



STANDARD SPECIFICATION

DWS 2510 SUPPLY OF VALVES

PARTICULAR VALVE SPECIFICATION

BUTTERFLY VALVES

TO BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATION
AND
SECTION DWS 2510/01 – GENERAL TECHNICAL SPECIFICATION



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1. GENERAL

1.1 TYPE

Butterfly valves shall be doubled flanged, full-bore types unless otherwise specified in the Project Specification. Wafer and lug type butterfly valves not exceeding \varnothing 300 mm will be considered for temporary and/or low cost application.

1.2 SPECIFICATIONS

Butterfly valves shall be generally in accordance with BS 5155.

1.3 FLOWRATES

The maximum flow rate in the valves shall not exceed 7 m/s unless otherwise specified. The maximum permissible flow rates through the valves at the respective maximum differential pressure across the valve shall be quoted. No cavitation in the fully open position shall be accepted and the tenderer must state the head loss for the specified flow rates in his covering letter.

1.4 OPERATION

The valves shall be capable of closing under the maximum head and maximum specified flow rate. The valves shall be capable of operating in any position without variation of the disc position or flutter.

There shall be no interference in the water flow pattern through a valve, i.e. the disc stop mechanism shall not impede the flow pattern.

Discs shall close with a positive action with no possibility of slamming shut during any stage of the closing operation. All valves shall be installed in a position that allows the valve to operate along the horizontal axis. The lower portion of the disc shall open towards the downstream side of the valve.

1.5 SEATS AND SEALS

The valves shall be of the "tight shut off type" and the water seals shall be of the resilient seal type.

2. CONSTRUCTION AND OPERATIONAL REQUIREMENTS

2.1 BODIES

Hubs for shaft-bearing housings shall form an integral part of the valve body.

Valves bodies shall have adjustable mechanical stops to prevent over travel of the valve disc in the open or closed position. These stops may be incorporated in an actuator.

2.2 DISCS

Discs shall be a single casting of approved hydrofoil section with a smooth continuous surface. The maximum combined stresses in the disc shall not exceed 20% of the minimum



yield stress of the material used when the specified unbalanced pressure is applied on any of the two sides.

2.3 RETAINING RINGS

Stainless steel retaining rings shall be coated to reduce galvanic corrosion (Refer to Standard Specification DWS 9900 Section C3). Any recess for the retaining ring in the disc or body shall be coated and the retaining rings assembled whilst the coating is still wet.

2.4 SEATS AND SEALS

Preference shall be given to resilient seal arrangements that are removable, replaceable and adjustable from the down stream side of the valve, without having to remove the valve from the pipeline.

Resilient seals shall have non-weathering, non-sticking, long life properties and shall be compatible with the quality of water to be conveyed.

The seat profile shall be smooth and continuous and shall provide adequate "lead in" for the resilient seal to open and to close on the stainless steel seat only.

Seats and seals shall be of a design that would prevent them from becoming loose and obviate water seepage under the seals or seats during all conditions of operation and test.

2.5 SHAFTS

Shafts can either be continuous or a stub-shaft design configuration. Stub shafts shall extend into the disc hub for a distance of at least 1.5 shaft diameters and shall not protrude from the hubs i.e. exposing the shaft.

Shafts shall be attached to discs by means of keys, dowel pins, taper pins or any combination of the three and the connection shall be designed to transmit shaft torque equivalent to at least 75% of the torsional strength of the shaft. Dowel and taper pins shall be mechanically secured.

2.6 BEARINGS

Self-lubricating sleeve type bearings shall be fitted in the hubs in the valve body.

Each valve shall be fitted with at least one adjustable thrust bearing set to hold the disc securely concentric with the body or seat.

3. VALVE MATERIAL SPECIFICATION

Valve components shall be constructed of the material specified in the following tables unless otherwise specified in the Project Specification.

**3.1 BUTTERFLY VALVE (DN 200-3000)**

SIZE DN	PRESSURE RATING kPa	HYDRAULIC TEST PRESSURE IN kPa	
200 – 3000	1000	STRUCTURAL 1500	SEAT 1000
200 – 1800	1600 - 2500	2400 – 3750	1600 - 2500
200 – 1200	4000	6000	4000
COMPONENT	MATERIAL TYPE	MATERIAL SPECIFICATION	
BODY	SG IRON CAST STEEL	BS 2789 Gr 420/ SABS 936 SG 42 BS 1504-161 Gr 480/ SABS 1465 Part 1	
BODY SEAT RING	STAINLESS STEEL	BS 970 Part 4, Gr 304 S15	
VALVE DISC	SG IRON CAST STEEL	BS 2789 Gr 420/ SABS 936 SG 42 BS 1504-161 Gr 480/ SABS 1465 Part 1	
DISC / BODY SEAL	ELASTOMER / RUBBER	EPDM 75 ⁰ A / NITRILE	
SEAL RETAINING RING	STAINLESS STEEL	BS 970 Part 4, Gr 304 S15	
VALVE SHAFT	STAINLESS STEEL	BS 970 Part 4, Gr 304 S15	
SHAFT BEARINGS/BUSHES	PHOSPHOR BRONZE	BS 1400 PB1C (Cu, Sn10, P)	
SHAFT SEALS	RADIAL LIP TYPE / CUP SEAL	NITRILE / VITON	
EXTERNAL FASTENERS	STEEL (HOT DIP GALVANISED)	SABS 163 Gr 8.8	
INTERNAL FASTENERS	STAINLESS STEEL	ASTM A193 Gr B8M, ASTM A439 Gr D2	
OPERATION ARRANGEMENT : (✓) GEARBOX		SEE AUXILIARY DRIVE SPECIFICATION	
ELECTRIC ACTUATOR		SEE AUXILIARY DRIVE SPECIFICATION	
HYDRAULIC ACTUATOR		SEE AUXILIARY DRIVE SPECIFICATION	

**3.2 WAFER AND LUG TYPE (DN 50-300)**

SIZE DN	PRESSURE RATING kPa	HYDRAULIC TEST PRESSURE IN kPa	
50 - 300	1000 – 1600	STRUCTURAL 1500 – 2400	SEAT 1000 - 1600
COMPONENT	MATERIAL TYPE	MATERIAL SPECIFICATION	
BODY	SG IRON CAST STEEL	BS 2789 Gr 420/ SABS 936 SG 42 BS 1504-161 Gr 480/ SABS 1465 Part 1	
BODY SEAT RING	STAINLESS STEEL	BS 970 Part 4, Gr 304 S15	
VALVE DISC	SG IRON CAST STEEL	BS 2789 Gr 420/ SABS 936 SG 42 BS 1504-161 Gr 480/ SABS 1465 Part 1	
DISC / BODY SEAL	ELASTOMER / RUBBER	EPDM 75 ⁰ A / NITRILE	
SEAL RETAINING RING	STAINLESS STEEL	BS 970 Part 4, Gr 304 S15	
VALVE SHAFT	STAINLESS STEEL	BS 970 Part 4, Gr 304 S15	
SHAFT BEARINGS/BUSHES	PHOSPHOR BRONZE	BS 1400 PB1C (Cu, Sn10, P)	
SHAFT SEALS	RADIAL LIP TYPE / CUP SEAL	NITRILE / VITON	
EXTERNAL FASTENERS	STEEL (HOT DIP GALVANISED)	SABS 163 Gr 8.8	
INTERNAL FASTENERS	STAINLESS STEEL	ASTM A193 Gr B8M, ASTM A439 Gr D2	
OPERATION ARRANGEMENT		SEE AUXILIARY DRIVE SPECIFICATION	