

1. USE:

1.1 Maximum results and long life of the valves can be maintained under normal working conditions and according with pressure/temperature rating and corrosion data chart.

2. MANUAL OPERATION:

2.1 The opening and closing of the valve is done by turning the lever a ¼" turn (90 degrees).

- A. Valve in Open Position: The lever is in line with the valve or pipeline.
- B. Valve in Closed Position: The lever is at right angle with the valve or pipeline.

3. DISASSEMBLY & CLEANING PROCEDURE:

Caution: ball valve can trap fluids in the ball cavity when closed.

3.1 If the valve has been used to control hazardous media, it must be decontaminated before disassembly.

It is recommended that the following steps are taken for safe removal and reassembly.

- A. Relieve the line pressure.
- B. Place valve in half-open position and flush the line to remove any hazardous material from the valve.
- C. All persons involved in the removal and disassembly of the valve should wear the proper Protective clothing, such as face shield, gloves, etc.

Maintenance of parts is easy, even if the valve is installed in the line:

By removing all the body bolts except one, then loosening the remaining bolt, the valve body can be swung out. Seats, gaskets and ball can be replaced without disturbing pipe alignment.

On threaded lines, valve can be screwed on without the use of unions, as the three-piece construction makes valve ends free, by removing the bolts.

4. GENERAL INFORMATION FOR INSTALLATION:

- 4.1 The valve can be installed in any position on the pipeline.
- 4.2 Before installation of the valves, the pipe must be flushed clean of dirt, burrs and welding residues, or the seats and ball surface will be damaged.
- 4.3 The pipe must be free from tension.

5. INSTALLATION OF THREADED VALVES

- 5.1 Use a sealant, such as hemp core, Teflon, etc. on the threads that is compatible with the intended service.
- 5.2 Apply wrench only on the hexagon of the valve ends. Tightening by using the valve body or lever can seriously damage the valve.
- 5.3 In some applications, screwed valves are back welded on site, these valves must be treated as per instructions for weld end valves before back welding. (see item 6 and illustration page 6)

6. INSTALLATION OF WELD-END VALVES

- 6.1 Tack weld the valve on the pipe in four points on both end caps.
- 6.2 With the valve in the open position, (lever to be parallel to the axis of the pipe), remove all the body bolts except one. Loosen the nut on the remaining bolt
- 6.3 Swing the body outside the pipe and remove seats and ball to prevent accidental damage and protect the exposed valve body and ends from weld splatter.
- 6.4 Finish welding both end caps on the pipe.
- 6.5 When cooled down, clean both end caps and body surface.
- 6.6 Lightly lubricate ball seats (with a media compatible lubricant) and Install ball and seats into body taking care to install lager curve of the seats facing the ball.
- 6.7 Swing the body back in position and replace the bolts. Tighten all nuts slightly. This Operation is very important, to keep body and end caps perfectly parallel, thus preventing distortion of the end caps.
- 6.8 Tighten body bolts evenly. Make sure that maximum tightening torque is observed.
- 6.9 Check proper operation of the valve and hydrostatic system and check for leaks.

BOLT TIGHTENING SPECIFICATIONS

The body bolts of the valve should be tightened evenly.
Tighten one-side snugly, then the one diagonal across.
Repeat for the other bolts, bringing them all down tightly in sequence.

Torque of Body Bolt**Full Bore Series 32**

Size	Threads	lbf-in	kgf-cm	N-m	Threads	lbf-in	kgf-cm	N-m
1/4"	1/4"-20UNC	87 ~ 95	100 ~ 110	9.8 ~ 10.8	M6	87 ~ 95	100 ~ 110	9.8 ~ 10.8
3/8"	1/4"-20UNC	87 ~ 95	100 ~ 110	9.8 ~ 10.8	M6	87 ~ 95	100 ~ 110	9.8 ~ 10.8
1/2"	1/4"-20UNC	95 ~ 130	110 ~ 150	10.8 ~ 14.7	M6	95 ~ 130	110 ~ 150	10.8 ~ 14.7
3/4"	5/16"-18UNC	122 ~ 156	140 ~ 180	13.7 ~ 17.6	M8	122 ~ 156	140 ~ 180	13.7 ~ 17.6
1"	5/16"-18UNC	165 ~ 200	190 ~ 230	18.6 ~ 22.5	M8	165 ~ 200	190 ~ 230	18.6 ~ 22.5
1.1/4"	3/8"-16UNC	191 ~ 217	220 ~ 250	21.6 ~ 24.5	M10	191 ~ 217	220 ~ 250	21.6 ~ 24.5
1.1/2"	3/8"-16UNC	330 ~ 365	380 ~ 420	37.2 ~ 41.2	M10	330 ~ 365	380 ~ 420	37.2 ~ 41.2
2"	7/16"-14UNC	391 ~ 434	450 ~ 500	44.1 ~ 49.0	M12	391 ~ 434	450 ~ 500	44.1 ~ 49.0
2.1/2"	9/16"-12UNC	625 ~ 694	720 ~ 800	70.6 ~ 78.4	M14	625 ~ 694	720 ~ 800	70.6 ~ 78.4
3"	5/8"-11UNC	694 ~ 781	800 ~ 900	78.4 ~ 88.2	M16	694 ~ 781	800 ~ 900	78.4 ~ 88.2
4"	5/8"-11UNC	694 ~ 781	800 ~ 900	78.4 ~ 88.2	M16	694 ~ 781	800 ~ 900	78.4 ~ 88.2

Torque of Body Bolt**Reduced Bore Series 32**

Size	Threads	lbf-in	kgf-cm	N-m	Threads	lbf-in	kgf-cm	N-m
1/2"	1/4"-20UNC	87 ~ 95	100 ~ 110	9.8 ~ 10.8	M6	87 ~ 95	100 ~ 110	9.8 ~ 10.8
3/4"	1/4"-20UNC	95 ~ 130	110 ~ 150	10.8 ~ 14.7	M6	95 ~ 130	110 ~ 150	10.8 ~ 14.7
1"	5/16"-18UNC	122 ~ 156	140 ~ 180	13.7 ~ 17.6	M8	122 ~ 156	140 ~ 180	13.7 ~ 17.6
1.1/4"	5/16"-18UNC	165 ~ 200	190 ~ 230	18.6 ~ 22.5	M8	165 ~ 200	190 ~ 230	18.6 ~ 22.5
1.1/2"	3/8"-16UNC	191 ~ 217	220 ~ 250	21.6 ~ 24.5	M10	191 ~ 217	220 ~ 250	21.6 ~ 24.5
2"	3/8"-16UNC	330 ~ 365	380 ~ 420	37.2 ~ 41.2	M10	330 ~ 365	380 ~ 420	37.2 ~ 41.2
2.1/2"	7/16"-14UNC	391 ~ 434	450 ~ 500	44.1 ~ 49.0	M12	391 ~ 434	450 ~ 500	44.1 ~ 49.0
3"	9/16"-12UNC	625 ~ 694	720 ~ 800	70.6 ~ 78.4	M14	625 ~ 694	720 ~ 800	70.6 ~ 78.4
4"	5/8"-11UNC	694 ~ 781	800 ~ 900	78.4 ~ 88.2	M16	694 ~ 781	800 ~ 900	78.4 ~ 88.2

Torque of Body Bolt

Full Bore 32 Series with NACE standard (B8M bolt/8M nut for CF8M BV, B7M bolt/2HM nut for WCB BV)

Size	Threads	kgf.cm
1/4"	1/4"-20UNC	70~80
3/8"	1/4"-20UNC	70~80
1/2"	1/4"-20UNC	70~80
3/4"	5/16"-18UNC	140~150
1"	5/16"-18UNC	190~200
1.1/4"	3/8"-16UNC	220~230
1.1/2"	3/8"-16UNC	380~390
2"	7/16"-14UNC	450~460
2.1/2"	9/16"-12UNC	720~740
3"	5/8"-11UNC	800~820
4"	5/8"-11UNC	800~820

Tensioning Torque of stem nut

1 kg-cm = 0.098Nm = 0.868 In-lbs

Torque of stem nut for
Standard O-ring Type
(See item 23)

Torque of stem nut for
Standard O-ring Type
(See item 24)

Torque of stem nut for
Non Standard Non O-ring Type

Torque of stem nut for
Non Standard Non O-ring Type

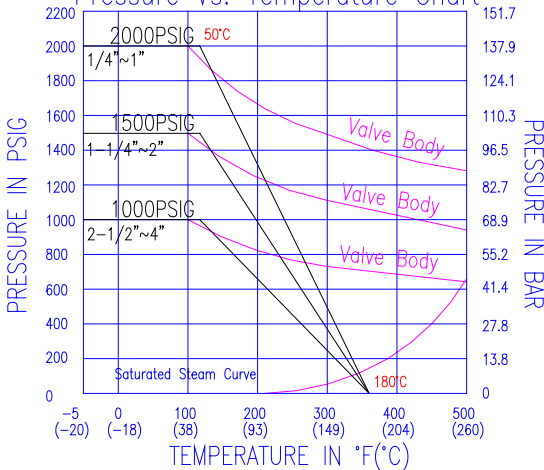
Size		Series 32			Series 32F Fire Safe valve			Non-fire safe valve Series 32			Series 32F Fire Safe valve		
Full port	Red port	In-lbs	Nm	kg-cm	In-lbs	Nm	kg-cm	In-lbs	Nm	kg-cm	In-lbs	Nm	kg-cm
1/4"		61	6.9	70	78	8.8	90	69	7.8	80	78	8.8	90
3/8"	1/2"	61	6.9	70	78	8.8	90	69	7.8	80	78	8.8	90
1/2"	3/4"	69	7.8	80	87	9.8	100	78	8.8	90	87	9.8	100
3/4"	1"	69	7.8	80	87	9.8	100	78	8.8	90	87	9.8	100
1"	1 1/4"	95	10.8	110	104	11.8	120	122	13.7	140	130	14.7	150
1 1/4"	1 1/2"	95	10.8	110	104	11.8	120	122	13.7	140	130	14.7	150
1 1/2"	2"	139	15.7	160	148	16.7	170	200	22.5	230	174	19.6	200
2"	2 1/2"	139	15.7	160	148	16.7	170	200	22.5	230	174	19.6	200
2 1/2"	3"	165	18.6	190	191	21.6	220	191	21.6	220	208	23.5	240
3"	4"	182	20.6	210	191	21.6	220	191	21.6	220	208	23.5	240
4"		200	22.5	230	208	23.5	240	217	24.5	250	226	25.5	260

Pressure rating

1/4"~4" (Full Port)

SEAT: PTFE or RTFE

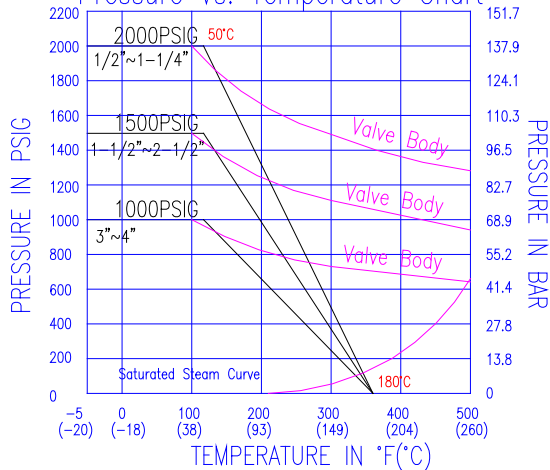
Pressure Vs. Temperature Chart



1/2"~4" (Reduced Port)

SEAT: PTFE or RTFE

Pressure Vs. Temperature Chart



Series 32 Basic Torque (R-PTFE SEATS)

Valve Size Full bore		Break Away Torque		Cv
Inch	DN	In/Lb	Nm	G. P .M.
1/4"	8	69	8	8
3/8"	10	69	8	8
1/2"	15	69	8	15
3/4"	20	92	10	40
1"	25	138	16	70
1 1/4"	32	207	23	110
1 1/2"	40	288	33	250
2"	50	301	34	430
2 1/2"	65	553	62	700
3"	80	780	88	1100
4"	100	1010	114	2000

Valve Size Reduced bore		Break Away Torque		Cv
Inch	DN	In/Lb	Nm	G. P .M.
-	-	-	-	-
1/2"	15	69	8	8
3/4"	20	69	8	15
1"	25	92	10	40
1 1/4"	32	138	16	70
1 1/2"	40	207	23	110
2"	50	288	33	250
2 1/2"	65	301	34	430
3"	80	553	62	700
4"	100	780	88	1100

30% safety factor included.(Full port)

30% safety factor included.(Reduced port)

- The above torque figures are based on "valve with grease".
- Torque figure is 30% higher if valve is dry assembled (Degreased).

Media and Service Factors for sizing:

Torque Determination: = Basic Torque * Media Factor * Service Factor = Sizing Torque

Media Factors	Multiplier
Clean, particle free, non-lubricating (water, alcohol, etc)	1.00
Clean, particle free, non-lubricating (oils, hydraulic fluid, etc)	0.80
Slurries or heavily corroded and contaminated systems	2.00
Gas or saturated steam, clean and wet	1.00
Gas or superheated steam, clean and dry	1.30
Gas, dirty unfiltered e.g. natural gas, Chlorine	1.50

Service Factors	Multiplier
Simple On and Off Operations	1.00
Throttling	1.20
Positioner Control	1.50
Once per day Operations	1.20
Once every two days or a "Plant Critical" Operation	1.50

Part lists exploded view

SERIES 32 (1/4" - 2")

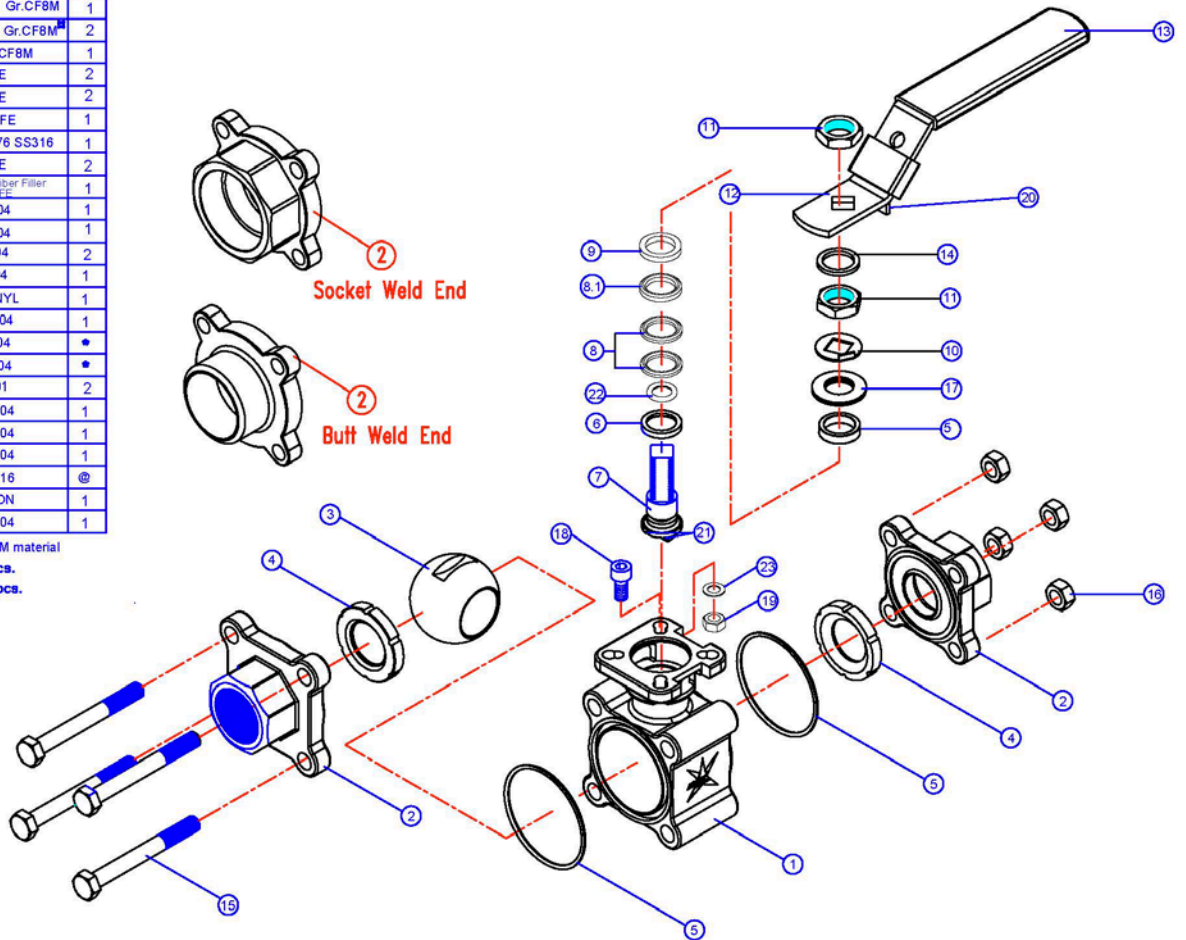
MATERIALS LIST

NO.	PART NAME	MATERIAL	QTY
1	Body	ASTM A351 Gr.CF8M	1
2	End Cap	ASTM A351 Gr.CF8M	2
3	Ball	SS316/CF8M	1
4	Seat	PTFE	2
5	Joint Gasket	PTFE	2
6	Stem Seal	RPTFE	1
7	Stem	ASTM A276 SS316	1
8	Stem Packing	PTFE	2
8.1	Stem Packing	25% Glass Fiber Filler + PTFE	1
9	Gland	SS304	1
10	Lock saddle	SS304	1
11	Stem Nut	SS304	2
12	Handle	SS304	1
13	Handle Sleeve	VINYL	1
14	Stem Washer	SS304	1
15	Bolt	SS304	•
16	Bolt Nut	SS304	•
17	Belleville Washer	SS301	2
18	Stop Pin	SS304	1
19	Pin Nut	SS304	1
20	Locking Device	SS304	1
21	Antistatic Device	SS316	@
22	O-Ring	VITON	1
23	WASHER	SS304	1

■ Socket weld and butt weld uses CF3M material

• 1/4"~1 1/2" -4pcs, 2"-6pcs.

● 1/4"~1 1/2" -1pcs, 3/4"~4" -2pcs.



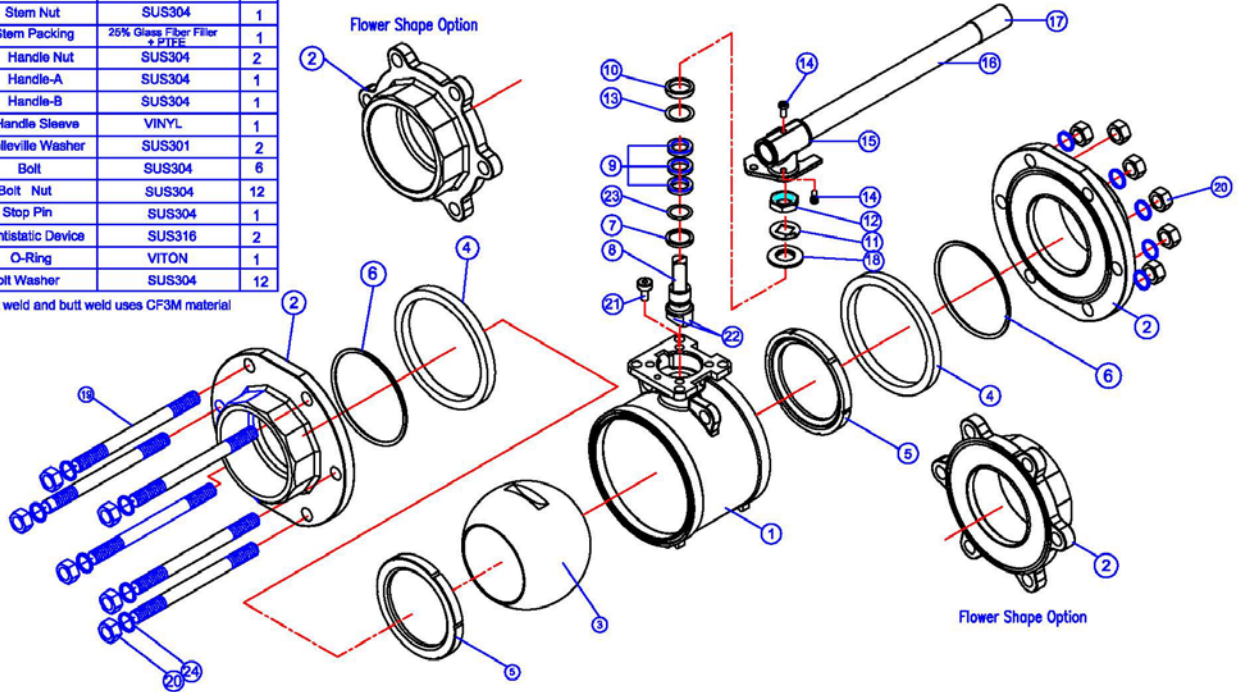
32 SERIES
3-PIECE FULL or REDUCED PORT BALL VALVES
Installation & Maintenance Manual

MATERIALS LIST

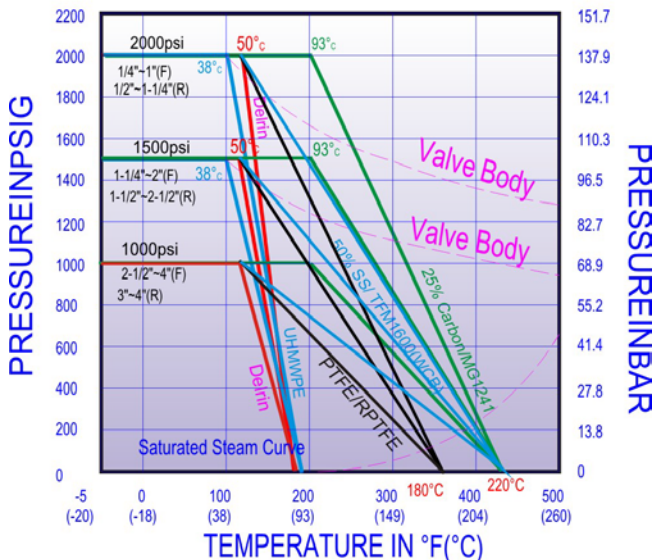
NO.	PART NAME	MATERIAL	QTY
1	Body	ASTM A351 Gr.CF8M	1
2	End Cap	ASTM A351 Gr.CF8M	2
3	Ball	CF8M	1
4	Seat Gasket	ASTM A351 Gr.CF8M	2
5	Seat	PTFE	2
6	Joint Gasket	PTFE	2
7	Stem Seal	RPTFE	1
8	Stem	ASTM A276 SS316	1
9	Stem Packing	PTFE	3
10	Gland	SUS304	1
11	Lock saddle	SUS304	1
12	Stem Nut	SUS304	1
13	Stem Packing	25% Glass Fiber Filler + PTFE	1
14	Handle Nut	SUS304	2
15	Handle-A	SUS304	1
16	Handle-B	SUS304	1
17	Handle Sleeve	VINYL	1
18	Belleville Washer	SUS301	2
19	Bolt	SUS304	6
20	Bolt Nut	SUS304	12
21	Stop Pin	SUS304	1
22	Antistatic Device	SUS316	2
23	O-Ring	VITON	1
24	Bolt Washer	SUS304	12

■ Socket weld and butt weld uses CF3M material

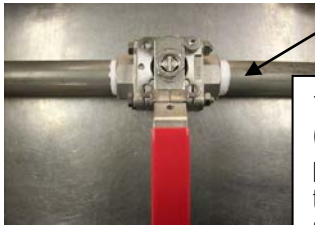
SERIES 32 (2-1/2" - 4")



SEAT RATING CHART
Pressure Vs. Temperature Chart



Re: 3pc Ball Valve – dismantling procedure and illustration
Instructions for weld end valves



1.) Put valve in close position first (handle and pipe are in vertical position), fix the valve on the pipe temporarily with spot welding on four points of end caps



6.) Adjust body and ends by hand, and make sure they're in alignment. Use a tool to screw bolts and nuts together, and avoid the displacement to occur between body and ends.



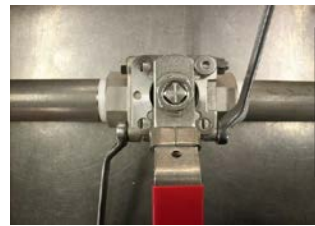
2.) Then, turn the valve in open position (handle and pipe are in parallel position)



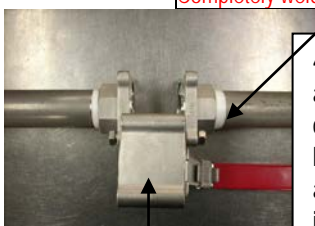
7.) Open and close valve within 3-5 times repeatedly, and finally put valve in close position.



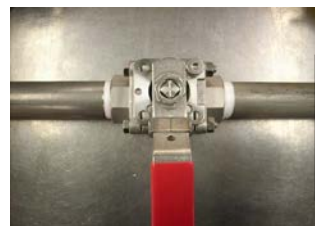
3.) Use a tool to take off three bolts, and keep one bolt in loose position.



8.) Use tools to screw bolts and nuts together tightly (in diagonal line) according to standard torque.



4.) Swing body outside of pipe, and weld the ends on pipe completely, pay attention and keep off the contact of end joint and seats during such process, in order to avoid the seals being burned and damaged.



9.) After assembling, check if the valve can open or close smoothly? Then, do a piping test.



5.) After cooling, clean the surface of whole ends and body. And swing body back to original position, then put back bolts and nuts to original position as well.

<CAUTION>

- Do not connect the system before valve pipeline installation to the earthing connection has been tested, examined and approved by the customer.
- Do not allow dust layers on the transportation media as it could charge the valve during high velocity of transportation. The flammable material shall be prohibited to be used on the valve.

For Sales and Service Contact:



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