

# TuBore™ clean valves



## Introduction

### 48 series - the TuBore™ line

The TuBore™ series is Habonim's line of sterile ball valves for the pharmaceutical, bioprocessing, food and beverage industries. The valves comply with ASME BPE standard for applications in which sterility, cleanability and drainability are essential for product quality.

Because the TuBore™ valve port diameter is identical to the tube inner diameter, no expansion or contraction can take place inside the system resulting in full drainage and no traces that could cause contamination. The TuBore™ line excels at maximum flow capacity and minimum pressure drop and provides low-torque tight shutoff.

The TuBore™ series is grouped into three geometric designs according to the ASME BPE, DIN 11850 and ISO 1127 tube dimension specifications.

Only FDA and USP Class VI compliant polymers or elastomers are used in the TuBore™ series.

To avoid rouging on austenitic stainless steel surfaces and corrosion attack on welding areas, low ferrite cast or forged bar materials are used and polished. Upon request, electro-polished surface finishes are available.

Purge and drain ports are available upon request to facilitate CIP/SIP operation.

Diverter and various multiport configurations based on the TuBore™ model are also available.

## Technical summary

<b>48 series</b>	TuBore™
<b>Size range</b>	¼"- 6" (DN8 - DN150) Series depended
<b>Pressure range</b>	Vacuum 10 <sup>-6</sup> Tor to 50 bar (750 psi)
<b>Temperature range</b>	-60 °C to +230 °C (-76 °F to +446 °F)
<b>Materials</b>	Stainless steel A351 CF3M, A479 316L, EN 10222-5 1.4435, Alloy C22, Alloy C276
<b>End connections</b>	Welded, clamped
<b>Operation</b>	Lever or gear operated, pneumatic or electric actuation
<b>Service</b>	Pharmaceutical , bioprocessing, cosmetics, food & beverage

## Standards of compliance

<b>Factory certification</b>	ISO 9001-2008	Quality management system
<b>Valve design &amp; tests</b>	ASME BPE	Valve design
	DIN 11850 (Range 2)	Stainless steel tubes - Dimensions and tolerances
	ISO 1127	Stainless steel tubes - Dimensions and tolerances
	EN 12266-1, API 598	Testing of metallic valves - Pressure tests, test procedures and acceptance criteria.
<b>Certifications</b>	API 607, ISO 10497	Testing of valves - Fire type-testing requirements
	ISO 15848-1	Industrial valves - measurement, test and qualification procedures for fugitive emissions
	PED 97/23/EC Module H	Pressure equipment directive
	ATEX 94/9/EC	Equipment and protective systems intended for use in potentially explosive atmospheres (optional for actuated unit only)
<b>Documentation</b>	EN 10204 2.2 / 3.1 / 3.2	Metallic materials - types of inspection documents

### Polishing and Electro-polishing

To minimize contamination and to avoid corrosion/roughing problems, inner surfaces which come into direct or indirect contact with the flow media are polished and, upon request, electro-polished.

For cast/forged valves the body, ball, seat retainer (2" size and above) and the end connections are polished internally. For rolled bar valves, additional polishing is carried out the body and end connections outer surfaces.

When requested, electro-polishing is carried out on the body, ball, seat retainer (2" size and above) and end connections.

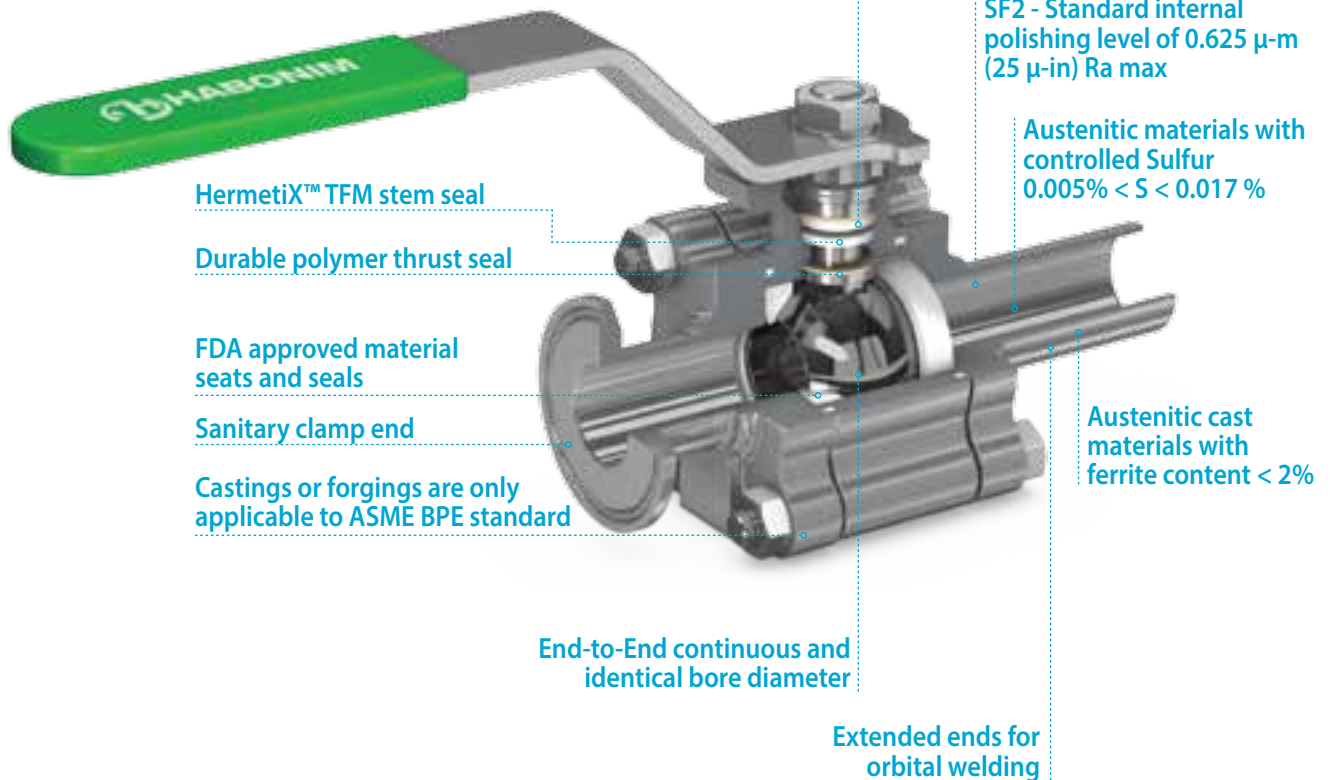
The standard TuBore™ line polishing level is 0.625 μ-m (25 μ-in) Ra max. Higher levels of surface finish up to 0.375 μ-m (15 μ-in) Ra max are available, including internal and external electro-polishing.

Habonim does not use Animal Derived Ingredients (ADI's) in its surface finishing processes.

Ra Reading for Metallic Contact Surfaces			
Product			
ASME BPE	Ra Max.		Habonim
Surface designation	μ-in.	μ-m	Code
SF1	20	0.51	G32
SF2*	25	0.64	G24
Mechanically Polished and Electropolished			
ASME BPE	Ra Max.		Habonim
Surface designation	μ-in.	μ-m	Code
SF4	15	0.38	E32
SF5	20	0.51	E24
SF6	25	0.64	E18

\* SF2 is the TuBore™ line standard surface finish, no need to add 'G24' suffix

### 48X series TuBore™ with ISO 15848-1 certified stem seal



### Cleaning and Assembling

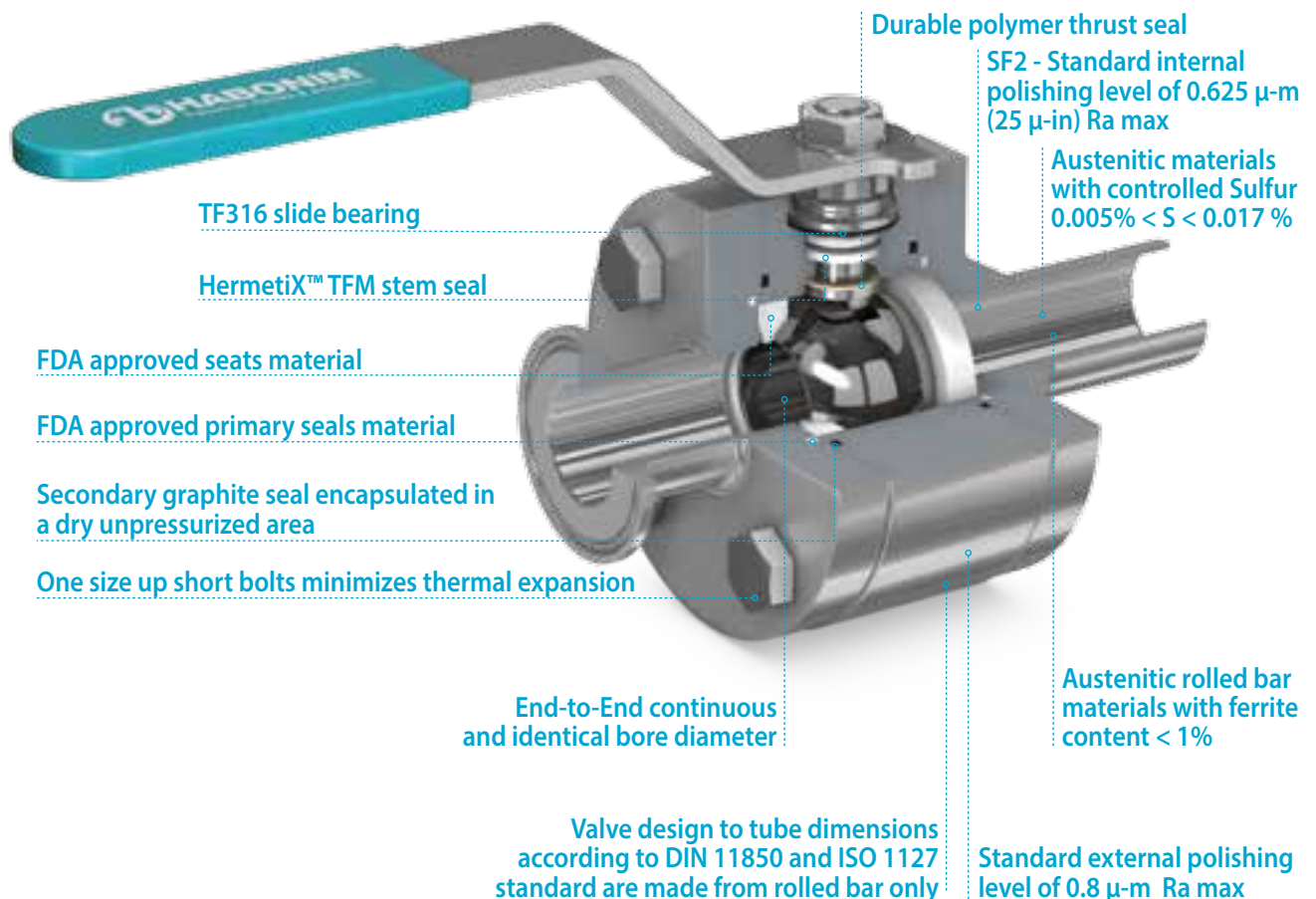
Habonim's meticulous cleaning, assembly and inspection procedure for the TuBore™ line ensures the stringent cleanliness required by Bioprocessing, Pharmaceutical and Oxygen services.

Habonim uses a state of the art, environmentally friendly, alkaline-based automatic degreasing system with multiple stages of cleaning, rinsing and drying chambers to ensure that particles, grease, metal chips and other contamination hazards that can be introduced by a poor deburring process or shop dirt are removed thoroughly before the assembly process begins. Upon completion of the cleaning process, the valves are assembled in an oil free restricted area by qualified personnel who are specially trained to perform this task. The employees wear clean working clothes and latex gloves throughout the procedure. The equipment and tools are cleaned before use and the work surfaces are covered with a clean polyethylene sheet before performing the valve assembly.

### Testing and packaging

All valves are 100% helium leak tested according to the EN 1779 vacuum test method - A.3 Leakage  $\leq 1E-6$  Pa\*m<sup>3</sup>/sec. Packaging is done in the same cleanroom where the cleaning process was completed. Finished (dry, completed, inspected and approved) valve end connections are capped with non-shedding end caps. Finished valves are removed from the cleanroom environment only after being bagged and sealed in a clean polyethylene bag.

## 48G series - External and internal polish bar made valve line, Graphite-free fire safe and ISO 15848-1 certified valve



# Floating Ball Valves

**TuBore™ clean valves**

General

ASME BPE  
standard

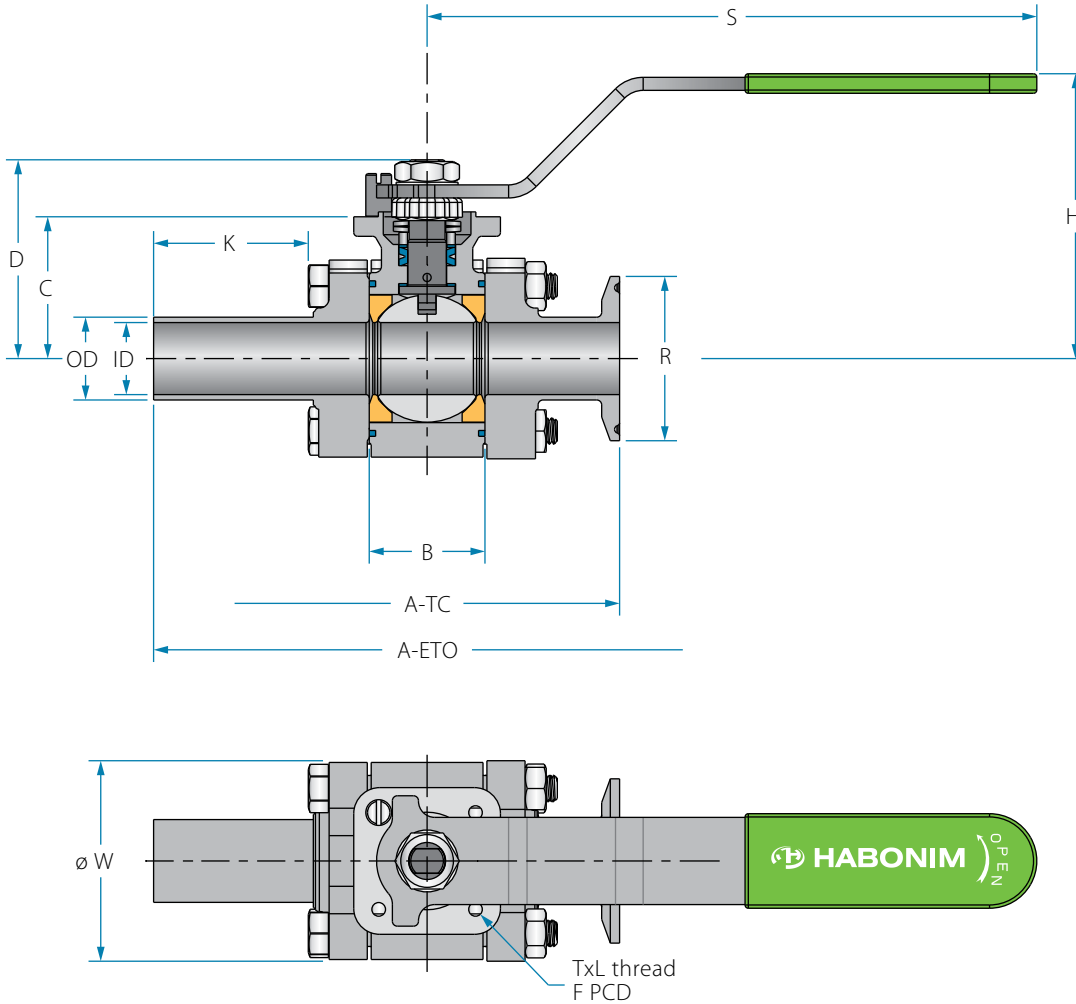
DIN 11850  
standard

ISO 1127  
standard

Ordering code  
system

Size ½"- 1½" | DN15-DN40 | Class 300 | 48X/48<sup>(1)</sup> Series

## Valve dimensions



TuBore™ size	Unit	OD	ID	A ETO	A TC	B	C	D	H	K	S	W	RTC	M	N	P	F	TxL	Weight kg/lb	Kv Cv
DN15	mm	12.70	9.40	137.00	89.00	20.60	29.00	38.00	61.60	41.50	150.00	31.80	25.20	5.54	⅜"	6.50 (F03)	36.00	M5X10	0.90	8
½"	inch	0.50	0.37	5.39	3.50	0.81	1.14	1.50	2.42	1.63	5.91	1.25	0.99	0.22	UNF	0.26	1.42	M5X10	2.00	9
DN20	mm	19.05	15.75	147.00	102.00	24.60	36.00	45.00	67.90	43.90	150.00	38.10	25.20	5.54	⅜"	7.10 (F03)	36.00	M5X10	1.00	29
¾"	inch	0.75	0.62	5.79	4.00	0.97	1.42	1.77	2.67	1.73	5.91	1.50	0.99	0.22	UNF	0.28	1.42	M5X10	2.10	34
DN25	mm	25.40	22.10	168.00	118.00	35.50	43.50	61.00	84.80	43.90	187.00	44.50	50.40	7.54	⅞"	9.20 (F04)	42.00	M5X10	1.70	53
1"	inch	1.00	0.87	6.61	4.65	1.40	1.71	2.41	3.34	1.73	7.36	1.75	1.98	0.30	UNF	0.36	1.65	M5X10	3.80	62
DN40	mm	38.10	34.80	186.00	141.00	50.00	55.50	85.00	107.10	44.00	236.00	57.20	50.40	8.71	⅞"	13.00 (F05)	50.00	M6X12	3.50	150
1½"	inch	1.50	1.37	7.31	5.57	1.97	2.19	3.35	4.22	1.73	9.29	2.25	1.98	0.34	UNF	0.51	1.97	M6X12	7.70	175