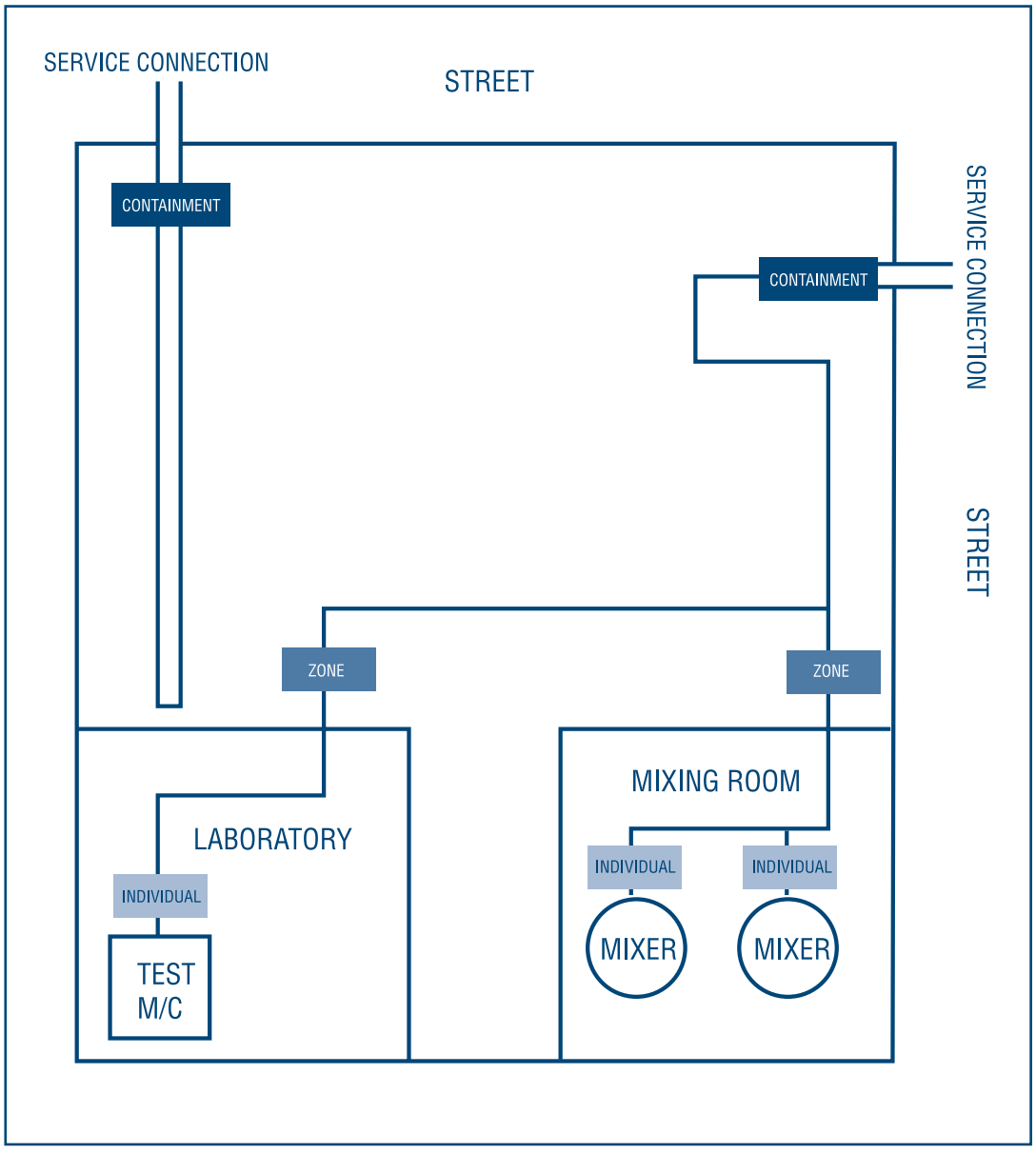
Low Hazard - Any condition, device or practice which in connection with the potable water supply system would constitute a nuisance but not endanger health or cause injury.

Three levels of protection

Individual Protection Backflow prevention protection provided at individual fixtures.

Zone Protection Backflow protection provided at the connection to specific sections of water supply system within a building.

Containment Protection Backflow prevention protection provided at the property boundary to protect the authority's water supply from contamination.



Individual Protection

industrial and commercial applications

Form of Cross Connection	Hazard Rating	Backflow Prevention Device
Industrial and Commercial		
Fogging and cleaning spray equipment with chemical injection or additives	High	RBT or RPZD
Pan washing apparatus	High	RBT or RPZD
Chemical dispensers (high toxicity)	High	RAG, RBT or RPZD
Weed and pest spraying and water cartage tanks	High	RAG or RPZD
Mixing of chemicals	High	RAG or RPZD
Portable and mobile tankers	High	RAG or RPZD
Chemical dispensers (low toxicity)	Medium	Testable device
Coils and jackets in heat exchangers—unsealed and toxic environment	Medium	DCV only
Coils and jackets in heat exchangers—sealed and non-toxic environments	Low	Non-testable device
Photographic processing machines (no developer mixing)	Low	Non-testable device

hose attachment outlets

Form of Cross Connection	Hazard Rating	Backflow Prevention Device
Hose Attachment Outlets		
(a) External hose taps	Low	Non-testable device
(b) Flexible connections over domestic fixtures	Low	Non-testable device
(c) Hose taps located within an area provided with zone protection, but not connected downstream of the zone protection device	Low	Non-testable device
(i) flexible connections over commercial, industrial or hospital fixtures		
(ii) laboratory outlets	Low	Non-testable device
(d) Hose taps located within 18 m of a Type C irrigation system	Low	Non-testable device

Hazards and Levels of Protection

water treatment applications

Form of Cross Connection	Hazard Rating	Backflow Prevention Device
Water treatment systems		
Demineralizing equipment using ion-exchange resins with acid and alkali regeneration	High	RBT or RPZD
Plants with auxiliary non-drinking water supplies	High	RBT or RPZD
Drinking water in reclaimed water plants	Low	Non-testable device
Chlorinators	Medium	Testable device
In-line water softeners and filters	Low	Non-testable device

Fixtures and appliances	Hazard Rating	Backflow Prevention Device
Bidets	High	RBT or RPZD
Food preparation or food storage tanks, vats and vessels with clean-in-place systems	High	RAG or RPZD
Fixtures used for food preparation, e.g., sinks	Low	AG
Fixtures used for ablutions, e.g., baths, bidettes, basins, showers	Low	AG
Laundry troughs	Low	AG
Hair salons basins or troughs	Low	Non-testable device
Carbonated drink-dispensing machines	Low	Stainless steel dual CV (intermediate) vent
Drink-dispensing equipment, vending machines, coffee machines	Low	Non-testable device
Food preparation or food storage tanks, vats and vessels	Low	AG/non-testable device

hospital, medical, dental and veterinary applications

Form of Cross Connection	Hazard Rating	Backflow Prevention Device
Hospitals – medical		
Equipment used for handling, mixing, measuring and processing chemical and microbiological substances	High	RAG or RPZD
Photographic developers (a) Developer mixing facilities (b) Water supplying rinse tanks	 High Low	 RAG or RPZD Non-testable device
Dental console (a) Australia (b) New Zealand	 Low High	 VDCV RAG or RPZD

water supply applications permanently attached

Form of Cross Connection	Hazard Rating	Backflow Prevention Device
Water supply systems permanently attached		
Steam boilers	Low	BT
Cooling towers*	High	RAG or RPZD
Steam calorifier	Medium	Testable device

agricultural and horticultural applications

Form of Cross Connection	Hazard Rating	Backflow Prevention Device
Agricultural and horticultural		
Antibiotic injectors	High	RBT or RPZD
Fertilizers, herbicides, nematicides, insecticides and weedicides injected into an irrigator (Type D)	High	RBT or RPZD
Fogging and cleaning sprays with chemical injection	High	RBT or RPZD

*extracted from AS/NZS 3500.1:2003 Appendix F

Zone Protection

agricultural, horticultural and irrigation system applications

Form of Cross Connection	Hazard Rating	Backflow Prevention Device
Agricultural, Horticultural and Irrigation Systems		
Irrigation systems injected with fertilizers, herbicides, nematicides and insecticides (Type D)	High	RBT or RPZD
Drinking nipples and troughs	High	RAG or RBT or RPZD
Irrigation systems (Type C)	Medium	Testable device
Irrigation systems (Type B)	Low	Non-testable device

industrial and commercial applications

Form of Cross Connection	Hazard Rating	Backflow Prevention Device
Industrial and Commercial		
Electro-plating, degreasing, descaling, stripping, pickling, dipping, etc., tanks, vats and vessels	High	RBT or RPZD
Commercial laundries	High	RAG or RPZD
Cooling or heating systems with recirculating water	High	RAG or RPZD
Clean-in-place systems(i.e., internal chemical cleaning takes place without dismantling equipment)	High	RAG or RPZD
Dockside facilities	High	RAG or RPZD
Industrial process water that has been recirculated	High	RAG or RPZD
Industrial and teaching laboratories	High	RAG or RPZD
Aircraft facilities	Medium	Testable device
Secondary school laboratories (including fume cupboards)	Medium	Testable device
Water filtration equipment	Low	Non-testable device
Photographic laboratories	Low	Non-testable device

sanitary drainage system, fixtures and appliances

Form of Cross Connection	Hazard Rating	Backflow Prevention Device
Fixtures and Appliances		
Sanitary dump points	High	RAG or RPZD
Food storage tanks, vats and vessels with clean-in-place systems	High	RAG or RPZD
Food storage tanks, vats and vessels	Low	Non-testable device
Hair salons, basins or troughs	Low	Non-testable device

*extracted from AS/NZS 3500.1:2003 Appendix F

Hazards and Levels of Protection

fire services

Form of Cross Connection	Hazard Rating	Backflow Prevention Device
Fire Services		
Direct connection to public water supply (Aust only) No tank, reservoir, connection to other water supply, antifreeze or other additives or auxiliary supply, e.g., pond or lake within 180 m of fire brigade booster connection	Low	Single-check valve resilient seated (see Clause 4.6.3.3 Item (h)(iii))
Fire hose reels located in areas of hazard have to have a backflow prevention device in line with the hazard ratings of the areas within reach of the fire hose.	Medium	DCV
All other fire services	Medium	DCV
Fire storage tank	Low	AG

hospital, medical, dental, veterinary and nursing home applications

Form of Cross Connection	Hazard Rating	Backflow Prevention Device
Hospitals/Medical Laboratories, Nursing Homes		
Dissecting rooms in hospitals and medical buildings	High	RBT or RPZD
Mortuary equipment used in funeral parlours, mortuaries, autopsy areas	High	RBT or RPZD
Utility rooms, where other than hand basins are installed	High	RBT or RPZD
Operating theatres in hospitals and medical buildings	High	RBT or RPZD
Dental and medical surgeries (a) Australia (b) New Zealand	 Low High	 Non-testable device RAG or RPZD

irrigation applications

Form of Cross Connection	Hazard Rating	Backflow Prevention Device
All Properties using injection systems		
Systems involving fertilisers, herbicides, nematicides etc. (Type D)	High	Registered break tank/RPZD
Domestic Properties and Residential Units not using injection systems		
Outlets and pipework more than 150mm above) ground (permanently open, not subject to ponding) (Type A)	N/A	No backflow prevention required
Outlets and pipework less than 150mm above ground (Type B)	Low	Non-testable devices
All other properties - other than Domestic Properties and Residential Units not using injection systems		
Outlets and pipework more than 150mm above ground (permanently open, not subject to ponding) (Type A)	N/A	No backflow prevention required
Outlets and Pipework less than 150mm above ground (Type C)	Medium	Testable devices or Atmospheric Vacuum Breakers

*extracted from AS/NZS 3500.1:2003 Appendix F

Containment Protection

Form of Cross Connection	Hazard Rating	Backflow Prevention Device
Type of Premises		
Premises with an alternative water supply	High	RBT or RPZD
Premises where inspection is restricted	High	RBT or RPZD
Hospitals, mortuaries, clinics and the like	High	RBT or RPZD
Piers, docks and other waterfront facilities	High	RBT or RPZD
Sewage treatment plants and sewage lift stations	High	RBT or RPZD
Chemical plants	High	RBT or RPZD
Metal finishing plants	High	RBT or RPZD
Petroleum processing or storage plants	High	RBT or RPZD
Radioactive material processing plants or nuclear reactors	High	RBT or RPZD
Car and plant washing facilities	High	RBT or RPZD
Abattoirs	High	RBT or RPZD
Factories using processing or manufacturing toxic chemicals	High	RBT or RPZD
Chemical laboratories	High	RBT or RPZD
Pathology laboratories	High	RBT or RPZD
Sanitary depots	High	RBT or RPZD
Universities	High	RBT or RPZD
Food and beverage processing plants	Medium	Testable device
Caravan parks	Medium	Testable device
Marinas	Medium	Testable device
Premises with grey water re-use systems	Medium	Testable device
Public swimming pools	Medium	Testable device
Premises with reticulated and disinfected reclaimed water systems	Medium	Testable device
Premises with rainwater tanks	Low	Non-testable device

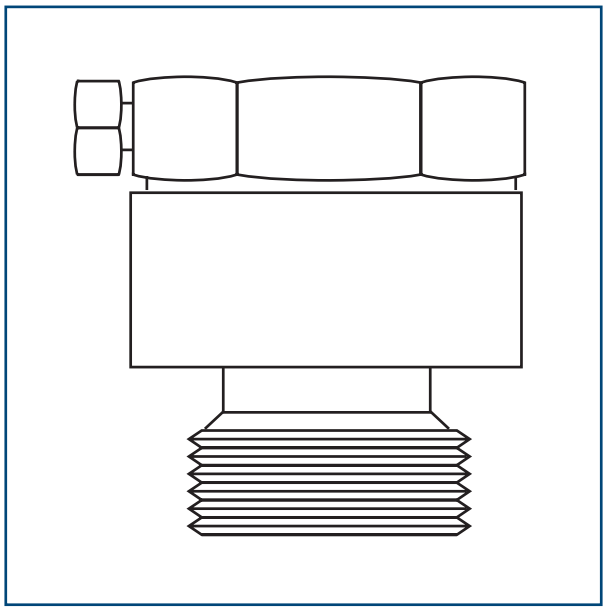
Legend:

AG = Air Gap
AVB = Atmospheric Vacuum Breaker
DCV = Double Check Valve
RAG = Registered Air Gap
RBT = Registered Break Tank
RPZD = Reduced Pressure Zone Device
VDCV = Vented Dual Check Valve
BT = Brake Tank

*extracted from AS/NZS 3500.1:2003 Appendix F

Dura Hose Connection Vacuum breaker (Hose Connection HCVB)

The Dura Vacuum Breaker is a low hazard backflow device, it is a single check valve spring loaded to a closed position with atmospheric vacuum breaker vent. They are generally attached to a hose tap to prevent backsyphonage for example in the event of cross connection when filling a swimming pool. It can also be used in other applications including: laboratory sinks, service sinks, soap dispensers etc.



Low Hazard Device (Backsyphonage only)

features

- Working pressure 1400 kPa
- Maximum working temp 80 deg
- Large flow passage

installation requirements

- Must have free ventilation at all times.
- Is not to be buried or installed into a pit.
- Shall not under normal operation, be subject to constant pressure.
- Have no isolation valves located downstream of the vacuum breaker.
- For use with irrigation sprinkler heads less than 150mm above ground level. Install 450mm above the highest outlet.

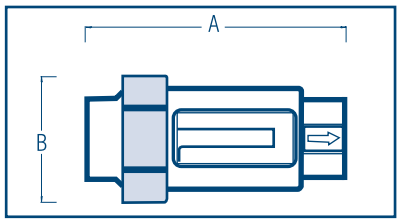
1006796	DURA VACUUM BREAKER TO SUIT 15MM HOSEBIB
1006797	DURA VACUUM BREAKER TO SUIT 20MM HOSEBIB
1006798	DURA VACUUM BREAKER TO SUIT 15MM HOSEBIB C/P

Dual Check Valve DUCV 20-25mm

The Dual Check Backflow Preventer was designed to be installed down stream from the house water meter to reduce the potential backflow of pollutants from the house or yard into water mains. Each of the two spring loaded check valves remains tightly closed at zero flow. At rated flow, both checks are fully open. If the back pressure increases above the supply pressure, there is a reverse direction of flow, the check valves close and backflow is prevented. Approved to AS2845-1.

dimensions and codes

Size	A	B	Reece Code
20mm	91mm	46mm	1011270
25mm	92mm	46mm	1011271



Low Hazard Device (Back pressure & Backsyphonage)

features

- Compact and lightweight
- Corrosion resistant
- Two independently operating check valves
- Union connection for easy installation and testing
- Suitable for vertical and horizontal installations
- Pressure rated to 1200 kPa and will withstand temperatures from 1°C to 60°C

materials

Parts	Material
Body & Covers	DR-Brass
Springs	Stainless Steel

characteristics

- Maximum working pressure 1200 kPa
- Minimum working pressure 220 kPa
- Temperature Range 1°C to 60°C

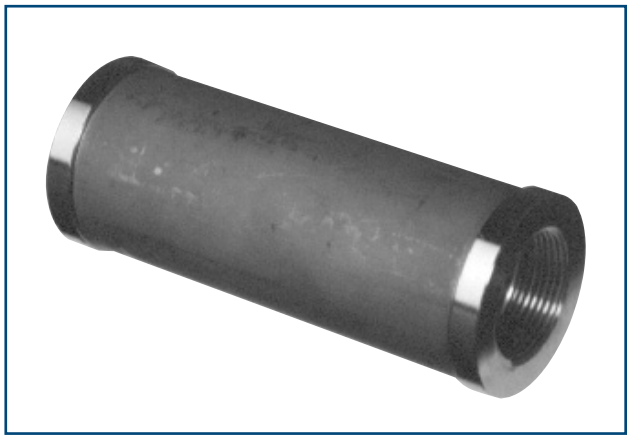
flow rates

- Maximum permitted pressure loss: 50 kPa
- Maximum flow rate: 20mm - 42 Litres per minute
  25mm - 60 Litres per minute

FEBCO® BACKFLOW PREVENTION

Dual Check Valve DUCV 32-50mm

Dual Check Valve DUCV provides protection to the potable water supply from contaminates in low hazard applications. The dual check valve consists of two independently acting internally loaded check valves in series. Under flow conditions, 12-14 kPa of pressure is required to open the first check valve to allow flow through to the second check valve. The second check valve needs a further 12-14 kPa of pressure to open and allow supply of water downstream.



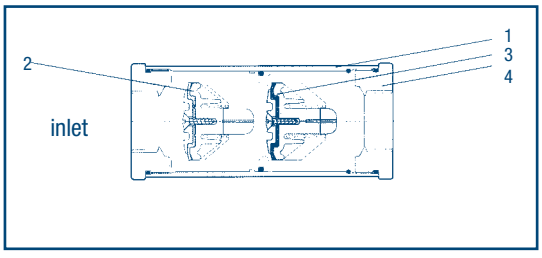
Low Hazard Device (Back pressure & Backsyphonage)

features

- Working pressure 2300 kPa @ 90˚C
- 316 Stainless Steel body
- Stainless Steel springs for corrosion resistance
- Replaceable check valve modules
- Compact design
- Suitable for vertical and horizontal applications

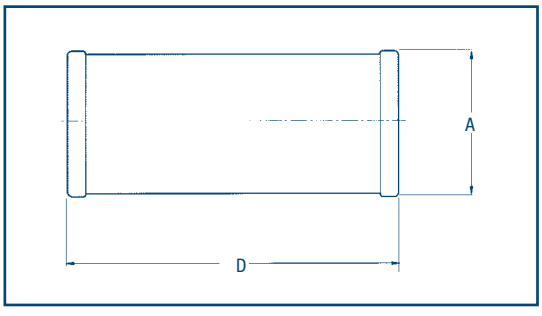
material configuration

No.	Description
1	Body
2	First check valve
3	Second check valve
4	End cap



dimensions and codes

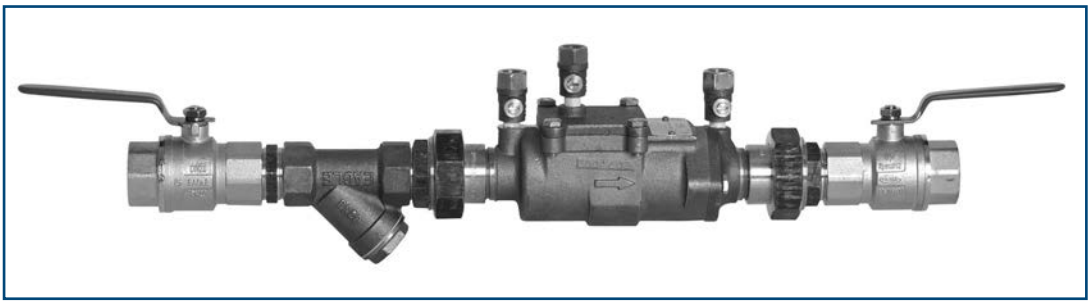
Valve Size	A	D	Weight Kg	Reece Code
32	63	162	1.4	1011803
40	90	198	3.7	1011804
50	90	198	3.3	1011805



MasterSeries™ 15-50mm Double Check Valve 850 DCV

Double Check Valves 15mm through 50mm shall consist of two independently acting in-line check cartridges, two resilient seated ball type isolating valves (to be installed immediately upstream of the line strainer and immediately downstream of the device) and three resilient seated test cocks. A line strainer (supplied) shall be installed immediately upstream of the device, except where used in fire service installations. The device body shall be removable from the line via M&F barrel unions (supplied) and to be installed immediately either side of the device body. Further details refer installation instructions in pack.

There shall be a single access cover for access to the first and second check. Mainline valve body and cap shall be bronze. These devices are Australian Standards - Watermark approved for use in Australia, its territories and New Zealand.



Medium Hazard Device (Back pressure & Backsyphonage)

features

- Low head loss
- New Modular check design
- Bayonet style check for quick and easy service
- Meets all specifications of AWWA and ASSE
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California
- D.R. brass, shut-off valves and test cocks
- Maximum Working Pressure 1200 kPa
- Temperature Range 0ºC - 60ºC

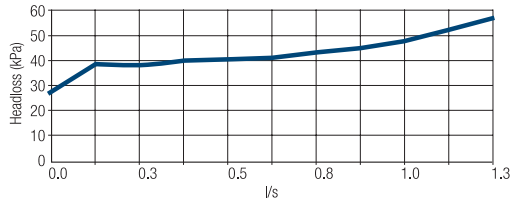
typical specifications

The Double Check Valve 15mm through 50mm consists of a bronze body with bronze caps. The device includes threaded inlet and outlet, full port ball valve shut-off valves and three ball valve test cocks. All internal parts are corrosion resistant material. All Double Check Valves are constructed so all internal parts can be serviced without removing the device from the line. The device operates when installed in any position. Double Check Valves are rated to 1200 kPa water working pressure and water temperature from 0˚C to 60˚C.

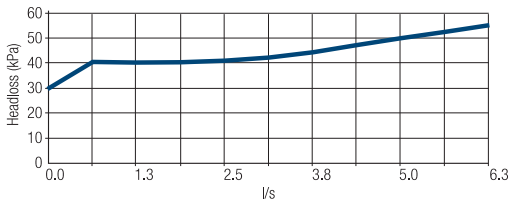
MasterSeries™ 15mm-50mm Double Check Valve 850 DCV

model 850 flow curves

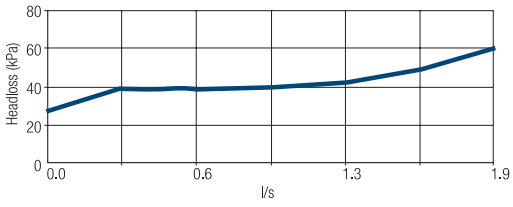
Double Check Assembly **15mm**



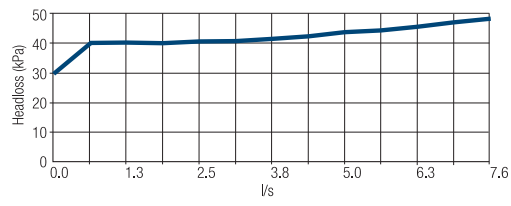
Double Check Assembly **32mm**



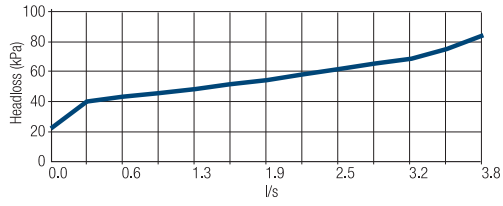
Double Check Assembly **20mm**



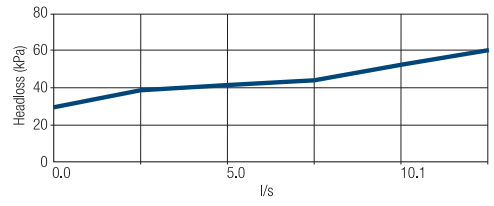
Double Check Assembly **40mm**



Double Check Assembly **25mm**

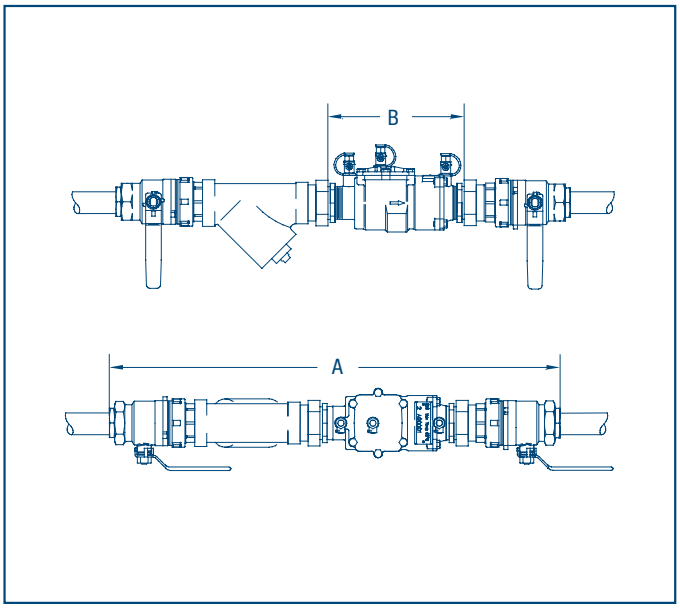


Double Check Assembly **50mm**



dimensions and codes

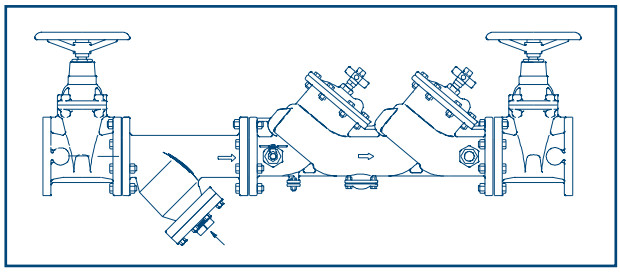
Size (mm)	A	B	Reece Code
15	445	160	1011468
20	430	160	1011469
25	510	190	1011470
32	640	260	1011471
40	700	260	1011472
50	770	260	1011473



FEBCO® BACKFLOW PREVENTION

Double Check Valve 850 DCV

The Febco Double Check Valve 850 is an inline backflow preventer. Available in 65mm through to 150mm the device consists of two independently acting check valves, two resilient seated cast iron gate valves (refer page 52), three test cocks and Y strainer.

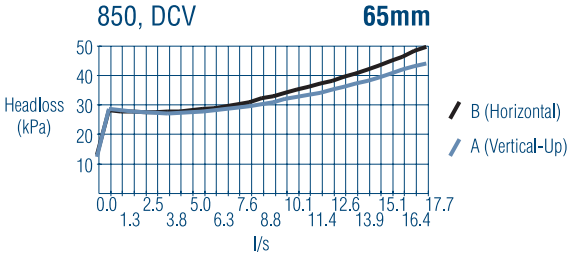


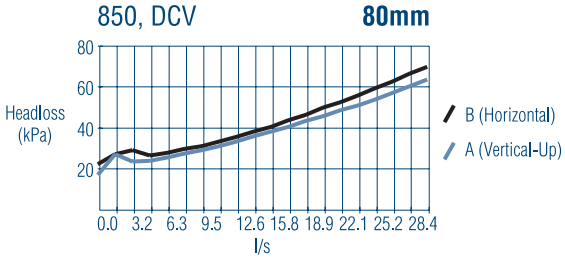
Medium Hazard Device (Back pressure & Backsyphonage)

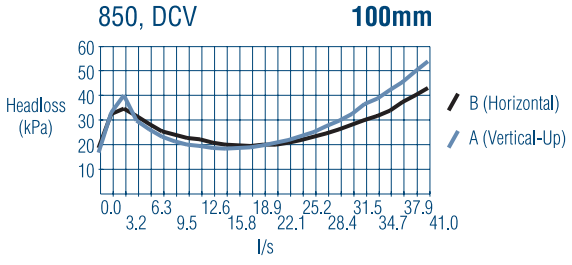
features

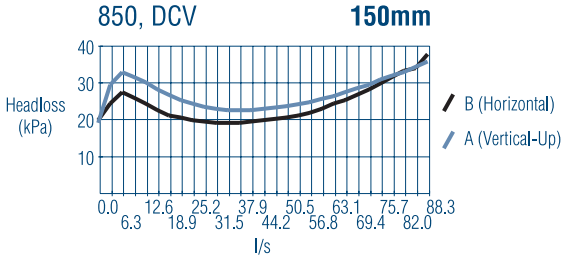
- Maximum working pressure 1200 kPa
- Hydrostatic test pressure 2400 kPa
- Temperature range 0°C to 60°C
- End connections flanged AS2129 Table E
- Easily serviceable inline

model 850 flow curves







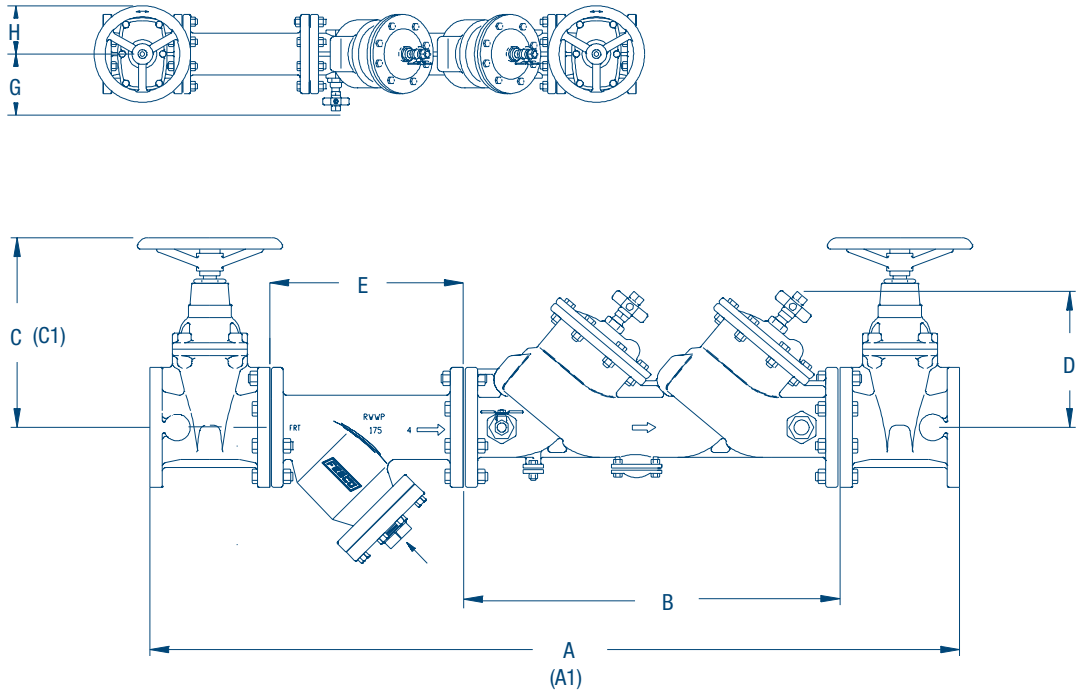


FEBCO® BACKFLOW PREVENTION

65mm-150mm Double Check Valve 850 DCV

dimensions and codes

Size (mm)	A RSGV	A1 BFV	B	C RSGV	C1 BFV	D	E	G	H	Reece Code RSGV	Reece Code BFV
65	1300.70	1010.70	647.70	310	203	260.35	273	114.30	180.98	1009165	1009164
80	1351.90	1035.90	650.88	350	211	260.35	295	114.30	187.33	1009178	1009216
100	1521.20	1163.20	711.20	380	230	260.35	352	139.70	206.38	1009184	1009183
150	1886.65	1464.65	882.65	485	255	330.20	470	165.10	250.83	1009196	1009195

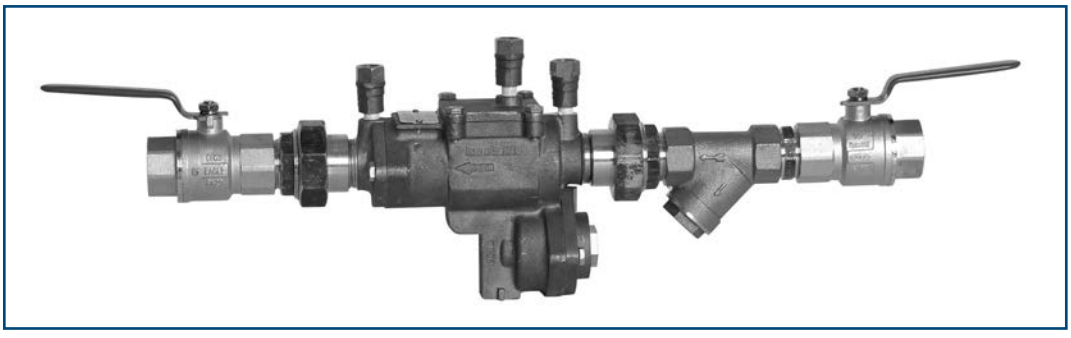


NB: (A1) & (C1) refer installation inc. BFV (not pictured) *BFV = Butterfly Valves RSGV = Resilient Seated Gate Valves (pictured)

MasterSeries™ 15mm-50mm Reduced Pressure Zone Device 860 RPZD

Reduced Pressure Zone Devices 15mm through to 50mm shall consist of an automatically opening differential pressure relief valve located so that its valve seat and port to atmosphere are below the lowest point of the first check valve (to preclude backsyphonage) and between two resilient seated ball type isolating valves (to be installed immediately upstream of the line strainer and immediately downstream of the device) and three resilient seated test cocks. A line strainer (supplied) shall be installed immediately upstream of the device, except where used in fire service installations. The device body shall be removable from the line via M&F barrel unions (supplied) and to be installed immediately either side of the device body. Further details refer installation instructions in pack.

There shall be a single access cover for access to the first and second check with separate access cover for the relief valve. These devices are Australian Standards – Watermark approved for use in Australia, its territories and New Zealand.



High Hazard Device (Back pressure & Backsyphonage)

features

- Ultimate mechanical protection of potable water, against high hazard cross connection contamination
- Modular relief valve for ease of maintenance.
- Simple service procedures. All internal parts serviceable in line.
- Low head loss
- Spring loaded check valves
- Internal relief valve pressure sensing passages
- Replaceable relief valve seat ring on all sizes

characteristics and materials

- Maximum working pressure 1200 kPa
- Hydrostatic test pressure 2400 kPa
- Temperature range 0˚C to 60˚C
- Main valve body bronze
- Relief valve body bronze
- Elastomers silicone
- Diaphragms: nitrile, fabric reinforced
- Springs Stainless Steel

MasterSeries™ 15mm-50mm Reduced Pressure Zone Device 860 RPZD

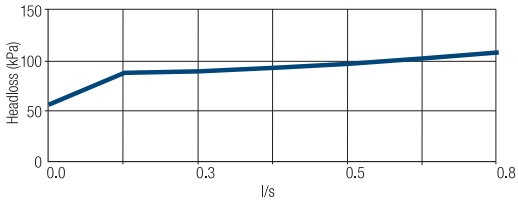
typical specifications

The Reduced Pressure Backflow Preventer shall consist of two independently operating, spring loaded, check valves and one hydraulically dependent differential relief valve. The device shall automatically reduce the pressure in the "zone" between the check valves to at least 35 kPa lower than inlet pressure. Should the differential between the upstream and the zone of the unit drop to 15 kPa, the differential relief valve shall open and maintain the proper differential.

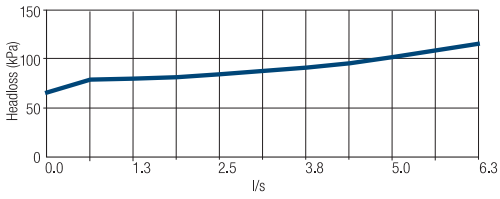
Mainline valve body and caps including relief valve body and cover shall be bronze. Check valve moving member shall be centre stem guided. All hydraulic sensing passages shall be internally located within the mainline and relief valve bodies and relief valve cover. Diaphragm to seat area ratio shall be 10:1 minimum. 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. Shut-off valves and test cocks shall be full ported ball valves.

model 860 flow curves

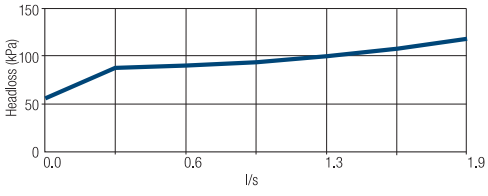
Reduced Pressure Assembly **15mm**



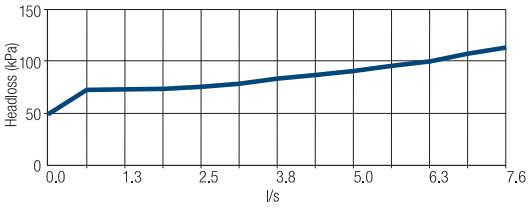
Reduced Pressure Assembly **32mm**



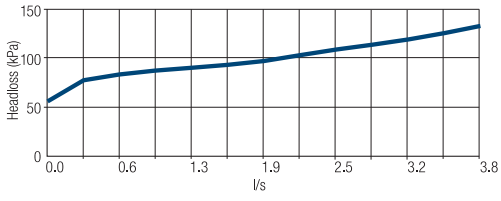
Reduced Pressure Assembly **20mm**



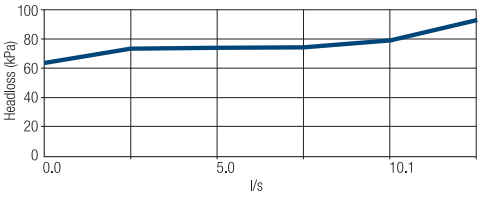
Reduced Pressure Assembly **40mm**



Reduced Pressure Assembly **25mm**

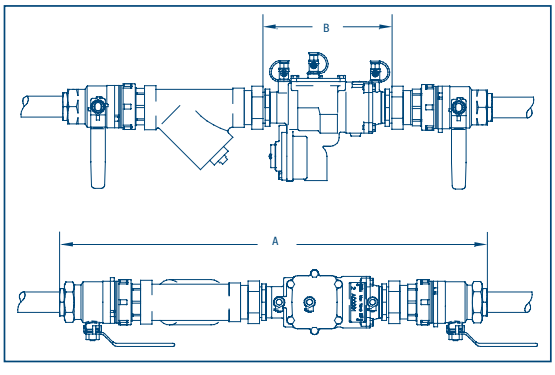


Reduced Pressure Assembly **50mm**



dimensions and codes

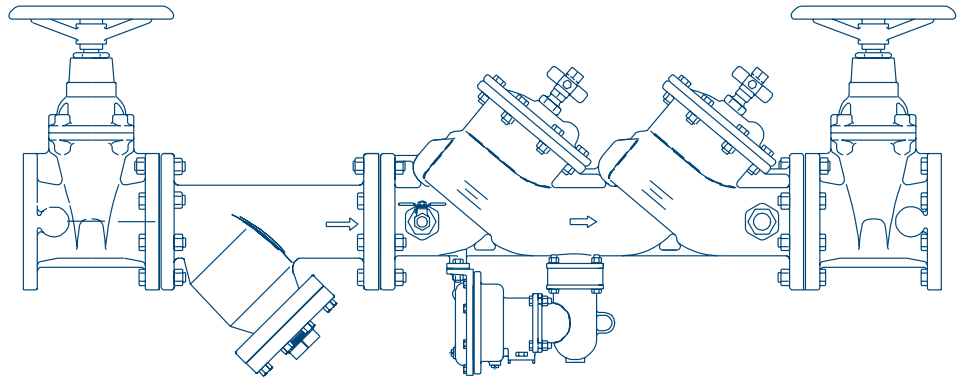
Size	A	B	Reece Code
15	445	160	1011402
20	430	160	1011403
25	510	190	1011404
32	640	260	1011405
40	690	260	1011406
50	770	260	1011407



FEBCO® BACKFLOW PREVENTION

Reduced Pressure Zone Device 860 RPZD

The Febco 860 Reduced Pressure Assembly provides protection to potable (drinking) water supply from contamination in high hazard application. The 860 In-line Reduced Pressure Assemblies 65mm through 150mm shall consist of an automatically opening differential pressure relief valve located so that its valve seat and port to atmosphere are below the lowest point of the first check valve (to preclude backsyphonage) and between two independently acting spring-loaded swing check valves, two approved resilient seated shut-offs, three resilient seated test cocks and Y strainer.



Model 860 Reduced Pressure Zone Device

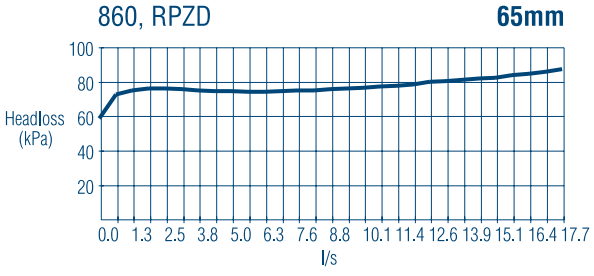
High Hazard Device (Back pressure & Backsyphonage)

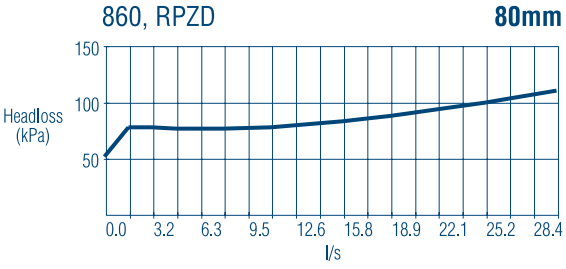
features

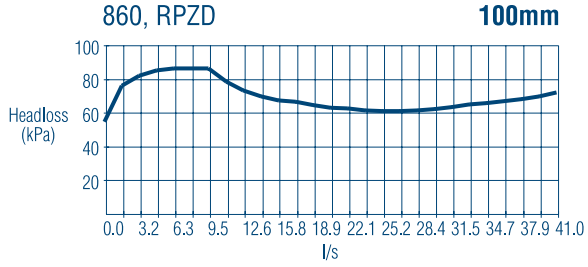
- Maximum working pressure 1400 kPa
- Hydrostatic test pressure 2400 kPa
- Temperature range 0°C to 60°C
- End connections flanged AS2129 Table E

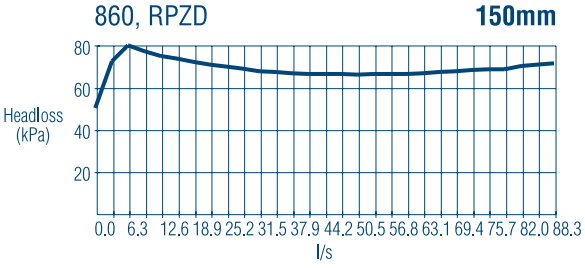
65mm-150mm Reduced Pressure Zone Device 860 RPZD

model 860 flow curves







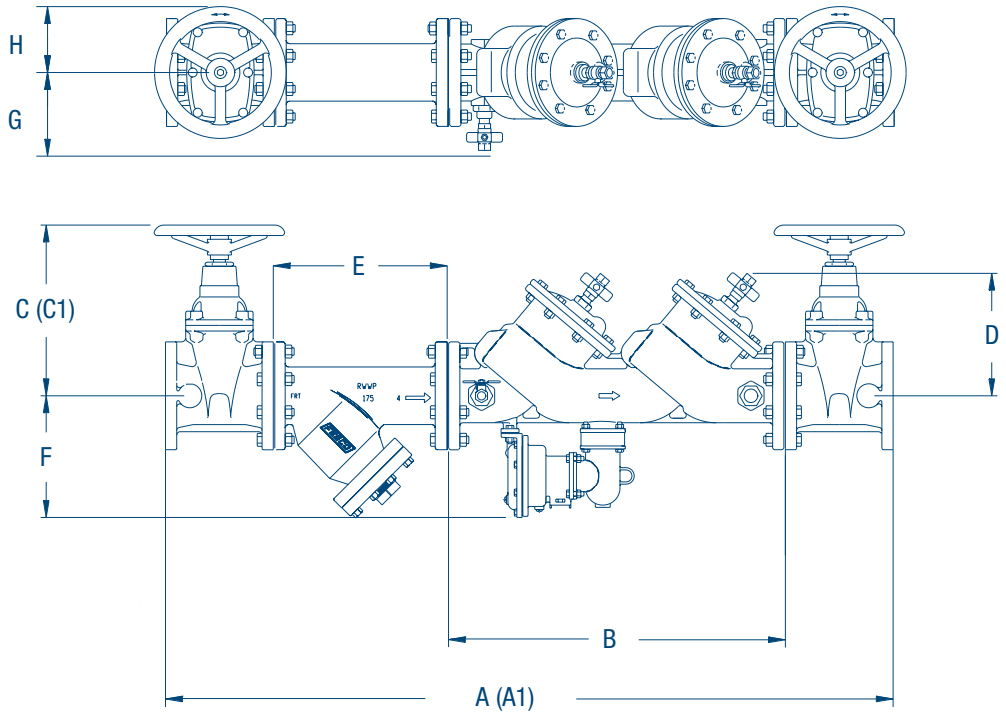


FEBCO® BACKFLOW PREVENTION

65mm-150mm Reduced Pressure Zone Device 860 RPZD

dimensions and codes

Size (mm)	A RSGV	A1 BFV	B	C RSGV	C1 BFV	D	E	F	G	H	Reece Code RSGV	Reece Code BFV
65	1300.70	1010.70	647.70	310	203	254	273	254	114.30	181.10	1009167	1009166
80	1351.90	1035.90	650.90	350	211	254	295	254	114.30	187.45	1009180	1009179
100	1521.20	1163.20	711.20	380	230	257.30	352	257.30	139.70	206.50	1009170	1009190
150	1886.65	1464.65	882.65	485	255	323.85	470	282.70	165.10	250.95	1009203	1009197



NB: (A1) & (C1) refer installation inc. BFV (not pictured) *BFV = Butterfly Valves RSGV = Resilient Seated Gate Valves (pictured)

FEBCO® BACKFLOW PREVENTION

Dura Butterfly Valve

The Dura Butterfly Valve is a soft sealing valve for installation with flanges drilled in accordance with AS 2129 Table E. Dura Butterfly Valves feature absolutely tight sealing and low operation torque requirement, thus minimal operational wear and extended service life are long term benefits.

Dura Butterfly Valves are available in sizes 50mm through to 450mm. Engineered for long-term, maintenance-free performance, Dura Butterfly Valves are commonly selected for a variety of applications spanning a wide range of industries and are well suited to backflow devices.

features

- All valves are individually factory tested at 16 bar tight shut off as standard
- Is tight sealing, corrosion resistant, and has a low operation torque requirement
- The light weight and compact design reduces installation, storage and transport costs
- Expoxy Coated as standard
- Working Temp –10°C to 120°C
- Top Flange conforms to 5211/1

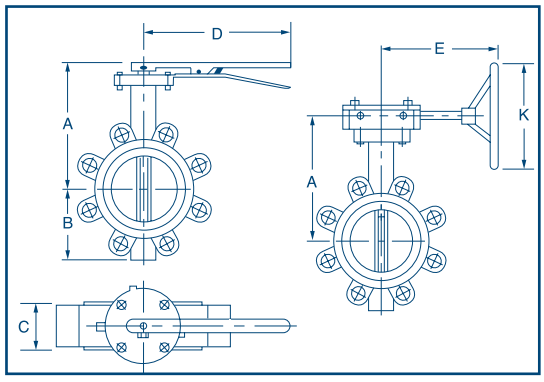
material specifications

Component	Material	BS	ASTM
Body	Cast Iron	1452 Gr 220	A126 Cl.B
Shaft	Stainless steel	970 416 S21	AISI 416
Disc	Stainless Steel	1507 S316 C16	A351 CF8M
Bushings	PTFE	1400 LG2	B62 C83600
Liner	EPDM	-	-
O-Rings	EPDM	-	-

Dura Butterfly valve

dimensions

Nominal Size (mm)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	K (mm)	Weight Lever (Kg)	Weight Geared (Kg)
50	191	80	42	262	134	150	4.6	8.1
60	203	91	45	262	134	150	5.3	8.8
80	211	95	45	262	134	150	5.5	9.1
100	230	112	50	262	134	150	9.0	12.3
125	245	134	54	262	134	150	11.6	14.9
150	255	138	56	262	134	150	13.5	16.8
200	271	170	58	326	240	305	20.2	31.1
250	326	198	68	415	240	305	33.3	43.6
300	366	234	77	415	257	305	45.5	58.4



KV Values-valve sizing coefficients (m3/h at 1 bar ΔP)

Nominal Size		KV at disc opening							
DN	10º	20º	30º	40º	50º	60º	70º	80º	90º
50	0.05	2.6	6.1	13	23	38	61	91	100
65	0.09	5.2	10	22	39	65	103	154	170
80	0.17	7.8	16	34	61	100	158	238	261
100	0.26	15	31	68	120	199	315	472	519
125	0.43	25	53	115	205	339	536	804	884
150	0.39	39	82	177	317	523	829	1243	1366
200	1.7	77	163	353	629	1040	1646	2649	2713
250	2.6	131	277	600	1070	1771	2803	4205	4619
300	3.5	202	428	927	1653	2735	4329	6494	7136

Cast Iron AS2638 Gate Valve

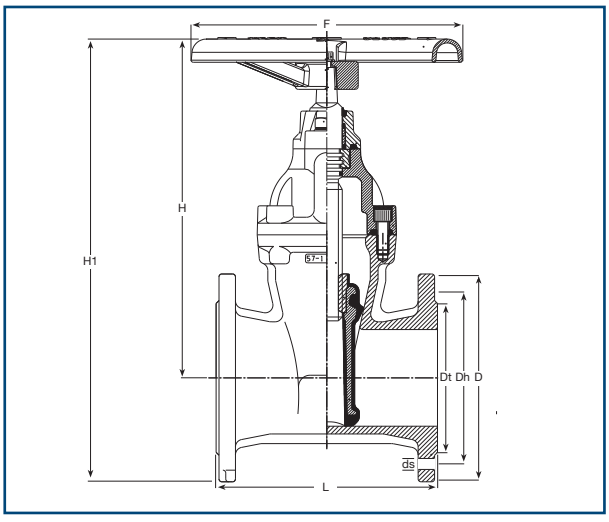
The AS2638 is a resilient seat, wedge gate valve, suitable for use with water and neutral liquids, to a maximum temperature of 70°C. The gate valve's primary function is to control the flow of water, although by design, it eliminates external corrosion, making it suitable for under ground installation.

features

- Supplied complete with hand wheel
- Ductile iron wedge, fully vulcanised with EPDM
- O-ring stem seals replaceable under pressure
- Fully corrosion resistant construction
- Fusion bonded epoxy coating
- Body/Bonnet bolts sealed with wax
- Maximum working pressure 1600 kPa
- Temperature range: -10° to 70°C. (insulation needed for temperatures of 0°C and below)

materials

Gland flange, body and bonnet	Ductile iron, 500-7 to AS 1831
Coating	Fusion bonded epoxy resin - Internally and externally to AS 4158
Stem	Stainless steel 431
Stem sealing	NBR wiper ring, 2 NBR O-rings
Wedge	Ductile iron, 500-7 to AS 1831, core fully vulcanised with EPDM rubber, with integral wedge nut of dezincification resistant brass, CZ 132 to AS 2345
Bushing	Polyamide
Thrust collar and stem seal box	Dezincification resistant brass, CZ 132 to AS 2345
Bonnet bolts	DN50 - DN250 Grade 8.8, sealed with hot melt DN300 - DN400 Grade 12.9, sealed with hot melt
Gland flange bolts	Stainless steel 316
Bonnet gasket	EPDM rubber
Handwheel	Ductile iron to AS 1831



dimensions

DN	L mm	H1 mm	H mm	Dt mm	D mm	Dh mm	ds mm	Holes	F mm	Weight kilos
50	178	392	310.0	98	165	114	18.5	4	280	20.1
65	190	410	320.0	103	185	127	18.5	4	280	21.1
80	203	410	326.0	122	185	146	18.5	4	280	22.1
100	229	460	351.5	154	215	178	18.5	4	280	30.1
150	267	600	459.5	209	280	235	18.5	8	360	54.9
200	292	730	563.0	264	335	292	18.5	8	500	83.2
225	305	825	637.0	296	370	324	18.5	8	500	107.2
250	330	855	648.5	328	405	356	22.5	8	500	111.2
300	356	955	724.0	376	455	406	22.5	12	500	156.2
375	381	1170	904.5	463	550	495	26.5	12	640	255.6
400	406	1200	917.5	503	620	521	26.5	12	640	300.6

Dura Eagle Ball Valve

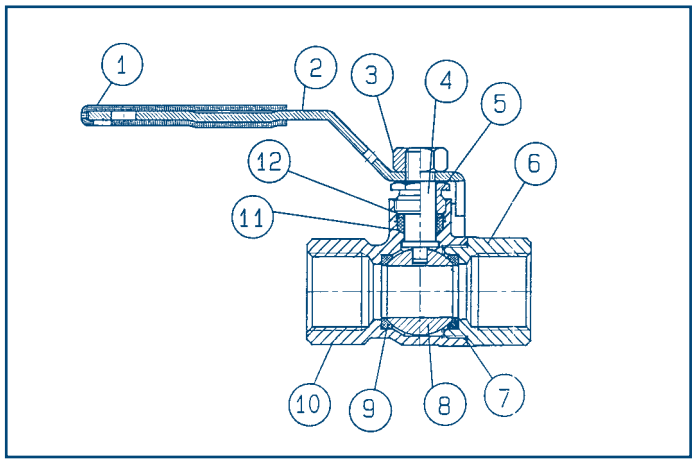
The Dura Eagle is a brass ball valve with metallic body, spherical shutoff valve (ball), and female BSP threaded end connections. Manufactured in brass with requirement “DR” (Dezincification resistant copper alloy in accordance with AS2345), the Dura Eagle is fully tested and has watermark approvals. These valves are suitable for line assembly in pipeline, the principal aim is to open and close flow in distribution systems. The Dura Eagle ball valves also feature a stainless steel handle to prevent electrolysis and rust from occurring. Available in sizes 15mm through to 50mm. They are well suited for backflow applications.

features

- Valve is suitable for hot and cold water applications
- Real full bore
- PTFE seats both ends
- Quarter turn operation
- Hard chromed solid ball
- Temperature range: -20°C to 100°C in accordance with AS1628
- Maximum working pressure 2100 kPa
- Internal threaded ends to AS1722.2
- 100% Tested
- Stainless steel handle to prevent rust & electrolysis.

materials

No.	Denomination	Material
1	Cover	Polyethylene
2	Handle (Lever)	Steel
3	Handle Nut	Steel
4	Stem	DR-Brass
5	Sealing Nut	Brass
6	Lateral	DR-Brass
7	Seal (O-Ring)	NBR
8	Ball	DR-Brass
9	Seat	P.T.F.E
10	Body	DR-Brass
11	Sealing Gland	P.T.F.E. G-400
12	Washer	Brass



Dura Bronze Y Strainer

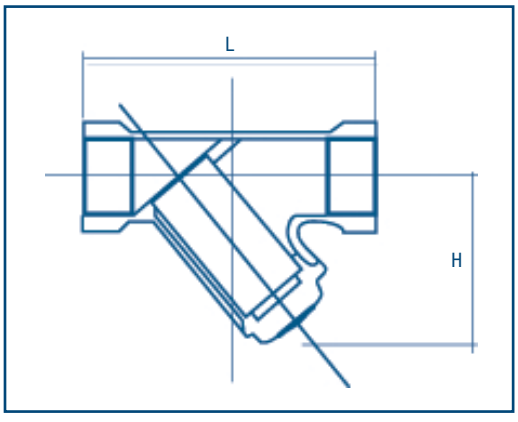
The Dura Bronze Y Strainer is applicable to water, oil and gas. It's function is to allow scale and dirt residue to be caught, preventing the chance of imminent damage to equipment such as pumps, valves, flow equipment etc. The strainer allows the full flow of fluid with only a minimal pressure loss. The easily removable cover allows easy access to the basket for cleaning which maximizes the life of the valve.

features

- Working pressure:
  Saturated steam 689 kPa
  Water, Oil & Gas 1378 kPa
- Test pressure 2067 kPa
- Female threads to AS1722

materials

Parts	Material
Body	Bronze
Cap	Bronze
Screen	Type 304 Stainless Steel
Gasket	Non-asbestos Sheet



dimensions (mm)

Size (mm)	15	20	25	32	40	50	65	80
L Threaded ends	81.5	100.5	115	135.5	158	190.5	230	259
H Height	55	70	75	90	98	138	150	160

Dura Cast Iron Y Strainer Flanged

The Dura Cast Iron Y Type Strainer is applicable to water, oil and gas. It's function is to allow scale and dirt residue to be effectively captured, preventing the chance of imminent damage to equipment such as pumps, valves, flow equipment etc. The strainer allows the full flow of fluid with only a minimal pressure loss. The easily removable cover allows access to the filter screen for cleaning and maintenance. A plugged tapping point is provided for draining or blowdown.

features

- Epoxy Coated
- Flanges conform to AS2129 Table D or E
- Easily removable cover

operating pressure and temperature

DN50 up to DN300	Water, Oil, Gas	1600kPa@65°C

standard screens

nominal size (mm)	hole diameter (mm)
50-80	1.5
100-450	3.0

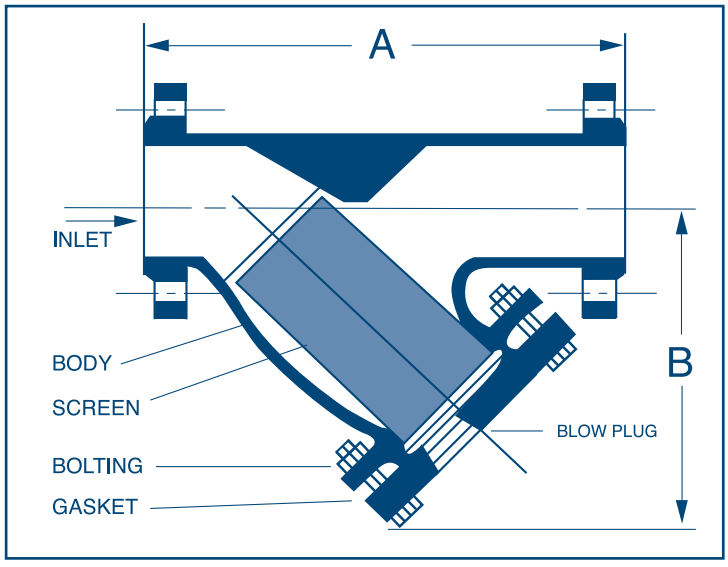
material specification

component	material	BS	ASTM
Body	Cast Iron	1452 Gr 220	A126 Cl.B
Cover	Cast Iron	1452 Gr 220	A126 Cl.B
Screen	Stainless Steel	970 304 S15	ASI 304
Gasket	EPDM	-	-
Plug	Malleable Iron	-	-

Dura Cast Iron Y Type Strainer Flanged

dimensions

nominal size (mm)	A (mm)	B (mm)	blow off BSP	weight (kg)
50	225	155	1/2”	10
65	273	205	1”	16
80	295	215	1”	23.5
100	352	245	1”	34
125	416	295	1 1/4 “	52
150	470	320	1 1/2 “	70
200	543	415	1 1/2 “	110
250	660	485	2”	185
300	762	560	2”	295



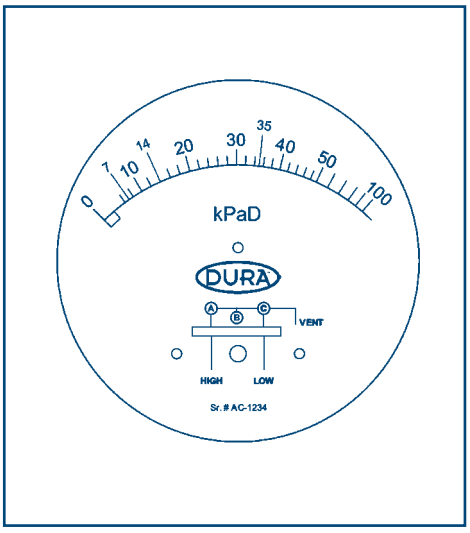
Bolt and Gasket Specifications

Fitting specs for RPZD & DCV with BFV's 'IN-LINE' Devices

		BFV IN-LINE
Size (mm)	Qty	Item
65	4	M16 X 65mm
	16	M16 X 35mm
	1	65mm Gasket Rubber
	20	Flat Washer M16mm
80	4	M16 X 65mm
	16	M16 X 35mm
	1	80mm Gasket Rubber
	20	Flat Washer M16mm
100	8	M16 X 70mm
	32	M16 X 40mm
	1	100mm Gasket Rubber
	40	Flat Washer M16mm
150	8	M20 X 70mm
	32	M20 X 40mm
	1	150mm Gasket Rubber
	40	Flat Washer M20mm
		RSGV IN-LINE
65	20	M16 X 65mm
	5	65mm Gasket Rubber
	20	Flat Washer M16mm
80	20	M16 X 65mm
	5	80mm Gasket Rubber
	20	Flat Washer M16mm
100	40	M16 X 70mm
	5	100mm Gasket Rubber
	40	Flat Washer M16mm
150	40	M20 X 70mm
	5	150mm Gasket Rubber
	40	Flat Washer M20mm

Dura Backflow Prevention Device Test Kit

Suitable for all brands of testable backflow prevention devices.
Under current legislation (AS/NZS 3500:1) all backflow devices must be tested annually.



kit includes

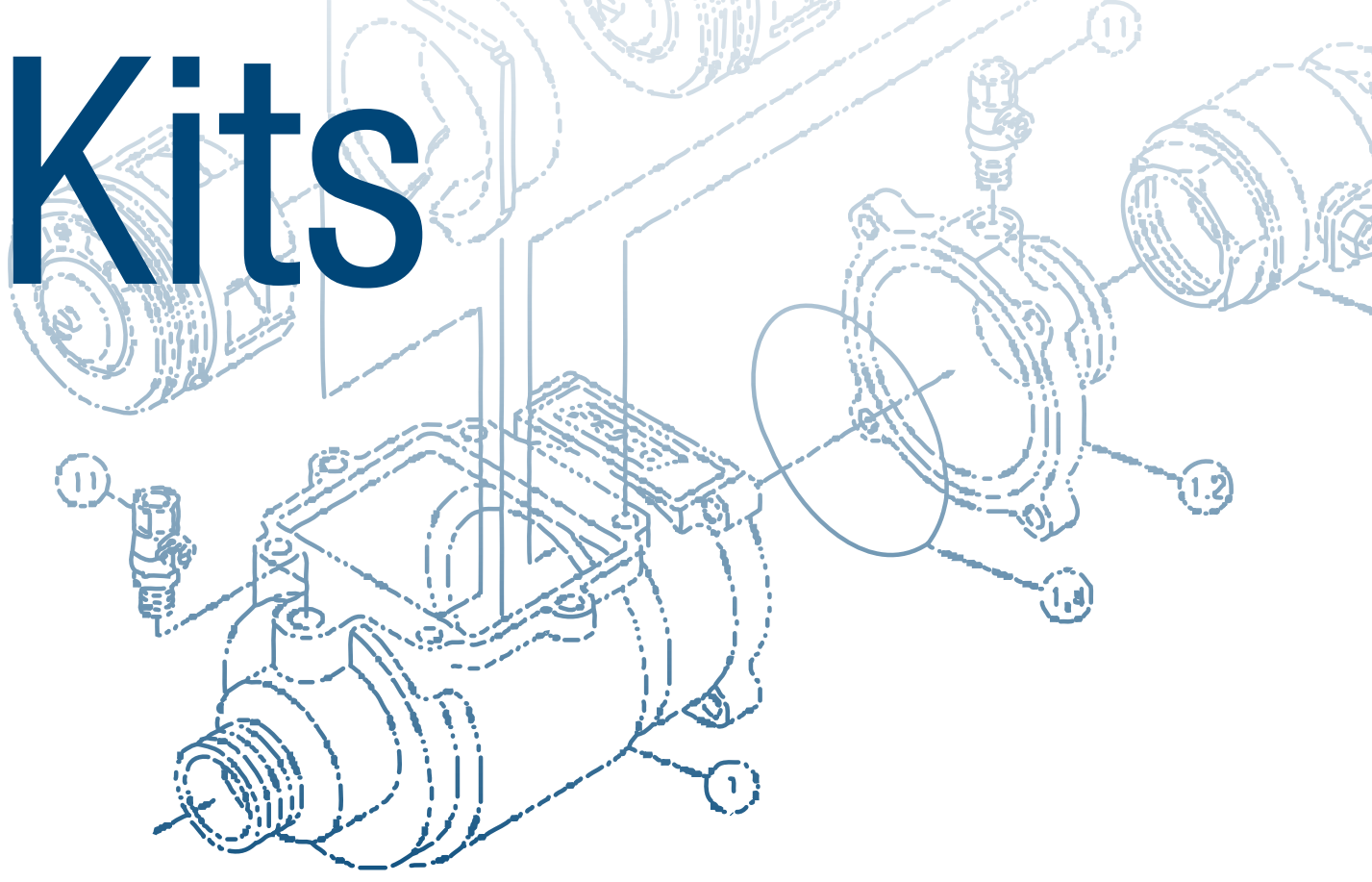
Quantity	Item
1	Dura Differential Pressure Gauge
1	Red High Pressure Test Hose
1	Blue High Pressure Test Hose
1	Yellow High Pressure Test Hose
3	Knurled Test Nipples 6mm
3	Knurled Test Nipples 3mm
3	Knurled Test Nipples 15mm
3	Screwed Bushes 20mm x 15mm
1	Durable Carry Box

product codes

1011418	Dura Backflow Valve Test Kit
1011452	Dura Backflow Adaptor Kit
1011459	Dura Backflow Test Kit Recalibration
1011450	Dura Backflow Adaptor 15mm BF16 & BF19
1011451	Dura Backflow Adaptor 6mm BF15 & BF18
1011466	Dura Backflow 1/4 x 1/8 BSpt Nipple

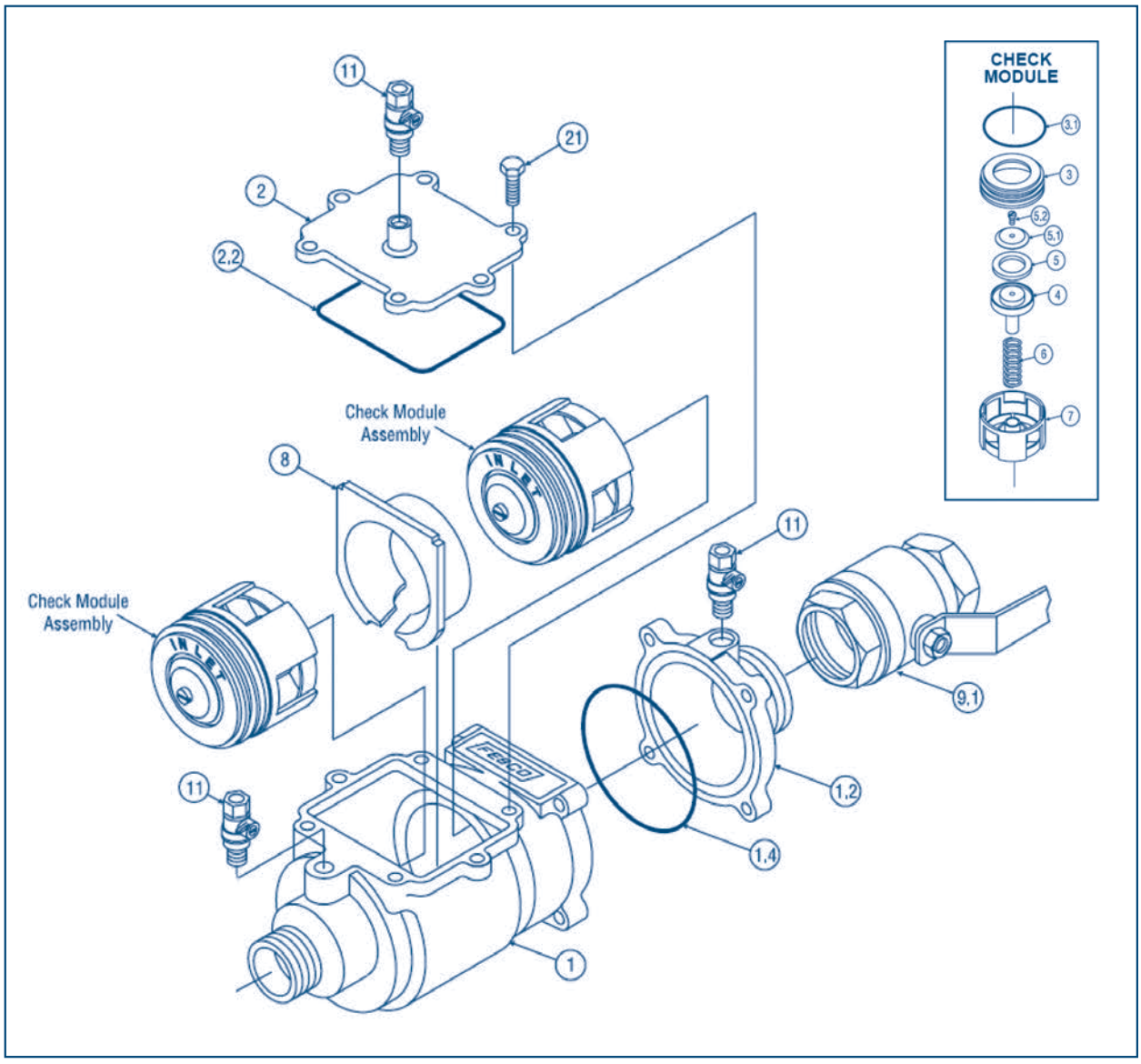
FEBCO® BACKFLOW PREVENTION

Spare Parts & Service Kits



FEBCO® BACKFLOW PREVENTION

MasterSeries™ 15mm-50mm Double Check Valve 850 DCV



model 850 item description

Item	Description	Item	Description
1	Body	5.1	Disc Retainer
1.2	Tailpiece	5.2	Round HD Screw
1.4	O-Ring	6	Spring
2	Cover	7	Guide
2.2	O-Ring	8	Retainer Spacer
3	Seat	9.1	Ball Valve
3.1	O-Ring	11	Test Cock
4	Poppet	21	Hex HD Capscrew
5	Seat Disc		

Febco kits - 850

Febco 850 Check Module Rubber Kit

Size (mm)	Reece Code	Febco Code
15-20	1012275	905342
25	1012276	905343
32-50	1012277	905344

Parts

Item	Description	Qty
1.4	O-Ring	1
2.2	O-Ring	1
3.1	O-Ring	2
5	Seat Disc	2

Febco 850 Check Module Assembly

Size (mm)	Reece Code	Febco Code
15-20	1012280	905347
25	1012281	905349
32-50	1012282	905351

Parts

Item	Description	Qty
3	Seat	1
3.1	O-Ring	1
4	Poppet	1
5	Seat Disc	1
5.1	Disc Retainer	1
5.2	Round HD Screw	1
6	Spring	1
7	Guide	1

Febco 850 Single Poppet Kit

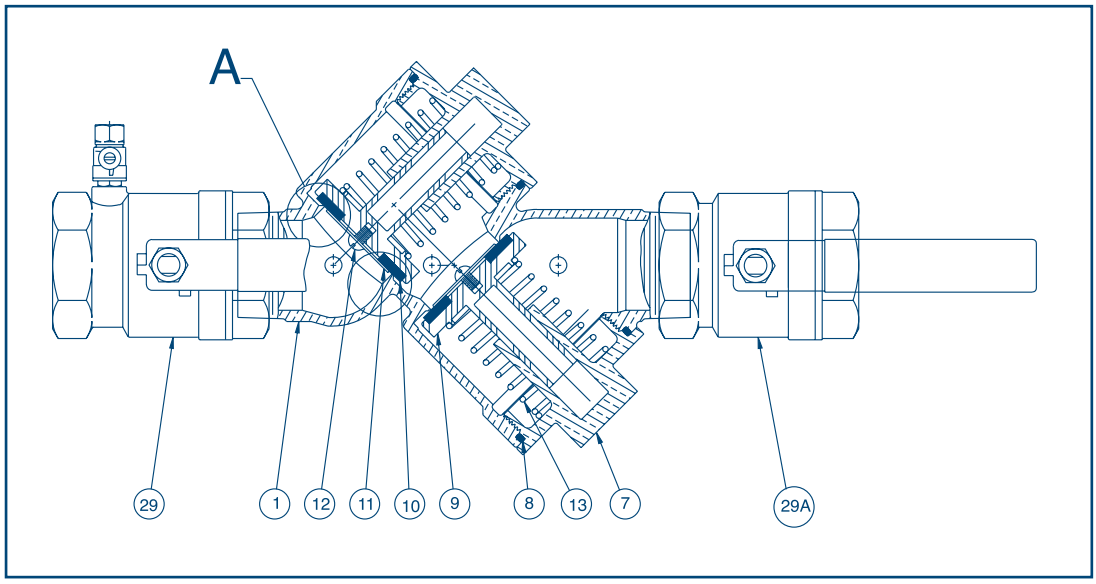
Size (mm)	Reece Code	Febco Code
15-20	1012291	905339
25	1012292	905340
32-50	1012293	905341

Parts

Item	Description	Qty
4	Poppet	1
5	Seat Disc	1
5.1	Disc Retainer	1
5.2	Round HD Screw	1

FEBCO® BACKFLOW PREVENTION

Double Check Valve 805Y DCV

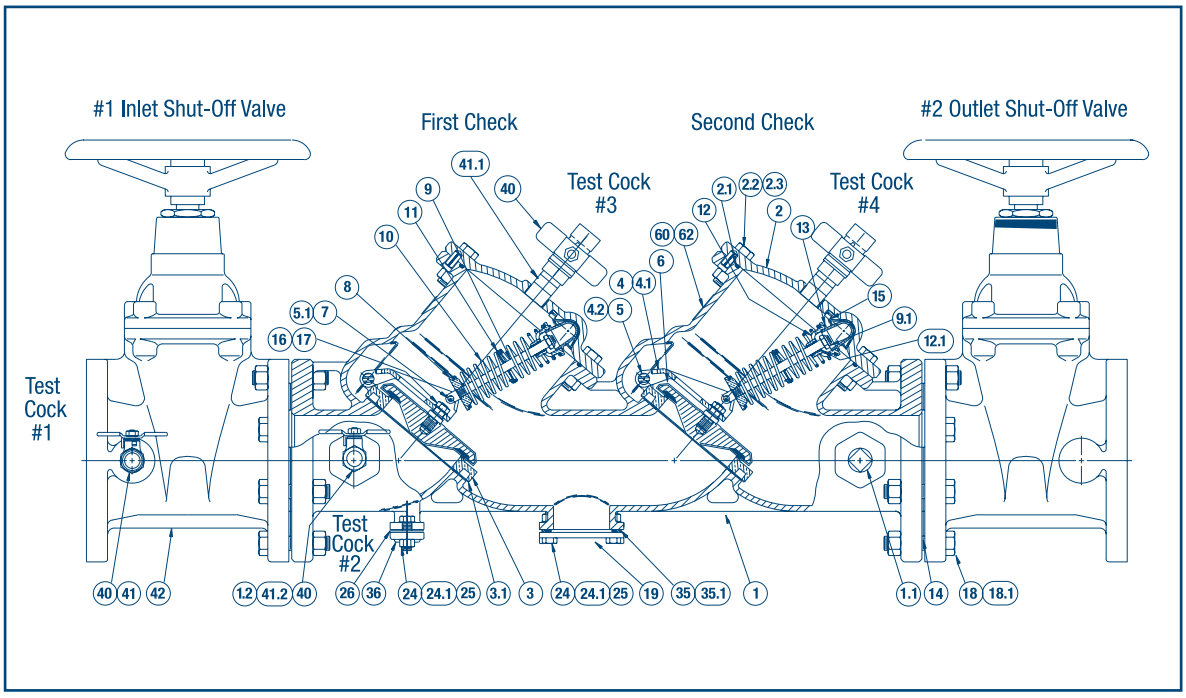


Medium Hazard Device (Back pressure & Backsyphonage)

Item	Description
1	Body
7	Cap
8	O-Ring
9	Disc Holder
10	Seat Disc
11	Washer
12	Screw
13	Spring
29	Ball Valve - Inlet
29A	Ball Valve - Outlet

FEBCO Spare Parts Model 805Y	Size(mm)	Reece Code
Febco 805Y Check Rubbers	15-32	1011180
Items 8 & 10 - 2each	40-50	1011181
Febco 805Y DCV Check Valve Assembly	15-32	1011120
Items 8, 9, 10, 11 & 12	40-50	1011121
Febco 805Y DCV Inlet & Outlet Springs	15-32	1011650
Item 13	40-50	1011651
Febco OEM Test Cock	3-6 M&F	1011186
	6-6 M&F	1011187

65mm-250mm Double Check Valve 850 DCV



model 850 item description

Item	Description	Item	Description	Item	Description
1	Body	7	Load Pin	25	Bolt
2	Cover (w/hole)	8	Lower Spring Retainer	26	Gasket
2.1	O-Ring	9	Spring Retainer	35	O-Ring
2.2	Cap Screw	9.1	Elastic Stop Jam Nut	35.1	Back-Up Ring
2.3	Hex Nut	10	Spring	36	Cover
2.5	Cover (w/o hole)	10.2	Spring Shim	40	Ball Valve
3	Seat Ring	10.3	Spring Shim	41	Nipple
3.1	Gasket	11	Spring Guide	42	Gate Valve (NRS)
3.2	Socket Head Screw	12	Upper Spring Retainer	43	Bulkhead Fitting
3.4	Washer	12.1	Bushing-Spring Stem	43.1	Bulkhead Fitting
4	Arm	13	Pivot Bearing	44	Bulhead Plug
4.1	Bushing-Swing Pin	14	Flange Gasket	45	Gasket
4.2	Swing Pin	15	Bearing Socket	45.1	Gasket
5	Retaining Clip	16	Hex Jam Nut (2-1/2”-8”)	46	Washer
5.1	Retaining Clip		Capscrew (10”)	46.1	Washer
6	Check Disc (2-1/2”-8”)	17	Washer	47	Nut
	Seat Disc (10”)	18	Flange Nut	47.1	Nut
6.1	Disc Holder (10”)	18.1	Flange Nut	70	Clamp (870V/876V only)
6.2	Disc Retainer (`10”)	19	Cover		
6.3	Capscrew (10”)	24	Bolt		

FEBCO® BACKFLOW PREVENTION

Febco kits - 850 Large

Febco 850 Spring Module

Size (mm)	Reece Code	Febco Code
65-80	1011145	905142
100	1011148	905143
150	1011149	905144

Parts

Item	Description	Qty
5.1	Retaining Clip	2
7	Load Pin	1
8	Lower Spring Retainer	1
9	Spring Stem	1
9.1	Elastic Stop Jam Nut	1
10	Spring	2
11	Spring Guide	1
12	Upper Spring Retainer	1
12.1	Bushing-Spring Stem	1
10.2	Spring Shim (8”only)	1

Febco 850 Rubber Kit

Size (mm)	Reece Code	Febco Code
65-80	1011689	905249
100	1011664	905163
150	1011665	905164

Parts

Item	Description	Qty
2.1	O-Ring	2
3.1	Gasket	2
6	Check Disc	2
15	Bearing Socket	2
26	Gasket	1
35	O-Ring	1
35.1	Back-up Ring	1
45	Gasket	2
45.1	Gasket	2

Febco 850 Seat Ring Arm Assembly

Size (mm)	Reece Code	Febco Code
65-80	1011130	905157
100	1011131	905158
150	1011132	905159

Parts

Item	Description	Qty
3	Seat Ring	1
3.1	Gasket	1
3.2	Socket Head Screw	4
3.4	Elastic Stop Nut	4
4	Arm	1
4.1	Bushing-Swing Pin	2
4.2	Swing Pin	1
5	Retaining Clip	2

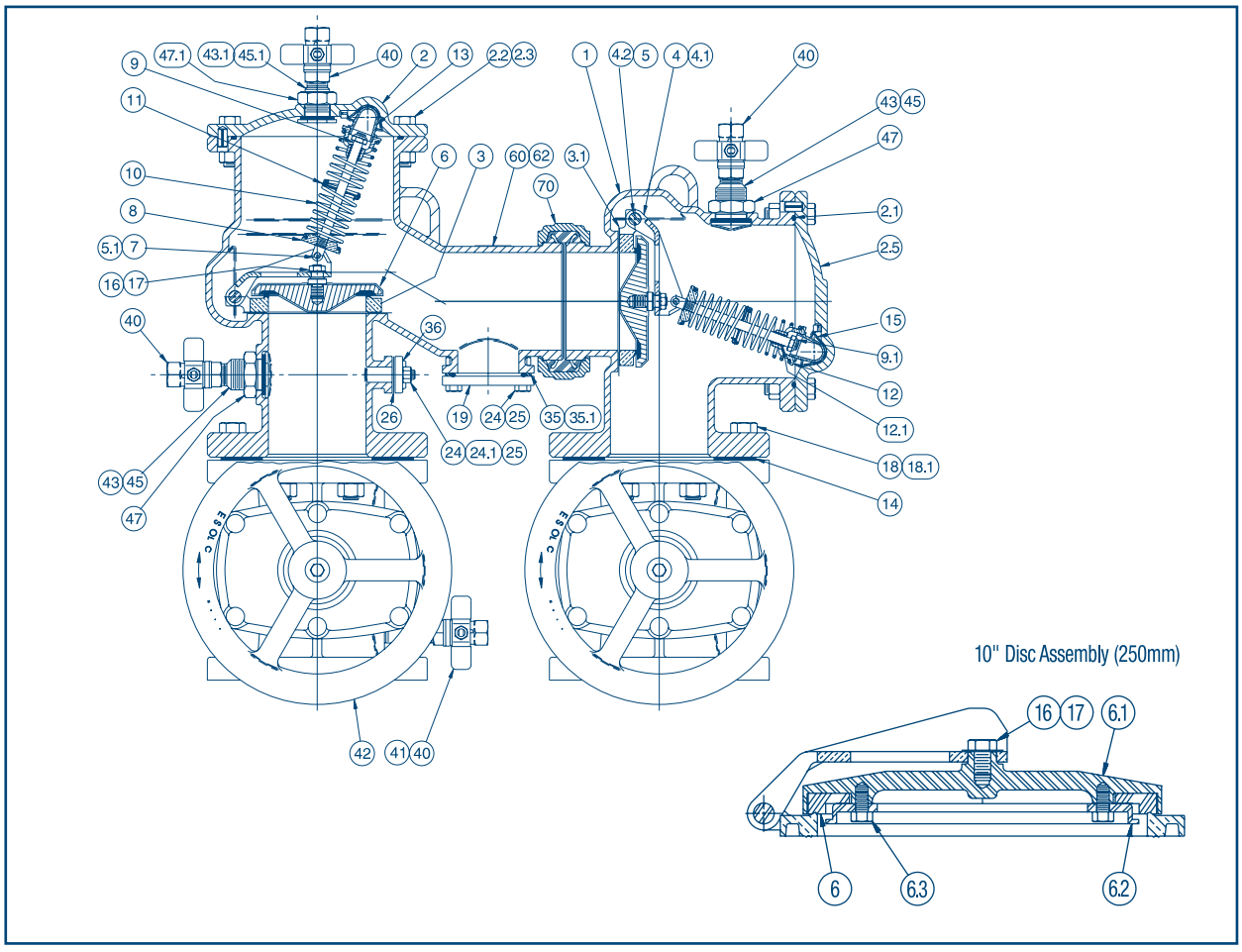
Febco 850 Disc Assembly

Size (mm)	Reece Code	Febco Code
65-80	1011175	905182
100	1011174	905153
150	1011170	905154

Parts

Item	Description	Qty
6	Check Disc / Seat Disc	1
16	Hex Jam Nut	1
17	Washer	1

Double Check Valve 870V DCV "N-Shape"



Model 870 Item Description

Item	Description	Item	Description	Item	Description
1	Body	7	Load Pin	24.1	Washer
2	Cover	8	Lower Spring Retainer	25	Bolt
2.1	O-Ring	9	Spring Stem	26	Gasket
2.2	Cap	9.1	Elastic Stop Jam Nut	35	O-Ring
2.3	Hex Nut	10	Spring	35.1	Back-Up Ring
2.5	Cover	11	Spring Guide	36	Cover
3	Seat Ring	12	Upper Spring Retainer	40	Ball Valve
3.1	Gasket	12.1	Bushing Spring Stem	41	Nipple
4	Arm	13	Pivot Bearing	42	Gate Valve (NRS)
4.1	Bushing-Swing Pin	14	Flange Gasket	43	Bulkhead Fitting
4.2	Swing Pin	15	Bearing Socket	43.1	Bulkhead Fitting
5	Retaining Clip	16	Hex Jam Nut	45	Gasket
5.1	Retaining Clip		Capscrew (10" Only)	45.1	Gasket
6	Check Disc (2-1/2"-8")	17	Washer	47	Nut
	Seat Disc (10" Only)	18	Flange Nut	47.1	Nut
6.1*	Disc Holder (10" Only)	18.1	Flange Nut	60	Identification Plate
6.2*	Disc Retainer (10" Only)	19	Cover	62	Drive Screw
6.3*	Capscrew (10" Only)	24	Bolt	70	Clamp 870V Only

FEBCO® BACKFLOW PREVENTION

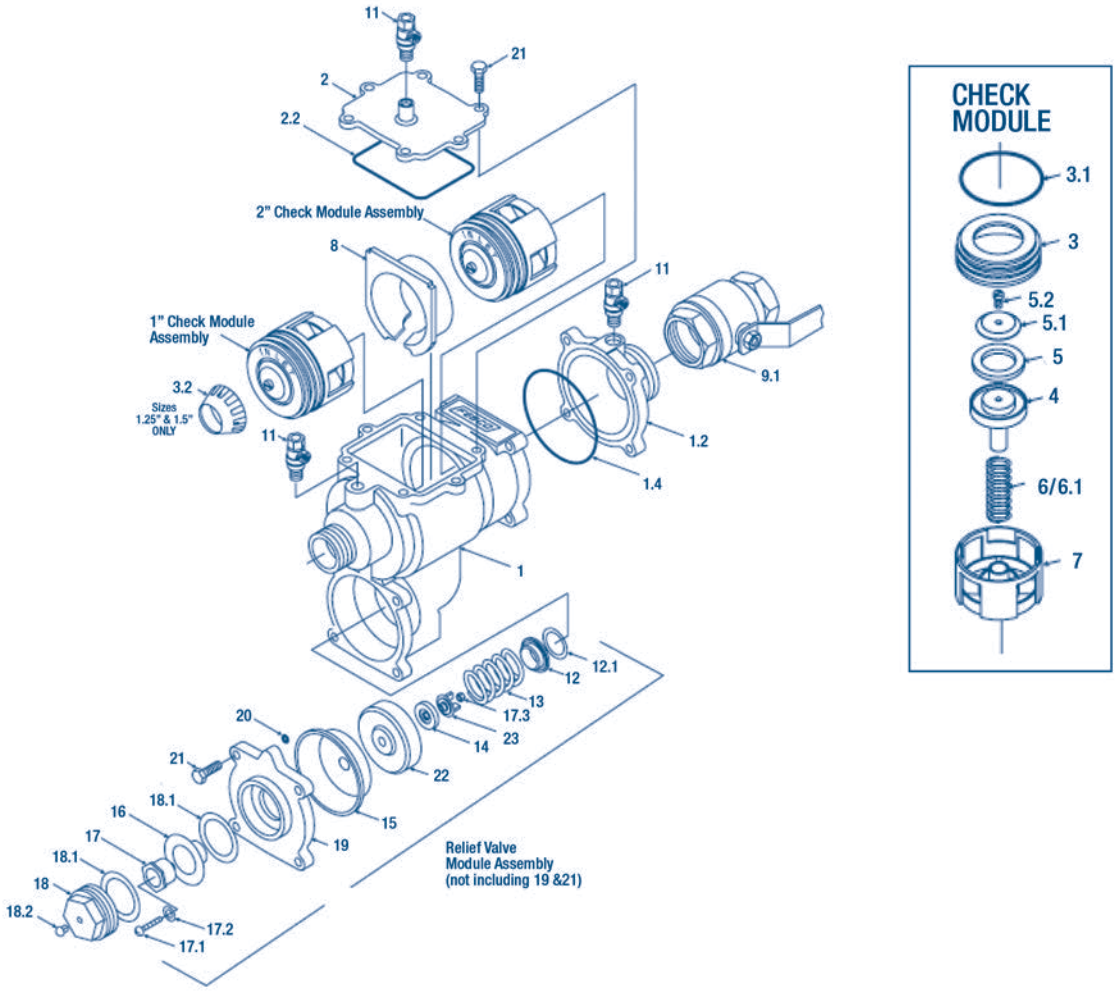
Febco spare parts - 870V

FEBCO Spare Parts Model 870V	Size (mm)	Reece Code
Febco 870V Spring Module	65-80	1011145
	100	1011148
	150	1011149
	200	1011150
	250	1011151
Febco 870V Disc Assembly	65-80	1011173
	100	1011174
	150	1011170
	200	1011660
	250	1011696
Febco 870V Seat Ring Arm Assembly	65-80	1011130
	100	1011131
	150	1011132
	200	1011661
	250	1011662
Febco 870V Rubber Kit	65-80	1011663
	100	1011664
	150	1011665
	200	1011666
	250	1011667

Febco kit components - 870V

Kit	Item	Description	Item	Description
Febco 870V Spring Modules	5.1	Retaining Clip	10	Spring
	7	Load Pin	11	Spring Guide
	8	Lower Spring Retainer	12	Upper Spring Retainer
	9	Spring Stem	12.1	Bushing-Spring Stem
	9.1	Elastic Stop Jam Nut	10.2 (8"only)	Spring Shim
Febco 870V Disc Assembly	6	Check Disc	17	Washer
	16	Hex Jam Nut		
Febco 870V Seat Ring Arm Assembly	3	Seat Ring	4	Arm
	3.1	Gasket	4.1	Bushing-Swing Pin
	3.2	Socket Head Screw	4.2	Swing Pin
	3.4	Washer	5	Retaining Clip
Febco 870V Rubber Kit	2.1	O-Ring	35	O-Ring
	3.1	Gasket	35.1	Back-Up Ring
	6	Check Disc	45	Gasket
	15	Bearing Socket	45.1	Gasket
	26	Gasket		

MasterSeries™ 15mm-50mm Reduced Pressure Zone Device 860 RPZD



model 860 item description

Item	Description	Item	Description
1	Body	12.1	Gasket Ring-RV
1.2	Tailpiece	13	Spring-RV
1.4	O-Ring	14	Seat Disc-RV
2	Cover	15	Diaphragm-RV
2.2	O-Ring	16	Outer Diaphragm-RV
3	Seat	17	Small Piston-RV
3.1	O-Ring	17.1	Round HD Screw Phillips
4	Poppet	17.2	Washer
5	Seat Disc	17.3	Hex Nut
5.1	Disc Retainer	18	Cylinder-RV
5.2	Round HD Screw Phillips	18.1	Slip Ring-Cylinder
6	Spring	18.2	Slide (Plug)
6.1	Spring	19	Cover-RV
7	Guide	20	O-Ring
8	Retainer Spacer	21	Hex HD Capscrew
9.1	Ball Valve	22	Large Piston-RV
11	Test Cock	23	Guide-RV
12	Seat Ring-RV		

FEBCO® BACKFLOW PREVENTION

Febco spare parts - 860

Febco 860 Check Module & Relief Valve Rubber Kit

Size (mm)	Reece Code	Febco Code
15-20	1012288	905355
25	1012289	905356
32-50	1012290	905357

Parts

Item	Description	Qty
2.2	O-Ring	1
3.1	O-Ring	1
5	Seat Disc	2
12	Seat Ring	1
12.1	Gasket Ring	1
14	Seat Disc	1
15	Diaphragm	1
16	Outer Diaphragm	1
18.1	Slip Ring Cylinder	2
20	O-Ring	1

Febco 860 Check Module Rubber Kit

Size (mm)	Reece Code	Febco Code
15-20	1012275	905342
25	1012276	905343
32-50	1012277	905344

Parts

Item	Description	Qty
1.4	O-Ring	1
2.2	O-Ring	1
3.1	O-Ring	2
5	Seat Disc	2

Febco 860 Relief Valve Rubber Kit

Size (mm)	Reece Code	Febco Code
15-25	1012278	905345
32-50	1012279	905346

Parts

Item	Description	Qty
12	Seat Ring	1
12.1	Gasket Ring	1
14	Seat Disc	1
15	Diaphragm	1
16	Outer Diaphragm	1
18.1	Slip Ring Cylinder	2
20	O-Ring	1

Febco 860 Single Poppet Kit

Size (mm)	Reece Code	Febco Code
15-20	1012291	905339
25	1012292	905340
32-50	1012293	905341

Parts

Item	Description	Qty
4	Poppet	1
5	Seat Disc	1
5.1	Disc Retainer	1
5.2	Round HD Screw	1

Febco kit components - 860

Febco 860 1st Check Module Assembly

Size (mm)	Reece Code	Febco Code
15-20	1012283	905348
25	1012284	905350
32-50	1012285	905352

Parts

Item	Description	Qty
3	Seat	1
3.1	O-Ring	1
4	Poppet	1
5	Seat Disc	1
5.1	Disc Retainer	1
5.2	Round HD Screw	1
6	Spring (1st Check)	1
7	Guide	1

Febco 860 2nd Check Module Assembly

Size (mm)	Reece Code	Febco Code
15-20	1012280	905347
25	1012281	905349
32-50	1012282	905351

Parts

Item	Description	Qty
3	Seat	1
3.1	O-Ring	1
4	Poppet	1
5	Seat Disc	1
5.1	Disc Retainer	1
5.2	Round HD Screw	1
6.1	Spring (2nd Check)	1
7	Guide	1

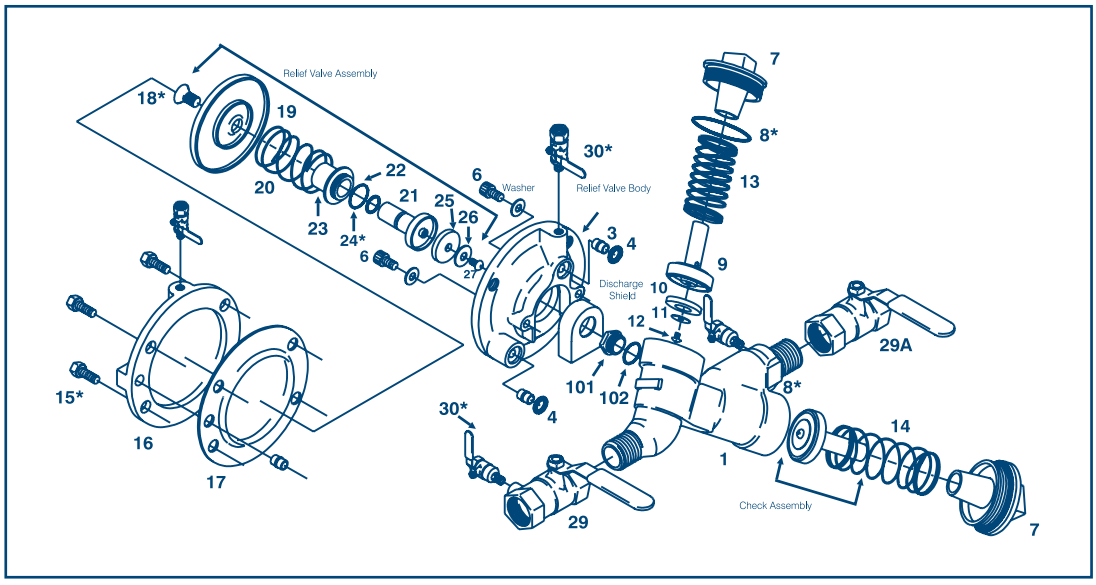
Febco Relief Valve Module Assembly

Size (mm)	Reece Code	Febco Code
15-25	1012286	905353
32-50	1012287	905354

Parts

Item	Description	Qty
12	Seat Ring	1
12.1	Gasket Ring	1
13	Spring	1
14	Seat Disc	1
15	Diaphragm	1
16	Outer Diaphragm	1
17	Small Piston	1
17.1	Round HD Screw	1
17.2	Washer	1
17.3	Hex Nut	1
18.1	Slip Ring Cylinder	2
20	O-Ring	1
22	Large Piston	1
23	Guide	1

Reduced Pressure Zone Device 825Y RPZD

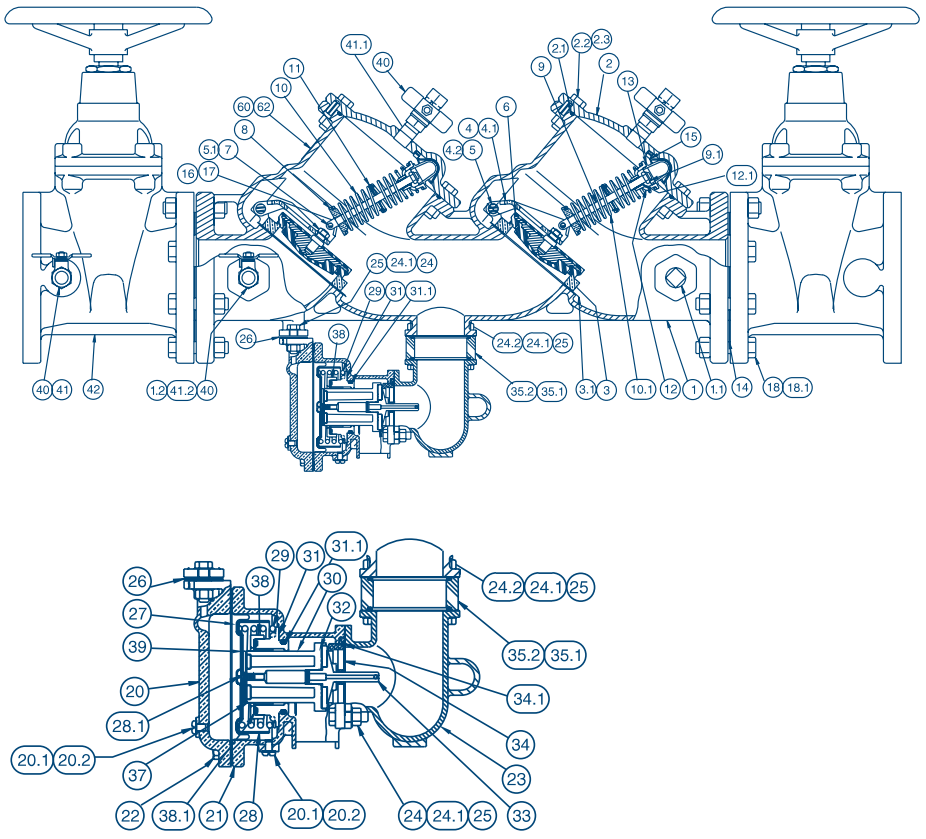


High Hazard Device (Back pressure & Backsyphonage)

Item	Description
3	Bushing
4	O-Ring
5	Gasket
6	Capscrew
7	Cap
8	O-Ring
9	Disc Holder
10	Seat Disc
11	Washer
12	Screw
13	Spring (Inlet)
14	Spring (Outlet)
15	Bolt
16	Cover
17	Diaphragm
18	Screw
19	Button
20	Spring
21	Mainstem
22	O-Ring
23	Guide
24	O-Ring
25	Seat Disc
26	Washer
27	Screw
101	Seat Ring (Relief Valve)
102	O-Ring (Relief Valve)

FEBCO Spare Parts Model 825Y	Size(mm)	Reece Code
Febco 825Y Check Rubbers	15-32	1011180
items 8 & 10 - 2 each	40-50	1011181
Febco 825Y RPZD Valve Rubber Kit Complete	15-32	1011184
items 3, 4, 5, 8, 10, 17, 22, 24, 25 & 102	40-50	1011185
Febco 825Y RPZD Check Valve Assembly	15-32	1011120
items 8, 9, 10, 11 & 12	40-50	1011121
Febco 825Y RPZD Inlet Springs	15-32	1011652
item 13	40-50	1011654
Febco 825Y RPZD Outlet Springs	15-32	1011650
item 14	40-50	1011651
Febco 825Y RPZD Relief Valve Rubber	15-32	1011124
items 17, 22, 24 & 25	40-50	1011182
Febo 825Y RPZD Relief Valve Assembly	15-32	1011125
items 17, 18, 19, 20, 21, 22, 23, 24, 25, 26 & 27	40-50	1011126
Febco 825Y RPZD Relief Valve Spring	15-32	1011653
item 20	40-50	1011655
Febco 825Y RV Seat Ring Kit	15-32	1011732
items 101 & 102	40-50	1011735
Febco OEM Test Cock	3-6 M&F	1011186
	6-6 M&F	1011187

65mm-250mm Reduced Pressure Zone Device 860 RPZD



model 860 item description

Item	Description	Item	Description	Item	Description
1	Body	10.2	Spring Shim 2nd Check	29	RV Spring
1.1	Pipe Plug	11	Spring Guide	30	RV Stem
1.2	Bushing (21/2"-4" Only)	12	Upper Spring Retainer	31	Main Guide
2	Cover	12.1	Bushing-Spring Stem	31.1	Main Guide O-Ring
2.1	O-Ring	13	Pivot Bearing	32	Seat Disc
2.2	Cap Screw	14	Flange Gasket	33	Lower Guide
2.3	Hex Nut	15	Bearing Socket	34	Seat Ring
3	Seat Ring	16	Hex Jam Nut	34.1	O-Ring
3.1	Gasket	17	Washer	35.1	O-Ring
3.2	Socket Head Screw	18	Flange Nut	35.2	Extension
3.3	Washer	18.1	Flange Nut	37	Small Diaphragm Nitrile
3.4	Elastic Stop Nut	20	R.V. Cover	38	Retainer
4	Arm	20.1	Bleed Screw	38.1	Slip Ring
4.1	Bushing-Swing Pin	20.2	Gasket	39	Flow Washer
4.2	Swing Pin	21	R.V. Body	40	Ball Valve
5	Retaining Clip	22	Cover Bolt	41	Nipple
5.1	Retaining Clip	23	Elbow	41.1	Nipple
6	Check Disc	24	RV Mtg Bolt	41.2	Nipple
7	Load Pin	24.1	Washer	42	Gate Valve (NRS)
8	Lower Spring Retainer	25	RV Mtg Nut	60	Identification Plate
9	Spring Stem	26	Gasket	62	Drive Screw
9.1	Elastic Stop Jam Nut	27	Large Diaphragm Nitrile	70	Clamp
10	Spring	28	Button		
10.1	Spring 2nd Check	28.1	Flow Washer		

FEBCO® BACKFLOW PREVENTION

Febco spare parts - 860

Febco 860 Disc Assembly

Size (mm)	Reece Code	Febco Code
65-80	1011175	905182
100	1011171	905183
150	1011172	905184

Parts

Item	Description	Qty
6	Check Disc / Seat Disc	1
16	Hex Jam Nut	1
17	Washer	1

Febco 860 Inlet Spring Module

Size (mm)	Reece Code	Febco Code
65-80	1011135	905172
100	1011136	905173
150	1011137	905174

Parts

Item	Description	Qty
2.1	O-Ring	1
5.1	Retaining Clip	2
7	Load Pin	1
8	Lower Spring Retainer	1
9	Spring Stem	1
9.1	Elastic Stop Jam Nut	1
10	Spring	2
11	Spring Guide	1
12	Upper Spring Retainer	1
12.1	Bushing-Spring Stem	1

Febco 860 Outlet Spring Module

Size (mm)	Reece Code	Febco Code
65-80	1011145	905142
100	1011148	905143
150	1011149	905144

Parts

Item	Description	Qty
2.1	O-Ring	1
5.1	Retaining Clip	2
7	Load Pin	1
8	Lower Spring Retainer	1
9	Spring Stem	1
9.1	Elastic Stop Jam Nut	1
10	Spring	2
11	Spring Guide	1
12	Upper Spring Retainer	1
12.1	Bushing-Spring Stem	1
10.2	Spring Shim 2nd Check (8”only)	1

Febco 860 Seat Ring Arm Assembly

Size (mm)	Reece Code	Febco Code
65-80	1011130	905157
100	1011131	905158
150	1011132	905159

Parts

Item	Description	Qty
3	Seat Ring	1
3.1	Gasket	1
3.2	Socket Head Screw	4
3.3	Washer	0
3.4	Elastic Stop Nut	4
4	Arm	1
4.1	Bushing-Swing Pin	2
4.2	Swing Pin	1
5	Retaining Clip	2

Febco spare parts - 860

Febco 860 Check Module and Relief Valve Rubber Kit

Size (mm)	Reece Code	Febco Code
65-80	1011680	905187
100	1011681	905188
150	1011682	905189

Parts

Item	Description	Qty
2.1	O-Ring	2
3.1	Gasket	2
6	Check Disc	2
15	Bearing Socket	2
16	Hex Jam Nut	2
17	Washer	2
26	Gasket	1
27	Large Diaphragm	1
31.1	Main Guide O-Ring	1
32	Seat Disc	1
34.1	O-Ring	1
35.1	O-Ring	1
35.2	Extension	1

Febco 860 Relief Valve Rubber Kit

Size (mm)	Reece Code	Febco Code
65-150	1011190	905316

Parts

Item	Description	Qty
26	Gasket	1
27	Large Diaphragm	1
31.1	Main Guide O-Ring	1
32	Seat Disc	1
34.1	O-Ring	1
37	Small Diaphragm	1

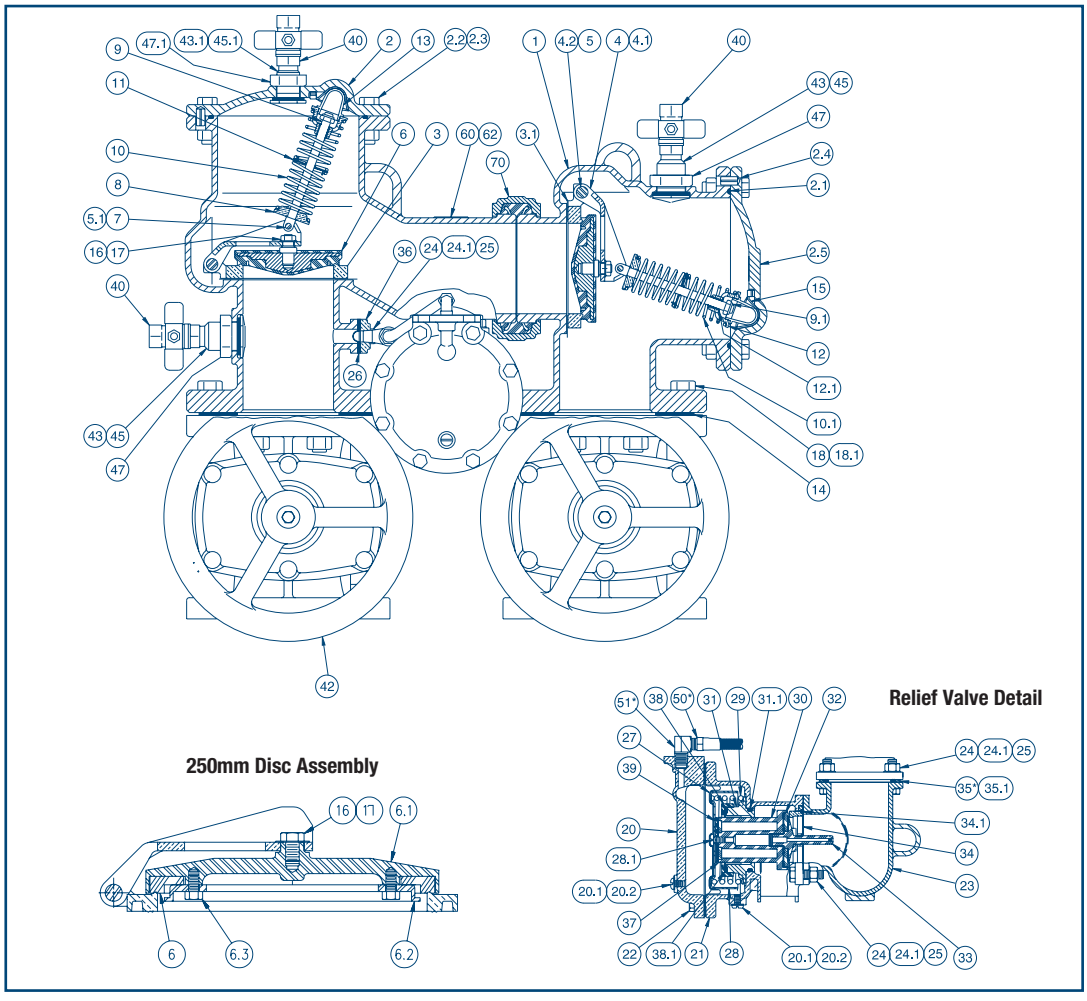
Febco 860 Relief Valve Repair Kit

Size (mm)	Reece Code	Febco Code
65-150	1011685	905192

Parts

Item	Description	Qty
26	Gasket	1
27	Large Diaphragm	1
28	Button	1
29	RV Spring	1
30	RV Stem	1
31.1	Main Guide O-Ring	1
32	Seat Disc	1
33	Lower Guide	1
34	Seat Ring	1
34.1	O-Ring	1
37	Small Diaphragm	1

Reduced Pressure Zone Device
880V RPZD “N-Shape”



Reduced Pressure Zone Device
880V RPZD "N-Shape"

model 880 Item description

Item	Description	Item	Description	Item	Description
1	Body	11	Spring Guide	31	Main Guide - RV
2	Cover 1st Check	12	Upper Spring Retainer	31.1	O-Ring - RV
2.1	O-Ring	12.1	Bushing-Spring Stem	32	Seat Disc - RV
2.2	Capscrew	13	Pivot Bearing	33	Lower Guide
2.3	Hex Nut	14	Flange Gasket	34	Seat Disc
2.4	Expansion Pin	15	Bearing Socket	34.1	O-Ring
2.5	Cover 2nd Check	16	Hex Jam Nut	35	O-Ring
3	Seat Ring	17	Washer	35.1	Back-Up Ring
3.1	Gasket	18	Flange Bolt	36	Adaptor Plate
4	Arm	18.1	Flange Nut	37	Small Diaphragm
4.1	Bushing Swing Pin Acetal Resin	20	R.V. Cover	38	Retainer
4.2	Swing Pin	20.1	Bleed Screw	38.1	Slip Ring
5	Retaining Clip	20.2	Gasket	39	Flow Washer
5.1	Hairpin Cotter	21	R.V. Body	42	Gate Valve
6	Check Disc	22	Cover Bolt	43	Bulkhead Fitting
	Seat Disc	23	Elbow	43.1	Bulkhead Fitting
6.1	Disc Holder (10")	24	RV Mtg Bolt	45	Gasket
6.2	Disc Retainer (10")	24.1	Washer - RV	45.1	Gasket
6.3	Capscrew (10")	25	RV Mtg Bolt	47	Nut
7	Load Pin	27	Large Diaphragm	50	Sensing Line
9	Spring Stem	28	Button	51	Street Elbow
9.1	Elastic Stop Jam Nut	28.1	Flow Screw	60	Identification Plate
10	Spring 1st Check	29	RV Spring	62	Drive Screw
10.1	Spring 2nd Check	30	Stem - RV	70	Clamp (880V)

Febco spare parts - 880V

FEBCO Spare Parts Model 880V	Size(mm)	Reece Code
Febco 880V Disc Assembly	65-80	1011690
	100	1011691
	150	1011692
	200	1011672
	250	1011696
Febco 880V Inlet Spring Module	65-80	1011135
	100	1011136
	150	1011137
	200	1011670
	250	1011671
Febco 880V Outlet Spring Module	65-80	1011145
	100	1011148
	150	1011149
	200	1011150
	250	1011151
Febco 880V Seat Ring Arm Assembly	65-80	1011130
	100	1011131
	150	1011132
	200	1011661
	250	1011662
Febco 880 Check and Relief Valve Rubber Kit	65-80	1011686
	100	1011687
	150	1011688
	200	1011683
	250	1011684
Febco 880 Relief Valve Rubber Kit	65-250	1011190
Febco 880 Relief Valve Repair Kit	65-250	1011685

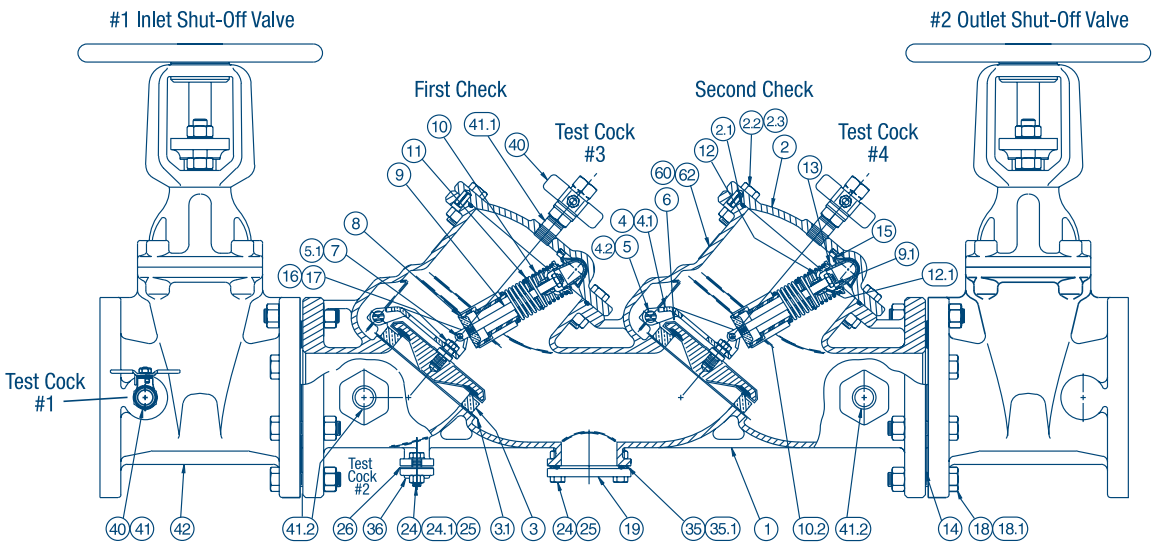
FEBCO® BACKFLOW PREVENTION

Reduced Pressure Zone Device
880V RPZD "N-Shape"

Febco kit components - 880V RPZD

Kit	Item	Description	Item	Description
Febco 880V Disc Assembly	6	Check Disc	17	Washer
(10" - item 6 only)	16	Hex Jam Nut		
Febco 880V Inlet Spring Modules	2.1	O-Ring	9.1	Elastic Stop Jam Nut
	5.1	Retaining Clip	10	Spring
	7	Load Pin	11	Spring Guide
	8	Lower Spring Retainer	12	Upper Spring Retainer
	9	Spring Stem	12.1	Bushing-Spring Stem
Febco 880V Outlet Spring Modules	2.1	O-Ring	9.1	Elastic Stop Jam Nut
	5.1	Retaining Clip	10.1	Spring 2nd Check
	7	Load Pin	11	Spring Guide
	8	Lower Spring Retainer	12	Upper Spring Retainer
	9	Spring Stem	12.1	Bushing-Spring Stem
(8" only)	10.2	Spring Shim 2nd Check		
Febo 880V Seat Ring Arm Assembly	3	Seat Ring	4	Arm
	3.1	Gasket	4.1	Bushing-Swing Pin
	3.2	Socket Head Screw	4.2	Swing Pin
	3.3	Washer	5	Retaining Clip
	3.4	Elastic Stop Nut		
Febco 880V Check and RV Rubber Kit	2.1	O-Ring	31.1	Main Guide O-Ring
	3.1	Gasket	32	Seat Disc
	6	Check Disc	34.1	O-Ring
	15	Bearing Socket	35	O-Ring
	16	Hex Jam Nut	35.1	O-Ring
	17	Washer	37	Extension
	26	Gasket	45	Gasket
	27	Large Diaphragm	45.1	Gasket
Febco 880V RV Rubber Parts Kit	26	Gasket	32	Seat Disc
	27	Large Diaphragm	34.1	O-Ring
	31.1	Main Guide O-Ring	37	Small Diaphragm
Febco 880V RV Repair Kit	26	Gasket	32	Seat Disc
	27	Large Diaphragm	33	Lower Guide
	28	Button	34	Seat Ring
	29	RV Spring	34.1	O-Ring
	30	RV Stem	37	Small Diaphragm
	31.1	Main Guide O-Ring		

Double Check Detector Assembly
Model 856 DCDA



Note: Bulkhead fittings are not furnished on the Model 850 or 856.

model 856 item description

Item	Description	Item	Description	Item	Description
1	Body	6.2	Disc Retainer (10”)	19	Cover
2	Cover (w/hole)	6.3	Capscrew (10”)	24	Bolt
2.1	O-Ring	7	Load Pin	25	Bolt
2.2	Cap Screw	8	Lower Spring Retainer	26	Gasket
2.3	Hex Nut	9	Spring Stem	35	O-Ring
2.5	Cover (w/o hole)	9.1	Elastic Stop Jam Nut	35.1	Back-Up Ring
3	Seat Ring	10	Spring	36	Cover
3.1	Gasket	10.2	Spring Shim	40	Ball Valve
3.2	Socket Head Screw	10.3	Spring Shim	41	Nipple
3.4	Washer	11	Spring Guide	42	Gate Valve (NRS)
4	Arm	12	Upper Spring Retainer	43	Bulkhead Fitting
4.1	Bushing-Swing Pin	12.1	Bushing-Spring Stem	43.1	Bulkhead Fitting
4.2	Swing Pin	13	Pivot Bearing	44	Bulkhead Plug
5	Retaining Clip	14	Flange Gasket	45	Gasket
5.1	Retaining Clip	15	Bearing Socket	46	Washer
6	Check Disc (2-1/2”-8”)	16	Hex Jam Nut (2-1/2”-8”)	46.1	Washer
	Seat Disc (10”)	17	Washer	47	Nut
6.1	Disk Holder (10”)	18	Flange Nut	47.1	Nut
		18.1	Flange Nut	70	Clamp (870V/876 only)

Double Check Detector Assembly Model 856 DCDA

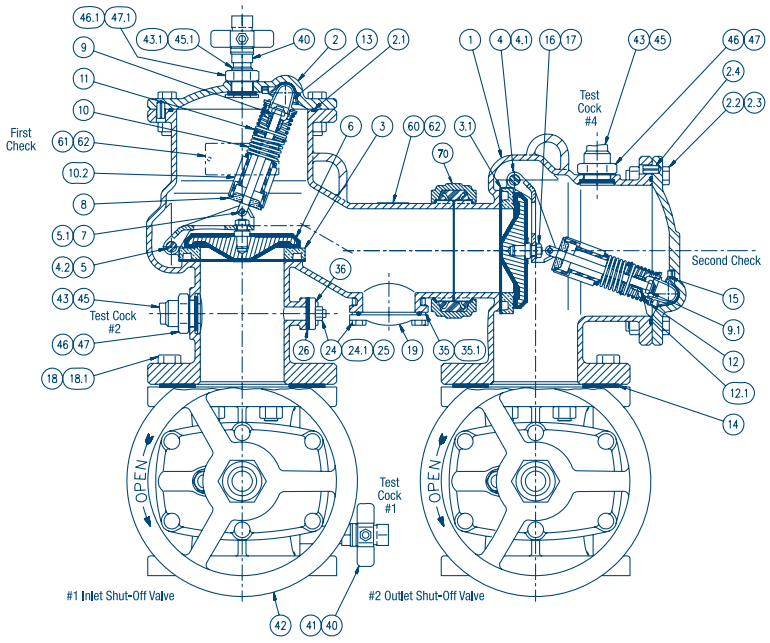
Febco spare parts 856-DCDA

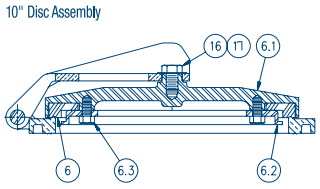
FEBCO Spare Parts Model 856-DCDA	Size(mm)	Reece Code
Febco 856 Spring Module	100	1011715
	150	1011143
Febco 856 Disc Assembly	100	1011174
	150	1011170
Febco 856 Seat Ring Arm Assembly	100	1011131
	150	1011132
Febco 856 Rubber Kit	100	1011664
	150	1011665

Febco kit components - 856 DCDA

Kit	Item	Description	Item	Description
Febco 856 Spring Modules	5.1	Retaining Clip	10	Spring
	7	Load Pin	10.2	Spring Shim
	8	Lower Spring Retainer	11	Spring Guide
	9	Spring Stem	12	Upper Spring Retainer
	9.1	Elastic Stop Jam Nut	12.1	Bushing-Spring Stem
(8"only)	10.3	Spring Shim		
Febco 856 Disk Assembly	6	Check Disc	17	Washer
(10" - item 6 only)	16	Hex Jam Nut		
Febco 856 Seat Ring Arm Assembly	3	Seat Ring	4	Arm
	3.1	Gasket	4.1	Bushing-Swing Pin
	3.2	Socket Head Screw	4.2	Swing Pin
	3.4	Washer	5	Retaining Clip
Febco 856 Rubber Kit Complete	2.1	O-Ring	35	O-Ring
	3.1	Gasket	35.1	Back-Up Ring
	6	Check Disc	45	Gasket
	15	Bearing Socket	45.1	Gasket
	26	Gasket		

Double Check Detector Assembly
Model 876 DCDA “N-Shape”





model 876 item description

Item	Description	Item	Description	Item	Description
1	Body	6.2	Disc Retainer (10”)	19	Cover
2	Cover (w/hole)	6.3	Capscrew (10”)	24	Bolt
2.1	O-Ring	7	Load Pin	25	Bolt
2.2	Cap Screw	8	Lower Spring Retainer	26	Gasket
2.3	Hex Nut	9	Spring Stem	35	O-Ring
2.5	Cover (w/o hole)	9.1	Elastic Stop Jam Nut	35.1	Back-Up Ring
3	Seat Ring	10	Spring	36	Cover
3.1	Gasket	10.2	Spring Shim	40	Ball Valve
3.2	Socket Head Screw	10.3	Spring Shim	41	Nipple
3.4	Washer	11	Spring Guide	42	Gate Valve (NRS)
4	Arm	12	Upper Spring Retainer	43	Bulkhead Fitting
4.1	Bushing-Swing Pin	12.1	Bushing-Spring Stem	43.1	Bulkhead Fitting
4.2	Swing Pin	13	Pivot Bearing	44	Bulkhead Plug
5	Retaining Clip	14	Flange Gasket	45	Gasket
5.1	Retaining Clip	15	Bearing Socket	46	Washer
6	Check Disc (2-1/2”-8”)	16	Hex Jam Nut (2-1/2”-8”)	46.1	Washer
	Seat Disc (10”)	17	Washer	47	Nut
6.1	Disk Holder (10”)	18	Flange Nut	47.1	Nut
		18.1	Flange Nut	70	Clamp (870V/876 only)

FEBCO® BACKFLOW PREVENTION

Double Check Detector Assembly Model 876 DCDA "N-Shape"

Febco spare parts 876 -DCDA

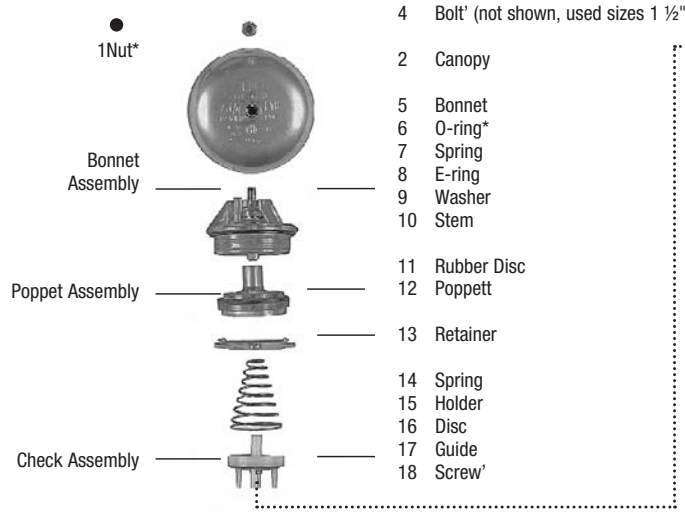
FEBCO Spare Parts Model 876-DCDA	Size (mm)	Reece Code
Febco 876 Spring Module	100	1011715
	150	1011143
Febco 876 Disc Assembly	100	1011174
	150	1011170
Febco 876 Seat Ring Arm Assembly	100	1011131
	150	1011132
Febco 876 Rubber Kit	100	1011664
	150	1011665

Febco kit components - 876 DCDA

Kit	Item	Description	Item	Description
Febco 876 Spring Modules	5.1	Retaining Clip	10	Spring
	7	Load Pin	10.2	Spring Shim
	8	Lower Spring Retainer	11	Spring Guide
	9	Spring Stem	12	Upper Spring Retainer
	9.1	Elastic Stop Jam Nut	12.1	Bushing-Spring Stem
	10.3	Spring Shim (8"only)		
Febco 876 Disk Assembly	6	Check Disc	17	Washer
	16	Hex Jam Nut		
Febco 876 Seat Ring Arm Assembly	3	Seat Ring	4	Arm
	3.1	Gasket	4.1	Bushing-Swing Pin
	3.2	Socket Head Screw	4.2	Swing Pin
	3.4	Washer	5	Retaining Clip
Febco 876 Rubber Kit Complete	2.1	O-Ring	35	O-Ring
	3.1	Gasket	35.1	Back-Up Ring
	6	Check Disc	45	Gasket
	15	Bearing Socket	45.1	Gasket
	26	Gasket		

Pressure Vacuum Breaker 765 PVB

spares



4 Bolt' (not shown, used sizes 1 ½"-2"
2 Canopy
5 Bonnet
6 O-ring*
7 Spring
8 E-ring
9 Washer
10 Stem
11 Rubber Disc
12 Poppett
13 Retainer
14 Spring
15 Holder
16 Disc
17 Guide
18 Screw'

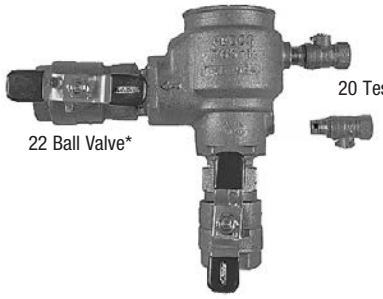


Illustration shown is ¾" through 1 ¼" only
Bonnet and bolt for 1 ½" not shown.

Size (mm)	Reece Code	Description
15-20	1011110	Febco **765** Bonnet Assembly
25-32	1011111	Febco **765** Bonnet Assembly
40-50	1011698	Febco **765** Bonnet Assembly
15-20	1011112	Febco **765** Poppet Assembly
25-32	1011113	Febco **765** Poppet Assembly
40-50	1011699	Febco **765** Poppet Assembly
15-20	1011122	Febco **765** Rubber Kit
25-32	1011123	Febco **765** Rubber Kit
40-50	1011697	Febco **765** Rubber Kit
15-20	1011114	Febco **765** Check Assembly
25-32	1011115	Febco **765** Check Assembly
40-50	1011116	Febco **765** Check Repair Kit
15-20	1011700	Febco **765** Check Bonnet/Poppet Kit
25-32	1011701	Febco **765** Check Bonnet/Poppet Kit

FEBCO® BACKFLOW PREVENTION

Unit Conversion Table

Volumetric Rate of Flow							
Litre per second l/s	Litre per minute l/min	Cubic Metre per hour m^3/h	Cubic Foot per hour ft^3/h	Cubic Foot per minute ft^3/min	U.K. gallon per minute U.K. gal/min	U.S. gallon per minute U.S. gal/min	U.S. barrel per day US barrel/d
1	60	3.6	127.133	2.1189	13.2	15.85	543.439
0.017	1	0.06	2.1189	0.0353	0.22	0.264	9.057
0.278	16.667	1	35.3147	0.5886	3.666	4.403	150.955
0.008	0.472	0.0283	1	0.0167	0.104	0.125	4.275
0.472	28.317	1.6990	60	1	6.229	7.480	256.475
0.076	4.546	0.2728	9.6326	0.1605	1	1.201	41.175
0.063	3.785	0.2271	8.0209	0.1337	0.833	1	34.286
0.002	0.110	0.0066	0.2339	0.0039	0.024	0.029	1

Moment of Force (Torque)						
	pdl ft	lbf in	Nm	ibf ft	kgf m	
	1	0.3730	0.04214	0.03108	4.297×10^3	
	2.681	1	0.1130	0.08333	0.01152	
	23.73	8.851	1	0.7376	0.1020	
	32.17	12	1.356	1	0.1383	
	232.7	86.80	9.807	7.233	1	
	6006	2240	253.1	187.7	25.81	
	72070	26880	3037	2240	309.7	
One Nm = 10^7 dny cm						

Energy, Work, Heat						
Joule j	Kilojoule kj	Megajoule MJ	Foot Pound Force ft lbf	British Thermal Unit B.t.u.	Therm	Kilowatt Hour kW h
1	0.001	10^{-6}	0.737	9.48×10^{-4}	9.48×10^{-9}	2.78×10^{-7}
1000	1	0.001	737.56	0.9478	9.48×10^{-6}	2.78×10^{-4}
10^6	1000	1	737.562	947.82	9.48×10^{-3}	0.2778
1.356	1.36×10^{-3}	1.36×10^{-6}	1	1.28×10^{-3}	1.28×10^{-8}	3.77×10^{-7}
1055.1	1.0551	1.05×10^{-3}	778.17	1	10-5	2.931×10^{-4}
1.0551×10^8	105 510	105.51	7.78×10^7	100 000	1	29.307
3.6×10^6	3600	3.6	2.65×10^6	3412.1	0.03412	1
1 joule = 1 newton metre						

Pressure and Liquid Head								
Newton per square metre N/m^2	Millibar (10^2N/m2) mbar	Bar (10^2N/m2) bar	Kilogram Force per square centimetre kgf/cm^2	Pound per square inch lbf/in^2	Foot of Water ft H^20	Metre of Water m H^20	millimetre mercury mm Hg	inch of mercury in Hg
1	0.01	10^{-5}	1.02×10^{-5}	1.45×10^{-4}	3.3×10^{-4}	1.02×10^{-4}	0.0075	2.95×10^{-4}
100	1	0.001	1.02×10^{-3}	0.0145	0.033	0.0102	0.75	0.029
10^5	1000	1	1.02	14.5	33.455	10.2	750.1	29.53
98067	980.7	0.981	1	14.22	32.808	10.0	735.6	28.96
6895	68.95	0.069	0.0703	1	2.307	0.703	51.71	2.036
2989	29.89	0.03	0.0305	0.433	1	0.305	22.42	0.883
9807	98.07	0.098	0.1	1.42	3.28	1	73.55	2.896
133.3	1.333	0.0013	0.0014	0.019	0.045	0.014	1	0.039
3386	33.86	0.0338	0.0345	0.491	1.133	0.345	25.4	1
1 Pa = $1N/m^2$ 1mm Hg = 1 torr								

Unit Conversion Table

Length

Millimetre mm	Centimetre cm	Metre m	Inch in	Foot ft	Yard yd
1	0.01	0.001	0.0394	0.0033	0.0011
10	1	0.01	0.3937	0.0328	0.0109
1000	100	1	39.3701	3.2808	1.0936
25.4	2.54	0.0254	1	0.0833	0.0278
304.8	30.48	0.3048	12	1	0.3333
914.4	91.44	0.9144	36	3	1

1 kilometre = 1000 metres = 0.62137 miles
1 mile - 1609.34 metres = 1.60934 kilometres

1 thou = 0.0254mm
1 u m (micron) = 10^{-6}m = 39.37 x 10-6 in

Area

square millimetre mm^2	square centimetre cm^2	square metre m^2	square inch in^2	square foot ft^2	square yard yd^2
1	0.01	10^{-6}	1.55 x 10^{-3}	1.076 x 10^{-5}	1.196 x 10^{-6}
100	1	10^{-4}	0.55	1.076 x 10^{-3}	1.196 x 10^{-4}
10^6	10 000	1	1550	10.764	1.196
645.16	6.4516	6.452 x 10^{-4}	1	6.944 x 10^{-3}	7.716 x 10^{-4}
92 903	929.03	0.093	144	1	0.111
836 127	8361.27	0.836	1296	9	1

Volume

Cubic Millimetre mm^3	Cubic Centimetre cm^3	Cubic Metre m^3	Cubic Inch in^3	Cubic Foot ft^3	Cubic Yard yd^3
1	0.001	10^{-9}	6.1 x 10^{-5}	3.531 x 10^{-8}	1.308 x 10^{-9}
1000	1	10^{-6}	0.061	3.531 x 10^{-5}	1.308 x 10^{-6}
10^9	10^6	1	61 024	35.31	1.308
16 387	16.39	1.639 x 10^{-5}	1	5.787 x 10^{-4}	2.143 x 10^{-5}
2.832 x 10^7	2.832 x 10^4	0.0283	1728	1	0.0370
7.646 x 10^8	7.646 x 10^5	0.7646	46 656	27	1

Liquid Measure

Cubic Metre m^3	Litre l	Millilitre ml	U.K. gallon U.K. gal	U.S. gallon U.S. gal	Cubic Foot ft^3
1	1000	10^6	220	264.2	35.3147
0.001	1	1000	0.22	0.2642	0.0353
10^{-6}	0.001	1	2.2 x 10^{-4}	2.642 x 10^{-4}	3.53 x 10^{-5}
0.00455	4.546	4546	1	1.201	0.1605
0.00378	3.785	3785	0.8327	1	0.1337
0.0283	28.317	28 317	6.2288	7.4805	1

1 U.S. Barrel = 42 U.S. gallons (petroleum measure) 1 litre = 10_6 mm_3 = 10_3 cm_3 or 1 cubic decimetre (1 dm_3)
1 litre - 1.76 U.K. pints = 2.113 U.S. pints U.K. gallon and U.K. pint also called Imperial gallon and Imperial pint

Velocity

Metre Per Second m/s	Foots Per Second ft/s	Metre Per Minute m/min	Foot Per Minute ft/min	Kilometre Per Hour km/h	Mile Per Hour mile/h
1	3.281	60	196.85	3.6	2.2369
0.305	1	18.288	60	1.0973	0.6818
0.017	0.055	1	3.281	0.06	0.0373
0.005	0.017	0.305	1	0.0183	0.01136
0.278	0.911	16.667	54.68	1	0.6214
0.447	1.467	26.822	88	1.6093	1

Mass

Kilogram kg	Pound lb	Hundredweight cwt	Tonne t	U.K. ton	U.S.ton sh ton
1	2.205	0.0197	0.001	9.84 x 10^{-4}	0.001
0.454	1	0.0089	4.54 x 10^{-4}	4.46 x 10^{-4}	5.0 x 10^{-4}
50.802	112	1	0.0508	0.05	0.056
1000	2204.6	19.684	1	0.9842	1.1023
1016	2240	20	1.0161	1	1.12
907.2	2000	17.857	0.9072	0.8929	1

Notes

FEBCO®
BACKFLOW PREVENTION

reece™
Plumbing Centres