

|            |            |
|------------|------------|
| Serial No. | H-V030-E-8 |
|------------|------------|

## Butterfly Valves

**Type 56: 400mm (16")**

Body: PP, PVDF

**Type 75: 450-600mm (18"-24")**

Body: PP, PVDF

**Type 56D: 400mm (16")**

Body: PDCPD

**Type 75D: 450-600 mm (18"-24")**

Body: PDCPD

### User's Manual





### Contents



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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>

|  |   |
|--|---|
| <br>Warning | This symbol reminds the user to take caution due to the potential for serious injury or death..                     |
| <br>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.



Caution

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

- 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.)

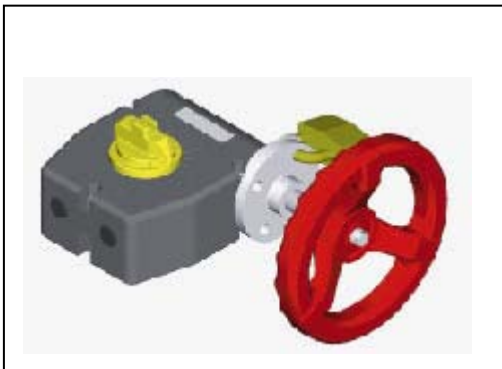
- Keep the valve out of direct sunlight, water and dust. Use cover to shield the valve.

(The valve will not operate properly.)

- Perform periodic maintenance.

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

- 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 its original intermediate setting.



### (3) General Instructions for Transportation, Unpacking and Storage



Warning

- When suspending and supporting a valve, take care and do not stand under a suspended valve.



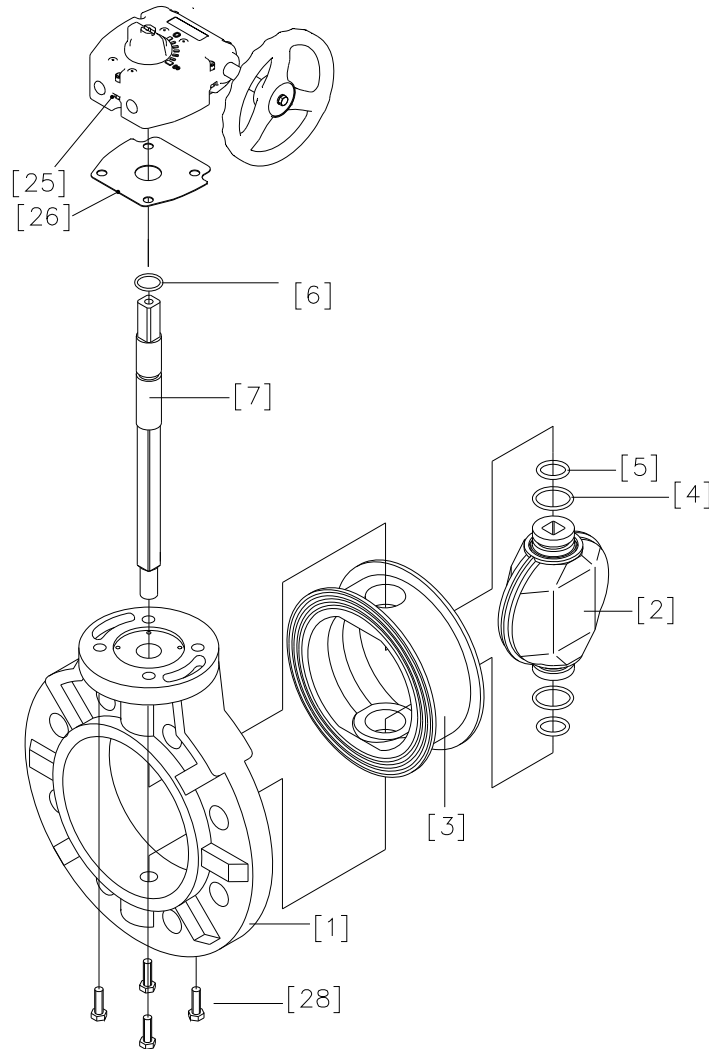
Caution

- This valve is not designed to handle impacts of any kind. Avoid throwing or dropping the valve.
- 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) Name of parts

**Type 56, 56D Gear Type: 400mm (16")**

Body Material: PP, PVDF, PDCPD\*

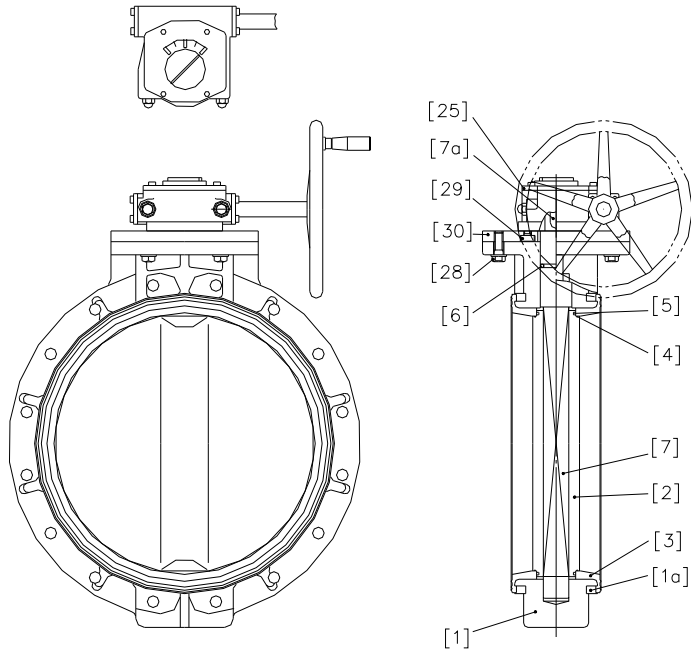


| No. | DESCRIPTION | No.  | DESCRIPTION | No.  | DESCRIPTION |
|-----|-------------|------|-------------|------|-------------|
| [1] | Body        | [5]  | O-Ring (B)  | [26] | Gasket (A)  |
| [2] | Disc        | [6]  | O-Ring (C)  | [28] | Bolt (C)    |
| [3] | Seat        | [7]  | Stem        |      |             |
| [4] | O-Ring (A)  | [25] | Gear Box    |      |             |

\*Reference figure

**Type 75, 75D Gear Type: 450-600mm (18"-24")**

Body Material: PP, PVDF, PDCPD\*



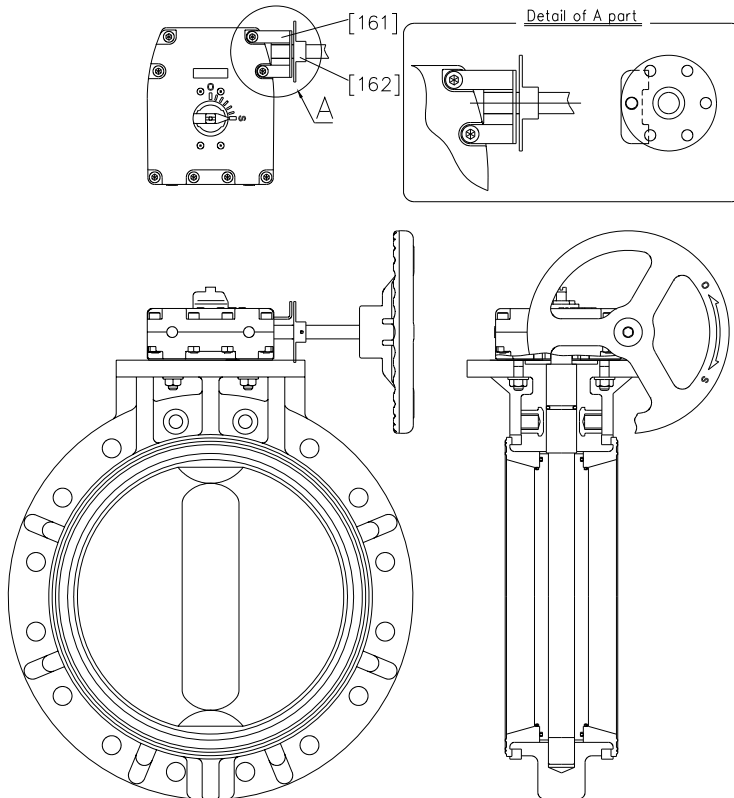
| No.  | DESCRIPTION        |
|------|--------------------|
| [1]  | Body               |
| [1a] | Ring <sup>*1</sup> |
| [2]  | Disc               |
| [3]  | Seat               |
| [4]  | O-ring (A)         |
| [5]  | O-ring (B)         |
| [6]  | O-ring (C)         |
| [7]  | Stem               |
| [7a] | Key (A)            |
| [25] | Gear Box           |
| [28] | Bolt (C)           |
| [29] | Bolt (D)           |
| [30] | Stand              |

\*Reference figure

\*1 only for Body material: PP, PVDF

**Type 56, 56D Gear Type: 400mm (16") with Handle Lock (Option)**

Body Material: PP, PVDF, PDCPD\*



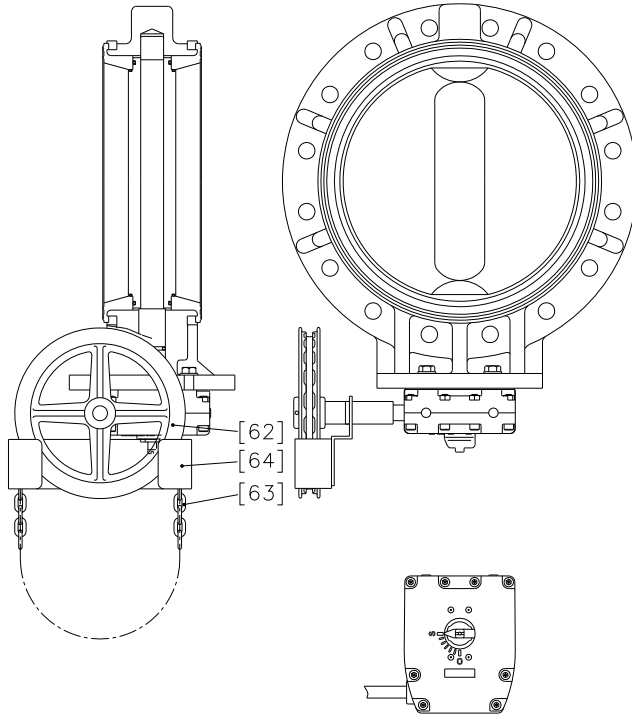
| No.   | DESCRIPTION    |
|-------|----------------|
| [161] | Lock Plate (A) |
| [162] | Lock Plate (B) |

\*Reference figure

**Type 56, 56D Chain Type: 400mm (16'') (Option)**

**Type 75, 75D Chain Type: 450-600mm (18''-24'') (Option)**

Body Material: PDCPD, PDCPD\*



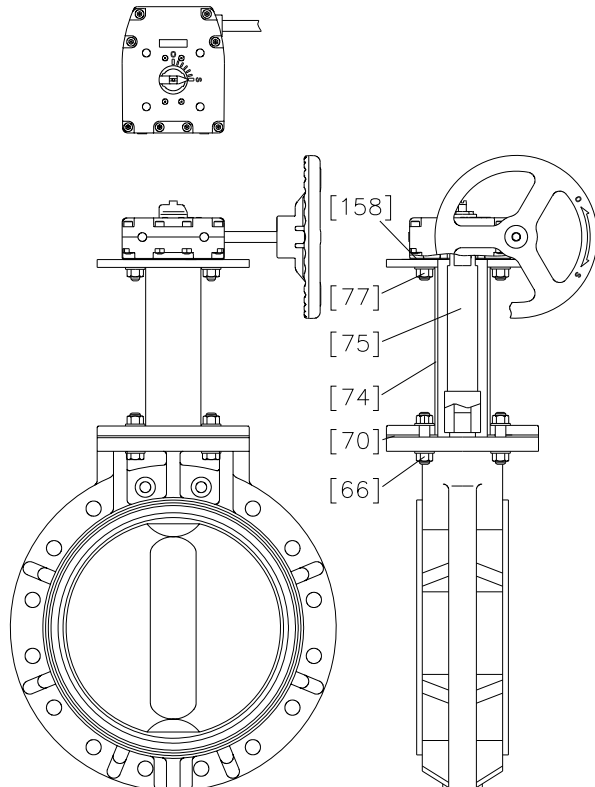
| No.  | DESCRIPTION    |
|------|----------------|
| [62] | Sprocket Wheel |
| [63] | Chain (A)      |
| [64] | Chain Cover    |

\*Reference figure

**Type 56, 56D Long Stem Type: 400mm (16'') (Option)**

**Type 75, 75D Long Stem Type: 450-600mm (18''-24'') (Option)**

Body Material: PP, PVDF, PDCPD\*

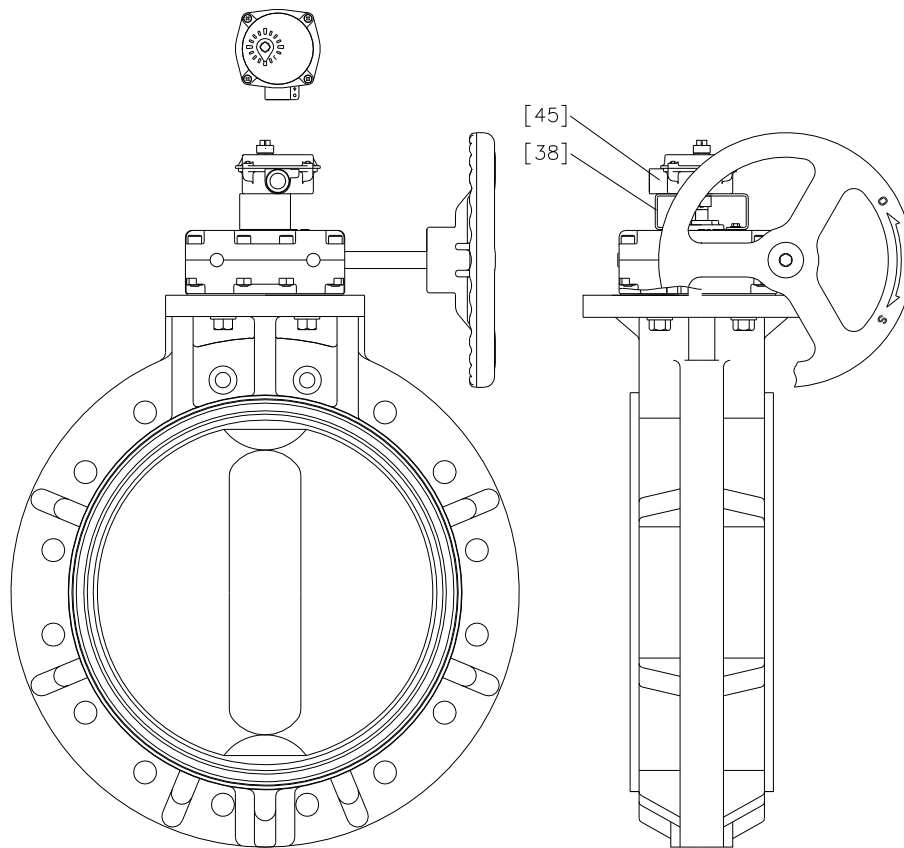


| No.   | DESCRIPTION    |
|-------|----------------|
| [66]  | Bolt • Nut (B) |
| [70]  | Gasket (C)     |
| [74]  | Pipe           |
| [75]  | Shaft          |
| [77]  | Bolt (H)       |
| [158] | Gasket (L)     |

\*Reference figure

**Type 56, 56D Gear Type: 400mm (16") with Limit Switch Box (TA-200-SB2) (Option)**

Body Material: PP, PVDF, PDCPD\*



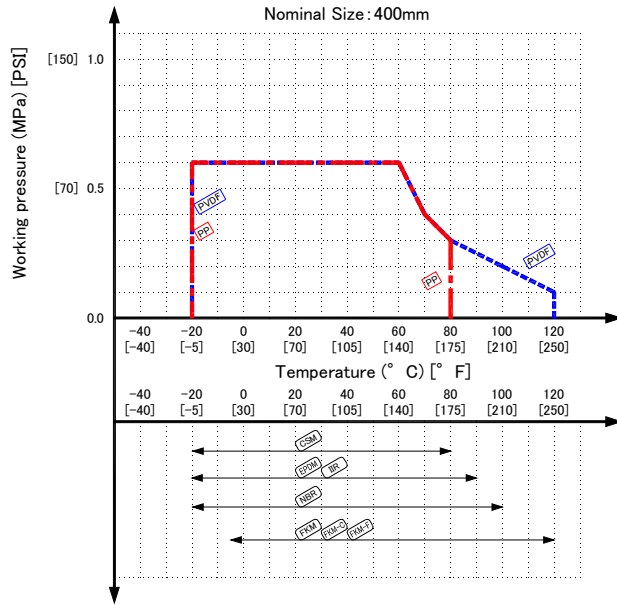
| No.  | DESCRIPTION      |
|------|------------------|
| [38] | Bracket (A)      |
| [45] | Limit Switch Box |

\*Reference figure

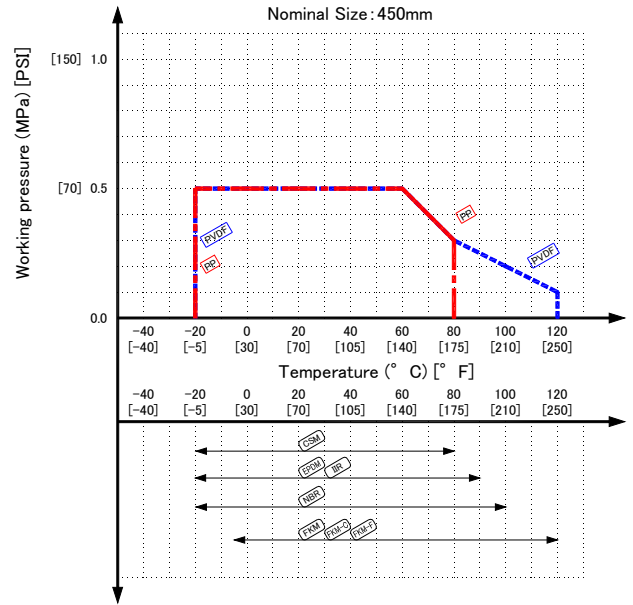


(5) Working pressure vs. temperature

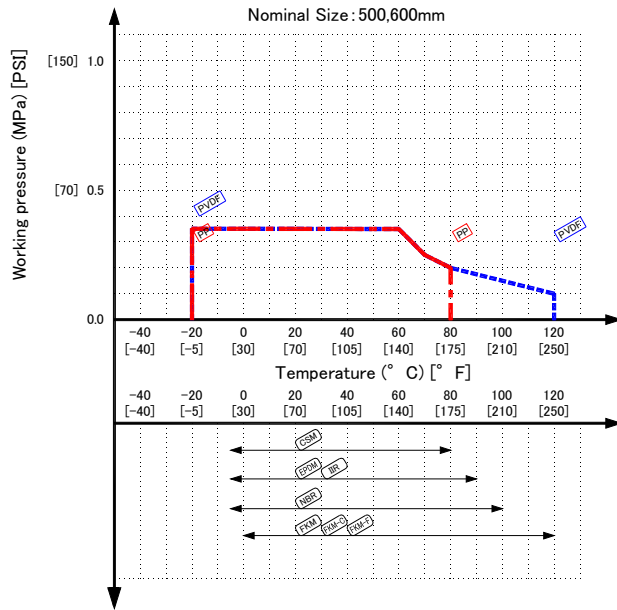
**BUTTERFLY VALVE TYPE56**



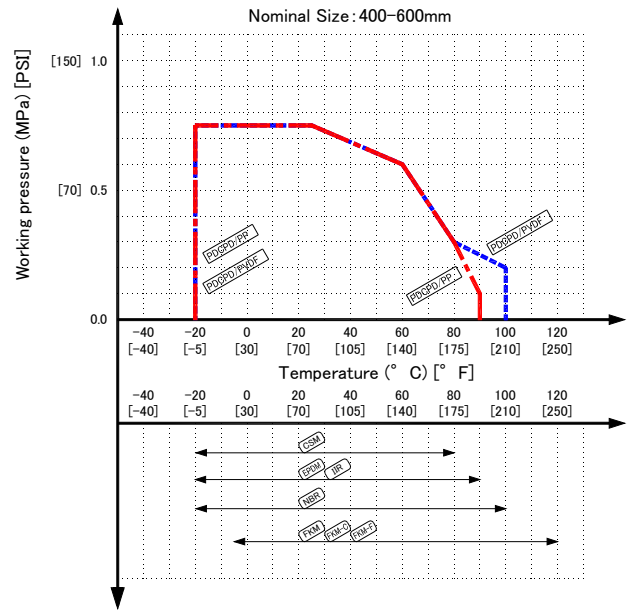
**BUTTERFLY VALVE TYPE75**



**BUTTERFLY VALVE TYPE75**



**BUTTERFLY VALVE TYPE56D,75D**



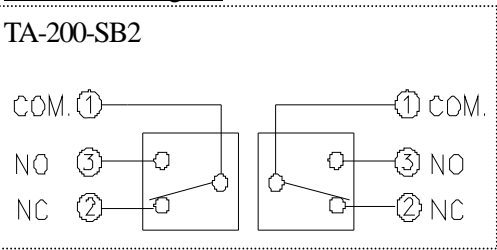
**(6) Specification of limit switch (option)**

| Nominal Size | Type      | Type Code  | Protection Grade |
|--------------|-----------|------------|------------------|
| 400mm (16")  | Gear Type | TA-200-SB2 | IP55             |

Limit Switch Rating

| Type Code  | Rate Voltage (V) | Resistive Load (A) | Inductive Load (A) |
|------------|------------------|--------------------|--------------------|
| TA-200-SB2 | AC125            | 11                 | 7                  |
|            | AC250            | 11                 | 7                  |
|            | DC125            | 0.5                | 0.1                |
|            | DC250            | 0.25               | 0.04               |

Connection Diagram



**(7) Installation procedure**



- When suspending and supporting a valve, take care and do not stand under a suspended valve.

Warning

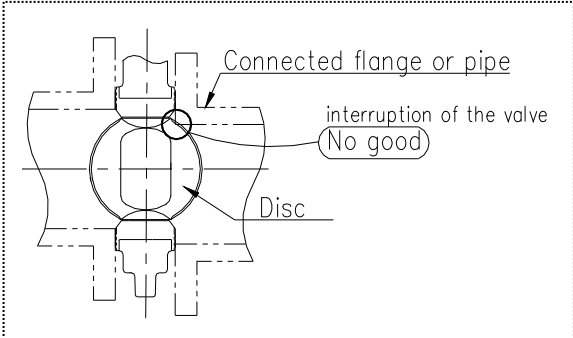
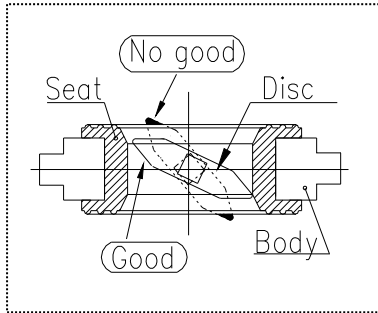


- Be sure to conduct a safety check on all hand and power tools to be used before beginning work.
- Wear protective gloves and safety goggles as fluid remain in the valve even if the pipeline is empty. (You may be injured.)

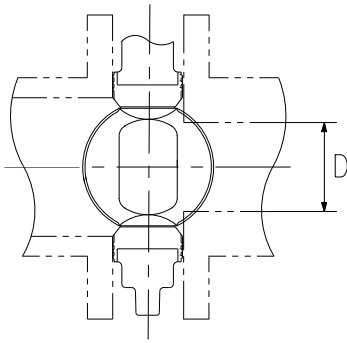


Caution

- 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.)
- 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 in the position indicated by solid lines in figure to the right 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.
- 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.



In case of an abutting thick walled flange and pipe, shave the flange or the pipe inner diameter in order to avoid contact of pipe and disc. If the inside diameter of the connecting pipe is larger than dimension D below, shaving is not necessary.



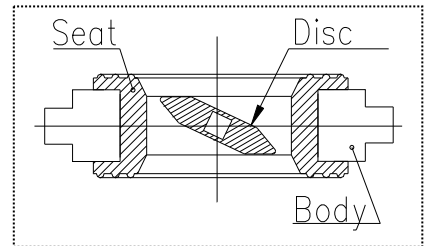
| Nominal size | Diameter D     |
|--------------|----------------|
| 400mm (16")  | 366mm (14.41") |
| 450mm (18")  | 419mm (16.5")  |
| 500mm (20")  | 469mm (18.5")  |
| 600mm (24")  | 569mm (22.4")  |

Necessary items

- Torque wrench
- Spanner wrench
- Bolt-Nut-Washer (For many flanges specification.)

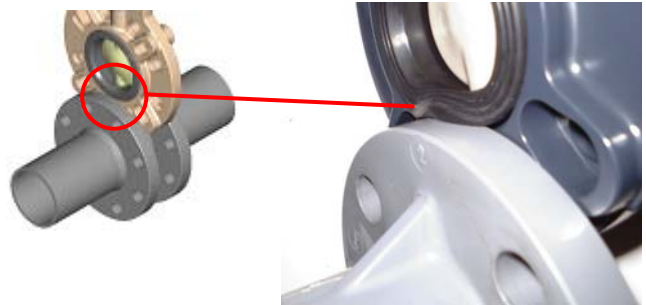
Procedure

- 1) Leave the disc [2] slightly opened by the handle.  
Do not make the disc protrude from the seat. (The disc may be damaged.)
- 2) Set the valve to the coupled flange.
- 3) Insert the connecting bolt-washer-nuts, and temporarily tighten them by hand.
- 4) Using a torque wrench, tighten the bolts and nuts gradually to the specified torque in a diagonal manner.



Caution

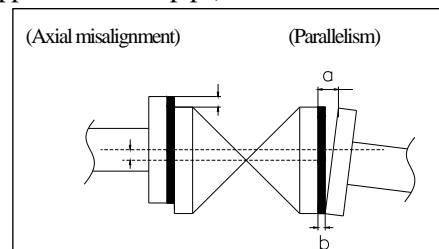
- When you insert a valve between flanges, please insert after extending the fields of flanges fully. (If you insert a valve by force without fully extending fields of flanges, a liner may be turned over and suffer a crack.)



- 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) |
|---------------------|--------------------|-------------------|
| 400-600mm (16"-24") | 1.5 [0.06]         | 1.0 [0.04]        |

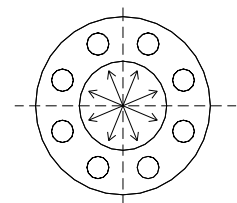


- Tighten the bolts and nuts gradually with a torque wrench to the specified torque level in a diagonal manner. (Avoid excessive tightening. (The valve can be damaged.))

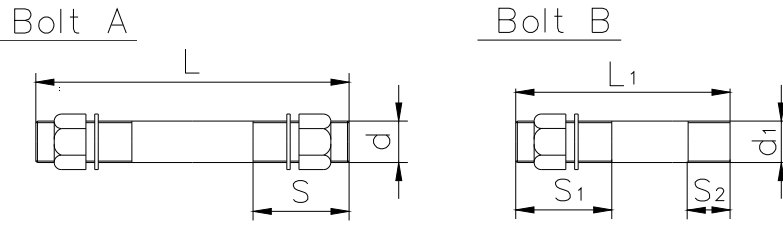
Specified torque value

Unit: N·m {kgf·cm} [lb·inch]

|              |                       |                       |
|--------------|-----------------------|-----------------------|
| Nom. Size    | 400, 450mm (16", 18") | 500, 600mm (20", 24") |
| Torque value | 80 {816} [710]        | 100 {1020} [887]      |



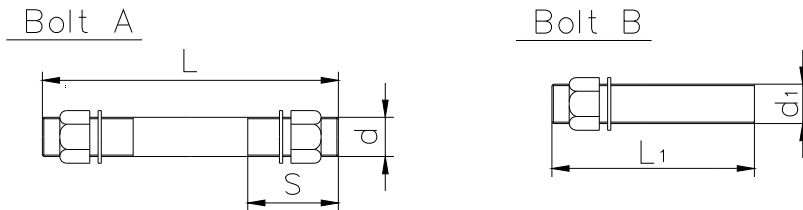
**- Body Material: PP, PVDF**



Unit: mm (inch)

| Nominal Size | Bolt A |                          |             | Bolt B |                        |             | Nut         | Washer |              |
|--------------|--------|--------------------------|-------------|--------|------------------------|-------------|-------------|--------|--------------|
|              | d      | L                        | S           | d1     | L                      | S1          |             |        | S2           |
| 400mm (16")  | M24    | More than 300mm (11.81") | 45mm (1.8") | M24    | More than 120mm (4.8") | 45mm (1.8") | 27mm (1.1") | M24    | 24mm (0.94") |
| 450mm (18")  |        | More than 315mm (12.4")  |             |        |                        |             |             |        |              |
| 500mm (20")  |        | More than 330mm (13.0")  |             |        |                        |             |             |        |              |
| 600mm (24")  | M30    | More than 375mm (14.8")  | 50mm (2.0") | M30    | More than 145mm (5.7") | 50mm (2.0") | 33mm (1.3") | M30    | 30mm (1.2")  |


**- Body Material: PDCPD**




Unit: mm (inch)

| Nom. Size   | Bolt A |                          |             | Bolt B |                        | Nut | Washer       |
|-------------|--------|--------------------------|-------------|--------|------------------------|-----|--------------|
|             | d      | L                        | S           | d1     | L1                     |     |              |
| 400mm (16") | M24    | More than 290mm (11.43") | 60mm (2.4") | M24    | More than 100mm (4")   | M24 | 24mm (0.94") |
| 450mm (18") |        | More than 310mm (12.2")  |             |        | More than 110mm (4.3") |     |              |
| 500mm (20") |        | More than 320mm (12.6")  |             |        | More than 110mm (4.3") |     |              |
| 600mm (24") | M30    | More than 350mm (13.8")  | 70mm (2.8") | M30    | More than 120mm (4.7") | M30 | 30mm (1.2")  |

**(8) Connection of limit switch procedure (option)**

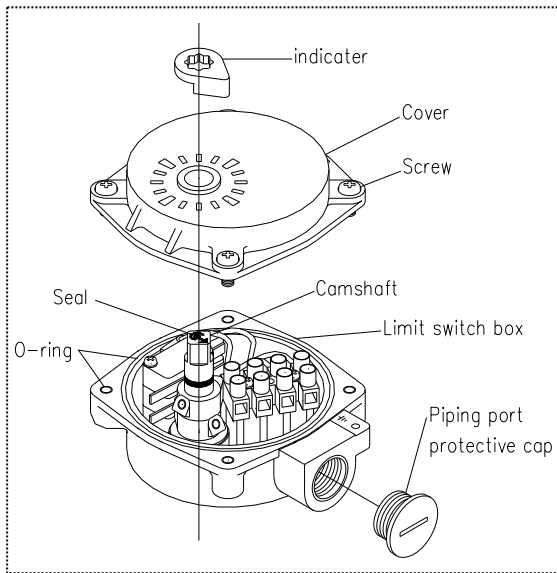
**Warning**  - Shut down the power on the equipment before connecting wires. There are risks of electrical shock depending on the level of operating voltage.

**Caution**  - Be sure that the terminal cover and body cover are put on during the operation.  
 - If you use the limit switch at 1mA-100mA or 5-30V, consult near Asahi dealer.



- Necessary items**
- Screw driver (+)
  - Connector (G1/2)
  - Crimp-style terminal
  - Wire stripper
  - Terminal crimping tool

Procedure (TA-200-SB2)


- 1) Remove the indicator.
- 2) Remove the fixed screws from casing using screw driver (+).  
 ※Don't be missing the o-ring of case end.
- 3) Turn to counter clockwise and remove the piping port protective cap.
- 4) Draw the cable through the connector.
- 5) Strip the cable with wire stripper.
- 6) Connect the cable to terminal board with a screw driver (-) in accordance page 9.  
 ※Tighten the screws. (Short circuit or shocks may occur.)
- 7) Tighten up the connector to fix the cable.
- 8) The screws must be tightened in turn after set the casing with screws driver (+)  
 ※Be sure to set the o-ring when the casing is re-set. (Short circuit or shocks may occur.)
- 9) Inset the indicator to the upper camshaft which must be set same direction of the seal's arrow.



**(9) Operating Procedure**

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

Caution

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

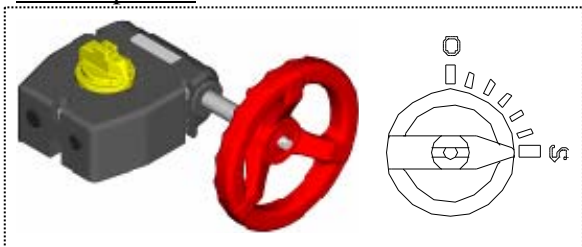
- Do not exert excessive force in closing the valve.
- When operating the handle, be sure to do so with your hand. (Using a tool may damage the handle.)

○ The indicator shows the position of the disc on the top of gear box.

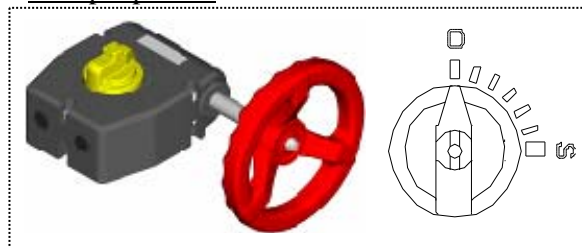
- For the full-shut position, the indication shows Shut [S].
- For the full-opened position, the indication shows Open [O].

▪ Type 56: 400mm (16")

Full shut position

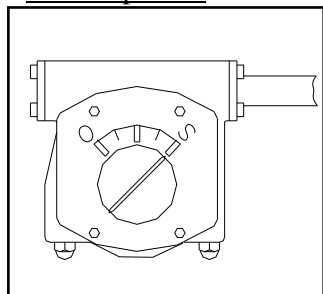


Full open position

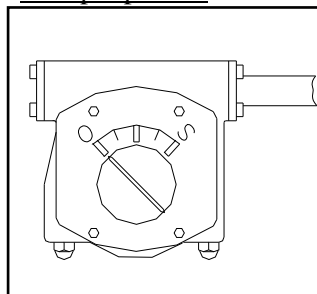


▪ Type 75: 450-600mm (18"-24")

Full shut position



Full open position





Technical Data for Operation

| Nominal Size  |      | Stem Torque |        |       |        | Diameter of Handle (mm) | Required Operating Force (N) |    |       |    |
|---------------|------|-------------|--------|-------|--------|-------------------------|------------------------------|----|-------|----|
| Body Material |      | PP, PVDF    |        | PDCPD |        |                         | PP, PVDF                     |    | PDCPD |    |
| mm            | inch | N•m         | kgf•cm | N•m   | kgf•cm | N                       | kgf                          | N  | kgf   |    |
| 400           | 16"  | 760         | 7500   | 1300  | 13300  | 150                     | 170                          | 17 | 290   | 30 |
| 450           | 18"  | 820         | 8000   | 1500  | 15300  | 205                     | 135                          | 14 | 244   | 25 |
| 500           | 20"  | 1150        | 11300  | 1800  | 18400  | 205                     | 188                          | 20 | 293   | 30 |
| 600           | 24"  | 1600        | 15700  | 1900  | 19400  | 205                     | 261                          | 27 | 317   | 32 |

Note: Data mentioned in the table above is reference only.

These data are measured in standard condition and it slightly differs depending on conditions.

(10) Disassembly and assembly procedure for parts replacement

  - Wear protective gloves and safety goggles as fluid remain in the valve even if the pipeline is empty. (You may be injured.)

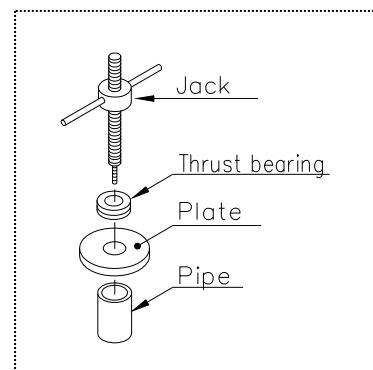
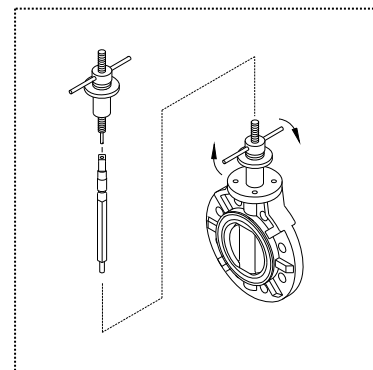
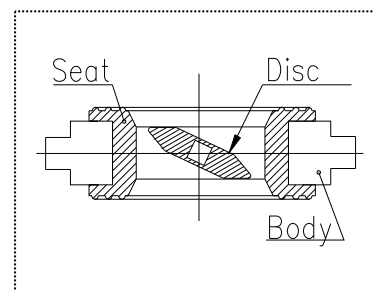
- When installing pipes and valves, ensure that they are not subjected to tension, compression, bending, impact, or other excessive stress.
- Do not change or replace valve parts under line pressure.

- Necessary items
- Protective gloves
  - Safety goggles
  - Spanner wrench
  - Plate
  - Thrust bearing
  - Silicone grease
  - Screwdriver (-)

<< Disassembly >>

Procedure

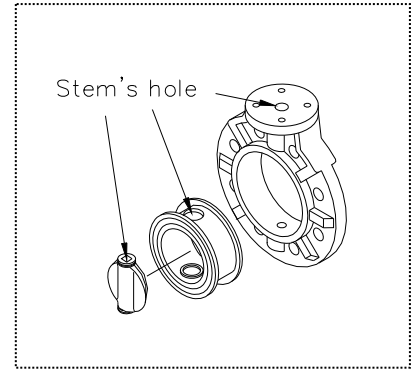
- 1) Drain fluid completely from the pipeline and leave the valve slightly opened.
- 2) Loosen the connecting bolts and nuts with a spanner wrench.
- 3) Remove the valve from the pipeline.
- 4) To take off the gearbox [25], loosen the bolt (C) [28] and pull up the gearbox.
- 5) Attach jack, thrust bearing, plate, and pipe to the valve, and thread the jack into the stem [7].
- 6) Remove the stem [7] from the jack.
- 7) Remove the O-ring (C) [6].
- 8) Make the disc [2] fully open.
- 9) Pull out the both edges of seat [7] and remove the seat [3] and disc [2].
- 10) Take the disc [2] out of the seat [3].
- 11) Remove the O-ring (A) [4] and the O-ring (B) [5].



<< Assembly >>

Procedure

- 1) Before starting assembly, silicone grease (equivalent to Toray Silicone HVG) should be spread on the disc O-rings (A) [4], (B) [5] and stem O-ring (C) [6].
- 2) The procedure of the assembly is the almost reverse of its disassembly. However, to insert seat [3] with the disc [2] into the body [1], set the disc [2] with half - opened position. Press outer rim of seat [3] into inside of the body [1], keeping stem holes straight.  
(Make sure that stem holes of the seat [3] are in alignment with the stem holes of the body [1].)
- 3) After assembly, make sure that the disc [2] fits seat [3] well.



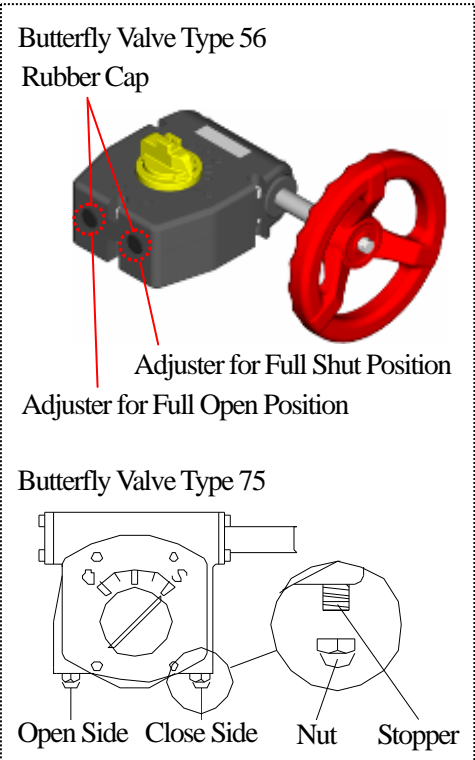
**(11) Adjustment procedure for stopper**

Necessary items

- Protective gloves
- Allen wrench
- Spanner wrench



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

- 1) Remove the rubber cap (nut) of Full-shut (Full-opening) adjuster.
- 2) Loosen the stopper hex-bolt completely by Allen wrench.
- 3) Adjust the disk of valve to required position.
- 4) Tighten the stopper hex-bolt.
- 5) Put the rubber cap (nut) of Full-shut (Full-opening) adjuster back on gearbox.





**(12) Inspection items**



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

|     |  |
|-----|--|
| (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.                            |

**(13) Troubleshooting**

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

**(14) Handling of residual and waste materials**

  - 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 Valves**

Type 56: 400mm (16")

Type 75: 450-600mm (18"-24")

Type 56D: 400mm (16")

Type 75D: 450-600mm (18"-24")



ASAHI AV VALVES

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**Distributor**

Asahi Organic Chemicals Industry's homepage

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