

ASSEMBLY PROCEDURES - 100mm Butterfly Valve

Tooling required

Rubber mallet
EP2 grease
Loctite Blue
Thread tape
Bench vice with aluminium jaws
Internal circlip pliers
Ring spanner 10mm
Swivel socket spanner 10mm
Allen key no 2
Allen key no 4
Allen key no 8

Assembly Jigs required

Combined Butterfly valve spanner/disc spanner
Combined Butterfly valve o-ring/bush tool
Butterfly valve circlip tool
Butterfly valve polypropylene sealing disc jig

Testing Jigs required

Main body TEST FL 150 jig (seat tightness 500kPa & 27kPa)

ASSEMBLY PROCEDURE

Sealing disc and ring assembly

- 1 Insert and tighten the studs (#15) into the sealing disc (#11) using ring spanner 10
- 2 Fit the sealing disc into vice bench by the studs
- 3 Fit BS343 o-ring (#12) to the sealing disc
- 4 Screw on sealing disc ring (#13) and tighten with butterfly valve spanner
- 5 Insert 2 x grub screws (#14) and tighten with allen key no 2
- 6 Remove the sealing disc assembly from the bench vice

Fitment of top shaft assembly into main body

- 7 Insert and secure the butterfly valve main body (#1) into the bench vice
- 8 Use the "bush" end of the "o-ring/bush" tool to insert the top shaft PTFE spacer (#2) into the main body
- 9 Use the "o-ring" side of the same tool to insert and correctly fit o-rings #3 first then o-ring #4
- 10 Insert PTFE bush (#5) and use the "o-ring circlip tool" to ensure all seals are inserted all the way down
- 11 Insert the top shaft (#6)
- 12 Using the internal circlip pliers, insert the circlip (#7) into the groove - IMPORTANT that the circlips is inserted correctly against the inside diameter of the groove. Use the circlip tool to ensure the circlip is lying flat on top of the top shaft (NOTE: never re-use circlips)

Fitment of bottom shaft assembly into main body

- 13 Turn the main body around so that the base of the body is facing upwards
- 14 Insert the bottom shaft PTFE bush (#8) into the main body from the outer side
- 15 Insert the bottom shaft from into the main body from the inner side
- 16 Thread the thread tape around the large grub screw (#10), insert into main body and tighten with torque wrench (set at 50Nm)

- 17 Place the Polypropylene jig on clean, flat surface. Place the sealing disc assembly (studs facing upwards) on top of the jig
- 18 Place the main body (with "outflow arrow" facing downwards) over the sealing disc assembly with the top and bottom shafts fitting in between the top and bottom shaft plates (#16) to ensure correct alignment
- 19 Place the 4 x spring washers (17) and 4 x nuts (#18) onto the studs and screw on loosely (enough to keep the sealing disc assembly in place)

Main body and sealing disc assembly and alignment

- 20 Fit the main body assembly into the bench vice
- 21 Assemble handle locator (#19), handle centre (#20), handle shaft (#22) with the handle spring (#26)
- 22 Fit the handle to the top shaft
- 23 Turn the sealing disc 180 degrees and back into position 2 - 3 times to ensure the moving parts are in alignment with the top and bottom shafts
- 23 Return the sealing disc assembly into the closed position
Fully tighten the nuts (#18)
- 24 Remove the handle (for testing purposes)

AFTER TESTING - Fitment of handle assembly to main body

- 25 Use Loctite to fit and secure handle washer (#24) and allen cap screw (#25) into the handle locator
- 26 Use Loctite to fit and secure the handle knob (#23) to the threaded end of the handle shaft

<u>TESTING PROCEDURES - 100mm Butterfly Valve</u>
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- 1 Fit the butterfly valve with the "outflow" arrow/sealing disc with the shaft plates facing outwards onto the "TEST FL 150" jig with washers and nuts - ensure nuts are fully and securely fastened to the jig
- 2 Test the seat tightness at 27kPa for 5 minutes
- 3 Check for leaks:
 - a - top shaft
 - b - bottom shaft
 - c - sealing disc/main body sealing area
- 4 Turn the butterfly valve around and fit and secure to the jig
Test the seat tightness at 500kPa for 5 minutes
Check for leaks:
 - a - top shaft
 - b - bottom shaft
 - c - sealing disc/main body sealing area

As per EN12266-1:2012 and EN1266-2:2012 testing regulations Table A.5 and Annex B.1 acceptance criteria:

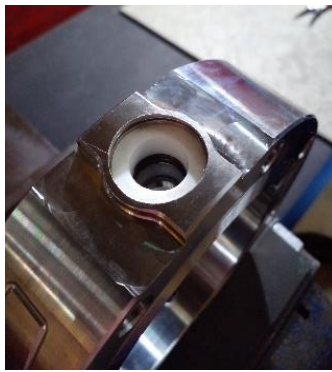
"A"	No visually detectable leaks for the duration of the test
"B1.3"	Move obturator between open and closed positions



1 Tighten studs



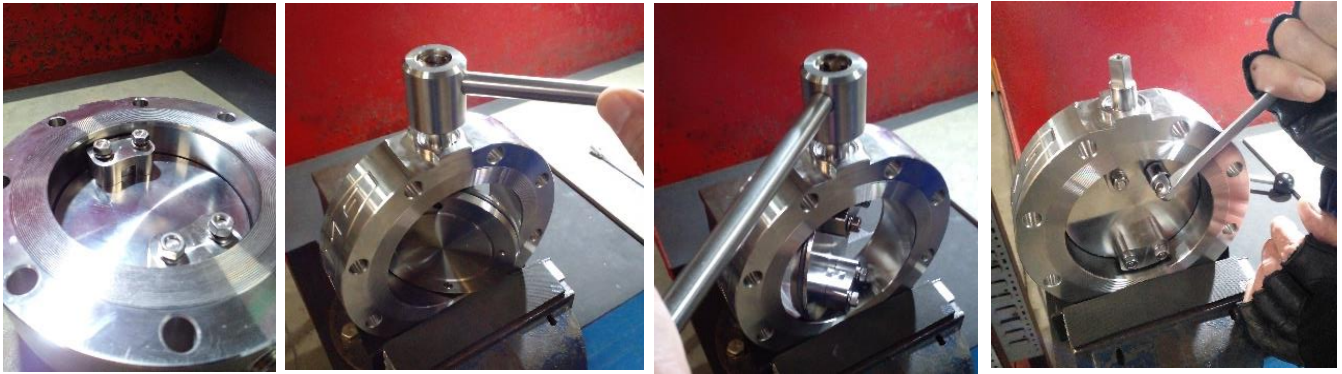
2 - 6 Sealing Disc Assembly



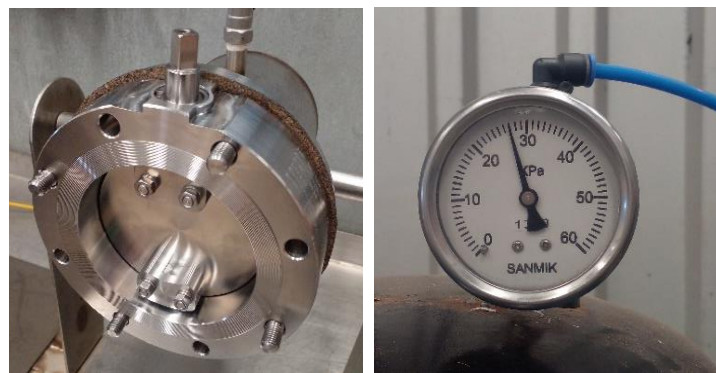
7 - 12 Fitment of Top Shaft & Circlip



13 - 16 Fitment of Bottom Shaft & Grub screw



17 - 23 Main Body and Sealing Disc Assembly & Alignment



Test 1: Seat Tightness @ 27kPa for 5 minutes



Test 2: Seat Tightness @ 500kPa for 5 minutes



25 - 26 Fitment of Handle Assembly