



Flow Control

Backflow Systems

Features

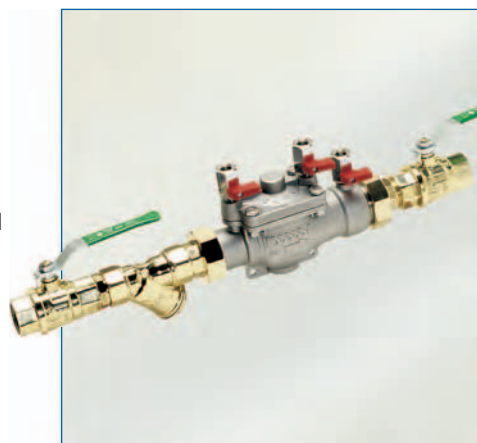
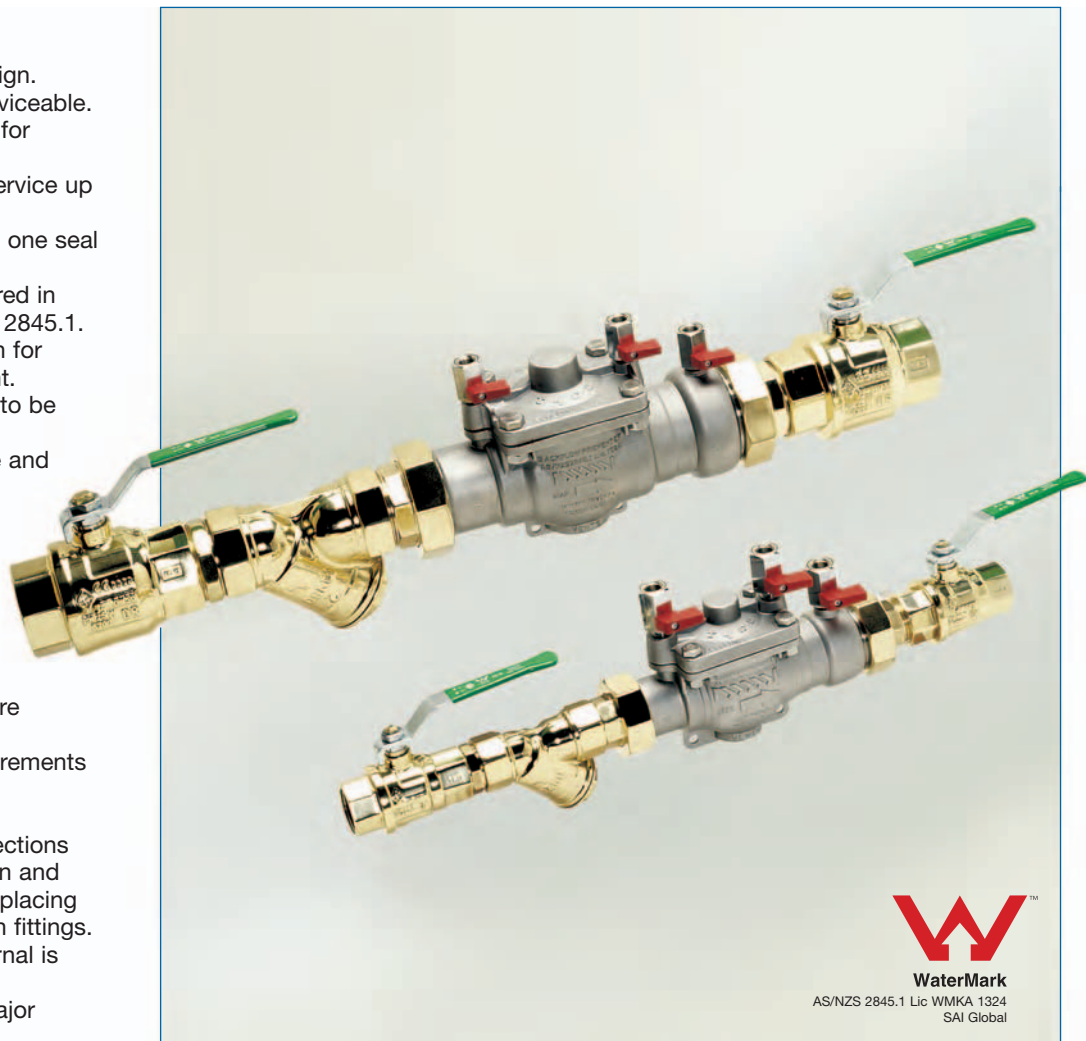
- Lightweight compact design.
- Now inline and onsite serviceable.
- No special tools required for servicing.
- Approved for hot water service up to 90°C.
- Maintenance friendly with one seal kit suitable for six valves.
- Designed and manufactured in accordance with AS/NZS 2845.1.
- Straight through flow path for maximum flow co-efficient.
- Top entry allows all parts to be accessed easily.
- Stainless steel main valve and internals for superior corrosion resistance.
- Fully restrained check valve assemblies for unrivalled safety.
- Every valve is bench tested and tracked with unique serial number.
- All internal components are repairable or replaceable.
- Conforms to testing requirements of AS/NZS 2845.3.
- Anti-tamper test taps
- Unique "ring & tail" connections conforming with Australian and International standards replacing conventional compression fittings.
- All bolting internal & external is stainless steel.
- Design conforms to all major international standards.
- Recommended for horizontal installation only.

General Applications

The RP03 provides protection from both backsiphonage and backpressure of the potable water supply from contamination in high and medium hazard applications.

Reduce Pressure Zone Device suitable for high and medium hazard rated applications.

- 15 - 50mm BSP screwed connections



Technical Data

Size Range:

15-50mm

End Connections:

BSP Screwed AS 1722

Alternative threaded connections may be available on request

Working Pressure:

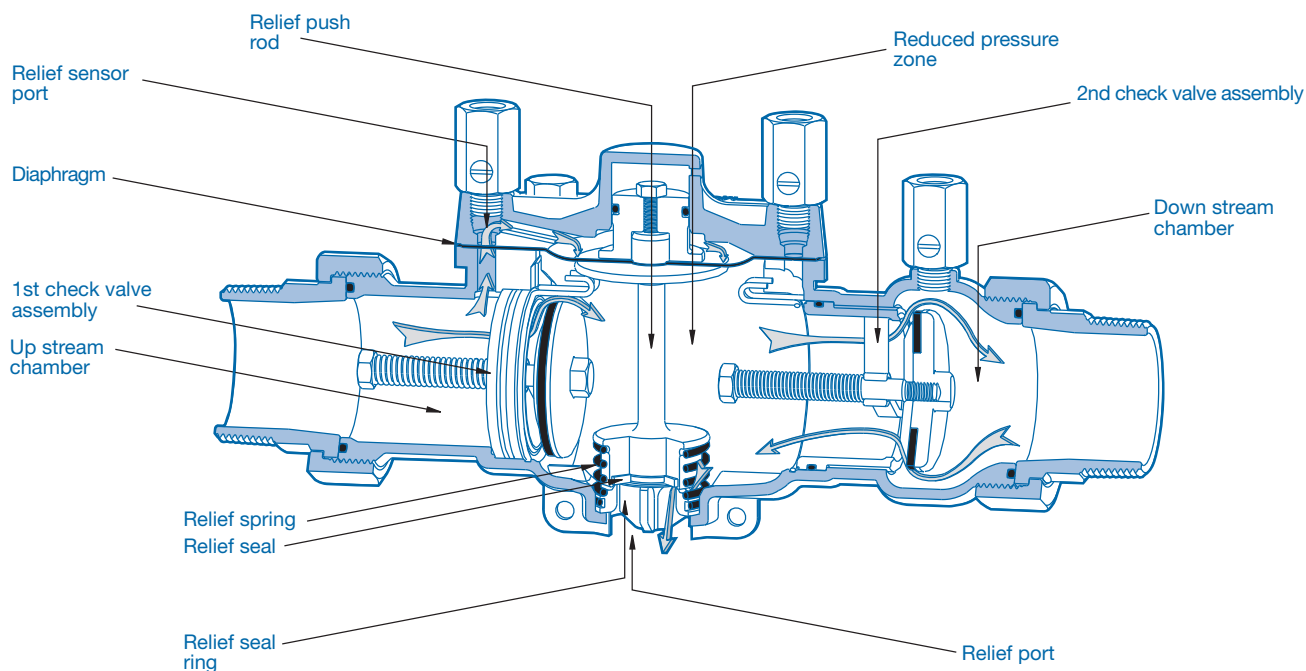
PN16

Temperature Rating:

1°C - 90°C

Backflow Prevention - Figure RP03

15 - 50mm



Principle of operation

Reduced Pressure Zone Device consists of two independently acting non-return valves in series. They are arranged to be force-loaded in the closed position. A relief valve is positioned between them and is designed to be pressure energised to vent to atmosphere when the pressure differential across the up-stream non-return valve reduces to 14 kPa.

Under normal dynamic flow conditions:

Water enters the up stream chamber before the 1st check valve assembly and flows up through the relief sensor port. When sufficient water pressure is achieved (minimum of 14 kPa) above the diaphragm. It will energize the relief push rod and relief spring, moving the relief seal onto the relief seal ring closing the relief port off from atmosphere.

Once the relief port is closed, pressure builds up in the up stream chamber before the 1st check valve assembly. When this pressure is sufficient (minimum of 35 kPa) 1st check valve assembly will open allowing flow into and fill the reduced pressure zone.

The 2nd check valve assembly will open after the reduced pressure zone is full and pressurised sufficiently (minimum 7 kPa) allowing flow through the down stream chamber.

Under the condition of back-pressure: (premises pressure is greater than supply pressure)

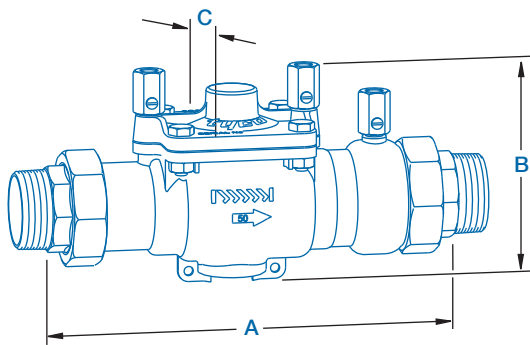
Water pressure in down stream chamber and spring pressure force the 2nd check valve assembly closed. If the 2nd check valve assembly is fouled by debris in the open position, the backpressure energizes the diaphragm from below and with the aid of the relief spring pulls the push rod and relief seal up off the relief seal ring opening the relief port. This allows all liquid contained in the reduced pressure zone to be relieved to atmosphere. The relief port will continue to discharge until backpressure dissipates or 2nd check valve assembly is cleared of debris.

Under the condition of backsiphonage: (negative/low pressure in mains supply)

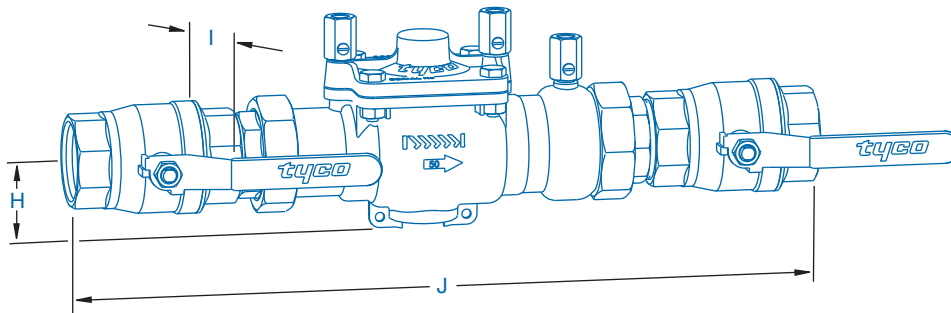
The 1st check valve assembly will close under spring pressure. Water pressure in up stream chamber before the 1st check valve assembly and relief sensor port will dissipate. This will result in the relief spring opening the relief port and allowing all liquid contained in the reduced pressure zone to be relieved to atmosphere.

Backflow Prevention - Figure RP03

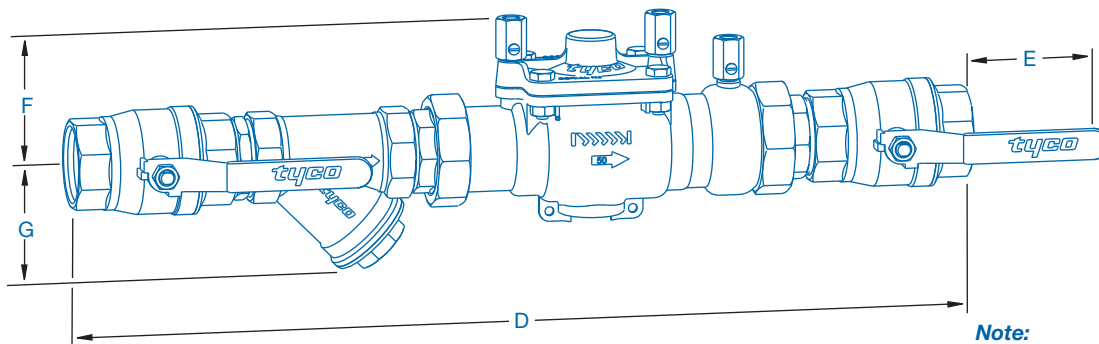
15 - 50mm



Note:
Valve only illustrated.



Note:
Fire service arrangement illustrated.



Note:
Complete assembly illustrated.

Dimensions (mm)

Valve size	A	B	C	D	E	F	G	H	I	J	Weights (kg)		
											VO	CO	FS
15	233	131	68	420	65	86	40	45	80	353	2.8	3.4	3.1
20	233	131	68	450	65	86	48	45	92	369	2.8	3.8	3.3
25	233	131	68	482	68	86	56	45	96	395	2.8	4.3	4.1
32	312	160	98	615	72	99	64	61	125	508	6.3	8.6	8.0
40	312	160	98	648	87	99	73	61	131	524	6.3	9.5	8.5
50	312	160	98	705	97	99	89	61	143	565	6.3	11.5	10.2

Notes:

Dimension are nominal to $\pm 1\text{mm}$.

VO = Weight of valve only.

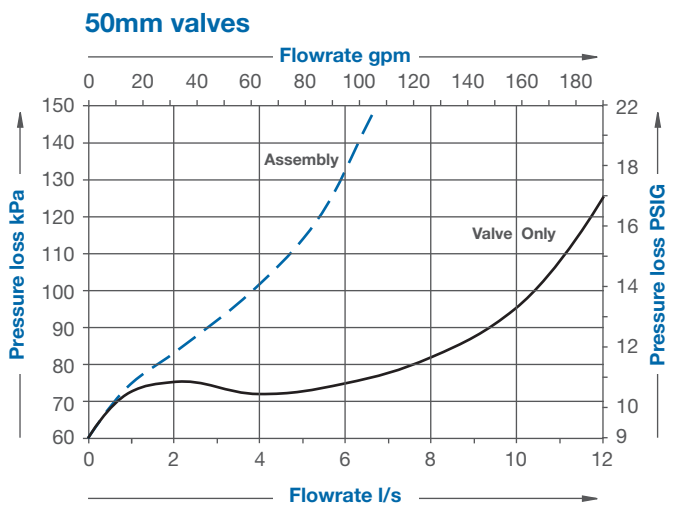
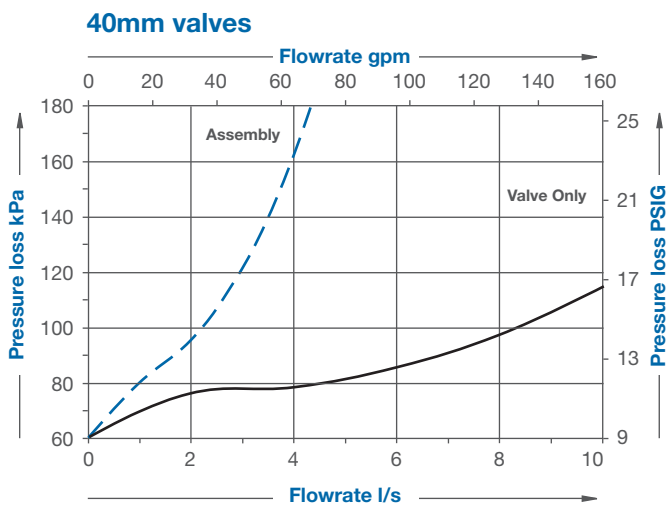
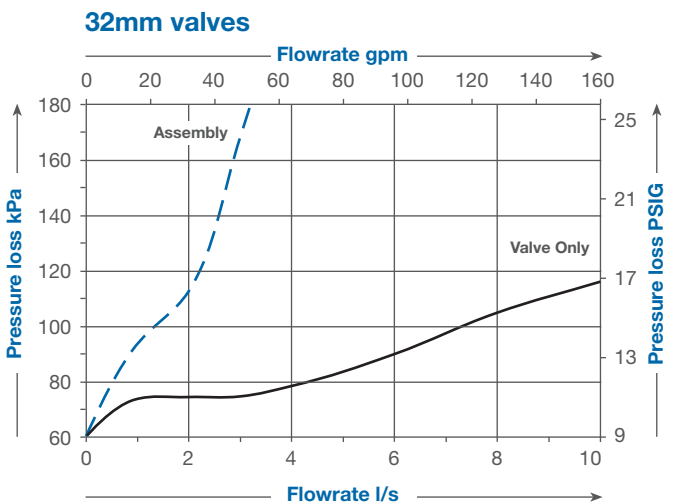
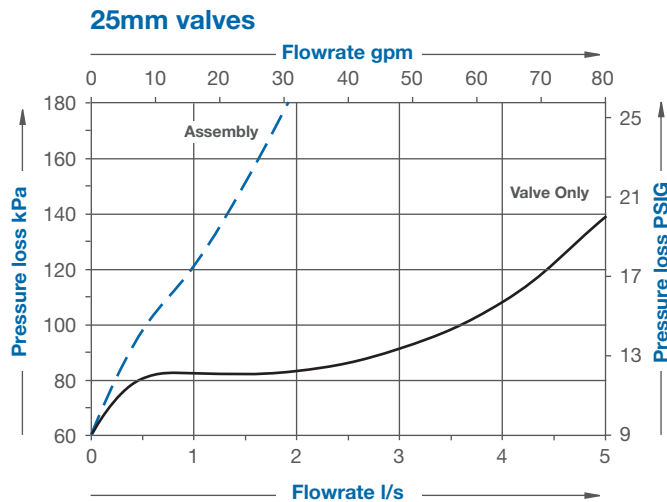
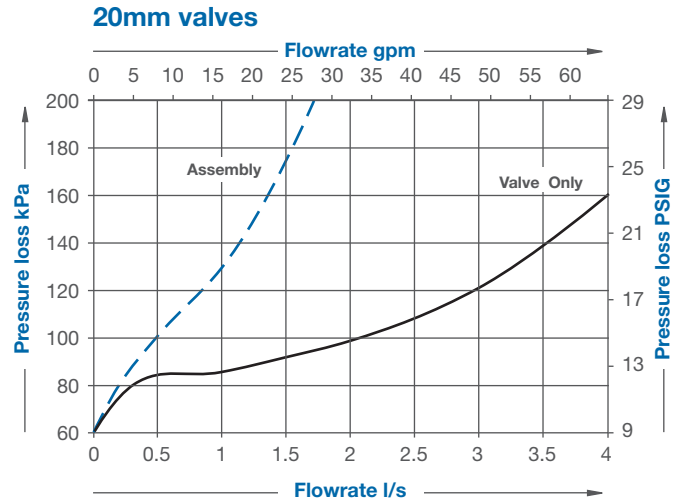
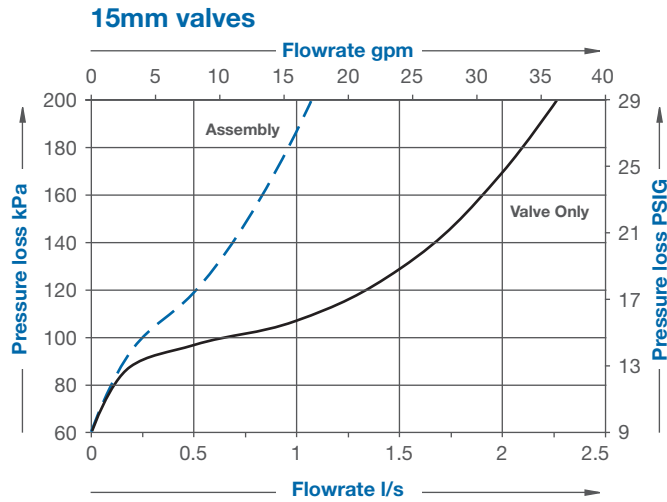
FS = Weight of fire service arrangement (no strainer).

CO = Weight of complete arrangement with ball valves.

Backflow Prevention - Figure RP03

15 - 50mm

Typical flow characteristic graphs



Note:
 --- Complete valve assembly
 — Valve only

Typical specifying sequence

Example:	50	RP03	CO
Valve Size (mm)			
Figure No.			
Configuration VO = Valve only CO = Complete arrangement with DR brass ball valves and strainer FS = Fire service (no strainer) SS = Complete arrangement with stainless steel ball valves and strainer			

Trouble shooting guide

Symptom: First check valve not holding tight (reading approaches zero without holding).

Cause

1. Debris fouling the check valve seal.
2. Check seal damaged or perished.
3. Check seal plate O-ring damaged.

Remedy

1. Inspect, clean, reverse or replace check seal.
2. Inspect and replace check seal.
3. Inspect and replace O-ring.

Symptom: First check valve drops below 35 kPa and remains steady.

Cause

1. Debris fouling the check valve seal.
2. Check seal damaged.
3. Check valve spring memory loss or damaged.

Remedy

1. Inspect, clean, reverse or replace check seal.
2. Inspect and replace check seal.
3. Replace first check valve assembly.

Symptom: Continuous discharge from relief port.

Cause

1. Debris fouling 1st check valve seal.
2. Debris fouling relief seal.
3. Relief seat edge O-ring.
4. Diaphragm damaged.
5. Debris fouling 2nd check seal (static flow).

Remedy

1. Clean check valve seal.
2. Clean relief seal.
3. Replace O-ring.
4. Replace diaphragm.
5. Clean check valve seal.

Symptom: Second check valve not holding tight.

Cause

1. Debris fouling the check valve seal.
2. Check seal damaged or perished.
3. Check seal plate O-ring damaged.

Remedy

1. Inspect, clean, reverse or replace check seal.
2. Inspect and replace check seal.
3. Inspect and replace O-ring

Symptom: Relief port not opening before 14 kPa.

Cause

1. Diaphragm damaged.
2. Relief spring memory loss.

Remedy

1. Replace diaphragm.
2. Replace spring.

Symptom: Discharging from inspection port in top cover.

Cause

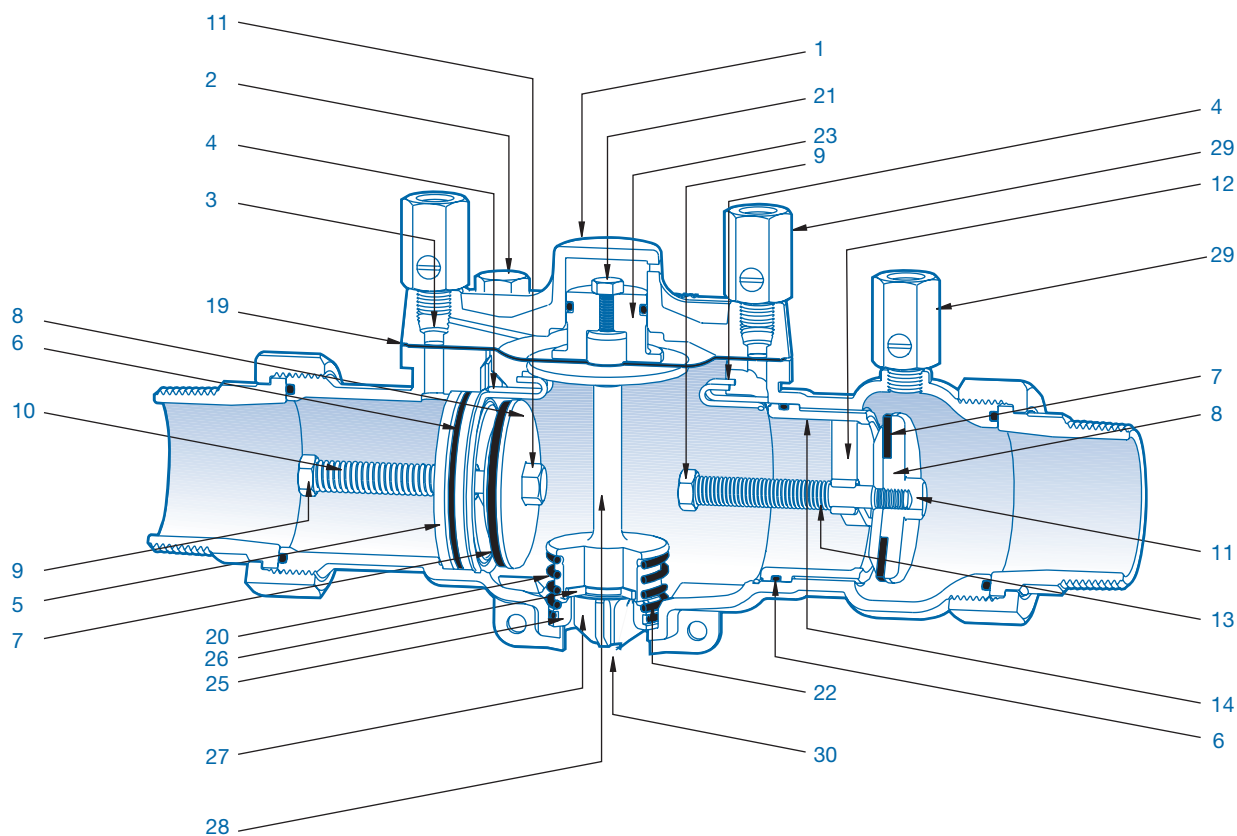
1. Debris fouling relief guide O-ring.
2. Damaged relief guide O-ring.

Remedy

1. Inspect and clean O-ring.
2. Replace O-ring.

Backflow Prevention - Figure RP03

15 - 50mm



Parts list

No. Description

- 1** Cover plate
- 2** Cover plate bolts
- 3** Relief sensor port
- 4** Check valve circlip
- 5** 1st check valve seal ring
- 6** Check valve O-ring
- 7** Check valve seal
- 8** Check valve disc
- 9** Check valve stem
- 10** First check valve spring
- 11** Check valve retaining nut
- 12** Second check valve seal ring
- 13** Second check valve spring

No. Description

- 14** Second check valve extended body seal ring
- 19** Relief valve diaphragm
- 20** Relief valve spring
- 21** Relief valve top guide bolt
- 22** Relief seal guide O-ring
- 23** Relief valve guide
- 25** Relief valve seal ring
- 26** Relief valve seal
- 27** Relief valve seal retainer
- 28** Relief valve push rod
- 29** Test taps
- 30** Relief port

Complete safety and maintenance instructions for high hazard devices.

Safety precautions

In every instance of installation or removal from the pipeline, ensure the line is not pressurized and any hazardous liquid is drained away. Slowly close both isolating valves and then open test taps (29) to drain relief port.

Maintenance & Testing Requirements

Test after initial installation and annually for the life of the valve or service. Maintain in a working order and inspect for operational function at intervals not exceeding twelve months. The functions are to be carried out by authorized licensed backflow testers.

Disassembly instructions

Main Valve

As per safety precautions slowly close isolation valves and the open test taps (29) to drain relief port.

Remove cover bolts (2).

Remove cover plate (1), relief assembly consisting of relief top guide bolt (21), relief guide (23), relief diaphragm (19), relief push rod (28), relief seal (26), relief seal retainer (27) and relief spring (20) may pull out as one piece connected to top cover.

Separate cover plate (1) from relief assembly.

Relief assembly

To access relief diaphragm (19), remove relief top guide bolt (21) from relief guide (23), by screwing a cover bolt (2) for 15mm - 25mm or M8 x 30 bolt for 32mm - 50mm into thread provided on top of relief guide (23) to separate guide (23) from pushrod (28).

To access relief seal (26), separate relief spring (20) from pushrod (28). Turn relief seat retainer (27) anti-clock wise and remove from pushrod (28).

To access relief seal O-ring (22), push relief seal ring (25) through from underneath relief port.

Check valve assemblies

Utilising both sets of circlip prongs, squeeze together and pull out 1st and 2nd check valve assembly circlips (4).

To remove 2nd check valve assembly pull stem (9) out then up, bringing the check assembly through the top entry of the valve.

To remove 1st check valve assembly, slowly and crack open inlet isolating valve allow the water pressure to push the check valve assembly into the intermediate chamber. Shut off inlet isolating valve and remove check assembly through the top entry of the valve.

Both check valve assemblies are mechanically the same, so the same procedure can be used for both assemblies. Fit spanners to the check stem nut (9) and to the check disc (11) then turn check disc anti-clockwise and remove.

Remove check disc (8) to exposes check seal (7) for servicing or replacement.

Note:- When reassembling:

- Lubricate all O-rings
- 2nd check valve assembly has the extended body (14).
- Check valve seal (7) and diaphragm (19) must be clean, free of any greases, moisture and debris upon assembly.

Specifications for Reduce Pressure Zone Device suitable for high and medium hazard rated applications.

- The assembly shall be connected with the “ring & tail” to allow easy removal or replacement of the device in accordance with AS3500.
- Main valve and internals shall be of stainless steel construction and to have pressure rating of PN16 and a temperature rating of 90°C.
- All internal parts and elastomers are to be accessible through a top entry point of the main valve to allow inline maintenance.
- Valve shall also be fitted with test points with BSPT threads to allow testing to AS2845.3
- If required the assembly can be fitted with locking mechanism to provide adequate security.

