
KITZ

Operation Manual

For
Cast Bronze Fun-Coil Valves and
Ball Valves for Fun-Coil Unit

Thank you for having chosen KITZ products.

For safe and trouble-free function and performance of the product, ensure to read and understand all items of this manual before valve mounting and operation.

Keep this manual in a convenient place for your valve operators' easy access.

This manual apply to Type 200 cast bronze fun-coil valves connecting for steel pipe,
Type 200 cast bronze fun-coil valves connecting for copper pipe,
JIS 10K cast bronze ball valves with long handle for fun-coil unit and
JIS 10K cast bronze ball valves with long neck for fun-coil unit made by KITZ.

CAUTION AND WARNING

To ensure safe and trouble-free function and performance of the product, please read all items of this manual before handling, transportation, mounting and operation of valves. Keep this manual in a convenient place for your valve operations' easy access.

The signal words "WARNING" and "CAUTION" are defined as follows:



Indicates a potentially hazardous situation, which, if not avoided, will result in death or serious injury.



Indicates a potentially hazardous situation, which, if not avoided, could result in minor or moderate injury.

NOTES TO USERS

This manual covers the normal usage of the product. Technical data and instructions for operation, maintenance and inspection of the product are prepared in consideration of safety. However, they are good only to cover typical applications as a general guideline to users. If technical assistance beyond the scope of this manual is required, contact KITZ Corporation or its distributors.

The illustrations given in this manual do not introduce all details. If more detailed data are needed, refer to our relevant valve assembly drawings.

Any information provided in this operation manual is subject to revision at any time without notice. This edition cancels all previous issues.

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CHAPTER
Construction and Design Features

Construction and Design Features

1. Type 200 Cast Bronze fun-coil valves with indicator connecting for steel and copper pipe

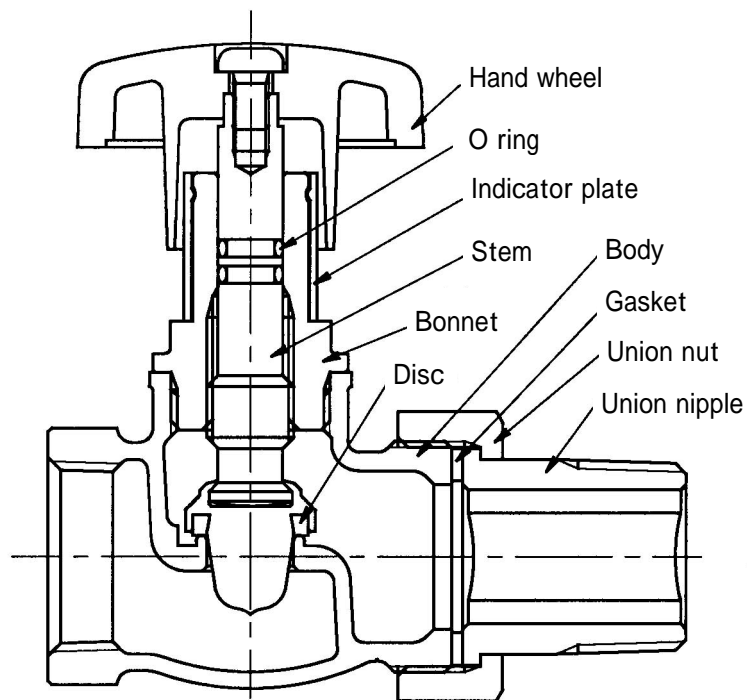
1.1 The typical valve design is as illustrated below.

1.2 This is inside screw and rising stem type.

1.3 It needs the space for hand wheel operation and its lift dimensions.

1.4 This valve is available to use for both on – off and control.

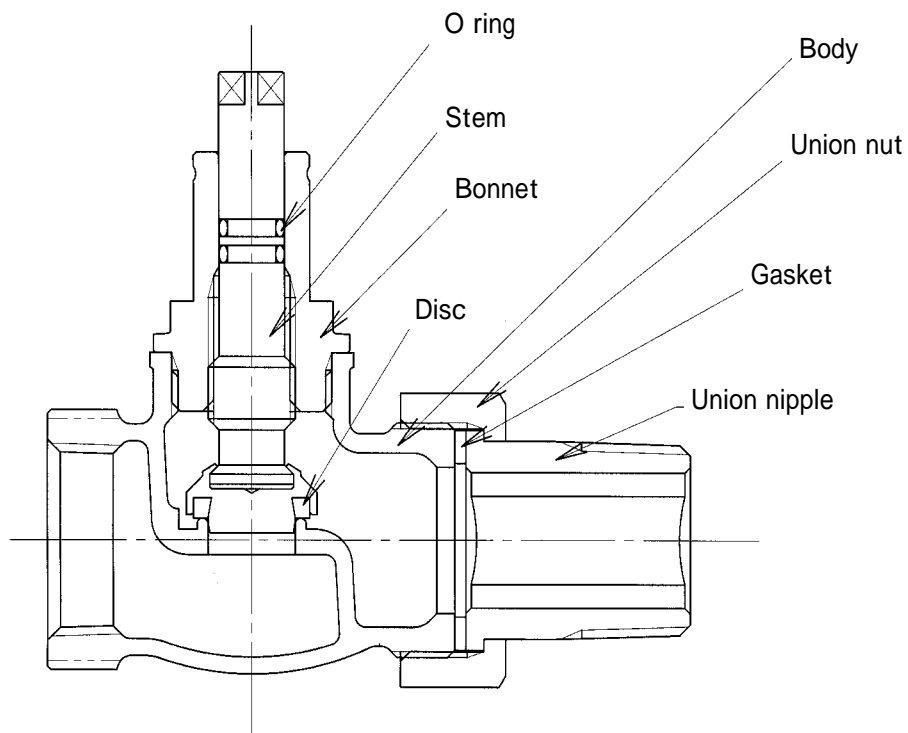
1.5 This valve design may have big pressure loss according its configuration.



This illustration represents a typical construction.

Construction and Design Features

2. Type 200 Cast Bronze fun-coil valves connecting for steel pipe and copper pipe
 - 2.1 The typical valve design is as illustrated below.
 - 2.2 This valve is inside screw and rising stem type.
 - 2.3 It needs the space for hand wheel operation and its lift dimensions.
 - 2.4 This valve is available to use for on – off action.
 - 2.5 This valve design may have big pressure loss according its configuration.
 - 2.6 This valve has no hand wheel, but it is available to install applicable one on request.
(Please contact our distributor in such case.)



This illustration represents a typical construction.

Construction and Design Features

3. JIS 10K Cast Bronze ball valves for fun-coil unit with long handle. (Full bore type)

3.1 The typical valve design is as illustrated below.

3.2 This valve has long hand wheel for racking availability.

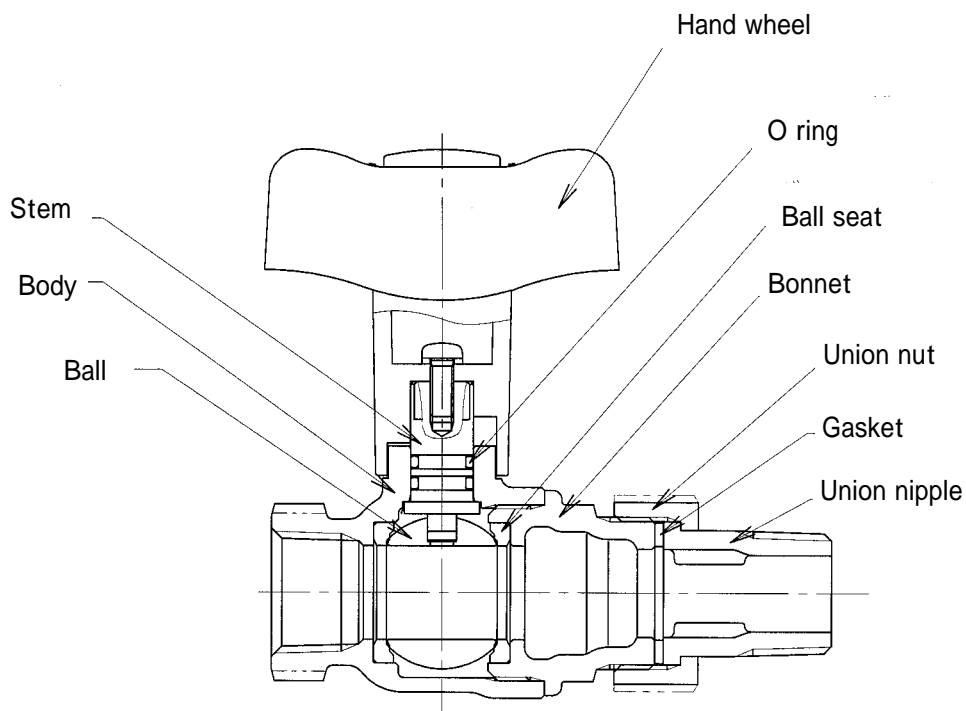
3.3 Bore size is the same diameter with nominal size.

3.4 This valve is able to open and close by quarter turn operation.

3.5 This valve is available to use for on – off action.

3.6 Two ball seats support Ball and stem is not fixed to the ball. Therefore ball can move to secondary seat and help to seal when pressurized the valve.

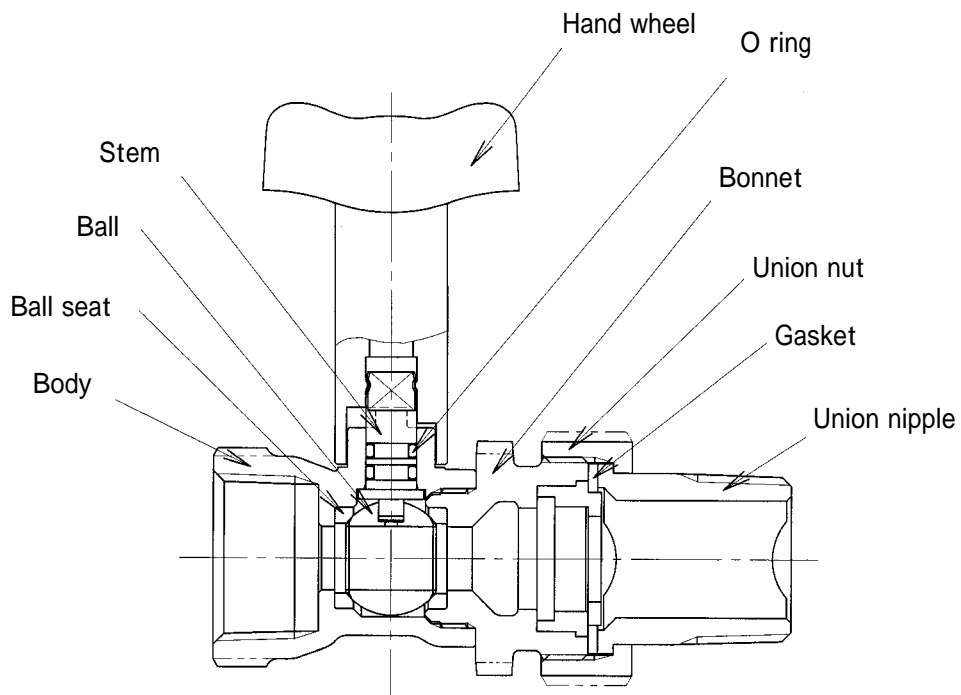
3.7 This valve is bi-directional seal.



This illustration represents a typical construction.

Construction and Design Features

4. JIS 10K Cast Bronze ball valves for fun-coil unit with long handle. (Reduced bore type)
 - 4.1 The typical valve design is as illustrated below.
 - 4.2 This valve has long hand wheel for racking availability.
 - 4.3 Bore size is smaller than nominal size.
 - 4.4 This valve is able to open and close by quarter turn operation.
 - 4.5 This valve is available to use for on – off action.
 - 4.6 Two ball seats support Ball and stem is not fixed to the ball. Therefore ball can move to secondary seat and help to seal when pressurized the valve.
 - 4.7 This valve is bi-directional seal.



This illustration represents a typical construction.

Construction and Design Features

5. JIS 10K Cast Bronze ball valves for fun-coil unit with long neck. (Full bore type)

5.1 The typical valve design is as illustrated below.

5.2 This valve has long neck for racking availability.

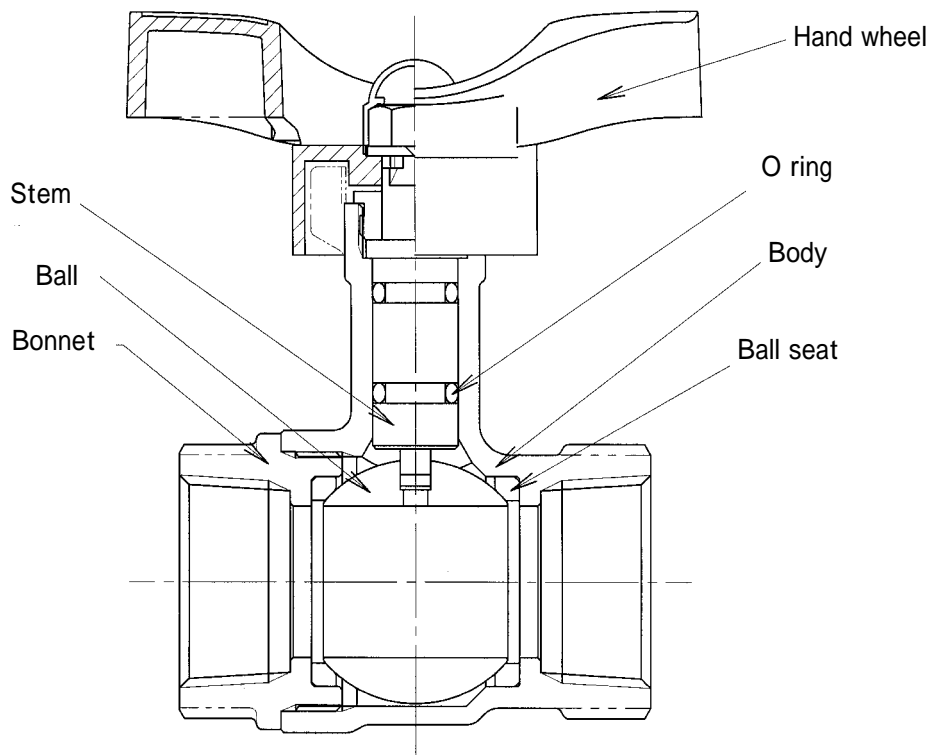
5.3 Bore size is the same diameter with nominal size.

5.4 This valve is able to open and close by quarter turn operation.

5.5 This valve is available to use for on – off action.

5.6 Ball is supported by two ball seats and stem is not fixed to the ball. Therefore ball can move toward secondary seat and help to seal when pressurized the valve.

5.7 This valve is bi-directional seal.



This illustration represents a typical construction.

CHAPTER
Valve Operation Device

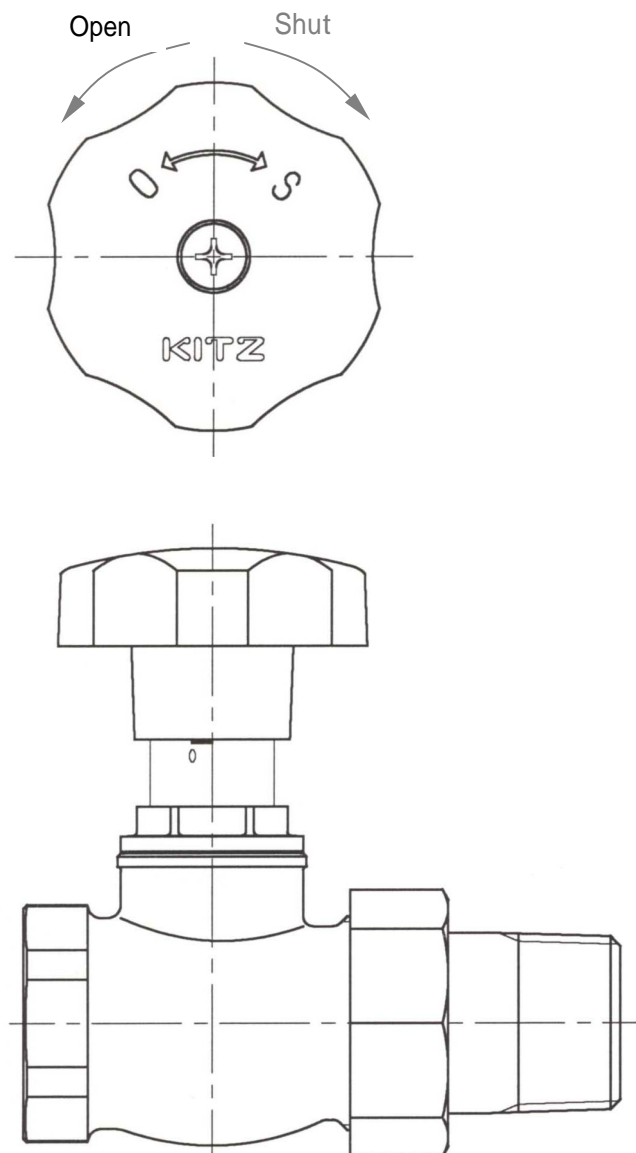
Valve Operation Device

1. Type 200 Cast Bronze fun-coil valves. (For control)

1.1 Hand wheel is mounted directly on the valve stem.

1.2 Rotating the hand wheel to clockwise the valve will close, and moving the hand wheel to counterclockwise it will open. This is marked on the hand wheel.

1.3 Hand wheel operating torque or force may be different during operation.



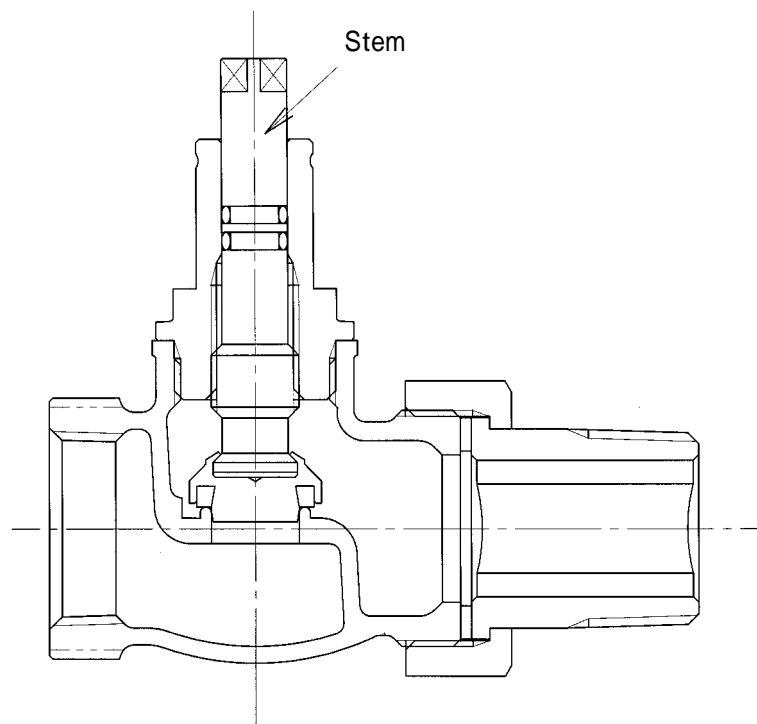
This illustration represents a typical construction

Valve Operating Device

2. Type 200 Cast Bronze fun-coil valves. (For switching)

2.1 This valve has no hand wheel. Please use the wrench or some suitable tool to operate it. Hand wheel can install on your request. Please contact our distributor in such a case.

2.2 Turning the stem clockwise closes the valve, and turning the stem counterclockwise opens the valve.



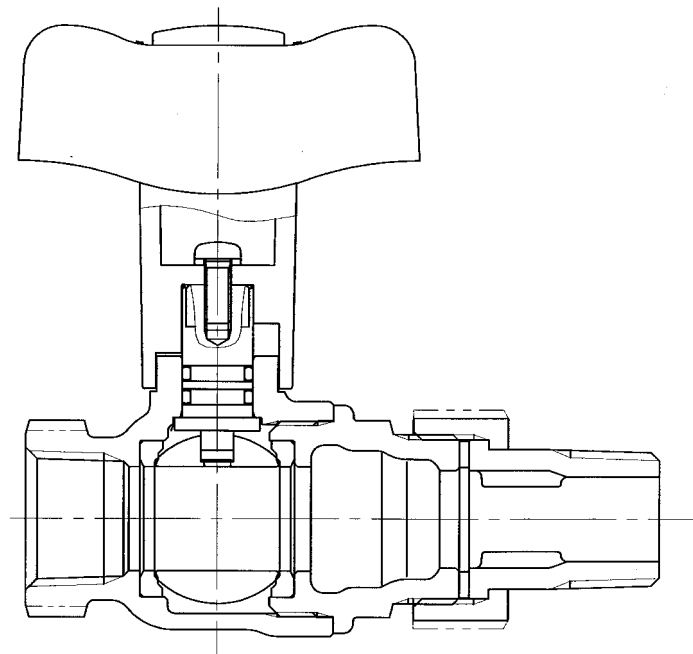
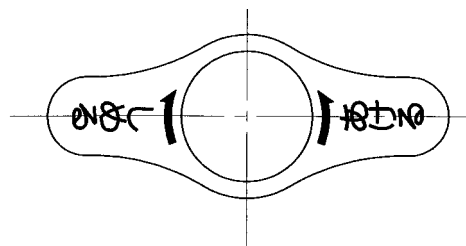
This illustration represents a typical construction

Valve Operating Device

3. JIS 10K Cast Bronze ball valve with long handle for fun-coil unit. (Full bore type)

3.1 This valve is mounted directly on the valve stem.

3.2 According to the arrow on the handle, turning the handle clockwise closes the valve, and turning the handle counterclockwise opens the valve.



This illustration represents a typical construction

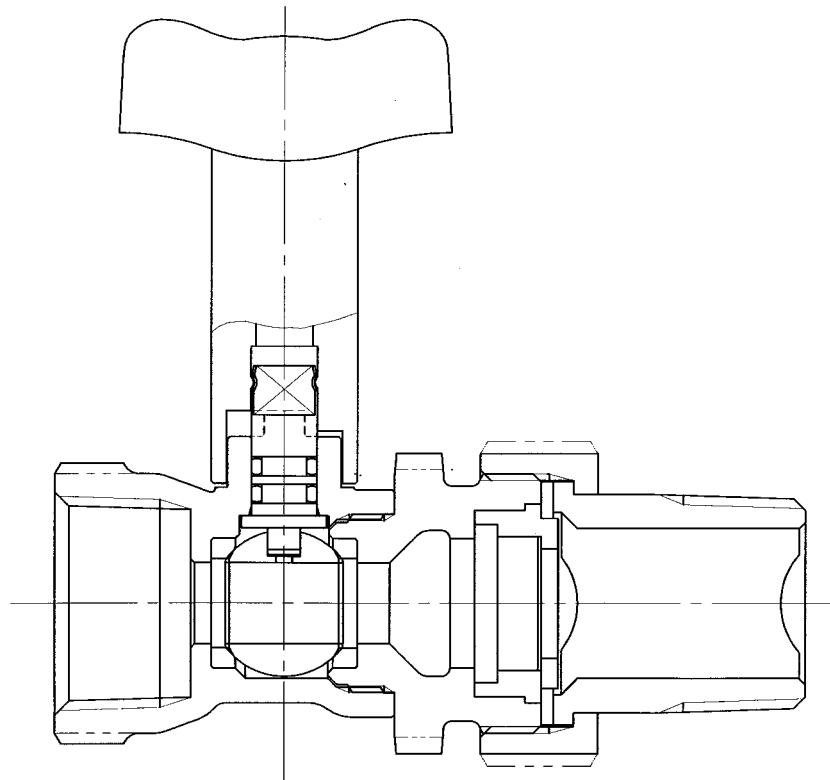
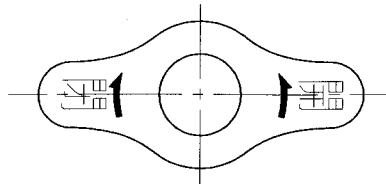
Valve Operating Device

4. JIS 10K Cast Bronze ball valve with long handle for fun-coil unit. (Reduced bore type)

4.1 This valve is mounted directly on the valve stem.

Handle can remove easily to pull it upward without using any tool or jig.

4.2 According to the arrow on the handle, turning the handle clockwise closes the valve, and turning the handle counterclockwise opens the valve.



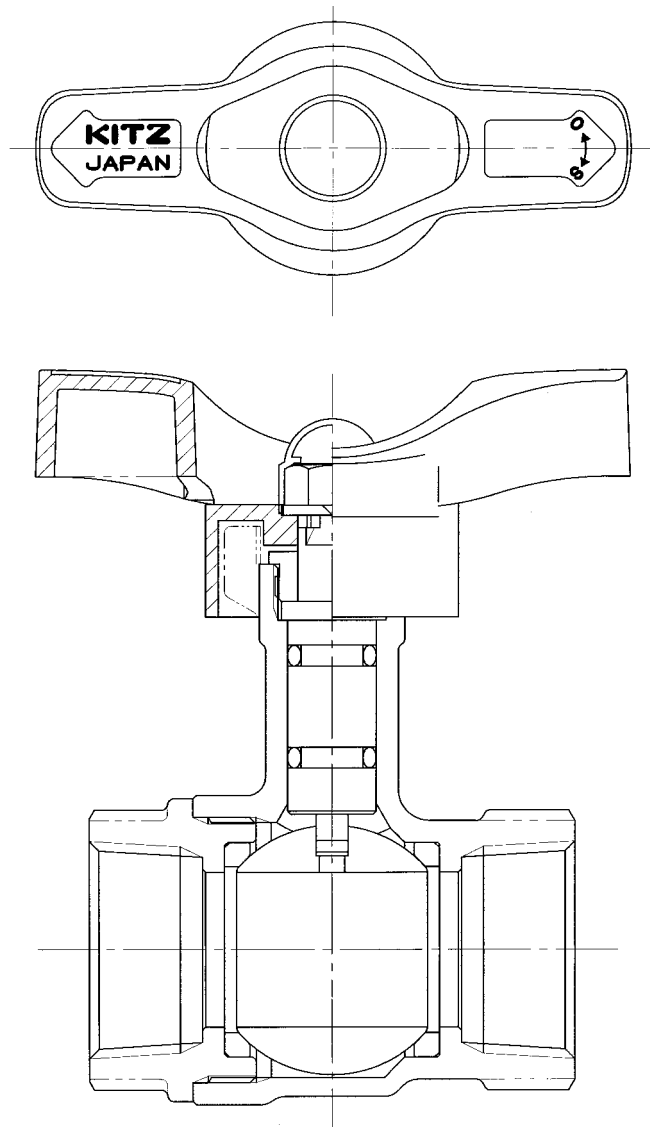
This illustration represents a typical construction

Valve Operating Device

5. JIS 10K Cast Bronze ball valve with long handle for fun-coil unit. (Full bore type)

5.1 This valve is mounted directly on the valve stem.

5.2 According to the arrow on the handle, turning the handle clockwise closes the valve, and turning the handle counterclockwise opens the valve.



This illustration represents a typical construction



CHAPTER

Shipping, Handling and Storage of Valves

Shipping, Handling and Storage of Valves

1. Shipping and Handling Valves

1.1 Care for Shipping and Handling Valves

 CAUTION	
	(1) Take care the handling and storage of carton packed The high humidity may damage the cartons, which may lead to damaging valves.




1.2 Shipping and Handling Valves

1.2.1 Maintain the original packing condition during shipment. If the protective covers are found missing during transportation, provide appropriate type of protective covers.

1.2.2 Handle valves carefully so that they may not fall or drop on the ground. Any extraordinary mechanical impact should be avoided.

2. Storage

2.1 Care for Valve Storage

 CAUTION	
	(1) DO NOT storage valves in the corrosive environment, which may cause corrosion on threaded portions of valves. (2) DO NOT remove protective covers until installation. As they will prevent the intrusion of any foreign object, the removal of covers could cause damage to the closure elements such as ball and seats. (3) DO NOT fall, drop, give mechanical impact or place any other objects on valves, and DO NOT step on them, which may damage valves. (4) DO NOT carelessly pile up products to avoid risk of product damage and personal injury caused by unstable piling.
	(5) Keep the valves in the open position during storage. Storing the valves in halfway position may deform the ball seats, leading to the internal leakage. And storing the valves in the fully closed position may damage the ball, when the flange protections or covers are torn or removed.

Shipping, Handling and Storage of Valves



2.2 Storage



- 2.2.1 Indoor storage of valves in a dust-free, low humidity and well-ventilated places is recommended.
- 2.2.2 Storage of valves directly on the ground or concrete floor is not recommended. Place packed valves on the racks for storage.
- 2.2.3 Take appropriate measures to prevent valves from direct exposure to dust, rain and sunlight, if valves should be stored outdoors.

CHAPTER
Valve Installation

Valve Installation

1. Care for choice of location for Valve installation



 WARNING	
	(1) Check the valve specifications with the identification plate or tag and the relevant catalog, to ensure that the exact valves specified in your piping arrangement plan was provided. The service fluid, pressure and temperature determine the compatibility of sealing materials. Incorrect application of a specific valve could be hazardous.



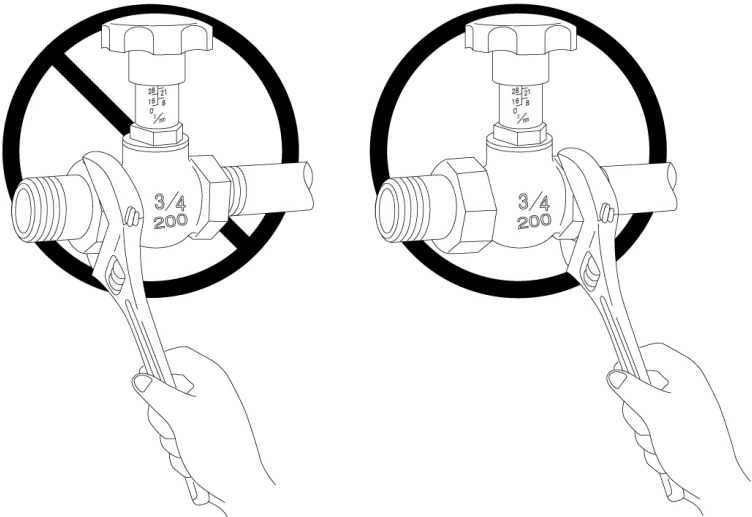

 CAUTION	
	(1) Keep a secure footing for valve installation and operation. (2) Sufficient lighting should be prepared for valve operation. (3) Piping should be properly supported, if needed.

- 1.1 Allow sufficient room for operation, installation and subsequent maintenance of valves, considering the valve height and the stem direction.
- 1.2 Take appropriate measures for smooth operation, inspection and maintenance of valves if they are forced to be installed in small spaces.
- 1.3 Try not to install valves in the places where valve functions may be hampered by such outer forces as vibrations.
- 1.4 It is recommended to install valves on horizontal piping in an upright position.

Valve Installation

2 Care for Valve installation.

 WARNING	
	(1) Keep off the working area to prevent personal injury if valves are installed at higher places.

 CAUTION	
	<p>(1) Pay attention not to damage threaded areas and seat surfaces during mounting work.</p> <p>(2) Use the suitable sealing material for applicable to the temperature and the fluid at threaded areas.</p> <p>(3) Use spanners or any appropriate tools. It is prohibited to use a pipe wrench for valves.</p> <p>(4) Fit spanners on the valve ends to be connected with pipes. Do not fit them on the other ends. (Refer to illustration below)</p> <div style="text-align: center;">  </div> <p>(5) Recommended maximum velocity of copper piping is approx. 2m/sec. It may happen the erosion if the velocity is over 3m/sec.</p> <p>(6) Soft brazing material should be used for solder end valves. Do not use hard brazing material to avoid skin crack.</p> <p>(7) Do it open position of valves when brazing.</p>
	<p>(8) Never disassemble the valve during mounting work.</p> <p>(9) Do not over tighten valves, which may damage valve internals.</p> <p>(10) Do not use copper pipe for steam service.</p> <p>(11) Do not fit the strong fire directly on the body center when brazing.</p> <p>(12) Do not spread the flax any other joining parts.</p> <p>(13) Do not use the copper pipe specified JIS H 3300 C4430, 6870, 6871, 6872, 7060, 7100, 7150 and 7164 or JWWA H 101 (for water supply).</p>

Valve Installation

3. Check the followings before valve mounting.

3.1 Type 200 Cast bronze fun-coil valves for copper piping.

3.1.1 Service conditions should be within the valve specifications.

3.1.2 Valve threads should correspond with piping threads.

3.1.3 No damage should be found on valve and piping threads.

3.1.4 The threads dimensions should correspond with the applicable standards.

We recommend checking using applicable thread gauge.

3.1.5 Use the copper pipe specified in JIS H 3300 C1220 or ASTM B 88 "Seamless Copper Water Tube". There are 3 types of pipe depending its wall thickness. Main application of these pipe are as follows

TYPE	Wall thickness	Medical	Water supply	Hot water	Cold water	City gas
K						
L						
M						

is available for use.

3.1.6 Use the Tin – Silver Alloy (96.5 – 3.5) as brazing materials.

3.1.7 Do not use the Tin – Lead Alloy (50 – 50) as brazing materials so that borne gas and/or lead may affect operator.

3.1.8 Do not use the hard brazing materials, which is over than 450 deg. C melting point so that fusing parts have some skin cracks.

3.1.9 Remove foreign objects such as sand, dust, oil and so on from connecting pipe interior before valve mounting.

3.1.10 Handle valves carefully so that they may not fall or drop on the ground. Any extraordinary mechanical impact should be avoided.

3.1.11 Remove protection covers just before valve mounting.

3.1.12 Check all threaded areas after installation and retighten them, if needed.

3.1.13 Piping should be flushed before test operation with the valve fully open, to assure removal of any foreign object that could damage valves. Do not operate the valve during flushing.

Valve Installation

3.2 Fun – Coil Valves other than above.

3.2.1 Make sure the fluid, pressure and velocity are available for the valve.

3.2.2 Valve threads should correspond with piping threads.

3.2.3 No damage should be found on valve and piping threads.

3.2.4 The threads dimensions should correspond with the applicable standards.

We recommend checking using applicable thread gauge.

3.2.5 Remove foreign objects such as sand, dust, oil and so on from connecting pipe interior before valve mounting.

3.2.6 Handle valves carefully so that they may not fall or drop on the ground. Any extraordinary mechanical impact should be avoided.

3.2.7 Remove protection covers just before valve mounting.

3.2.8 Check all threaded areas after installation and retighten them, if needed.

3.2.9 Piping should be flushed before test operation with the valve fully open, to assure removal of any foreign object that could damage valves. Do not operate the valve during flushing..

Valve Installation

4. Installation Procedures (Internal screw threads)

4.1 Make sure that pipes and pipe threads should be correct.

4.2 Remove all foreign objects such as cutting oil and spatters from pipe internals and threaded areas with detergent or waste cloth.

4.3 Apply sealing material such as sealing tape to the pipe threads.

4.4 Screw the pipe into the valve using spanners or any appropriate tools. It is prohibited to use a pipe wrench for valves.

4.5 Do not apply any excessive torque to thread pipe ends into valves. The torque should be within the following ranges.

Nominal Size	1/2	3/4	1	1-1/4
Torque (N - m)	20 ~ 29	39 ~ 49	49 ~ 59	59 ~ 69

4.6 Increase line temperature and pressure gradually at test operation. Retighten the thread areas, if needed.

Valve Installation

5. Installation Procedures (Union nut)

5.1 Make sure that there is a gasket in the union.

5.2 Remove all foreign objects such as cutting oil and spatters from pipe internals and threaded areas with detergent or waste cloth.

5.3 Apply sealing material such as sealing tape to the union nipple threads keeping union nut on the union nipple.

5.4 Insert the handle of adjustable angle wrench or spanner into the union nipple, then screw into the pipe with clamping the handle by another spanner.

5.5 Screwed in torques are the same value described in item 4.5.

5.6 Fasten the union nut to the valve body using an appropriate tool such as the spanner. It is prohibited to use a pipe wrench for valves. Do not forget to install the gasket.

5.7 Do not apply any excessive torque to union nut into the valve. The torques should be within the following ranges.

Nominal Size	1/2 & 3/4	1	1-1/4
Torque (N – m)	29 ~ 39	49 ~ 59	59 ~ 69

5.8 Increase line temperature and pressure gradually at test operation. Retighten the thread areas, if needed.

5.9 If leakage from the gasket area is found, it is the cause of alignment of the angle between piping and valve. Check the clearance of gasket contact surface, and correct the installation.

Valve Installation

6. Installation Procedures (Brazing)

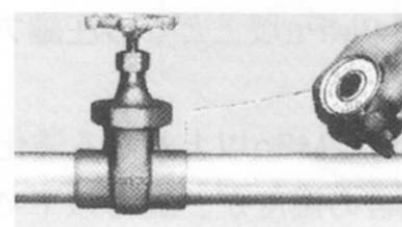
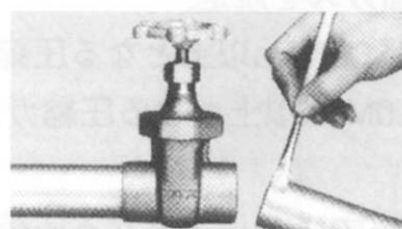
Use soft brazing material such as Tin-Silver (96.5-3.5) for brazing.

After brazing, P-T Rating shall be applied following table.

Material	Temperature Deg. C	Maximum Allowable Working Pressure		
		NPS 1/4 to 1 MPa	NPS 1.1/4 to 2 MPa	NPS 2.1/2 to 4 MPa
H96.5 Ag3.5A	38	3.45	2.76	2.07
	66	2.76	2.41	1.90
	93	2.07	1.72	1.38
	121	1.38	1.21	1.03

Procedure




- 1) Clean up cut-end of copper pipe and body connecting ends so that free from any dust and foreign material.
- 2) Spread the flax to the outside of copper pipe thinly and uniformly.
Put copper pipe into the valve fully, then turn to clockwise and counterclockwise few times.
- 3) Put brazing material on the pipe like a figure, then melt it with moving a heating torch like winding around the pipe.
Melted material will be proceeding by capillary action.



CHAPTER
Valve Operation

Valve Operation

1. Care for valve operation.

 CAUTION	
	<p>(1) DO NOT apply too excessive force to operate the valves by such methods as using a pipe or any other device.</p> <p>(2) Never loosen bonnet connection or union nuts of pressurized valves.</p>
	<p>(3) Gradually open valves to prevent damage of pipes, when high temperature fluids are handled.</p> <p>(4) Gradually open valves to prevent damage of pipe or other instruments by water hammer, when fluid is liquid.</p> <p>(5) Take some appropriate measures to prevent freezing, as needed..</p>

2. Operation

2.1 JIS 10K Cast Bronze Ball Valves for fun-coil Unit

2.1.1 Check the fluid, pressure and velocity are available to the valve.

2.1.2 According to the arrow on the handle, turning the handle clockwise closes the valve, and turning the handle counterclockwise opens the valve.

2.2 Type 200 Cast bronze fun-coil Valve.

2.2.1 Check the fluid, pressure and velocity are available to the valve.

2.2.2 According to the arrow or letter on the handwheel, turning the handwheel clockwise closes the valve, and turning the handwheel counterclockwise opens the valve.

2.2.3 Hand wheel operating torque or force may be different during operation.

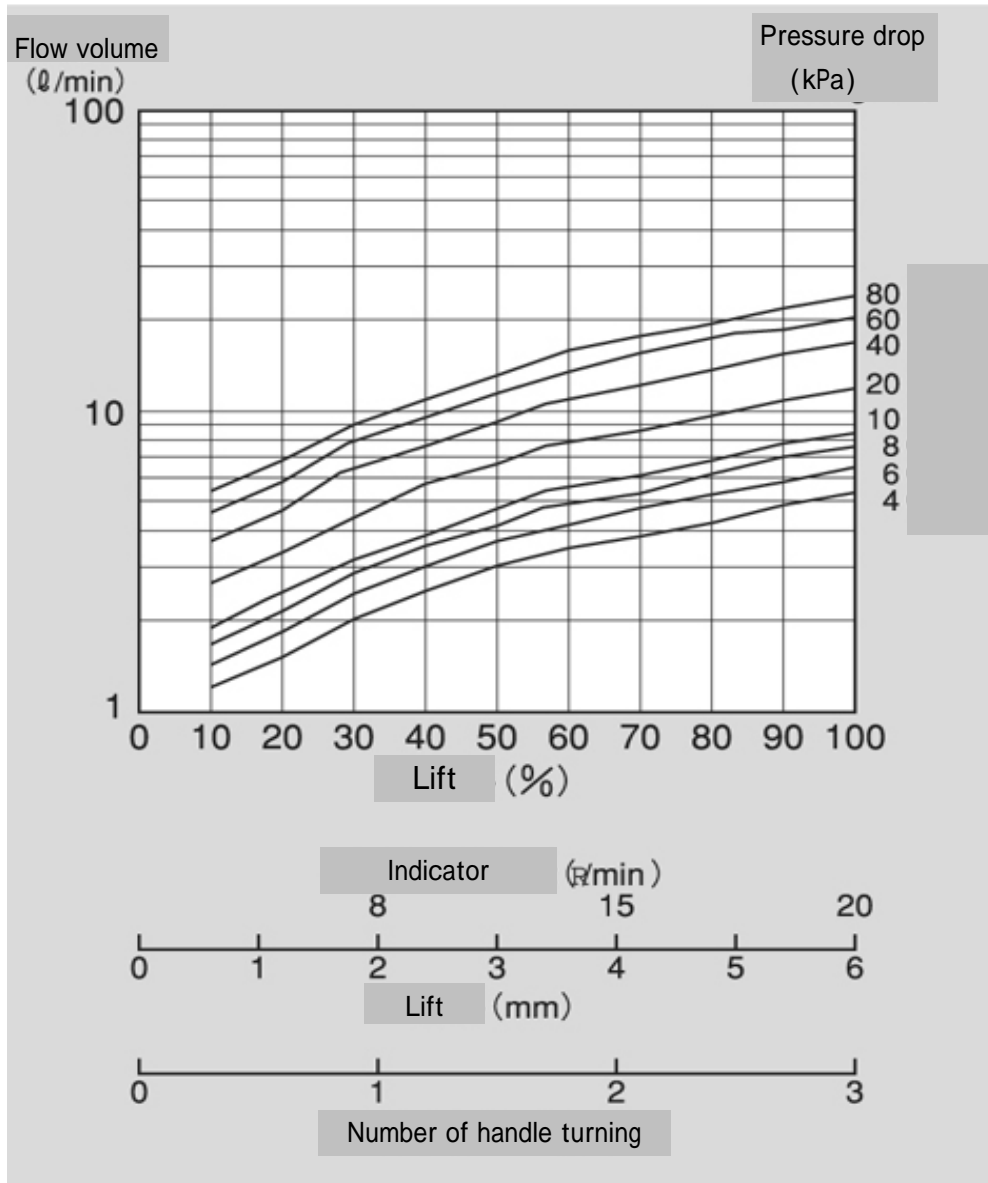
2.2.4 For valves with indicator put on the end of hand wheel to the appropriate position of indicator plate with required flow volume.

Note: Indicator plate is shown flow characteristic based on 60 kPa pressure drops.

Please refer to the following characteristic charts on your operating conditions.

Valve Operation

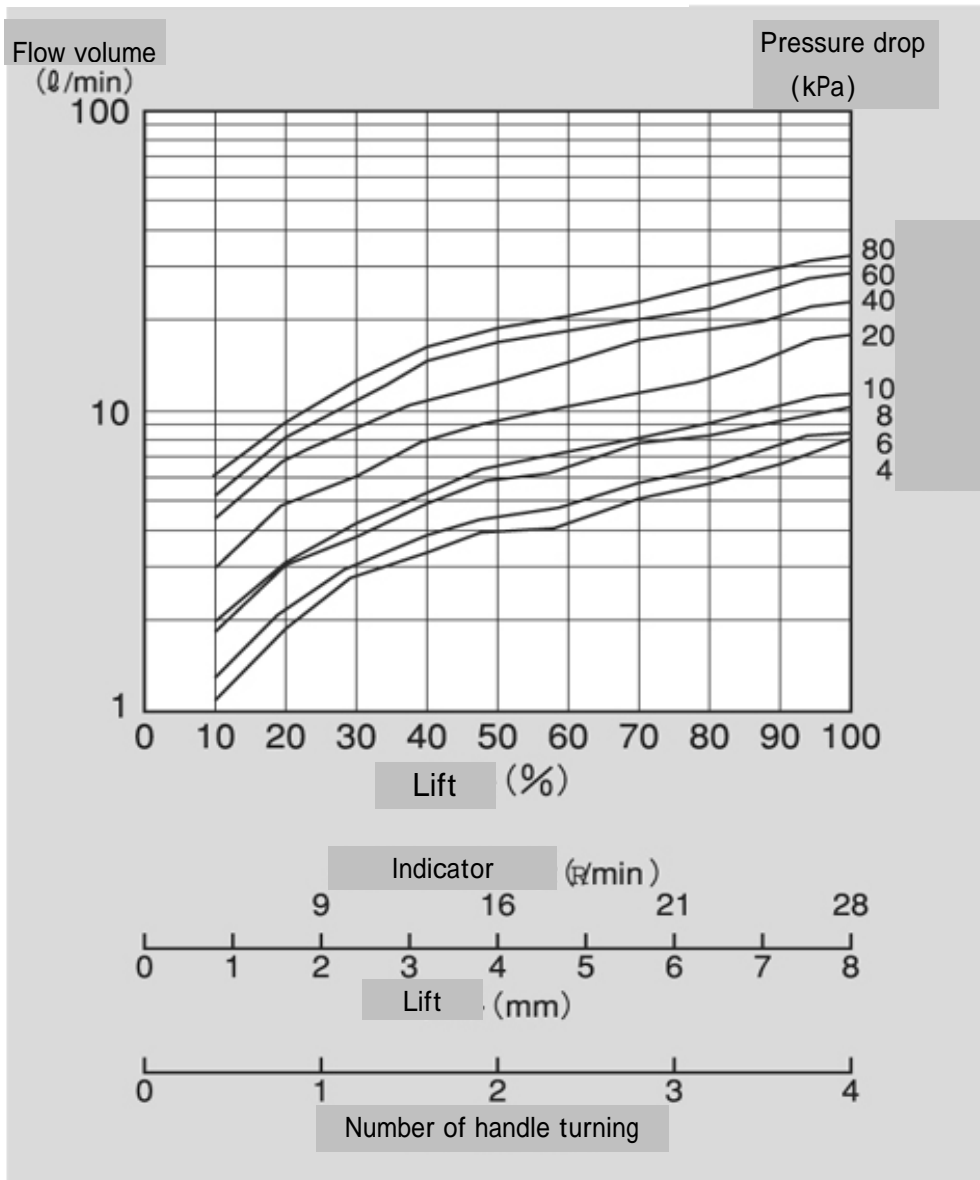
Flow characteristic for nominal size 1/2, Cv value = 1.8



Indicator plate is shown flow characteristic based on 60kPa pressure drop.

Valve Operation

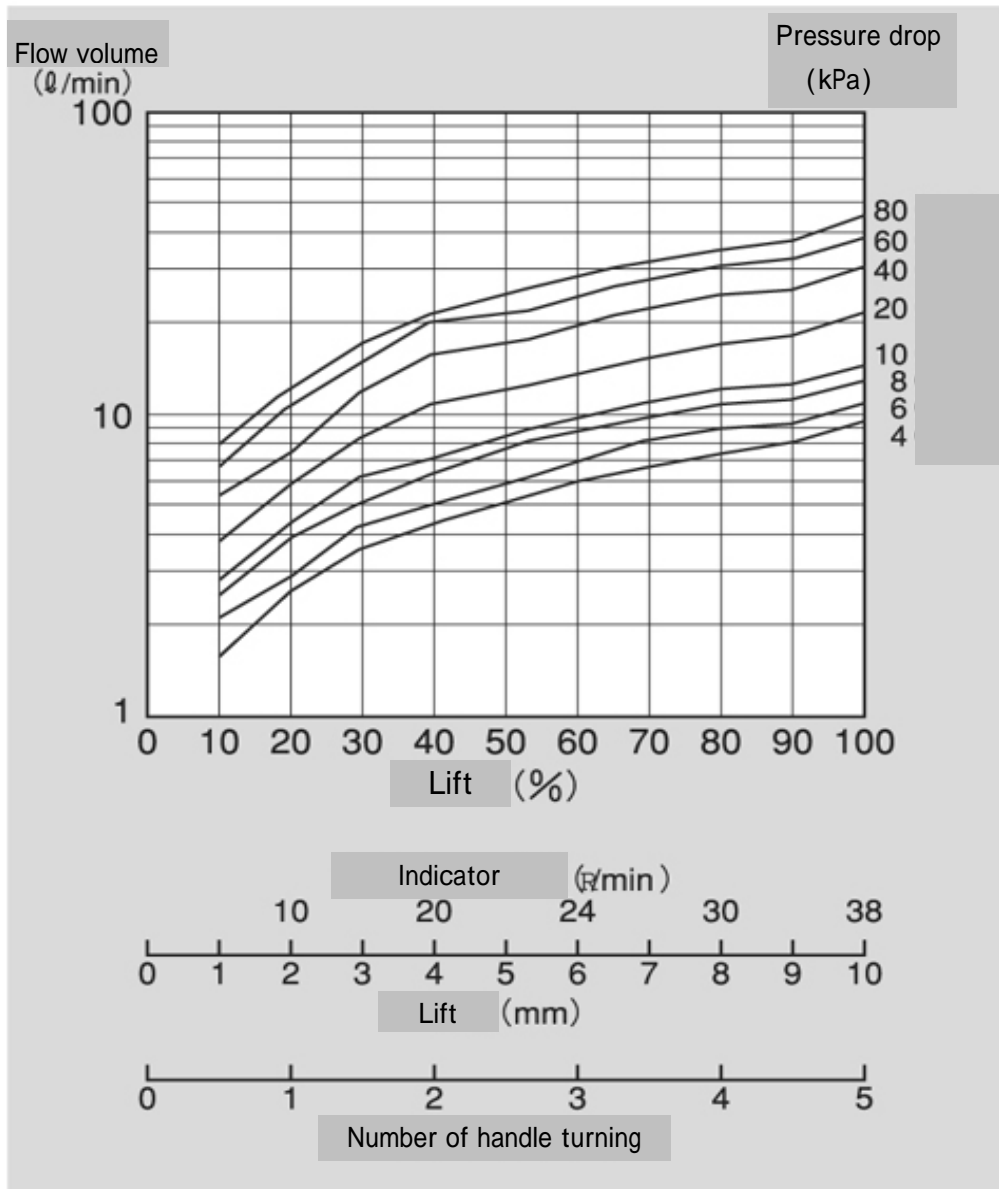
Flow characteristic for nominal size 3/4, Cv value = 2.6



Indicator plate is shown flow characteristic based on 60kPa pressure drop.

Valve Operation

Flow characteristic for nominal size 1 & 1 1/4, Cv value = 3.3



Indicator plate is shown flow characteristic based on 60kPa pressure drop.

Valve Operation



3. Daily Inspection

In order to operate your valves safely and satisfactorily, the daily inspection is very important. Here are the inspection items.

Inspection items	Areas to be inspected	Inspection Method	Remedial Measure
External Leakage	Stem Area	Visual Check with soap solution	Retighten gland bolts. Replace the valve as needed
	Threaded Portions	Visual Check with soap solution	Retighten each threaded areas. Replace valve components as needed.
	Body	Visual Check with soap solution	Replace the valve.
Abnormal Noises	Valve body	Auditory check	Consult a piping engineer.
	Loosened screw	Auditory check	Retighten screw.
	Pipe vibration	Auditory check	Consult a piping engineer
Loosened Screw	Threaded Portions	Visual and Tactile check	Retighten screw.
Internal seat leakage			Remove foreign object. Disassemble and inspect the valve components. (Replace the ball seats) Replace the valve.
Valve operation	Valve operating position	Visual Check	Make sure that the valve is in predetermined position.
	Disturbed operation	Auditory and Tactile check	Disassemble and inspect the valve components. Replace the valve.

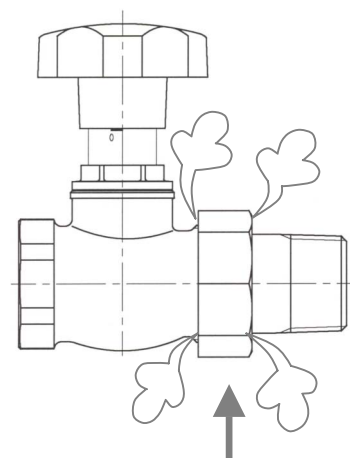
Valve Operation

4. Corrective measures

 CAUTION	
	<p>(1) Wear the protective items such as goggle, gloves and working boots.</p> <p>(2) Reduce the line pressure to the atmospheric level before retightening screws</p> <p>(3) Operators should take protective measures to prevent direct exposure to the fluid, when the fluid spouts out from any connecting portions.</p>

4.1 Leakage from the union area.

Retighten the union nut, if leakage from this area is detected. Adequate torque should be applied when retightening the union nut. If it does not stop the leakage, the gasket should be replaced.



5. Trouble Shooting

Defect	Possible causes	Remedial measure
Disturbed valve operation	Foreign objects may have choked up the valve body cavity and stock around the seat.	Disassemble and inspect the valve components.
Excessive valve torque	Foreign objects may have stuck to the stem.	Remove the foreign objects and check the valve.
	Foreign objects may have choked up the valve body cavity.	Flush the built-up objects by the media with the valve slightly open.
Leakage from the union nut area	Loose union nut.	Retighten the union nut.
	Damage on the gasket.	Replace the gasket.
Internal seat leakage	Damage on the seat.	Consult a piping engineer
	Deform the seat area caused by piping force.	Consult a piping engineer
Abnormal noise or vibration	Loose the threaded portion.	Retighten the threads.

CHAPTER

Periodic Inspection and Maintenance of Valves

Periodic Inspection and Maintenance of Valves



1. Periodic Inspection



- 1.1 A periodic inspection with valves mounted to pipelines is recommended at least once a year.
- 1.2 Ensure the smooth operation and safety of valves before inspection.
- 1.3 Inspection items and methods are same as daily inspection. See Chapter V for the items and methods suggested.
- 1.4 Where valves and adjoining piping are not daily inspected or not operated for a long period of time, a periodic inspection is also recommended. (A periodic inspection should be carried out on all valves.)

2. Inspection and maintenance

In case pipelines or facilities where valves are installed are shut down for the pipeline inspection, remove the valves from the pipelines and perform the body and seat pressure tests as well as operation tests, if needed. If any defect is found, disassemble the valves for further inspection. The valves must pass required inspections before being sent back to the pipelines or facilities for reinstallation.

- 2.1 Care for removal of the valves from pipelines or installation of the valves on pipelines.

 WARNING	
	<ol style="list-style-type: none"> (1) Discharge the fluid from the pipes and reduce the line pressure to the atmospheric level when disassembling valves. (2) Discharge the fluid and pressure trapped within the valve body with the valve intermediate position before disassembling. (3) Take protective measures to prevent direct exposure to the fluid and catching fire. (4) Keep off the working area to prevent personal injury if valves are installed at higher places.

 CAUTION	
	<ol style="list-style-type: none"> (1) Wear the protective items such as goggle, gloves and working boots. (2) Keep a secure footing for valve dismantle and installation. (3) Be sure to insert new gaskets for union mounting

Periodic Inspection and Maintenance of Valves

2.2 Assembly and disassembly

Refer to Chapter VII for assembly and disassembly procedure.

2.3 Test and Inspection



Refer to the following procedure for test and inspection.

2.3.1 Operation Test

- (1) Check smooth operation of valves without galling or sticking of internal valve components.
- (2) Check that the stem is firmly assembled with the disc.
- (3) Ensure that there should be no offset of the seat port and disc seat in the fully closed position.

2.3.2 Shell Test and Seat Leakage Test

- (1) Care for shell test and seat leakage test

 CAUTION	
	<ol style="list-style-type: none">(1) Wear the protective items such as goggle, gloves and working boots.(2) Before shell test and seat leakage test begin, take some precautions for operators safety.

- (2) Shell Test and Seat Leakage Test

All valves should be subjected to a hydrostatic or pneumatic shell test and seat leakage test at the required test pressures after reassembly.

Refer to JIS B 2003 for test methods and procedures.



CHAPTER



Disassembly and Reassembly of Valves

Disassembly and Reassembly of Valves

1. Disassembly procedure for Type 200 Cast Bronze fun-coil Valves

1.1 Care for disassembly

 WARNING	
	(1) Operator should take an appropriate caution for not being exposed to the fluid or catching fire.

 CAUTION	
	(1) Wear the protective items such as goggle, gloves and working boots. (2) Pay attention not to catch fingers during disassembly.

1.2 Before Disassembly

1.2.1 Place the valve in a dust-free place.

1.2.2 Take care not to damage the body, disc surface and stem threads.

1.3 Disassembly procedure

1.3.1 Open the valve till intermediate position.

1.3.2 Loosen the set screw of hand wheel.

1.3.3 Remove the bonnet from the body.

Stem and disc can remove from the body together bonnet.

1.3.4 Turn the hand wheel clockwise till touch the bonnet.

1.3.5 Remove the set screw and hand wheel.



1.3.6 Turn the stem clockwise until disconnect to the bonnet thread.

1.3.7 Remove the stem from bonnet inner side.

Disassembly and Reassembly of Valves

2. Reassembly procedure for Type 200 Cast Bronze fun-coil Valves.

2.1 Care for reassembly

 CAUTION	
	<ul style="list-style-type: none">(1) Wear the protective items such as goggle, gloves and working boots.(2) No open flame or smoking should be allowed in the working area.(3) Take care not to catch fingers during reassembly.(4) Replace the “o” ring and gasket for new ones to ensure satisfactory sealing performance. Reuse of these components may cause leakage.

2.2 Before Reassembly

2.2.1 Check all parts before reassembly. If any unsatisfactory function is found, replace the valve.

2.2.2 The consumables such as “o” ring and gasket should be prepared beforehand.

2.2.3 Clean all parts for reuse to thoroughly remove dust and other foreign objects.

2.2.4 Reassemble the valve in a dust-free area.

2.2.5 Take care not to damage the body seat surface, disc seat surface, stem threads and “o” ring.

2.2.6 Keep in mind that all threads should be securely tightened.

Disassembly and Reassembly of Valves

2.3 Reassembly procedure

2.3.1 Insert the stem into the bonnet from inner side, then turn the stem counterclockwise and keep the intermediate position.

2.3.2 Mount the hand wheel to the stem and screw -in the set screw.

2.3.3 Screw-in the bonnet to the body.

2.3.4 Fit the spanner axis flat of bonnet, and then fasten the bonnet according to torque shown in the table bellow.

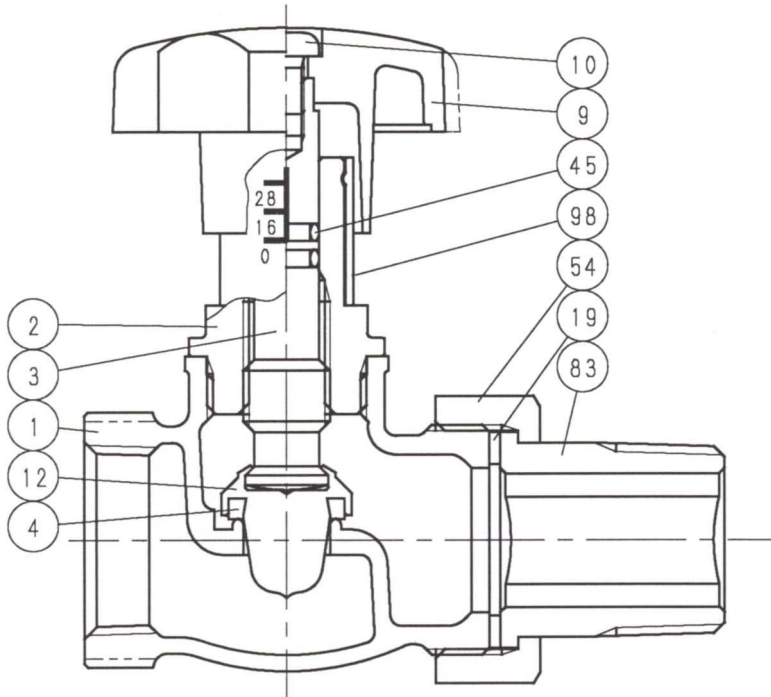
Unit: N - m

Nominal Size	1/2	3/4	1 & 1 1/4
Tightening Torque	35 ~ 45	41 ~ 59	60 ~ 78

2.3.5 All threaded parts should be securely tightened. Retighten them, if founded loosened.

Disassembly and Reassembly of Valves

3. Cross-sectional assembly drawing.



No.	Parts Name
1	Body
2	Bonnet
3	Stem
4	Disc
9	Hand Wheel
10	Set Screw
12	Disc Holder
19	Gasket
45	"O" Ring
54	Union Nut
83	Union Nipple
98	Indicator Plate

This drawing introduces a typical construction of the valve.
 Refer to the approval drawing before disassembly and reassembly.

Disassembly and Reassembly of Valves

4. Disassembly and reassembly procedure for JIS 10K Cast Bronze Ball Valves for fun-coil Unit.

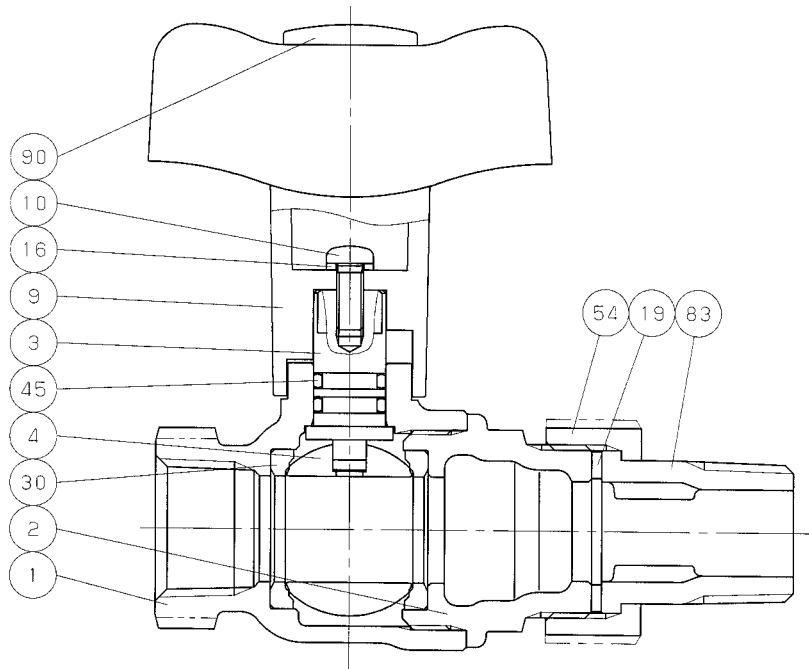
4.1 This ball valves cannot disassemble.

4.2 If damaged parts were found, replace the assembled new valve.

4.3 Changeable parts are as follows;

9: Hand Wheel, 10: Set Screw, 16: Spring Washer, 19: Gasket, 54: Union Nut,
83: Union Nipple and 90: Handle Cap

4.4 Cross-sectional assembly drawing.



No.	Parts Name
1	Body
2	Bonnet
3	Stem
4	Ball
9	Handle
10	Set Screw
16	Spring Washer
19	Gasket
30	Ball Seat
45	"O" Ring
54	Union Nut
83	Union Nipple
90	Handle Cap

This drawing introduces a typical construction of the valve.

Refer to the approval drawing before disassembly and reassembly