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UNION TECH CO., INC.

SEVERE SERVICE BALL VALVES

**POWER GENERATION
applications**

UNION TECH CO. 321023721
BODY 122 TRIM 215
MAX TEMP 1150F
W08169M LTD CLASS 2520AX
P/H B0AC02
FLOW

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application

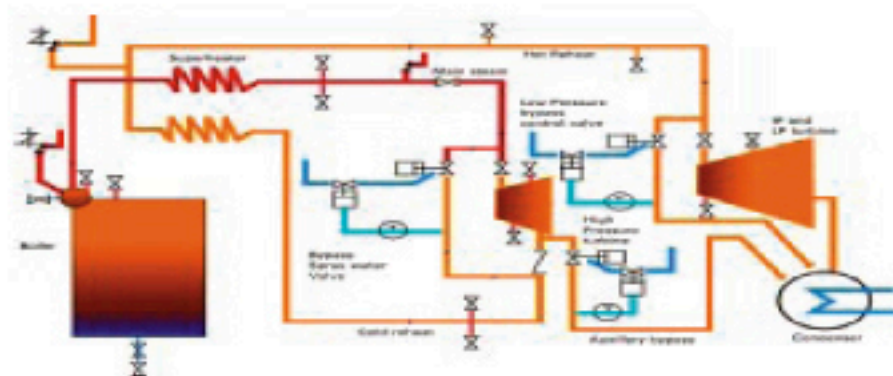
Union Tech was established in 1982 as a contract manufacturer for the oil tools industry. Over the years, Union Tech expanded horizontally into additional markets, such as the automotive and power generation industries. Headquartered in Houston, Texas, Union Tech is one of the premier metal-seated ball valve manufacturers in the world. Our success was based on the ability to provide customers with consistent performance in terms of precision manufacturing, expedient delivery, and value.

company profile

At Union Tech, we view quality as the foundation of our business. Because of our manufacturing roots, our valves are completely manufactured in-house within a single campus allowing for greater quality control, expanded flexibility in customization, and a personalized level of post-sale service. All key operations (CNC machining, coatings, assembly, testing, etc.) are executed within a single campus, which allows for more effective quality assurance and increased flexibility. Union Tech valves have been designed to the highest standards, using the finest materials for each application.

commitment to quality

Union Tech valve applications include but are not limited to: Isolations of drains, vents, blow downs, feed water drains, boiler drains, economizer drains, steam drum vents and isolation bypass lines. Union Tech metal-seated ball valves can be used in place of globe valves in most applications. Union Tech valves provide better Cv values than similar-sized globe valves, thus enabling a reduction in bore size for the application.

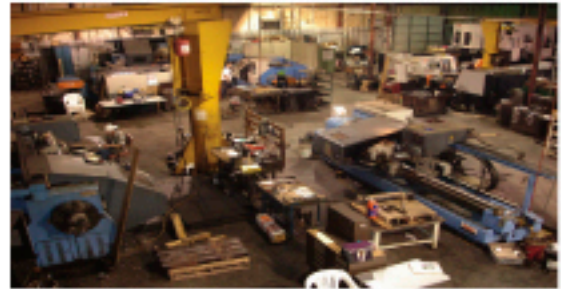


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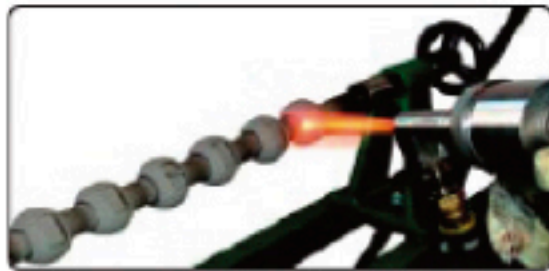
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manufacturing

Because severe-service ball valves require components manufactured to critical tolerances, Union Tech has made major investments in all key operations in the manufacturing process.



- We utilize state-of-the-art CNC equipment, which enables the efficient and precise production of valve components.



- Union Tech controls all aspects of the HVOF coating process, including temperature and powder mixtures



testing

Our testing procedures exceed other testing standards such as MSS-SP61, API-598 and ANSI FCI 70.2 Class VI. All testing procedures are performed in accordance with ANSI B16.34 and can be summarized as follows:

- A hydrostatic test is performed at 1.5 x maximum cold working pressure – zero leakage for 60 seconds.
- A high pressure seat test is performed at 1.1 x maximum cold working pressure – zero leakage for 60 seconds.
- A low pressure seat test is performed at 50 psi – zero leakage for 60 seconds.
- Additional air test is performed at 50 psi – zero leakage for 60 seconds.

engineering and design

Innovative engineering is the first step in building our products. Our engineering department focuses on fusing current technologies with time-tested methods to design effective products. We continue to develop products for a wide range of applications in industries such as power generation, pulp and paper, chemical processing, mining, water/wastewater treatment, etc. Our engineers have capability and knowledge to provide analyses such as:

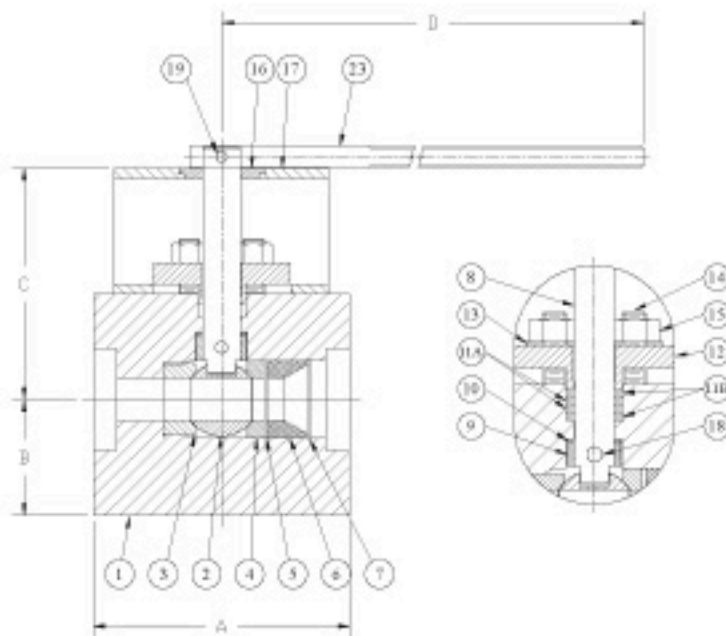
- Finite Element Analysis (FEA)
- Flow calculations
- Material selections
- Torque analysis
- Stress analysis
- Failure analysis

Our engineering department often evaluates existing design conditions and can make recommendations that are custom-tailored for specific requirements. We are willing and able to work closely with your engineering department to help design effective solutions for your applications.

valve design features

Some of the distinguishing features of a Union Tech valve are as follows:

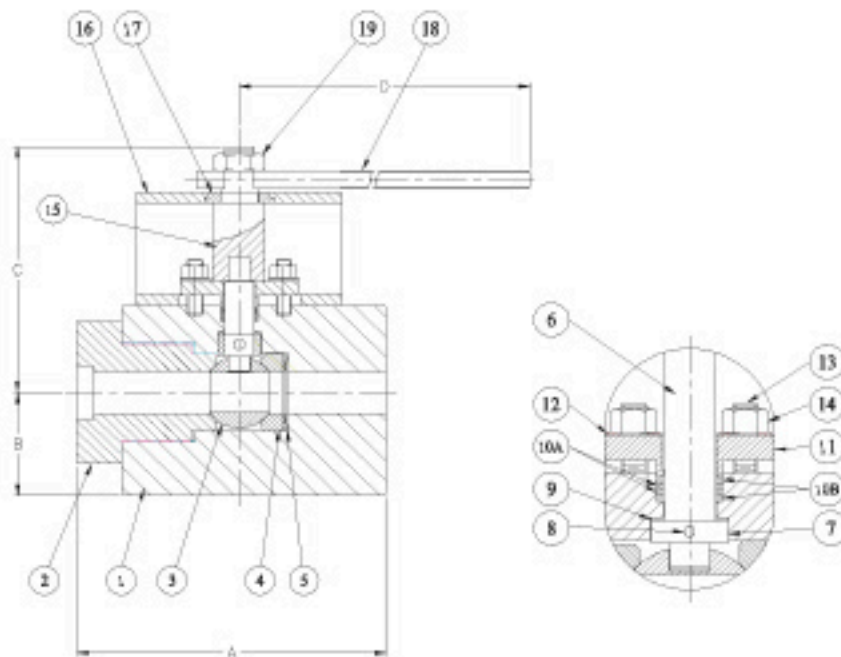
- Ball and seats are matched lapped for a bubble tight shut off
- Integral seat prevents leakage behind the seat
- Seal areas are protected from product flow to help extend valve life
- Blow-out proof stem
- Quality trim materials consist of Inconel 718 and/or 410ss
- Universal mounting brackets are machined to ISO standards
- Precision alignment of mounting brackets reduces stem side load
- Four-bolt, live loaded packing gland provides an even load on the stem packing
- In-house CNC machining and HVOF coating assures effective quality control
- Manufactured from forged bar stock and all USA materials
- ASME B16.34 compliant
- 4-year limited warranty



| ITEM | DESCRIPTION | MATERIAL |
|------|------------------------------------|--------------------|
| 1 | Body | ASTM A 105/F22/F91 |
| 2 | Ball | 410SS/CCC |
| 3 | Seat Seal | 410SS/CCC |
| 4 | Seat Pusher | 410SS/OPQ |
| 5 | Spring | INCONEL 718 |
| 6 | Transition Spacer | C/S |
| 7 | Retaining Ring | ASTM A 286 GR. 860 |
| 8 | Stem | ASTM A 286 GR. 860 |
| 9 | Stem Collar | 431SS |
| 10 | Stem Bearing | 410SS/OPQ |
| 11A | Stem Packing | GRAFOIL |
| 11B | Stem Packing (Anti-Extrusion) | GRAFOIL |
| 12 | Gland Flange | 410SS |
| 13 | Live Load Spring | 301SS |
| 14 | Gland Stud | ASTM A 193 GR. B8M |
| 15 | Gland Nut | ASTM A 194 GR. 8 |
| 16 | Adaptor Bushing | CAST IRON |
| 17 | Mounting Bracket | C/S ASTM A-500 |
| 18 | Load Pin | INCONEL 718 |
| 19 | Shear Pin | INCONEL 718 |
| 20 | Bracket Bolts (Not Shown) | ASTM A-574 |
| 21 | Bracket Lock Washers (Not Shown) | C/S |
| 22 | Bracket Alignment Pins (Not Shown) | C/S |
| 23 | Hand Lever | C/S 1018 |

VALVE DIMENSIONS

| BORE SIZE | A | B | C | D |
|-----------|--------|-------|-------|--------|
| .65" | 5.00" | 2.25" | 5.00" | 13.25" |
| 1.00" | 6.00" | 2.75" | 5.50" | 19.25" |
| 1.40" | 8.00" | 3.00" | 5.50" | 19.25" |
| 1.75" | 9.50" | 3.25" | 6.00" | 24.00" |
| 2.00" | 12.25" | 4.25" | 7.75" | N/A |



| ITEM | DESCRIPTION | MATERIAL |
|------|-------------------------------|--------------------------|
| 1 | Body | ASTM A 105/F22/F91 |
| 2 | End Connection | ASTM A 105/F22/F91 w/CCC |
| 3 | Ball | 410SS/CCC |
| 4 | Seat Pusher | 410SS/OPD |
| 5 | Spring | INCONEL 718 |
| 6 | Stem | A638-GR.660 TYP 2 |
| 7 | Stem Collar | 410SS |
| 8 | Load Pin | INCONEL 718 |
| 9 | Stem Bearing | 410SS/OPD |
| 10A | Stem Packing | GRAFOIL |
| 10B | Stem Packing (Anti Extrusion) | GRAFOIL |
| 11 | Gland Flange | 410SS |
| 12 | Live Load Spring | 300SS |
| 13 | Gland Stud | ASTM A 193 GR. B8M |
| 14 | Gland Nut | ASTM A 194 GR. 8 |
| 15 | Stem Adaptor | 4140 HT |
| 16 | Mounting Bracket | C/S ASTM A-500 |
| 17 | Adaptor Bushing | CAST IRON |
| 18 | Hand Lever | C/S 1018 |
| 19 | Adaptor Nut | SS |

VALVE WEIGHTS

| SIZE | BARE STEM | WITH HAND LEVER |
|-------|-----------|-----------------|
| .65" | 30 lbs. | 32 lbs. |
| 1.00" | 55 lbs. | 57 lbs. |

VALVE DIMENSIONS

| Bore Size | A | B | C | D |
|-----------|--------|-------|-------|--------|
| .65" | 7.50" | 2.25" | 6.00" | 13.25" |
| 1.00" | 9.00" | 2.75" | 6.50" | 19.00" |
| 1.40" | 10.50" | 3.63" | 7.00" | 18.63" |
| 1.75" | 11.50" | 4.00" | 7.50" | 24.00" |
| 2.00" | 14.50" | 4.50" | 8.00" | N/A |

Cv for power valves

The Cv for valves indicates the flow capacity of the valve. By using the Cv and the correct formula one can determine the amount of flow through the valve of a particular product. Power valves usually flow steam, water, or a combination of both. Steam is generally measured in pounds per hour while water will be measured in gallons or barrels per hour. The chart below list the Cv of each bore size of the Union Tech power valve.

*ALL PIPE SIZES ARE SCH160

| BORE | 1/2" | 3/4" | 1" | 1 1/2" | 2" | 2 1/2" | 3" | 4" |
|-------|------|------|----|--------|-----|--------|-----|-----|
| .65" | 22 | 40 | 26 | 16 | 15 | | | |
| 1.00" | | | | | 46 | 37 | | |
| 1.40" | | | | | 135 | 94 | 80 | |
| 1.75" | | | | | 375 | 208 | 150 | |
| 2.00" | | | | | | 400 | 234 | |
| 2.50" | | | | | | | 665 | |
| 3.05" | | | | | | | | 785 |

VALVE WEIGHTS

1 PIECE BODY

| SIZE | BARE STEM | WITH HAND LEVER |
|-------|-----------|-----------------|
| .65" | 25 lbs. | 27 lbs. |
| 1.00" | 46 lbs. | 48 lbs. |
| 1.40" | 66 lbs. | 68 lbs. |
| 1.75" | 98 lbs. | 100 lbs. |

VALVE WEIGHTS

2 PIECE BODY

| SIZE | BARE STEM | WITH HAND LEVER |
|-------|-----------|-----------------|
| .65" | 30 lbs. | 32 lbs. |
| 1.00" | 55 lbs. | 57 lbs. |

TEMPERATURE VS. PRESSURE CHART

ANSI B16.34 RATING

1-PIECE

TEMPERATURE DEG F

| CLASS | A-105 | 8000 | 8000 | 8000 | 8000 | 7802 | 7458 | 7368 | 8720 | 5485 | > | > | > | > | > | |
|----------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| STANDARD | F-22 | 8000 | 8000 | 7968 | 7725 | 7880 | 7834 | 7589 | 7380 | 7176 | 6856 | 6400 | 6268 | 4026 | 2701 | 1886 |
| 3200# | F-91 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 7819 | 7771 | 7880 | 7225 | 6400 | 6268 | 5189 | 5198 | 4882 |

2-PIECE

| CLASS | MATERIAL | 100 | 200 | 300 | 400 | 500 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 | 1050 | 1100 |
|---------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| LIMITED | A-105 | 8750 | 8750 | 8750 | 8750 | 8750 | 8315 | 8205 | 8089 | 7931 | 6000 | > | > | > | > | > | > |
| 3500# | F-22 | 8750 | 8750 | 8650 | 8450 | 8400 | 8400 | 8390 | 8300 | 8075 | 7890 | 7425 | 7000 | 6735 | 4471 | 3176 | 1882 |
| | F-91 | 8750 | 8750 | 8750 | 8750 | 8750 | 8750 | 8681 | 8583 | 8475 | 8400 | 7700 | 7000 | 6387 | 5774 | 5475 | 5176 |

* A-105 is not recommended for prolonged use above 800 deg F. | * F-22 is not recommended for prolonged use above 1100 deg F.





<< SOCKET WELD ENDS

1/2" to 2 1/2" - 150# to 4500# Class

BUTT WELD ENDS >>

1/2" to 4" in Standard and Metric sizes



ADDITIONAL CUSTOMER ENDS

RAISED FACE FLANGE (RF) | RING JOINT FLANGE (RTJ) | FNPT

PNEUMATIC AND ELECTRIC ACTUATORS MOUNTED AND TESTED



We have the ability to adapt our valves to any actuator, such as double acting, pneumatic, spring return, hydraulic, electric, etc. Mounting and testing of actuated valves can also be performed at our facility.

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