FLOWSERVE

AUDCO SLIMSEAL BUTTERFLY VALVES

Experience In Motion

FLOWSERVE INDIA CONTROLS PVT LTD

AUDCO SLIMSEAL is a Wafer type Butterfly Valve with an integrally moulded elastomer body liner. Designed to outperform loose liners, SLIMSEAL's elastomer liner is moulded directly in the body bore and vulcanised in-situ, making it last the entire life of the valve. The result - a valve that requires no form of maintenance. A perfect FIT AND FORGET valve.

AUDCO SLIMSEAL is available in different combinations of body, liner and disc materials to suit a wide range of line fluids, a size range of 50 to 600 mm, and a pressure rating up to PN 16. This permits its use in a wide range of applications making AUDCO SLIMSEAL a truly versatile valve.

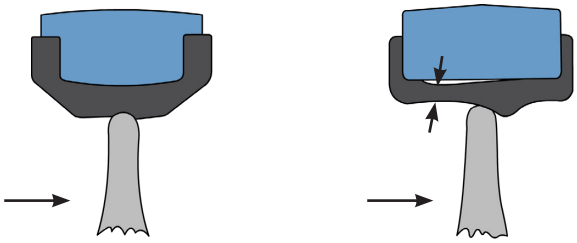
ADVANTAGES OF INTEGRALLY MOULDED LINER

LONGER VALVE LIFE

Integral moulding permits maximising the use of plasticiser in elastomer formulation. This ensures a smooth surface, thereby reducing friction between the disc and liner. In-situ vulcanisation imparts greater strength to the liner. Reduced friction and high strength of the seat extend valve life.

SUPERIOR SEATING

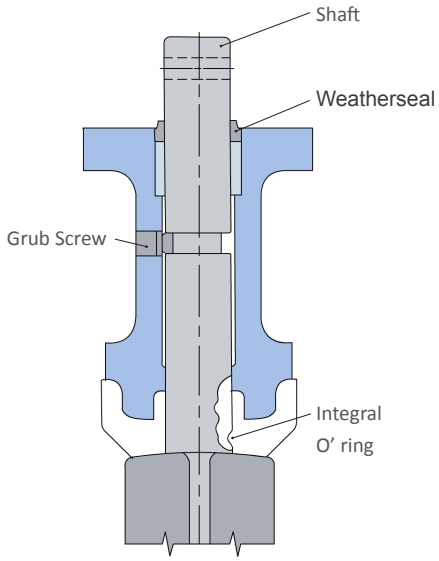
SLIMSEAL's integrally moulded body liner is not subjected to stretching, which is the cause for fatigue in loose-lined elastomers. Fatigue in elastomer results in excessive wear and subsequent tearing of the liner. A torn liner can be easily swept into the line causing extensive damage to expensive down-stream equipment. Though in valves with loose liners the seat can be replaced, by the time it is done the line fluid would have caused some corrosion to the valve body. This causes imperfect seating of the new liner, resulting in leakages. These drawbacks are eliminated in SLIMSEAL's integrally moulded liner design.



Integrally moulded liner | Loose liner

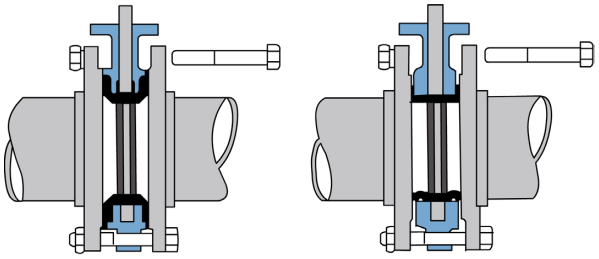
STEM SEALING

In SLIMSEAL Valves the body liner incorporates flats at the top and the bottom where the shaft passes through, providing a wide sealing area. The secondary sealing is by two 'O' rings that are moulded at the top and bottom of the seat, which get compressed around the shaft. A weatherseal at the top of the shaft prevents any ingress of foreign material into the valve.

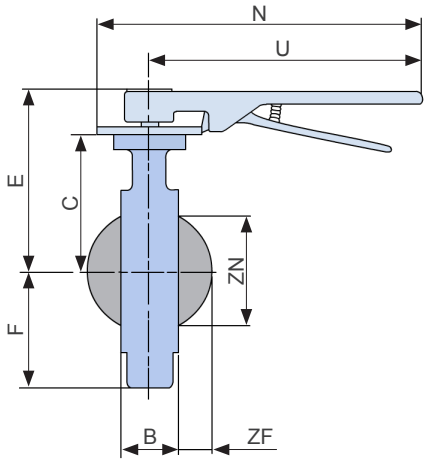


EASY INSTALLATION

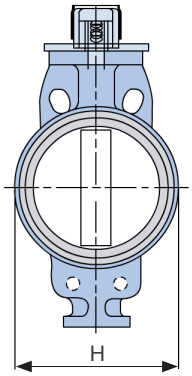
SLIMSEAL has a gasket integral to the body which eliminates the need for a separate gasket between the valve face and companion flange. In addition, as the liner is bonded to the body, it will not hang out or get pinched during installation. Damage to expensive replaceable seats is thereby eliminated.



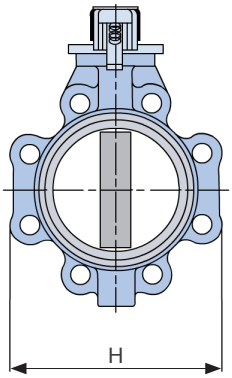
Integrally moulded liner | Loose liner



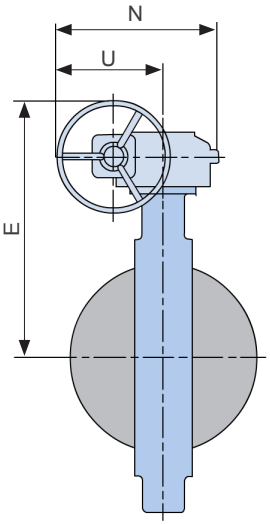
Valves With
Flow Control Lever



Wafer Flangeless
Valve



Wafer Lugged
Valve



Valve With
Gear Unit

DIMENSIONS (mm)

Valve size		50	65	80	100	125	150	200	250	300	350	400	450	500	600
B		43	46	46	52	56	56	60	68	78	92	102	114	127	154
C		99	110	116	134	164	177	235	259	284	318	370	410	448	509
E	Flow Control Lever	125	140	146	174	204	217	302	326	351	-	-	-	-	-
	Standard Gear Unit	228	239	245	263	293	306	429	453	478	512	-	-	-	-
	Heavy Duty Gear Unit	-	-	-	-	-	-	451	476	501	535	587	790	828	889
F		65	78	85	105	118	144	169	214	249	342	377	447	485	556
H	Wafer Flangeless	103	110	130	161	193	220	273	328	378	438	489	532	589	695
	Wafer Lugged	121	135	180	208	238	261	322	394	462	525	595	647	721	845
N	Flow Control Lever	320	320	320	320	320	320	619	619	619	-	-	-	-	-
	Standard Gear Unit	193	193	193	193	193	193	300	300	300	300	-	-	-	-
	Heavy Duty Gear Unit	-	-	-	-	-	-	375	375	375	375	375	552	552	552
U	Flow Control Level	268	268	268	268	268	268	508	508	508	-	-		-	-
	Standard Gear Unit	132	132	132	132	132	132	217	217	217	217	-	-	-	-
	Heavy Duty Gear Unit	-	-	-	-	-	-	255	255	255	255	255	437	437	437
ZN		27	47	63	83	107	136	185	234	280	325	376	424	476	573
ZF		4	10	16	23	32	45	67	88	106	123	144	163	183	220
H .W.Dia-Standard Gear Unit		152	152	152	152	152	152	300	300	300	300	-	-	-	-
H.W.Dia-Heavy Duty Gear Unit		-	-	-	-	-	-	300	300	300	300	300	578	578	578

APPROXIMATE WEIGHT (kgs)

Flow Control Lever - Flangeless	3.6	3.9	4.6	6.8	9.5	11.6	26.5	34.5	46.0	-	-	-	-	-
Flow Control Lever - Lugged	4.9	5.6	7.6	10.4	13.5	15.6	34.0	47.5	61.2	-	-	-	-	-
Standard Gear Unit- Flangeless	11.3	11 .6	12.3	14.5	17 .2	19.3	28.0	36.0	47.5	72.0	-	-	-	-
Standard Gear Unit- Lugged	12.6	13.3	15.3	18.1	21.2	23.3	35.5	49.0	62.7	95.0	-	-	-	-
Heavy Duty Gear Unit- Flangeless	-	-	-	-	-	-	46.0	54.0	65.5	90.0	115.5	146.0	181.5	261.0
Heavy Duty Gear Unit - Lugged	-	-	-	-	-	-	53.5	67.0	80.7	113.0	157.0	204.0	260.0	391.0

Note: 450 mm to 600 mm wafer flangeless bodies have lugs near the top and bottom shaft areas. Unless specified by the customer, lugs are tapped as per ASME B16.1 CLASS 125 / ASME 16.5 CLASS 150 (UNC) as shown in dotted lines. For more details contact Flowserve India Controls Pvt Ltd.

MATERIAL SPECIFICATION

Name of Part	Material of Construction		
Body	Cast Iron to BS 1452 Gr 250	SG Iron to BS 2789 Gr 420/12	CS to ASTM A216 Gr WCB
Body Liner	Black Nitrile	EPDM (WRC approved)	
Disc	SG Iron to BS 2789 Gr 420/12 with nylon coating	AI. Bronze to BS 1400 Gr. AB2	SS to ASTM A351 Gr. CF8/ CF8M edge polished.
Shaft	AISI 410 PTFE coated		
Bearings 50-300 mm 350 - 600 rnrn	Acetal Phosphor Bronze		
Flow Control Lever	SG Iron / Steel		

For other materials of body and disc, contact Flowserve India Controls Pvt Ltd.

TORQUE DATA (Line Pressure 16 bar)

Valve Size (mm)	Torque Nm
50	12
65	20
80	27
100	41
125	62
150	93
200	182
250	279
300	318
350	514
400	925
450	1192
500	1506
600	3029

Torque figures indicated are the maximum torque under static condition and do not include any safety factor. During operator I actuator selection suitable factor of safety is to be considered taking into account fluid parameters. Torque figures are at the top shaft of the valve.

STANDARDS

Valve Design	EN 593 API609 MSS SP67 ISO 5752	- Specification for Butterfly valves - Lug and Wafer type Butterfly Valves - Butterfly valves - Metal valves for use in flanged pipe systems. Face to face and centre to face dimensions	
Installed Face to Face dimension	50mm to 300mm	BS EN 593 API 609 MSS SP-67 ISO 5752	- Wafer Short - Category A - Narrow Body - Short
	350mm to 600mm	BS EN 593 API 609 MSS SP-67 ISO 5752	- Wafer Medium - Category A (Except DN 350) - Wide Body - Medium
Pressure testing	EN 12266-1 Part I		

The valves have been designed to fit without gaskets between flanges drilled to BS 10 Tables D & E, ASME B16.1/ B16.5 Class 150, DIN ND 10/16, BS 4504 PN 10/16, IS 6418 Tables 6 to 9 or IS 6392 Tables 10 to 20.
For mounting with any other flanges contact Flowserve India Controls Pvt Ltd. Lugged valves are provided with tapped holes as per ANSI Bl6.1 Cl.l25 (UNC) unless otherwise specified.
Body top platform drilled to ISO 5211 to facilitate direct mounting of actuators and gear units. Contact Flowserve India Controls Pvt Ltd. for shaft top end details for bare shaft valves.

TEST PRESSURE - Bar

Seat	Working Pressure	Test Pressures	
		Body/Disc	Seat
BLACK NITRILE/ EPDM	16	24	17.6

OPERATION

SLIMSEAL Valves are offered with a choice of operators like Flow Control Lever, Standard Gear Unit or Heavy Duty Gear Unit as given below:

Operator Type	Model	Size Range (mm)
Flow Control Lever	-	50 to 300
Standard Worm type Gear Unit	G50	50 to 150
	SRI00	200 to 350
Heavy Duty Worm Gear Unit	27M7	200 to 400
	G400	450 to 600

Heavy duty gear units are supplied for valves to be fitted with electric actuators. Vertical Gear Units for valves in size 50 to 150 mm could be offered as an option.

ACCESSORIES

SLIMSEAL Butterfly valves can be supplied with factory fitted pneumatic, hydraulic or electric actuators along with other accessories such as limit switches, manual overrides, positioners etc. to form a complete flow control package.

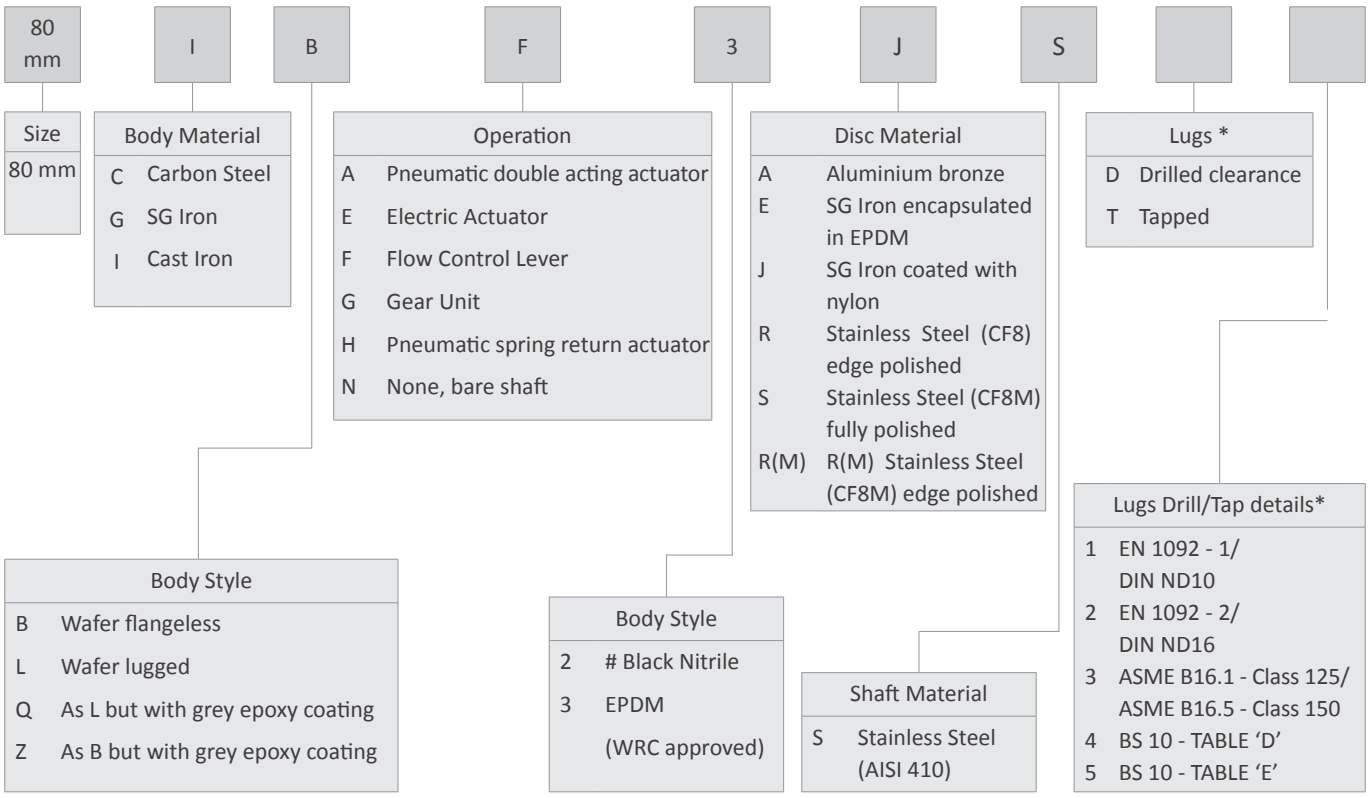
MATERIALS AND APPLICATIONS

General Applications	Continuous Working Temperature Range		Maximum Working Pressure	Disc Material	Seat Material
Oils, Fuels, Water, Air, Gases	Hydrocarbons (Except Aromatics) Other Liquids Dry Service	- 10°C to 90°C - 10°C to 80°C - 10°C to 65°C	16 bar	Nylon Coated SG Iron	# Black Nitrile
Brines, Sea Water, Estuary Water,	Liquids	- 10°C to 80°C	16 bar	Aluminium Bronze	# Black Nitrile
Steam, Water, Hot Gases, Powders, Slurries and aqueous slurries of an / abrasive nature	Liquids Dry Services	- 10°C to 120°C - 10°C to 100°C	16 bar	Stainless Steel periphery polished	EPDM (WRC approved)

For applications below 5°C, Special Nitrile rubber to be used.

MATERIALS AND APPLICATIONS

A familiarity with our Catalogue number is not necessary when specifying or ordering our valves. If full description of the valve could be provided we will translate this into a catalogue number formulated as per the following system:



* For lugged valves only

Butterfly valves for corrosive chemical services with internals of Hypalon and Viton are available as AUDCO CHEMSEAL Valves. Butterfly valves for clean services with internals of WRC approved EPDM and white nitrile are available as AUDCO CLEANSEAL valves. Please refer to Chemseal / Cleanseal Catalogues.

As we continuously endeavour to improve our products, the data given herein are subject to change.

AUDCO CHEMSEAL

Wafer Type Butterfly Valves

For Corrosive Applications

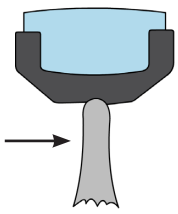
AUDCO CHEMSEAL is a wafer type butterfly valve specifically designed for corrosive services. The body liner is formulated from Hypalon which is a synthetic elastomer having a chemical inertness very close to that of PTFE, but at the same time having the resilience of rubber. This design eliminates contact of the valve body and shaft from the line media.These valves find application on lines carrying aqueous acids, alkali solutions and majority of inorganic salts. The valve has a coating of epoxy paint capable of withstanding corrosive atmospheres.

LONGER VALVE LIFE

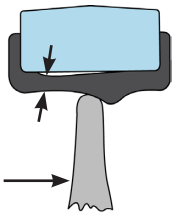
Integral moulding permits maximising the use of plasticiser in elastomer formulation. This ensures a smooth surface, thereby reducing friction between the disc and liner. In-situ vulcanisation imparts greater strength to the liner. Reduced friction and high strength of the seat extend valve life.

SUPERIOR SEATING

CHEMSEAL's integrally moulded body liner is not subjected to stretching, which is the cause for fatigue in elastomers. Fatigue in elastomer results in excessive wear and subsequent tearing of the liner. Atom liner can be easily swept into the line and cause extensive damage to costly down stream equipment. Though in a loose liner valve, the liner can be replaced, by the time it is done, the line fluid would have caused some corrosion to the valve body. This causes imperfect sealing of the new liner resulting in leakages. These drawbacks are eliminated in the CHEMSEAL's integrally moulded liner design.



Integrally moulded liner



Loose liner

STEM SEALING

In the CHEMSEAL valves the rubber liner incorporates flats at the top and the bottom where the shaft passes through, providing a wide sealing area. The secondary sealing is by two 'O' rings that are moulded at the top and bottom of the seat, which get compressed around the shaft. A weatherseal at the top of the shaft prevents any ingress of foreign material into the valve.

MATERIAL SPECIFICATION

Name of Part	Material of Construction	
Body	Cast Iron to BS 1452 Gr 250 SG Iron to BS 2789 Gr 420/12	
Body Liner	Hypalon	Viton.
Disc	SG Iron to BS 2789 Gr 420/12 fully encapsulated with Hypalon/Viton rubber.	Stainless Steel to ASTM A351 Gr. CF8/CF8M edge polished.
Shaft	AISI 410 PTFE coated.	

For other materials of body & disc, contact Flowserve India Controls Pvt Ltd.

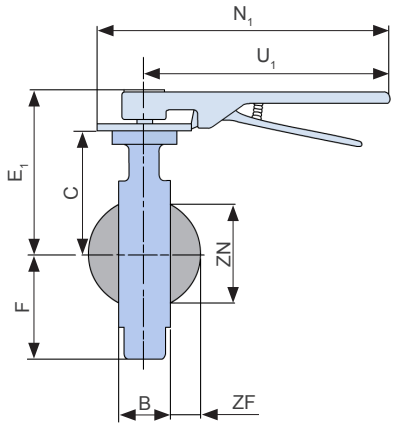
STANDARDS

Valves Design : EN 593, API609, MSS SP 67 and ISO 5752
Pressure Testing : BS 6755 Part 1
Pipe Flange Standards : To suit BS 10 Tables D & E, ASME B16.1/ B16.5 Class 150, DIN ND 10/16, BS 4504 PN 10/16, IS 6418 Tables 6 to 9 or IS 6392 Tables 10 to 20.
For mounting with any other flanges contact Flowserve India Controls Pvt Ltd.
Lugged valves are provided with tapped holes as per ANSI B16.1 CL. 125 (UNC) unless otherwise specified.

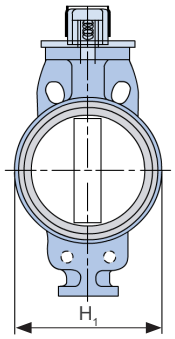
TEST PRESSURE - Bar

Liner Material	Temperature (Max.)	Working Pressure	Test Pressures	
			Body/Disc	Seat
Hypalon	70°C	12	18	13.2
Viton	150°C	12	18	13.2

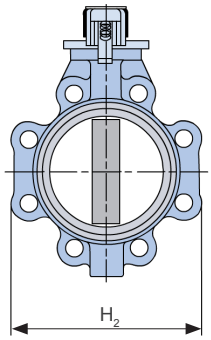
DIMENSIONS (mm)



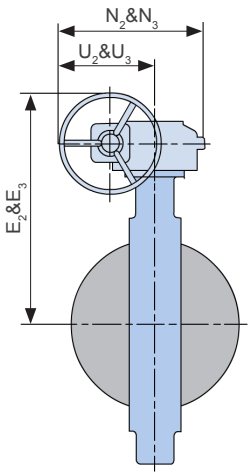
Valves With
Flow Control Lever



Valve With Wafer
Flangeless Design



Valve With Wafer
Lugged Design



Valve With
Gear Unit

Valve size	B	C	E_1	E_2	E_3	F	H_1	H_2	N_1	N_2	N_3	U_1	U_2	U_3	ZN	ZF
50	43	99	139	277	-	65	103	121	320	242	-	268	181	-	27	4
65	46	110	150	288	-	78	110	135	320	242	-	268	181	-	47	10
80	46	116	156	294	-	85	130	180	320	242	-	268	181	-	63	16
100	52	134	174	312	-	105	161	208	320	242	-	268	181	-	83	23
125	56	164	204	342	-	118	193	238	320	242	-	268	181	-	107	32
150	56	177	217	355	-	144	220	261	320	242	-	268	181	-	136	45
200	60	235	-	417	451	169	273	322	-	248	375	-	187	255	185	67
250	68	259	-	441	476	214	328	394	-	248	375	-	187	255	234	88
300	78	284	-	466	501	249	378	462	-	248	375	-	187	255	280	106

E_1 / N_1 / U_1 - Flow Control Lever E_2/ N_2 / U_2 - Standard Gear Unit E_3 / N_3 / U_3 - Heavy Duty Gear Unit

Gear units indicated above are applicable only for valves with stainless steel discs. In the case of valves with Hypalon/ Viton encapsulated SG Iron discs, the torque values are higher; for such application please contact Flowserve India Controls Pvt Ltd. for the selection of Gear unit.

A familiarity with our **Catalogue Number** is not necessary when specifying or ordering our valves. If full description of the valve could be provided we will translate this into a catalogue number formulated as per the following system:

80	I	G	F	1	R	S		
Size	Body Material	Body Style	Operation	Body Lining			Lugs*	Lugs Drill/Tap details *
80 mm	I Cast Iron G SG Iron	G Wafer flangeless with black epoxy coating M Wafer lugged with black epoxy coating P Wafer lugged with dark B.S. grey epoxy coating R Wafer flangeless with dark B.S. grey epoxy coating	A Pneumatic double acting actuator E Electrical Actuator F Flow Control Lever G Gear unit H Pneumatic Spring return actuator N None, bare Shaft	1 Hypalon V Viton	Disc Material G SG Iron encapsulated in Hypalon V SG Iron encapsulated in Viton R Stainless Steel (CF8) S Stainless Steel (CF8M)	Shaft Matl. S Stainless Steel (AISI 410)	D Drilled T Tapped	1 EN 1092-1/ DIN ND10 2 EN 1092-2/ DIN ND16 3 ANSIB16.1 - Class 125/ ANSI B16.5 - Class 150 4 BS 10 - TABLE 'D' 5 BS 10 - TABLE 'E'

* For lugged valves only

As we continuously endeavour to improve our products, the data given herein are subject to change.

AUDCO CLEANSEAL

Wafer Type Butterfly Valves

Hygienic Applications

AUDCO CLEANSEAL is a wafer type butterfly valve specifically designed for hygienic services. The body seat is formulated from food grade EPDM or white Nitrile rubber, both synthetic elastomers which do not impart any toxic substance, colour, odour or flavour to the line media. This design eliminates contact of the valve body and shaft from the line media. These valves find application on Hygienic lines in food, dairy, beverages, pharmaceutical and other related industries. The valve has a white epoxy paint for providing corrosion resistance. These valves are available in a size range of 50 to 300mm and maximum pressure rating of 16 bar for EPDM and 14 bar for White Nitrile.

SELF DRAINING AND CAVITY FREE

The CLEANSEAL valve design incorporates a crevice free construction, which is a pre-requisite for valves to be used on hygienic services. A smoothly streamlined elastomer lining with a fully polished stainless steel disc ensures that there are no dead pockets or crevices in the valve. The body seat and disc of the CLEANSEAL are contoured in such a way that it is impossible for any line media to remain stagnant inside the valve. The wiping action of the disc ensures that the seat is always maintained clean.

SUPERIOR SEATING

CLEANSEAL's integrally moulded seats are not subjected to stretching unlike valves with a loose liner seat. This is because integral moulding literally makes the seat an integral part of the body. This design eliminates the possibility of the seat developing cracks or crevices.

FULLY ISOLATED VALVE INTERNALS

In the CLEANSEAL valves, the rubber liner incorporates flats at the top and the bottom where the shaft passes through, providing a wide sealing area. This ensures the line fluid does not enter the stem area and get contaminated. The secondary sealing is by two 'O' rings that are moulded at the top and bottom of the seat, which get compressed around the shaft.

WEATHERSEAL FEATURE

A weatherseal at the top of the shaft prevents any ingress of foreign material into the valve. This prevents absolutely any contamination of the line media by external means.

MATERIAL SPECIFICATION

Name of Part	Material of Construction
Body	Cast Iron to BS 1452 Gr 250 SG Iron to BS 2789 Gr 420/12
Body Liner	Tasteless EPDM/White Nitrile
Disc	Fully polished Stainless Steel to ASTM A 351 Gr. CF8M
Shaft	AISI 410 PTFE coated for permanent dry lubrication.

For other matenals of body & elise, contact Flowserve India Controls Pvt Ltd.

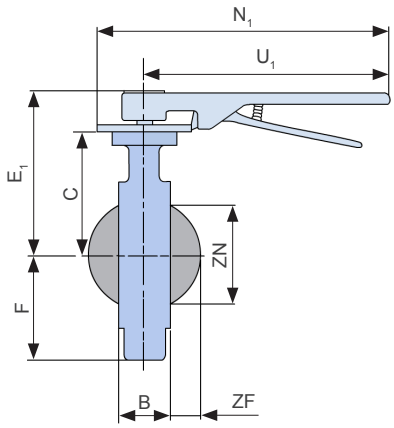
STANDARDS

Valves Design : EN 593, API 609, MSS SP 67 and IS05752
Pressure Testing : BS 6755 Part 1
Pipe Flange Standards : To suit BS 10 Tables D&E, ANSI 125/150, DIN ND 10/16, BS 4504 PN 10/16, IS 6418 Tables 6 to 9 or IS 6392 Tables 10 to 20.
For mounting with any other flanges contact Flowserve India Controls Pvt Ltd.
Lugged valves are provided with tapped holes as per ASME B16.1/B16.5 Class 150 (UNC) unless otherwise specified

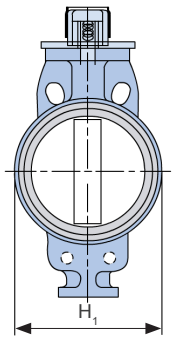
TEST PRESSURE

Liner Material	Service	Temp. range	Test Pressures	
			Body/Disc	Seat
EPDM (Tasteless)	Liquids	- 10°C to 100°C	21	15.4
	Dry	- 10°C to 100°C		
White Nitrile	Liquids	- 10°C to 80°C		
	Dry	- 10°C to 65.°C		

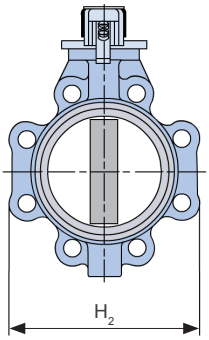
DIMENSIONS (mm)



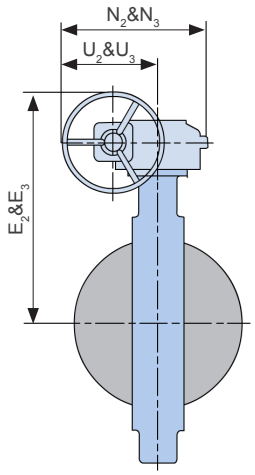
Valves With
Flow Control Lever



Valve With Wafer
Flangeless Design



Valve With Wafer
Lugged Design



Valve With
Gear Unit

Valv size	B	C	E_1	E_2	E_3	F	H_1	H_2	N_1	N_2	N_3	U_1	U_2	U_3	ZN	ZF
50	43	99	139	277	-	65	103	121	320	242	-	268	181	-	27	4
65	46	110	150	288	-	78	110	135	320	242	-	268	181	-	47	10
80	46	116	156	294	-	85	130	180	320	242	-	268	181	-	63	16
100	52	134	174	312	-	105	161	208	320	242	-	268	181	-	83	23
125	56	164	204	342	-	118	193	238	320	242	-	268	181	-	107	32
150	56	177	217	355	-	144	220	261	320	242	-	268	181	-	136	45
200	60	235	-	417	451	169	273	322	-	248	375	-	187	255	185	67
250	68	259	-	441	476	214	328	394	-	248	375	-	187	255	234	88
300	78	284	-	466	501	249	378	462	-	248	375	-	187	255	280	106

E_1 / N_1 / U_1 - Flow Control Lever E_2/ N_2 / U_2 - Standard Gear Unit E_3 / N_3 / U_3 - Heavy Duty Gear Unit

A familiarity with our **Catalogue Number** is not necessary when specifying or ordering our valves. If full description of the valve could be provided we will translate this into a catalogue number formulated as per the following system:

80	I	J	F	4	S	S		
Size	Body Material	Body Style	Operation	Body Lining	Disc Material	Shaft Matl.	Lugs*	Lugs Drill/Tap details *
80 mm	I Cast Iron G SG Iron	J Wafer flangeless with white epoxy coating N Wafer lugged with white epoxy coating	A Pneumatic double acting actuator E Electrical Actuator F Flow Control Lever G Gear Unit H Pneumatic Spring return actuator N None, bare Shaft	4 EPDM (Tasteless) 5 White Nitrile	S Stainless Steel (CF8M)	S Stainless Steel (AJSI410)	D Drilled T Tapped	1 EN 1092-1/ DIN ND1O 2 EN 1092-2/ DIN ND16 3 ASME B16.1 - Class 125/ASME B16.5 Class 150 4 BS 10 - TABLE 'D' 5 BS 10 - TABLE 'E'

* For lugged valves only

As we continuously endeavour to improve our products, the data given herein are subject to change.

FLOWSERVE

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