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1 SCOPE

1.1 CAUTION

- 1.1.1 For your safety, read this manual before installation or servicing.
- 1.1.2 Before installing or servicing, please ensure the line pressure has been relieved and any hazardous fluids have been drained or purged from the system.
- 1.1.3 Ensure that all Lockout and Tagout procedures for the system have been properly implemented.

1.2 USE

- 1.2.1 A-T Controls LS Series Lined Butterfly Valves are available in lug and wafer style designs and are compatible with ASME B16.5 Class 125/150 flanges for sizes 1-1/2"-24". 1-1/2"-12" wafer style valves are also compatible with EN1092-2 PN10/16 and JIS B2220 10K flanges.
- 1.2.2 Maximum results and optimum valve life can be maintained under normal service conditions and in accordance with pressure/temperature ratings and corrosion data chart.

2 INSTALLATION

- 2.1 A-T Controls LS Series Lined Butterfly Valves are bi-directional and can be installed with the flow in either direction. The valve can be mounted in any position so that the handle, gear, or actuator has proper clearance, can be easily accessed, and the open/close indicator can be viewed. If the gear is equipped with a chain wheel, the valve shall be mounted in a way so that the chain does not come in contact with the valve or pipeline.
- 2.2 Before installation of the valves, the pipe must be flushed clean of dirt, burrs, and welding residues. Failure to do so can cause the seats and sealing surfaces to be damaged.
- 2.3 The pipe must be free from tension and in proper alignment.
- 2.4 Before installation of the valves, check to ensure that all flange seals are free from defects.
Note: A PTFE flange gasket is recommended for the LS Series Lined Butterfly valves if the flange sealing surface is not PTFE.
- 2.5 Before installation of the valves, check to ensure that there is proper clearance for the disc to be able to fully open and close without being obstructed. This is especially important when using sch. 80 pipe as the clearances become smaller. See the LS Series catalog for valve dimensions.
- 2.6 A-T Controls LS Series Lined Butterfly Valves shall be installed in the pipeline completely assembled and open approximately 5 degrees from the closed position. The valves shall NOT be opened so that the disc is outside of the seat. Do NOT disassemble the valves or remove any handles, gears, or actuators to install.
- 2.7 Install the valve in the pipeline and tighten the flange bolts properly per the recommended minimum flange bolt torques in the table below. The bolts shall be torqued in a uniform pattern.

Recommended Minimum Flange Bolt Torques LS Series Lined Butterfly Valves			
Size	Torque (ft-lbs)	Size	Torque (ft-lbs)
1-1/2"	40-50	10"	95-120
2"	40-50	12"	120-150
2-1/2"	40-50	14"	225-250
3"	65-80	16"	215-240
4"	40-50	18"	300-330
5"	75-95	20"	275-300
6"	75-95	24"	440-470
8"	100-125		

2.8 DEAD-END SERVICE

A-T Controls LS Series Lined Butterfly Valves are not rated for dead-end service applications.

3 VALVE OPERATION

3.1 MANUAL

CAUTION: A-T Controls recommends a manual gear operator for all valves larger than 6".

3.1.1 HANDLES

3.1.1.1 10 Position Handles

To **OPEN** the valve; squeeze the handle to unlock it and turn it in the counter-clockwise direction. The handle can be locked in at 10 degree increments to adjust the flow. The valve will be locked into the 90 degree marker and parallel to the pipeline when fully open.

To **CLOSE** the valve; squeeze the handle to unlock it and turn it in the clockwise direction. The handle can be locked in at 10 degree increments to adjust the flow. The valve will be locked into the 0 degree marker and perpendicular to the pipeline when fully closed.

Note: The handles contain a pin that can be used to deter unwanted operation. The pin can be removed if unnecessary per the end user's requirement. A padlock (not included) can also be used through this hole in the handle to lock out operation of the handle.

3.1.1.2 Infinite Handles

To **OPEN** the valve; loosen the lock bolt & nut to unlock it and turn the handle in the counter-clockwise direction. The handle can be set in infinite positions between fully open and fully closed to adjust the flow. Once in the desired position, tighten the lock bolt & nut to hold the handle in place. The valve will be fully counter-clockwise and parallel to the pipeline when fully open.

To **CLOSE** the valve; loosen the lock bolt & nut to unlock it and turn the handle in the clockwise direction. The handle can be set in infinite positions between fully open and fully closed to adjust the flow. Once in the desired position, tighten the lock bolt & nut to hold the handle in place. The valve will be fully clockwise and perpendicular to the pipeline when fully closed.

3.1.2 GEAR

To **OPEN** the valve; turn the hand wheel counter-clockwise. The indicator will be pointing to the open position and stop rotating when fully opened. The flow can be adjusted by stopping the indicator anywhere between open and close.

To **CLOSE** the valve; turn the hand wheel clockwise. The indicator will be pointing to the close position and the hand wheel will stop rotating when fully closed. The flow can be adjusted by stopping the indicator anywhere between open and close.

Note: The gears contain a locking device that allows handwheel operation to be locked out through the use of a padlock (not included). The locking device can be removed if unnecessary per the end user's requirement.

3.2 AUTOMATED

A-T Controls LS Series Lined Butterfly Valves can be mounted with quarter turn actuators. Valves with actuators shall be checked for proper valve stem alignment. Angular or linear misalignments may result in high operational torque and unnecessary wear on the valve stem. See the actuator IOM for information on operating the actuator.

4 DISASSEMBLY & ASSEMBLY / REPAIR

A-T Controls LS Series Lined Butterfly Valves are not designed to be disassembled and repaired in the field. Please contact A-T Controls for repair options and pricing.

5 STORAGE

A-T Controls LS Series Lined Butterfly Valves should be clean and bagged sufficiently to prevent contamination and stored in a cool, dark place.

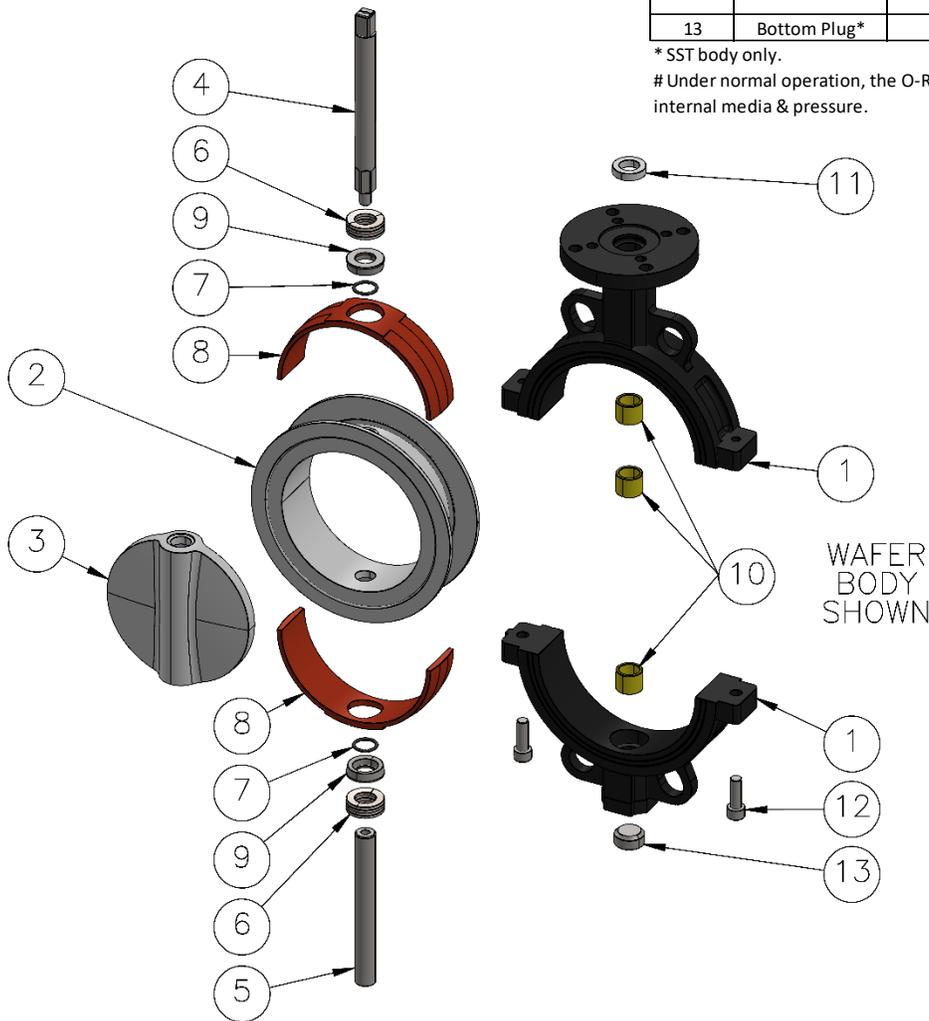
6 BILL OF MATERIALS

Bill of Materials (1-1/2"-14")

Item No.	Description	Material	Qty
1	Body	ASTMA395 / A351 CF8M	1
2	Seat	PTFE	1
3	Disc	PFA Encapsulated over CF8 (DI Body) PFA Encapsulated over CF8M (SST Body)	1
4	Upper Stem	ASTM A276 431	1
5	Lower Stem	ASTM A276 431	1
6	Belleville Washer	Spring Steel	8
7	O-Ring	FKM #	2
8	Seat Energizer	Silicone #	2
9	Pressing Sleeve	ASTM A276 304	2
10	Bushing	FRP #	3
11	Bushing	PTFE #	1
12	Body Bolt	A2-70	<u>Lug DI Body</u> 1.5"-6" (2) 8"-14" (4)
			<u>Lug CF8M Body</u> 1.5"-8" (2) 10"-14" (4)
			<u>Wafer DI & SST Body</u> 1.5"-8", 14" (2) 10"-12" (4)
13	Bottom Plug*	ASTM A276 304	1

* SST body only.

Under normal operation, the O-Rings, Bushings, and Seat Energizers are not subjected to internal media & pressure.



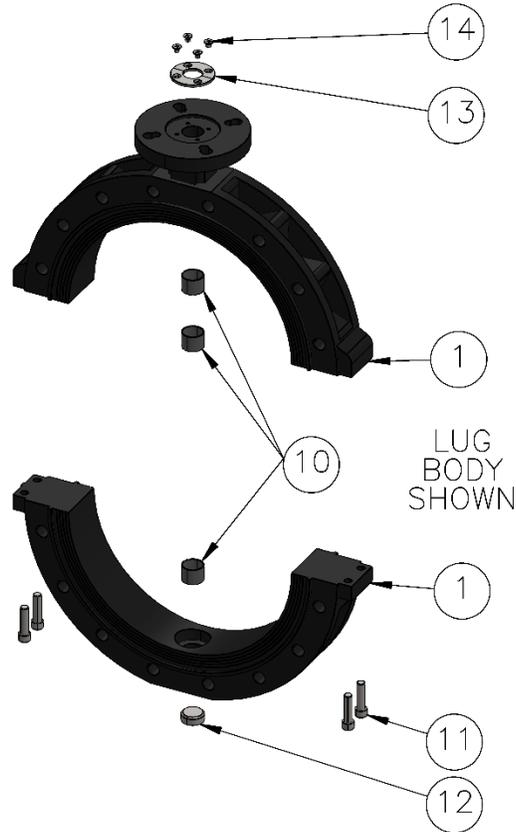
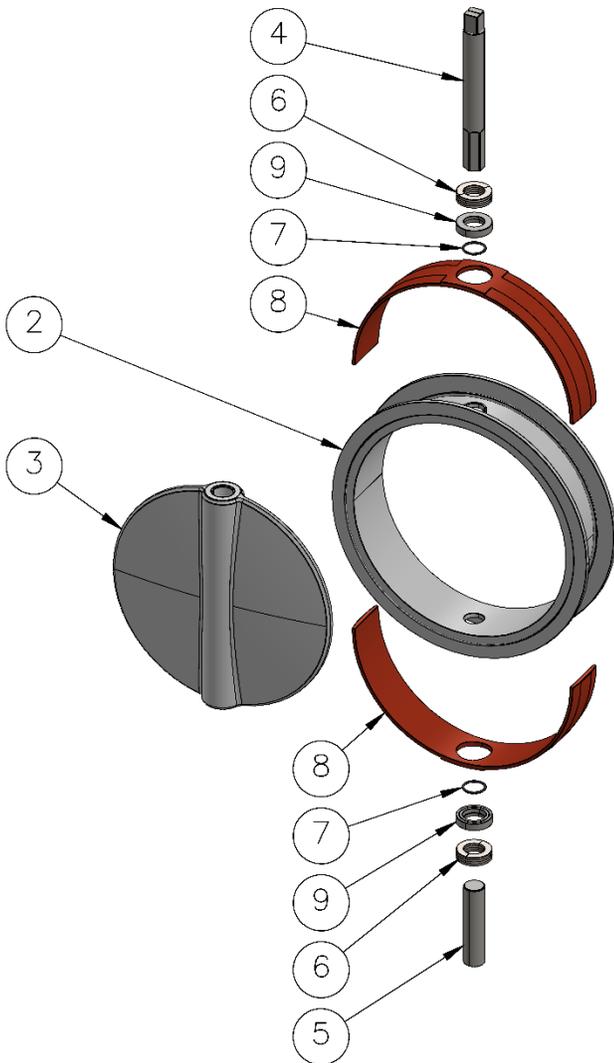
Bill of Materials (16"-24")

Item No.	Description	Material	Qty
1	Body	ASTM A395 / A351 CF8M	1
2	Seat	PTFE	1
3	Disc	PFA Encapsulated over CF8 (DI Body) PFA Encapsulated over CF8M (SST Body)	1
4	Upper Stem	ASTM A276 431	1
5	Lower Stem	ASTM A276 431	1
6	Belleville Washer	Spring Steel	8 20" (6)
7	O-Ring	FKM #	2
8	Seat Energizer	Silicone #	2
9	Pressing Sleeve	ASTM A276 304	2
10	Bushing	Stainless Steel + PTFE	3
11	Body Bolt	A2-70	Lug DI & SST Body 4
			Wafer DI & SST Body 16" (2) 18"-24" (4)
12	Bottom Plug*	ASTM A276 304	1
13	Gland**	ASTM A276 304	1
14	Gland Bolt**	A2-70	4

* SST body only.

** 18" only.

Under normal operation, the O-Rings, Bushings, and Seat Energizers are not subjected to internal media & pressure.



A-T Controls product, when properly selected, is designed to perform its intended function safely during its useful life. However, the purchaser or user of A-T Controls products should be aware that A-T Controls products might be used in numerous applications under a wide variety of industrial service conditions. Although A-T Controls can provide general guidelines, it cannot provide specific data and warnings for all possible applications. The purchaser / user must therefore assume the ultimate responsibility for the proper sizing and selection, installation, operation, and maintenance of A-T Controls products. The user should read and understand the installation operation maintenance (IOM) instructions included with the product and train its employees and contractors in the safe use of A-T Controls products in connection with the specific application.

While the information and specifications contained in this literature are believed to be accurate, they are supplied for informative purposes only. Because A-T Controls is continually improving and upgrading its product design, the specifications, dimensions and information contained in this literature are subject to change without notice. Should any question arise concerning these specifications, the purchaser/user should contact A-T Controls.

For product specifications go to <https://a-tcontrols.com/Downloads/>

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