

OPERATION & MAINTENANCE



The designs, materials and specifications shown are subject to change without notice due to our continuing programme of product development.

OPERATION:

Series 41 Swing Check Vales are suitable for use with wholesome (potable) water, raw water and low solids sewage up to 70°C. Minimum liquid temperature must be above freezing.

Insulation is recommended for external temperatures from 0° to -10°C.

They can have a Lever & Weight option, Right Hand as standard.

They can also have an outside spring up to DN 200.

These options may be added as a conversion from Non Lever & Weight.

NOTE: The valves are not designed for “end of line” services. In the event of a valve being mounted on the end of a pipeline, we strongly advise the use of a blanking flange or plug.

DESIGN CONSTRAINTS:

Please consider the following points when selecting your valve:

- Consideration should be given at the design stage where valves will be located to give access for operation, adjustment, maintenance and repair.
- If a valve is installed less than 6 diameters downstream of an elbow or tee etc., it will experience very high-localised velocities that are far in excess of the average velocity. This high velocity will result in excessive turbulence within the valve and variations in performance may be experienced, therefore installation in this area should be avoided.
- Valves must be provided with adequate support. Adjoining pipework must be supported to avoid the imposition of pipeline strains on the body which may impair its performance.
- Heavy valves may need independent support or anchorage.

MAINTENANCE:

The valve is designed for underground use with minimum maintenance and requires no lubrication.

In the event of a spares replacement becoming necessary, the recommended procedure is as follows:

*All of the following procedures must be carried out with due regard to relevant **Road Traffic Act** Guidelines, **Health and Safety** and **COSHH** directives.*

SAFETY PRECAUTIONS

- a) Procedures must NOT be carried out whilst the valve is installed in a live main under pressure.
- b) Ensure main will NOT be recharged before all work on the valve is completed.

Refer to General Arrangement Diagrams Attached

Page 7 Diagram for Series 41 without Lever & Weight DN 50 DN 200.

Page 8 Diagram for Series 41 with Lever & Weight DN 50 DN 200.

Page 9 Diagram for Series 41 with outside spring DN 50 DN 200.

Page 10 Diagram showing location of shaft into hinge.

Page 11 Diagram for Series 41 without Lever & weight DN 250 DN 300.

Page 12 Diagram for Series 41 with Lever & Weight DN 250 DN 300.

1. Replacement of Brass Sealing Bushes with 'O' Ring Seals. (Refer to Pages 7, 8, 9, 11 & 12)

This can only be carried out when there is no pressure in the pipeline.

If fitted, remove guard.

- a. If fitted remove nut (21), washer (22) and lever (23) with weight (20) or spring (26).
NOTE: position of lever relative to body (12) for re-assembly.
- b. Unscrew either bushing (15) or (24) and replace with new bushing complete with 'O' ring seals.
- c. Repeat step b) with opposite side bushing.
- d. Where necessary, refit lever (23), weight (20), washer (22) and nut (21) or spring (26). Where necessary, replace guard.

2. Replacement of Complete Bonnet Assembly (Complete with Shaft, Hinge, Disc & Bushings). (Refer to Pages 7, 8, 9, 11 & 12)

This can only be carried out when there is no pressure in the pipeline.

If fitted remove guard.

- a. If fitted, detach spring (26) from lever (23) or eyebolt (27). Ref. Page 9.
- b. Remove bonnet (10) by removing hexagon screws (5) and washers (4) and lift completed assembly from body (12). (NOTE: Screws are different lengths.)

NOTE: If bushings only are to be replaced, follow steps 1a, 1b, 1c & 1d.

Check free movement of hinge prior to re-assembling of body.

- c. Ensure that seat area in body is clean.
- d. Fit hexagon screws (5) and washers (note different lengths) (4) through bonnet (10) and fit bonnet gasket (11) over screws (5).
Fit bonnet (10) into body (12) with disc (6) facing correct way.
- e. Tighten bonnet screws (5) in a diagonal sequence using torque wrench set at 25Nm to 30Nm. Reset the torque wrench at 40Nm to 50Nm and re-tighten the screws following a circumferential sequence.
- f. Where necessary, refit outside spring (26).
- g. Slowly re-charge the main and check integrity of seals.
- h. Where necessary, re-fit guard.

3. Adding Lever & Counterweight to Series 41 Non Lever & Weight Valves (DN 50 up to DN 200)

Safety Precaution : This can only be carried out, when there is no pressure in the pipeline.

Replacement of the parts:

If fitted remove guard.

Refer to General Arrangement diagrams attached. (Pages 7 & 8)

- a. Dismantle the bonnet (10) by removing the hexagon screws and washers (4) and (5) and lifting the bonnet assembly away from the body (12). (NOTE: Screws are different lengths.)
- b. Remove the two closed bushings (15) from the bonnet (10), and the shaft (13).
- c. Refer to diagram on Page 10. Insert the new longer shaft (13) into the hinge and enter the assembly into one side of the bonnet (10), taking note of which side the lever and weight is required to be positioned.
- e. Lubricate the internal rubber seals on a CLOSED end bushing (15) and an OPEN end bushing (24) using a Water Regulations approved grease such as Rocol Aqua-Sil silicone grease.
- f. Mount the CLOSED end bushing (15) over the stub end of the shaft (13) using a twisting action to avoid damaging the seals and screw into the bonnet (10).

Mount the OPEN end bushing (24) over the exposed end of the shaft (13) using a twisting action to avoid damaging the seals and screw into the bonnet.

Check for free movement of the hinge / disc assembly.

- g. Fit hexagon screws (5) and washers (4) through bonnet (note different lengths) (10) and fit bonnet gasket (11) over screws (5).
Fit bonnet (10) into body (12) with disc (6) facing correct way.
- h. Tighten bonnet screws (5) in a diagonal sequence using torque wrench set at 25Nm to 30Nm. Reset the torque wrench at 40Nm to 50Nm and re-tighten the screw following a circumferential sequence.
- i. Attach the lever (23) on the shaft (13) in correct alignment for movement of disc and clearance of guard.
- j. Secure the lever with the nut (21) and washer (22).
- k. Mount the counterweight (20) on the lever (23). Lock its position with the set screw (19) noting clearance of guard.
- l. Re-connect the flow and slowly fill the valve to check integrity of seals etc.
- m. Where necessary, refit guard.

4. Adding Lever & Counterweight to Series 41 Non Lever & Weight Valves (DN 250 up to DN 300)

Safety Precaution : This can only be carried out, when there is no pressure in the pipeline.

Replacement of the parts:

If fitted remove guard.

Refer to General Arrangement diagrams attached. (Pages 11 & 12)

- a. Dismantle the bonnet (10) by removing the hexagon screws and washers (4) and (5) and lifting the bonnet assembly away from the body (12). (NOTE: Screws are different lengths.)
- b. Remove the two closed bushings (15) from the bonnet (10), then the hinge (7) with the disc (6) and the shaft (13), spacers (41) and retaining washers.
- c. Insert the new longer shaft (13) complete with keys (46) into one side of the bonnet (10) taking note of which side the lever and weight is required to be positioned.
- d. Mount a spacer (41) and retaining washer then the hinge (7) with disc (6) on the shaft (13). Add the second retaining washer and spacer (41) whilst feeding the shaft through and locate the key drive into the keyways in the hinge (7).
- e. Lubricate the internal rubber seals on a CLOSED end bushing (15) and an OPEN end bushing (24) using a Water Regulations approved grease such as Rocol Aqua-Sil silicone grease.
- f. Mount the new CLOSED end bushing (15) over the stub end of the shaft (13) by using a twisting action to avoid damaging the seals and screw into the bonnet (10).

Mount the OPEN end bushing (24) over the exposed end of the shaft (13) using a twisting action to avoid damaging the seals and screw into the bonnet.

Check for free movement of the hinge / disc assembly.

- g. Fit hexagon screws (5) (note different lengths) and washers (4) through the bonnet (10) and fit bonnet gasket (11) over screws (5). Fit bonnet (10) into body (12) with disc (6) facing correct way.
- h. Tighten bonnet screws (5) in a diagonal sequence using a torque wrench set at 25Nm to 30Nm. Reset the torque wrench at 40Nm to 50Nm and re-tighten the screws following a circumferential sequence.
- i. Attach the lever (23) on the shaft (13) in correct alignment for movement of disc and clearance of guard.
- j. Secure the lever with the nut (21) and washer (22).
- k. Mount the counterweight (20) on the lever (23). Lock into position with the set screws (19) noting clearance of guard.
- l. Remove hexagon screw (44) to allow air to be vented. Refit when valve is full of water. Re-connect the flow and slowly fill the valve to check integrity of seals etc.
- m. Where necessary, refit guard.

NOTE: A reducer (39) is fitted to restrict the opening of the disc if required. Adjustment can be made by releasing the seal nut (38) and turning the open reducer (39) as required. Re-tighten the seal nut (38).

5. Adding outside spring to Series 41 Non Lever & Spring Valves (DN 50 up to DN 200)

Safety Precaution : This can only be carried out, when there is no pressure in the pipeline.

Replacement of the parts:

If fitted, remove guard.

Refer to General Arrangement diagrams attached. (Pages 9 & 10)

- a. Dismantle the Bonnet (10) by removing the hexagon screws and washers (4) and (5) and lifting bonnet assembly away from the body (12). (NOTE: Screws are different lengths.)
- b. Remove the two closed bushings (15) from the bonnet (10), then the hinge (7) with the disc (6) and the shaft (13).
- c. Refer to diagram on page 10. Insert the new longer shaft (13) into one side of the bonnet (10) taking note of which side the lever and weight is required to be positioned.
Fit the new longer shaft (13) into the hinge (7) and disc (6) assembly; ensure that the drive lugs are fully engaged.
- d. Lubricate the internal rubber seals on a CLOSED end bushing (15) and an OPEN end bushing (24) using a Water Regulations approved grease such as Rocol Aqua-Sil silicone grease.
- e. Mount the new CLOSED end bushing (15) over the stub end of the shaft (13) using a twisting action to avoid damaging the seals and screws into the bonnet (10).

Mount the OPEN end bushing (24) over the exposed end of the shaft (13) using a twisting action to avoid damaging the seals and screws into the bonnet (10).

Check for free movement of the hinge / disc assembly.

- f. Fit hexagon screws (5) and washers (4) through bonnet (10) and fit bonnet gasket (11) over screws (5). Fit bonnet (10) into body (12) with disc (6) facing correct way.
- g. Tighten bonnet screws (5) in a diagonal sequence using a torque wrench set at 25Nm to 30Nm. Reset the torque wrench at 40Nm to 50Nm and re-tighten the screws following a circumferential sequence.
- h. Attach the lever (23) on the shaft (13) in correct alignment for movement of disc and clearance of guard.
- i. Secure the lever with the nut (21) and washer (22).
- j. Mount the springplate bracket (30) onto the relevant flange mounting bolts.
- k. Assemble the spring (26) to the lever (23) and eyebolt (27). Adjust the eyebolt (27) if necessary, to ensure disc (6) is able to fully open and close.
- l. Re-connect the flow to check integrity of seals etc.
- m. Where necessary, refit guard.

6. Adding Lever & Counterweight to Series 41 Free End Shaft Valves (DN 50 up to DN 300).

Safety Precaution : This can only be carried out, when there is no pressure in the pipeline.

Fitting of the parts:

If fitted, remove guard.

Refer to General Arrangement diagrams attached. (Pages 8 & 12)

- a. Remove plastic protective cover from free end of shaft (13).
- b. Attached the lever (23) to the shaft (13) and secure with washer (22) and nut (21).

NOTE: The lever (23) must be aligned on the hexagon flats on the shaft (13) to ensure correct closure of the disc (6) and clearance to a guard, if fitted. The alignment is also important with respect to the installation position of the valve, either vertical or horizontal.

- c. Mount the counterweight (20) onto the lever (23) and lock its position with the set screw (19) noting clearance of any alignment guard. (DN 250 & DN 300 may have more than one counterweight fitted.)
- d. Re-connect the flow and slowly fill the valve to check for correct operation.
- e. Where necessary, refit guard.

7. Adding Outside Spring to Series 41 Free End Shaft Valves (DN 50 up to DN 200)

Safety Precaution : This can only be carried out, when there is no pressure in the pipeline.

Fitting of the parts:

If fitted, remove guard.

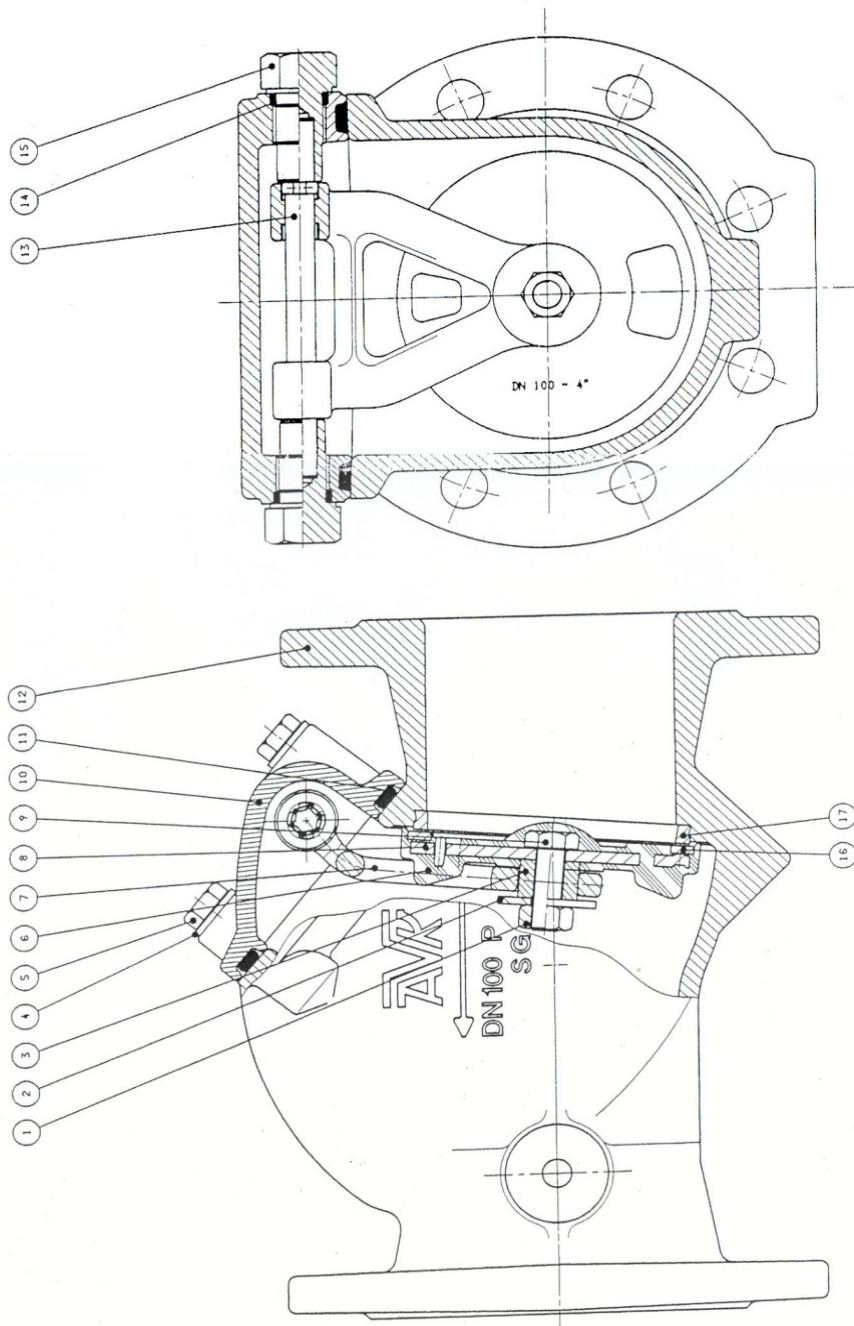
Refer to General Arrangement diagrams attached. (Page 9)

- a. Remove plastic protective cover from free end of shaft (13).
- b. Attach the lever (23) to the shaft (13) and secure with washer (22) and nut (21).

NOTE: The lever (23) must be aligned on the hexagon flats on the shaft (13) to ensure correct closure of the disc (6) and clearance onto a guard, if fitted.

- c. Mount the springplate bracket (30) onto the relevant flange mounting bolts.
- d. Assemble the spring (26) to the lever (23), eyebolt (27) and nuts (28). Adjust the eyebolt (27) if necessary, to ensure disc (6) is able to fully open and close.
- e. Re-connect the flow to check integrity of seals etc.
- f. Where necessary, refit guard.

Operation and maintenance instruction diagram for Series 41 without counterweight:



| | | |
|-----|---------------------|----------------------------------|
| 17 | Body Seat Ring | Gun Metal, BS 1400 LG 2 |
| 16 | Seat Ring | Gun Metal, BS 1400 LG 2 |
| 15 | Bushing | High Tensile Alloy C432, BS 287A |
| 14 | O-ring | Nitrile Rubber |
| 13 | Shaft | Stainless Steel |
| 12 | Valve Body | Ductile Iron |
| 11 | Bonnet Gasket | Nitrile Rubber |
| 10 | Bonnet | Ductile Iron |
| 9 | Hexagon Screws | Stainless Steel |
| 8 | Disc Insert | Carbon Steel |
| 7 | Hinge | Ductile Iron |
| 6 | Disc Rubber Coating | Rubber compound, EPDM |
| 5 | Hexagon Screws | Stainless Steel |
| 4 | Washer | Stainless Steel |
| 3 | Bushing | Polyamide 6.6 |
| 2 | Washer | Stainless Steel |
| 1 | Nut | Stainless Steel |
| Pos | Valve detail | Material |

OM. 41 GENERAL ARRANGEMENT
SWING CHECK VALVE SERIES 41
DN 50 - 200

AVR

Size :
41-XXX-55-Rubber-GS

Rev. no. :
AC

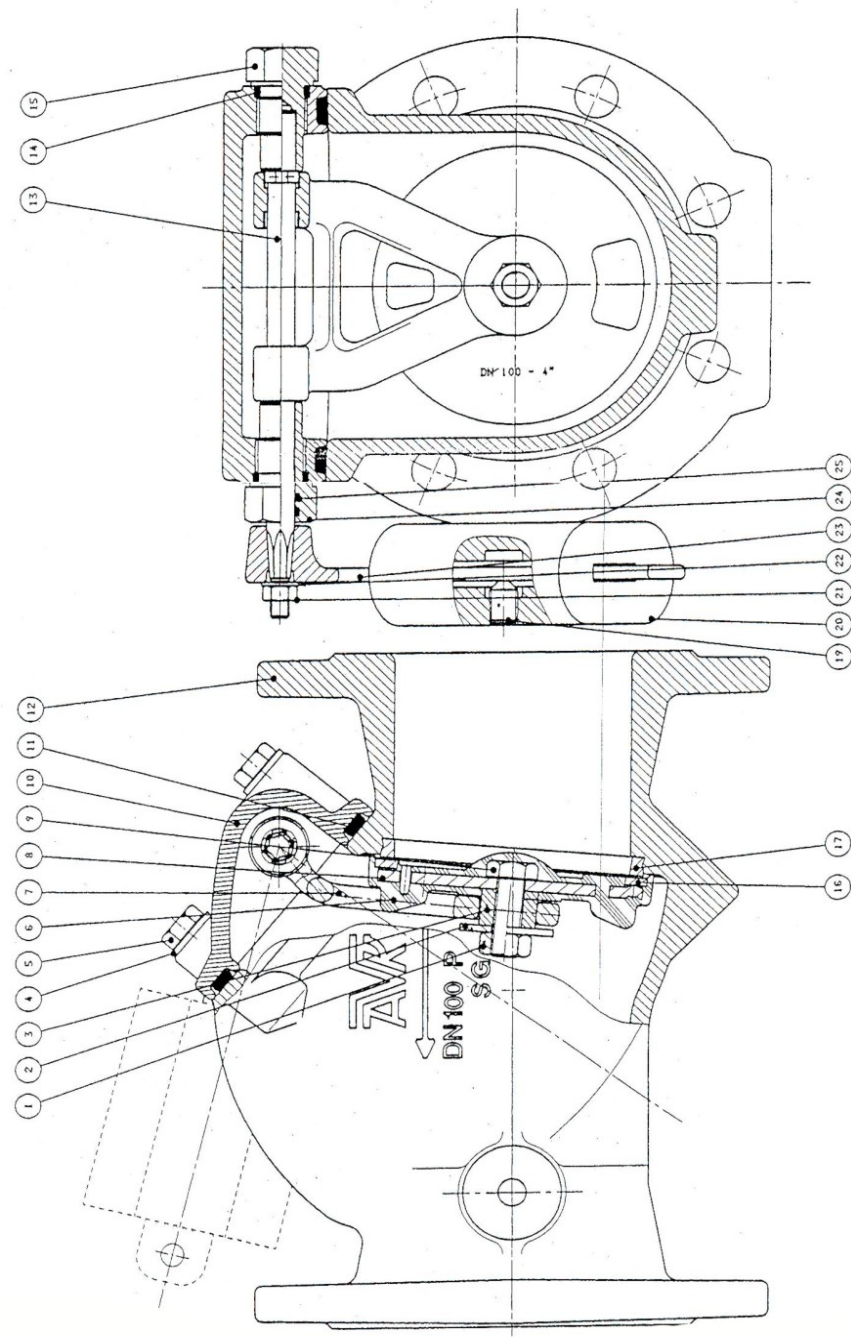
Drawn :
FK

Date :
00-06-20

Revised for :

SEPT. 2004

Operation and maintenance instruction diagram for Series 41 with counterweight:

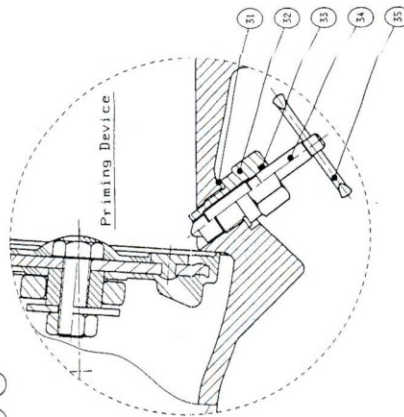
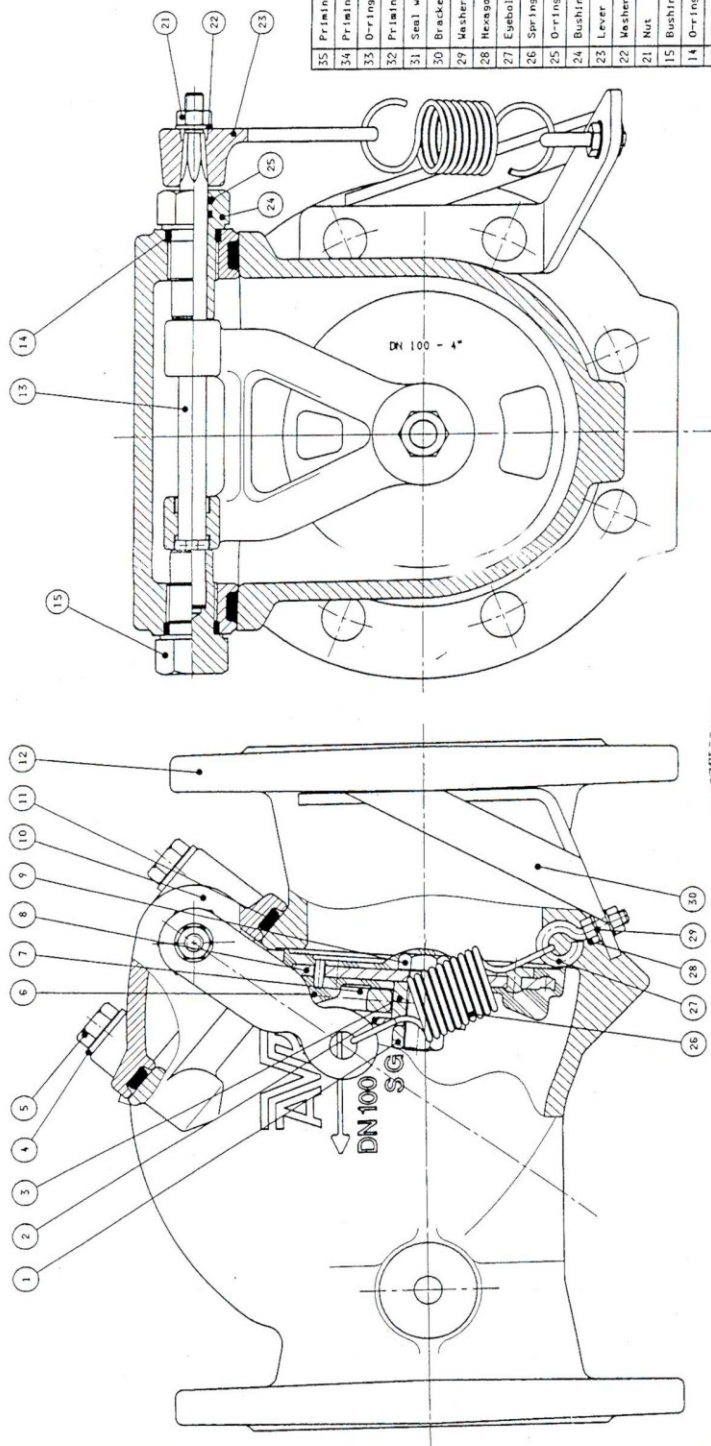


| Pos | Valve detail | Material |
|-----|---------------------|-----------------------------------|
| 25 | O-ring | Nitrile Rubber |
| 24 | Bushing | High Tensile Alloy C2132, BS 2874 |
| 23 | Lever | Carbon Steel |
| 22 | Washer | Stainless Steel |
| 21 | Nut | Stainless Steel |
| 20 | Weight | Ductile Iron |
| 19 | Set Screw | Stainless Steel |
| 17 | Body Set Ring | Gun Metal, BS 1400 L6 2 |
| 16 | Seat Ring | Gun Metal, BS 1400 L6 2 |
| 15 | Bushing | High Tensile Alloy C2132, BS 2874 |
| 14 | O-ring | Nitrile Rubber |
| 13 | Shaft | Stainless Steel |
| 12 | Valve Body | Ductile Iron |
| 11 | Bonnet Gasket | Nitrile Rubber |
| 10 | Bonnet | Ductile Iron |
| 9 | Hexagon Screw | Stainless Steel |
| 8 | Disc Insert | Carbon Steel |
| 7 | Hinge | Ductile Iron |
| 6 | Disc Rubber Coating | Rubber compound, EPDM |
| 5 | Hexagon Screws | Stainless Steel |
| 4 | Washer | Stainless Steel |
| 3 | Bushing | Polymide 6.6 |
| 2 | Washer | Stainless Steel |
| 1 | Nut | Stainless Steel |

OM. 41 GENERAL ARRANGEMENT
SWING CHECK VALVE SERIES 41
DN 50 - 200

Drawing no.: 4100036-Aqua-GS
 Drawn: FX
 Date: 08-06-21
 Rev. no.: AC
 Project no.:

Operation and maintenance instruction diagram for Series 41 with Outside Spring:



| | | |
|------|---------------------|-----------------------------------|
| 35 | Priming tap handle | Stainless Steel |
| 34 | Priming tap spindle | Stainless Steel |
| 33 | O-ring | Nitrile Rubber |
| 32 | Priming tap body | High Tensile Alloy C4132, BS 287A |
| 31 | Seal washer | Fiber |
| 30 | Bracket | Cast Iron |
| 29 | Washer | Stainless Steel |
| 28 | Hexagon nut | Stainless Steel |
| 27 | Eyebolt | Stainless Steel |
| 26 | Spring | Stainless Steel |
| 25 | O-ring | Nitrile Rubber, ASTM D2000 |
| 24 | Bushing | High Tensile Alloy No. C35330 |
| 23 | Lever | Carbon Steel |
| 22 | Washer | Stainless Steel |
| 21 | Nut | Stainless Steel |
| 15 | Bushing | High Tensile Alloy No. C35330 |
| 14 | O-ring | Nitrile Rubber, ASTM D2000 |
| 13 | Shaft | Stainless Steel |
| 12 | Valve Body | Ductile Iron |
| 11 | Bonnet Gasket | Nitrile Rubber |
| 10 | Bonnet | Ductile Iron |
| 9 | Hexagon Screw | Stainless Steel |
| 8 | Disc Insert | Carbon Steel |
| 7 | Hinge | Ductile Iron |
| 6 | Disc Rubber Coating | Rubber compound, EPDM |
| 5 | Hexagon Screws | Stainless Steel |
| 4 | Washer | Stainless Steel |
| 3 | Bushing | Polyamide 6.6 |
| 2 | Washer | Stainless Steel |
| 1 | Nut | Stainless Steel |
| Part | Valve detail | Material |

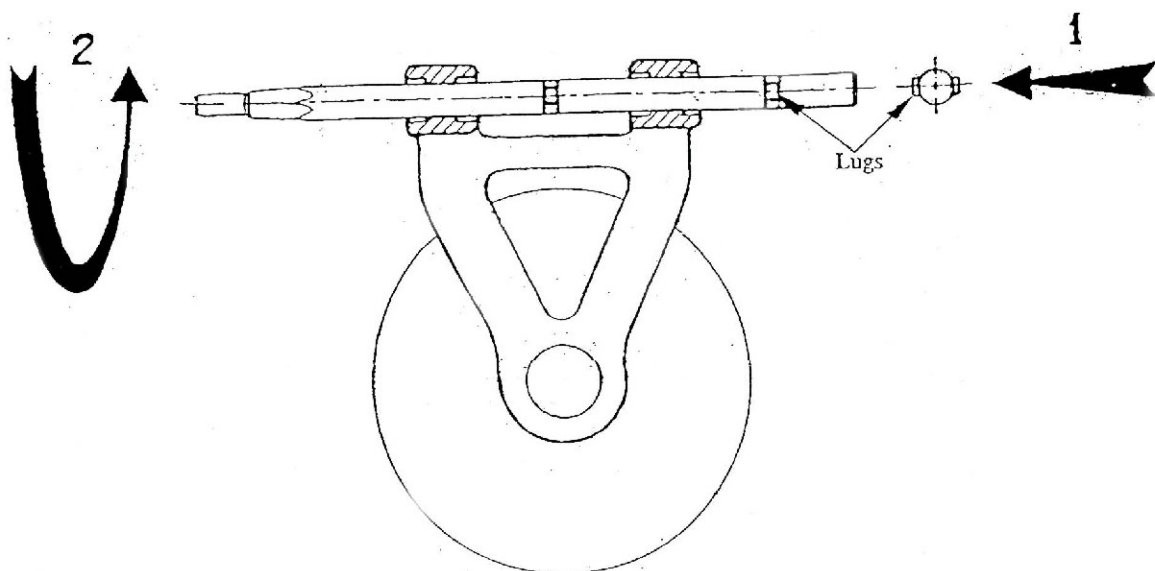
OM. 41 GENERAL ARRANGEMENT
SWING CHECK VALVE SERIES 41
DN 50 - 200



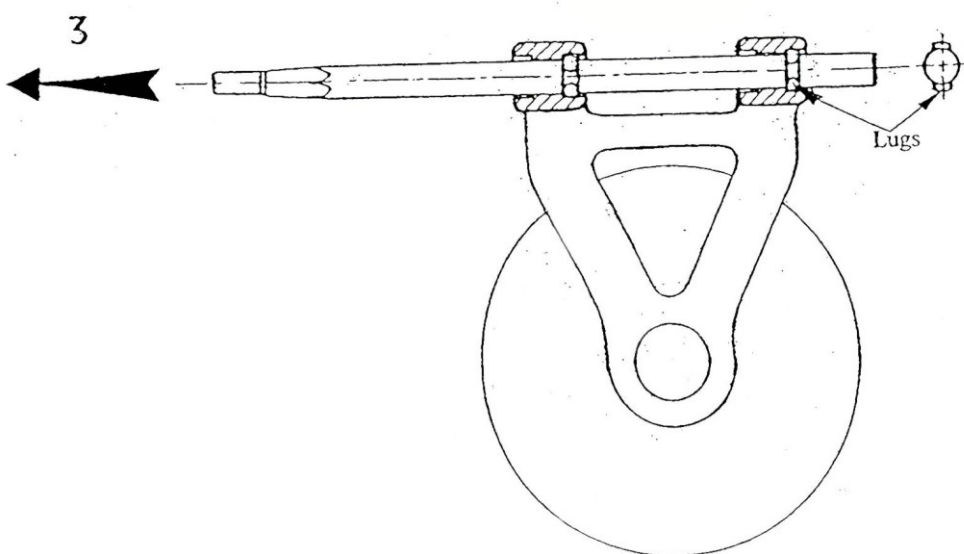
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Drawing no. : 41-XXX-68-Roua-Gas
Date : 00-06-21
Rev. no. : AC
Responsible for :

SEPT. 2004

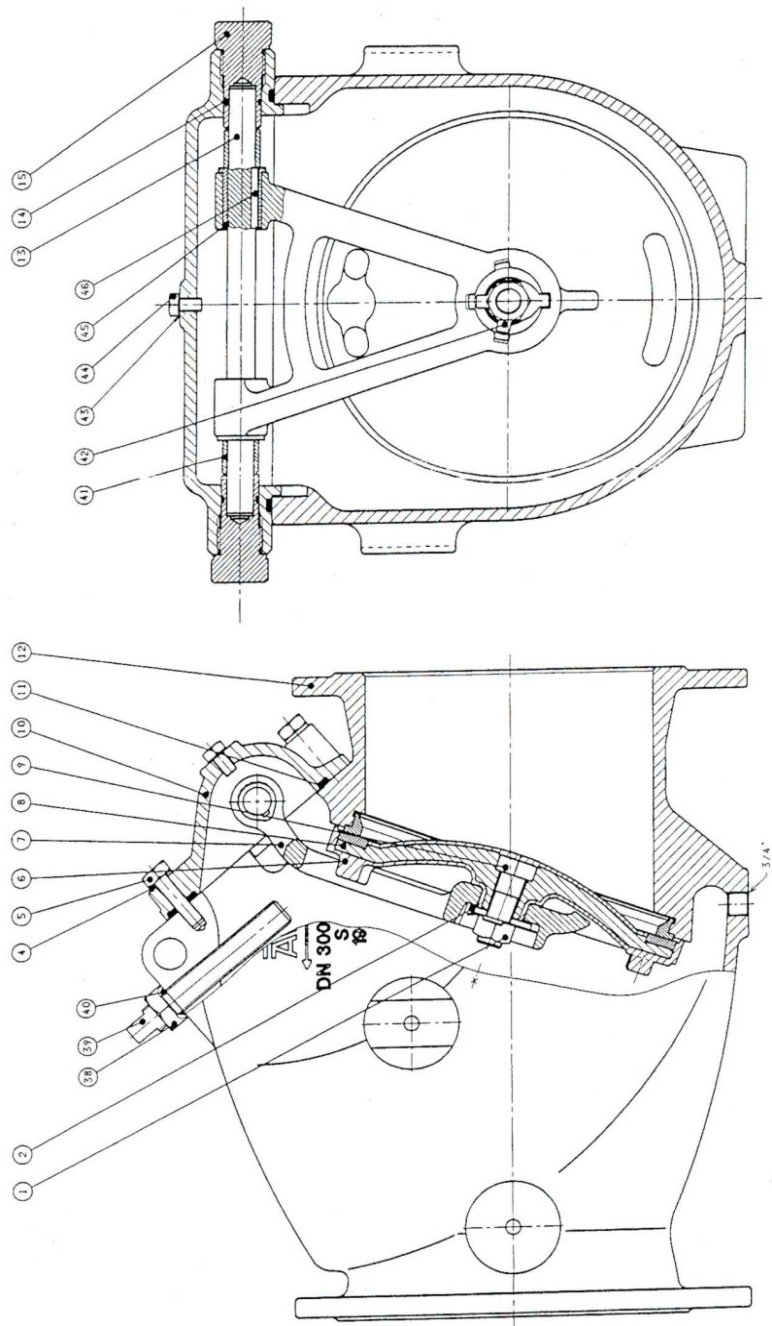
**Adding lever and counterweight to Series 41 Valves:
Reference Procedure 3 c :**



**Adding outside spring to Series 41 Valves:
Reference Procedure 5 c :**



Operation and maintenance instruction diagram for Series 41 without counterweight:



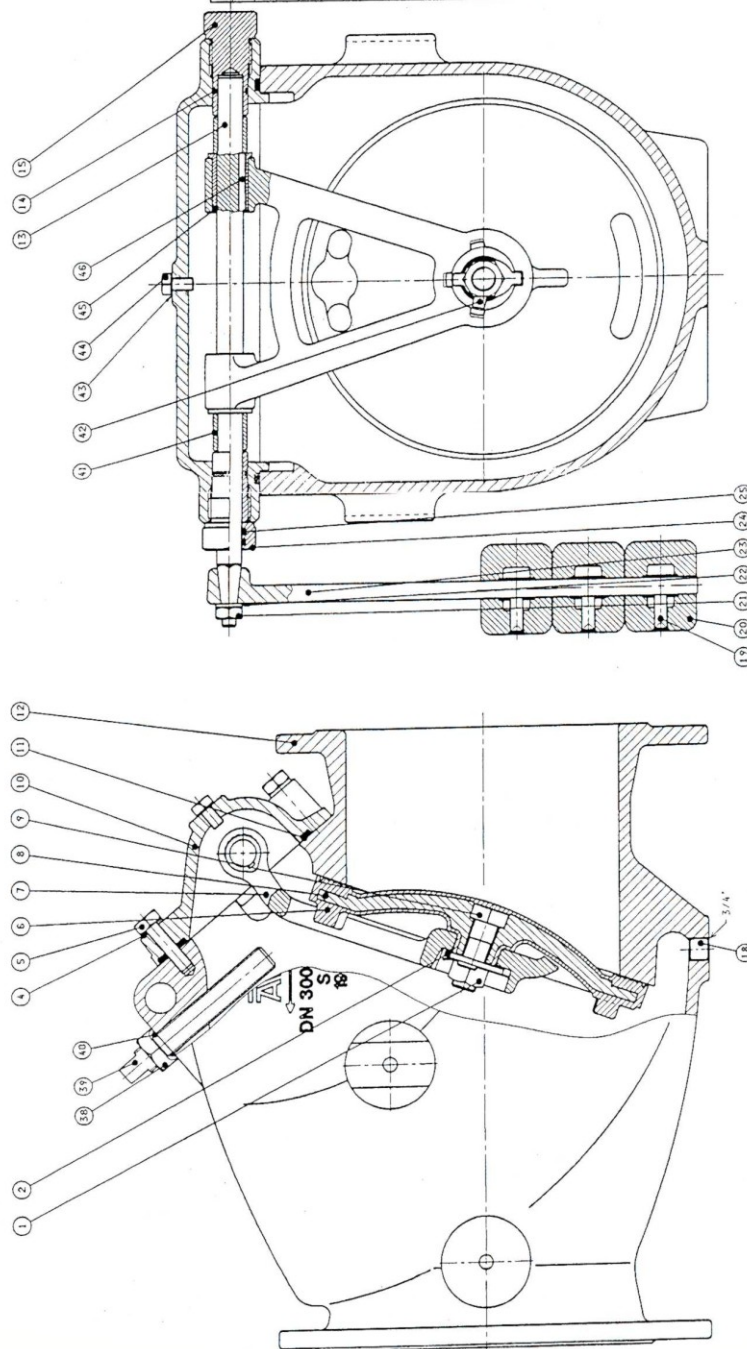
| | | |
|-----|---------------------|-----------------------------------|
| 46 | Key | Stainless Steel |
| 45 | Connector | Stainless Steel |
| 44 | Hexagon Screw | High Tensile Alloy C2132, BS 2874 |
| 43 | Seal Washer | Copper |
| 42 | Lockwasher | Stainless Steel |
| 41 | Spacer | Stainless Steel |
| 40 | O-ring | Nitrile Rubber |
| 39 | Open Reducer | Stainless Steel |
| 38 | Seal-Nut | Stainless Steel |
| 18 | Drain Plug | Stainless Steel |
| 17 | Body Seat Ring | Gun Metal, BS 1400 LG 2 |
| 16 | Seat Ring | Gun Metal, BS 1400 LG 2 |
| 15 | Bushing | High Tensile Alloy C2132, BS 2874 |
| 14 | O-ring | Nitrile Rubber |
| 13 | Shaft | Stainless Steel |
| 12 | Valve Body | Ductile Iron |
| 11 | Bonnet Gasket | Nitrile Rubber |
| 10 | Bonnet | Ductile Iron |
| 9 | Hexagon Screw | Stainless Steel |
| 8 | Disc Insert | Ductile Iron |
| 7 | Hinge | Ductile Iron |
| 6 | Disc Rubber Coating | Rubber compound EPDM |
| 5 | Hexagon Screw | Stainless Steel |
| 4 | Washer | Stainless Steel |
| 2 | Washer | Stainless Steel |
| 1 | Nut | Stainless Steel |
| Pos | Valve detail | Material |

OM. 41 GENERAL ARRANGEMENT
SWING CHECK VALVE SERIES 41
DN 250 - 300

AVR

Size :
Drawn : FK
Date : 00-06-23
Rev. :
Material :
Surface Fin :
Drawing no :
4150055-Rubber-Gas
Rev. no :
AC

SEPT.2004



| | | |
|---|---------------------|----------------------------------|
| 6 | Key | Stainless Steel |
| 5 | Connector | Stainless Steel |
| 4 | Hexagon Screw | High Tensile Alloy C132, BS 2874 |
| 3 | Seal Washer | Copper |
| 2 | Lockwasher | Stainless Steel |
| 1 | Spacer | Stainless Steel |
| 0 | O-ring | Nitrile Rubber |
| 9 | Open Reducer | Stainless Steel |
| 8 | Seal-Nut | Stainless Steel |
| 7 | O-ring | Nitrile Rubber |
| 6 | Bushing | High Tensile Alloy C132, BS 2874 |
| 5 | Lever | Ductile Iron |
| 4 | Washer | Stainless Steel |
| 3 | Nut | Stainless Steel |
| 2 | Weight | Ductile Iron |
| 1 | Set Screw | Stainless Steel |
| 0 | Drain Plug | Stainless Steel |
| 9 | Bushing | High Tensile Alloy C132, BS 2874 |
| 8 | O-ring | Nitrile Rubber |
| 7 | Shaft | Stainless Steel |
| 6 | Valve Body | Ductile Iron |
| 5 | Bonnet Gasket | Nitrile Rubber |
| 4 | Bonnet | Ductile Iron |
| 3 | Hexagon Screw | Stainless Steel |
| 2 | Disc Insert | Ductile Iron |
| 1 | Hinge | Ductile Iron |
| 0 | Disc Rubber Coating | Rubber Compound, EPDM |
| 9 | Hexagon Screw | Stainless Steel |
| 8 | Washer | Stainless Steel |
| 7 | Nut | Stainless Steel |

OM. 41 GENERAL ARRANGEMENT
SWING CHECK VALVE SERIES 41

DN 250 - 300



Drawing no. : Rev. no. :
4130066-Aqua-Gas : AC

SEPT. 2004