Spears® True Union 2000 Ball Valve Premium Pneumatic Actuation Package

The compact design of True Union 2000 Ball Valves provides maximum versatility with minimum space requirements. Fully serviceable valve cartridge also mates with Spears® Union 2000 Schedule 80 pipe unions. Both valves and unions utilize Buttress Thread union nuts for superior strength. All ball valves feature Spears® self adjusting Floating Seat design for extended service, and Spears® Safe-T-Shear® Stem with double O-ring stem seals for assurance of fluid containment in case of inadvertent valve damage. Available in chemical and corrosion resistant PVC or CPVC with socket, flanged or Spears® Patented Special Reinforced (SR) threaded.

Actuated package includes polypropylene valve mounting bracket for accurate valve/actuator alignment and support in any position. Premium pneumatic actuator is an Air-to-Air (Double Acting; optional Spring Return) featuring twin piston rack and pinion operation with adjustable stops, and permanent lubrication. Manual override is standard. Housing is hard anodized aluminum with epoxy coated aluminum end caps.



Typical Illustration

True Union 2000 Ball Valve Specifications

Style	Double union • 1/4 turn shut off • Blocked seal carrier • Double O-ring stem seals • Safe-T-Shear® Stem
Material	PVC or CPVC
Size Range	1/2" - 6" & 8" Venturied*
Pressure Rating	1/2" - 4" = 235 psi @ 73°F 6" - 8" & all flanged valves = 150 psi @ 73°F
Vacuum Service	To 26 in-Hg
Seats	PTFE
O-rings	EPDM or FKM
End Connector	Socket, SR Threaded, or Flanged
Certifications	EPDM Valves NSF® Certified for potable water use.

*8" Venturied is 6" valve fitted with 8 x 6 adapters

Standard 2-Position Actuator Specifications

Type	Dual piston • rack & pinion • adjustable stop
Standard Operation	Air-to-Air (double acting)
Supply Pressure	80 psi
Air Connection	1/4" - 1/8"

Custom Pneumatic Actuation Options & Accessories

- Spring Return Operation (Fail Safe)
- 60 psi or 40 psi Operating Pressure
- Declutchable Manual Override
- Pneumatic & Electro Pneumatic Positioners
- 3 & 4 Way Solenoid Valve
  12VDC, 24VDC, 24VAC, 115VAC, 230VAC
  NEMA 4/4x & 7/9 rating
- Dual Power Solenoids
- Output Signal Limit Switches
- Standard Limit Switches
- Dome Position Indicator
- Stainless Steel Gauge Sets
- Customized ID Tags

Sample Engineering Specification

All ball valves shall be pneumatically actuated True Union 2000 type constructed from PVC Type I Cell Classification 12454 or CPVC Type IV Cell Classification 23447. All O-rings shall be EPDM or FKM. All valves shall have Safe-T-Shear® stem and double O-ring stem seals. All valve union nuts shall have Buttress threads. All seal carriers shall be Safe-T-Blocked®. All valve components shall be replaceable. All EPDM valves shall be Certified by NSF International for use in potable water service. All 1/2" through 4" valves shall be pressure rated at 235 psi and all 6" through 8" and all flanged valves shall be pressure rated at 150 psi for water at 73°F. Pneumatic Actuators shall be factory installed, dual piston, rack & pinion design with adjustable stops. Operation shall be Air-to-Air (double acting) for 80 psi supply pressure. All mounting fasteners shall be stainless steel. Actuator shall be equipped with [selected options list], as manufactured by Spears® Manufacturing Company.

The section is provided for formulation of part numbers on custom actuated valve packages. A 3-step process is used to build custom actuated valve part numbers:

Step 1 - Select the desired type, style, options and material of valve from appropriate Valve Selection Table. Specify nominal valve size from Size Code available.

Step 2 -Select the desired actuator style options from the Actuator Selection Tables

Step 3 -Select desired actuator accessories (if any) from the Accessories Selection Tables.

IMPORTANT: Custom accessories are ordered under a separate part number from the actuated Valve Package. Accessory part numbers are ordered individually and factory assembled with selected Actuated Valve Package.

If any accessories are being ordered, add the suffix, "- A " to the end of the Actuated Valve Package part number. This suffix is added only if an Accessory(s) is being selected for add on to the initial Actuated Valve Package.

ACTUATED VALVE PACKAGE PART NUMBER POSITIONS

VALVE CODE	ACTUATOR CODE		SIZE CODE	ACCESSORY DESIGNATION
☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	☐	☐ ☐ ☐	- A
1 - 2 - 3 - 4 - 5	6 - 7 - 8 - 9		10 - 11 - 12	

Optional Control Number
(not used on basic packages)

Step 1: Valve & Size Code Selection

Spears actuated valve selection table include Ball Valves (Selection Table 1) Butterfly Valves (Selection Table 2), Diaphragm Valves (Selection Table 3) and Gate Valves (Selection Table 3A). Use the table information to complete the Valve Code in the package part number.

Table 1: BALL VALVES
(Valve Type - End Connector - O-ring - Special Options - Material – Size Selection)

VALVE CODE	Reserved for Actuator	SIZE CODE
☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	☐ ☐ ☐
1 - 2 - 3 - 4 - 5	6 - 7 - 8 - 9	10 - 11 – 12

Valve Type
0 = Compact Ball
P = Compact 2000
1 = True Union Ball
2 = TU 2000 Ind. Ball
Z = TU 2000 Std Ball
3 = Utility (Special)
S = Single Entry (Special)
T= TU 2000 Ind Tandem
U = Hor 3-way L Tandem
V = Hor 3-way T Tandem
W= Ver 3-way L Tandem
X= Ver 3-way 2L Tandem
Y= Ver 3-way 3L Tandem
R= Ver 3-way T Tandem
A= Hor 3-way L-port
B= Hor 3-Way T-port
C= Ver 3-Way L-port
D= Ver 3-Way 2L-port
E= Ver 3-Way 3L-port
F= Ver 3-Way T-port

End Connector
(see note 1)
1 = Socket
2 = Thread
3 = SR Thread
4 = Flanged
5 = BSP Thread
6 = DIN Plain (socket)
7 = JIS Plain (socket)
8 = Flange CL300 Drilling
9 = Flange PN 16/10 Drilling (to 160 mm)

O-ring
0 = Buna-N.
1 = EPDM
2 = FKM
3 = PTFE Encapsulated EPDM.
4 = Silicone
5 = FKM/ETP
6 = AFLAS® TFE/P (FEPM)
7 = PTFE Encapsulated FKM
8 = Perfluoroelastomer

Special Options
0 = None
1 = Lubricant Free (see note 2)
2 = Vented Ball

Material
1 = PVC
2 = CPVC
3 = PP
(see note 1)
4 = LE PVC

Size
005 =1/2"
007 = 3/4"
010= 1"
012 = 1-1/4"
015 = 1-1/2"
020 = 2"
025 = 2-1/2"
030 = 3"
040 = 4"
060 = 6"

Notes:

1 – PP valves available in regular True Union style sizes1/2" – 4" only, with threaded or SR threaded end connectors only. 1/2" – 2" PVC & CPVC True Union valves ordered as "socket" come with both socket and regular threaded end connectors. 2-1/2" - 6" valves come with socket only.

2 – All Ball Valves are assembled with non-silicone lubricant.

3 – Tandem (Diverting) part number includes two valves operated from one actuator with one opening while the other closes.

Table 5: PNEUMATIC ACTUATOR
(Operation - Operating Pressure - Manual Override)

ACTUATOR CODE

Optional Control Number (not used on basic packages)

□ □ □ □ □ **6 - 7 - 8 - 9** □ □ □ □ **10 - 11 - 12**

1 - 2 - 3 - 4 - 5 Reserved for Valve

Reserved for Size

Operation Mode
H = Air-to-Air
N = Air-to Air, Extended Stops
J = Air-to-Spring Close
K = Air-to Spring Open
O = Air-to-Spring Close, Extended Stops
P = Air-to Spring Open, Extended Stops
W = 3-Way Ball Valve Actuator
(see note 1)

Operating (Supply) Pressure
(see note 2)
1 = 80 psi
2 = 60 psi
3 = 40 psi
4 = 20-100 psi specified (must use with optional Control Number below)
5 = 140 psi (Diaphragm Valve only)
6 = 150 psi
7 = 120 psi
8 = 90 psi (Diaphragm Valve w/Unitized Plastic Housing, 1/2" - 2")

Manual Override
(see note 3)
0 = None
1 = Basic Manual Override (no operator Hand wheel)
2 = Declutchable Manual Override (w/Hand wheel)
3 = Manual Override (w/Hand wheel)

Special Options
0 = None
1 = Polyester Powder Coated
2 = Stainless Steel Housing & Mounting
3 = Autocatalyticly Nickel Infused (ANI) housing
4 = Special Bracketing- TUMB2
5 = Diaphragm w/Unitized Plastic Housing (1/2" - 2")

Notes:
1 – Bracket only part numbers do not allow any other options (must be Z000); available for Ball Valves only.
2 – Operating pressures (1-2-3) apply to Ball valve actuators.
3 – Basic Manual Override is standard on all Ball Valves and Butterfly Valves with Declutchable Manual Override as an option. Standard Diaphragm Valve package has no override. No manual override option sizes 1/2" –2". Declutchable Manual Override is an option on valve sizes 2-1/2" & larger.

Actuator Only Part Numbers
Individual Premium Pneumatic actuators can be ordered for specific Spears® valve types and sizes. Includes actuator and mounting hardware for specified valve type and size. To specify valve type for actuator only, enter the first digit valve type code followed by zeros (“0”) for remaining 4-digits of the valve code section of the part number plus the applicable 3-digit valve size code (see valve selection Tables 1, 2, or 3). Complete the actuator code selection as described in this section. See Step 3 for any desired actuator accessories.

Example: An 80 psi, air-to-air pneumatic actuator only with declutchable manual override for 2" standard Butterfly Valve would have the following part number: 40000H102-020.

Optional Control Numbers (custom use) – Pneumatic Actuators
1 = Downsized actuator for vacuum application
2 = Habonin brand pneumatic actuator
3 = Customer Requested Upsized Actuator (one size larger than standard)
4 = Saunders 602-1/2 actuator
X = Actuator assembled with Double Containment Valve & Valve Box (for use in “actuator only” part number)
Control Numbers for user specified pressure. Must be used with Operating (Supply) Pressure code 7, #4:

A = 20 psi	D = 50 psi	G = 80 psi
B = 30 psi	E = 60 psi	H = 90 psi
C = 40 psi	F = 70 psi	J = 100 psi

Note: When control number is used on a package with accessories, the dash (-) is dropped before the “A” due to part number limitations.