



KTM POWDER DISCHARGE SYSTEM (PDS) METALTITE® BALL VALVES

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Before installation these instructions must be read fully and understood



Please use the valves according to warnings and cautions described in this document. Failure to do so could result in an accident due to wrong storage, installation, operation, maintenance and disassembling and/or serious damage.

Please keep this manual in a handy place for immediate reference; be sure to provide it to purchaser, contractor, piping designer, user, operator or maintenance technician.

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Please read through this manual completely before operating the valves. Powder Discharge System (PDS) Metaltite® Ball Valves are usable for ON-OFF powder service such as polyethylene, polypropylene and hydrocarbon vapor etc.

1 SAFETY PRECAUTIONS

Precautions for using KTM valves safely are highlighted with the following two warning signs to indicate the level of danger posed. Please read the postscript carefully to ensure safety and prevent any damage before starting to use the product.

WARNING

A potentially hazardous situation which, if not avoided, could result in death or serious injury.

WARNING

A potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

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2 SPECIFICATIONS

The safety of the valves and conformity with your equipment should be checked by the design engineer or those who determine the specification based on the catalog or other technical data.

Upon arrival, the applicable conditions (temperature, pressure, fluid-characteristics, environmental conditions, mounting gauge etc.) should be first checked to make sure they are correct.

For the standard specifications, refer to the table below and the catalog.

SELECTION GUIDE

Example	E0126	M	K	62	BY	A30	RF	200	PX	
Valve code										
E0105	Full bore, trunnion type, JIS 10K, ASME CL150, (DN 250 - 350)									
E0106	Full bore, trunnion type, JIS 20K, ASME CL300, (DN 250 - 350)									
E0125	Full bore, trunnion type, JIS 10K, ASME CL150, (DN 50 - 200)									
E0126	Full bore, trunnion type, JIS 20K, ASME CL300, (DN 50 - 200)									
E0108	Full bore, trunnion type, ASME CL600, (DN 50 - 350)									
Sub code										
M	Metaltite® seat									
Special feature										
K	Powder service									
Body code										
32	JIS SCS14A (316SS), ASTM CF8M (316SS)									
62	JIS SCPH2, ASTM WCB									
Trim code	Ball	Description	Seat	Packing	Stem					
BY	SCS14A / SFNi	CF8M / SFNi	316 SS Stellite	RTFE	SCM 435 ENP					
BG	SCS14A / SFNi	CF8M / SFNi	316 SS Stellite	Graphite	SCM 435 ENP					
WY	SCS14A / WC	CF8M / WC	316 SS WC	RTFE	SCM 435 ENP					
WG	SCS14A / WC	CF8M / WC	316 SS WC	Graphite	SCM 435 ENP					
Flange code										
A15	ASME Class 150		J10	JIS 10K						
A30	ASME Class 300		J20	JIS 20K						
A60	ASME Class 600		JPI	Also available						
Connection code										
RF	Raised face (smooth finish 125 to 250 AARH)									
RJ	Ring joint									
Size										
50	DN 50 (NPS 2)		100	DN 100 (NPS 4)		200	DN 200 (NPS 8)		300	DN 300 (NPS 12)
80	DN 80 (NPS 3)		150	DN 150 (NPS 6)		250	DN 250 (NPS 10)		350	DN 350 (NPS 14)
Option code										
PX	Powder proof devices around seat and stem areas									

NOTES

SFNi Nickel alloy overlay

ENP Electroless nickel plating

WC Tungsten carbide coating

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3 RANGE OF APPLICATION

Pressure/temperature rating

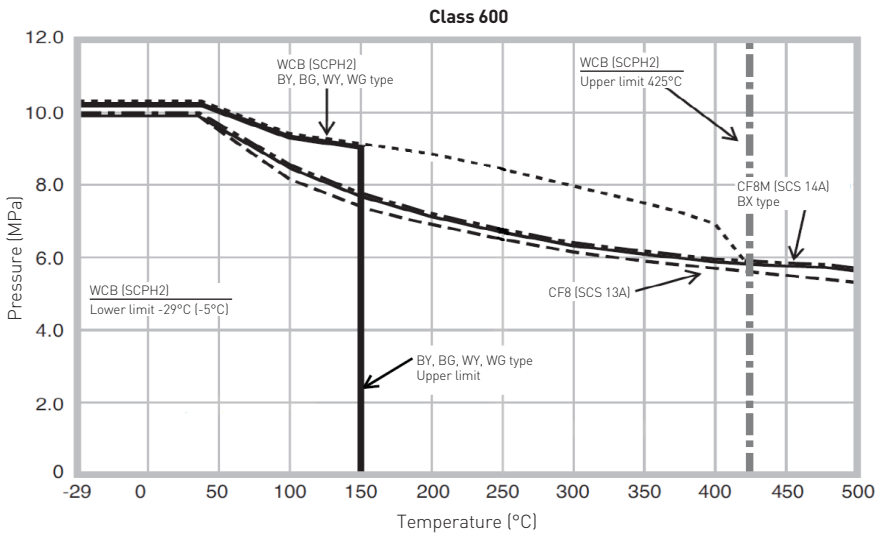
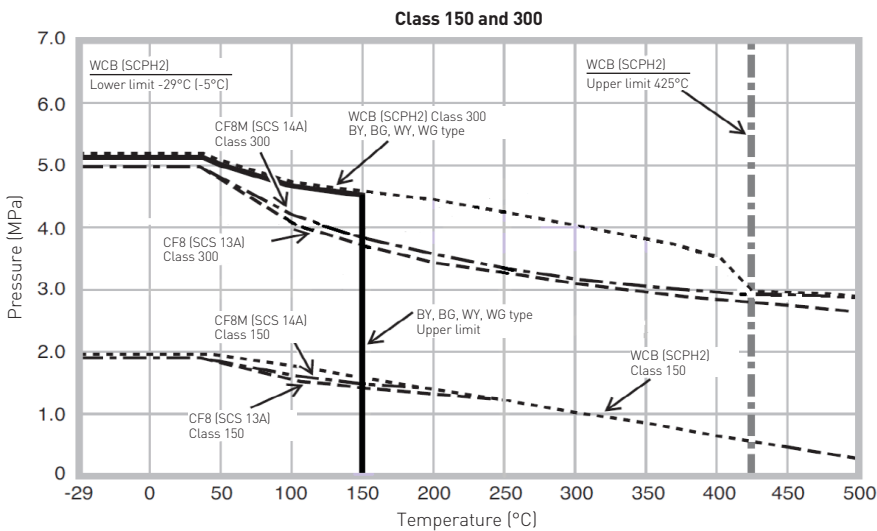
Powder Discharge System (PDS) Metaltite® Ball Valves have a range of application defined by temperature and pressure. Please operate the valve within the range shown below. Operating the valve outside that range may result in failure of valve body or parts and leakage of the fluid.
 (The pressure/temperature rating is defined by body and seal ring material.)

WARNING

Do not use valves beyond specifications or limits indicated in the catalog.

CAUTION

1. These models may be used indoors or outdoors. If however used in an environment exposed to gas, an appropriate type and material should be used to prevent corrosion or rusting. (Details on the component materials are provided in the catalogs.)
2. To prevent accidents, custom-made valves for special treatment and operation should be ordered for specific applications using oxygen and hydrogen peroxide.



— Solid line indicate trim rating.
 - - - Dashed lines indicate body ratings.

— WCB
 - - - CF8
 - · - · CF8M

Materials in parentheses indicate equivalent JIS material.

Lower limit temperature for SCPH2 is -5°C, WCB is -29°C.

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4 STORAGE AND PRESERVATION BEFORE INSTALLATION

The storage of the valves should be in accordance with the following criteria:

1. Storage warehouse should be clean and dry.
 2. The ball must be in open position and the end flanges must be protected with appropriate seal discs.
 3. Do not remove the bore protection cover until installation to avoid rust and contamination with foreign substances.
 4. Periodical checks have to be carried out in the storage area to verify that the above mentioned conditions are maintained.
4. Do not lift the valve by its hand-lever as these levers are not designed to take the load of the whole valve. Doing so may cause the lever to brake off or be disconnected from the valve, resulting in possible valve damage or a person's injury.
 5. Avoid lifting over people's heads, equipments or any other things, that can possibly be damaged or cause of injury in the event that the lifted load falls off the handling equipment.
 6. All local safety regulations must be observed and complied with at all times.

CAUTION

1. The ball valves are delivered with the ball in full-open position and should be stored as they are. Keeping the ball in other positions, incl. half-open position, for an extended period of time could cause seat leakage.
2. Do not place the consignment package directly on the ground.
3. Do not expose consignment packages to the rain/wind or directly to the sun.
4. Storage in an open area for a limited period can be considered only if the valves have appropriate packing (packed in cases covered with vinyl sheets protecting from rain, wind, dust etc).
5. Store in a dry and well ventilated condition.
6. If storage is anticipated for an extended period, the desiccant bags (if supplied) should be changed every six months.

5 TRANSPORTATION

WARNING

1. When handling valves, the correct equipment and accessories (slings, fasteners, hooks etc.) must be sized and selected, taking into consideration the individual and/or overall valves weight indicated in the packing list and/or delivery note.
 2. Lifting and handling must be done only by qualified personnel. Improper hoisting can cause valve deformation or damage from dropping the valve.
 3. Do not lift the valve by using lifting points or lugs located on the actuator, as these lifting points/lugs are for the actuator only.
3. Confirm that the materials of construction listed on the valve nameplates are appropriate for the intended service and are according to specifications. When in doubt, contact KTM or your local Emerson facility.
 3. Define the preferred mounting orientation with respect to the system pressure. Where applicable, the arrow on the body helps to identify the upstream side (high pressure) and downstream side (low pressure).
 4. Fasteners like bolts and nuts at each connecting portion on the valve should be checked and retightened in case they were loosened due to shock during transportation. When tightening nuts, use a closed wrench for safety.
 5. Before installation, the protection cover on the bore must be removed.
 6. Manually operated valves, may be installed on pipes at any angle, horizontally, vertically or any other direction. It is however recommended to consider facilitating maintenance and handling.
 7. Maintenance space must be provided.
 8. Although Metaltite® ball valves are designed as bi-directional, sealing function in a closed valve position excels for positive pressure direction (from Body Cap side to Body side direction). Generally install the valve with the Body Cap facing to high-pressure side when the valve is closed.

6 INSTALLATION

The following instructions will make for a satisfactory and long life service of the valve.

1. Remove the valve from the shipping package (box or pallet) carefully to avoid any damage to the valve and actuator (plus accessories where applicable).
2. Confirm that the materials of construction listed on the valve nameplates are appropriate for the intended service and are according to specifications. When in doubt, contact KTM or your local Emerson facility.
3. Define the preferred mounting orientation with respect to the system pressure. Where applicable, the arrow on the body helps to identify the upstream side (high pressure) and downstream side (low pressure).
4. Fasteners like bolts and nuts at each connecting portion on the valve should be checked and retightened in case they were loosened due to shock during transportation. When tightening nuts, use a closed wrench for safety.
5. Before installation, the protection cover on the bore must be removed.
6. Manually operated valves, may be installed on pipes at any angle, horizontally, vertically or any other direction. It is however recommended to consider facilitating maintenance and handling.
7. Maintenance space must be provided.
8. Although Metaltite® ball valves are designed as bi-directional, sealing function in a closed valve position excels for positive pressure direction (from Body Cap side to Body side direction). Generally install the valve with the Body Cap facing to high-pressure side when the valve is closed.

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CAUTION

1. Ensure that there are no solid objects such as pieces of wood, plastic or packing materials within the valve or on the valve seat. It is recommended to flush pipes before installing the valve. If this is not possible, the installed valve must be in its open position before flushing takes place.
2. Unless otherwise recommended by KTM, the valves should be installed with the ball in open position to ensure that the seat rings are not damaged during installation.
3. Use appropriate gaskets which comply with standards or specifications.
4. Tighten the flange bolts with a closed wrench, using a "crisscross" pattern that alternately tightens the bolts located 180 degrees apart (see Figure 1). Unequal partial tightening places stress on lined pipes which may damage the flange or produce excessive operation torque.
5. Failure to fabricate pipes without excessive stress will result in leakage, poor operation or failure of the valves.
6. When conducting a pressure test of the pipe system, the valves should be in a partially open position. Testing at closed position will impose too much load and will cause leakage from seats. Check for any leakage from the joint flange and gland portion during the pressure test. After conducting the pressure test, return to fully open/closed position at once.
7. If the piping system is pressurized with water for testing, and if the piping system has been shut down for a long time after testing, the following measures should be taken:
 - Use corrosion inhibitor with water to pressurize the piping system.
 - After testing, the piping system should be depressurized and the test water completely drained.
 - Ensure that the corrosion inhibitor does not leave a residue within the system as the particulates may damage the valve sealing surfaces.

7 OPERATION

7.1 Operation instruction

Valve adjustment is performed through lever handle/gear operation. Turning the stem clockwise shuts the valve. Check the operation of the valve by stroking it to "fully open" and "fully closed". Either the hand lever or the direction of the parallel flats on the top of the stem indicate the open or close position of the KTM ball valves (Figure 2). For gear operated valves, the position is indicated by the arrow-indicator (Figure 3).

WARNING

1. Operate the valve taking up a stable posture, after checking that the specified handle is fastened by bolts/nuts or snap ring/set screw. Also, when operating the valve with a spare handle, please make sure that the handle is reliably inserted into the stem's end. Insufficient insertion and forced operation of the handle may result in damage or injury if the handle slips out.
2. Excessive handle operation may break the lever, injure the operator, and/or deform the stopper or the stem, which may also result in seat leakage.
3. Be careful in handling the valve where high temperature fluid flows in the pipeline. The heated valve may cause burn injury of bare hands.

7.2 Gear operated valve adjustment

If the gear-operated mechanism indicator does not correctly indicate whether the valve is completely open or shut, adjust the opening with the adjustment screw. For details, refer to document No. C325-330, "Instruction Manual of A, B, C and D typed Gear Operational Valves".

FIGURE 1
Tightening of bolts

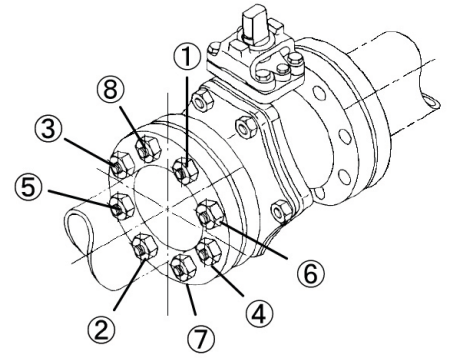


FIGURE 2
Lever handling valve

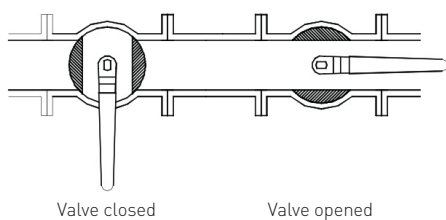
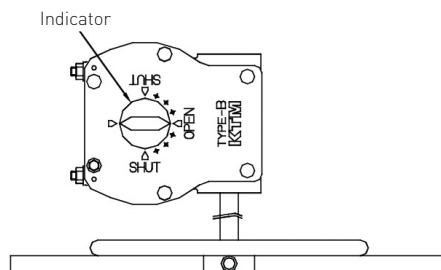


FIGURE 3
Gear operated valve



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8 MAINTENANCE

The following instructions will contribute to a long life service of the valve. Periodical checks and maintenance are required to keep valves in good working condition. Parts to be checked periodically and maintenance items are shown in below Figure 4.

CAUTION

If leakage is observed through the gland packing, tighten the gland bolts slowly and evenly until the leakage stops. This must be accomplished without affecting the torque. Do not over-tighten the packing gland bolts, since this will increase the torque required to operate the valve. This procedure should be performed every 3,000 operation cycles or every six months of service. When gland packing is expected to be loosened due to the heat cycle, retighten the screws every two months of service or every 1,000 operational cycles.

Typical structures of gland portion are shown in Figure 4. Numbers of parts vary slightly depending on the valve type and size. Refer to the respective construction drawings for details.

CAUTION

The sealing portion between body and body cap is provided with reinforced PTFE or a graphite gasket as shown in Figure 5. In case of slight leakage, the fastening bolts should be moderately tightened.

FIGURE 4
Gland structures

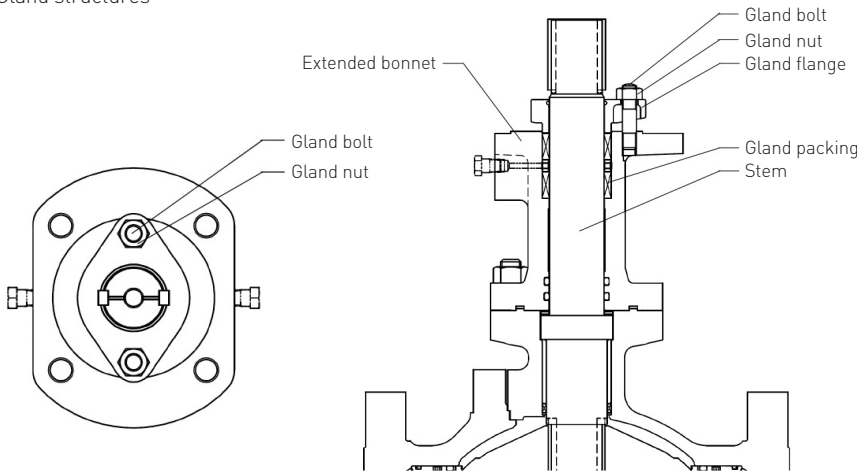
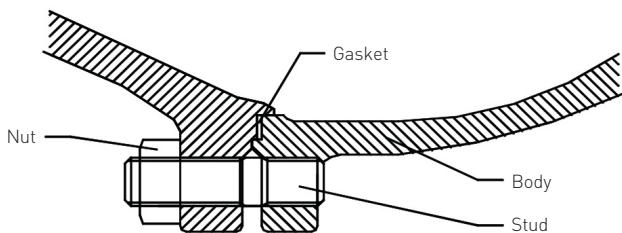


FIGURE 5
Body sealing structures



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9 TROUBLESHOOTING

Trouble examples	Causes	Measures
Unsmooth operation	<ol style="list-style-type: none"> 1. Jamming due to solids or slurry in the fluid. 2. Fluid sticks to ball and seats. 3. Unusual pressure rise exceeding seat rating limit when shutting the valve. 	<ol style="list-style-type: none"> 1. Clean the inside of the valve. If necessary, replace parts (ball, seats, stem bearing, thrust bearing). 2. Clean the inside of the valve. If necessary, replace ball or seats. 3. Take measures to prevent abnormal pressure rise in pipe.
Outside leakage	<ol style="list-style-type: none"> 1. Sealing performance of gasket and gland packing decreases gradually when operation frequency is high or the high temperature fluid flows. 2. Sealing performance of gasket and gland packing decreases when shutting the valve during abnormal pressure rise in the piping. 	<ol style="list-style-type: none"> 1. The fastening nuts or bolts at gasket and gland packing are required to be lightly tightened, or gasket and gland packing replaced. 2. Take measures to prevent pressure rise and replace seats, gaskets and gland packing.
Seat leakage	<ol style="list-style-type: none"> 1. Fluid sticks to ball and seats. 2. Abrasion of ball and seats. 	<ol style="list-style-type: none"> 1. Clean the inside of the valve. If necessary, replace ball or seats. 2. Replace ball and seats.

10 VALVE DISASSEMBLY

Assemble/disassemble the valves in a clean, well-lit and well ventilated place.

CAUTION

Before removing the valve from the piping, ensure that the system has been fully depressurized and any dangerous fluids have been drained off.

Failure to do so may cause serious personal injury and/or damage to the valve.

Maintenance of the valves must be performed only by qualified personnel. Never operate/disassemble the valves before checking the safety. The valve is extremely heavy; ensure a stable position to prevent it from falling down when assembling/disassembling.

There is a cavity inside the ball valve when a ball is fully open or fully closed. For a safe disassembly, following instructions must be carried out.

1. Half open the valve when still installed in piping, and make sure no pressure remains in the cavity. Failure to do so may result in injury, explosion or fire caused by the remaining pressure.
2. Before disassembling the valve, make sure that it has been decontaminated of any harmful gasses or fluids, and disassembly is done at a well ventilated place and within a safe temperature range for maintenance.
3. Pressure of flammable gas and other dangerous fluids must be checked only at well ventilated places outdoors, far away from any fire source.

Refer to the following construction drawing(s) for disassembling. The numbers of parts vary slightly depending on the valve size, but the basic structures are identical.

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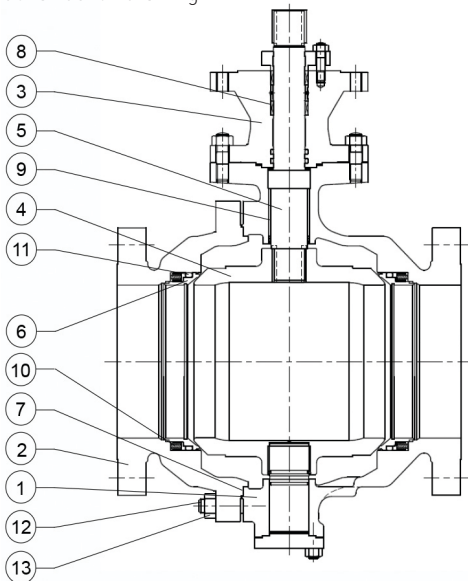
ASME CLASS 150 MODEL E0105MK, E0125MK / ASME CLASS 300 MODEL E0106MK, E0126MK

No.	Parts name	Body material: carbon steel				Body material: stainless steel			
		Material code				Material code			
		62BY	62BG	62WY	62WG	32BY	32BG	32WY	32WG
		Temperature range				Temperature range			
		-29° to 150° ^[1]				-29° to 150°			
1	Body	WCB [SCPH2]				CF8M [SCS14A]			
2	Body cap	WCB [SCPH2]				CF8M [SCS14A]			
3	Extended bonnet	WCB [SCPH2]				CF8M [SCS14A]			
4	Ball	CF8M [SCS14A] + SFNi		CF8M [SCS14A] + WC		CF8M [SCS14A] + SFNi		CF8M [SCS14A] + WC	
5	Stem	SCM435H + ENP				SCM435H + ENP			
6	Seat	316SS + Stellite		316SS + WC		316SS + Stellite		316SS + WC	
7	Gasket	RPTFE	Graphite	RPTFE	Graphite	RPTFE	Graphite	RPTFE	Graphite
8	Gland packing	RPTFE	Graphite	RPTFE	Graphite	RPTFE	Graphite	RPTFE	Graphite
9	Stem bearing	PEEK				PEEK			
10	Spring	316SS				316SS			
11	Seal ring	FKM ^[2]				FKM ^[2]			
12	Stud bolt	A193 G B7				A193 G B7 + Zn			
13	Nut	A194 G 2H				A194 G 2H + Zn			

ASME CLASS 600 MODEL E0108MK

No.	Parts name	Body material: carbon steel				Body material: stainless steel			
		Material code				Material code			
		62BY	62BG	62WY	62WG	32BY	32BG	32WY	32WG
		Temperature range				Temperature range			
		-29° to 150° ^[1]				-29° to 150°			
1	Body	WCB [SCPH2]				CF8M [SCS14A]			
2	Body cap	WCB [SCPH2]				CF8M [SCS14A]			
3	Extended bonnet	WCB [SCPH2]				CF8M [SCS14A]			
4	Ball	CF8M [SCS14A] + SFNi		CF8M [SCS14A] + WC		CF8M [SCS14A] + SFNi		CF8M [SCS14A] + WC	
5	Stem	SCM435H + ENP				SCM435H + ENP			
6	Seat	316SS + Stellite		316SS + WC		316SS + Stellite		316SS + WC	
7	Gasket	Spiral wound gasket				Spiral wound gasket			
8	Gland packing	RPTFE	Graphite	RPTFE	Graphite	RPTFE	Graphite	RPTFE	Graphite
9	Stem bearing	PEEK				PEEK			
10	Spring	316SS				316SS			
11	Seal ring	FKM ^[2]				FKM ^[2]			
12	Stud bolt	A193 G B7				A193 G B7 + Zn			
13	Nut	A194 G 2H				A194 G 2H + Zn			

FIGURE 6
Construction drawing



NOTES

1. Lower limit temperature for SCPH2 is -5°, WCB is -29°.

2. Will use FVMQ in case of -29°.

Materials in parentheses indicate equivalent JIS material or generic name.

SFNi Nickel Alloy overlay

WC Tungsten Carbide coating

ENP Electroless Nickel plating

Zn Zn plating

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(Sending the valves back to us and requesting repair)

CAUTION

1. *The ball valve has a cavity in its interior when a ball is fully open or fully closed. Since some pressure and fluid may remain inside the cavity, be sure to release pressure and purge fluids completely by keeping the valve half-open when removing the valve from the piping or sending them back to us.*
2. *Please return the valve without disassembling.*

11 WARRANTY

The warranty period is one year from the date of installation by the first use of the goods, or eighteen (18) months from the date of shipment to the first user, whichever occurs first.

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