



Ranhill SAJ

SPECIFICATION FOR BUTTERFLY VALVE

SPECIFICATION SAJ VL / BV / 001

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QUALITY ASSURANCE DEPARTMENT
RANHILL SAJ SDN. BHD.

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SPECIFICATION FOR BUTTERFLY VALVE

1. GENERAL

- a) Features required are as follows or otherwise the Spesifikasi JKR 2020-0050-99 and relevant specifications in Appendix B of the specification shall be used.

2. TYPE OF BUTTERFLY VALVE

- a) Double Flange - for connection to pipe flanges by individual bolting.
- b) Semi-Lug - allow downstream dismantling under full pressure rating.
- c) Wafer - for clamping between pipe flanges using through bolting.

3. FEATURES REQUIRED

- a) The nominal pressure (PN) and Flange Dimensions shall be as in table below:-

Nominal / Class Pressure Designations	Pressure Rating
PN 16, PN 25, PN 40	BS 4504: Part 1 & 2

Table 1 – Nominal Pressure and Pressure Rating.

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- b) The nominal size (DN) for PN designated valve and nominal pipe size for Class designated valve shall be as in Table 2 - DN sizes for PN designated valves and nominal pipe sizes for Class designated valve.

DN (mm)	Nominal Pipe Sizes (in)
40	1.5
50	2
65	2.5
80	3
100	4
125	5
150	6
200	8
250	10
300	12
350	14
400	16
450	18
500	20
600	24
700	28
800	36
1000	40
1200	48
1400	56
1600	64
1800	72
2000	80

Table 2- DN sizes for PN designated valves and nominal pipe sizes for Class designated valve

- c) Butterfly Valve Flange Dimensions shall be as specified dimension.

Nominal / Class pressure designations	Flange Dimensions
PN 16, PN 25, PN 40	BS 4504: Part 1 & 2

Flange Dimensions

- d) Tolerances on face-to-face dimension shall be in accordance with Table 3 – Tolerances on Face-to-face Dimensions.

Face-to-face dimensions	
mm	mm
Up to and including 250	± 2
Above 250 up to and including 500	± 3
Above 500 up to and including 800	± 4
Above 800 up to and including 1000	± 5
Above 1000 up to and including 1600	± 6
Above 1600 up to and including 2250	± 8

Table 3 – Tolerances on Face-to-face dimensions

- e) Valve body of ductile iron shall be coated using Fusion-Bonded Epoxy Powder from 250 µm to 350 µm in accordance to BS 6920.
- f) The dimension of the actuator attachment flange shall comply with the requirements of BS 5840: Part 1.
- g) Valve shall be provided with an indicator to show the position of the disk
- h) The face-to-face dimensions shall be in accordance with Table 4 – Face-to-face Dimensions

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Table 4 – Face-to-face Dimensions

1	2	3	4	5	6	7
Nominal Size	Double Flanged short	Double Flanged long	Wafer short	Wafer medium	Wafer long	Wafer
	Face-to-face dimensions for nominal pressure not exceeding		Face-to-face dimensions for nominal pressure not exceeding			
	PN 25 Class 150	PN 40 Class 300	PN 25 Class 150	PN 25 Class 150	PN 25 Class 150	PN 40 Class 300
DN	mm	mm	mm	mm	mm	mm
40	106	140	33	-	-	-
50	108	150	43	-	-	-
65	112	170	46	-	-	-
80	114	180	46	-	64	49
100	127	190	52	-	64	56
125	140	200	56	-	70	64
150	140	210	56	-	76	70
200	152	230	60	-	89	71
250	165	250	68	-	114	76
300	178	270	78	-	114	83
350	190	290	-	92	127	127
400	216	310	-	102	140	140
450	222	330	-	114	152	160
500	229	350	-	127	152	170
600	267	390	-	154	178	200
700	292	430	-	-	229	-
800	318	470	-	-	241	-
900	330	510	-	-	241	-
1000	410	550	-	-	300	-
1200	470	630	-	-	350	-
1400	530	710	-	-	390	-
1600	600	790	-	-	440	-
1800	670	870	-	-	490	-
2000	760	950	-	-	540	-

4. MATERIALS

Component	Materials	Reference	Grade or Designation (Minimum)
Body / Disk / Handwheel	Ductile Iron	BS 2789	All Grades
Shaft	Stainless Steel	BS 970: Part 4	080M40
Lining	EPDM	MS 672: 99 / AS 1646	Hardness 66 ~ 75 IRHD
Bolts, Nuts, Studs and Washer	Stainless Steel	BS 970: Part 4	304S31

5. TESTS AND INSPECTION

All Butterfly Valves shall comply with tests in accordance with the requirements of specification.

6. COATING

Internal and external components of butterfly valve shall undergo the necessary surface Preparation for polymeric coating of fusion-bonded epoxy powder of thickness from 250 µm to 350 µm.

The colour of the valves shall be blue.

7. MANDATORY MARKING

All Butterfly Valves shall have the following information cast on the body: -

- a) Nominal size (DN), or nominal pipe size (in)
- b) Nominal pressure (PN or Classes)
- c) Manufacturer's name or trade mark;
- d) Year of manufacture (last two digit);
- e) Butterfly Valve type (Double Flange, Semi-Lug, Wafer)
- f) Body material designation (i.e. DI for Ductile Iron).

8. PACKING

- a) All valves shall be individually packed with proper methods and protected from damage during transit.

9. DESIGN

- a) Valves shall be design for either tight-shut-off or regulating service applications.
- b) End flanges of double sked-flanged valves shall be cast or forged integral with the body.
- c) Wafer type valves shall be provided with holes for the passage of bolts securing the connection flanges.
- d) Lugged type wafer valves shall be supplied with drilled holes into the lugs appropriate to the size, nominal pressure rating and type of the connecting flange.
- e) Valve body of ductile iron shall be coated using Fusion-Bonded Epoxy Powder from 250 μm to 350 μm in accordance to AS/NZS 4158.1 Part 1.
- f) The dimension of the actuator attachment flange shall comply with the requirements of BS 5840:Part 1.
- g) Valve shall be provided with an indicator to show the position of the disk.
- h) Valve bleed with double disk designed for 'block and bleed' service shall be provided with a bleed connection in the body between the disks. The tapping connection shall be threaded in accordance with BS 21, parallel with positive tolerance deviation, or in accordance with the requirements of BS 2779. A parallel threaded plug with a washer shall be fitted.
- i) The means of attachment between shaft and disk shall preclude components becoming loose in service.
- j) For valves DN 350 or 14 in and larger, a bearing(s) shall be provided to take the axial thrust. Spring retaining clips shall not be used as thrust bearings.
- k) Non-integral seatings and linings where used, and their means of attachment shall not become loose in service.
- l) Valves of nominal size greater than DN 600 (24 in) shall have provision incorporated for lifting.
- m) Bolting threads other than end flange connections shall be in accordance with BS 3643 (ISO metric coarse).

10. OPERATION

a) Operational capability

i) General

All valves shall be capable of being operated by one of the appropriate devices, at a differential pressure across the disk as marked on the valve.

ii) Provision of operating device

For valves designed for operation by handwheel or wrench, a handwheel or wrench, as appropriate, shall be supplied with each valve.

iii) Handwheels

Handwheels, where fitted, shall be marked with the direction of closure. Handwheels shall be securely fitted yet allow for removal and replacement when necessary.

iv) Wrenches

The design of the wrench, when fitted, shall be such that the wrench can only be assembled to the valve so that it is parallel to the direction of flow when the valve is open.

b) Direction of operation

Manually operated valves shall be closed by turning the handwheel or wrench in a clockwise or anticlockwise direction when facing the handwheel or wrench.

c) Actuator operation

Where actuator operation is required the dimension of the actuator attachment flange shall comply with the requirements of BS 5840:Part 1.

d) Indicators

All valves shall be provided with an indicator to show the position of the disk.

e) Limit stops

Stops shall be provided for both the fully open and fully closed positions of the valve. Means shall also be provided with wrench operated valves for positively holding the disk in not less than three intermediate positions.

11. PRE-DELIVERY INSPECTION AND EVALUATION

- a) It is the responsibility of the tenderer to inform SAJ for inspection purposes during manufacturing and before delivery.
- b) SAJ reserve the right to inspect and witness the testing of product offered.
- c) At any time, when requested, the supplier shall provide SAJ a sample of the product offered for evaluation purposes. All costs shall be borne by the supplier.

- d) If at any time the supplier fails to deliver the required sample, the product is deemed fail to meet the specifications.

12. CERTIFICATION

- a) Manufacturer and/or supplier are required to provide a copy of the certificate and testing report from SIRIM, IKRAM or other recognized certification bodies.
- b) Tests report required should be those tests conducted within a year period.
- c) SAJ have the right to refuse offer or reject supply if the documents required are not enclosed.



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SCHEDULE OF STORES

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**SCHEDULE OF STORES Supply And
 Delivery of Butterfly Valve
 To Specification SAJ VL/BV/001 (Rev. 3.0/10.2018)
 For The Period Of Years.**

NO.	DESCRIPTION	UNIT	PROV. QTY	RATE (RM)
A	Supply and delivery of Butterfly Valve (Double Flange Type)			
1	50mm	No		
2	100mm	No		
3	150mm	No		
4	200mm	No		
5	250mm	No		
6	300mm	No		
7	350mm	No		
8	400mm	No		
9	500mm	No		
10	600mm	No		
11	700mm	No		
12	800mm	No		
13	900mm	No		
14	1000mm	No		
15	1100mm	No		
16	1200mm	No		

(Ringgit :)
 Signature of Tenderer : Signature of witness :
 Name : Name :
 In the capacity of : Address :
 Tenderer's Seal or Chop :
 Date :



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NO.	DESCRIPTION	UNIT	PROV. QTY	RATE (RM)
B	Supply and delivery of Butterfly Valve Semi-Lug Type In Accordance with Specification SAJ VL/BV/001			
1	50mm	No		
2	100mm	No		
3	150mm	No		
4	200mm	No		
5	250mm	No		
6	300mm	No		
7	350mm	No		
8	400mm	No		
9	500mm	No		
10	600mm	No		
11	700mm	No		
12	800mm	No		
13	900mm	No		
14	1000mm	No		
15	1100mm	No		
16	1200mm	No		

(Ringgit :)

Signature of Tenderer : Signature of witness :
 Name : Name :
 In the capacity of : Address :
 Tenderer's Seal or Chop :
 Date :



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NO.	DESCRIPTION	UNIT	PROV. QTY	RATE (RM)
C	Supply and delivery of Butterfly Valve Wafer Type In Accordance With Specification SAJ VL/BV/001			
1	50mm	No		
2	100mm	No		
3	150mm	No		
4	200mm	No		
5	250mm	No		
6	300mm	No		
7	350mm	No		
8	400mm	No		
9	500mm	No		
10	600mm	No		
11	700mm	No		
12	800mm	No		
13	900mm	No		
14	1000mm	No		
15	1100mm	No		
16	1200mm	No		

(Ringgit :)

Signature of Tenderer : Signature of witness :
 Name : Name :
 In the capacity of : Address :
 Tenderer's Seal or Chop :
 Date :

