



WELDED BALL VALVES



WELDED BALL VALVES

Fully welded ball valves are used in pipelines on welded jointed spools due to their strong structure and low maintenance needs. They are generally preferred in underground and aboveground applications. Their design provides a lightweight structure and optimum level sealing.

Specifications

Valve size :	2" - 56"
Valve type :	Trunnion
Body Type :	Fully Welded
Pressure Class :	ANSI 150 / 300 / 600 / 900 / 1500 / 2500
End Connection :	RF / RTJ / BW / SW
Bore :	Full Bore / Reduced Bore
Operator :	Lever / Gear / Actuator
Material :	Carbon Steel / Stainless Steel / Duplex / Alloy Steel
Operating Temperature :	Standard / High
Leakage Class :	API 598 / ANSI FC70-2 / ISO 5208
Desing Standard:	ASME B16.34 / API 6D / API 6A / ISO 14313 / ISO 17292
Face to Face Standard:	ASME B16.10

End Connection Standard :	ASME B16.5 / ASME B16.25 / DIN EN 1092-1
Test Standard :	API 6D / API 598 / ISO 14313
Fire Safe Standard :	API 607 / ISO 10497 / API 6FA EN 10204 3.1 - 3.2 / ISO 15848 Fugitive Emission / 2014-68 EU PED / SIL Capable / IP 67 (Gearbox)
Certification :	
Isolation Type :	DBB / DIB-1 / DIB-2

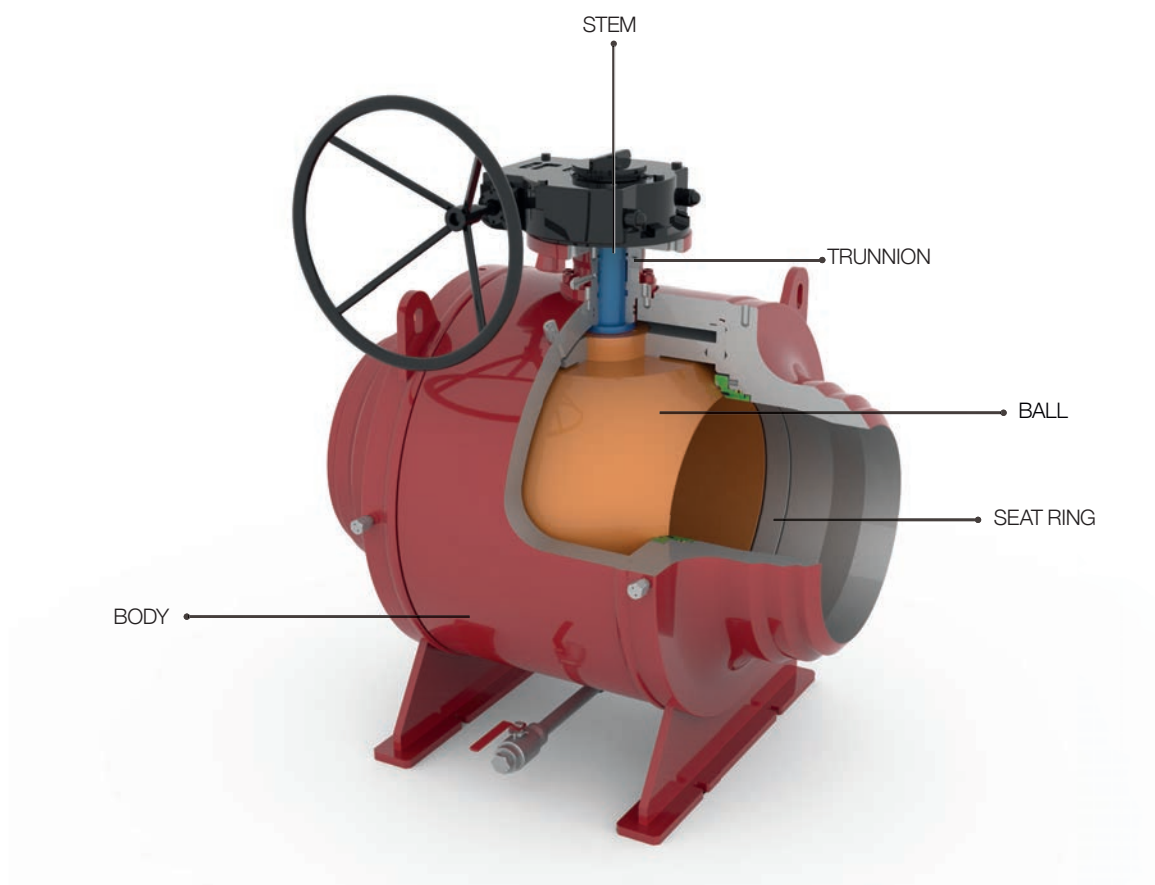


DESIGN & ANALYSIS

Reference standards and literature are scanned before valve designs are made.

With these researches, the design phase begins. The design is made taking into account reference standards. After the design is finished, a review is made. Analytical calculations are checked. If there is no problem until this stage, prototype production is started.

Material selection for valves operating under severe service conditions is very important for many reasons. When choosing the material, the operating temperature and pressure of the process, the chemical and mechanical abrasiveness of the fluid should be taken into consideration.



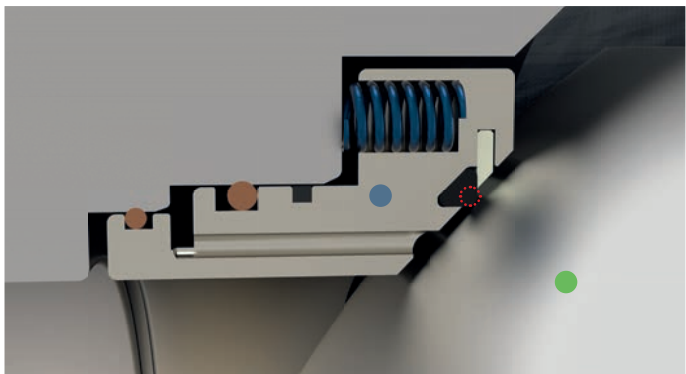
FEATURES

- Due to low torque values, smaller actuator can be selected.
- Weld ends are beveled according to customer requirements.
- Fixed lifting lugs on the valve.
- Emergency sealing fittings are a default feature.
- Blow-out-proof stem.
- Locking device is optional.
- Available with metal and soft seats.
- Locking device is optional.

ISOLATION TYPES

There are two main headings in the sealing design, which are affected by the operating conditions; First sytems of seat, second surface coating.

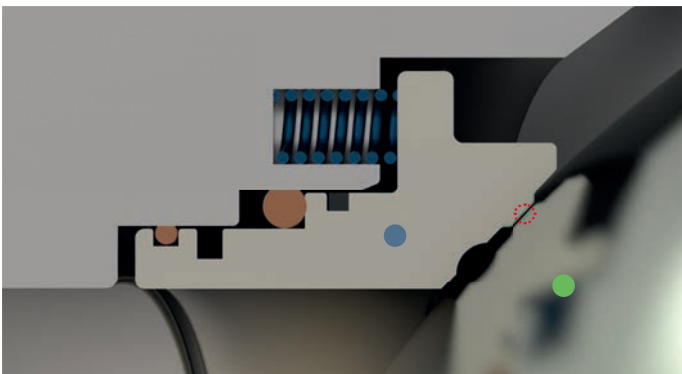
Ball valves have two types of sealing, soft seat and metal seat. Zero tightness can be achieved in soft seat ball valves. Metal seat valves are preferred for more heavy conditions. Zero leakage is not expected but it is also possible to achieve zero tightness for metal seat ball valves.



Soft Seat

Soft seats are provide excellent sealing performance and for used normal condition and normal temperature and aggressive environments.

- Sealing Area
- Ball
- Seat



Metal Seat

Mainly used abrasive fluids, severe service and corrosive fluids also high temperatures and pressures.

- Sealing Area
- Ball
- Seat

Soft Seat vs Metal Comparison Table

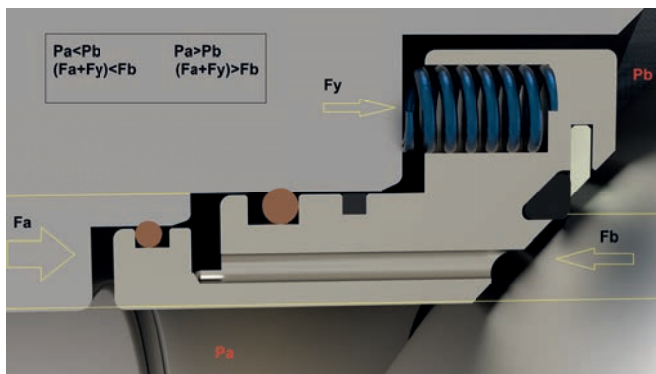
Low Torque	Torque	High Torque
Short	Life Time	Long
Perfect	Leakage Performance	Strong
Short	Leakage Life Time	Long
Low	Cost	High

There are differences between soft seat and metal seat designs. Depending on the conditions of use, these differences can be evaluated as an advantage or a disadvantage. In short, we can say that the soft seat is economical and the metal seat is suitable for difficult conditions.

SINGLE PISTON EFFECT & DOUBLE PISTON EFFECT

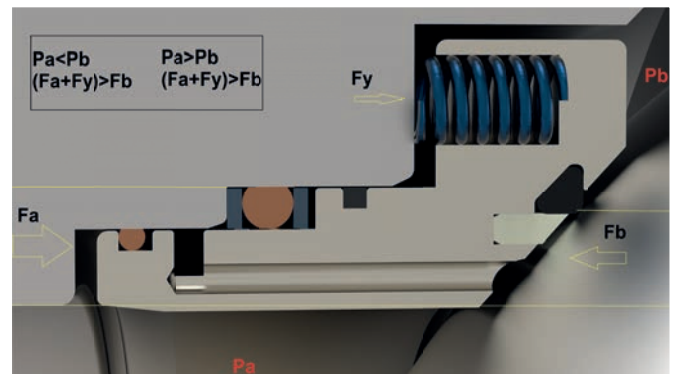
Single Piston Effect

This type of seat design can ensure a tight contact with the ball in only single direction. In fact, when the line (so the valve) is under pressure (upstream), the seat is pushed toward the ball normally. It is called single piston effect due to one side seat ring pushed toward the ball.



Double Piston Effect

As the name of it indicates, this type of seat design provide a tight contact with the ball in the normal direction, and also in the reverse direction. So, both sides upstream and downstream can be sealed for better leakage proof. Its design allows to use body cavity pressure to push downstream side ring toward the ball also. It is called double piston effect due to both side seat ring pushed toward the ball.



Options Of Seat Structural

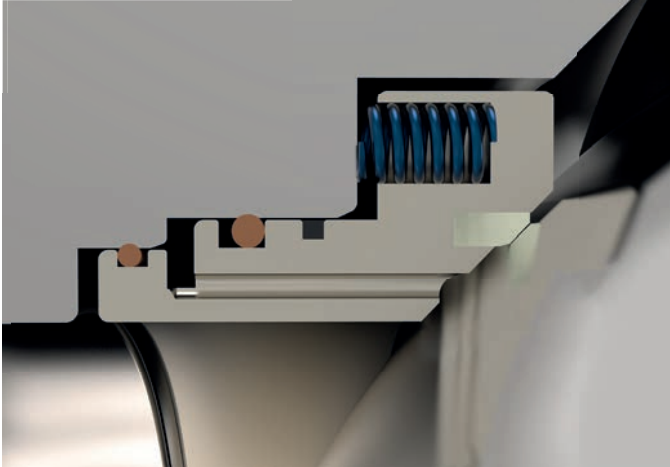
TRUNNION		2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	28"	30"	32"	36"	40"	42"	48"	56"
SOFT	DPE	O	O	O	O	O	O	O	O	O	S	S	S	S	S	S	S	S	S	S	S	S
	SPE	S	S	S	S	S	S	S	S	S	O	O	O	O	O	O	O	O	O	O	O	O
MTM	DPE	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	SPE	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
PMSS	DPE	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	SPE	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O

O: Optionel S: Standard

In Trunnion Ball Valves, the operating pressure and the pressure of the seat to the ball determine the seat structure. We prefer Single Piston Effect (SPE) as standard from 2" to 16" and Double Piston Effect (DPE) seat design from 18" to 56".

SOFT SEAT DESIGNS

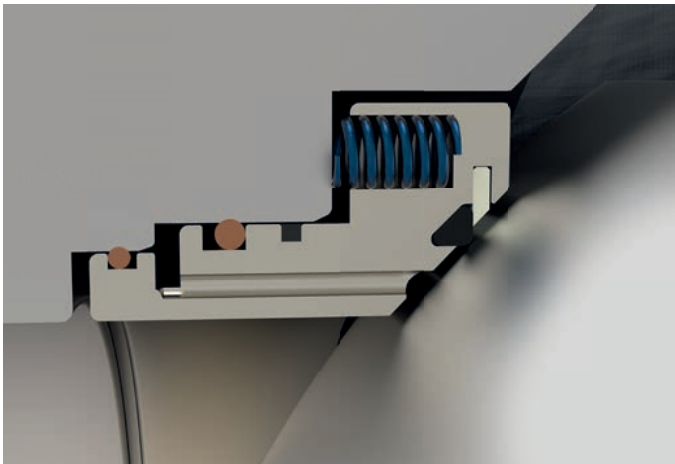
Soft seat sealing is the most used ball valve sealing type. Since the sealing material is elastomer, it can provide zero leakage. Soft seat valves are preferred for general use. Elastomer materials can resist up to a certain temperature. Working pressures and working temperatures are the most important factors in the selection of elastomers.



Standard Sealing

It is a spring-energised seat type with thermoplastic sealing material. It is preferred in general use.

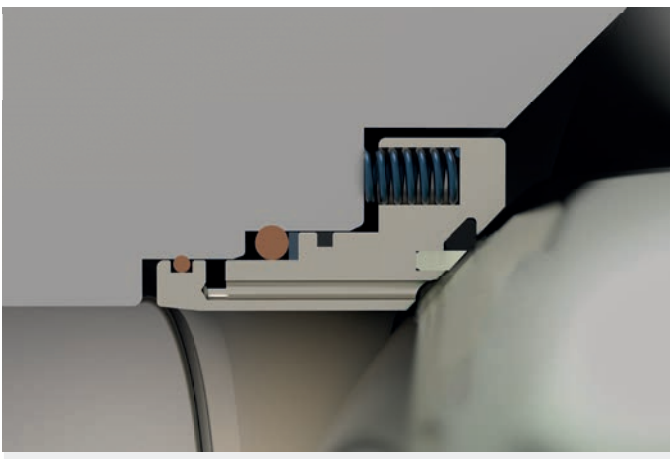
It provides sealing by direct contact to ball surface of the thermoplastic material.



Delta Sealing

It is a spring-energised seat type with elastomer sealing.

It shows excellent sealing performance because to its elastic structure. It produces less torque due to its low friction area.

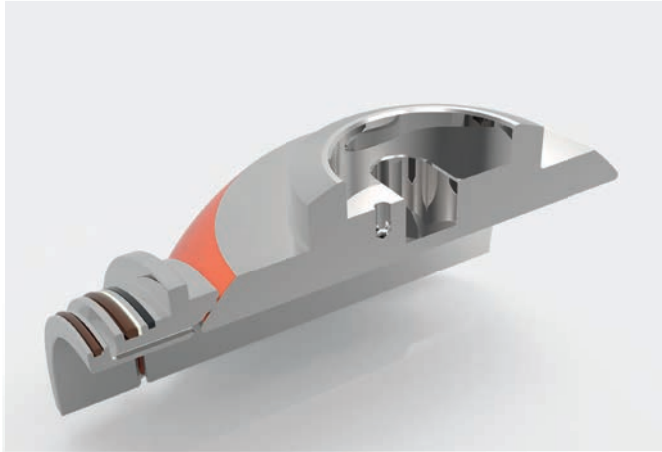


Pmss

It is called primary metal secondary soft seat. Ball surface and seat surface are coated with special coating material. Metal seat provides primary sealing. It provides secondary sealing with elastomer material. It is mainly used for high performance in dirty gas applications.

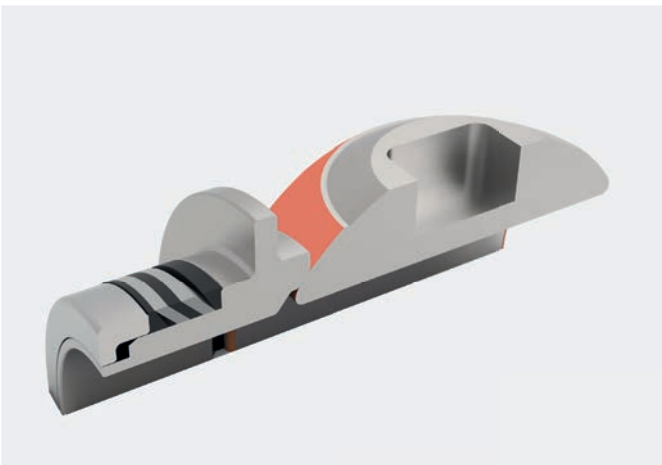
METAL SEAT DESIGNS

Metal seated ball valves are used in many industries with many different fluids. The most essential information in the design phase of the valves is the process requirements of the industries. We as KURVALF make various metal seated valve designs and offer solutions suitable for different operating conditions. Stainless steels are mostly preferred.



High Performance Design

Hard surfaced ball and seat works with metal to metal contact. Coated surface with a very hard alloy prevents rapid corrosion. In this design, elastomer is used in back seats. Design can work up to 230 degrees with elastomer.

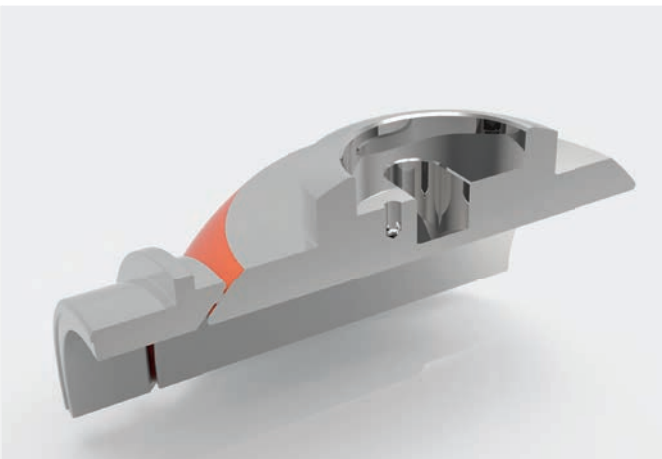


Extreme Performance Design

Hard surfaced ball and seat works with metal to metal contact. Coated surface with a very hard alloy prevents rapid corrosion.

Except for ball and seat contact point, in metal seated valves, the sealing behind the seat must be suitable for extreme conditions.

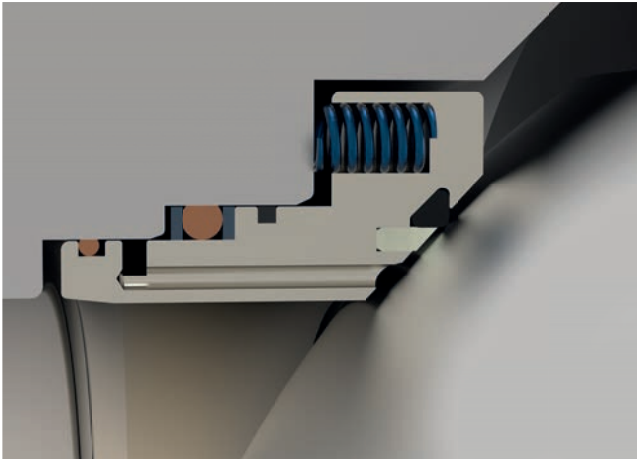
It is not possible to use elastomers in applications above 230 degrees. Sealing solutions are possible by using graphite-based materials instead of elastomer materials.



Full Metal Design

The sealing which cannot be achieved with elastomer and graphite materials can be achieved this metal to metal design. This solution is designed for the toughest conditions. This design is preferred in processes where there is both chemical and mechanical wear.

FEATURES



Double Block and Bleed

When the ball is in the closed position, each seat seals off the process medium independently at the same time between the up/down stream and body cavity; it allows bleeding of the trapped cavity pressure (DBB) through drain or vent valve. The double block and bleed function makes it possible to flush the valve under pressure and verify that the seats are sealing properly.

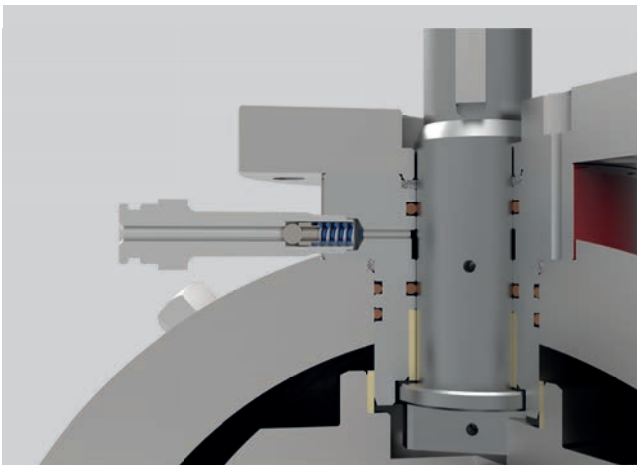
Single valve with two seating surfaces that, in the closed position, provides a seal against pressure from both ends of the valve with a means of venting/bleeding the cavity between the seating surfaces.

NOTE This valve does not provide positive double isolation when only one side is under pressure. See double isolation and bleed valve

Double Isolation Bleed

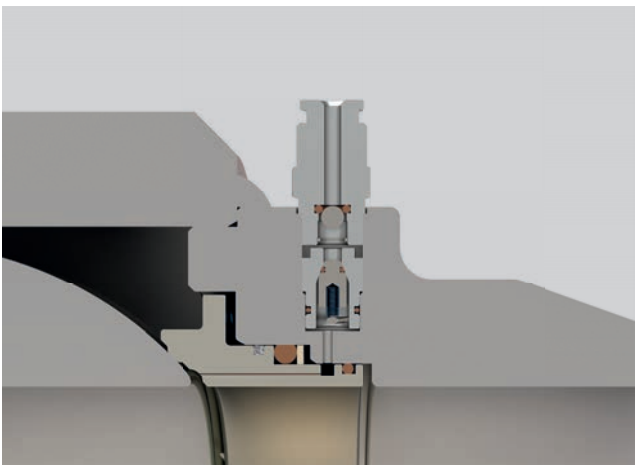
Single valve with two seating surfaces, each of which, in the closed position, provides a seal against pressure from a single source, with a means of venting/bleeding the cavity between the seating surfaces.

NOTE: This feature can be provided in one direction or in both directions.



Stem Seal

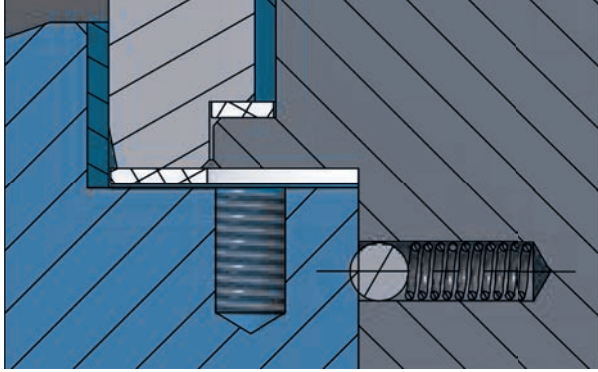
For high pressure or large size valves, double o-rings located in the upper stem area are used to ensure positive sealing. And upon request, additional stem seal injection fittings are provided to be utilized in the case of emergencies, o-ring damage, or if stem leakage occurs.



Emergency Seat Seal

In the event of damage to the valve seat, sealant can be injected to temporarily seal the valve until maintenance can be performed. It provides high integrity shut-off. On request, secondary seat sealant injection fittings are installed.

FEATURES



Anti Static Device

Spring plus graphite type antistatic device are applied between the ball, stem, gland flange and body, to keep the electrical continuity between all the metallic components, and ensure the resistance lower then the most severe service requirement.

Ball, plug and gate valves with soft seat have an antistatic device.

The electrical resistance between the obturator and valve body and between the stem/ shaft and valve body is measured using a direct-current power source not exceeding 12 V. The resistance is measured on dry valves before pressure testing and shall not exceed 10 Ω .

Blow-Out Proof Stem

This design ensures the valve stem cannot blown out of the body in the event of the gland being removed while the valve is under pressure. To prevent stem blow out from body, the stem has a shoulder in the lower part and so constructs that it may not blow out upwards.

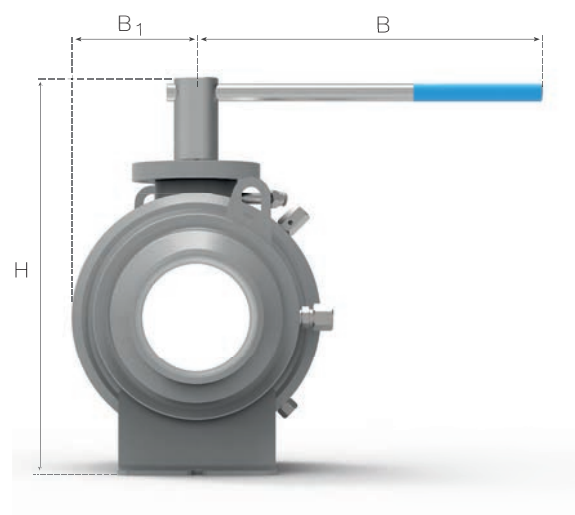
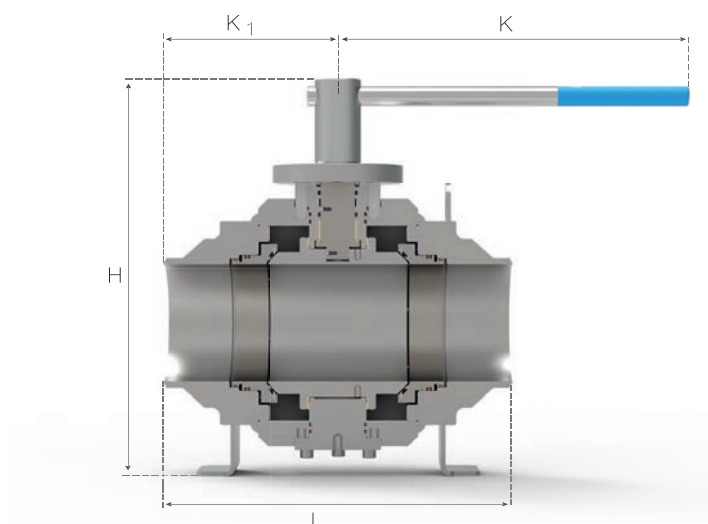
Lubrication Table

Lubrication is essential for valves with API 6A and API 6D design. Periodic lubrication is recommended for the long life time and operation of the valves. All valves of 4" and above are equipped with stem lubrication and emergency sealing as standard. Emergency sealing in 2" and 3" diameters can be offered as an option.

TRUNNION	SOFT			MTM			PMSS		
	MİL.YAĞ	SEAT.YAĞ	DRAIN	MİL.YAĞ	SEAT.YAĞ	DRAIN	MİL.YAĞ	SEAT.YAĞ	DRAIN
2"	N/A	O	√	N/A	O	√	N/A	O	√
3"	N/A	O	√	N/A	O	√	N/A	O	√
4"	√	√	√	√	√	√	√	√	√
6"	√	√	√	√	√	√	√	√	√
8"	√	√	√	√	√	√	√	√	√
10"	√	√	√	√	√	√	√	√	√
12"	√	√	√	√	√	√	√	√	√
14"	√	√	√	√	√	√	√	√	√
16"	√	√	√	√	√	√	√	√	√
18"	√	√	√	√	√	√	√	√	√
20"	√	√	√	√	√	√	√	√	√
22"	√	√	√	√	√	√	√	√	√
24"	√	√	√	√	√	√	√	√	√
28"	√	√	√	√	√	√	√	√	√
30"	√	√	√	√	√	√	√	√	√
32"	√	√	√	√	√	√	√	√	√
36"	√	√	√	√	√	√	√	√	√
40"	√	√	√	√	√	√	√	√	√
42"	√	√	√	√	√	√	√	√	√
48"	√	√	√	√	√	√	√	√	√
56"	√	√	√	√	√	√	√	√	√

O: Optionel

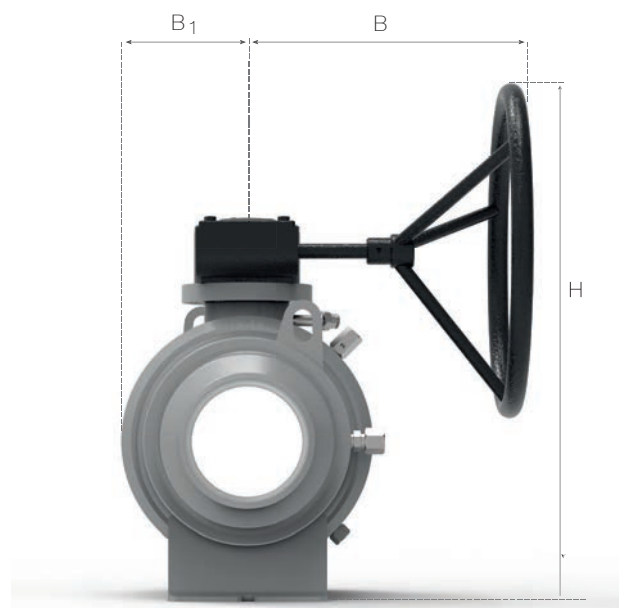
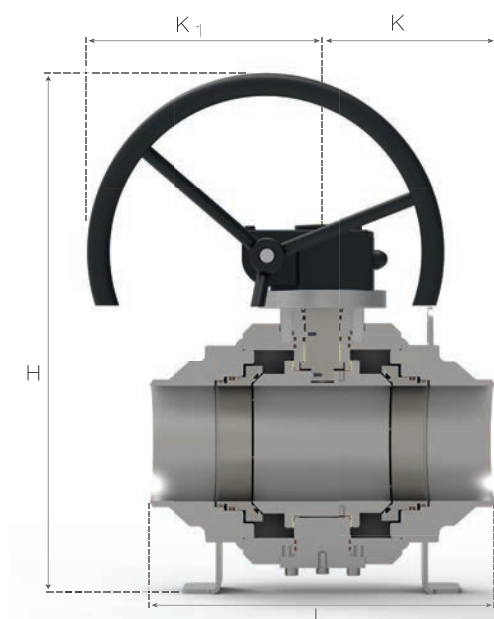
DIMENSIONS



2"- 4" LEVER OP.

SIZE	CLASS	BW						
		L	H	K1	K	B1	B	KG
2"	150	216	251,5	108	260	79	260	17
3"	150	283	329	141,5	415	95,5	415	31,6
4"	150	305	423	152,5	407	118	407	52
6"	150	457	514	228,5	460	160	460	147
2"	300	216	251,5	108	260	79	260	17
3"	300	283	329	141,5	415	95,5	415	31,6
4"	300	305	423	152,5	407	118	407	52
6"	300	457	514	228,5	460	160	460	147
2"	600	292	310	146	261	79	261	19,5
3"	600	356	303	178	415	95,5	415	35,3
4"	600	432	423	216	403	118	403	65
2"	1500	368	316	184	404	88	404	35,3

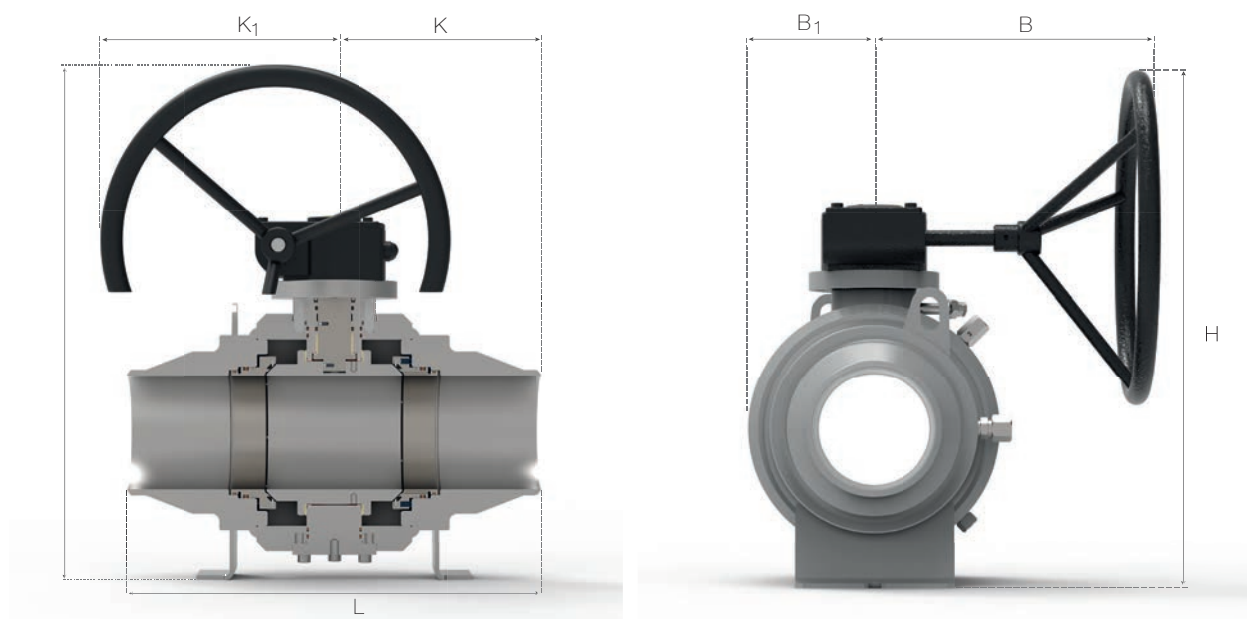
DIMENSIONS



6"- 56" ANSI 150 GEAR OP.

SIZE	CLASS	BW						
		L	H	K1	K	B1	B	KG
8"	150	521	787	299,5	260,5	360	337	221,5
10"	150	559	862	318	279,5	278,5	378	335
12"	150	635	949	318	317,5	317	378	517,7
14"	150	762	1125	393,5	381	381	493	692
16"	150	838	1200	393,5	419	419	493	978
18"	150	914	1340	445,5	457	457	500	1265
20"	150	991	1469	445,5	495,5	495,5	502	2391,5
24"	150	1143	1659,5	445,5	571,5	571	502	3600
26"	150	1245	1750	445,5	622,5	622,5	502	4820
28"	150	1346	1865	445,5	673	673	502	5711,6
30"	150	1397	1965	460	698,5	698,5	703	6920
32"	150	1524	2092	460	762	762	703	8427
36"	150	1727	2165	460	863,5	863,5	703	9150
40"	150	1965	2190	460	982,5	982,5	703	12060
42"	150	2105	2335	460	1052,5	1052,5	703	13605
48"	150	2410	2505	460	1205	1205	703	21500
56"	150	2520	2920	460	1260	1205337	703	34250

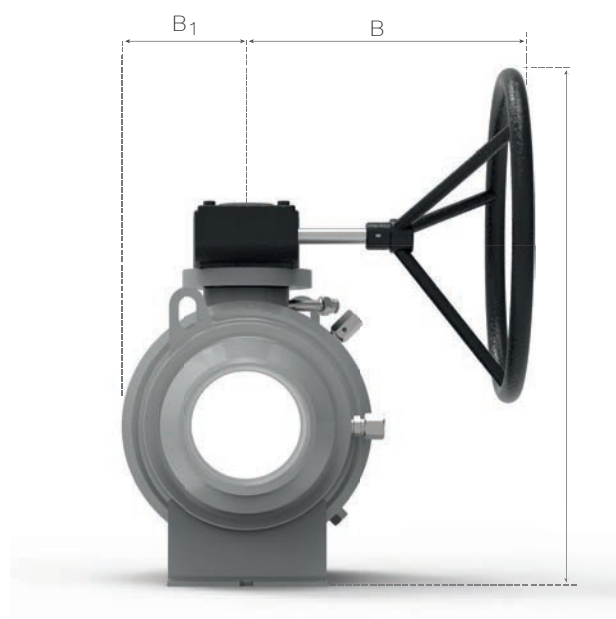
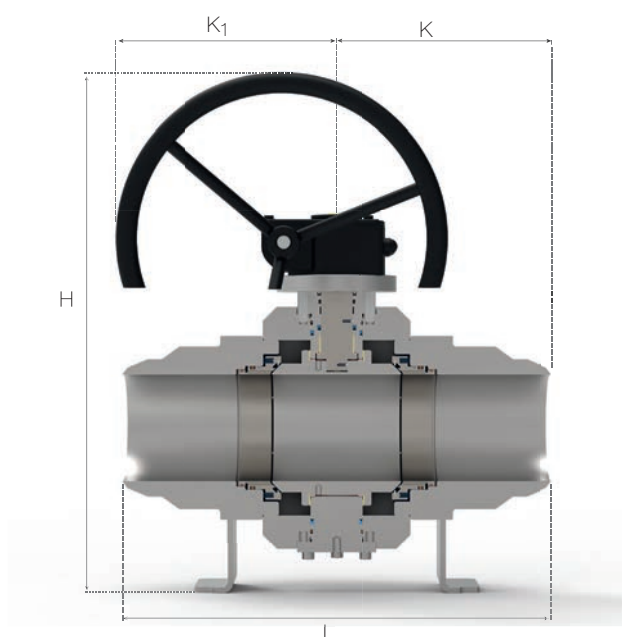
DIMENSIONS



6"- 56" ANSI 300 GEAR OP.

SIZE	CLASS	BW						
		L	H	K1	K	B1	B	KG
8"	300	521	787	299,5	260,5	360,5	337	221,5
10"	300	559	862	318	279,6	278,5	378	335
12"	300	635	949	318	317,5	317	378	517,7
14"	300	762	1125	393,5	381	381	493	692
16"	300	838	1200	393,5	419	419	493	978
18"	300	914	1340	445,5	457	457	493	1265
20"	300	991	1469	445,5	495,5	495,5	502	2391,5
24"	300	1143	1659,5	445,5	571,5	571,5	502	3600
26"	300	1245	1750	445,5	622,5	722,5	502	4820
28"	300	1346	1865	445,5	673	673	502	5711,6
30"	300	1397	1965	460	698,5	698,5	703	6920
32"	300	1524	2092	460	762	762	703	8427
36"	300	1727	2165	460	863,5	863,5	703	9150
40"	300	1965	2190	460	982,5	982,5	703	12060
42"	300	2105	2335	460	1052,5	1052,5	703	13605
48"	300	2410	2505	460	1205	1205	703	21500
56"	300	2520	2920	460	1260	1260	703	34250

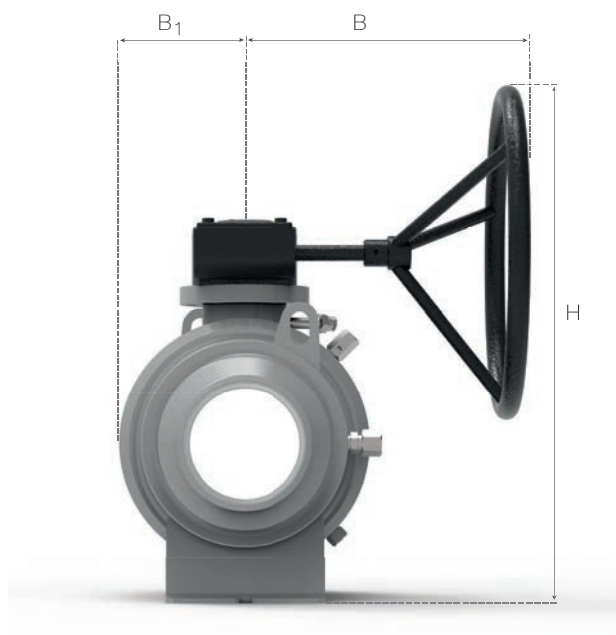
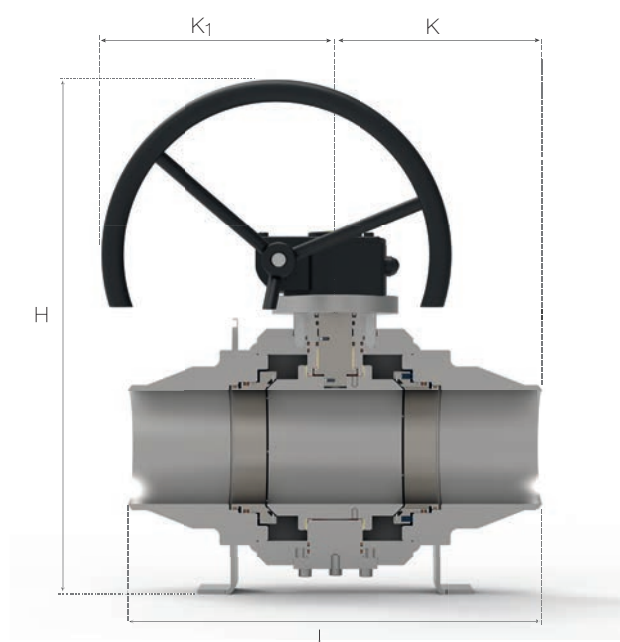
DIMENSIONS



6" - 56" ANSI 600 GEAR OP.

SIZE	CLASS	BW						
		L	H	K1	K	B1	B	KG
6"	600	559	656	284,5	279,5	279,5	349	158.1
8"	600	660	787	299,5	330	330	337	250
10"	600	787	862,5	318	393,5	393,5	378	373
12"	600	838	949	318	419	419	378	567,5
14"	600	889	1125	393,5	444,5	444,5	493	715
16"	600	991	1199	393,5	495,5	495,5	493	1046.6
18"	600	1092	1290	445,5	546	546	493	1795
20"	600	1194	1469	445,5	597	597	502	2796,8
24"	600	1397	1771,5	445,5	698,5	698,5	502	3960
26"	600	1448	1865	445,5	724	724	502	4820
28"	600	1549	1900	445,5	774,5	774,5	502	6216,5
30"	600	1651	2045	460	825,5	825,5	703	8457
32"	600	1778	2160	460	889	889	703	9250
36"	600	2083	2226	460	1041,5	1041,5	703	12102
40"	600	2032	2422	460	1016	1016	703	15263,8
42"	600	1960	2685	460	980	980	703	19715
48"	600	2083	2863,5	460	1041,5	1041,5	703	25604
56"	600	2170	3015	460	1085	1085	703	38550

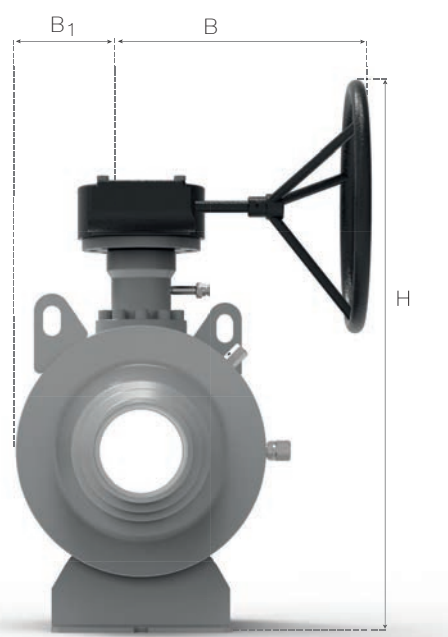
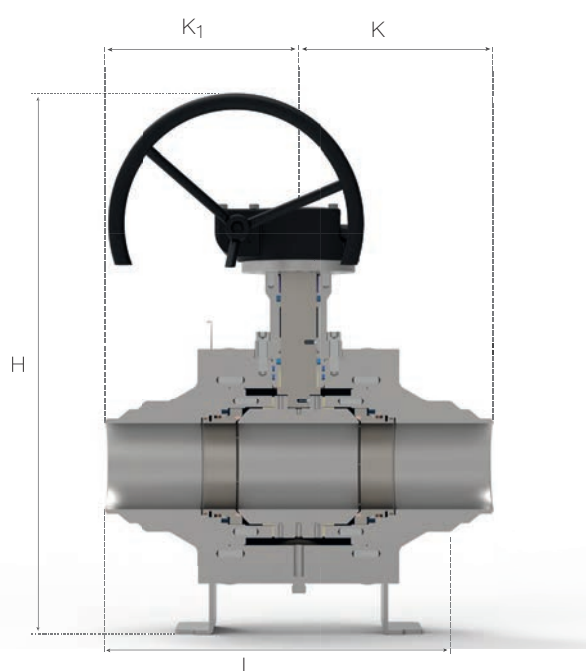
DIMENSIONS



2"- 56" ANSI 900 GEAR OP.

SIZE	CLASS	BW						
		L	H	K1	K	B1	B	KG
2"	900	368	432	127	184	184	251	38
3"	900	381	437	127	190,5	190,5	251	69
4"	900	457	623	284,5	228,5	228,5	349	126
6"	900	610	704,5	284,5	305	305	349	200.1
8"	900	737	858	299,5	368,5	369	337	596
10"	900	838	923	318	419	419	378	1010
12"	900	965	1028	318	482,5	483	378	1345
14"	900	1029	1364	393,5	514,5	515	493	1568
16"	900	1130	1290	393,5	565	565	493	2140
18"	900	1219	1469	445,5	609,5	609,5	493	2856
20"	900	1321	1862	445,5	660,5	661	502	4695
24"	900	1549	1935	445,5	774,5	774,5	502	6835
26"	900	1652	2056	445,5	826	826	502	9986
28"	900	1763	2175	445,5	881,5	881,5	502	12813
30"	900	1856	2281	460	928	928	703	15563
32"	900	1995	2396	460	997,5	997,5	703	20942
36"	900	2036	2645	460	1018	1018	703	23581
40"	900	2263	2895	460	1131,5	1131,5	703	28964
42"	900	2697	2863,5	460	1348,5	1349	703	31258
48"	900	2854	3015	460	1427	1427	703	34695
56"	900	2996	3159	460	1498	1498	703	36518

DIMENSIONS



6" - 56" ANSI 1500 GEAR OP.

SIZE	CLASS	BW						
		L	H	K1	K	B1	B	KG
3"	1500	470	437	127	235	235	251	54.8
4"	1500	546	623	284,5	273	273	349	126
6"	1500	705	704,5	284,5	352,5	352,5	349	360
8"	1500	832	928	299,5	416	416	337	736
10"	1500	991	1013	318	495,5	495,5	378	1256
12"	1500	1130	1135	318	565	565	378	1485
14"	1500	1257	1473	393,5	628,5	628,5	493	2295
16"	1500	1384	1506	393,5	692	692	493	2569
18"	1500	1495	1590	445,5	747,5	747,5	493	3698
20"	1500	1562	1972	445,5	781	781	502	5873
24"	1500	1694	2145	445,5	847	847	502	7785
26"	1500	1775	2169	445,5	887,5	887,5	502	11285
28"	1500	1832	2239	445,5	916	916	502	13694
30"	1500	1996	2375	460	998	998	703	18527
32"	1500	2064	2596	460	1032	1032	703	22986
36"	1500	2196	2751	460	1098	1098	703	26532
40"	1500	2235	2873	460	1117,5	1117,5	703	32986
42"	1500	2289	2967	460	1144,5	1144,5	703	33059
48"	1500	2336	3148	460	1168	1168	703	35281
56"	1500	2551	3205	460	1275,5	1275,5	703	37789

QUALITY CONTROL



All products are tested According to customer specification with digitally aided valve test benches which correspond %100 of modern requirements . Each valve is delivered to customers as EN10204 3.1 certificated.

- Pressure & Functional Tests according to API 6D, API 6A, API 598, and ISO 5208
- Annex F Design Validation Tests according to API 6D, and API 6A
- Fugitive Emission Tests according to ISO 15848-1



- NDE (Non-destructive testing) activities
 - Visual Examinations
 - Radiographic Tests
 - Ultrasonic Tests
 - Magnetic Particle Examinaions
 - Liquid Penetrant Tests
 - Positive Material Identification - PMI Tests



- Surface Quality Measurements
- Salt Spray Tests
- Adhesion tests
- Cross - Cut Tests
- Pull - Of Tests



- Dimension and Visual Controls



- Torque Tests



- Destructive Tests
 - Tensile Tests
 - Charpy Tests
 - Chemical Impact Tests with - Spectrometer
 - Hardness Tests

CERTIFICATION



- | | |
|--|--|
| <ul style="list-style-type: none"> • API 6D (Spec. for Pipeline and Piping Valves) • API 6A (Spec. for Wellhead and Tree Equipment) • ISO 9001:2015 Certificate • ISO 14001:2015 Certificate • ISO 45001:2018 Certificate • 2014/68/EU PED Certificate • 2006/42/EC Machinery Directive Certificate | <ul style="list-style-type: none"> • ISO 15848-1 Fugitive Emission Certificate • SIL 3 Certificate (Safety Integrity Level Certificate) • Fire Safe Certificate - ISO 10497 • Fire Safe Certificate - API 6FA • ATEX (Explosion Protection Certificate) • EN ISO 14141 Vave Perf.Reg. and Test Certificate • TSE Certificate - TS EN ISO 17292 Certificate |
|--|--|

NOTES

Handwriting practice lines consisting of 20 horizontal dotted lines.

[illegible]



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