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# ORBIT BALL VALVE CATALOG

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# Content

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# ORBIT BALL VALVE

## Overview

Orbit ball valves are widely used in various industries that needs, for example, molecular sieve dehydration, isomerization and hydrocracking. Antiwear has adopted patented hard metal coating and unique structural designs in orbit ball valves, and this approach substantially eliminates abrasions of ball/seat seals, ball pin, groove pin as well as internal leakage that may occur on either side of the valve. This makes them work well in most severe services, which demands the valves to have no stuck, no leakage on either side under high pressure condition.

## Design features

● Zero leakage: no matter pressure in bi-directional, there is absolute zero leakage.
● Long life: to eliminate the friction inflicted on the valve seat and thus fundamentally extend the service life of the valve, in ATW's design the ball only starts to rotate after it leaves the seat.
● No stuck in alternating temperature: There is no stuck because the torque is stable even the operating temperature alters between -60°C and 350°C.
● Self-cleaning sealing surface: when the ball moves away from the seat, the fluid will completely wash any impurities on the sealing surface away, thus the valve would have a long working life.
● Patented coating: The sealing surface coating of the ball/seats is developed and patented by ATW.
● Low fugitive emission packing design: The implementation of real live-load packing design significantly improves the sealing performance, making the external leakage rate much lower than any other designs.
● No dead zone in pocket: single-seat design leaves no dead zone in valve pocket, and effectively reduces the risks of fluid accumulation inside valve pocket.
● Online repair and easy maintenance: top-entry design, which allows online inspection and repair, thus quick and easy maintenance at site for the end users.

# ORBIT BALL VALVE

## Design features

ATW's orbit ball valves are widely used in units such as molecular sieve system, isomerization and hydrocracking. They are most suitable for applications that requires alternating temperature, very low leakage rate, dilating fluid and abrasive fluid, etc.

**•Refinery and petrochemical**

Orbit ball valve is used at isomerization and hydrocracking unit to be shut-off valve of flammable, explosive, toxic and harmful fluid.

**•Natural gas industry**

Orbit ball valve is used at natural gas extraction, purification and transportation unit in natural gas industry.

**•Ethylene and propylene industry**

Orbit ball valve is used at ethylene hydrocracking, propylene oxide, ethylene oxide, polyethylene, polypropylene unit.

**•Coal chemical**

Orbit ball valve is used at syngas purification and synthesis unit.

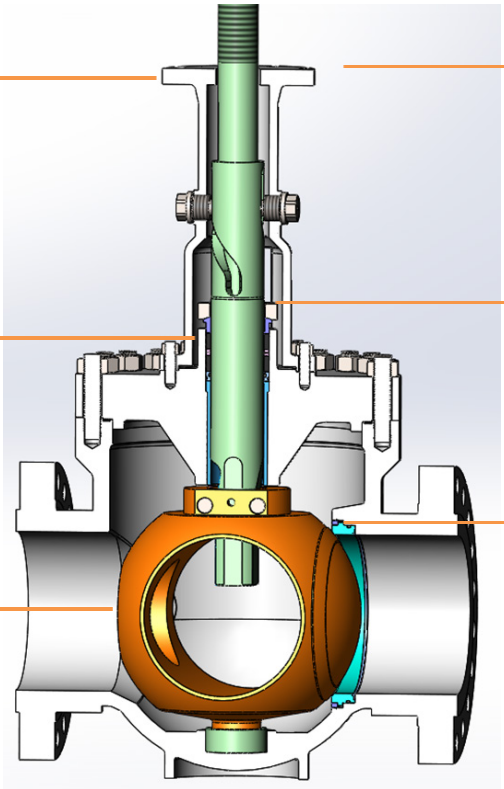
# ATW Orbit Ball Valve catalog

## Design features

One-piece valve body and top-entry design:
This enables online inspection and repair to reduce maintenance cost.

Oil injection hole design: Whenever the valve packing is stopped against the guide-way groove, lubricating oil can be injected from here to reduce resistance effectively.

Valve stem wedge surface design: Mechanically wedged seal ensures a reliable bi-directional sealing under full shut-off pressure and a wide temperature range.



Valve stem guiding structure design: This prevents the stem from tilting and avoids external leakage at the graphite packing due to long-time opening/closing.

Live-loaded packing design: This provides consistent pre-tightening force to compensate for fluctuation in temperature and pressure and packing wear.

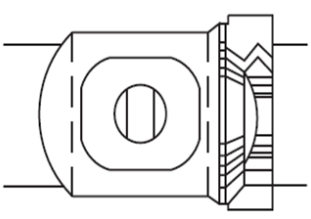
Bi-directional floating seats design: This design keeps the valve zero leakage sealing on bi-directions under wide temperature and preventing valve pocket pressure increasing or even locking the valve.

Bottom shaft supported ball structure design: This design is special in always keeping the ball's center line staying at the center line of the valve seat to ensure the sealing performance.

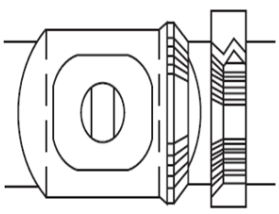
## Core Design Principle: No Relative Friction to assure zero leakage and long life

Traditional ball valves have the problem that the sealing surface is always exposed to friction. Normally valve abrasion would occur which will do harm to the sealing surface and reduce the service life. During opening and closing, the valve ball and seats are always in direct contact, or partly in direct contact with each other.

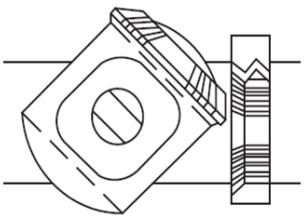
ATW solves this problem in orbit ball valves by implementing unique tilting and rotating designs. This design reduces the relative sliding distance of the seal surface to zero so that there is completely no friction when on/off operating. As the friction does not exist, the metal sealing surface would be able to maintain more healthy to ensure zero leakage rate on bi-directions for a long period of time.



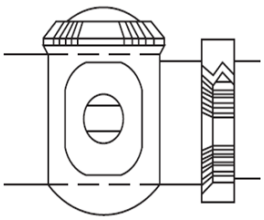
*Sequence 1*



*Sequence 2*



*Sequence 3*

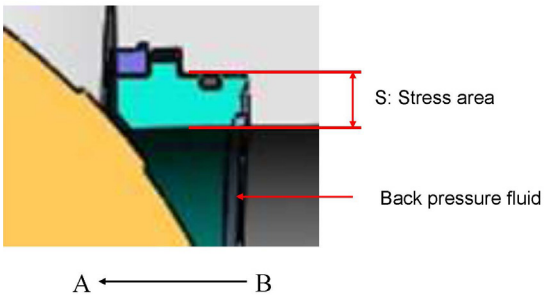


*Sequence 4*

## Zero leakage on bi-directions sealing under severe working condition

# Innovational floating seat design

In order to get zero leakage on bi-directions, Antiwear has made innovation of implementing floating seat design. The seat provides live-loaded auxiliary seal as follows: when the upstream pressure is forced on the sealing surface, the seat enhances the seal; on the other hand, the seat would move in the opposite direction when opposed to downstream pressure to ensure that the sealing pressure on the sealing surface is greater than the permissible sealing pressure. Therefore, this design can allow the valves to meet the requests of zero leakage on bi-directions under many severe working conditions.

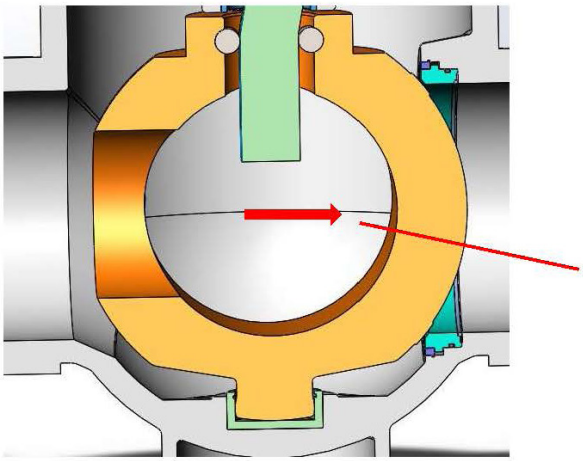



## Long life design principle & long time running with no maintenance

# Ball & seat matching model

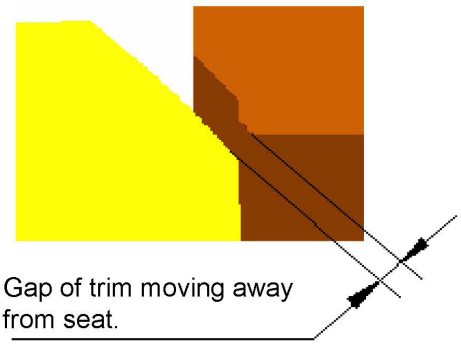
A common issue for traditional orbit ball valves is that the contact between ball and seat could be uneven while the valve is opening or closing. This would then cause the local stress of some part of the sealing surface to be much higher than the permissible stress, and consequently cause the internal leakage exceeding. ATW has carried out the new “Concentric Ball Seat Model” based on results of finite element stimulation and experimental demonstration.

This model can keep the sealing surface of the ball always stay on the centerline of the valve seat. Hence, the ball shows sliding parallel movement on the inclined section during operation in fact. Therefore, the sealing surface would always fit together perfectly during whole operation, so that the valves can work online for longer time with good sealing performance.



## Self-Cleaning sealing pair surface

To take care of fluid accumulation that may damage the sealing surface such as catalyst and molecular sieve, ATW has developed a self-cleaning sealing pair surface by studying physical and mathematical models of valves opening and closing. Under this design, once the ball leaves the seat, any fluid on the sealing surface would be washed away to assure better sealing quality.




### No stuck and ensure valve operability

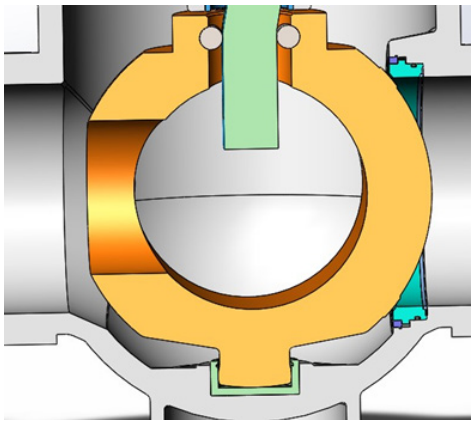
## Patented metal alloy coatings

Throughout the operation of orbit ball valves, different internal metal parts may be brought into contact with each other to cause frictional damage. For instance, such phenomenon occurs between the stem spiral groove and the groove pin as well as between the stem wedge surface and the ball pin. Overtime there could be metal bonding, wear and fragmentation, which would lead to stuck of the valve. Nevertheless, ATW has developed patented metal hard alloy coatings that can avoid above problems effectively.

| Chemical Ingredients | Thickness (℃) | Hardness | Chemical Ingredients | Thickness (um) | Coating Process | Basic material |
|---|---|---|---|---|---|---|
| FSLLOY2 | <850 | 84.5~89.5(HRA) | W-C-Co | -- | Fully sintered | -- |
| FSLLOY4 | <680 | 45~55(HRC) | W-Cr-C-Co | 120~220 | HVAF, HVOF | Cr13，SS，F51 |
| FSLLOY8 | <550 | 55~59(HRC) | W-Cr-Si-Ni | 400~600 | HT spraying | SS，F51 |
| FSLLOY10 | <550 | 59~65(HRC) | W-Cr-Si-Ni-C | 400~600 | HT spraying | SS，F51 |
| FSLLOY12 | <550 | 62~67(HRC) | W-Cr-Si-Ni-C | 400~600 | HT spraying | SS，F51 |
| FSLLOY14 | <450 | 68~74(HRC) | W-C-Co | 120~220 | HVAF, HVOF | Cr13，SS，F51 |
| FSLLOY16 | <800 | 65~72(HRC) | Cr-C-Ni | 120~220 | HVAF, HVOF | Cr13，SS，F51 |
| FSLLOY18 | <450 | 68~72(HRC) | W-Cr-C-Co | 120~220 | HVAF, HVOF | Cr13，SS，F51 |
| FSLLOY20 | <300 | 82.5~85.5(HRA) | Al-O-Zr | -- | Fully sintered | -- |
| … | … | … | … | … | … | … |
| FSLLOY48 | <680 | - | Secret | -- | -- | SS,MONEL,INCONEL |

## No dead zone in pocket

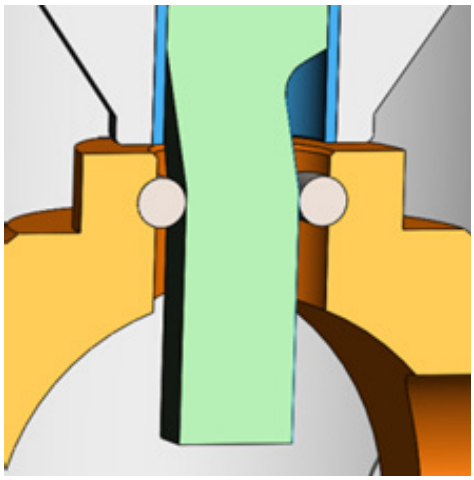
Antiwear's orbit ball valve has single seat design. The valve pocket is connected directly to the upstream fluid so that any fluid cannot accumulate inside the pocket. This eliminates any possibility of hazard fluid dilating, disintegrating and burning inside the valve.



# Other features

## Valve stem wedge surface design

The bottom part of the stem consists of an inclined segment, which provides mechanical wedge force for a consistantly tight seal. This mechanical wedge force is independent of the pipeline pressure and temperature. Thus, this design helps to ensure zero leakage on bi-directions under full shut-off pressure and a wide temperature range. Moreover as the sealing pressure may alter due to the ball's wear, the valve stem wedge surface design assure the reliability of sealing.

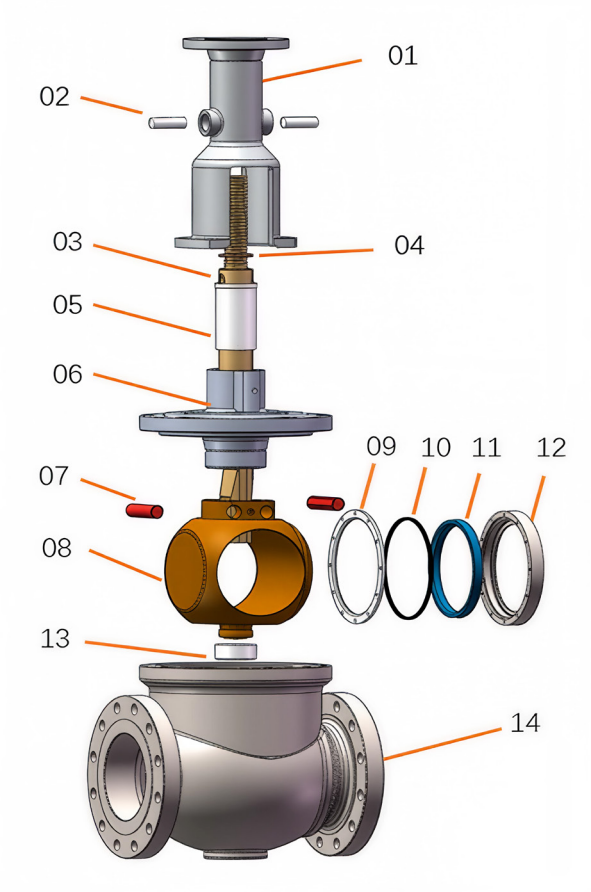


## Live-loaded packing design with no external leakage

ATW has also done a lot of research on external leakage of valves from self-developed wear models. The result is the live-load packing design. Through controlling the key factors, for instance the packing, the roughness at the valve stem and near the valve stem, the compressed amount of packing, it is assured that the seal stress of packing always remains in safety range so that there cannot be any external leakage.

# Materials of parts

## Orbit ball valve




| Item | Name | Materials |
|---|---|---|
| 01 | Bracket | A216 WCB，A352LCB，A351 CF8/CF3M，A890 4A |
| 02 | Groove pin | A705 630 or Inconel718 with hardened |
| 03 | Stem | A182 F6a，A705 630，A286 660，Inc.718 |
| 04 | Thrust bearing | A276 316 |
| 05 | Upper stem housing | A705 630 with hardened |
| 06 | Packing Stuffing Box | A216 WCB，A352LCB，A351 CF8/CF3M，A890 4A |
| 07 | Ball pin | A705 630 or Inconel718 with hardened |
| 08 | Ball | A216 WCB，A352LCB，A351 CF8/CF3M，A890 4A |
| 09 | Seat Retainer | 304/316L |
| 10 | Seat Ring | Graphite |
| 11 | Seat | A105，A182 F304/F316L/F51/F53 |
| 12 | Filler Block | 304/316L |
| 13 | Lower Stem Housing | A182 F304/316L，A705 630 |
| 14 | Body | A216 WCB，A352LCB，A351 CF8/CF3M，A890 4A |

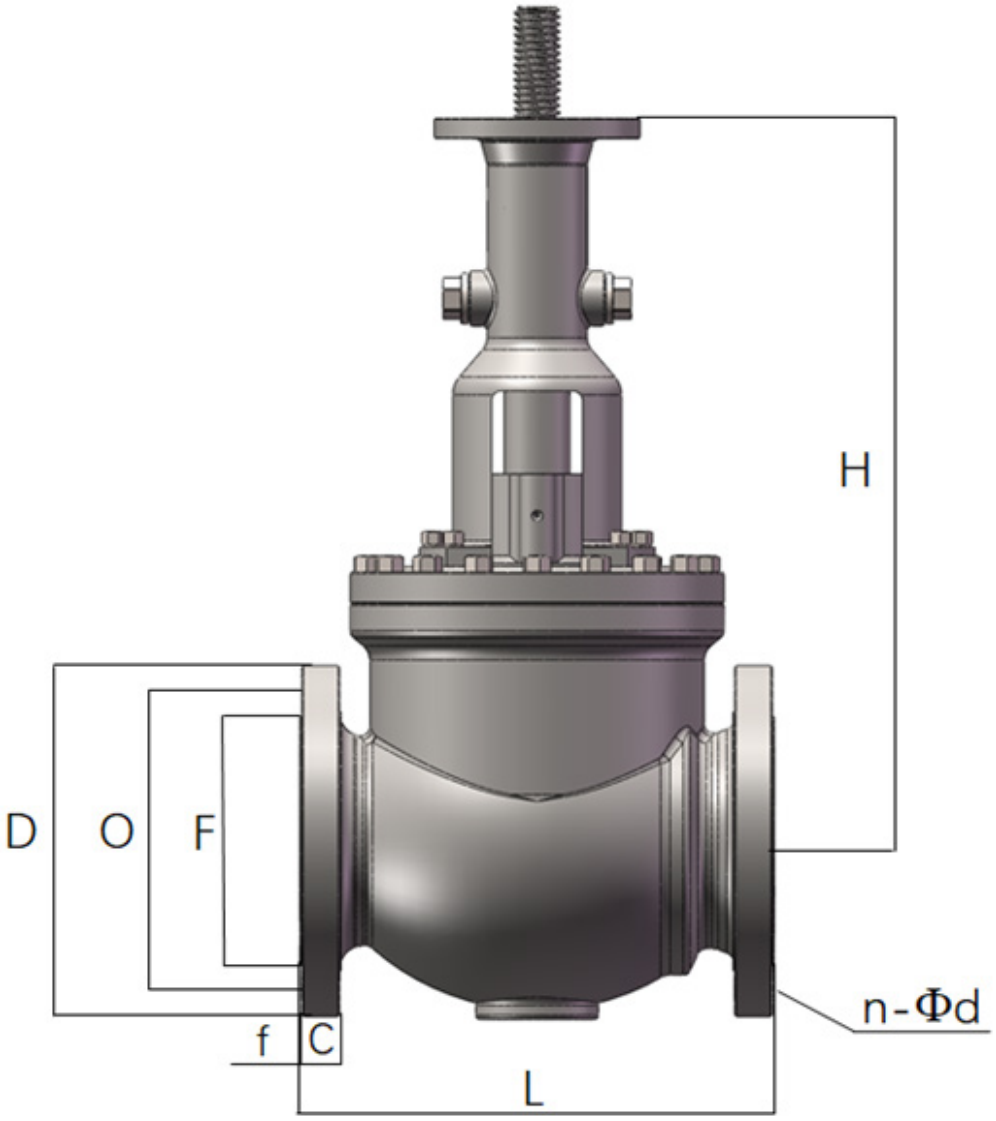
**Above are normal used materials. Please consult ATW for other materials. ATW reserves the right to modify its design.**

# Technical Specification

## Performance Indicators

| | |
|---|---|
| Size | • DN 15~DN600<br>• NPS0.5~NPS24 |
| Flange Standard | • ASME B16.5<br>• HG/T20592 |
| Pressure Rate | • Class150~Calss2500 |
| Design Temperature | • -196℃~538℃ |
| Structure length standard | • ASME B16.10<br>• GB/T12221<br>• API6D |
| Design Standard | • API 608<br>• API 6D<br>• ASME B16.34<br>• GB/T 12237<br>• GB/T 12224 |
| Inspection and test Std. | • API 598<br>• ISO5208<br>• FCI70.2 |
| Low fugitive emission Std. | • TA Luft VDI244<br>• ISO 15848-1 |

# Outline Dimension



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# ORBIT BALL VALVE

| Pressure Rate | Size | | Dimension (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | NPS | DN | L | | H | D | O | F | f | C | n-φd |
| | | | RF | RJ | | | | | | | |
| CLASS150 PN20 | 1/2 | 15 | 108 | 119 | 380 | 90 | 60.3 | 35 | 2 | 9.6 | 4-16 |
| | 3/4 | 20 | 117 | 130 | 400 | 100 | 69.9 | 43 | 2 | 11.2 | 4-16 |
| | 1 | 25 | 127 | 140 | 420 | 110 | 79.4 | 51 | 2 | 12.7 | 4-16 |
| | 1 1/2 | 40 | 165 | 178 | 455 | 125 | 98.4 | 73 | 2 | 15.9 | 4-16 |
| | 2 | 50 | 178 | 191 | 465 | 150 | 120.7 | 92 | 2 | 17.5 | 4-18 |
| | 2 1/2 | 65 | 190 | 203 | 300 | 180 | 139.7 | 105 | 2 | 20.7 | 4-18 |
| | 3 | 80 | 203 | 216 | 300 | 190 | 152.4 | 127 | 2 | 22.3 | 4-18 |
| | 4 | 100 | 229 | 242 | 340 | 230 | 190.5 | 157 | 2 | 22.3 | 8-18 |
| | 5 | 125 | 356 | 369 | 360 | 255 | 215.9 | 186 | 2 | 22.3 | 8-22 |
| | 6 | 150 | 394 | 407 | 400 | 280 | 241.3 | 216 | 2 | 23.9 | 8-22 |
| | 8 | 200 | 457 | 470 | 500 | 345 | 298.5 | 270 | 2 | 27.0 | 8-22 |
| | 10 | 250 | 533 | 546 | 600 | 405 | 362.0 | 324 | 2 | 28.6 | 12-26 |
| | 12 | 300 | 610 | 623 | 600 | 485 | 431.8 | 381 | 2 | 30.2 | 12-26 |
| | 14 | 350 | 686 | 699 | 650 | 535 | 476.3 | 413 | 2 | 33.4 | 12-30 |
| | 16 | 400 | 762 | 775 | 650 | 595 | 539.8 | 467 | 2 | 35.0 | 16-30 |
| | 18 | 450 | 864 | 877 | 700 | 635 | 577.9 | 533.5 | 2 | 38.1 | 16-33 |
| | 20 | 500 | 914 | 927 | 700 | 700 | 635.0 | 584 | 2 | 41.3 | 20-33 |
| | 24 | 600 | 1067 | 1080 | 800 | 815 | 749.3 | 692 | 2 | 46.1 | 20-36 |

| Pressure Rate | Size | | Dimension (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | NPS | DN | L | | H | D | O | F | f | C | n-φd |
| | | | RF | RJ | | | | | | | |
| CLASS300 PN50 | 1/2 | 15 | 140 | 151 | 380 | 95 | 66.7 | 35 | 2 | 12.7 | 4-16 |
| | 3/4 | 20 | 152 | 165 | 400 | 115 | 82.6 | 43 | 2 | 14.3 | 4-18 |
| | 1 | 25 | 165 | 178 | 420 | 125 | 88.9 | 51 | 2 | 15.9 | 4-20 |
| | 1 1/2 | 40 | 190 | 203 | 455 | 155 | 114.3 | 73 | 2 | 19.1 | 4-22 |
| | 2 | 50 | 216 | 232 | 465 | 165 | 127.0 | 92 | 2 | 20.7 | 8-18 |
| | 2 1/2 | 65 | 241 | 257 | 300 | 190 | 149.2 | 105 | 2 | 23.9 | 8-22 |
| | 3 | 80 | 282 | 298 | 300 | 210 | 168.3 | 127 | 2 | 27.0 | 8-22 |
| | 4 | 100 | 305 | 321 | 340 | 255 | 200.0 | 157 | 2 | 30.2 | 8-22 |
| | 5 | 125 | 381 | 397 | 360 | 280 | 235.0 | 186 | 2 | 33.4 | 8-22 |
| | 6 | 150 | 403 | 419 | 400 | 320 | 269.9 | 216 | 2 | 35.0 | 12-22 |
| | 8 | 200 | 502 | 518 | 500 | 380 | 330.2 | 270 | 2 | 39.7 | 12-26 |
| | 10 | 250 | 568 | 584 | 600 | 445 | 387.4 | 324 | 2 | 46.1 | 16-30 |
| | 12 | 300 | 648 | 664 | 600 | 520 | 450.8 | 381 | 2 | 49.3 | 16-33 |
| | 14 | 350 | 762 | 778 | 650 | 585 | 514.4 | 413 | 2 | 52.4 | 20-33 |
| | 16 | 400 | 838 | 854 | 650 | 650 | 571.5 | 467 | 2 | 55.6 | 20-36 |
| | 18 | 450 | 914 | 930 | 700 | 710 | 628.6 | 533.5 | 2 | 58.8 | 24-36 |
| | 20 | 500 | 991 | 1110 | 700 | 775 | 685.8 | 584 | 2 | 62.0 | 24-36 |
| | 24 | 600 | 1143 | 1165 | 800 | 915 | 812.8 | 692 | 2 | 68.3 | 24-42 |

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# ORBIT BALL VALVE

| Pressure Rate | Size | | Dimension (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | NPS | DN | L | | H | D | O | F | f | C | n-φd |
| | | | RF | RJ | | | | | | | |
| CLASS600 PN110 | 1/2 | 15 | 165 | 163 | 400 | 95 | 66.7 | 35 | 7 | 14.3 | 4-16 |
| | 3/4 | 20 | 190 | 190 | 420 | 115 | 82.6 | 43 | 7 | 15.9 | 4-18 |
| | 1 | 25 | 216 | 216 | 435 | 125 | 88.9 | 51 | 7 | 17.5 | 4-18 |
| | 1 1/2 | 40 | 241 | 241 | 505 | 125 | 98.4 | 73 | 2 | 15.9 | 4-16 |
| | 2 | 50 | 292 | 295 | 560 | 165 | 127 | 92 | 7 | 25.4 | 8-18 |
| | 2 1/2 | 65 | 330 | 333 | 590 | 190 | 149.2 | 105 | 7 | 28.6 | 8-22 |
| | 3 | 80 | 356 | 359 | 610 | 210 | 168.3 | 127 | 7 | 31.8 | 8-22 |
| | 4 | 100 | 432 | 435 | 690 | 275 | 215.9 | 157 | 7 | 38.1 | 8-26 |
| | 5 | 125 | 508 | 511 | 700 | 330 | 266.7 | 186 | 7 | 44.5 | 8-30 |
| | 6 | 150 | 559 | 562 | 705 | 355 | 292.1 | 216 | 7 | 47.7 | 12-30 |
| | 8 | 200 | 660 | 663 | 930 | 420 | 349.2 | 270 | 7 | 55.6 | 12-33 |
| | 10 | 250 | 787 | 790 | 1130 | 510 | 431.8 | 324 | 7 | 63.5 | 16-36 |
| | 12 | 300 | 838 | 841 | 1330 | 560 | 489.0 | 381 | 7 | 66.7 | 20-36 |
| | 14 | 350 | 889 | 892 | 1480 | 605 | 527.0 | 413 | 7 | 69.9 | 20-39 |
| | 16 | 400 | 991 | 994 | 1710 | 685 | 603.2 | 467 | 7 | 76.2 | 20-42 |
| | 18 | 450 | 1092 | 1095 | 1920 | 745 | 654.0 | 533.5 | 7 | 82.6 | 20-45 |
| | 20 | 500 | 1194 | 1200 | 2080 | 815 | 723.9 | 584 | 7 | 88.9 | 24-45 |
| | 24 | 600 | 1397 | 1407 | 2200 | 940 | 838.2 | 692 | 7 | 101.6 | 24-51 |

| Pressure Rate | Size | | Dimension (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | NPS | DN | L | | H | D | O | F | f | C | n-φd |
| | | | RF | RJ | | | | | | | |
| CLASS900 PN150 | 1/2 | 15 | 216 | 216 | 400 | 120 | 82.6 | 35 | 7 | 22.3 | 4-22 |
| | 3/4 | 20 | 229 | 229 | 420 | 130 | 88.9 | 43 | 7 | 25.4 | 4-22 |
| | 1 | 25 | 254 | 254 | 435 | 150 | 101.6 | 51 | 7 | 28.6 | 4-26 |
| | 1 1/2 | 40 | 305 | 305 | 505 | 180 | 123.8 | 73 | 7 | 31.8 | 4-30 |
| | 2 | 50 | 368 | 371 | 560 | 215 | 165.1 | 92 | 7 | 38.1 | 8-26 |
| | 2 1/2 | 65 | 419 | 422 | 590 | 245 | 190.5 | 105 | 7 | 41.3 | 8-30 |
| | 3 | 80 | 381 | 384 | 610 | 240 | 190.5 | 127 | 7 | 38.1 | 8-26 |
| | 4 | 100 | 457 | 461 | 690 | 290 | 235.0 | 157 | 7 | 44.5 | 8-33 |
| | 5 | 125 | 559 | 562 | 700 | 350 | 279.4 | 186 | 7 | 50.8 | 8-36 |
| | 6 | 150 | 610 | 613 | 705 | 380 | 317.5 | 216 | 7 | 55.6 | 12-33 |
| | 8 | 200 | 737 | 740 | 930 | 470 | 393.7 | 270 | 7 | 63.5 | 12-39 |
| | 10 | 250 | 838 | 841 | 1130 | 545 | 469.9 | 324 | 7 | 69.9 | 16-39 |
| | 12 | 300 | 965 | 968 | 1330 | 610 | 533.4 | 381 | 7 | 79.4 | 20-39 |
| | 14 | 350 | 1029 | 1039 | 1480 | 640 | 558.8 | 413 | 7 | 85.8 | 20-42 |
| | 16 | 400 | 1130 | 1140 | 1710 | 705 | 616.0 | 467 | 7 | 88.9 | 20-45 |
| | 18 | 450 | 1219 | 1232 | 1920 | 785 | 685.8 | 533.5 | 7 | 101.6 | 20-51 |
| | 20 | 500 | 1321 | 1334 | 2080 | 855 | 749.3 | 584 | 7 | 108.0 | 20-55 |
| | 24 | 600 | 1549 | 1568 | 2200 | 1040 | 901.7 | 692 | 7 | 139.7 | 20-68 |

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# ORBIT BALL VALVE

| Pressure Rate | Size | | Dimension (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | NPS | DN | L | | H | D | O | F | f | C | n-φd |
| | | | RF | RJ | | | | | | | |
| CLASS1500 PN260 | 1/2 | 15 | 216 | 216 | 400 | 120 | 82.6 | 35 | 7 | 22.3 | 4-22 |
| | 3/4 | 20 | 229 | 229 | 420 | 130 | 88.9 | 43 | 7 | 25.4 | 4-22 |
| | 1 | 25 | 254 | 254 | 435 | 150 | 101.6 | 51 | 7 | 28.6 | 4-26 |
| | 1 1/2 | 40 | 305 | 305 | 505 | 180 | 123.8 | 73 | 7 | 31.8 | 4-30 |
| | 2 | 50 | 368 | 371 | 560 | 215 | 165.1 | 92 | 7 | 38.1 | 8-26 |
| | 2 1/2 | 65 | 419 | 422 | 590 | 245 | 190.5 | 105 | 7 | 41.3 | 8-30 |
| | 3 | 80 | 470 | 473 | 610 | 265 | 203.2 | 127 | 7 | 47.7 | 8-33 |
| | 4 | 100 | 546 | 549 | 690 | 310 | 241.3 | 157 | 7 | 54 | 8-36 |
| | 5 | 125 | 673 | 676 | 700 | 375 | 292.1 | 186 | 7 | 73.1 | 8-42 |
| | 6 | 150 | 705 | 711 | 705 | 395 | 317.5 | 216 | 7 | 82.6 | 12-39 |
| | 8 | 200 | 832 | 842 | 930 | 485 | 393.7 | 270 | 7 | 92.1 | 12-45 |
| | 10 | 250 | 991 | 1001 | 1130 | 585 | 482.6 | 324 | 7 | 108 | 12-51 |
| | 12 | 300 | 1130 | 1146 | 1330 | 675 | 571.5 | 381 | 7 | 123.9 | 16-55 |
| | 14 | 350 | 1257 | 1276 | 1480 | 750 | 635.0 | 413 | 7 | 133.4 | 16-60 |
| | 16 | 400 | 1384 | 1406 | 1710 | 825 | 704.8 | 467 | 7 | 146.1 | 16-68 |
| | 18 | 450 | 1537 | 1559 | 1920 | 915 | 774.7 | 533.5 | 7 | 162.0 | 16-74 |
| | 20 | 500 | 1664 | 1686 | 2080 | 985 | 831.8 | 584 | 7 | 177.8 | 16-80 |
| | 24 | 600 | 1943 | 1971 | 2200 | 1170 | 990.6 | 692 | 7 | 203.2 | 16-94 |

| Pressure Rate | Size | | Dimension (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | NPS | DN | L | | H | D | O | F | f | C | n-φd |
| | | | RF | RJ | | | | | | | |
| CLASS2500 PN420 | 1/2 | 15 | 264 | 264 | 400 | 135 | 88.9 | 35 | 7 | 30.2 | 4-22 |
| | 3/4 | 20 | 273 | 273 | 420 | 140 | 95.2 | 43 | 7 | 31.8 | 4-22 |
| | 1 | 25 | 308 | 308 | 435 | 160 | 108 | 51 | 7 | 35 | 4-26 |
| | 11/2 | 40 | 384 | 387 | 505 | 205 | 146 | 73 | 7 | 44.5 | 4-33 |
| | 2 | 50 | 451 | 454 | 560 | 235 | 171.4 | 92 | 7 | 50.9 | 8-30 |
| | 2 1/2 | 65 | 508 | 540 | 590 | 265 | 196.8 | 105 | 7 | 57.2 | 8-33 |
| | 3 | 80 | 578 | 584 | 610 | 305 | 228.6 | 127 | 7 | 66.7 | 8-36 |
| | 4 | 100 | 673 | 683 | 690 | 355 | 273 | 157 | 7 | 76.2 | 8-42 |
| | 5 | 125 | 794 | 807 | 700 | 420 | 323.8 | 186 | 7 | 50.9 | 8-48 |
| | 6 | 150 | 914 | 927 | 705 | 485 | 368.3 | 216 | 7 | 108 | 8-55 |
| | 8 | 200 | 1022 | 1038 | 930 | 550 | 438.2 | 270 | 7 | 127 | 12-55 |
| | 10 | 250 | 1270 | 1292 | 1130 | 675 | 539.8 | 324 | 7 | 165.1 | 12-68 |
| | 12 | 300 | 1422 | 1445 | 1330 | 760 | 619.1 | 381 | 7 | 184.2 | 12-74 |

**Remark:**

**1. Structure length complies to ASME B16.10.**

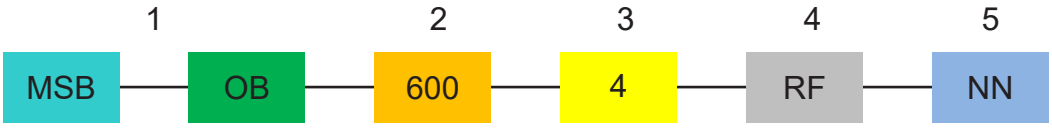
**2. Flange standard complies to ASME B16.5.**

**3. Flange standard and structure length can complies to other standard upon requests.**

**4. All dimensions are for reference only, and ATW reserves the right to make modifications.**

# Order Instruction

## Model compilation




1.MSB-OB: Model code, metal seated orbit ball valve

2. Pressure Rate

| Rate | Class150 | Class300 | Class600 | Class900 | Class1500 |
|---|---|---|---|---|---|
| Code | 150 | 300 | 600 | 900 | 1500 |

3. Size

| NPS | 1 | 1.5 | 2 | 2.5 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DN | 25 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 |

4. Connection

| Flange | | | | | Welded | |
|---|---|---|---|---|---|---|
| RF | RJ | FF | FM/M | TG | BW | SW |

5. Options

| Reducing bore | Jacketed | Lined | Hardened Path | Extended Stem | None |
|---|---|---|---|---|---|
| AN | BN | CN | DN | EN | NN |

HELP

YOU

ENJOY

GOOD

LIFE

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