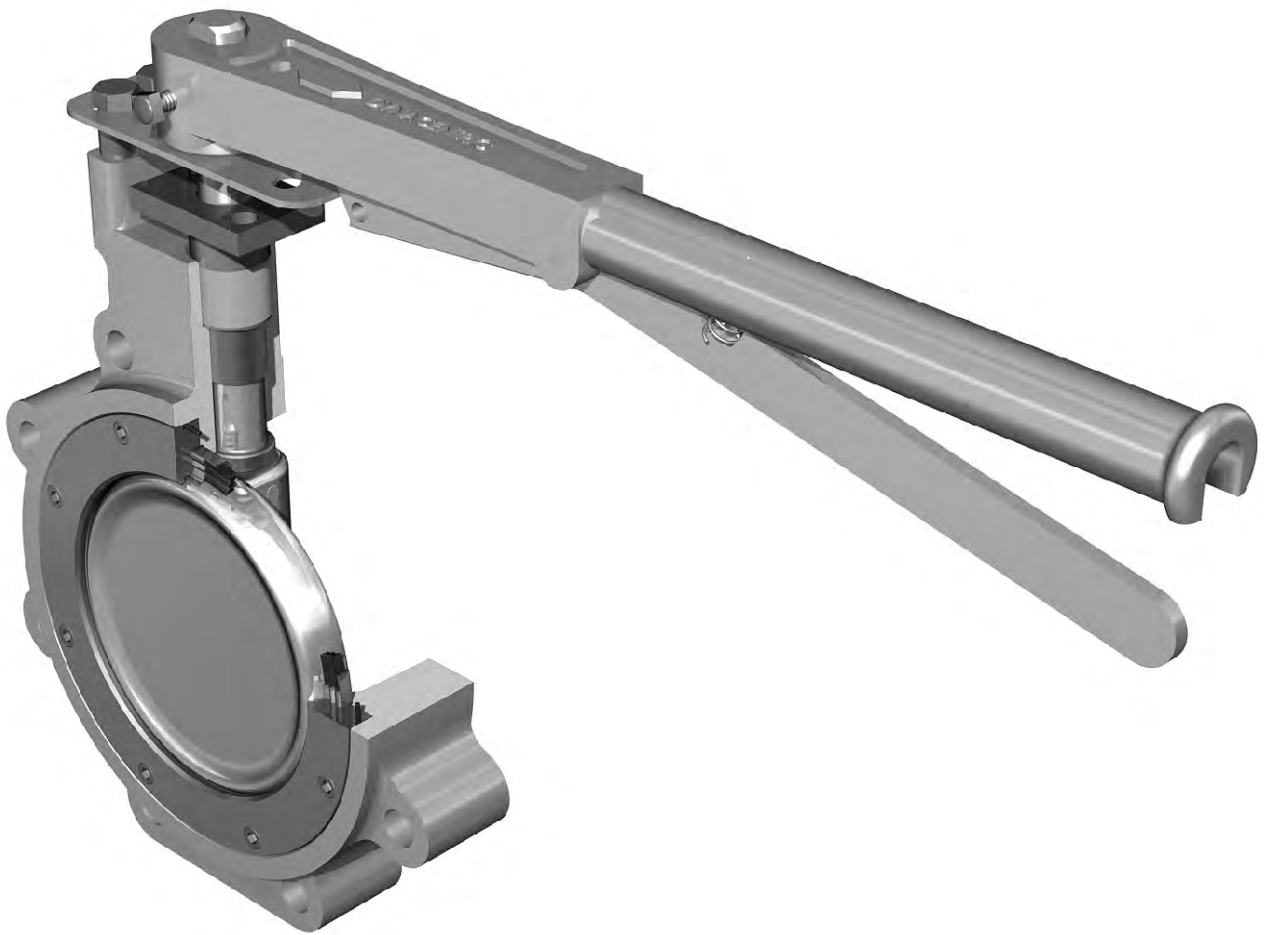


Installation, Operation and Maintenance Manual

WKM[®] MODEL MB DYNACENTRIC[®] HIGH PERFORMANCE BUTTERFLY VALVE



WKM[®]

TABLE OF CONTENTS**WKM DYNACENTRIC MB HIGH PERFORMANCE
BUTTERFLY VALVE**

Bill of Materials	1
Catalog Number Information	3
Nameplate Information	3
Scope	4
Storage	4
Installation	4
End-of-Line Service	5
Disc/Pipe Clearance	5
Gaskets	6
Flange Bolt and Stud Size	6
Procedure	7
Operation	8
Routine Maintenance	9
Trouble Shooting	9

Bill of Materials

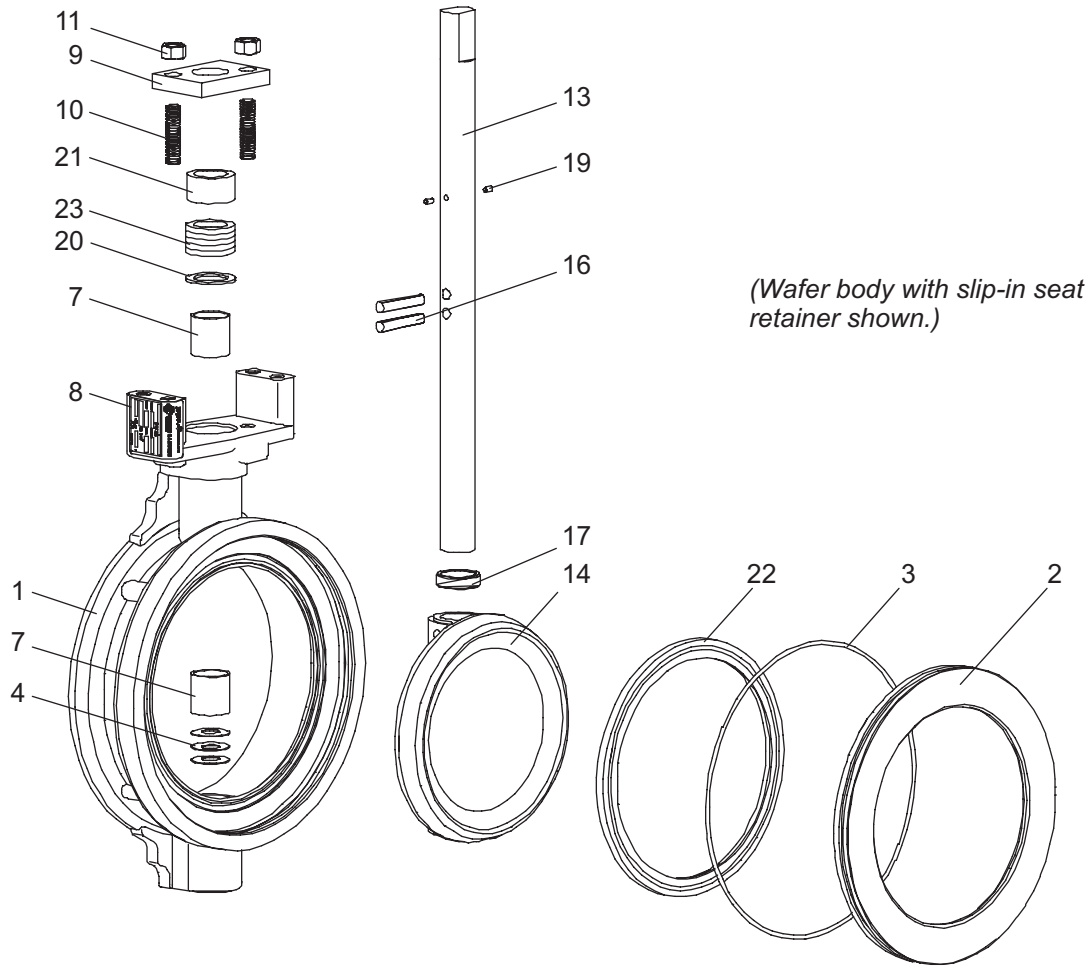


Figure 1 - Cameron Valves' WKM 2 1/2" - 24" Class 150 and 300 DynaCentric Wafer Valve Components.

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1.	Body	16.	Stem Pins
2.	Seat Retainer	17.	Disc Spacer
3.	Seat Retainer O-ring	18.	Key (8" - 12" Only)
3a.	Seat Retainer Screw	19.	Stem Retainer Pins
4.	Stem/Disc Spring	20.	Packing Spacer
7.	Stem Bearing	21.	Gland Ring
8.	Nameplate	22.	Seat
9.	Gland Retainer	23.	Packing Set
10.	Gland Retainer Stud	25.	Bottom Cover*
11.	Gland Retainer Nut	26.	Bottom Cover Gasket*
13.	Stem	27.	Bottom Cover Screw*
14.	Disc		
15.	Lower Stem*		

*(10" 300 and larger and 12" 150 and larger)

Bill of Materials

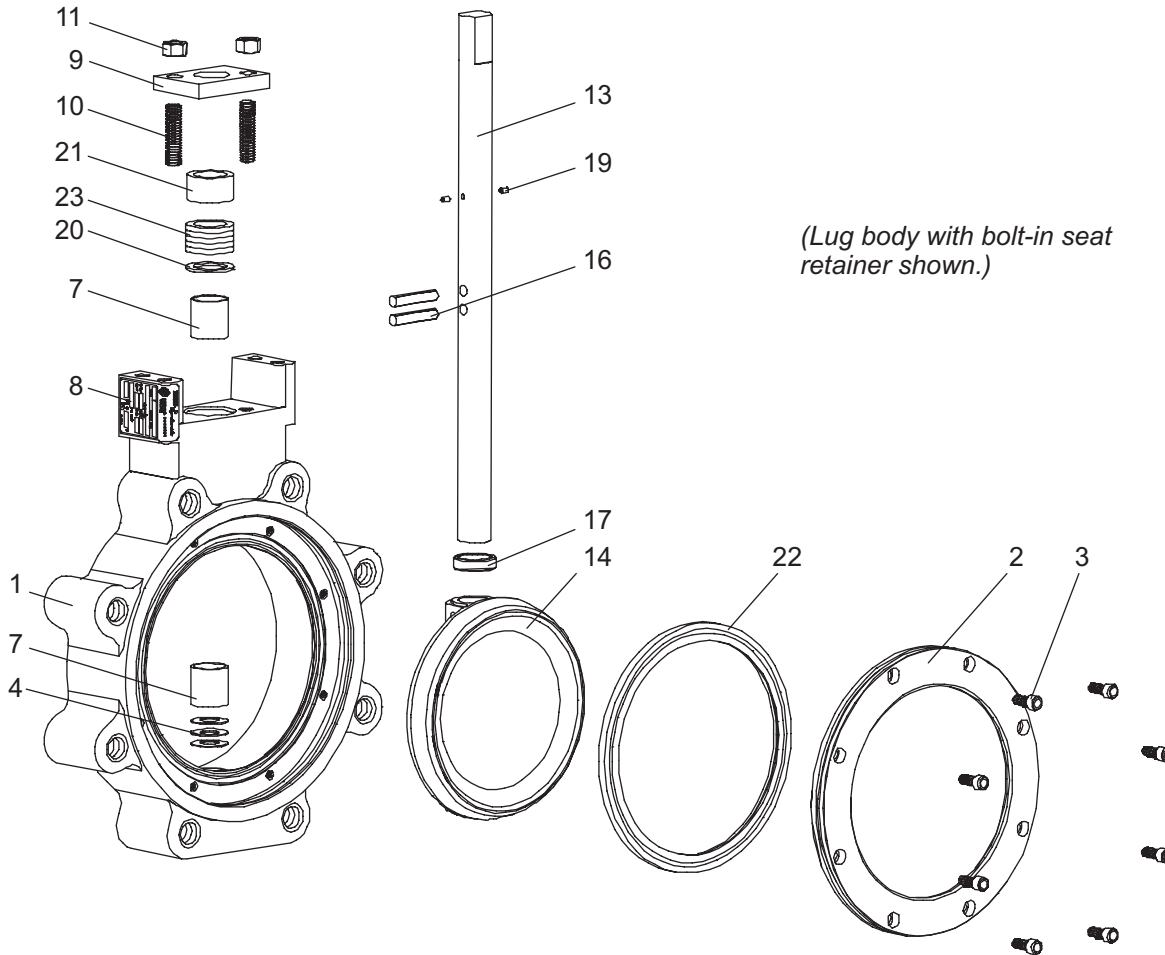
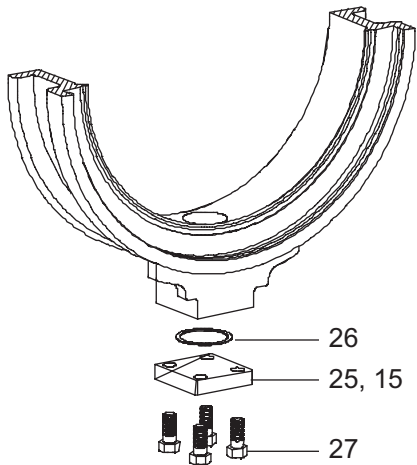


Figure 2 - Cameron Valves' WKM 2 1/2" - 36" Class 150 and 300 DynaCentric Lug Valve Components.



Detail of Bottom Cap
(10" 300 and larger and 12" 150 and larger)

Catalog Number Information

XX	-	B5XXX	-	XX	-	XXX	-	XX	-	XX		
Size Inches		Body Group		Trim Group		Seal Group		Packing Group		Actuation		
1 1/2"	02	Class	Material	Style	SS Disc	02	TFE	S01	TFE VEE	11	Bare Stem	00
3"	03	1=150	1-CS	0-Wafer	17-4 Stem	03	RTFE	S02	High Temp Galvanized	13	Handle	HL
4"	04	3=300	2=SS	2=Wafer ³	SS Disc	04	SS/RTFE	F02	Grafoil	14	Handwheel	WG
5"	05		3=CS2 ¹	3=Lug ³	Ni-Cr ⁴ Stem	05	Ni-Cr ⁴ (UNS 6625) /RTFE	F03			Worm Gear	WG
6"	06				Ni-Cu ⁵ Disc and Stem	06	316SS	M01			Chainwheel	CH
8"	08				SS Disc	07	Ni-Cr ⁴ (UNS 6625)	M03			Worm Gear	CH
10"	10				316SS Stem ²							
12"	12				SS Disc							
14"	14				HF-6 O/L ⁶							
16"	16				17-4 Stem							
18"	18				SS Disc							
20"	20				HF-6O/L ⁶							
24"	24				Ni-Cr ⁴ Stem							
36"	36											

Note: Valves with optional materials of construction are available on application.

- ¹ Controlled hardness carbon steel (H₂S Service).
- ² Valves equipped with 316 SS stems may require derating depending on size and class.
- ³ With bolted seat retainer.
- ⁴ Ref. "Inconel"
- ⁵ Ref. "Monel"
- ⁶ Ref. "Stellite" overlay

The WKM DynaCentric MB High Performance Butterfly Valves are available in three levels of certification:

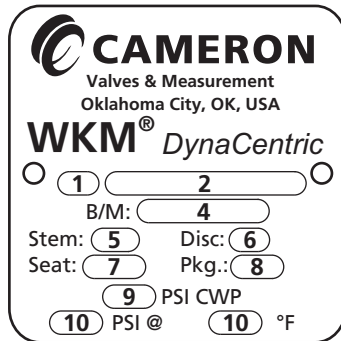
- MB-1: Standard Valve.
- MB-2: Standard with MTR package.
- MB-3: P.E.D. compliant with CE marking.

Nameplate Information

Standard Nameplate

Item Stamp

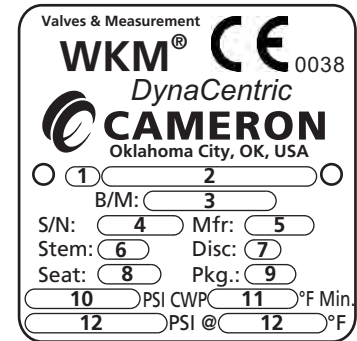
- 1 Valve Size
- 2 Model Number
- 4 Bill of Material Number
- 5 Stem Material
- 6 Disc Material
- 7 Seat Material
- 8 Packing Material
- 9 Maximum CWP
- 10 Seat Ratings



P.E.D. Compliant Nameplate

Item Stamp

- 1 Valve Size
- 2 Model Number
- 3 Bill of Material Number
- 4 Serial Number
- 5 Manufacture Date
- 6 Stem Material
- 7 Disc Material
- 8 Seat Material
- 9 Packing Material
- 10 Maximum CWP
- 11 Min. Operating Temperature
- 12 Seat Ratings



Scope

The WKM DynaCentric MB High Performance Butterfly Valve offers all the benefits of a wafer valve -smaller size, lower price, lighter weight and throttling capabilities - and the high performance characteristics of ball and gate valves. Because of their quarter turn operation, they are easily and economically adapted to power actuation.

The WKM DynaCentric MB High Performance Butterfly Valve is available in 2-1/2" thru 36" 150 and 300 pressure classes.

The valve is available in both flangeless wafer style and single flanged tapped lug style.

Storage

After assembly and test, The WKM DynaCentric MB High Performance Butterfly Valves are placed in the closed position. Carbon steel valve internals are coated with rust preventative and painted on the external surfaces. Flange protection is provided for all valves. Valves should be stored in a clean, dry location. Outdoor storage is permissible, but should be off the ground and protected from the elements. For long term storage, contact your Cameron representative.

Installation

Although The WKM DynaCentric MB High Performance Butterfly Valves have Bi-directional sealing capabilities and will operate in most positions, the following positions are generally recommended for specific applications.

Flow Direction -

Normally the preferred position is with the seat upstream (Figure 4) where the seat retainer provides protection for the seat against erosion due to line flow. This position also reduces operating torque and provides better throttling characteristics.

For handle operated valves or valves in fail-closed service, the seat should be downstream (Figure 5) with the stem side of the disc facing the flow. This position results in positive closing torque with increasing pressure and reduces the hazard associated with handle operation.

Although The WKM DynaCentric MB High Performance Butterfly Valves will seal with flow from either direction, switching flow from side to side should be avoided. Once a flow direction is

established, the seat tends to conform to the disc edge and may take a set making it difficult to establish a seal from the opposite direction.

Stem Position -

The WKM DynaCentric MB High Performance Butterfly Valves perform equally well with the stem in the vertical or horizontal position. However, the stem horizontal position is always preferred. When the lading contains solids, which can build up over long periods of closure, it is particularly important that this position be used. A flushing action of the flow media during opening and closing cycles cleans sediment from the bottom of the line by a jetting action. When such action is desired, the valve should be installed with the seat upstream (flow from the seat side of the valve) with the integral disc stop in the vertical up position. (Figure 6).

Note: some installations may present unique circumstances that may require installation in a position different than outlined above.

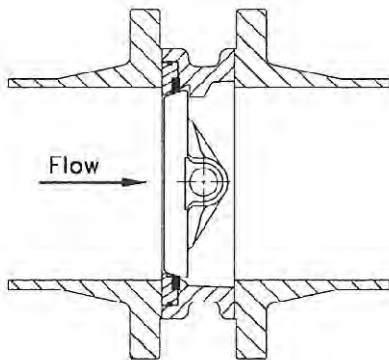


Figure 4
Preferred Position - Seat Upstream

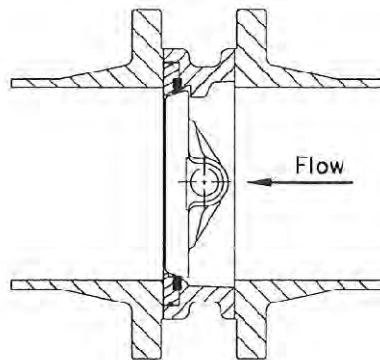


Figure 5
Seat Downstream (Fail Close)

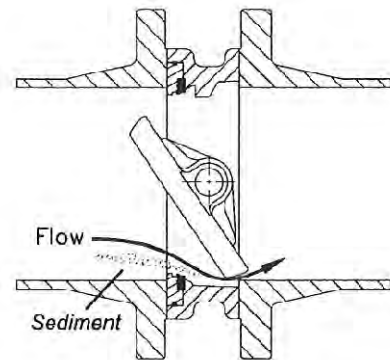
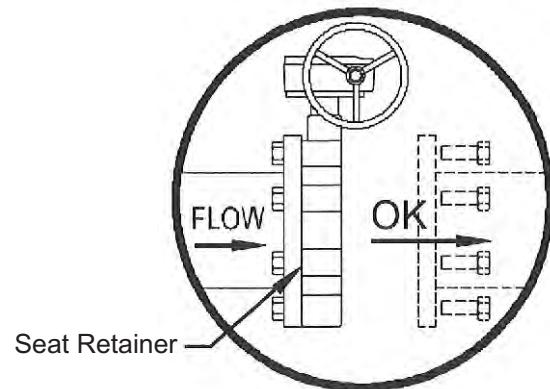


Figure 6
Stem Horizontal

End-of-Line Service

Threaded style lug valves are recommended for end-of-line or equipment isolation service. With the bolted seat retainer, the MB lug valve can handle flow from either direction. To prevent unintentional removal of the seat retainer with the pressure on the valve, it is recommended that the valve be installed with the seat retainer against the upstream flange if possible.



Disc/Pipe Clearance

Before beginning installation, note the required minimum pipe I.D. for proper disc/pipe clearance. Pipes smaller than those shown in Table 1 will require a bevel to prevent the disc edge from scraping on the pipe I.D. damaging the sealing surface. (See Figure 7).

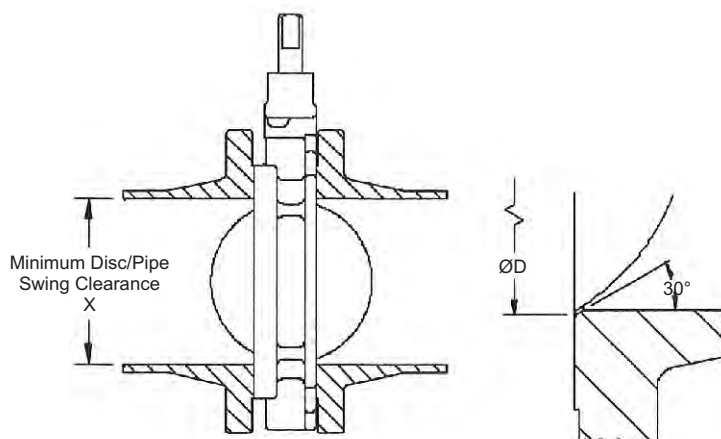


Figure 7

Valve Size and Class	Schedule 40	Schedule 80	Minimum Pipe I.D.
2 1/2" - 150	X	X	1.69
2 1/2" - 300	X	X	1.69
3" - 150	X	X	2.63
3" - 300	X	X	2.63
4" - 150	X	X	3.65
4" - 300	X	X	3.65
5" - 150	X	X	4.61
5" - 300	X	X	4.61
6" - 150	X		5.83
6" - 300	X		5.83
8" - 150	X		7.87
8" - 300	X	X	7.65
10" - 150	X		9.85
10" - 300	X	X	9.60
12" - 150	X		11.8
12" - 300	X		11.63
14" - 150	X		12.55
14" - 300	X	X	12.4
16" - 150	X		14.45
16" - 300	X	X	14.23
18" - 150	X		16.45
18" - 300	X	X	16.05
20" - 150	X		18.12
20" - 300	X	X	17.82
24" - 150	X		21.71
24" - 300	X	X	21.5
30" - 150	X	X	28.02
36" - 150	X		34.12

Gaskets

Non-asbestos gaskets made in accordance with ASME B16.5, Group 1a and 1b are standard for the The WKM DynaCentric MB High Performance Butterfly Valve.

ASME 16.20 standard spiral wound gaskets may also be used. Slip-in seat retainers provide 100%

gasket contact. The screw heads of bolt-in seat retainers protrude into the gasket surface less than 33%.

Flange Bolts

Recommended bolt and stud lengths for installation in ASME B16.5 flanges are provided in Table 2.

Valve Size (in.)	Bolt Circle Dia. (in.)	Bolt Size	Wafer Body			Lug Body	
			Qty.	Stud Length 'A'	Capscrew Length 'B'	Qty.	Capscrew Length 'B'
2 1/2" - 150	5 1/2	5/8-11 UNC	4	5.25	-	8	1.75
2 1/2" - 300	5 7/8	3/4-10 UNC	8	5.75	-	16	1.75
3" - 150	6	5/8-11 UNC	4	5.50	-	8	1.75
3" - 300	6 5/8	3/4-10 UNC	8	6.25	-	16	2.00
3" - 600	6 5/8	3/4-10 UNC	8	6.75	-	16	2.25
4" - 150	7 1/2	5/8-11 UNC	8	5.75	-	16	2.00
4" - 300	7 7/8	3/4-10 UNC	8	6.50	-	16	2.25
5" - 150	8 1/2	3/4-10 UNC	8	6.00	-	16	2.00
5" - 300	9 1/4	3/4-10 UNC	8	7.00	-	16	2.25
6" - 150	9 1/2	3/4-10 UNC	8	6.25	-	16	2.00
6" - 300	10 5/8	3/4-10 UNC	12	7.25	-	24	2.50
8" - 150	11 3/4	3/4-10 UNC	8	6.75	-	16	2.25
8" - 300	13	7/8-9 UNC	12	8.25	-	24	3.00
10" - 150	14 1/4	7/8-9 UNC	12	7.25	-	24	2.50
10" - 300	15 1/4	1-8 UNC	16	9.50	-	32	3.25
12" - 150	17	7/8-9 UNC	12	7.75	-	24	2.75
12" - 300	17 3/4	1 1/8-8 UN	16	10.50	-	32	3.75
14" - 150	18 3/4	1-8 UNC	12	9.00	-	24	3.00
14" - 300	20 1/4	1 1/8-8 UN	16 (8)	12.00	(3.70)	40	3.75
16" - 150	21 1/4	1-8 UNC	16	9.50	-	32	3.00
16" - 300	22 1/2	1 1/4-8 UN	16 (8)	13.00	(3.75)	32 (8)	4.00 (3.75)
18" - 150	22 3/4	1 1/8-8 UN	16	10.50	-	32	3.50
18" - 300	24 3/4	1 1/4-8 UN	20 (8)	14.00	(3.75)	40 (8)	4.00 (3.75)
20" - 150	25	1 1/8-8 UN	20	11.50	-	40	3.75
20" - 300	27	1 1/4-8 UN	20 (8)	14.50	(4.00)	48	4.00
24" - 150	29 1/2	1 1/4-8 UN	20	13.00	-	40	4.50
24" - 300	32	1 1/2-8 UN	20 (8)	16.50	(4.50)	40 (8)	5.00 (4.50)
30" - 150	36	1 1/4-8 UN	20(16)	16.50	(4.25)	48 (8)	5.00 (4.25)
36" - 150	42 3/4	1 1/2-8 UN	-	-	-	64	5.50

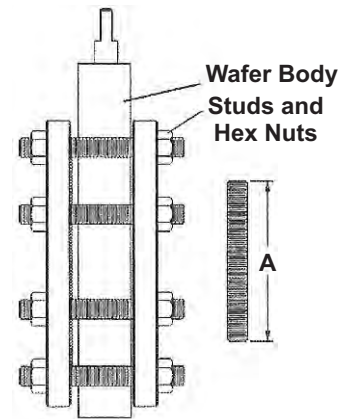


Figure 8

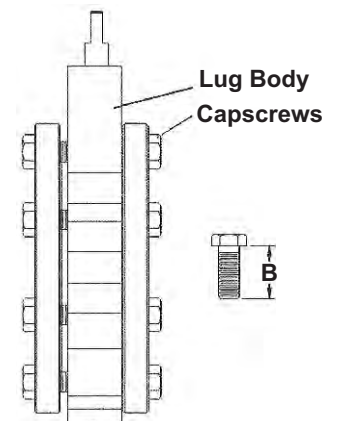


Figure 9

Procedure

The following procedure applies to new installation between standard ASME B16.5 pipe flanges.

When replacing a valve from an existing installation, clean the flange faces of any residual gasket material before starting.

Actuation should not be removed from the valve for installations unless the actuator must be transferred during replacement.

1. Remove protective covers from valve. Be sure valve is completely closed.
2. When installing wafer body valves, install lower flange bolts without tightening (Figure 10). Position valve and flange gaskets between flanges, within the pocket formed by the flange bolts. Install the remaining flange bolts, taking care that the gaskets are centered on the flange faces (Figure 11).

Note: While the WKM DynaCentric MB High Performance Butterfly Valve has bi-directional sealing capabilities, the preferred position is seat upstream (Figure 4).

Handle operated valves or fail close valves should be installed seat downstream (stem side facing flow).

3. Lug body valves should be positioned between the flanges with gaskets properly centered and then the capscrews inserted (Figure 12).
4. Carefully check disc clearance by placing the valve in the full open position. Should automated valves be difficult or impossible to cycle, check that the raised face of the flange matches the raised area on the valve face.
5. Tighten all bolts or capscrews in a crossover or star pattern to insure even sealing (Figures 11 and 12).
6. Packing gland tightness is pre-tested at the factory. Should stem leakage occur at start-up, the gland can be adjusted to stop the leak. Avoid over tightening which may result in excessive operating torque or premature packing wear.

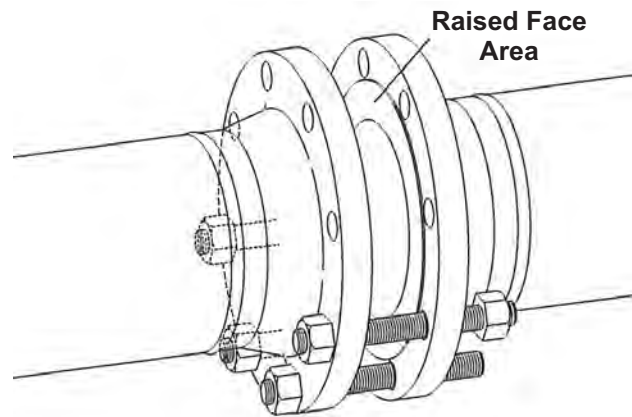


Figure 10

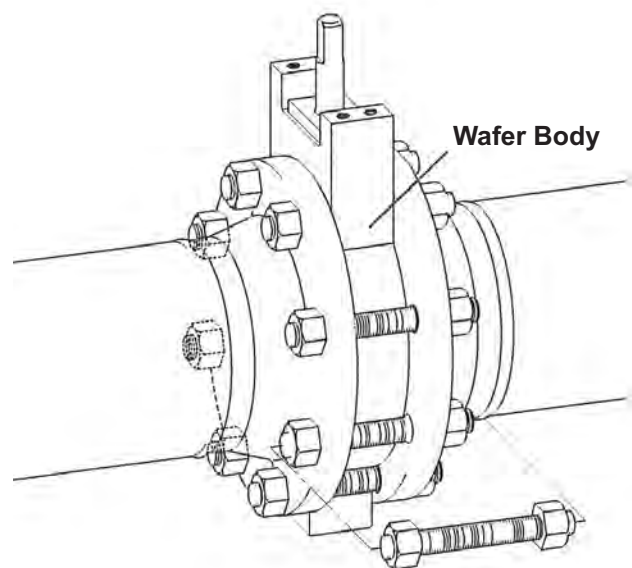


Figure 11

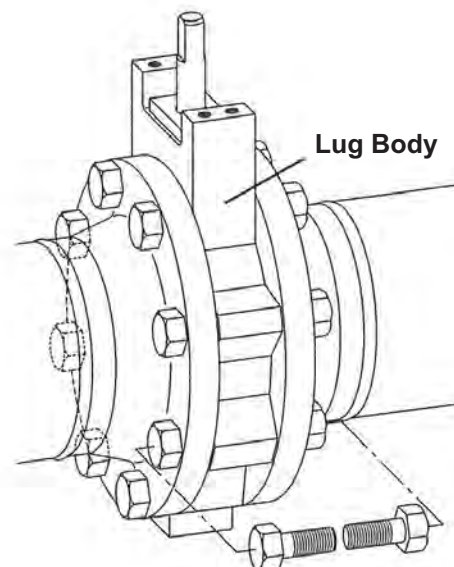


Figure 12

Operation

Manually Operated

The WKM DynaCentric MB High Performance Butterfly Valve operates from fully open to fully closed by a 90° turn of the handle.

Visual "OPEN - CLOSED" indicators on the stop plate and handle enable the valve's position to be determined at a glance.

The 3" through 6" WKM DynaCentric MB High Performance Butterfly Valves have flatted stems. The larger valves have a single square key. Both stem flats and keyway indicate valve position. When they are in line with the flow stream, the valve is open. When perpendicular, the valve is closed.

In all cases, when the valve is closed, the handle is perpendicular to the run of the pipe (Figure 13) and when the valve is open, the handle is parallel to the pipe (Figure 14).

Maximum recommended pressure differential for handle operated valves:

- 2 1/2" 450 psi
- 3" 400 psi
- 4" 300 psi
- 5" 200 psi
- 6" 150 psi
- 8" 50 psi

Worm Gear Operated

Worm gear operators, available as standard equipment on all valves 8" and larger, which are not power actuated, have an arrow on top of the operator that indicates the "OPEN - CLOSED" position of the disc (Figure 15).

Counter-clockwise rotation of the handwheel opens the valve; clockwise rotation closes the valve.

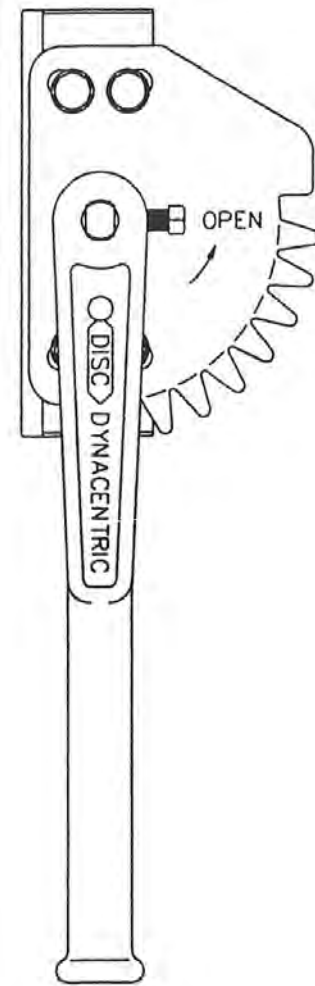


Figure 13

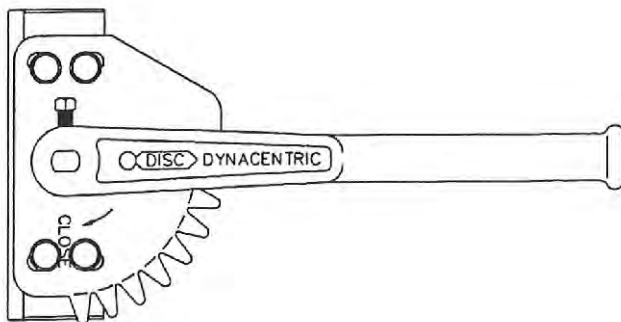


Figure 14

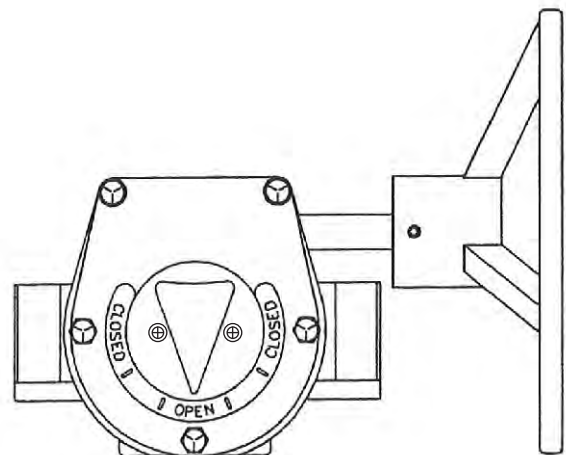


Figure 15

Routine Maintenance

Because of the simple design and operation, the WKM DynaCentric MB High Performance Butterfly Valve requires virtually no maintenance. Its non-lubricated construction and protected seat design provides reliable leak free performance without routine servicing.

The only preventive maintenance recommended for the valve is to periodically inspect for leaks around the stem packing. Should a leak appear, the packing can be adjusted by tightening the gland retainer nuts slightly. Avoid excessive tightening which may result in excessive valve torque or premature packing wear.

Troubleshooting

Trouble	Probable Cause	Remedy
The valve will not seal properly.	The seat and/or disc is worn or damaged.	Replace worn parts.*
	Foreign matter is present between seat and disc.	Operate several times to wipe clean.
	Operator stops are not set properly.	Adjust stops to proper setting.
The valve is hard to operate.	Build up of solids or roughness on edge of disc.	Operate several times to wipe clean or disassemble valve and clean disc edge.*
	Stem packing is too tight.	Tighten packing only sufficiently to stop leaks.
	Operator is not installed properly.	Reinstall operator in proper alignment with valve stem.
The valve will not open.	Disc hits on side of pipe.	Check for proper pipe clearance.
The valve is leaking around stem.	Gland nuts are loose.	Tighten gland nuts.
	Packing is damaged or worn.	Replace packing.
The valve opens and closes with line flow.	Handle or actuator does not provide proper restraint.	Restrain handle or actuator when in static position.

* Contact your Cameron representative for technical information or repair manual. Additional information is also available on-line at www.c-a-m.com

Contact your Cameron's Valves & Measurement group representative for a Repair Manual



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For the most current contact and location information go to: www.c-a-m.com/valvesandmeasurement

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