

Inserting

Outline

The inserting is a technique which a branch can be made from the main pipe or a plug, a valve, and so on can be installed without shutting water supply. Cosmo develops technologies meeting various demands such as "Requirement of simultaneous seal and branch" or "Demand for branching at any direction freely". The technique that is available even for large pipes or pipelines in high pressure can be called a technology renovation in Japanese water works field of which we are proud all over the world.

Purpose of use

1. Where there is no valve in the main to make the maintenance difficult.
2. Where spot pipe removals are required to install a structure (such as a bridge, a railway, or a sewer), widen a road, or broaden a river.
3. Where the area that the water supply is to be shut is required to be minimized.
4. Where the water pipeline is to be changed due to land readjustment etc.
5. Where a plug is required to be installed in a pipeline that is to be decommissioned.

< The way of assemble and the sealing system of the main body >

The way of assemble All seam parts of the main body shall be welded.

The sealing system The seal of sides of the main body shall be mechanically done with retainer glands for the standard type. Where, however, it is used on a steel pipe, the seal shall be done by weld for the standard type.

※ After the main body is assembled on the main, the hydrostatic test shall be done to check the seal.

Varieties

- Inserting resilient seated valve ISV
- Inserting valve IV
- Inserting butterfly valve IB
- Inserting plug IP
- Inserting switch-able valve IR
- Inserting plug branching type ID
- R valve "Inserting shallow earth covering type switch-able valve installation method"
- CO valve "Inserting switch-able valve installation method"

<Special branch work under pressure>

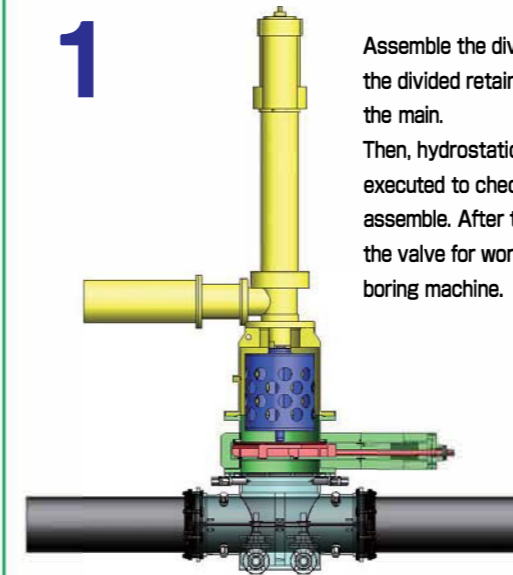
- Special upper branch work under pressure DH
- Special lower branch work under pressure DL
- Special branch work under pressure C cut DC
- Special cross branch work under pressure DS

<Others>

- Plug 3 type "Work under pressure temporary valve installation method"
- Shut man (ST type shutting device)

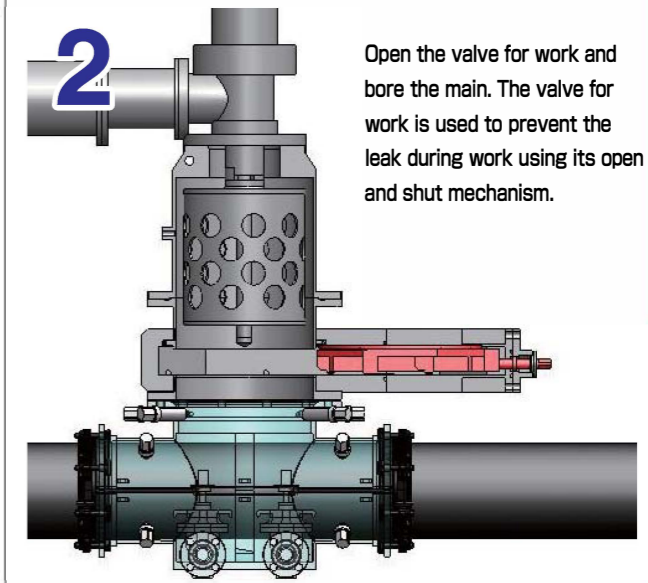
Mechanism

1



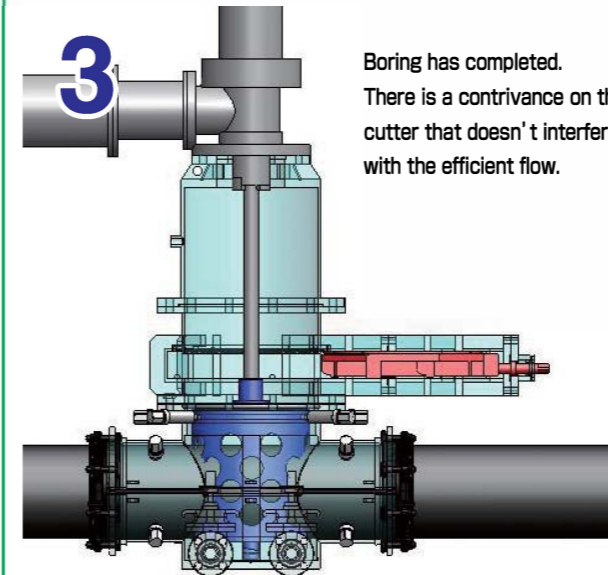
Assemble the divided tee and the divided retainer glands on the main.
Then, hydrostatic test is executed to check the proper assemble. After that, mount the valve for work and the boring machine.

2



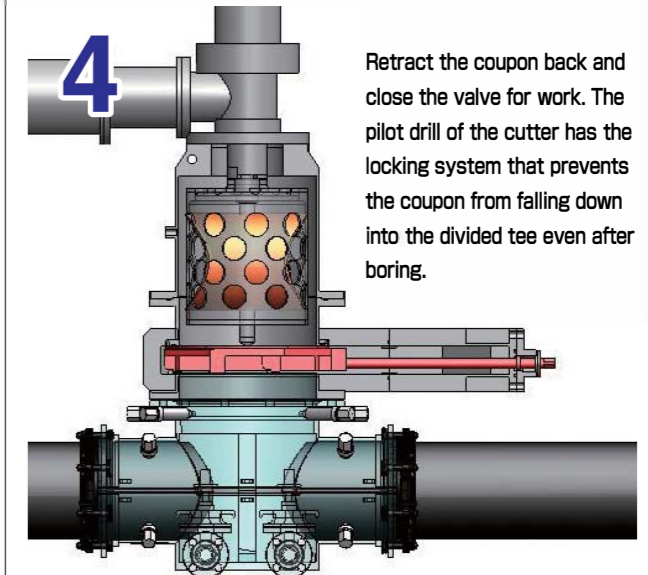
Open the valve for work and bore the main. The valve for work is used to prevent the leak during work using its open and shut mechanism.

3



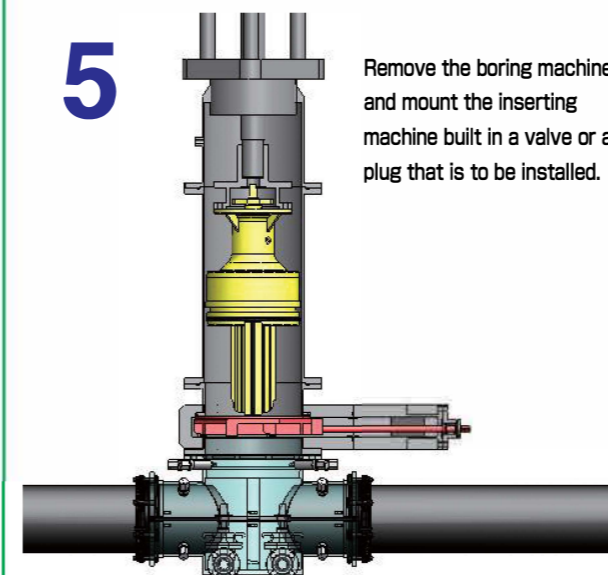
Boring has completed. There is a contrivance on the cutter that doesn't interfere with the efficient flow.

4



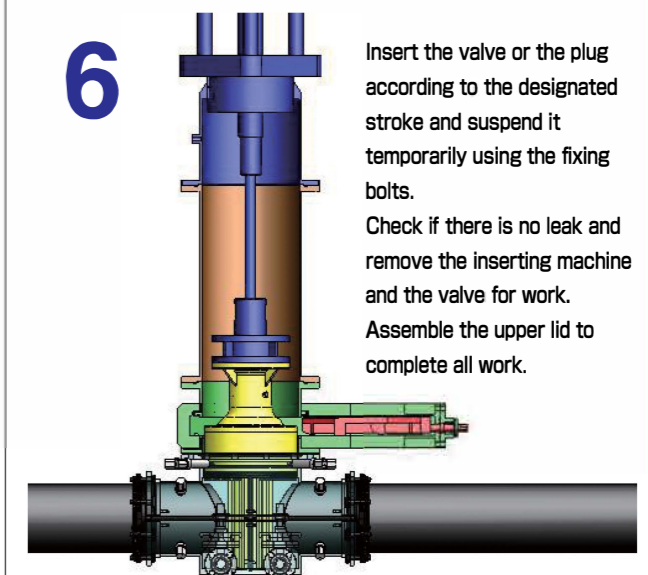
Retract the coupon back and close the valve for work. The pilot drill of the cutter has the locking system that prevents the coupon from falling down into the divided tee even after boring.

5



Remove the boring machine and mount the inserting machine built in a valve or a plug that is to be installed.

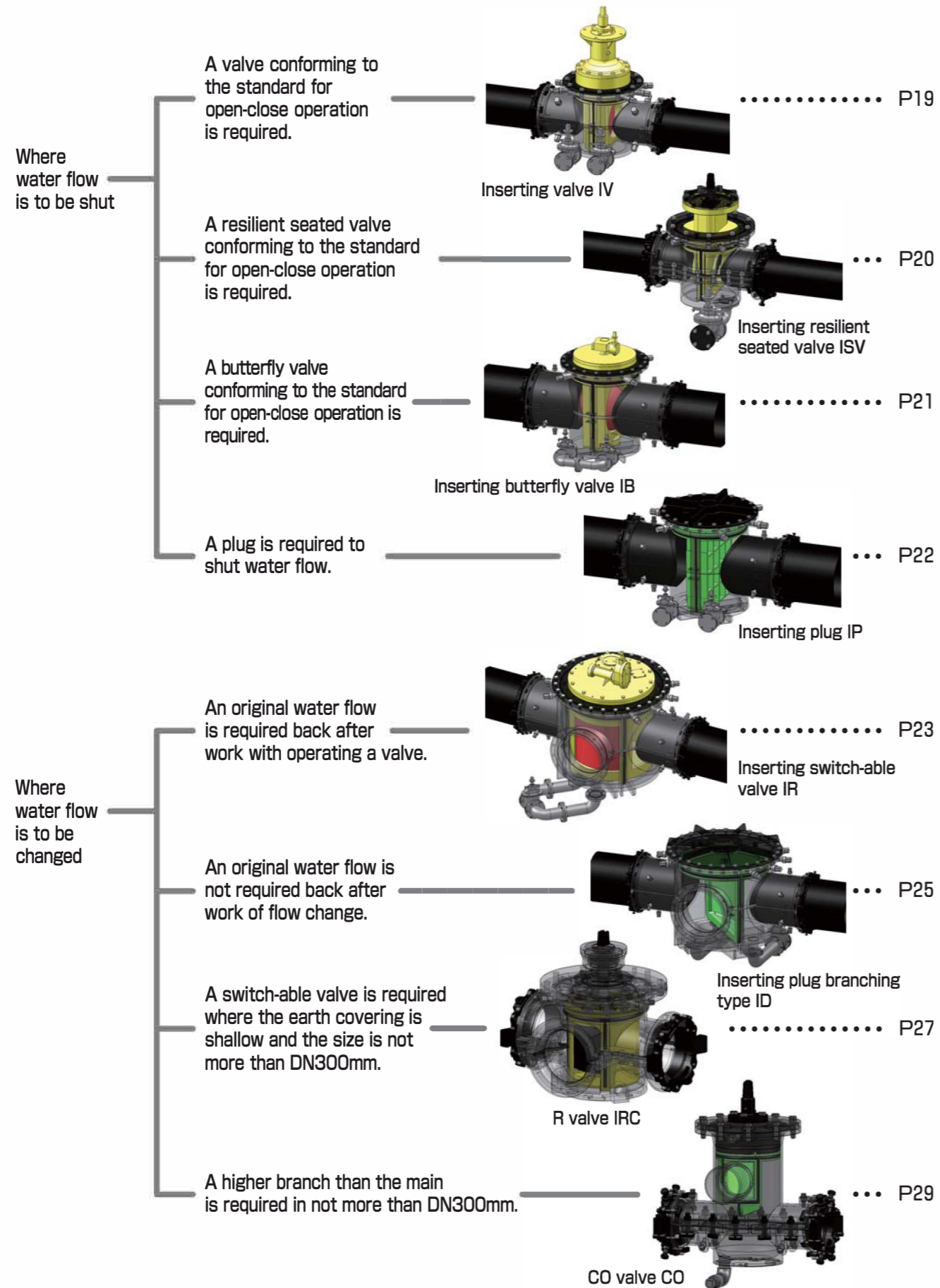
6



Insert the valve or the plug according to the designated stroke and suspend it temporarily using the fixing bolts.
Check if there is no leak and remove the inserting machine and the valve for work.
Assemble the upper lid to complete all work.

《Classification of Work Under Pressure》

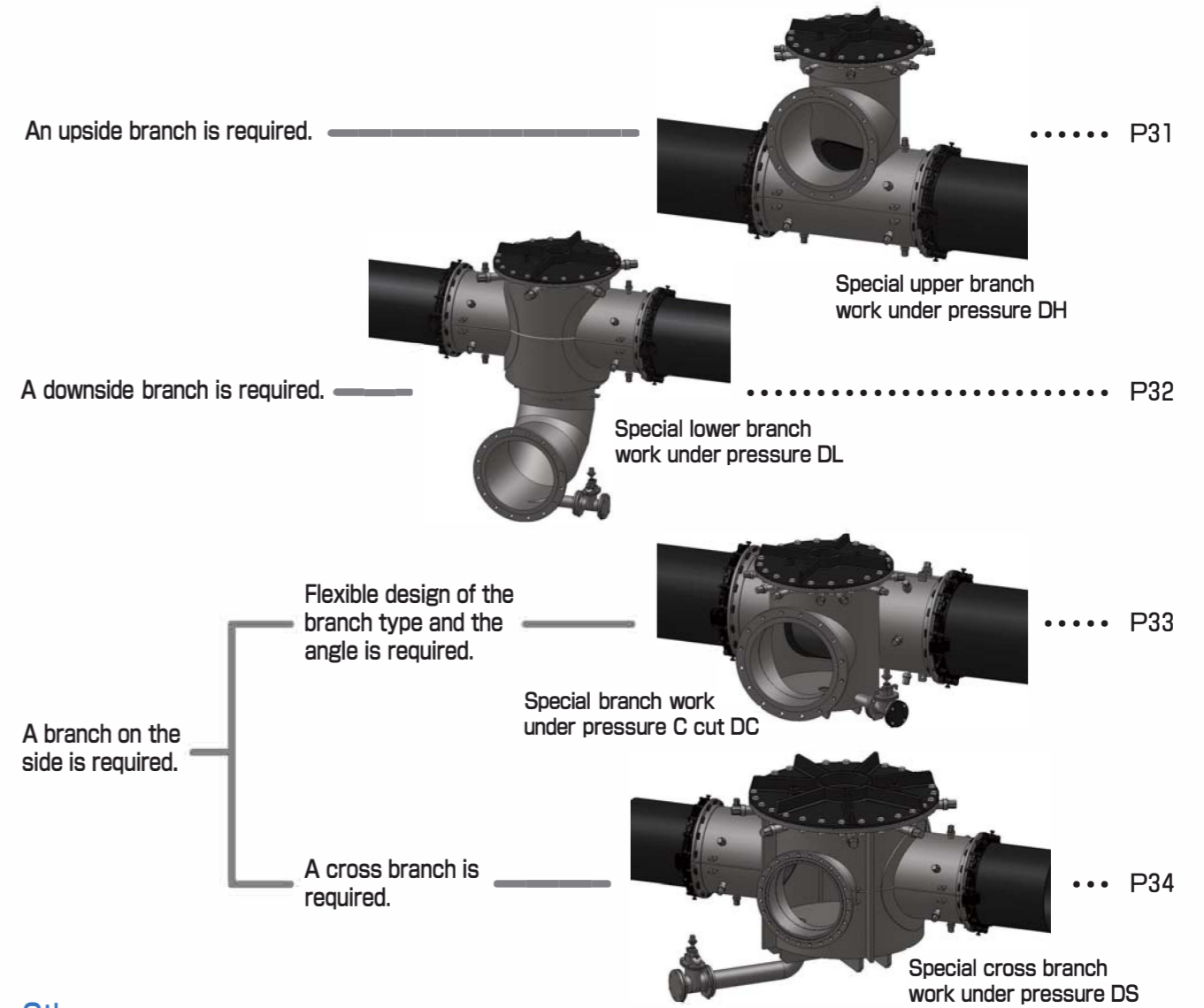
Use and features of Inserting



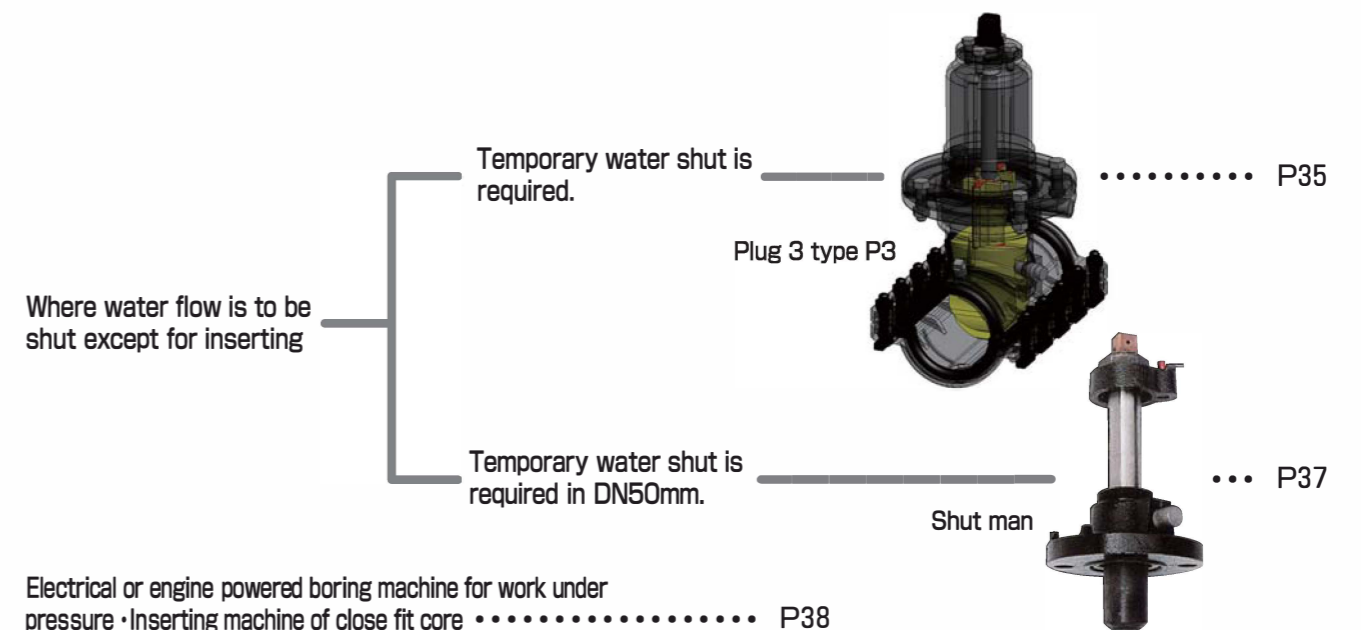
Inserting

Inserting

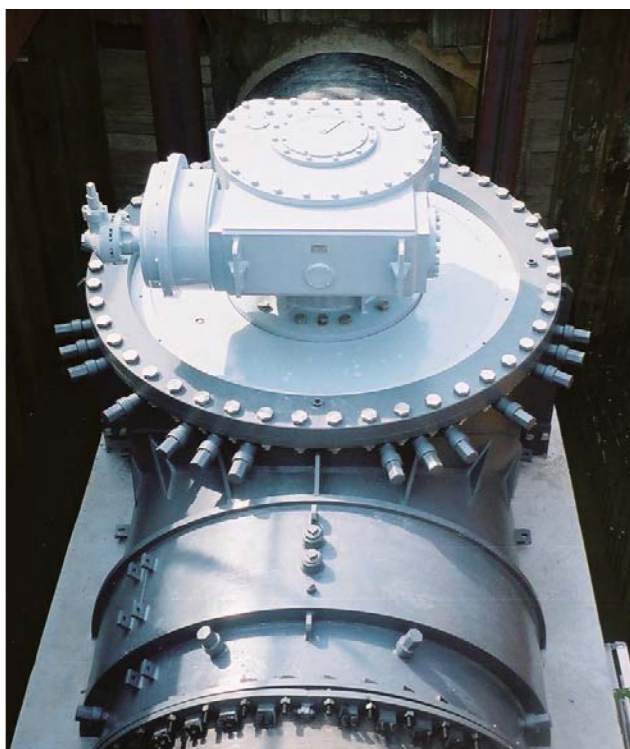
Special branch work under pressure



Others



Inserting Butterfly Valve IB



Material Main body: SS400/Valve: FCD450-10

Applicable pipe-Size

Applicable pipe	DN of the main
For casting iron pipe	300~2200
For steel pipe	300~2200
For hume pipe	300~1100

【Outline】

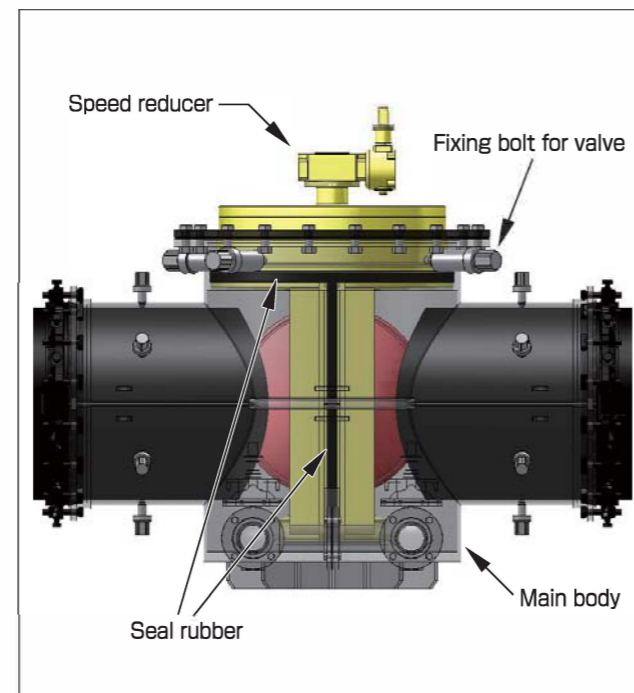
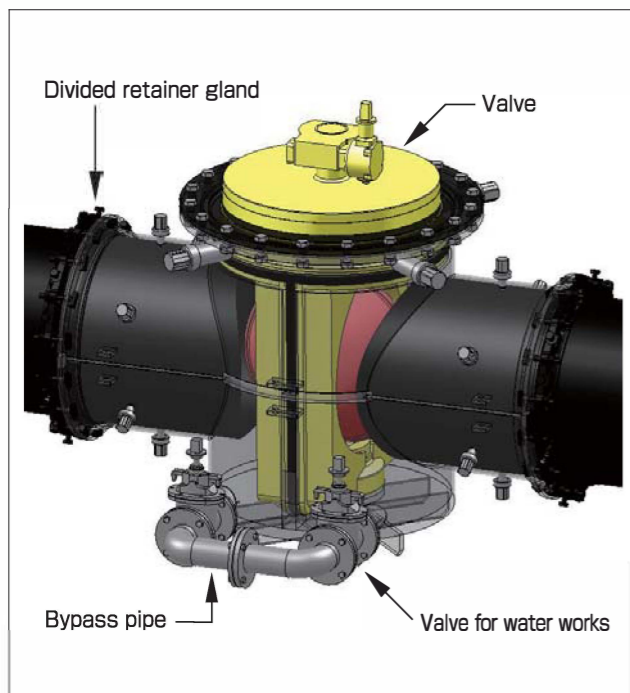
1. The purpose of the work is inserting a butterfly valve in the main under pressure.
2. The inserting divided tee is installed on the planned location on the main and a butterfly valve is inserted under pressure using equipments such as the valve for work, the pressure resistant companion flange, the cosmo borer, and the inserting machine.

【Features】

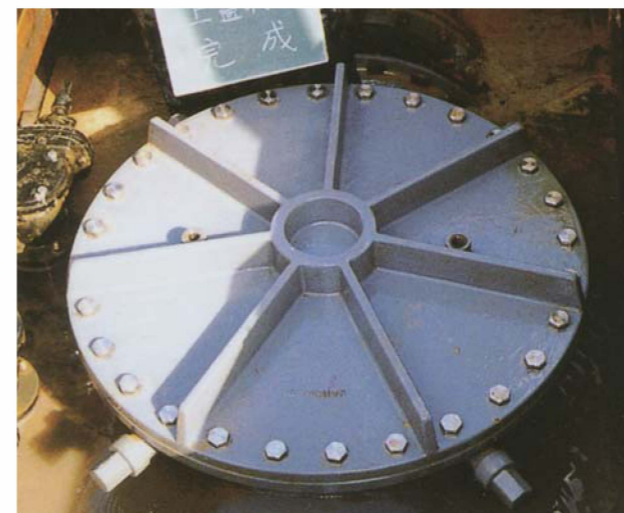
1. A butterfly valve approved by JWWA is used. (Conforming to JWWA B 138)
2. The valve, sliding parts, and valve operation parts comply with JWWA standard.
3. A manual or an electrical speed reducer can be attached.
4. For not less than DN 350mm, assistant valves can be installed. A drain or a cleaning system is available on demand.

【Valve operation】

"Counterclockwise open type" is the standard type according to JWWA B 138. "Clockwise open type" is available on demand. Also a manual or an electrical speed reducer can be requested.



Inserting Plug IP



【Outline】

1. The purpose of the work is shutting flow of the main.
2. The inserting divided tee is installed on the planned location on the main, a section of the main is taken away by boring, and a plug is inserted. All works are done under pressure.

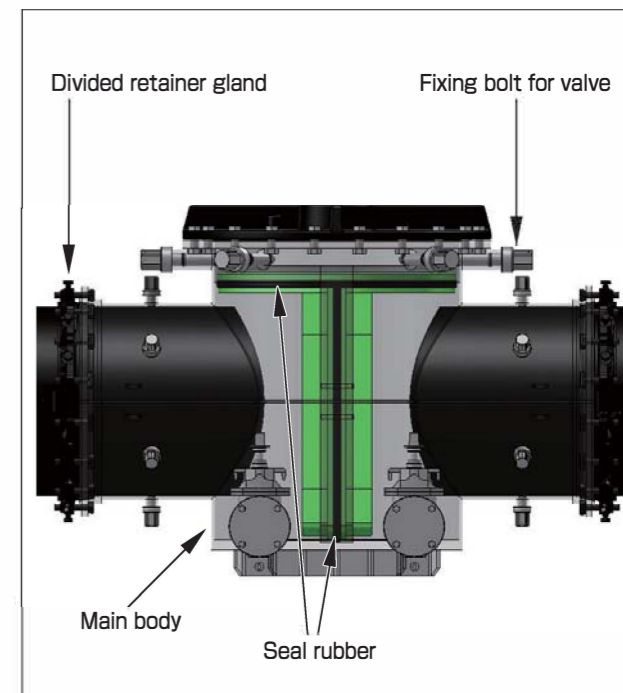
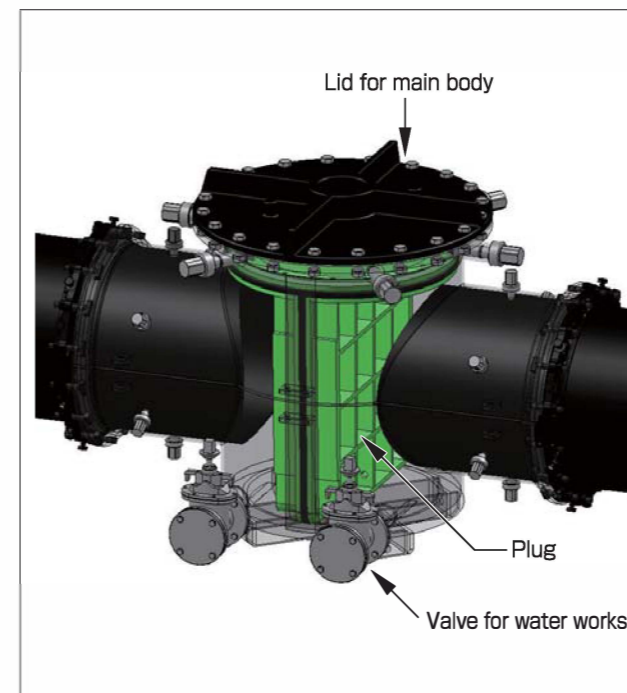
【Features】

1. A shutting plug can be installed without shutting water supply in the main.
2. The plug is a fixed type, so it can not be operated.
3. Second valves or a drain system can be installed.
4. It is available to be installed on the main at will.

Material Main body: SS400/Valve: FCD450-10

Applicable pipe-Size

Applicable pipe	DN of the main
For casting iron pipe	75~2200
For steel pipe	50~2200
For hume pipe	150~1100



Plug 3 Type Work under pressure temporary valve installation method

Plug Three Type



【Outline】

1. Boring of the main under pressure for "Plug 3 type" is done using a divided tee. A plug (valve) shall be installed on the flange part of the tee. The fitting of the plug and the inside of the main pipe shuts the flow in the main.

【Features】

1. It is available to be installed on the main under pressure at will.
2. A whole section of the main is not bored, but only the top of the pipe is bored to insert the plug, so it's time saving.
3. Hydrostatic test after the installation of the tee on the main proves the safety.
4. The tee maintains the original pipe strength of the main.
5. The plug can be removed on demand, so maintenance and control are easy.

Plug 3 Type Cosmo stopper Installation guide

<p>1 Assemble the case and the cover on the main after cleaning.</p>	<p>2 Execute the hydrostatic test under the pressure decided in a meeting with a supervisor.</p>
<p>3 Set supports and mount the valve for work.</p>	<p>4 Bore after the boring machine is mounted on the valve for work. Drain out chips from the drain hose. After boring, retract the cutter back, close the valve for work, and remove the boring machine.</p>
<p>5 Mount the inserting machine set up with the plug on the valve for work, insert the plug, and fix the plug. Then remove the inserting machine and the valve for work.</p>	<p>6 Assemble the upper lid and the cap to complete the work.</p>

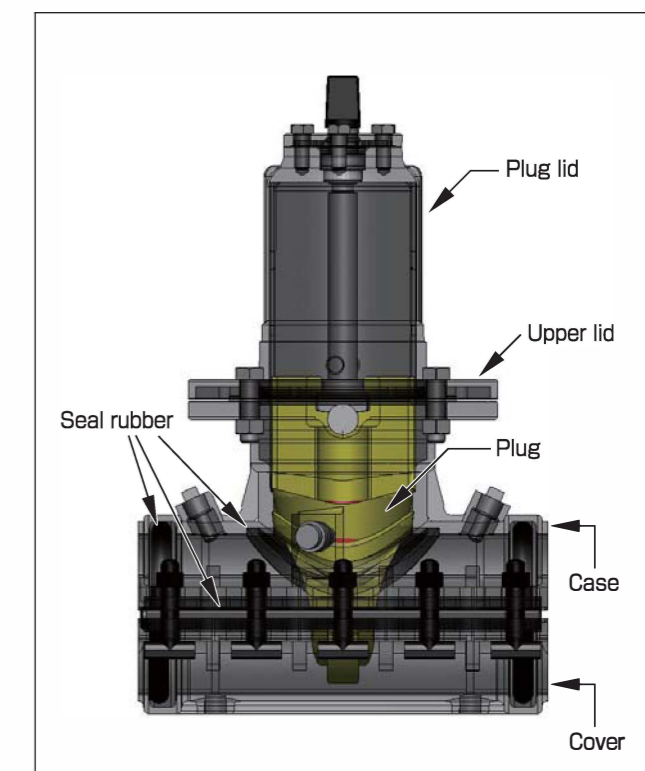
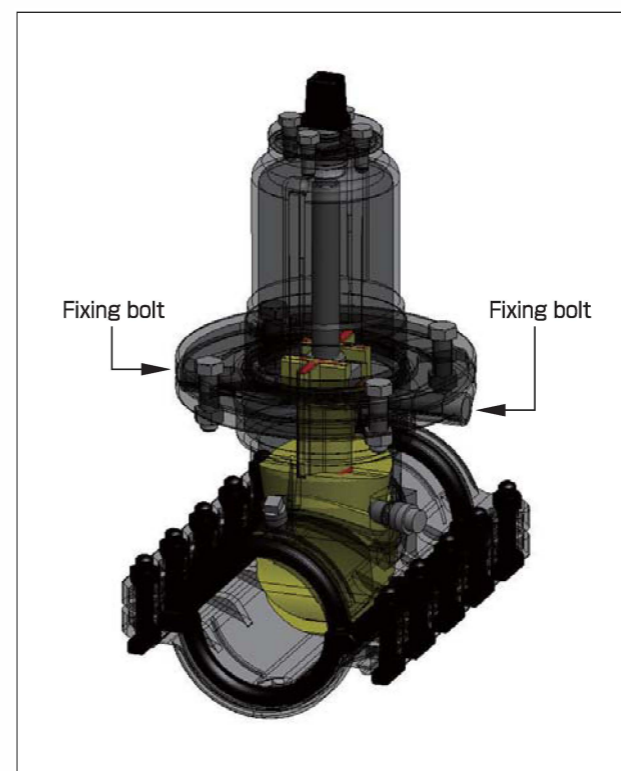
Material Main body: FCD450-10 / Valve(Plug): FCD450-10

Applicable pipe-Size

Applicable pipe	DN of the main
For casting iron pipe (millimeter)	75~600
For casting iron pipe (inch)	3B~20B
For steel pipe	75~500
For PVC pipe	75~200
For polyethylene pipe	75~200

【The standard number of turns】 (Ductile iron pipe with mortar lining)

DN	Number of turns (Turns)	DN	Number of turns (Turns)
75	18.5~19.5	300	57.0~58.0
100	22.5~23.5	350	64.0~65.0
125	24.5~25.5	400	64.0~65.0
150	28.0~29.0	450	66.0~67.0
200	43.0~44.5	500	66.0~67.0
250	47.0~48.0	600	70.5~71.5



Plug 3 Type Plug open and close (eg. DN75 to 150 mm, 3 inch to 6 inch)

