

# HIGH PRESSURE TRUNNIOBALL VALVES

TBV  
SERIES



## TBV FEATURES

- On/Off-service ball valve with 2-way pattern
- Diverter, selector and on/off-service ball valve with 3-way pattern
- MAWP\* 10,000 psi (689 bar) with PEEK seats
- MAWT\* 446°F (230°C) with PEEK seats
- Variable end connection types and sizes from 1/4" to 1/2" (6mm to 12mm)
- Operation with colored Nylon handles, metal handle, color anodized aluminum ISLT\*\* (locking device) handles
- Low-operating torque
- Easy panel mounting
- Electric and pneumatic actuators available

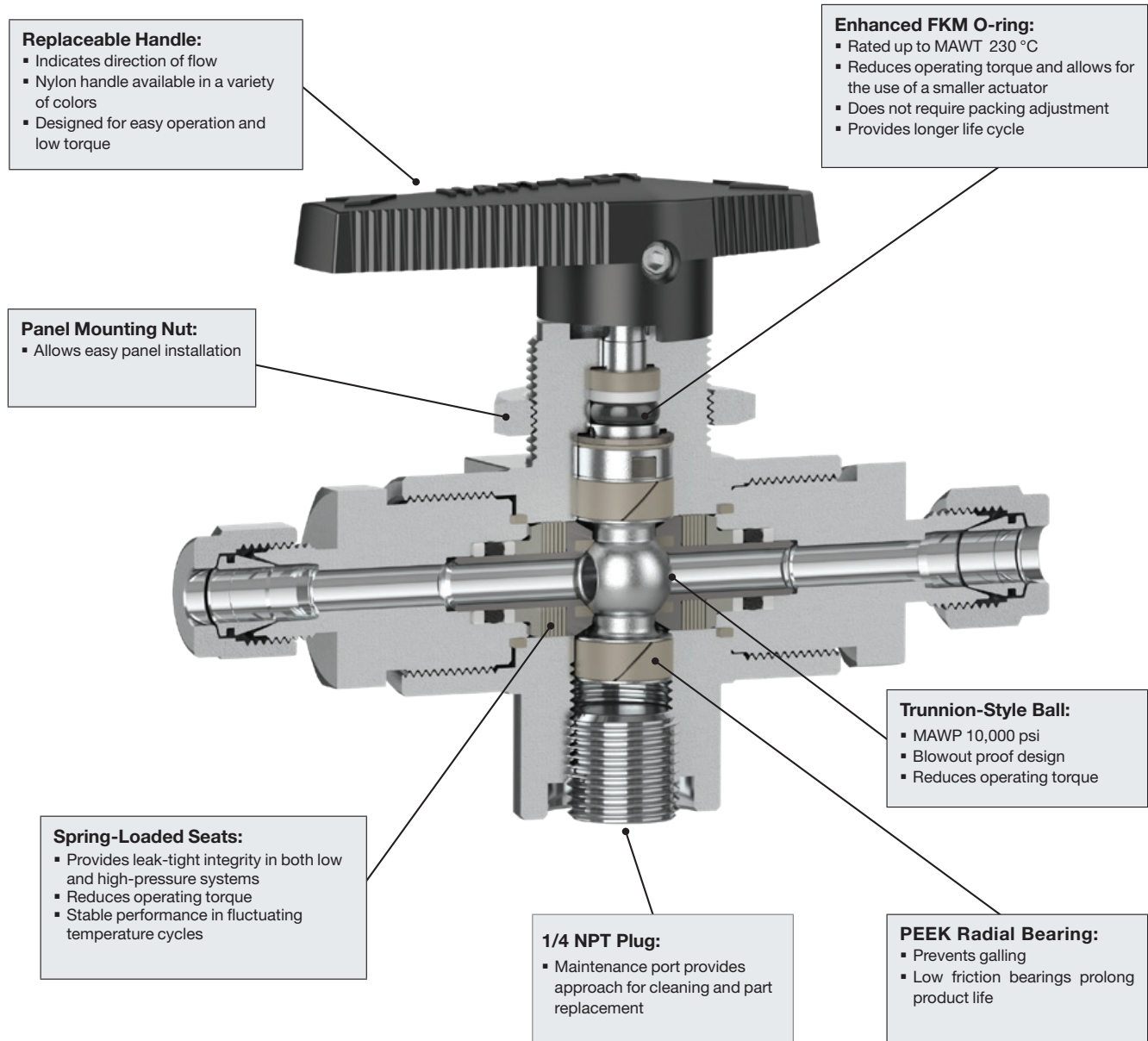
\* Maximum Allowed Working Pressure, Maximum Allowed Working Temperature.

\*\* ISLT – Integral Safety Lock-out Tag-out Patented pending

## GENERAL

The TBV series provides a reliable shut-off or switching function ball valve for high-pressure services. All ports are rated to the full operating pressure, allowing for flexibility in application. Spring-loaded seats provide high cycle life and low-operating torque for pressures up to 10,000 psig (689 bar).

**⚠ HAM-LET Ball Valves are designed for operation in the fully closed or fully open position.**



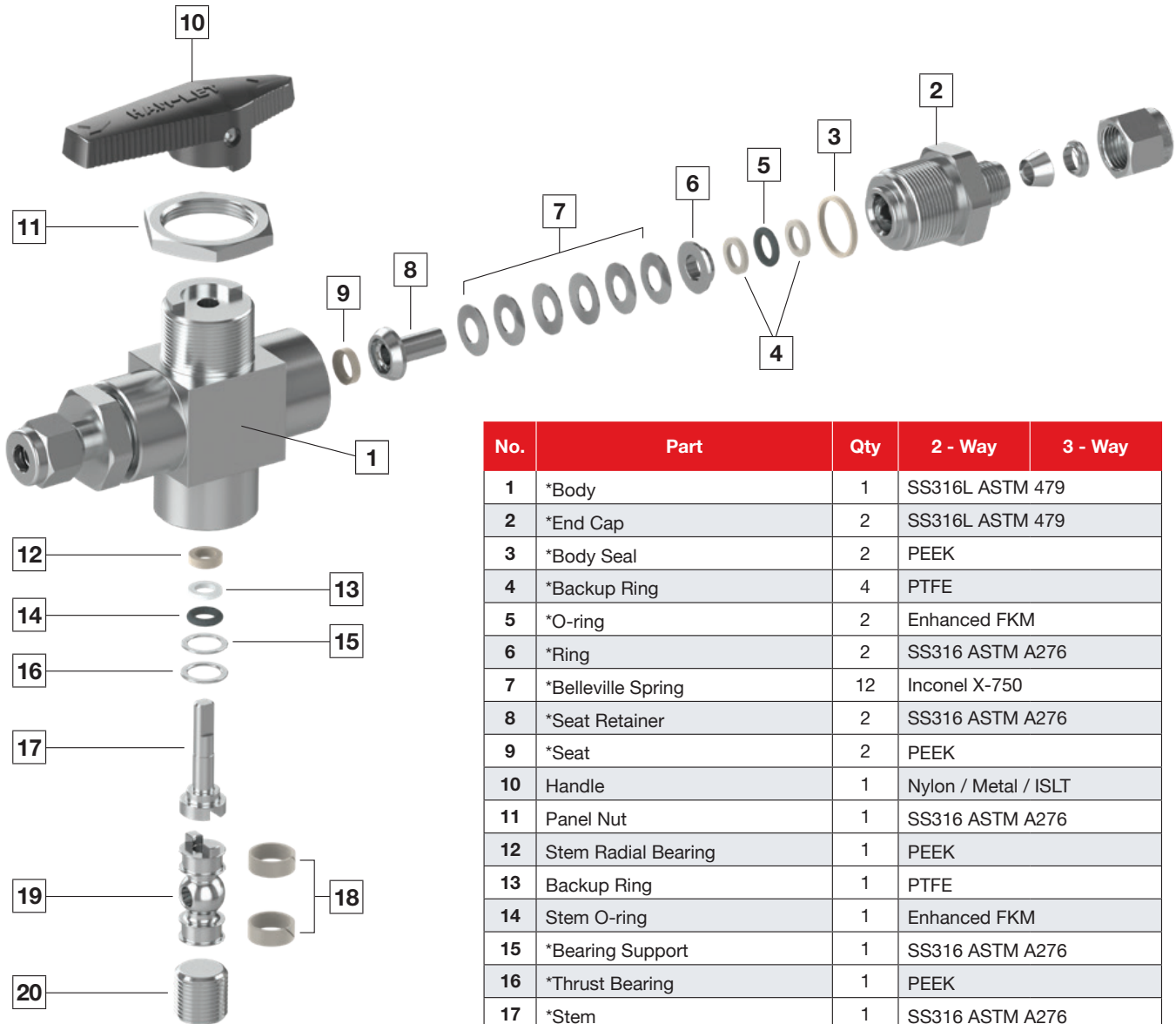
## TESTING

The Trunnion ball valve design has been burst and proof tested. Standard testing for each trunnion ball valve includes testing with nitrogen at 80 & 1000 psig. Each valve is tested for leakage through the shell and ball seats. The maximum allowable leakage across the ball seats is 0.1 std cc/min.

## CLEANING & PACKAGING

Every Trunnion ball valve is cleaned in accordance with standard cleaning and packaging (procedure 8184). Oxygen Clean cleaning and packaging, in accordance with special cleaning and packaging (procedure 8185), is available as an option.

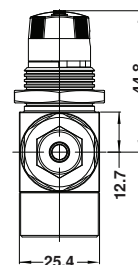
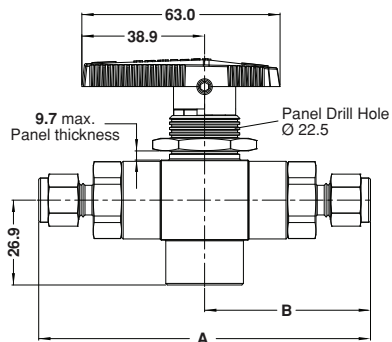
⚠ **Lubricant-Free cleaned valves have significantly higher actuation torque.**



No.	Part	Qty	2 - Way	3 - Way
1	*Body	1	SS316L ASTM 479	
2	*End Cap	2	SS316L ASTM 479	
3	*Body Seal	2	PEEK	
4	*Backup Ring	4	PTFE	
5	*O-ring	2	Enhanced FKM	
6	*Ring	2	SS316 ASTM A276	
7	*Belleville Spring	12	Inconel X-750	
8	*Seat Retainer	2	SS316 ASTM A276	
9	*Seat	2	PEEK	
10	Handle	1	Nylon / Metal / ISLT	
11	Panel Nut	1	SS316 ASTM A276	
12	Stem Radial Bearing	1	PEEK	
13	Backup Ring	1	PTFE	
14	Stem O-ring	1	Enhanced FKM	
15	*Bearing Support	1	SS316 ASTM A276	
16	*Thrust Bearing	1	PEEK	
17	*Stem	1	SS316 ASTM A276	
18	*Trunnion Radial Bearing	2	PEEK	
19	*Ball	1	SS316 ASTM A276	
20	Plug	1	SS316 ASTM A276	-
	Lubricants		Silicone based	

\* Wetted parts

## STRAIGHT PORT VALVE



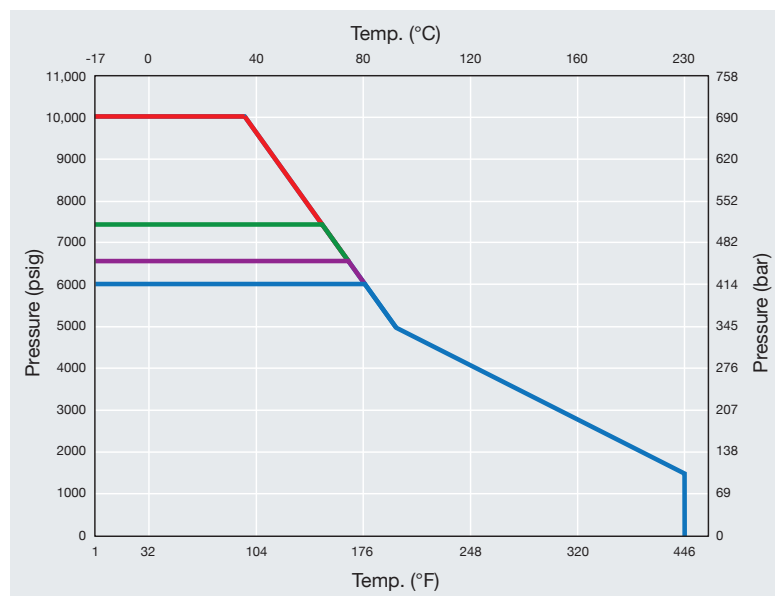
### STANDARD CONFIGURATION DIMENSIONS FOR 2 & 3-WAY VALVE

Orifice 4.75 mm (0.187 in.)

End		Cv		A		B	
Connection	Size	2 Way	3 Way	mm	in	mm	in
Let-Lok® Inch	1/4"	1.6	0.75	105.0	4.14	52.5	2.07
	3/8"	1.4		112.0	4.39	55.5	2.19
	1/2"	1		117.0	4.60	58.5	2.3
Let-Lok® Metric	6 mm	1.6		105.0	4.14	52.5	2.07
	8 mm	1.5		105.0	4.14	52.5	2.07
	10 mm	1.3		112.0	4.41	56.0	2.2
	12 mm	1		117.0	4.60	58.5	2.3
Female NPT	1/8"	1.2		74.7	2.94	37.5	1.47
	1/4"	1		99.8	3.93	49.9	1.97
	3/8"	0.9		96.5	3.80	48.25	1.90

Dimensions are for reference only, and are subject to change.

### PRESSURE TEMPERATURE RATING



- Let-Lok 1/4", Let-Lok 6mm, FNPT 1/8"
- Let-Lok 8mm, Let-Lok 10mm
- Let-Lok 3/8", Let-Lok 1/2", Let-Lok 12mm
- FNPT 3/8"

### MAX. PRESSURE RATING

AT 70°F (21°C)

#### Pressure per LET-LOK® Size

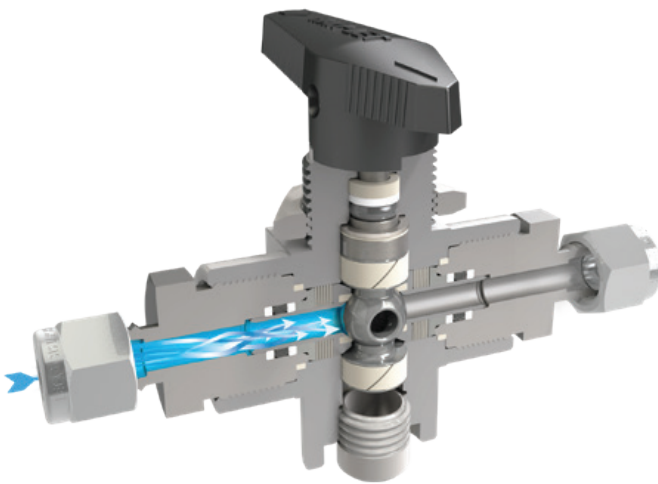
in	Pressure	mm	Pressure
1/4	10000 psi	6	10000 psi
3/8	6500 psi	8,10	7500 psi
1/2	6500 psi	12	6500 psi

**Note:** The maximum allowed working pressure that is marked on the valve may be limited according to the pressure limitations that are recommended by the tubing/piping standards (Reference: Let-Lok tube fittings General Information).



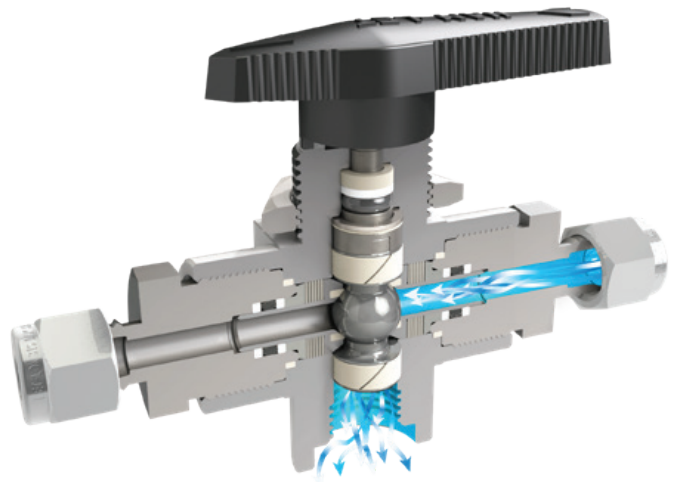
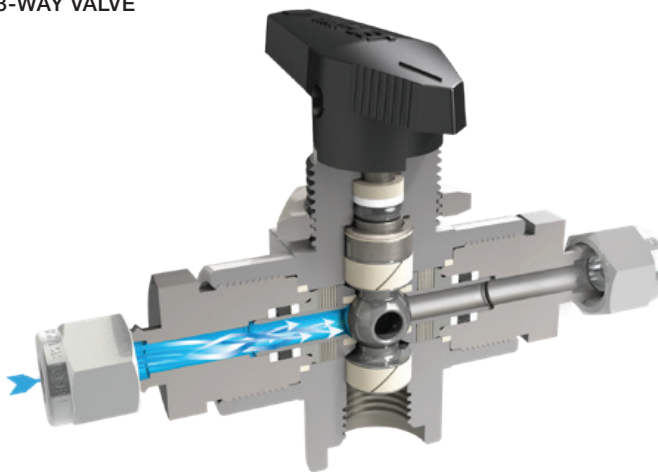
## TRUNNION BALL VALVES - FLOW DIRECTION

### 2-WAY VALVE

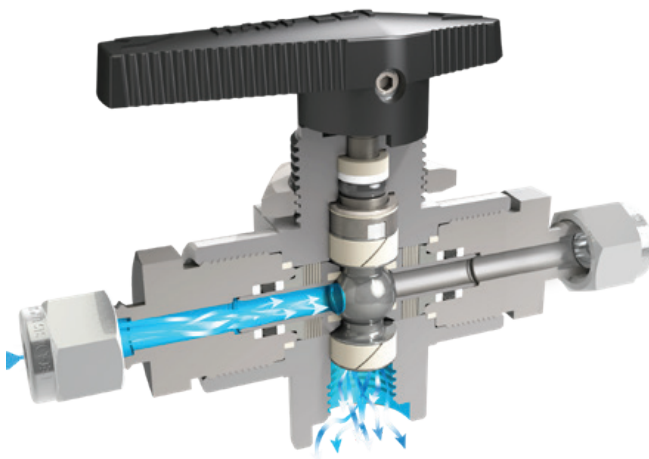


↔ Bi-directional flow

### 3-WAY VALVE



↪ Bi-directional flow



↪ Bi-directional flow

#### **Straight Port Valve**

Capable of bi-directional flow at full operational pressure.

#### **3 - Port Valve**

Capable of either side entry or bottom entry with bi-directional flow at full operational pressure.

## TRUNNION BALL VALVE - PNEUMATICALLY ACTUATED VALVES

### FEATURES

- 90° Actuation for 2-way valves
- 180° Actuation for T-type valves
- Actuators comply with industry standards for interface with ISO 5211, NAMUR, and VDI/VDE 3845
- Actuated valves are available factory assembled or separately, as actuator and mounting kits
- Limit switches, proximity sensors, position indicators, solenoid valves, and other accessories are available upon request
- Standard Temperature range: -32°C to 90°C (-25.6°F to 194°F)
- Optional: High Temperature, Low Temperature

### MATERIAL OF CONSTRUCTION

No.	Part	Qty	Material
1	Actuator	1	AL 356-T5
2	Coupling	1	St.St.316
3	Bracket	1	St.St.304
4	Washer Flat	4	St.St.304
5	Washer Spring	4	St.St.304
6	Screw	4	St.St.304
7	Panel Nut	2	St.St.316
8	TBV	1	St.St.316 / Brass *

\* Body material: St.St. ASTM A-276;

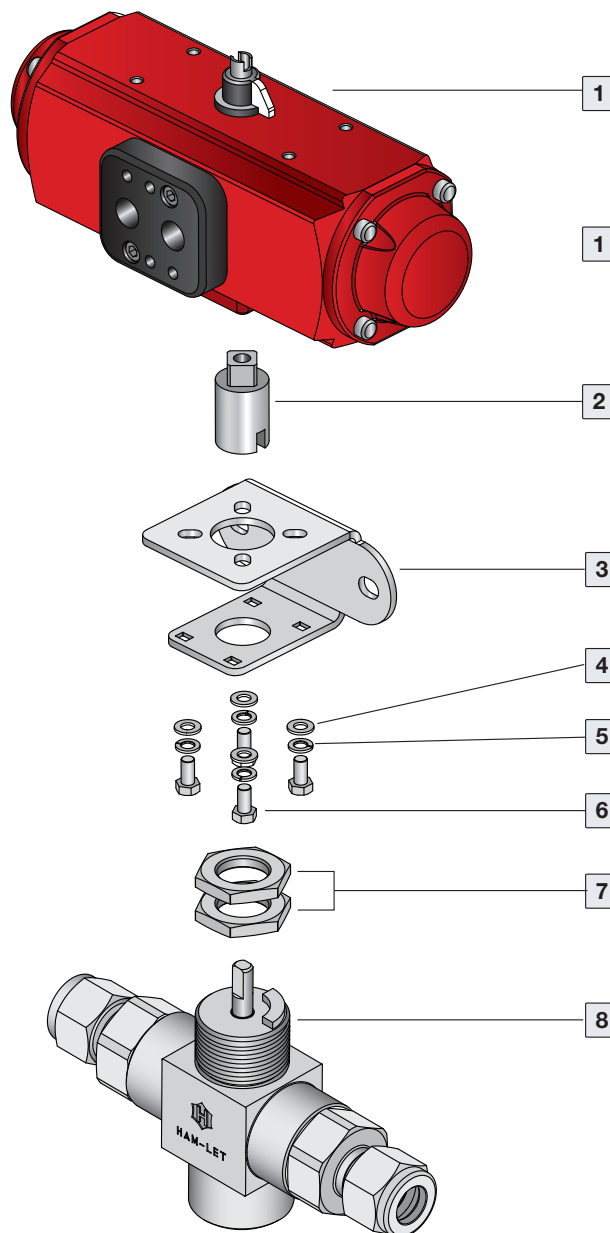
### GENERAL

Four standard actuator sizes are available upon request: Mini (designator "A1"), Small (designator "A2"), and 180° Actuator (designator "A2T").

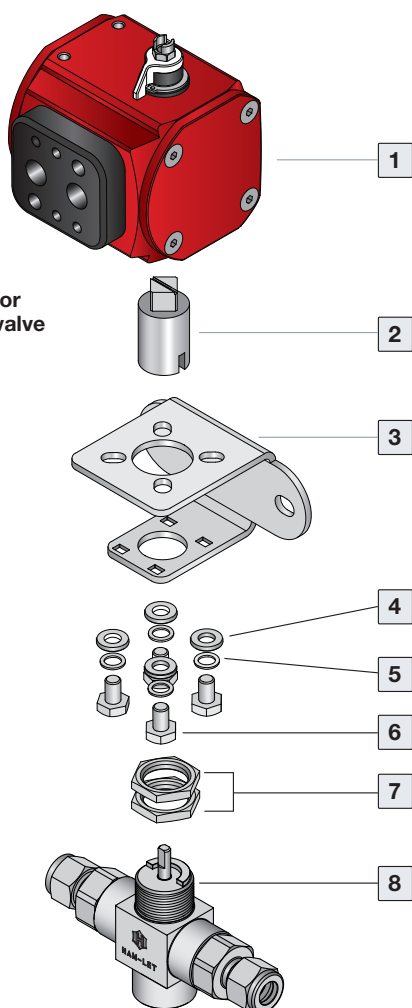
Improved operational speed enables better valve opening and closing control.

ATEX certification of valve-actuator assemblies is available on request at the time of order quotation.

### 180° Actuator on T-type valve



### 90° Actuator on 2-way valve



TRUNNION BALL VALVE - PNEUMATICALLY ACTUATED VALVES



The selection of Valve-Actuator assemblies provided herein is based on:

- Valve maximum allowable working pressure
- Ambient temperature (50 to 100°F /10 to 37°C)
- Actuator fits to valve based on operating pressure of 6 bar, as per table A.

To order TBV ball valve factory assembled with an actuator, add the actuator designator to the valve part number / description per the table below.

Example:

TBV-00SSL1/4ASS with standard Double Acting Aluminum Actuator  
TBV-00SSL1/4AS-A1

To order an actuator and mounting kit for field assembly:

Double acting Actuator ordering number: Z-A1

Corresponding mounting kit: Z-TBV-MK-1/4-F03-F04-A1

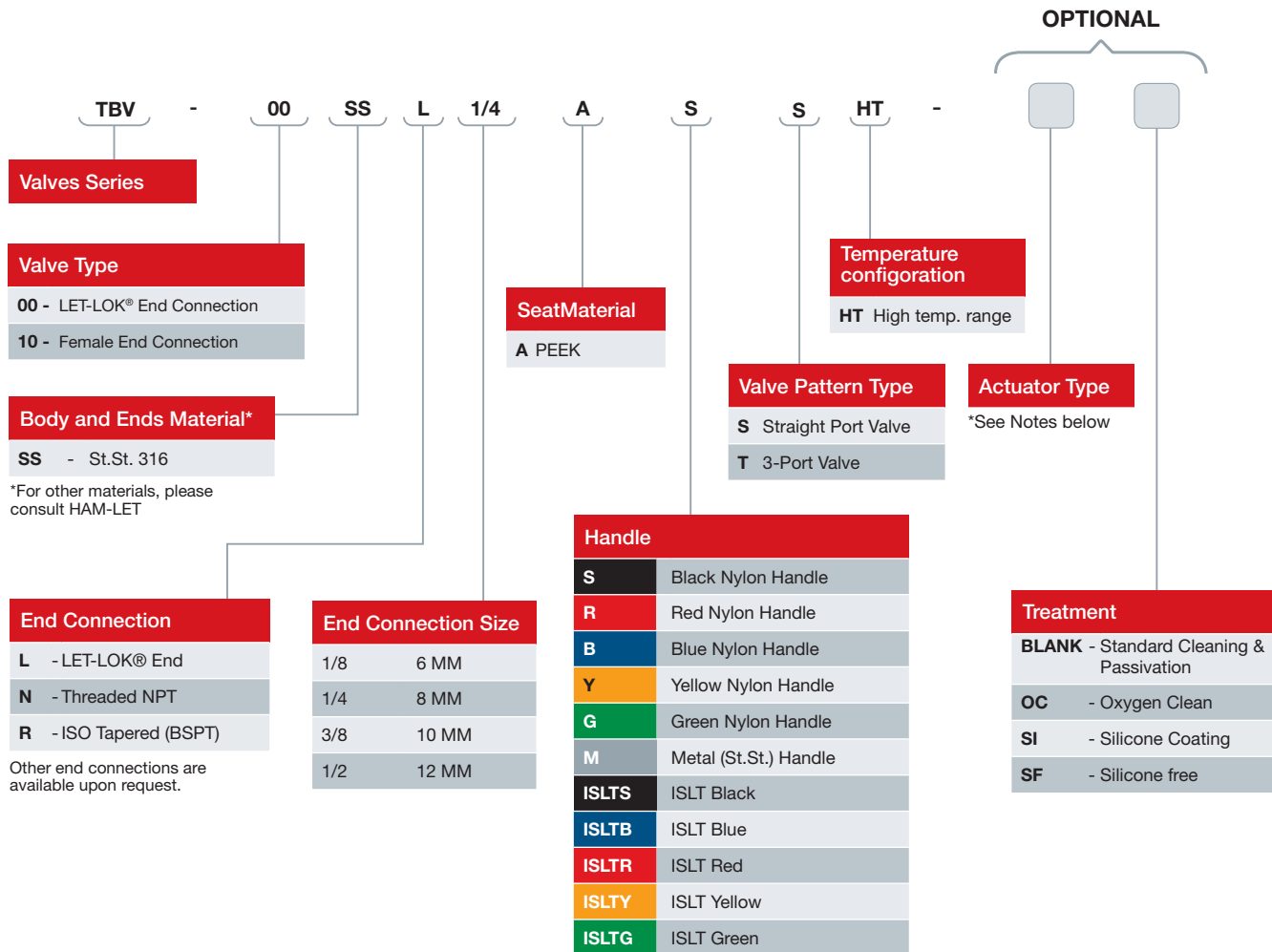


Table A: Ordering information for Actuated Valves

Series	Ends Size	Seats	Minimum Actuator Operating Pressure Bar (Psi)	Actuator Designators (Factory assembled)			Actuator Ordering Code		Mounting Kit Ordering Info
				Spring Return		Double Acting	Spring Return	Double Acting	
				NO	NC				
TBV	1/8"-1/2" (6mm-12mm)	PEEK	5 (72.5)	A2O	A2C	A1	Z-A2S	Z-A1	Z-TBV-MK-1/4"-F03-F04-A1
									Z-TBV-MK-1/4"-F03-F04-A2
TBV T-type	1/8"-1/2" (6mm-12mm)	PEEK	5 (72.5)	A2TS	A2TS	A2T	Z-A2TS	Z-A2T	Z-TBV-MK- 1/4"-F03-F04-A2

**Note:** For dimensions of actuators assembled on the TBV series, please refer to the HPA section.  
Actuated valves- in cases the valve will be cycled more frequently than once per hour, please contact your Ham-Let representative.

## TRUNNION BALL VALVE - SERIES ORDERING INFORMATION



### \*For Actuated Valves

- If special cleaning is required, OC will be added in the end and be applicable for the Valve only.
- Example: TBV-00SSL1/4AS - A1 OC
- For ordering information of actuators for high temperature please refer to HAM-LET Pneumatic Actuator Catalog
- For double mounting actuators, please contact your local representative
- For actuators accessories (Limit Switch, Solenoid Valve) please refer to HAM-LET Pneumatic Actuator Catalog.
- For Stainless Steel Actuator or Electric Actuator please contact your local representative



## ORDERING INFORMATION FOR SPARE KITS

### SEAL KIT

Seal Kit includes body seals, backup rings, O-rings, rings, belleville springs, retainer seats, seats, stem, radial bearing, support bearing and thrust bearing

Z	-	TBV	-	SK	-	A	-	S
				<b>Kit Type</b>			<b>Seat Material</b>	<b>Valve Pattern</b>
				SK - Seal Kit			A - PEEK	S For straight
								T For T Port Valves

### HANDLE KIT

Handle kit includes handle and set screw. To order a spare-parts kit, use the following format:

Z	-	TBV	-	HK	-	S
				Kit Type	Handle Type	
				HK Handle Kit	S	Black Nylon Handle
					R	Red Nylon Handle
					B	Blue Nylon Handle
					Y	Yellow Nylon Handle
					G	Green Nylon Handle
					M	Metal (St.St.) Handle
					ISLTS	ISLT Black
					ISLTB	ISLT Blue
					ISLTR	ISLT Red
					ISLTY	ISLT Yellow
					ISLTG	ISLT Green



#### Integral Safety Lock-Out Tag-Out Device

The integral locking mechanism enables safe and easy use for valve position locking and tagging. The design prevents undesirable valve position changes without the requirement for additional locking equipment.

Available for 2-way straight pattern; locked-open and locked-close positions  
For 3-way pattern valves, the ISLT handle can lock in the left, center and right positions.

#### Warning!

The system designer and user have the sole responsibility for selecting products suitable for their special application requirements, ensuring their safe and trouble-free installation, operation, and maintenance. Application details, material compatibility and product ratings should all be considered for each selected product. Improper selection, installation or use of products can cause property damage or personal injury.

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