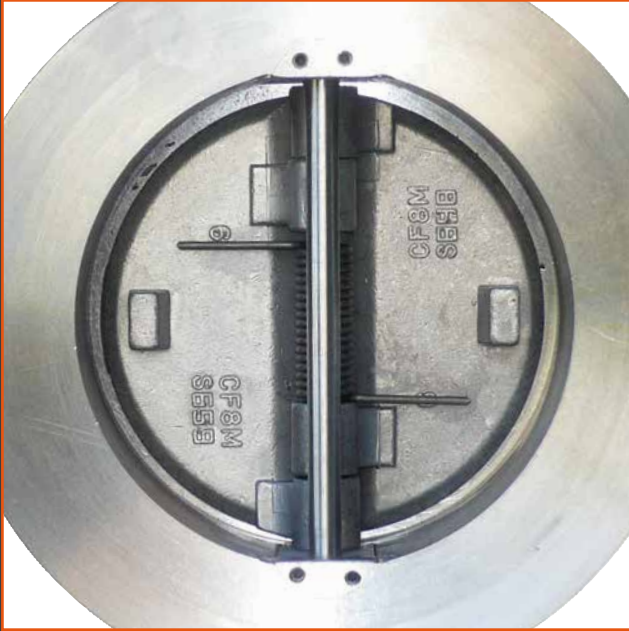


SUPER·CHECK®

WAFER PATTERN CHECK VALVES

'ASG' & 'AGW' STYLE



**AUSTRALIAN
PIPELINE VALVE®**



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COMPLETE PRODUCT LINE

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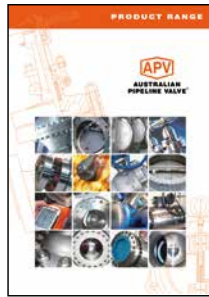
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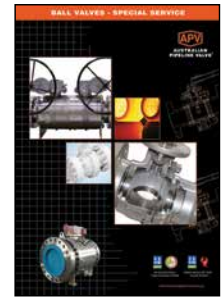
Product Brochure



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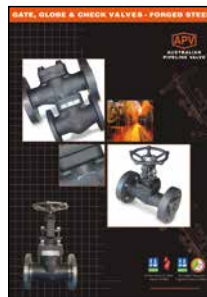
Ball Valves Floating Small Bore



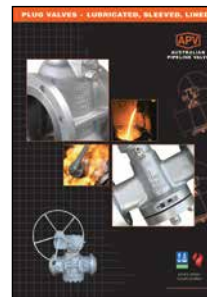
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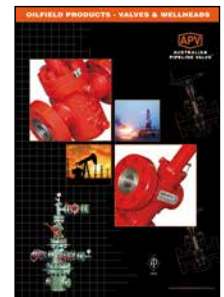
Gate, Globe & Check Valves - Cast Steel



Gate, Globe & Check Valves - Forged Steel



Plug Valves Lubricated, Sleeved & Lined

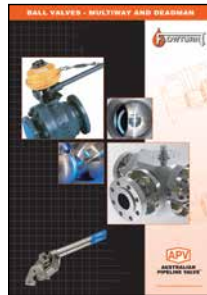


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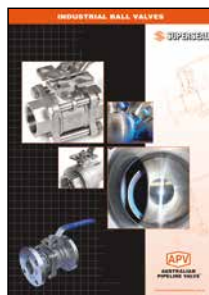
Steamco Steam Valves



Supercheck Wafer Check Valves



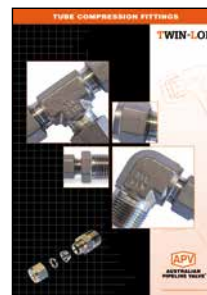
Superseal Butterfly Valves



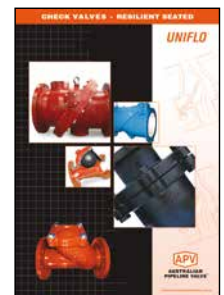
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Torqturn Actuators



TwinLok Tube Fittings



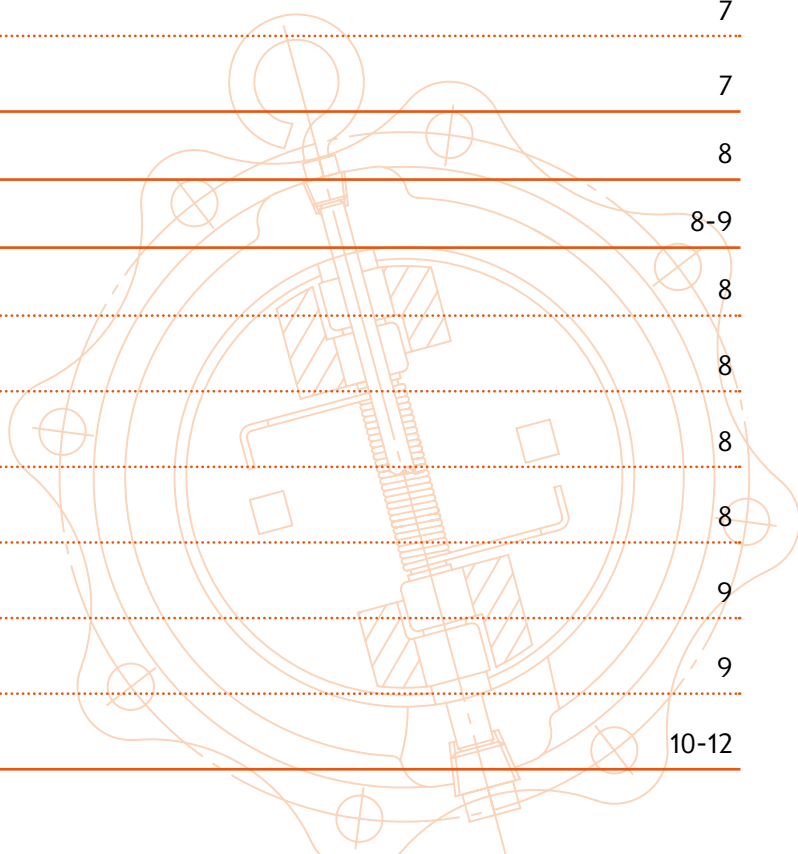
Uniflo Check Valves

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INTRODUCTION

The majority of this information is common knowledge to experienced valve users. When properly installed in applications for which they were designed, Australian Pipeline Valve - Supercheck valves will give long reliable service under normal conditions. This instruction manual is only a guide for installation and operation on standard service and covers general maintenance and minor repairs. An APV approved valve reconditioner should be used for reconditioning and major repairs.



Note

We do recommend however that this entire document be read prior to proceeding with any installation or repair. Australian Pipeline Valve and its parent company take no responsibility for damage or injury to people, property or equipment. It is the sole responsibility of the user to ensure only specially trained valve repair experts perform repairs under the supervision of a qualified supervisor.

RESPONSIBILITY FOR VALVE APPLICATION

The User is responsible for ordering the correct valves. The user is responsible for ensuring APV-Supercheck Valves are selected and installed in conformance with the correct pressure rating and design temperature requirements. Prior to installation, the valves, drawings and nameplates should be checked for proper identification to ensure the valve is of the proper type, material and is of a suitable pressure class and temperature rating to satisfy the applications requirements of the service application.



Caution

Do not use any valve in applications where either the pressure or temperature is higher than the allowable working values. Also valves should not be used in service media if not compatible with the valve material of construction, as this will cause chemical attacks, leakage, valve failure.

RECEIVING INSPECTION AND HANDLING

Valves should be inspected upon receipt to ensure:

- Conformance with all purchase order requirements.
- Correct type, pressure class, size, body and trim materials and end connections.
- Any damage caused during shipping.



Note

The User is advised that specifying an incorrect valve for the application may result in injuries or property damage. Selecting the correct valve type, rating, material and connections, in conformance with the particular performance requirements is important for proper application and is the sole responsibility of the user.

SAFETY INFORMATION

The following general safety information should be taken into account in addition to the specific warnings and cautions specified in this manual. They are recommended precautions that must be understood and applied during operation and maintenance of the equipment covered in this I.O.M.



Caution

To avoid injury, never attempt disassembly while there are pressures either upstream or downstream. Even when replacing gaskets or packings, caution is necessary to avoid possible injury. Disassemble with caution in the event all pressures are not relieved.



Caution

To prevent valve bending, damage, inefficient operation, or early maintenance problems, support piping on each side of the valve.



Caution

- *A valve is a pressurised mechanism containing fluids under pressure and consequently should be handled with appropriate care.*
- *Valve surface temperature may be dangerously too hot or too cold for skin contact.*
- *Upon disassembly, attention should be paid to the possibility of releasing dangerous and or ignitable accumulated fluids.*
- *Ensure adequate ventilation is available for service.*

This manual provides instructions for storing, general servicing, installation and removal of valves. APV and its resellers refuse any liability for damage to people, property or plant as well as loss of production and loss of income under any circumstances but especially if caused by: Incorrect installation or utilisation of the valve or if the valve installed is not fit for intended purpose. It is the sole responsibility of the user to ensure the valve type and materials are correctly specified.

DURING OPERATION TAKE INTO ACCOUNT THE FOLLOWING WARNINGS:

- a- The valve's internal parts (disc/stem/hinge pin/seats/gaskets/seals, etc.) shall be handled with care avoiding scratches or surface damage.
- b- All tools and equipment for handling the internal parts shall be soft coated, or else take care.
- c- Valves can be fitted with gaskets or seals in PTFE, Buna, Viton, etc., hence high temperatures and some cleaning fluids may damage sealing components.

For all operations make reference to position number on part list of the applicable drawing.

1.0 INSTALLATION



Piping should be properly aligned and supported to reduce mechanical loading on the end connections.

Install valve in system using proper size and type of mating flanges and appropriate gaskets (for FF or RF) or ring joint gaskets (for RTJ). Observe the following precautions:

- Do not install ASG/AGW series wafer check valves directly against another valve whereby the check valve discharges downstream directly into another valve.
- Do not install the valve whereby it directly discharges downstream into a tee or elbow fitting. Refer to Diagram 1.
- ASG/AGW check valves are not suitable for vertical downflow installations.

1.1 INSTALLATION POSITIONS

Check valves are unidirectional and have the direction of flow indicated on the valve body.

Supercheck dual flap check valves are recommended for use only in horizontal lines and vertical lines for upwards flow only.

1.2 PREPARATION FOR INSTALLATION

- Remove protective end caps or plugs and inspect valve ends for damage to flange faces.
- Thoroughly clean adjacent piping system to remove any foreign material that could cause damage to seating surfaces during valve operation.
- Verify that the space available for installation is adequate to allow the valve to be installed.

1.3 END CONNECTIONS

1.3.1 Flanged Ends

Check to see that mating flanges are dimensionally compatible with the flanges on the valve body and ensure sealing surfaces are free of debris.

Install the correct studs and nuts for the application and place the gasket between the flange facings.




Stud nuts should be tightened in an opposing criss-cross pattern in equal increments to ensure even gasket compression. See Diagram 5.

1.4 CLEANING

Before installation, wash off any rust proofing solution coating with kerosene, or any hydrocarbon solvent product. Valve plates (flaps) should be checked to ensure they are free.

1.5 DIRECTION OF FLOW & INSTALLATION POSITION

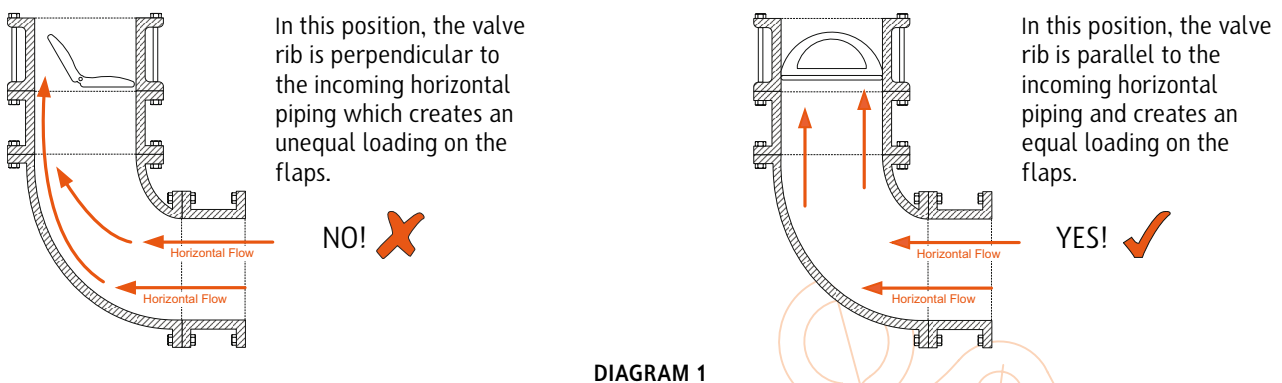
The direction of flow in the line should coincide with the flow direction indicated by the cast 'arrow' on the body of the valve.




Caution

Dual plate check valves are designed for steady flow conditions and are not recommended for use near reciprocating pumps, but especially compressors, any pulsating devices or other types of physical/thermal shock-load applications. In this type of application, the check valve will not perform efficiently and will ultimately fail.

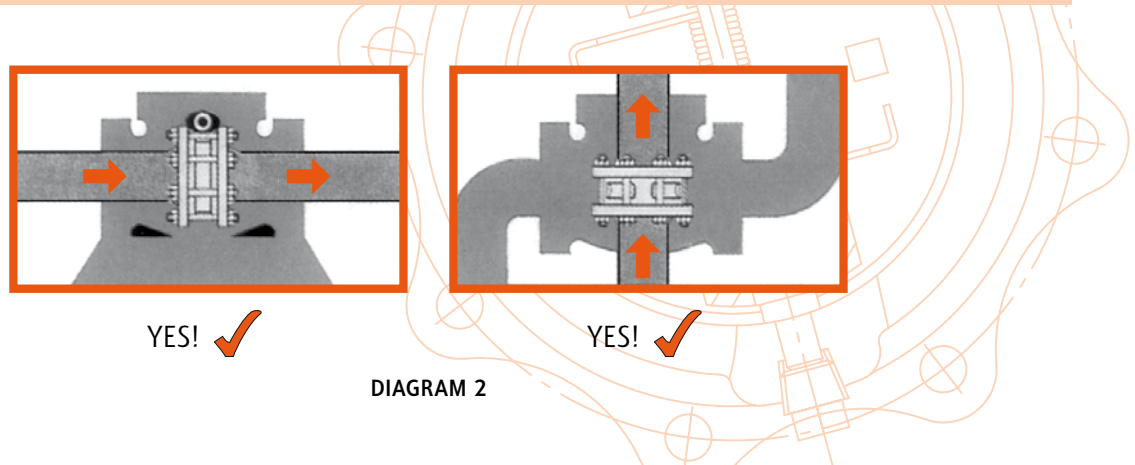
For vertical installation it is necessary to orientate the valve rib such that there is equal loading on both flaps. Refer Diagram 1. Additional pressure drop should be expected due to the weight of the discs.





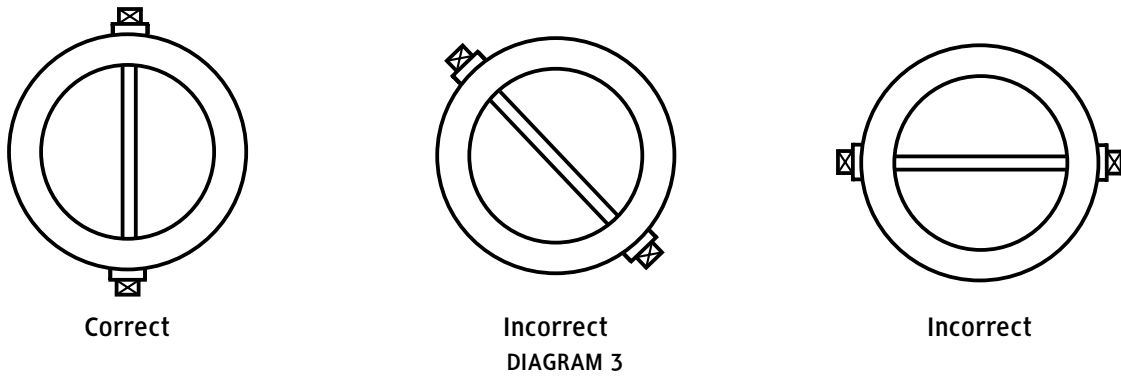
Caution

Supercheck valves can be installed either horizontally or vertically. For vertical installations, dual plate check valves can only be installed with flow direction upward. In the vertical position, the outlet will be above the inlet.



1.6 HORIZONTAL PIPING

Insert valve into pipeline so that the Pin Retainers (plugs) on model 'ASG' are placed in an up and down position. In other words the central rib in the middle of the valve must be perpendicular to the flow. For model 'AGW' use the body profile or lifting lug as a guide but install the same way. Consult Diagram 1 and 2 for orientation positions.



1.7 DISTANCE BETWEEN DUAL FLAP CHECK VALVE AND A BUTTERFLY VALVE

If you attach another valve to the outlet side of the Supercheck valve, ensure that there is enough distance between two valves so that the plates of the Supercheck check valve do not touch the disc of the other valve in the open position. For separating other valves such as butterfly valves, a spacer spool may be required to stop the disc interfering with the check valve flaps.

1.8 ORIENTATION OF DUAL FLAP CHECK VALVE TO PUMP DISCHARGE

When mounting the Supercheck valve near a pump, as indicated on Diagram 4, position so that the flow of the pump meets evenly with the two plates of the valve. The hinge pin of the Supercheck valve should be at right angles to the pump shaft. Ideally, for maximum service life keep distance 'A' more than 6 times the diameter of the pipe. For higher pressures the distances should be further. Consult Diagram 1 and 2 for orientation positions.

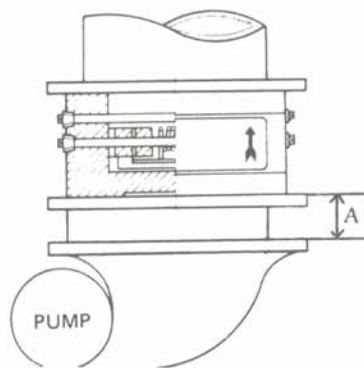
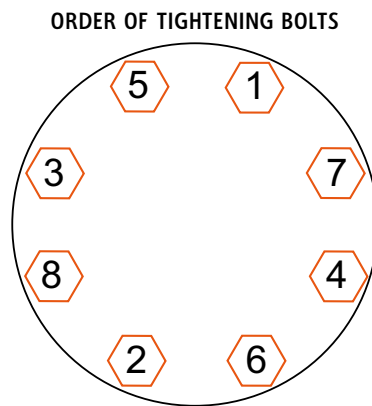


DIAGRAM 4

1.9 GASKETS

The opening end of the outlet side of Dual Flap Check valve is manufactured larger than the internal diameter of the pipe. Use a gasket that is either the same internal diameter of the dual flap Check outlet, or slightly larger. Most common spiral wound or CNAF pipe gaskets will fit, providing they are the same corresponding flange class rating as the valve it's specified to. CNAF gaskets are only suitable up to 1400 kPa (200 psi). Ring joint gaskets are frequently specified in class 900 to 2500. The recommended tightening sequence is shown below in Diagram 5. Tighten in numerical order, gradually increasing torque with each sequence.



1.10 POST-INSTALLATION PROCEDURES

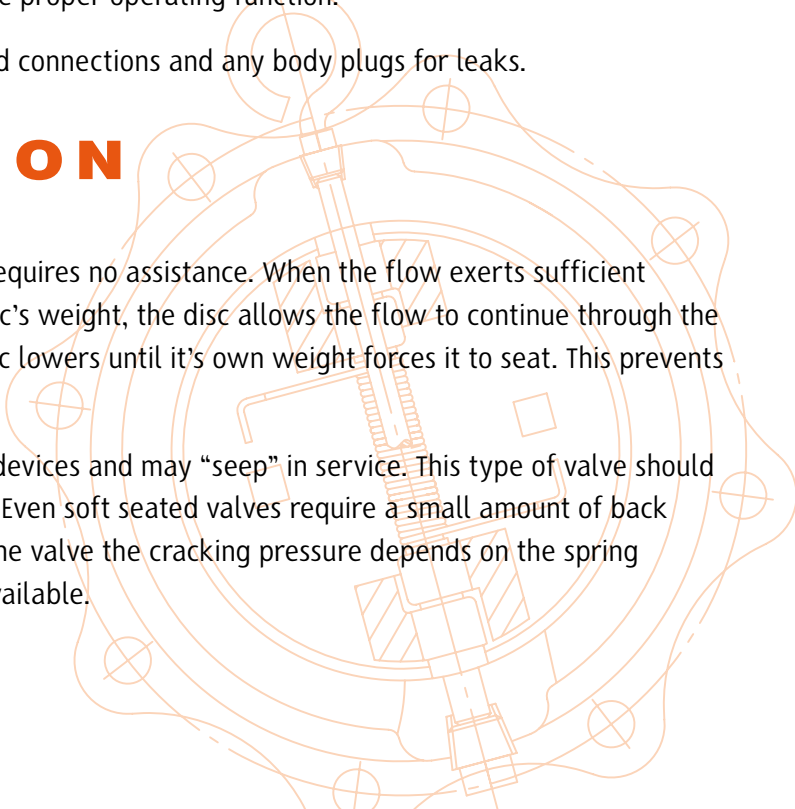
After installation, the line should be cleaned by flushing to remove any foreign material. When caustics are to be used to flush the line, additional flushing with clean water is required. The valve should be opened and closed after installation to ensure proper operating function.

With the line pressurised, check the valve end connections and any body plugs for leaks.

2.0 OPERATION

The check valve operation is automatic and requires no assistance. When the flow exerts sufficient pressure against the disc to overcome the disc's weight, the disc allows the flow to continue through the piping system. As pressure decreases, the disc lowers until it's own weight forces it to seat. This prevents the possibility of a reversal in the flow.

Metal seated check valves are not zero leak devices and may “seep” in service. This type of valve should always be backed up with an isolation valve. Even soft seated valves require a small amount of back pressure to effect a seat. Similarly, to open the valve the cracking pressure depends on the spring tension. Low cracking pressure springs are available.



3.0 MAINTENANCE

No periodic maintenance is necessary.

4.0 REPAIRS

Proper safety equipment and apparel should be worn when preparing to service a valve. Observe the general safety warnings throughout this catalogue and consult your safety and plant managers.

4.1 REPAIR INSTRUCTIONS

Due to the relatively low replacement cost of small diameter standard iron or carbon steel valves especially under 200 NB (8”), it is usually less expensive to replace the complete valve than to have maintenance personnel effect repairs. Refer to indicative bill of materials in Appendix A, Diagram 6, 7 and 7A. Design varies according to size, class, seat type, etc., hence refer to as-built drawing.

Gasket sealing surfaces should be scraped clean (avoid radial marks).

4.2 REMOVING VALVE FROM PIPELINE

Only one half of the stud bolts need to be removed (others can just be loosened) when removing the dual flap from the line. Of course for flanged or fully lugged valves all bolts should be removed.

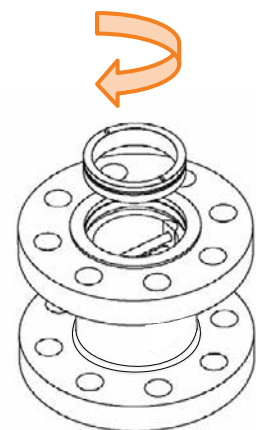
4.3 DISASSEMBLY ASG SERIES

Unscrew the stop pin retainers (11) and (9) from the body (1). Remove stop pin (4) from body (1). Unscrew the hinge pin retainers (12) from the body (1). To remove hinge pins (3) maintain pressure on the spring (5) and withdraw hinge pin (3). Dis-assemble and remove springs (5), body lug bearings (8), plate lug bearings (7), spring bearings (6), plates (2), and support sleeves when fitted (10).

4.4 DISASSEMBLY AGW SERIES

Remove retaining screws (9) and retainer ring (14) (version A) and then slide out the entire cartridge supported by thrust bearing inserts (6) which can then be removed. Remove the plates (2) from hinge pin (3) taking careful note of the position of spring (5) and washers (7).

Unscrew the flange insert component using a special tool



THREADED RETAINER STYLE A/A1



Caution

Before attempting shaft extraction, be sure to press hand over springs. Failure to do this may result in personal injury due to the spring ‘launching’ itself unexpectedly once the shaft is pulled free of it. Always wear protective eye wear.

4.5 ASSEMBLY ASG SERIES

- a) Lay the body (1) down, with 'downstream' side of the body facing upward. Lay plates (2) inside the body (1) with the hinge lugs together and sealing surface down. If support sleeves are fitted they must be inserted into plates before placing into the body. Insert bearings (6), (8) and plate lug bearings (7) between the body and plate lugs respectively. Check the plates (2) and lug bearings for end play. If body plates are severely worn they should be replaced.
- b) Valves with one spring, wind the spring (5) 180° in a clockwise direction. Place the wound spring (5) in position between the hinge lugs ensuring the convex side of the spring's leg is against the plate. For valves with two springs, ensure that the convex side of the spring legs (long leg) are at the centre of each plate. While maintaining pressure on the spring (5), insert the hinge pin (3) into the body (1) passing it through the lug bearings (7) and (8), plates (2), spring (5), spring bearings (6).
- c) First insert the pin stabilisers (9) (where applicable) then Teflon tape the threads of the hinge pin retainer, and screw the hinge pin retainers (12) into the body (1).
- d) First insert the pin stabilisers (9) (where applicable) then insert stop pins (4) into the body (1). Teflon tape the threads of stop pin retainer (11) and screw the stop pin retainers into the body (1).

4.6 ASSEMBLY AGW SERIES

- a) Lay the body down, with 'downstream' side of the body facing upward. First reassemble the entire cartridge unit in the reverse order shown in 4.3 above. The thrust bearing inserts (6) should house the stop pin (4) and the hinge pin (3). The hinge pin (3) should have plates (2), springs (5) and bearing/washers (7) pre fitted.

Note: Valves with one spring, wind the spring (5) 180° in a clockwise direction. Place the wound spring (5) in position between the hinge lugs ensuring the convex side of the spring's leg is against the plate. For valves with two springs, ensure that the convex side of the spring legs (long leg) are at the centre of each plate. While maintaining pressure on the spring (5), insert the hinge pin (3) into the body (1), plates (2), spring (5), bearings (7).

- b) Finally the closure ring (version A) (14) and screws (9) (version A and B) should be fastened.

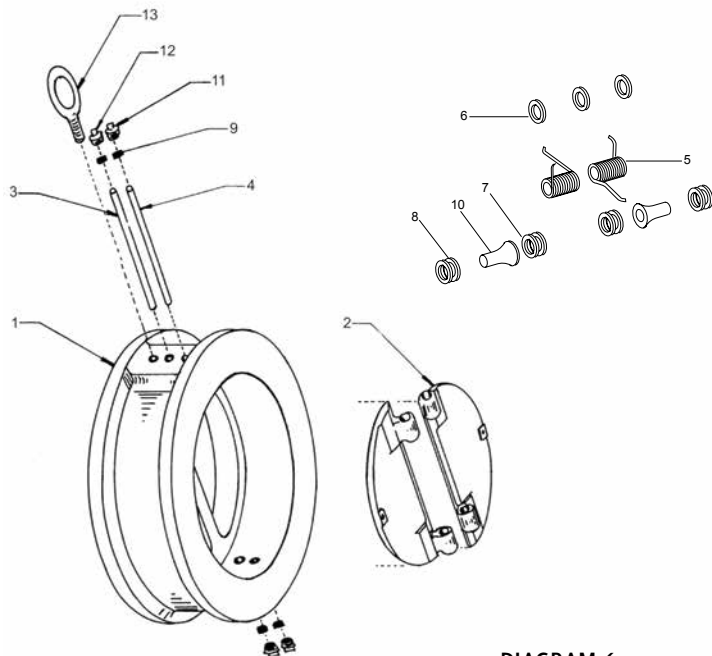


Caution

For AGW and ASG series: under no circumstances wind springs to gain a higher or lower torsional load. Special high and low torque springs are available for this purpose. Before attempting shaft extraction, be sure to press a hand over the disc spring. Failure to do this may result in personal injury due to the spring "launching" itself unexpectedly once the shaft is pulled free of it.

APPENDIX

EXPLODED VIEW 'ASG' STYLE



ITEM	QTY	DESCRIPTION
1	1	BODY
2	2	PLATES
3	1	HINGE PIN
4	1	STOP PIN
5	2 ~ 5	SPRING
6	3 ~ 5	SPRING BEARING
7	2 ~ 4	PLATE LUG BEARING
8	2 ~ 4	BODY LUG BEARING
9	4	PIN STABILISERS*
10	2	SUPPORT SLEEVES* (≤ 600NB)
11	2	HINGE PIN RETAINER PLUGS
12	2	STOP PIN RETAINER
13	1	LIFTING EYE BOLT*

* Where fitted

DIAGRAM 6

Indicative drawing only, refer to as-built drawing. Drawing will vary according to size, class, materials, etc.

EXPLODED VIEW 'AGW' THREADED RETAINER STYLE

ITEM	QTY	DESCRIPTION
1	1	BODY
2	2	PLATES
3	1	HINGE PIN
4	1	STOP PIN
5	1 ~ 5	SPRINGS
6	2	PIN RETAINERS
7	2 ~ 8	BODY BEARINGS
7a	2 ~ 4	PLATE BEARINGS
7b	0 ~ 4	SPRING BEARINGS
13	1	EYE BOLT*
14	1	RETAINER RING† (THREADED)

* Where required

† Sits inside the mating flange gasket contact surface area on flange faces

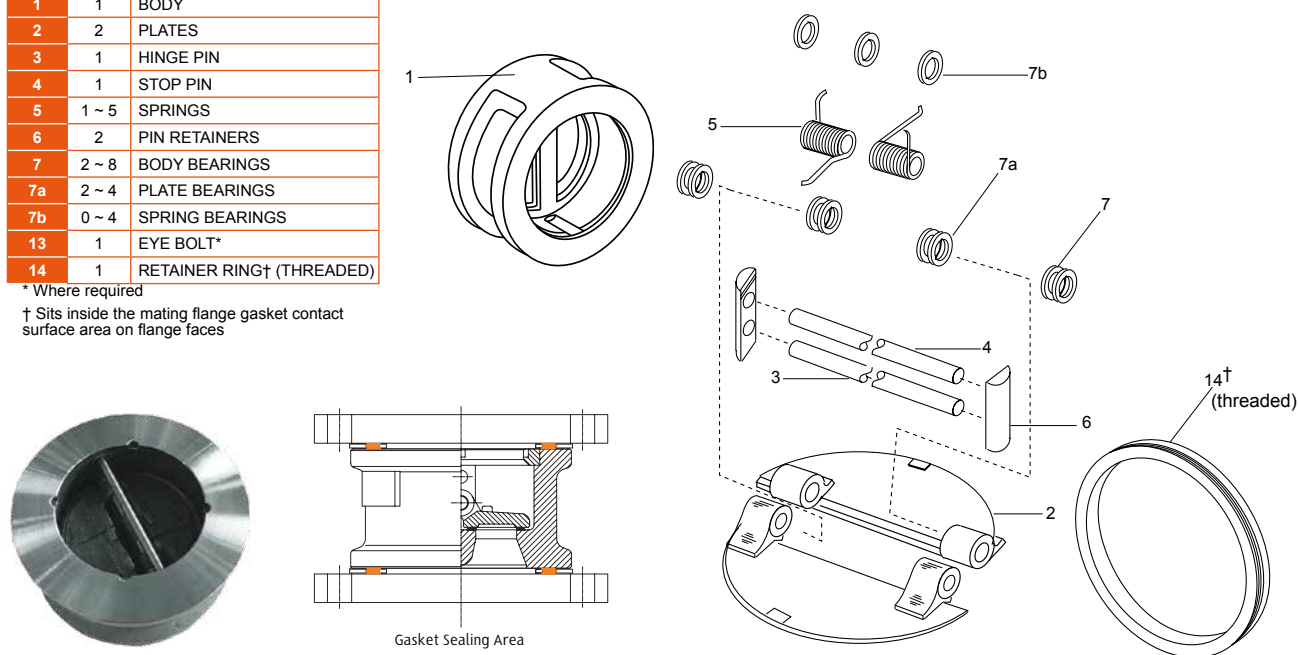
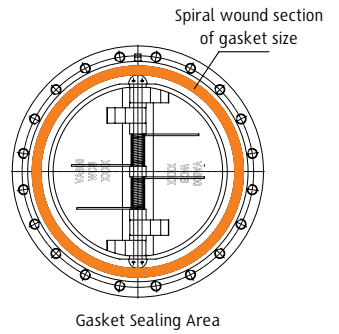


DIAGRAM 7

Indicative drawing only, refer to as-built drawing. Drawing will vary according to size, class, materials, etc.

EXPLODED VIEW 'AGW' ALLEN KEY RETAINER STYLE

ITEM	QTY	DESCRIPTION
1	1	BODY
2	2	PLATES
3	1	HINGE PIN
4	1	STOP PIN
5	1 - 5	SPRINGS
6	2	PIN HOLDER
6a	1	PIN HOLDER RETAINERS*
7	2 - 8	BEARINGS
9	2	SCREWS (2/4)
13	1	EYE BOLT*



* Where required

† Rebated into bore where required to allow smaller pin holder channel, thereby avoiding overlap into flange face gasket contact area.

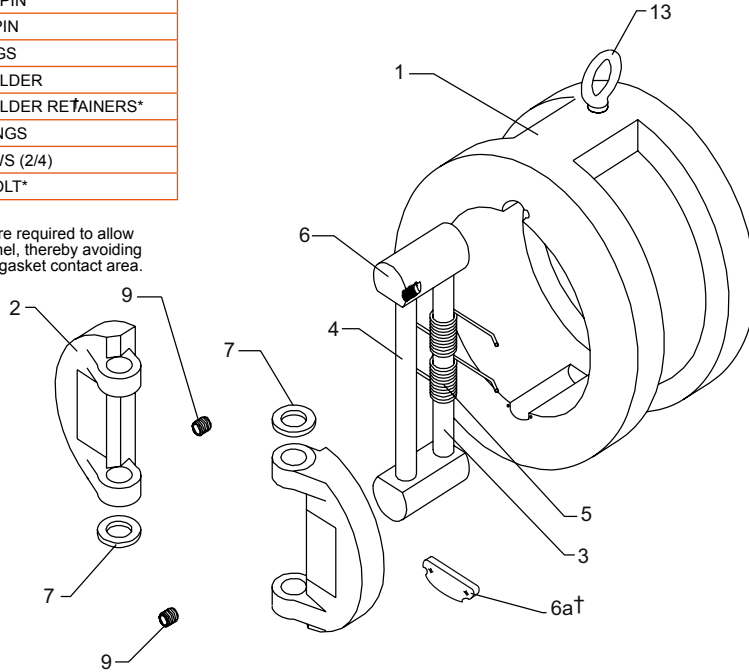


DIAGRAM 7A

Indicative drawing only, refer to as built drawing. Drawing will vary according to size, class, materials, etc.

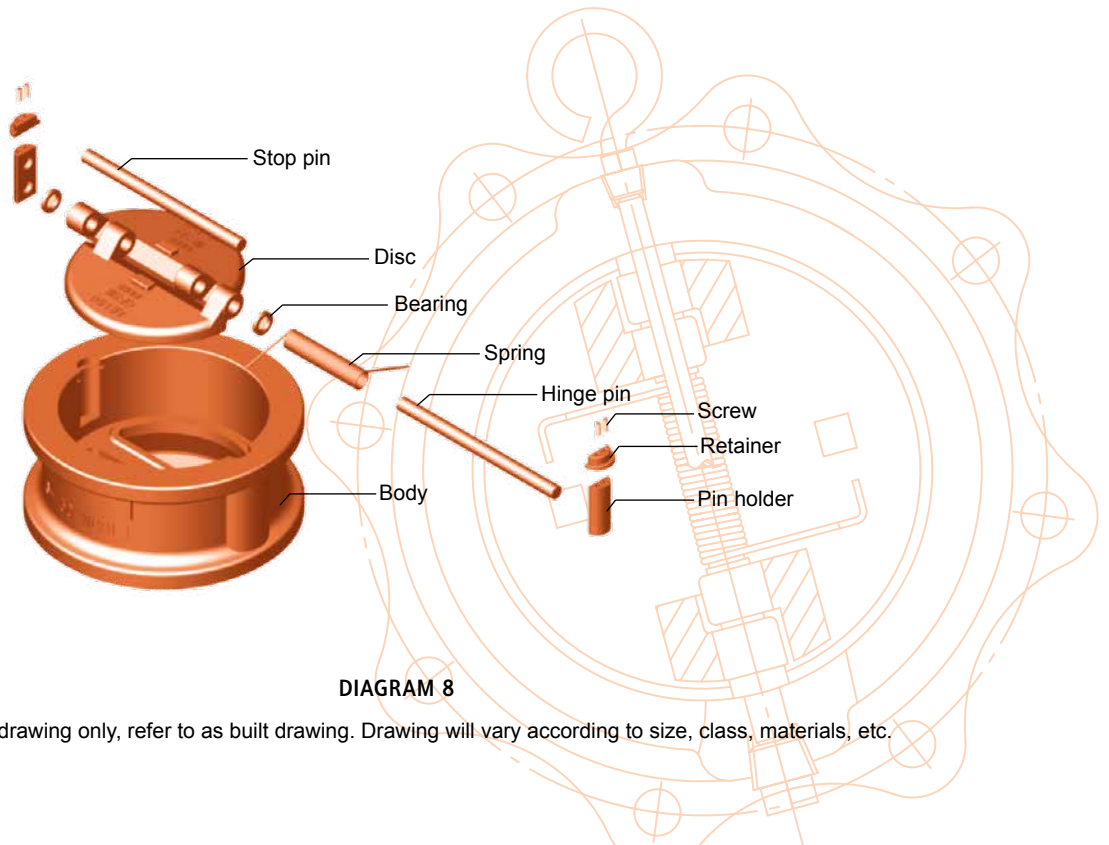


DIAGRAM 8

Indicative drawing only, refer to as built drawing. Drawing will vary according to size, class, materials, etc.

TABLE 1
Class 125-150 Spring Cracking Pressure kPa (PSI)

Valve Size		Std. Torque
mm	(in)	
50	(2")	1.58 (0.23)
65	(2 1/2")	1.79 (0.26)
80	(3")	1.45 (0.21)
100	(4")	1.52 (0.22)
127	(5")	1.24 (0.18)
150	(6")	0.96 (0.14)
200	(8")	1.31 (0.19)
250	(10")	1.24 (0.18)
300	(12")	1.17 (0.17)
350	(14")	1.03 (0.15)
400	(16")	1.10 (0.16)
450	(18")	1.03 (0.15)
500	(20")	0.90 (0.13)
600	(24")	0.69 (0.10)
750	(30")	0.55 (0.08)
900	(36")	0.55 (0.08)
1050	(42")	0.34 (0.05)
1200	(48")	0.41 (0.06)

Cracking pressures shown are a rough guide and valve cannot be used as a relief valve. The use of low torque springs should only be used when unique conditions are evaluated.

TABLE 2
Valve Coefficient Cv

Valve Size		Class 125-300
mm	(in)	
50	(2")	75
65	(2 1/2")	95
80	(3")	191
100	(4")	377
127	(5")	483
150	(6")	821
200	(8")	1,590
250	(10")	2,920
300	(12")	4,470
350	(14")	5,870
400	(16")	8,690
450	(18")	10,940
500	(20")	14,290
600	(24")	23,000
750	(30")	37,200
900	(36")	59,000
1050	(42")	92,000
1200	(48")	126,000

TABLE 3

Wafer Check Valve Standard APV Allowable Leakage Rates for Closure (Seat) Tests API 598

VALVE SIZE		METAL SEATED WAFER CHECK VALVES			SOFT SEATED WAFER CHECK VALVES			
NB	NPS	LIQUID TEST (cc/min)		GAS TEST (bubbles/min)	LIQUID TEST (cc/min)		GAS TEST ^a (bubbles/min)	
		APV	API 598	API 598	APV	API 598	APV ^a	API 598
≤50	≤2	3	6	Not required per API598 ^d	0 ^c	Not specified ^c	2 ^b	Not required per API598 ^d
65	2.5	3.75	7.5	Not required per API598 ^d	0 ^c	Not specified ^c	2 ^b	Not required per API598 ^d
80	3	4.0	9	Not required per API598 ^d	0 ^c	Not specified ^c	2 ^b	Not required per API598 ^d
100	4	6.0	12	Not required per API598 ^d	0 ^c	Not specified ^c	2 ^b	Not required per API598 ^d
125	5	7.5	15	Not required per API598 ^d	0 ^c	Not specified ^c	2 ^b	Not required per API598 ^d
150	6	9.0	18	Not required per API598 ^d	0 ^c	Not specified ^c	2 ^b	Not required per API598 ^d
200	8	12.0	24	Not required per API598 ^d	0 ^c	Not specified ^c	2 ^b	Not required per API598 ^d
250	10	15.0	30	Not required per API598 ^d	0 ^c	Not specified ^c	3 ^b	Not required per API598 ^d
300	12	18.0	36	Not required per API598 ^d	0 ^c	Not specified ^c	3 ^b	Not required per API598 ^d
350	14	21.0	42	Not required per API598 ^d	0 ^c	Not specified ^c	4 ^b	Not required per API598 ^d
400	16	24.0	48	Not required per API598 ^d	0 ^c	Not specified ^c	4 ^b	Not required per API598 ^d
450	18	27.0	54	Not required per API598 ^d	0 ^c	Not specified ^c	5 ^b	Not required per API598 ^d
500	20	30.0	60	Not required per API598 ^d	0 ^c	Not specified ^c	6 ^b	Not required per API598 ^d
600	24	36.0	72	Not required per API598 ^d	0 ^c	Not specified ^c	7 ^b	Not required per API598 ^d

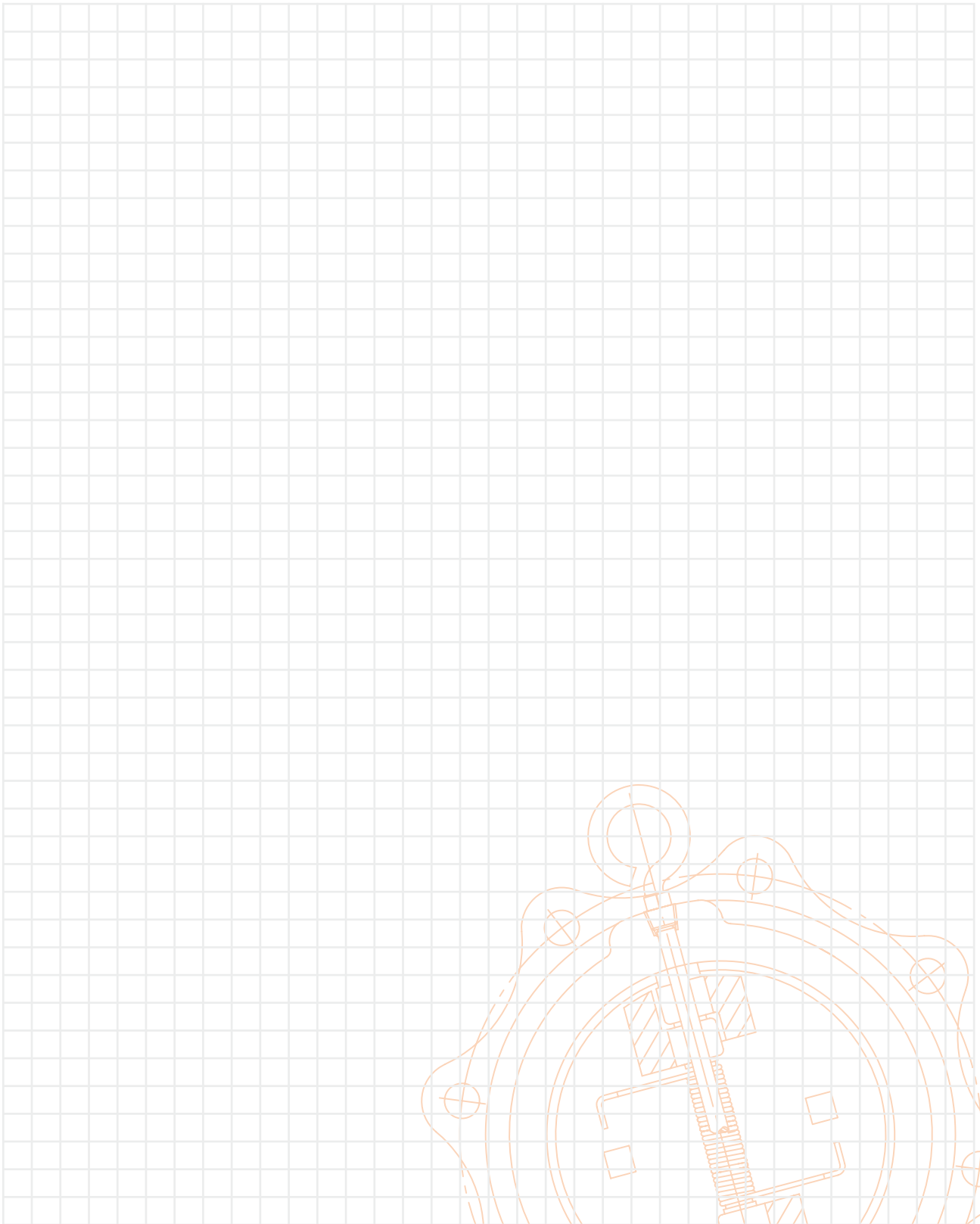
^a Gas test not performed as standard on cast iron body valves and is not required as per API 598. API598 does not require gas test on steel valves but APV performs it

^b 5.5 bar minimum test pressure. (Higher test pressure may be required to energise resilient seat in high pressure classes/larger sizes).

^c Since API 598 does not specify a leakage rate for resilient seated check valves, many manufacturers use the metal seated check valve leakage rate. However, APV demands as close as possible to tight shut off as per API 598 resilient seated (ISO 5208-A) Note in higher classes in smaller sizes and all classes in larger sizes, 3 up to 10 water drips a minute is accepted.

^d For check valves, gas test is not required as per API 598, but APV does perform it.

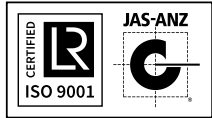
1cc = 16 drops, 1ml = 16 drops



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