KURVALF

INDUSTRIAL VALVES AND AUTOMATION

BALL VALVE USER MANUAL

Küresel Vana Kullanım Kitapçığı

Not : Tükçe El Kitabı için 25. Sayfaya Bakınız. / Note: See Page 25 for Turkish User Manual

TRADEMATRK : Marks and used in this manual are based on entered trademarks.

ATTENTION : Consider all warnings and safety notes specified in this manual prior to installation, commissioning and possible maintenance works.

STANDARDS

- Valve Design Standards : ISO 17292 , API 6D, ISO 14313
- Face to Face Standards : ANSI B16.10
- End Connection Standards : ANSI B16.5 / ANSI B.16.25 / DIN EN 1092-1
- Test Standards : API 6D / API 598
- Fire Safe Test Standards : API 607 / ISO 10497 / API

INDEX

1. 1. GENERAL INFORMATION

This manual was prepared in order to correctly keep, install, commission and carry out maintenance the ball valves. A correct installation and use enables the valve run efficiently. This manual is valid for ball valves produced under API spec. 6D. This manual is out of scope for the valves produced on special request of users. Specific requirements are valid for these ones. 24 month-warranty is given unless going out of the use rules. Warranty covers defective production and defective production that can be noticed later. The properties of valve acquired after sales may damage the valve. The valve goes beyond the scope of warranty as a result of problems and service failures that will arise due to interventions not complying with this procedure.

2. PACKAGING and STORAGE

2.1 PACKAGING

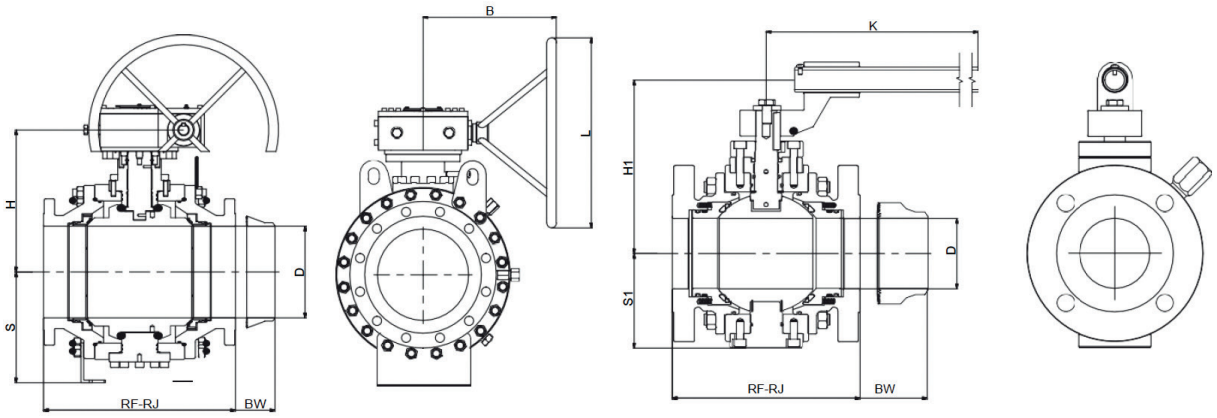
2.1.1 Type of packaging may vary depending on the size of the valve. All valves are shipped after packaged as to be protected from external factors.
2.1.2. When the valves are taken delivered, the package contents should be checked against any loss or damage.

2.2 STORAGE

2.2.1 The valves should be stored in a dry and non-corrosive area
2.2.2. Protective caps should not be opened until the valve is used and they should be kept on the valve.
2.2.3. The valves are shipped after applying anti-corrosion protective oil to their inner surfaces. In case the protective oil is cleaned off any way the valves should be lubricated again with protective oil before storage. (See 12)

3. 3. VALVE DIMENSIONS

3.1 MEASURING TABLES



CLASS 150 / BALL VALVE DIMENSIONS TABLE											
ANSI 150	RF	BW	RJ	D	S	H	B	L	S1	H1	K
2"	178	216	191	50	-	-	-	-	79	150	320
3"	203	283	216	76	-	-	-	-	102	188	480
4"	229	305	241	102	-	-	-	-	176	247	480
6"	394	457	406	152	216	258	281,5	427	-	-	-
8"	457	521	470	203	276	325,5	281,5	427	-	-	-
10"	533	559	546	254	307,5	394	370,5	527	-	-	-
12"	610	635	622	305	333,5	415	370,5	527	-	-	-
14"	686	762	699	337	382	488	480	527	-	-	-
16"	762	838	775	387	416	591	480	527	-	-	-
18"	884	914	876	438	535	672	559	527	-	-	-
20"	914	991	927	489	550	644	559	527	-	-	-
24"	1067	1143	1080	590	695	813	559	527	-	-	-
26"	1143	1245	-	635	710	880	559	527	-	-	-
28"	1245	1346	-	686	725	903	559	527	-	-	-
30"	1295	1397	-	737	735	927	559	527	-	-	-
32"	1372	1524	-	781	850	1083	(C)	(C)	-	-	-
36"	1524	1727	-	876	945	1162	(C)	(C)	-	-	-
40"	(C)	(C)	-	(C)	1022	1245	(C)	(C)	-	-	-

CLASS 300 / BALL VALVE DIMENSIONS TABLE											
ANSI 300	RF	BW	RJ	D	S	H	B	L	S1	H1	K
2"	216	216	232	50	-	-	-	-	79	150	320
3"	283	283	298	76	-	-	-	-	96,5	193	480
4"	305	305	321	102	-	-	-	-	127	247	480
6"	403	457	419	152	232	258	281,5	427	-	-	-
8"	502	521	518	203	289	325,5	281,5	427	-	-	-
10"	568	559	584	254	307,5	394	422,5	527	-	-	-
12"	648	635	664	305	333,5	415	422,5	527	-	-	-
14"	762	762	778	337	382	488	534	527	-	-	-
16"	838	838	854	387	433	586	534	527	-	-	-
18"	914	914	930	438	535	672	559	527	-	-	-
20"	991	991	1010	489	550	644	559	527	-	-	-
24"	1143	1143	1165	590	695	813	559	527	-	-	-
26"	1245	1245	-	635	710	880	559	527	-	-	-
28"	1346	1346	-	686	725	903	559	527	-	-	-
30"	1397	1397	-	737	735	927	559	527	-	-	-
32"	1524	1524	-	781	850	1083	(C)	(C)	-	-	-
36"	1727	1727	-	876	945	1162	(C)	(C)	-	-	-
40"	(C)	(C)	-	(C)	1022	1245	(C)	(C)	-	-	-

CLASS 600 / BALL VALVE DIMENSIONS TABLE											
ANSI 600	RF	BW	RJ	D	S	H	B	L	S1	H1	K
2"	292	292	295	50	-	-	-	-	79	150	320
3"	356	356	359	76	-	-	-	-	102	188	480
4"	432	432	435	102	-	-	-	-	127	247	480
6"	559	559	562	152	226	264	281,5	427	-	-	-
8"	660	660	664	203	289	325,5	281,5	427	-	-	-
10"	788	788	791	254	307,5	484	422,5	527	-	-	-
12"	838	838	841	305	333,5	505	422,5	527	-	-	-
14"	889	889	892	337	382	548	534	527	-	-	-
16"	991	991	994	387	433	591	534	527	-	-	-
18"	1092	1092	1095	438	535	672	559	527	-	-	-
20"	1194	1194	1200	489	550	709	559	527	-	-	-
24"	1397	1397	1407	590	663	813	559	527	-	-	-
26"	1448	1448	1461	635	710	880	559	527	-	-	-
28"	1549	1549	1562	686	725	903	559	527	-	-	-
30"	1651	1651	1664	735	735	927	559	527	-	-	-
32"	1778	1778	1794	781	850	1083	(C)	(C)	-	-	-
36"	2083	2083	2098	876	945	1162	(C)	(C)	-	-	-
40"	(C)	2032	(C)	976	1022	1245	(C)	(C)	-	-	-

3.1 CONNECTION DIMENSIONS

3.1.1 Flange Connection Dimensions

ASME B16.5 / ASME B16.47; ANSI 150, ANSI 300, ANSI 400, ANSI 600, ANSI 900, ANSI 1500, ANSI 2500

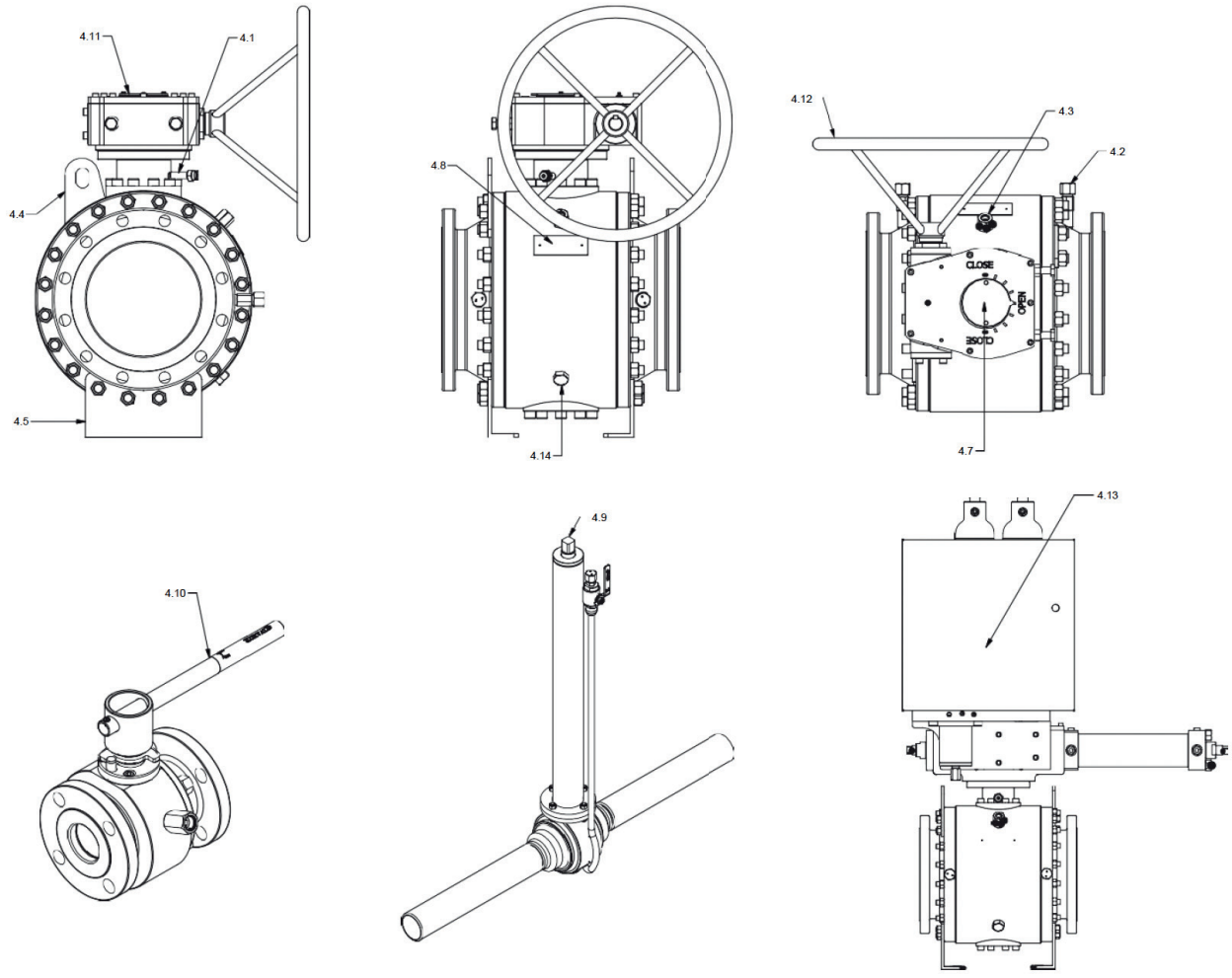
EN 1092-1; PN16, PN20, PN25, PN40, PN63, PN100, PN150, PN250

3.1.2 Welding Connection Dimensions

ASME B16.25

4. FEATURES

The illustrations showing the parts of the valve are as follows. (Please refer to the valve catalogue for detailed illustration of exploded valve.



4.1 Stem Lubrication; It enables to lubricate valve ball stem. Stem lubrication channel is independent of the line pressure. Lubrication process is done via grease nipple located on the upper bearing (trunnion).

4.2 Seat Lubrication; It is used in order to pump emergency seal oils.

4.3 Drain / Vent; It is used in order to drain solid / liquid particles from inside the body when the valve is fully open and in fully closed position (Double Block and Bleed)

4.4 Lifting Device; It is used to lift the valve safely

4.5 Valve Feetı; It enables to position the valve rigidly along with the equipment connected to the valve.

4.6 Stopper Adjusting Bolt; It enables to adjust the valve in fully open or fully closed position.

4.7 Thrust Washer; It shows the current position of the valve.

4.8 Label; It is the plate on which valve information and permissible operating conditions are written.(see 4.14)

KURVALF

KURVALF VANA A.Ş.
ÇALI MH. ÇINARLIK CAD. NO:8
NİLÜFER / BURSA / Türkiye

2354

6D - 0714

S/N:	B0100230241 - B0100230246	**DATE:**	01.23	
TYPE:	Trunnion	**BODY:**	A350 LF2	
FLUID:	N.G.	**BALL:**	AISI 420	
ENDS:	BWxBW	**SEAT RING:**	AISI 420	
DN:	0100	**STEM:**	AISI 420	
CLASS:	ANSI 150	**MAX W.PRES.:**	19.6	Bar at -29°C
FACE TO FACE:	305 MM	**MAX W.PRES.:**	17.7	Bar at +100°C

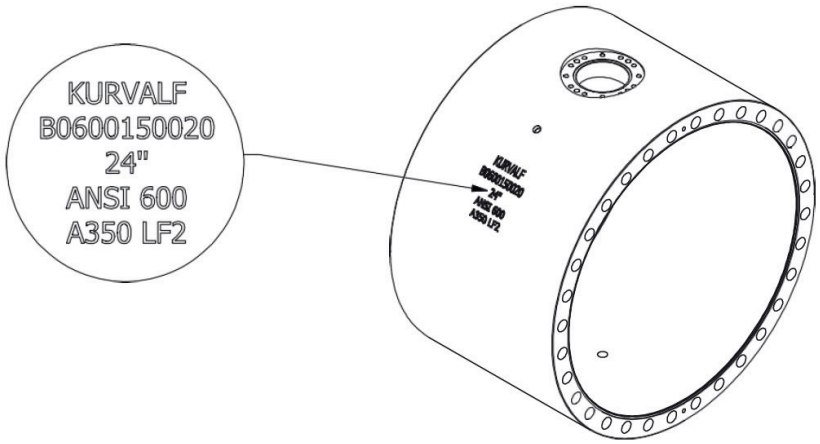
4.9 T-key; It is the adapter that gets opening / closing operation done in manual controlled valves. It is usually present in the embedded valves.

4.10 Lever; It is the adapter that gets opening / closing operation done in manual controlled valves. It is usually present in the terrestrial valves.
4.11 Gearbox; It is the gearbox that gets opening / closing operation done in manual controlled valves.

4.12 Control Handle; It is the adapter that gets opening / closing operation done in gearbox valves.

4.13 Actuator; It ensures to control valve with automation. (See The Preferred Act. Catalogue / Data-sheet)

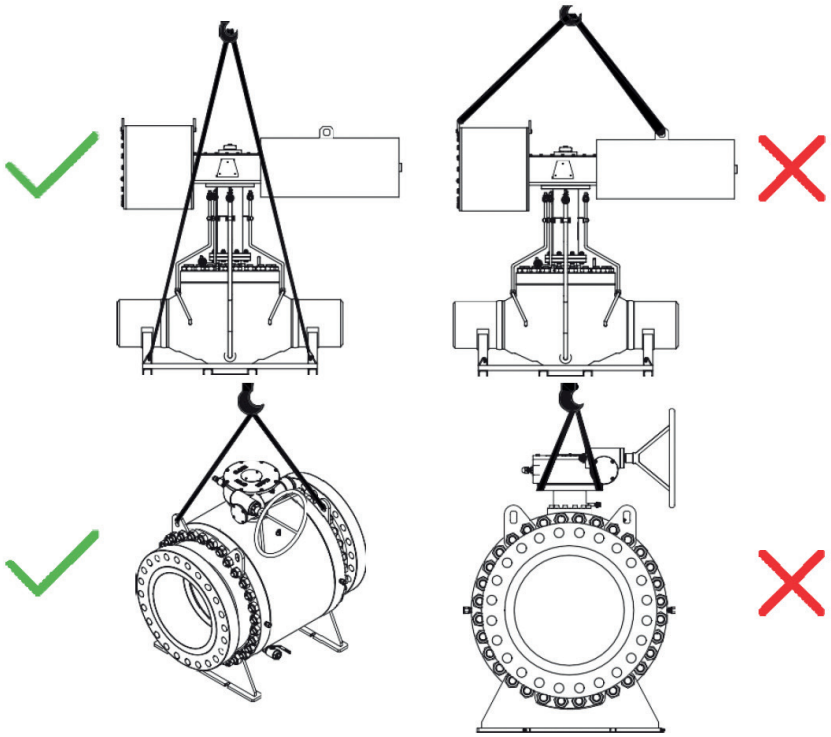
4.14 Marking; It is the serial number of the valve. It is an identification (ID) number located on the valve body to be used in order to access to all information related to the valve.



5. HANDLING

5.1 Handling process must be done with proper equipment according to the weight of the valve.

5.2 The valves must be lifted up from the lifting devices. They should not be lifted up absolutely through valve gearbox or actuator.



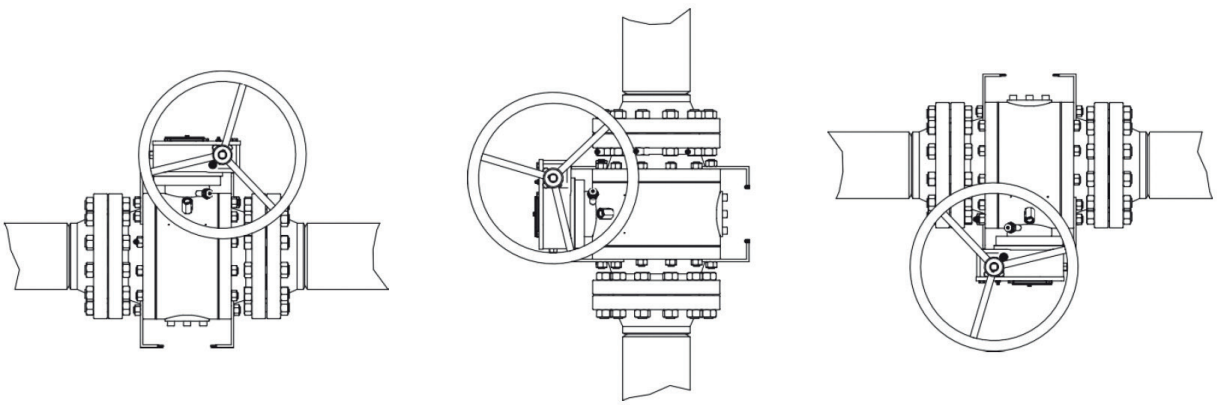
6. INSTALLATION

6.1 The valves can be used for both flow directions

6.2 The valves can be used in vertical and horizontal running positions.

6.3 Prior to installation, it should be checked whether your operation conditions are compatible with the valve that you have obtained according to the information on the valve body.

6.4 Prior to installation, it should be ensure that the line, on which the valve will be installed, is clean. Otherwise the seals may be damaged.



HORIZONTAL VERTICAL UPSIDE DOWN

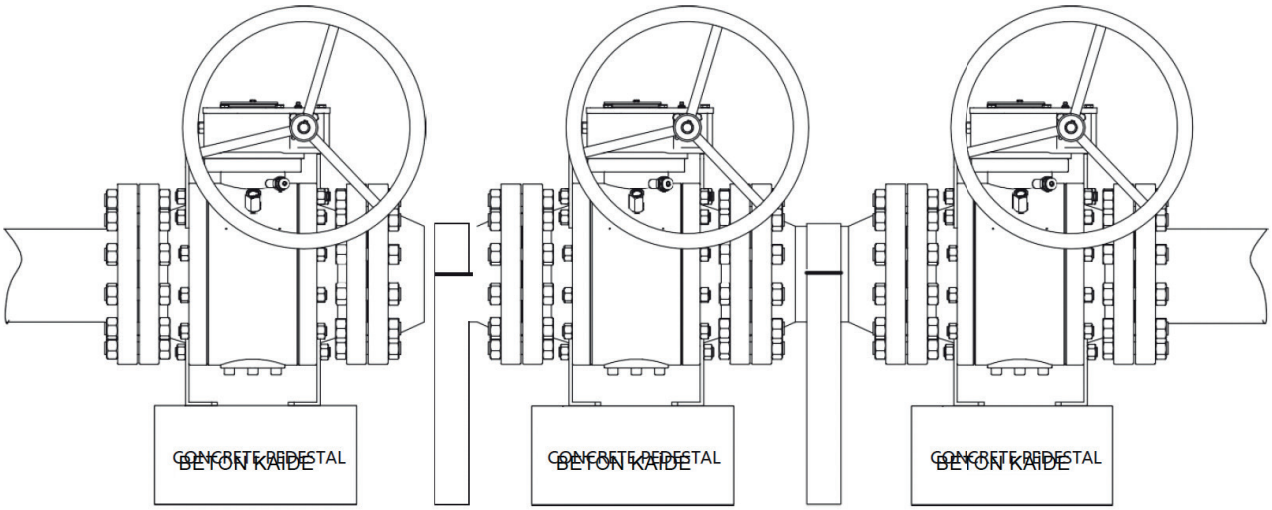
6.5 Adequate working space should be provided in order to ensure that service process can be easily applied to the valve after the use.

6.6 Valves with Flange Connection; Firstly one side of the valve should be connected to the line carefully by using a suitable steel gasket according to operating pressure, whereas the other side of valve should be installed again with a sealing gasket without being exposed to tensile stress.

6.6.1 For easier disassembly of the flanged valves, the distance between the line flanges should be 3-5 mm longer than the length of the valve.

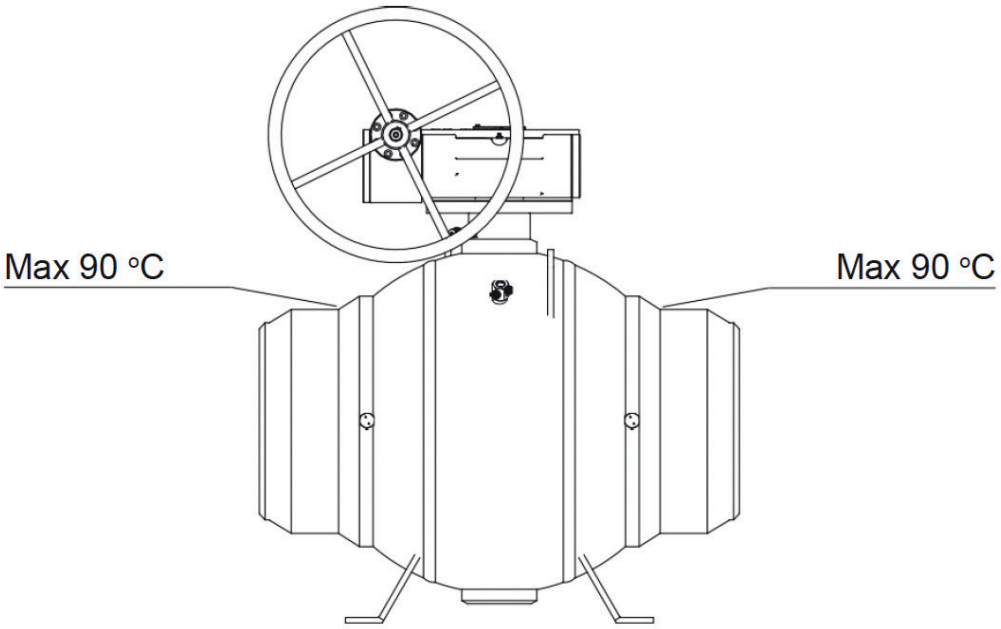
Attention: Excessive / uneven tightening may cause damage as well as leakage between the flange connection points.

6.7 For easier service, the valve on the pipe line should be supported from the body. There are proper connection legs asstandard (in 4” [DN 100] and larger diameters) for supporting ball valves toward pipe line from the body.



6.8 Valves with welded ends; Welding process should be carried out by qualified welders who have welder certificates under proper welding procedure.

6.8.1 During welding application, the material of the valve should be taken into consideration and it should be carried out according to the proper welding procedure. The body temperature during the welding process should not damage the valve seat. Thermal chalk or IR temperature control device should be used in order to keep the temperature under control.



Note: For a clean and not slagging root, TIG (Argon) welding root should be preferred.

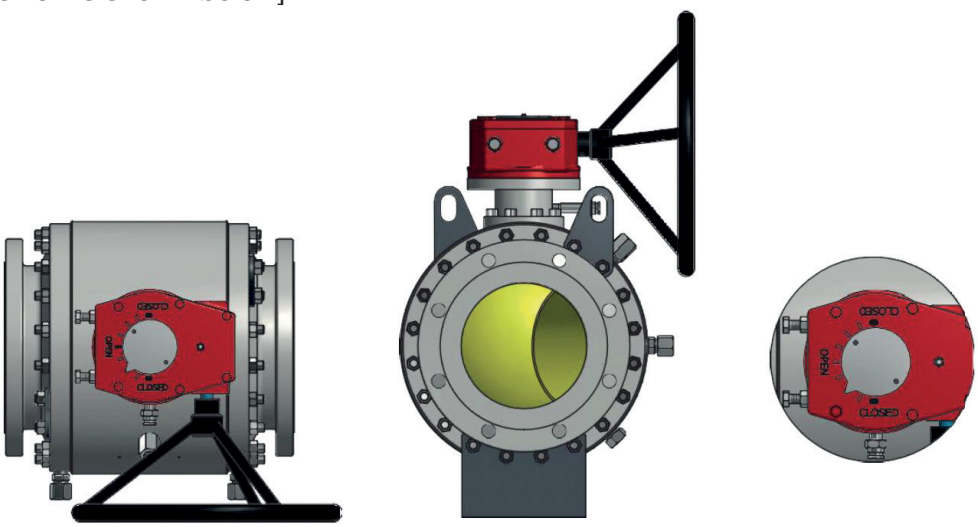
6.8.2 Since slag that may occur during the welding may cause a high risk in terms of seals, these slags should be absolutely avoided to get into the pipe line. Otherwise the product becomes out of warranty.

7. 7. COMMISSIONING

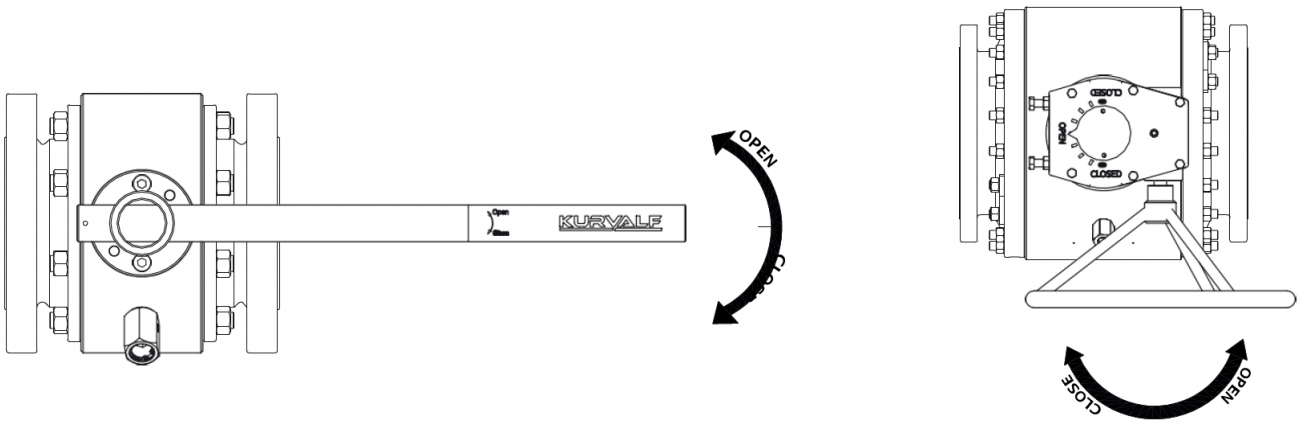
7.1 Bypass should be applied during the import process of taking the ball valves from closed position to open position. This process enables the ball to reach to the same pressure in both sides, as well. This process should be done absolutely to prevent damage to the seats.

7.2 After installation and testing, the valve test fluid should be cleaned by being drained. In case the fluid is not cleaned, it may cause icing in cold weather and this situation may damage the valve.

7.3 Ball valves are used in order to stop the fluid, the valve should be used in fully open or fully closed position. They should not be used absolutely for flow control (e.g. Semi-open position). [Image of semi-open position is shown below].



7.4 Valves close clockwise and open counterclockwise.



7.5 Valves are shipped as control handles are mounted or disassembled depending on the pack- age shape. Control handles should be installed after line connection.

7.6 Opening / closing settings of the valves, which are controlled by the gearbox, have been made. These settings should not be changed. (see 7.8 in case of obligation)

7.7 Opening/closing procedure;

7.7.1 Fully open and fully closed position is maintained by 90° opening / closing range.

7.7.2 Getting the valve into open position;

7.7.2.1. Determine the position of the valve by the help of indicators placed on control mechnism in manu- al, gearbox and actuator controlled valves.

7.7.2.2. In order to open the valve, rotate lever, t-key or control handle counterclockwise by follow- ing the indicator.

7.7.2.3. Continue the process until the indicator shows the open position and the rotation move- ment is completed.

7.7.2.4. When the rotation movement is completed, the valve has reached the open position, end the pro- cess.

7.7.3 Getting the valve into closed position;

7.7.3.1 Determine the position of the valve by the help of indicators placed on control mechanism in man- ual, gearbox and actuator controlled valves.

7.7.3.2 In order to close the valve, rotate lever, t-key or control handle clockwise by following the indicator.

7.7.3.3 Continue the process until the indicator shows the closed position and the rotation move- ment is completed.

7.7.3.4 When the rotation movement is completed, the valve has reached the closed position, end the process

WARNING: In case the valves are tried to be closed when the lever, T-key and gearbox are closed position in controlled valves, or the valves are tried to be opened when they are open, it may damage to the control mechanism by ap- plying excessive torque.

In order to avoid such situation, it should be taken into consideration that the valves close clockwise and open counterclockwise

7.8 Ball valve stopper setting procedure:

7.8.2. Loosen the stopper nut for open and closed position.

7.8.3. Rotate the stopper bolt counterclockwise.

7.8.4. Get the valve into fully open position.

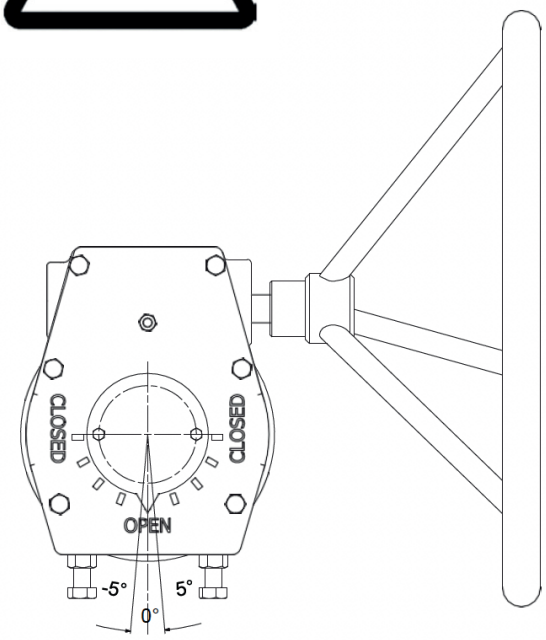
7.8.5. Look at the ball pin stem or indicator washer in order to verify the valve position.

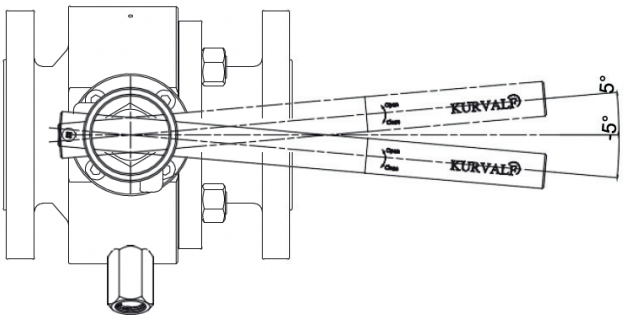
7.8.6. Rotate stopper bolt until it stops clockwise, then tighten the stopper nut to the extent that the stopper bolt cannot loosen it.

7.8.7. For setting the closed position, repeat the steps specified in **7.8.3.** and **7.8.6.**

Attention: Discharging (draining) the fluid present in the body contains a safety risk. Sudden dis- charge (pressure effect) that occurs during discharging may cause damage. Also the required safety measures should be taken if there are any explosive or flammable substances in the environment dur- ing this process.

Ball valve operators should consist of trained personnel.





8. LINE TEST

8.1 Hydrostatic Testing;

8.1.1 Ensure that all connections of the valves are made, and take all required safety measures.

8.1.2 Ensure that the valve is semi-open before filling line with water. Ensure to discharge the air inside the body as much as far as possible by opening the vent located inside the valve body. Ensure the water, which will be used as test fluid, to be clean and to be given to the line by being filtered by considering the risk of its damaging to the seals.

8.1.3 Increase the permissible operating pressure as it will not exceed 1.5 times of the system pressure. **Attention:** Check the suitability of connection points before applying pressure. Ensure that the pressure indicators are calibrated

8.1.4 Check the sealing of the valve body and valve joint areas

8.1.5 The test is successful if pressure decrease is not found in the pressure control manometer. Record the carried out processes by noting the time and the pressure values.

8.1.6 Get the valve into fully open position immediately after the hydrostatic body test.

8.1.7 Ensure to decrease the pressure with the vent located on the valve body. If drain valve is available, drain the water in present inside the body cavity with drain valve.

8.1.8 Close the drain valve. Body test has been completed.

Note: When the pressure inside the body cavity is balanced with the atmospheric pressure, you can use pneumatic pressure in order to completely drain the water inside the body cavity.

8.2 Leakage Test;

8.2.1 Get the valve into fully open or fully closed position. (see the Position Indicator.)

8.2.2 Pressure as it will not exceed the maximum operating pressure. The test table showing the test pressure and time is as follows.

<table>
<tr><th></th><th colspan="2">HYDOSTATIC SHELL TEST
(Working pressure x 1,5)</th><th colspan="2">HYDROSTATIC SEAT TEST
(Working pressure x1,1)</th><th colspan="2">PNEUMATIC SEAT
TEST</th></tr>
<tr><th></th><th>Pressure</th><th>Time</th><th>Pressure</th><th>Time</th><th>Pressure</th><th>Time</th></tr>
<tr><td>ANSI 150 Working pressure 19,6 bar</td><td>30 bar</td><td rowspan="6">Depends on nominal diameter</td><td>22 bar</td><td rowspan="6">Depends on nominal diameter</td><td rowspan="6">5.5 - 6,9 Bar</td><td rowspan="6">Depends On nominal diameter</td></tr>
<tr><td>ANSI 300 Working pressure 51,1 bar</td><td>77 bar</td><td>57 bar</td></tr>
<tr><td>ANSI 600 Working pressure 102,1 bar</td><td>154 bar</td><td>113 bar</td></tr>
<tr><td>ANSI 900 Working pressure 153,2 bar</td><td>230 bar</td><td>169 bar</td></tr>
<tr><td>ANSI 1500 Working pressure 255,3 bar</td><td>283 bar</td><td>281 bar</td></tr>
<tr><td>ANSI 2500 Working pressure 425,5 bar</td><td>639 bar</td><td>468 bar</td></tr>
<tr><td>≤ DN 100 (≤4")</td><td rowspan="4">Depends on Pressure Class</td><td>2 min.</td><td rowspan="4">Depends on pressure Class</td><td>2 min.</td><td rowspan="4">5.5 - 6,9 Bar</td><td>2 min.</td></tr>
<tr><td>DN 150 - 250 (6" - 10")</td><td>5 min.</td><td rowspan="2">5 min.</td><td rowspan="2">5 min.</td></tr>
<tr><td>DN 300-450 (12" - 18")</td><td>15 min.</td></tr>
<tr><td>DN 500 and bigger (20" and above)</td><td>30 min.</td><td>10 min.</td><td>10 min.</td></tr>
</table>

Note: It is recommended to use Nitrogen (N2) as sealing test fluid.

8.2.3 Drain the air inside the body cavity through the drain connections.

8.2.4 Wait for a length of time for the pressure to be stabilized (5-10 min).

8.2.5 You can carry out first sealing check through the body vent. You can follow the second sealing check from the pressure indicator. The test is successful if there is not a decrease in pressure.

8.2.6 End the process by getting the valve into operation use position after testing process. Record the carried out processes by noting the time and the pressure values.

Note: Use valve-flush prior to the test for the sealing tests to be effective (see 12). Carry out the appropriate lubrication into the lubrication channels with lubrication injectors after the flush process (see 9). Open and close the valve after each lubrication to ensure the lubrication process to be more effective.

9. LUBRICATION PROCEDURE

9.1 The system runs directly through the Giant type of greaser nipple located on the body or verti- cally extended pipe.

9.2 The purpose of the system is to act as emergency sealing only in the event that the seals are damaged.

9.3 Use Flush Valve to open the lubrication channel before pumping sealing lubrication (see 12). After this, pump the sealing oil.

Note: The valves which have not been opened / closed for long time should be cleaned with the valve flush before opening /closing process.

9.4 Emergency lubrication process (emergency sealant injection);

9.4.1. Remove the safety cap.

9.4.2. Insert the lubrication adapter of the grease pump which is appropriate for fittings.

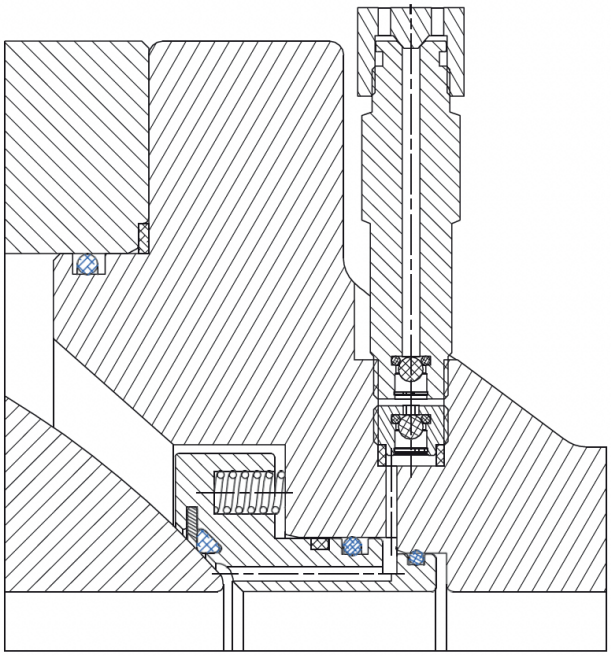
9.4.3. Inject sealing grease into both seat ring oil channels.

9.4.4. Observe the valve against any leakage.

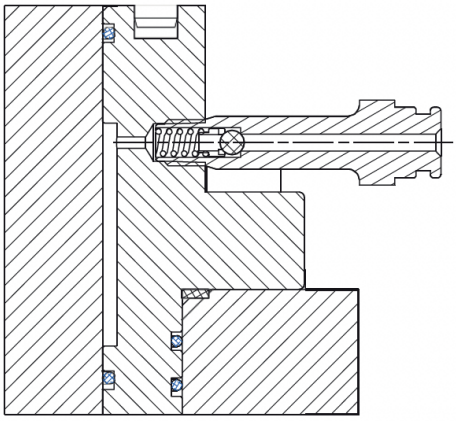
9.4.5. Continue to inject as it will stop the sealing.

9.4.6. If the leakage in the valve does not stop, it means that the damage in the seals is as much as it cannot be compensated. Stop the process and contact Kurvalf technical service (sales@kurvalf. com).

Note: The amount of the grease pumped from the greaser nipple should be calculated as average of 30 g per each inch of seat ring valve diameter. (For example; for 12” valve: 12x30=360g) The sealing grease to be pumped more than this amount will not help and it will get mixed into line fluid.
It is important to apply the process as the valve in the closed position for effectively lubrication of the seat.



SEAT LUBRICATION



STEM LUBRICATION

9.5 Stem Lubrication;

9.5.1. Remove the safety cap. (see Datasheet x number)

9.5.2. Insert the lubrication adapter of the grease pump, which is appropriate for greaser nipple.

9.5.3. Inject grease into stem oil channel. (see 11.16)

10. MAINTENANCE

10.1. Make the leakage controls of the fittings mounted to the valve body such as vent, plug, relief and etc.,

10.2. All gearboxes located in ball valves have a design feature not requiring any maintenance. Use the recommended oil in case lubrication is needed. (see 12)

10.3. Make opening / closing process in valves at periods (at least 1 time/year) specified by the enterprise determines. This process will allow the seals stay clean and lubricated.

10.4. The seats will cause sticking on the ball in the valves, which have not been used for long time without controlling, mounted in pipelines. In this case, ensure to use the valve flush in order to separate the sticked surfaces from each other.

Attention: The total torque should not exceed 1.5 times of the normal operating torque together with additional force you apply. Otherwise, you may damage the gearbox components. In case the valve is not opened, please contact Kurvalf service officials. (sales@kurvalf.com)

11. USEFUL INFORMATION AND RECOMMENDATIONS

11.1 Please read this manual carefully before installation and use.

11.2 Valves should be used at the specified operating conditions. (see Valve Datasheet)

11.3. Train your employees continuously for the safe operation and maintenance.

11.4. Ensure to carry out opening / closing process slowly in order to prevent the line pressure from creating the water hammer effect.

11.5. Ensure the continuity of the electrical conductivity and carry out the periodic checks.

11.6. Always use original spare parts.

11.7. Consider the dangers, environmental conditions in the region, where the valve will be in- stalled.

11.8. Never leave the ball valves semi-open and use that way.

11.9. Protect the valve from impact and corrosive environments in the site environment.

11.10. In fully open and fully closed position, the valves may vent the fluid inside the body cavity to the atmosphere. The pressure in the pipeline is not affected during this process. (DBB)

11.11. Double Block & Bleed (DBB) application;

11.11.1. Get the valve into fully open or fully closed position depending on the need.

11.11.2. Discharge the body pressure by opening the vent valve. (Ensure that the personnel is away from the area, where the gas will be discharged, or at a different angle, so you can prevent any pos- sible accidents.)

11.11.3. Continue gas discharge process until the valve pressure becomes equal to the atmospheric pressure. This period of time is proportional to the diameter of the valve.

12. RECOMMENDED MAINTENANCE OILS;

12.1.1. Valve Flush (Ritol) [Maintenance Oil]

12.1.2. Shell Gadus S2 V220 2, BP Energrease LS-EP2 [Stem lubrication, gearbox]

12.1.3. Lubchem Everlast-1 [Sealing oil]

12.1.4. Tectyl 502C, WD40 [anti-corrosion protective oil]

13. Possible Breakdowns

13.1 Internal leakage

It is the case that the line fluid goes across from the coming side (up stream) to the going side (down stream) when the valve is in the closed position. In the trunnion valves, the internal leakage is detected through the vent located on the body, while in the floating valves, it is detected through a pressure change occurred on the going side of the fluid.

The Causes of Internal Leakage;

13.1.1. Stopper failure (see 7.8)

13.1.2. Seat deformation (see 9)

13.1.3. Ball deformation (see 9)

Note: If the problem cannot be resolved, please make technical service request. (sales@kurvalf. com)

13.2 External Leakage;
It is the case that the line fluid reaches to the atmosphere through the valve. This situation requires urgent expert intervention. Please make technical service request. We recommend you to use photo or video expression in order to detect the problem correctly. (sales@kurvalf.com)

External leakage points;

13.2.1. Between Stem and Bearing (trunnion),

13.2.2. Between Bearing (trunnion) and body,

13.2.3. Between Body and cap,

13.2.4. Discharging vent, blind plug and lubrication pipes, body joint weldings.

13.2.5. Greaser nipple,

13.2.6. Welding and body surfaces.

13.3. Damage to Control Mechanism;
It is the malfunction of control mechanism as a result of an exterior impact or excessive force to the control mechanism. (see 7.7)

BALL VALVE	PLUG VALVE	GATE VALVE
For each seat, inject 0.03 liters per inc. For example; 10” Valve x 2 Seat = 0,6 lt	4” and small valves; 0.03 lt for each inch Between 6” and 8”; 0.045 lt for each inch Between 10” and 12”; 0.06 lt per inch Between 14” and 18”; 0.09lt per inch 20” and up; 0.12lt per inch	**Line Valve:** inject 0.03 lt per inch for each seat. **Wellhead Gate Valves:** Approximately 0.48 lt per inch to fill the body cavity

NOTE: *This table is a guide to help Valve Technicians calculate the volume they need.*

SIZE	FULL SERVICE (First Lubrication Process)		MAINTENANCE	
	BALL / GATE VALVE	**PLUG VALVE**	**BALL / GATE VALVE**	**PLUG VALVE**
2"	0,12 (0,06lt/seat)	0,06lt	0,03 (0,015lt/seat)	0,015
3"	0,18 (0,09lt/seat)	0,09lt	0,045 (0,0225lt/seat)	0,015
4"	0,24 (0,12lt/seat)	0,12lt	0,06 (0,03lt/seat)	0,03
6"	0,36 (0,18lt/seat)	0,27lt	0,09 (0,045lt/seat)	0,06
8"	0,48 (0,24lt/seat)	0,36lt	0,2 (0,06lt/seat)	0,09
10"	0,6 (0,3lt/seat)	0,6lt	0,15 (0,075lt/seat)	0,15
12"	0,72 (0,36lt/seat)	0,72lt	0,18 (0,09lt/seat)	0,18
14"	0,84 (0,42lt/seat)	1,05lt	0,21 (0,105lt/seat)	0,27
16"	0,96 (0,48lt/seat)	1,44lt	0,24 (0,12lt/seat)	0,3
18"	1,08 (0,54lt/seat)	1,56lt	0,27 (0,135lt/seat)	0,48
20"	1,2 (0,6lt/seat)	2,4lt	0,3 (0,15lt/seat)	0,54
24"	1,44 (0,72lt/seat)	2,88lt	0,36 (0,165lt/seat)	0,63
26"	1,56 (0,78lt/seat)	-	0,39 (0,195lt/seat)	-
30"	1,8 (0,9lt/seat)	-	0,45 (0,225lt/seat)	-
34"	2,04 (1,02lt/seat)	-	0,51 (0,255lt/seat)	-
36"	2,16 (1,08lt/seat)	-	0,54 (0,27lt/seat)	-
40"	2,88 (1,44lt/seat)	-	0,72 (0,36lt/seat)	-

Application for valves with extension piping	¼" = 0,05 lt/m
	½" = 0,2 lt/m
	⅜" = 0,13 lt/m
	¾" = 0,04 lt/m

KURVALF VANA A.Ş. Çalı Mah. Çınarlık Cad. No:8 16235 Nilüfer / BURSA Tel: +90 (224) 482 46 97 kurvalf@kurvalf.com www.kurvalf.com	**FAILURE DETECTION FORM**	Document No: F.07.11 / R02 Rev Date: 10/02/2015	
		DATE :	

A-COMPANY INFORMATION	
COMPANY NAME	
PHONE	
E-MAIL	
AUTHORIZED	
ADDRESS	

B-PRODUCT INFORMATION	
SERIAL NUMBER	
QTY.	
PRODUCT BRAND	
PRODUCT TYPE	

C- FAILURE DETECTED

D-ROOT CAUSE ANALYSIS		
ROOT CAUSE		
	HUMAN ERROR	PRODUCTION ERROR
	☐	☐

E-OPERATION

DETERMINED BY :		**APPROVED BY:**	
NAME		NAME	
POSITION		POSITION	
SIGN		SIGN	

NOTES:

NOTES:

NOTES:

Kurvalf Vana Anonim Şirketi
Address: Çınarlık Cad. No:8 Çalı 16270 Bursa / TÜRKİYE
Phone : +90 (224) 482 46 97 - pbx
Fax: +90 (224) 482 46 99
kurvalf@kurvalf.com