

Serial No.

H-V040-E-10

Butterfly Valve Type 57L

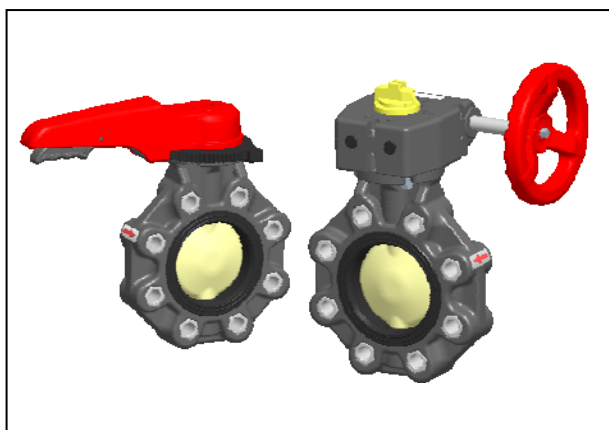
(Lug Style / PDCPD)

80-250mm (3"-10")

User's Manual

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ASAHI AV VALVES

This user's guide contains information important to the proper installation, maintenance and safe use of an ASAHl AV Product. Please store this manual in an easily accessible location.

<Warning & Caution Signs>

 Warning	This symbol reminds the user to take caution due to the potential for serious injury or death.
 Caution	This symbol reminds the user to take caution due to the potential for damage to the valve if used in such a manner.

<Prohibited & Mandatory Action Signs>

	Prohibited: When operating the valve, this symbol indicates an action that should not be taken.
	Mandatory action: When operating the valve, this symbol indicates mandatory actions that must be adhered to.

(1) Be sure to read the following warranty clauses of our product

- Always observe the specifications of and the precautions and instructions on using our product.
- We always strive to improve product quality and reliability, but cannot guarantee perfection. Therefore, should you intend to use this product with any equipment or machinery that may pose the risk of serious or even fatal injury, or property damage, ensure an appropriate safety design or take other measures with sufficient consideration given to possible problems. We shall assume no responsibility for any inconvenience stemming from any action on your part without our written consent in the form of specifications or other documented approval.
- The related technical documents, operation manuals, and other documentation prescribe precautions on selecting, constructing, installing, operating, maintaining, and servicing our products. For details, consult with our nearest distributor or agent.
- Our product warranty extends for one and a half years after the product is shipped from our factory or one year after the product is installed, whichever comes first. Any product abnormality that occurs during the warranty period or which is reported to us will be investigated immediately to identify its cause. Should our product be deemed defective, we shall assume the responsibility to repair or replace it free of charge.
- Any repair or replacement needed after the warranty period ends shall be charged to the customer.
- The warranty does not cover the following cases:
 - (1) Using our product under any condition not covered by our defined scope of warranty.
 - (2) Failure to observe our defined precautions or instructions regarding the construction, installation, handling, maintenance, or servicing of our product.
 - (3) Any inconvenience caused by any product other than ours.
 - (4) Remodeling or otherwise modifying our product by anyone other than us.
 - (5) Using any part of our product for anything other than the intended use of the product.
 - (6) Any abnormality that occurs due to a natural disaster, accident, or other incident not stemming from something inside our product.

(2) General operating instructions



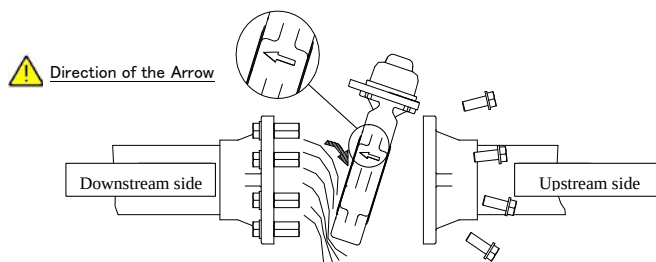
Warning



- Using a positive-pressure gas with our plastic piping may pose a dangerous condition due to the repellent force particular to compressible fluids even when the gas is under similar pressures used for liquids. Therefore, be sure to take the necessary safety precautions such as covering the piping with protective material. For inquiries, please contact us. For conducting a leak test on newly installed piping, be sure to check for leaks under water pressure. If absolutely necessary to use a gas in testing, please consult your nearest service station beforehand.

- While removal of valves from pipeline or during maintenance, please take precautions to protect worker.

- Before removal of valves from pipeline, make sure to empty the line so no liquid is remaining. Then take off bolts at the downstream side first. (It is dangerous taking off bolts at the upstream side first. It causes the valve drop out from pipeline.)



- Lug Butterfly Valve is designed for being able to maintain SHUT OFF POSITION at the disconnected downstream side pipeline while connected to upstream side pipeline. (This valve has flow direction. Therefore do not take away the upstream side bolts. ※Caution: If you take off the upstream side with out stopping and emptying at upstream side, there will be leakage on both side.)

- While removal of a flange on downstream side, draw out fluids from removing side pipeline completely.

※Maintaining low pressure on upstream side will ensure safety.



Caution



- Do not step on or apply excessive weight on valve. (It can be damaged.)

- Do not use AV valves in a place where they may become submerged in water.

(Submergence will make AV valve fail.)

- Do not use the valve in conditions where the fluid may have crystallized. (The valve will not operate properly.)



- Keep the valve away from excessive heat or fire. (It can be damaged, or destroyed.)

- Always operate the valve within the pressure vs. temperature range.

(The valve can be damaged or deformed by operating beyond the allowable range.)

- Allow sufficient space for maintenance and inspection.

- Select a valve material that is compatible with the media. For chemical resistance information, refer to "CHEMICAL RESISTANCE ON ASAHI AV VALVE".

(Some chemicals may damage incompatible valve materials.)

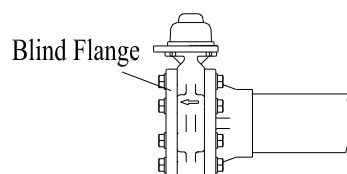
- Keep the valve out of direct sunlight, water and dust. Use cover to shield the valve. (The valve will not operate properly.)

- Perform periodic maintenance. (Leakage may develop due to temperature changes or periods of prolonged storage, rest, or operation.)

- Before opening or closing a lubricant free product, be sure to apply water.

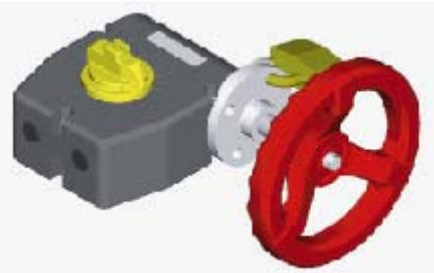
- If you install this valve to the end of the piping, we recommend to use

the "Blind Flange" at the opposite side of the valve to prevent accidental opening of the valve.



- Gear Operator Operation; we utilize a self-locking worm gear design on our manual operators. This design allows flow control of the valve in intermediate positions in normal process conditions. In applications where very high velocity, turbulence flow or vibration is present and an intermediate setting is required, It is recommended to install a locking device. The locking device will prevent the possibility of the valve drifting in severe condition from it is original intermediate setting.

Handle lock



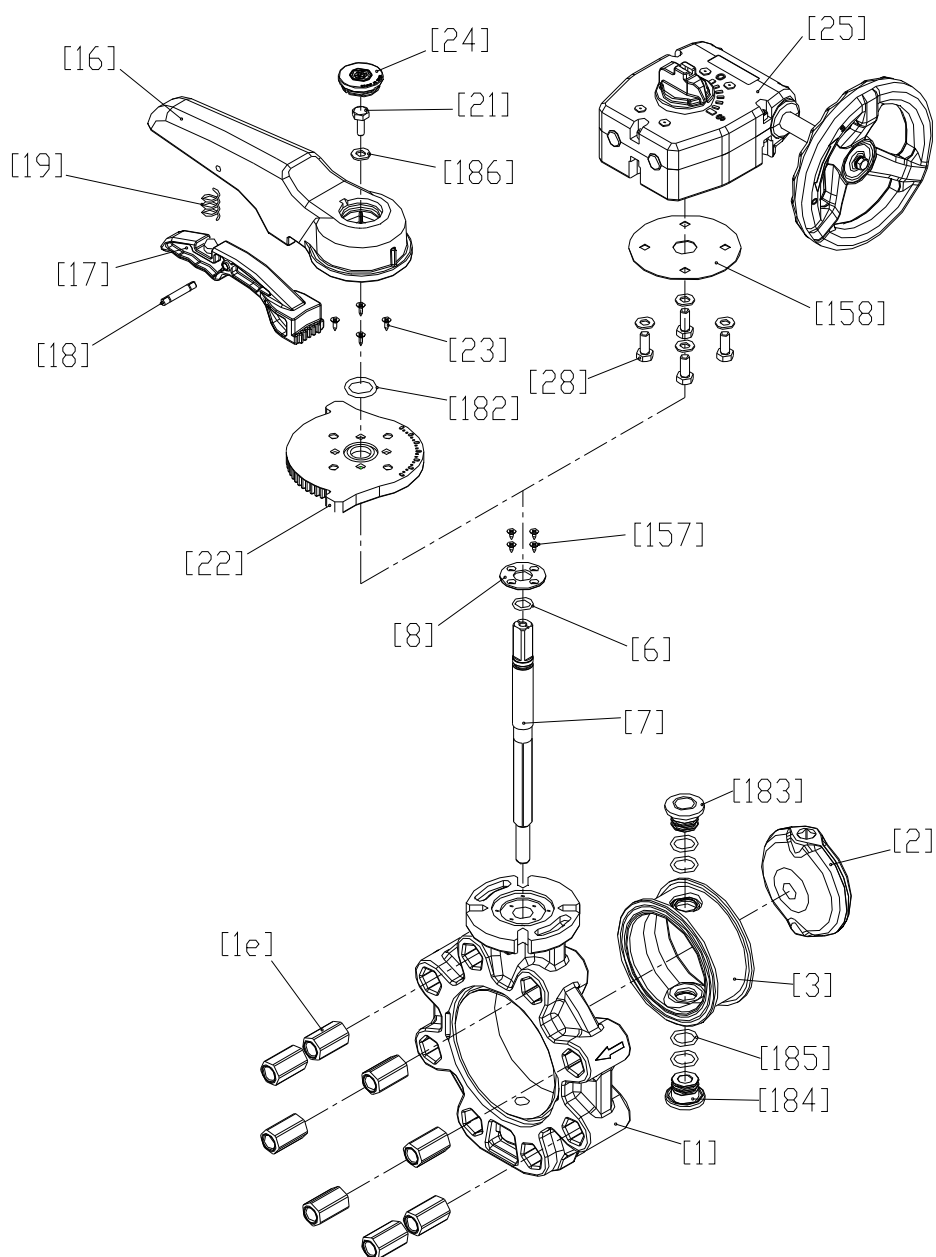
(3) General instructions for transportation, unpacking and storage

-   - When suspending and supporting a valve, take care and do not stand under a suspended valve.
- Warning**
-   - This valve is not designed to handle impacts of any kind. Avoid throwing or dropping the valve.
- Caution**
- Avoid scratching the valve with any sharp object.
- Do not over-stack cardboard shipping boxes. Excessively stacked packages may collapse.
- Avoid contact with any coal tar creosote, insecticides, vermicides or paint.
(These chemicals may cause damage to the valve.)
- When transporting a valve, do not carry it by the handle.
-  - Store products in their corrugated cardboard boxes. Avoid exposing products to direct sunlight, and store them indoors (at room temperature). Also avoid storing products in areas with excessive temperatures. (Corrugated cardboard packages become weaker as they become wet with water or other liquid. Take care in storage and handling.)
- After unpacking the products, check that they are defect-free and meet the specifications.

(4) Names of parts

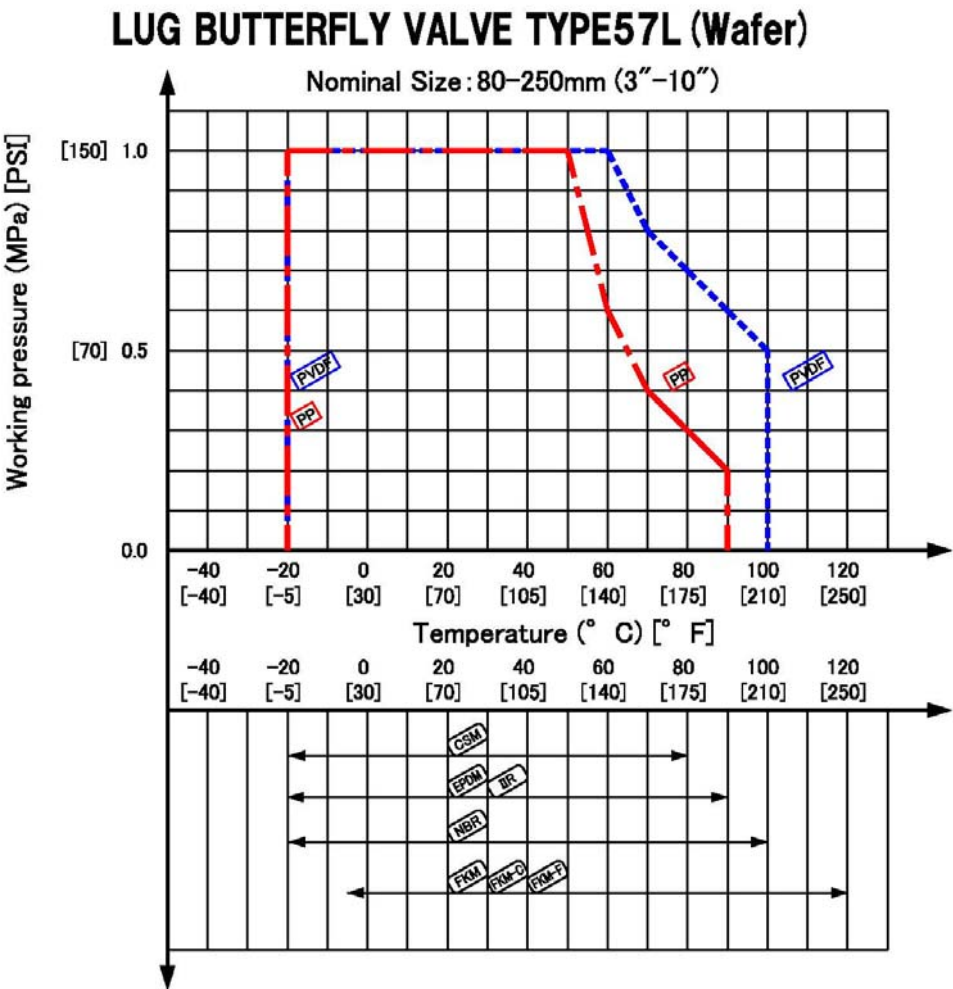
Nominal size: 80-200mm (3"-8")

Nominal size: 80-250mm (3"-10")



No.	Description	No.	Description	No.	Description
[1]	Body	[17]	Handle Lever	[28]	Bolt (C)
[1e]	Lug-Insert	[18]	Pin	[157]	Screw (F)
[2]	Disc	[19]	Spring	[158]	Gasket (L)
[3]	Seat	[21]	Bolt (B)	[182]	O-Ring (H)
[6]	O-Ring (C)	[22]	Locking Plate	[183]	Seat Bush (A)
[7]	Stem	[23]	Screw (B)	[184]	Seat Bush (B)
[8]	Stem Holder (A)	[24]	Cap (A)	[185]	O-Ring (I)
[16]	Handle (A)	[25]	Gear Box	[186]	Rubber + Washer

(5) Working pressure vs. temperature



(6) Installation procedure



Warning



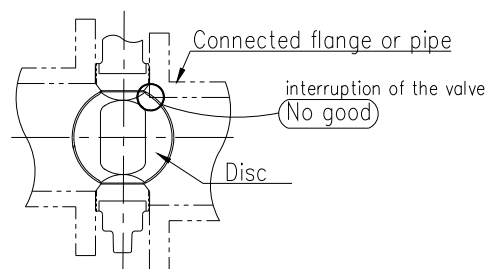
- When suspending and supporting a valve, take care and do not stand under a suspended valve.
- Be sure to conduct a safety check on all hand and power tools to be used before beginning work.
- Wear protective gloves and safety goggles as fluid remain in the valve even if the pipeline is empty. (You may be injured.)



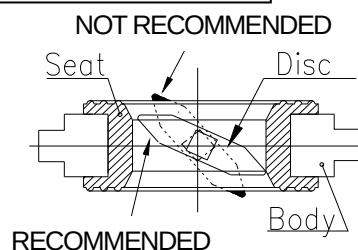
Caution



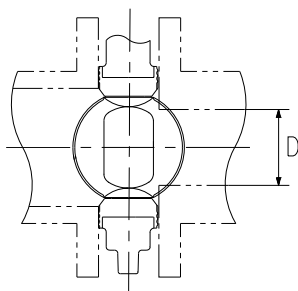
- When installing a pipe support by means of a U-band or something similar, take care not to over-tighten. (Excessive force may damage the pipe.)
- When installing pipes and valves, ensure that they are not subjected to tension, compression, bending, impact, or other excessive stress.
- Do not install the valve with the disc fully closed. (The disc may pinch into the seat, resulting in a high operating torque and preventing the valve from operating properly.)
- Do not use AV valves in a place where they may become submerged in water. (Submergence will make AV valve fail.)
- Care must be used during piping installation to ensure that the pipes or flanges are properly aligned so that the valve disc does not contact them in any setting. Misalignment as in Figure below will result in damage to the valve.
- Use flat faced flanges for connection to AV Valves.
- Ensure that the mating flanges are of the same standards.
- The gasket is unnecessary. (The seat carries out the role of the gasket.)
- The valve disc is sent in the position indicated by solid lines in Figure prior to shipment from the factory. If the valve is opened or closed after unpacking, it must be reset in this position before installation. Failure to do so will result in damage to the surface of the valve seat during handling and installation.



INTERFERENCE OF THE DISK



In case of the thick wall of the connection part (flange and pipe) is too thick, shave the flange or the pipe inside in order to avoid the contact of pipe and disc. If inside diameter of the connection part is larger than size D, shaving is not necessary.



Nominal Size	Diameter D
80mm (3")	67mm (2.64")
100mm (4")	91mm (3.58")
125mm (5")	115mm (4.53")
150mm (6")	137mm (5.39")
200mm (8")	179mm (7.05")
250mm (10")	231mm (9.09")



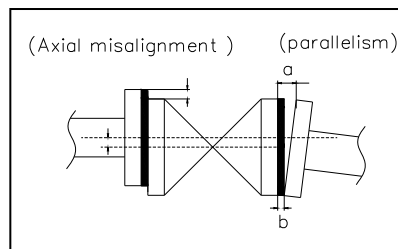
Caution



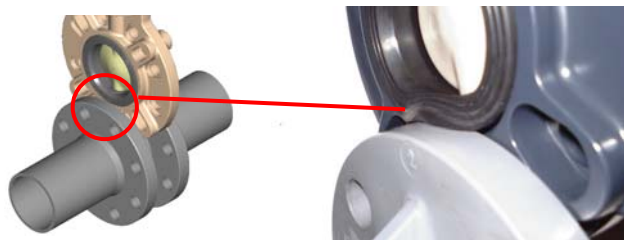
- The parallelism and axial misalignment of the flange surface should be under the values shown in the following table to prevent damage the valve. (A failure to observe them can cause destruction due to stress application to the pipe)

Unit : mm (inch)

Nom. Size	Axial Misalignment	Parallelism (a-b)
80mm (3")	1.0 (0.04)	0.8 (0.03)
100-150mm (4"-6")	1.0 (0.04)	1.0 (0.04)
200, 250mm (8", 10")	1.5 (0.06)	1.0 (0.04)

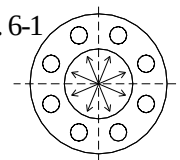


- When you insert a valve between flanges, please insert after extending the fields of flanges fully.
(If you insert a valve by force without fully extending fields of flanges, a liner may be turned over and suffer a crack.)



- Tighten the bolts and nuts gradually with a torque wrench to the specified torque level in a diagonal manner.
- Avoid excessive tightening. (The valve can be damaged.)

Fig. 6-1

**Recommended torque value**

Unit: N·m {kgf·cm} [lb·inch]

Nominal Size	80, 100mm (3", 4")	125, 150mm (5", 6")	200, 250mm (8", 10")
Torque value	30.0 {306} [266]	40.0 {408} [355]	55.0 {561} [488]

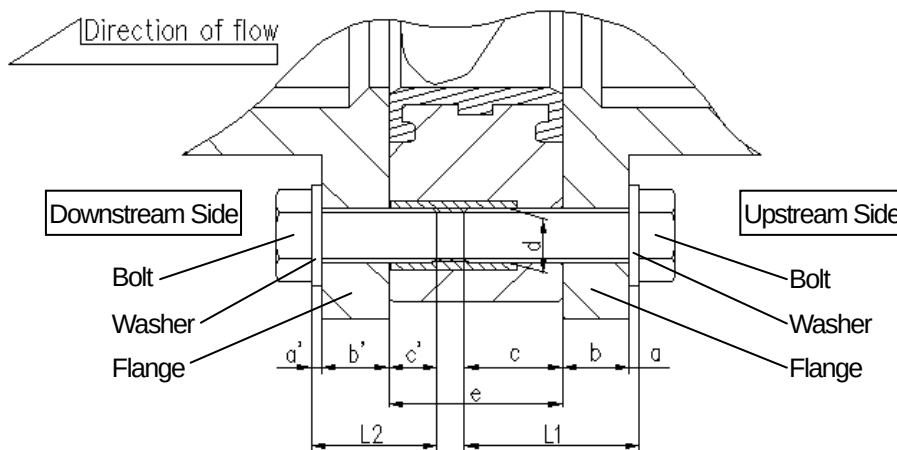
6-1. Used for Lug Style

Necessary items

● Torque Wrench

● Spanner Wrench

● Bolt, Washer



1) Bolt Length (Flanges: AV TS Flange)

Unit: mm (inch)

Nominal Size	Thickness of Washer		Thickness of Flange		Body Insertion Part		Face-to-Face Dimension
	Upstream Side	Downstream Side	Upstream Side	Downstream Side	Upstream Side	Downstream Side	
	a	a'	b	b'	c	c'	
80mm (3")	2.6mm	2.6mm	22mm	22mm	17mm	13mm	43.5mm
100mm (4")	2.6mm	2.6mm	22mm	22mm	26mm	13mm	52.5mm
125mm (5")	3.2mm	3.2mm	24mm	24mm	29mm	13mm	63mm
150mm (6")	3.2mm	3.2mm	26mm	26mm	33mm	16mm	67mm
200mm (8")	3.2mm	3.2mm	28mm	28mm	39mm	16mm	82.5mm
250mm (10")	3.2mm	3.2mm	30mm	30mm	53mm	18mm	106.5mm

※The length (c and c') above shows the minimum value.

Nominal Size	Lug Insert			Bolt d	Recommended Bolt Length			
	Internal Thread	Width Across Flats	Thickness of Lug Nut		Upstream Side		Downstream Side	
					L1	Quantity	L2	Quantity
80mm (3")	M16	24mm	40mm	M16	45mm	8	40mm	8
100mm (4")	M16	24mm	40mm	M16	55mm	8	40mm	8
125mm (5")	M20	30mm	50mm	M20	60mm	8	45mm	8
150mm (6")	M20	30mm	50mm	M20	65mm	8	50mm	8
200mm (8")	M20	30mm	60mm	M20	75mm	12 ^{*1}	55mm	12 ^{*1}
250mm (10")	M22	32mm	70mm	M22	95mm	12	60mm	12

*1 In case of DIN standards, 8 bolts are necessary.

2) Bolt Length (Flanges: Except for AV TS Flange)

- Bolt Length [L1] = Thickness of Washer [a] + Body Insertion Part [c] + Thickness of Flange []mm

- Bolt Length [L2] = Thickness of Washer [a'] + Body Insertion Part [c'] + Thickness of Flange []mm

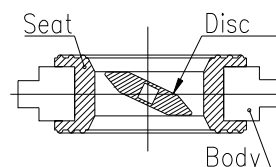
※Make sure to check whether both upstream and downstream side bolt does not interfere with each other.

Procedure

- 1) Install the valve between flanges and open the valve slightly.

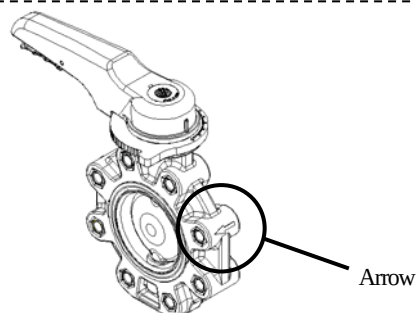
- Tubing with the piping of upstream -

- 2) Lug-Insert [1e] is inserted in the body [1].
- 3) Ensure that the direction of fluid and the flow direction marked on the valve body are the same [1].
- 4) Insert bolts, set nuts and washer and tighten the bolts and nuts temporarily by hand.
- 5) Tighten the bolts and nuts gradually with torque wrench to the specified torque in a diagonal manner. (Fig. 6-1)

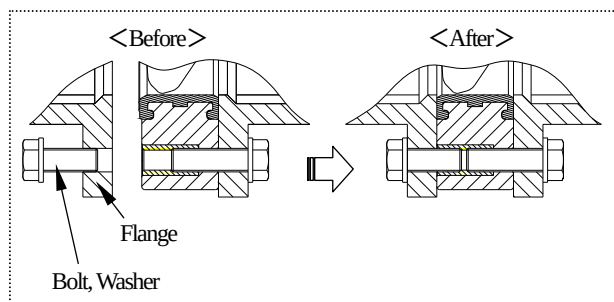
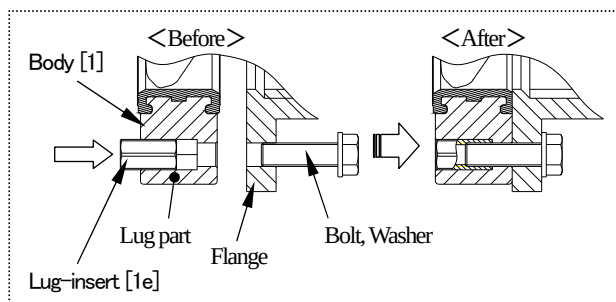


Warning

- Be certain when installing the valve that the directional arrow on the valve body and the direction of fluid flow are the same. Failure to do so will result in a very dangerous condition.

**- Tubing with the piping of downstream -**

- 6) The flange on the downstream side is set.
- 7) Insert bolts, set nuts and washer and tighten the bolts and nuts temporarily by hand.
- 8) Tighten the bolts and nuts gradually with torque wrench to the specified torque in a diagonal manner. (Fig. 6-1)

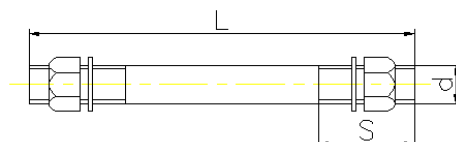


6-2. Used for Wafer Style

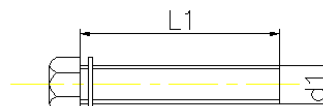
Necessary items

● Torque Wrench ● Spanner Wrench ● Bolt, Nut, Washer

Bolt A



Bolt B

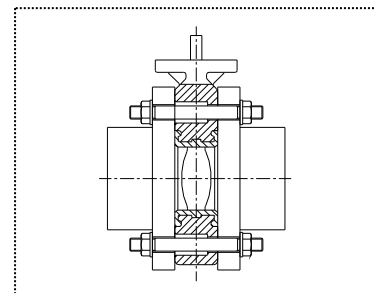
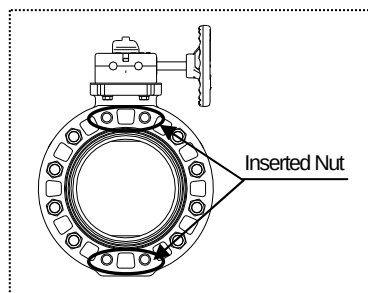
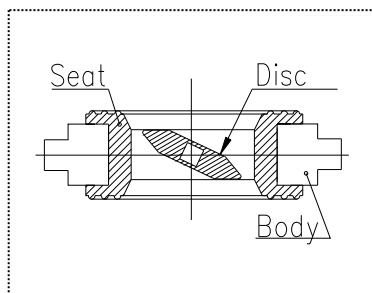
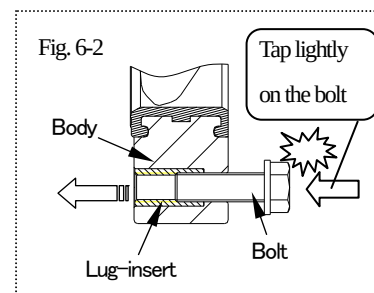


Bolt Length (Flanges : AV TS Flange)

Nominal Size	Bolt A Size				Bolt B Size		
	d	L	S	Quantity	d1	L1	Quantity
80mm (3")	M16	135mm	45mm	8	-	-	-
100mm (4")	M16	145mm	45mm	8			
125mm (5")	M20	165mm	50mm	8			
150mm (6")	M20	175mm	55mm	8			
200mm (8")	M20	195mm	55mm	8*1	M20	65mm	8
250mm (10")	M22	225mm	60mm	8	M22	70mm	8

*1 In case of DIN standards, 4 bolts are necessary.

- 1) Remove the Lug-insert [1e]. (Fig. 6-2)
- 2) Install the valve between flanges and open the valve slightly.
- 3) Insert bolts, set nuts and washer and tighten the bolts and nuts temporarily by hand.
- 4) Tighten the bolts and nuts gradually with torque wrench to the specified torque in a diagonal manner. (Fig. 6-1)



(7) Operating procedure



Caution



- Do not use the valve to fluid containing slurry. (The valve will not operate properly.)



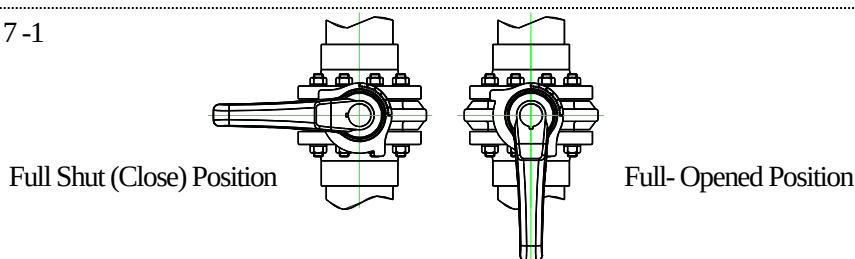
- The installed valve must never be opened or closed when foreign matter such as sand is present in the pipeline.

- Do not exert excessive force in closing the valve.

- When operating the handle, be sure to do so with your hand. (Using a tool may damage the handle.)

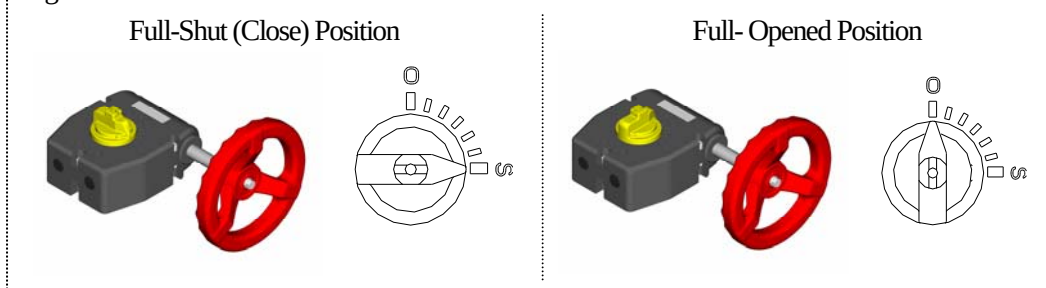
- 1) Open and close the valve by turning handle smoothly. (Turn clockwise to close and counterclockwise to open.)
- 2) In case of lever type, the direction of handle is same as the disc as shown in Fig. 7-1.
 - For the full-shut (Close) position, the handle is perpendicular to the piping axis direction.
 - For the full-opened position, the handle is parallel to the piping axis direction.

Fig. 7-1



- 3) In case of gear type, the indicator shows the position of the disc on the top of gear box.
 - For the full-shut (close) position, the indication shows Shut (S).
 - For the full-opened position, the indication shows Open (O).

Fig. 7-2



Technical Data for Operation

Nominal Size	Stem Torque (N·m)	Required Operating Force (N)	
	Seal	Lever	Gear
80mm (3")	20	80	11
100mm (4")	30	120	16
125mm (5")	40	125	21
150mm (6")	65	205	34
200mm (8")	165	395	87
250mm (10")	300	-	158

Note : Data mentioned in the table above is reference only. These data are measured in standard condition and it slightly differs depending on conditions.

Required Operating Force is the data by turning handle with both hands.

(8) Disassembly and assembly procedure for parts replacement



Warning

- The handle part can be removed with line pressure present. The stem holder can't be removed with line pressure present. If stem holder needs to be removed, there can not be line pressure present.
- Wear protective gloves and safety goggles as fluid remains in the valve. (You may be injured.)



Caution

- When installing pipes and valves, ensure that they are not subjected to tension, compression, bending, impact, or other excessive stress.
- Do not change or replace valve parts under line pressure.

Necessary items

- Protective Gloves
- Goggles
- Spanner Wrench
- Vise
- Grease (Silicone)
- Square Lumber
- Circular Stick (Plastic or Wood)
- Pressing Machine
- Hammer
- Screw Driver (+)
- Screw Driver (-)

<< Disassembly >>

Procedure

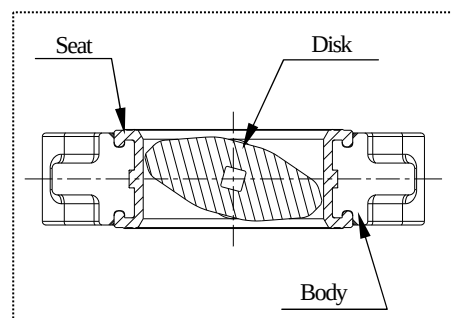
- 1) Drain fluid completely from the pipeline.
- 2) Leave the valve slightly opened.
- 3) Loosen the connecting bolts and nuts.
- 4) Remove the valve from the pipeline.

Lever Type <Nominal size 80-200mm (3"-8")>

- 5) To remove handle [16], first take off the cap [24] by using screw driver (-) and release bolt [21] by using socket wrench, then pull up the handle [16] while holding handle lever [17].
- 6) To take off locking plate [22], release 4 self-tapping screws [23] by using screw driver (+) and take off stem holder (A) [8].

Gear Type <Nominal size 80-250mm (3"-10")>

- 5) Loosen set bolt [28] for gear box [25] and pull off the gear box upward with gasket [158].
- 6) Remove the stem holder (A) [8]. Release 4 tapping screws [157] by using screw driver (+).



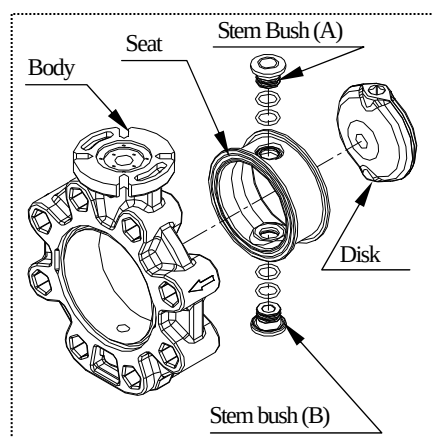
Lever & Gear Type

- 7) Hold flat surface of Stem [7] with vise and pull off valve body [1].
- 8) Insert the screw driver (-) between body [1] and seat [3]. Disc [2] and seat [3] are extruded by using screw driver (-).
- 9) Remove the disc [2], seat bush (A) [183] and seat bush (B) [184] from the seat [3].
- 10) Remove the O-ring (C) [6] from the stem [7].

<< Assembly >>

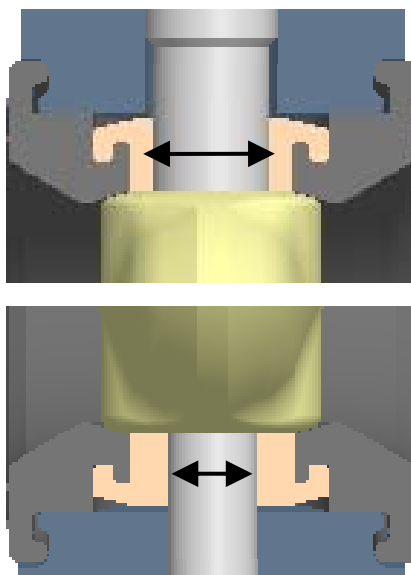
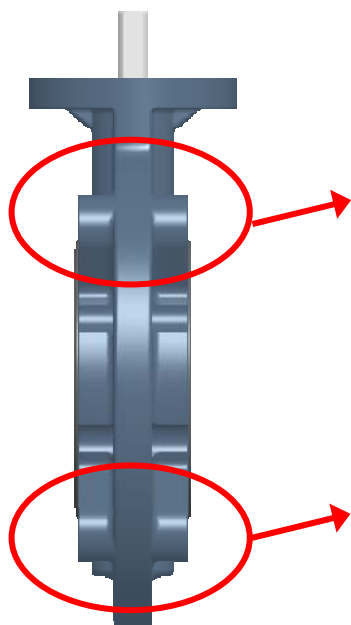
Procedure

- 1) Before starting assembly, grease (Silicone) should be spread on the O-ring (C) [6] and O-ring (I) [185].
- 2) Put the O-ring (C) [6] onto the stem [7]. Put the O-ring (I) [185] onto the stem bush (A) [183] and (B) [184].
- 3) Grease (Silicone) should be spread on the top and bottom disc [2], the stem of the seat [3].
- 4) Put the disc [2], seat bush (A) [183] and seat bush (B) [184] onto the seat [3]. "The set of seat - disc" call for combined parts.
- 5) Put it into the state of open the valve slightly. Insert the set of seat - disc [3] into the body [1].



Caution

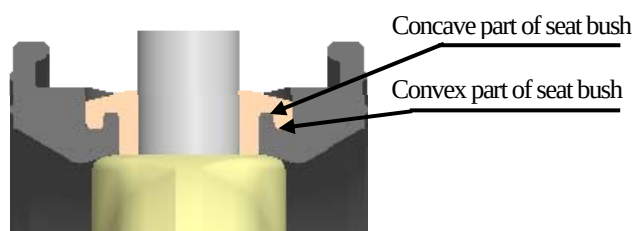
- Make certain stem hole of seat are properly aligned. The upper side stem hole of seat bush (A) [183] has larger than seat bush (B) [184] of lower side. When the stem bush is assembled oppositely, the stem [7] cannot be inserted.



Upper side:
Stem hole is large size

Lower side:
Stem hole is small size

- Make certain tabs are properly aligned.



- 6) Insert the stem [7] of the body [1].
- 7) Install stem holder (A) [8] onto valve body [1] with countersunk holes facing up using 4 screws [157].
- 8) To install lever or gear operator reverse disassembly procedure 5).

* Make certain line scribed on top of stem [7] indicates disc [2] position while installing stem [7].

After assembly, make sure that the valve can be fully opened and closed smoothly.

(9) Installation procedure for handle



Caution

! - Do not give any unjust force to cap, in installing or removing the cap. (It can be damaged)

Necessary items

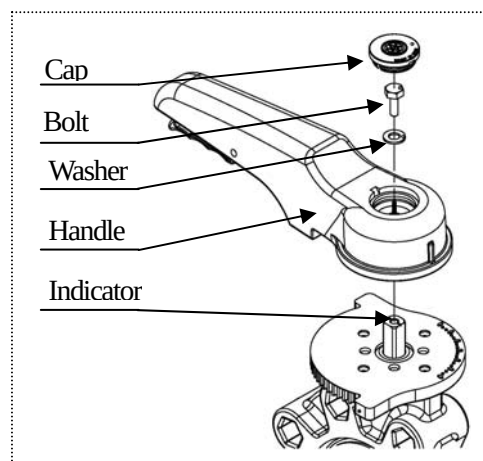
- Plastic Hammer
- Socket Wrench
- Screw Driver(-)
- Goggles
- Protective Gloves

<<Installation>>

Procedure

- 1) Install the handle on the stem. Set the direction of handle in the indication line at the top of stem.
- 2) Fix the handle at the top of stem with the attached bolts and washer by using socket wrench.
- 3) Set the convex part at the side of the cap and the concave of the handle, and set in the cap by striking lightly by using a plastic hammer.

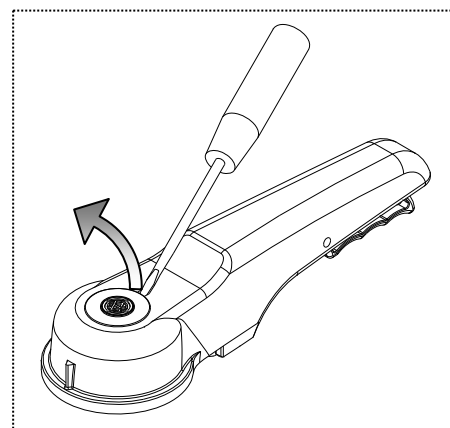
Nominal Size	80, 100mm (3", 4")	125-200mm (5"-10")
Bolt Size	M6×15L	M8×15L
Socket Size	10	13



<<Remove>>

Procedure

- 1) To remove the cap, push up the side of the cap by using screw driver (-).
- 2) Loose the bolts and washer by using socket wrench, then remove the handle.

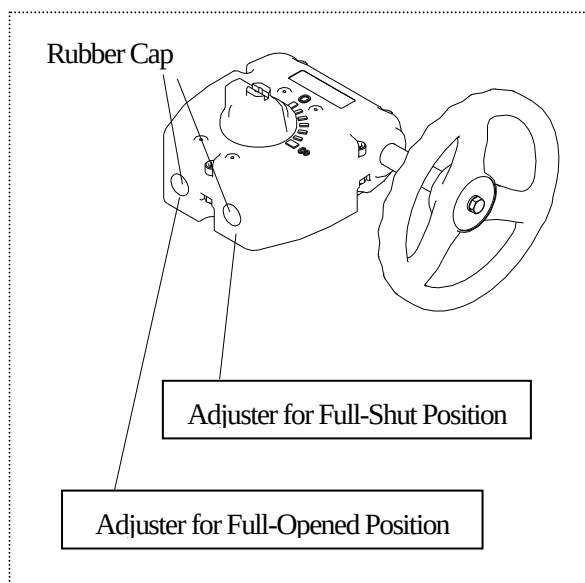


(10) Adjustment procedure for stopper gear type

Necessary Items

- Allen Wrench

The adjustments for full-opened and full-shut position are step-less, and it can be done with the stopper adjuster.



Adjustment for Full-shut (Full-opened) position

- 1) Remove the rubber cap of Full-closing (Full-opening) adjuster.
- 2) Loosen the first stopper hex-bolt completely by Allen Wrench.
- 3) Adjust the disc of valve to required position.
- 4) Tighten the stopper hex-bolts.
- 5) Put the rubber cap of Full-closing (Full-opening) adjuster back on gearbox.

(11) Inspection items



- Perform periodic maintenance. (Leakage may develop due to temperature changes or over periods of prolonged storage, rest or operation.)

Inspect the following items.

(1)	Check for flaw, crack, or deformation on the valve.
(2)	Check for leaks to the outside.
(3)	Check for the deformation of seat due to improper installation of valve.
(4)	Check for the smoothness of handle operation..

(12) Troubleshooting

Phenomenon	Cause	Treatment
Fluid is not stopped in the full closed position at the seat.	1) The stopper is not set correctly. 2) The seat is damaged or worn. 3) Foreign materials are caught. 4) The disc is damaged or worn. 5) The connecting bolts are over tightened or tightened unevenly.	Adjust the stopper. Replace the seat. Clean it up. Replace the disc. Adjust and retighten.
Fluid leaks to the outside.	1) The seat is damaged or worn. 2) The connecting bolts are not tightened in proper torque or evenly.	Replace the seat. Adjust and retighten.
The handle does not work smoothly.	1) Foreign materials have adhered. 2) The gear box is damaged. 3) The connecting bolt is over tightened.	Clean it up. Repair or replace. Adjust and retighten.
Valve does not operate	1) The gear box is damaged 2) The stem is damaged.	Repair or replace. Replace the stem.

(13) Handling of residual and waste materials



Warning

- Make sure to consult a waste treatment dealer for recommendations on the proper disposal of plastic valves. (Poisonous gas is generated when the valve is burned improperly.)

Butterfly Valve Type57L (PDCPD Lug Style)
80-250mm (3"-10")



ASAHI AV VALVES

Distributor

Asahi Organic Chemicals Industry's homepage

<http://www.asahi-yukizai.co.jp/en/>

Information in this manual is subject to change without notice.

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