



# FULL LINED VALVE

—  
Ball valve



[www.terofox.com](http://www.terofox.com)



We, Terofox look forward  
to being an impeccable TEAM  
with you.

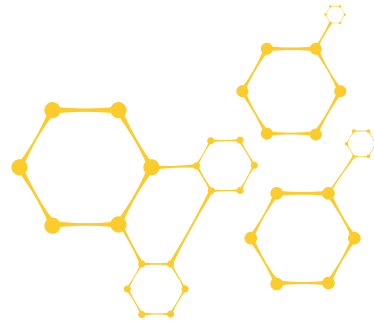
**Terofox Valves Integrated Corp.**

## // About Terofox

**With** accumulating 2 decades of experience in valve manufacturing; complementing the strict quality control with uncompromising valve quality and service. Terofox Valve progress toward a vertical integration and the solution-providing company.

**Quality & Integrity Lead the Way –**

# **TEROFOX VALVES INTEGRATED CORP.**



**Standardized** procedures and acceptance criteria are implemented in each workstation. Terofox manufacturing facilities perform 100% inspection in accordance with like API 598/ EN12266-1 every shipment.

**Terofox** smart workshop is presenting capability and efficient traceability by visual sign management on production line, efficient material record system provides an easy access to EN10204 3.1 MTR to our valued customer.

**Persisting** on incoming material quality control and developing the valve design precisely.

- \* Casting / metallic components: Investment castings (Lost-wax castings) MSS SP 25 and MSS SP 55, 2011, Evaluation of Surface Irregularities norm as criteria
- \* Soft Components: Well know branding, 3M, Daikin Fluorochemicals Series
- \* Professional computing soft wares such as SolidWorks in CAST-FLOW, CAD, to assure the accuracy of valve configuration by flow simulation, coordinate measuring machine etc.

**To** achieve efficient production line, high-quality products, and positive services. Terofox is persisting to optimize the software device, manufacturing facilities as well as internal/external training program.

**All** members at Terofox uphold the same core of business, do right thing right, the first time and every time.

**With** this in mind, we believe in developing long terms relationships, based on mutual trust and honesty. Thinking ahead and Quick response base on technical data/onsite experimental result with precise solution to customers are our permanent practice.



**We, Terofox look forward to being an impeccable TEAM with you.**



## // Scope of Application

**Perfluoroalkoxy** alkanes as known as PFA is commonly used in the application which processed with aggressive chemicals and high corrosive fluid since its material stability.

**With** these characteristics, PFA material been applied to the valve configuration by sintering processing, (Daikin-Neoflon PFA powder → compression moldings → Sintering by specific heating and duration) and widely used in chemical, power plants, steel, semiconductors, biochemical technology, food, Pharmaceutical, water treatment and other types of industries.

- Hydrochloric Acid
- Nitric Acid
- Hydrofluoric Acid
- Seawater
- Bromine
- Caustics and Acids
- Deionized water
- Phosphoric Acid
- Sulfuric Acid
- Acetic Acid
- Chlorine
- Brine
- Paints and Solvents



# FULL LINED BALL VALVE

## // Valve Configuration & Features



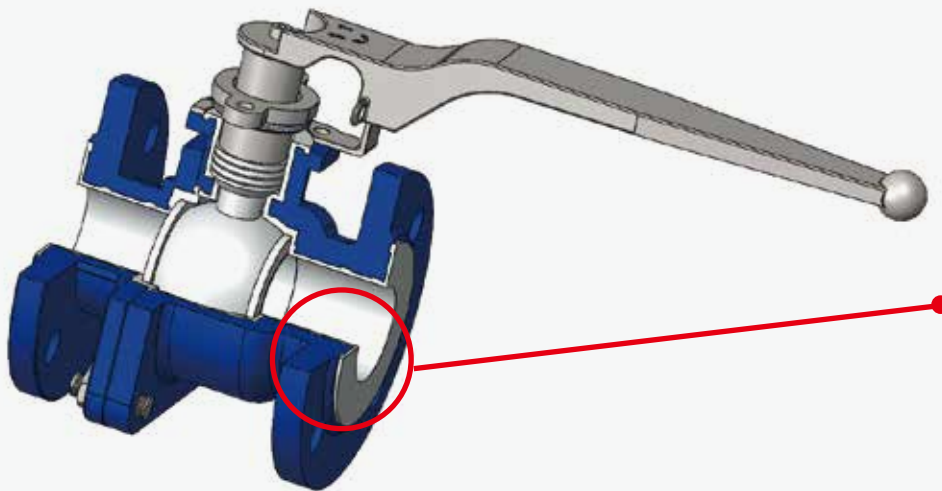
### 1

#### Fully PFA-lined

- Well know branding - Japan Daikin Neoflon PFA applied.
- Excellent Anti-Corrosive Properties

NEOFロン PFA AP-Series has outperformance on heat chemical resistance and has extremely low gas permeability. The harmful additives or pigments in the plastic is excluded to reduce the chemical reaction against the processing medium.

Fully PFA lined ball, stem and body offer unsurpassed resistance to corrosion, permeation, and microbial contamination from leaching colorants for maximum purity and reliability to cater to food services and severe application.



**Dovetail Designs**

### 2

#### Metal to Metal Body Joints

Extend the protection on dovetail-locked liner from damage occurred by external forces and eliminate pipe stress from affecting internal parts.

### 3

#### Dovetail Designs

Dovetail recesses and machined grooves lock the lining to attach firmly to the valve body, preventing possible peeling and distortion. And it is virtually impervious to shrinking, stress-cracking, collapse, or blowout.

### 4

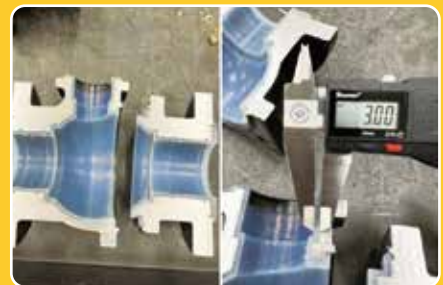
Cavity pressure energized PTFE integrated chevron packing eliminates leak paths and reduces fugitive emissions. Integrated bellow type packing for 4" & below sizes for a smooth disassembly processing.



**5**

**PFA-lined Thickness & Inspection**

Minimum of 3mm thickness on body, end cap, and ball of valve. Spark test standard: 20kV.



**6**

**One-piece Ball and Stem design**

High strength of one-piece ball and stem design prevents blowouts and limits hysteresis for dependable operation. Especially with high switching cycles, it leads in advantages when used in tough, highly viscous media.

**7**

Wall thickness comply to ASME B16.34 6.1.1.; According to casting's bore dimension. Minimum wall thickness determination shall not include liners, linings, or cartridges.

**8**

Full port design ensures an unrestricted flow path for high flow rates with minimal pressure drop.

**9**

Anti-static spring design prevents static buildup.

**10**

The Ball-stem design and construction comply to API608 5.5.3 norm.

**11**

ISO 5211 universal mounting pad for easy actuation

**12**

SIL (Safety Integrity Level) 2 Declaration of Conformity

## // TECHNICAL DATA

### ● TF-22(D)P



▷ DN15: 1/2"  
ASME A351 CF8M



▷ DN15: 1/2"  
ASME A216 WCB

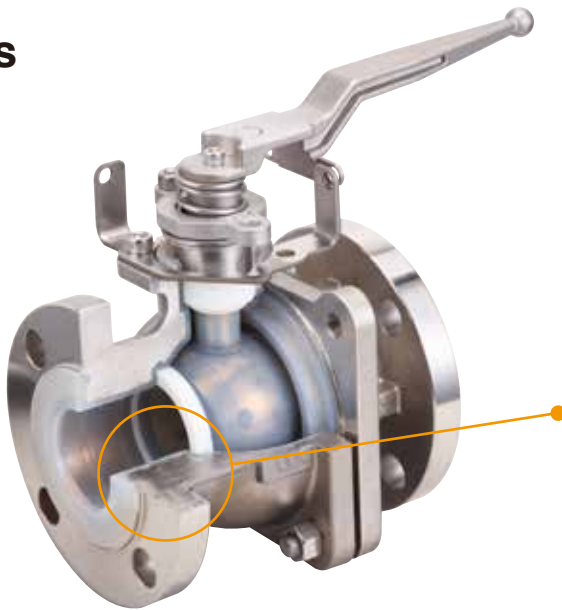


▷ DN100: 4"  
ASME A216 WCB

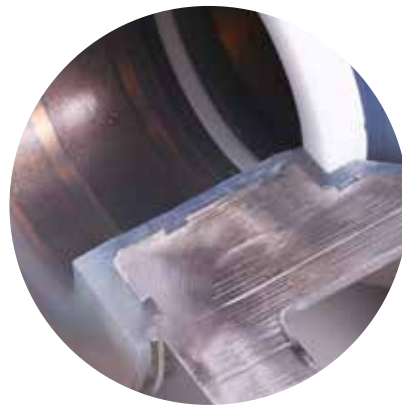


▷ DN150: 6"  
ASME A351 CF8M

### ● Sections



▷ TF-22P Sections



Dovetail Design

### :- Design

- Flange Dimensions According to ASME B16.5 / EN1092-1; RF #150/ PN16 Flanged End
- Face to Face According to ASME B16.10 / DIN 3202 F1
- Pressure / Temperature Rating According to ASME B16.34 / EN12516
- Wall Thickness According to ASME B16.34.
- Pressure Tested Accordance with API598/EN12266-1
- Cold Working Pressure: 16 bar.
- Temperature: -20°F to 356°F (-29°C ~180°C)
- Spark Test standard: 20kV



### :- Availability

- Size: 1/2"~8" (DN15~DN200)
- Pressure: Class 150, PN16

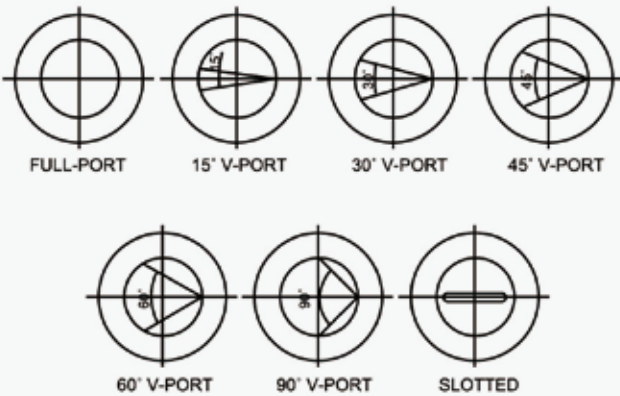
### :- Body Material

- Carbon Steel (ASTM A216 WCB) +PFA
- Stainless Steel ( ASTM A351 CF8, CF8M, CF3M )+PFA.

### :- Options

- Double acting / Spring return Pneumatic Actuator.
- V-bore selection: 15°, 30°, 45°, 60°, 90° is available.

### :- Applications



**Terofox** Valve  
 成豫實業股份有限公司  
 Quality and Integrity Lead the Way

**Terofox Valves Integrated Corp.**  
 26F. No. 789 Zhongming 5 Rd, South Dist.,  
 Taichung City 402, Taiwan (R.O.C.)  
 Tel: +886-4-22655306 Fax: +886-4-22650723  
 Email: info@terofox.com



### APPENDIX I

The use of the product Ball Valves must obey instructions in manufacturer's IOM to maintain the SIL Capable properties.

The compliant safety function(s) of Ball Valves is/are the following:

- Open the valve on demand.
- Close the valve on demand.

Hypothesis used for mode of operation is the following:

- The mode of operation is "Low demand", which means less than 1 trip demand each year.

Component architecture	Safety Function	Calculation hypothesis		Intermediate results		Final results	
		Tests intervals	MTTR	Failure Rate	Undetected dangerous failure rate	SIL Capability	Probability of Failure on Demand
1001 configuration	SF1(Fully open on demand)	12months	24 h	1.82E-06	1.05E-06	SIL 2	4.61E-03
1002 configuration	SF1(Fully open on demand)	12months	24 h	1.82E-06	1.05E-06	SIL 3	4.84E-04
1001 configuration	SF2(Fully close on demand)	12months	24 h	1.55E-06	7.75E-07	SIL 2	3.41E-03
1002 configuration	SF2(Fully close on demand)	12months	24 h	1.55E-06	7.75E-07	SIL 3	3.54E-04

The Safety Integrity Level of the safety function using the Ball Valves have been calculated as taking into account the characteristics of the complete system supporting the safety functions.

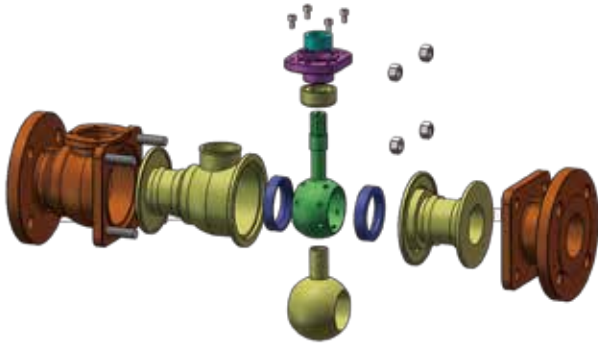


Terofox Valves Integrated Corp.  
**Sunny Zhang**  
 Signature  
 www.terofox.com

**Sunny Zhang (Mrs.)**

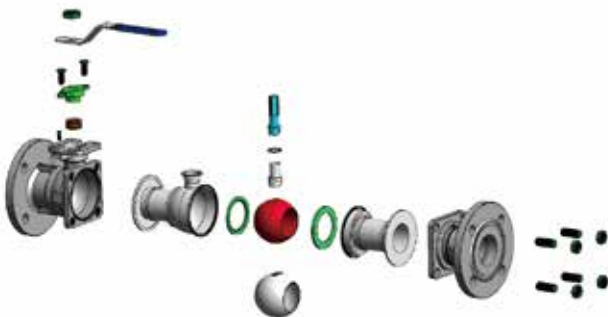
| Head of Technical & Technical & Quality Assurance Department

## :- List of Components One- piece ball and stem design



PART NAME	MATERIAL	
BODY	ASTM A216 WCB + PFA LINED	ASTM A351 CF8M + PFA LINED
END CAP	ASTM A216 WCB + PFA LINED	ASTM A351 CF8M + PFA LINED
BALL	ASTM A351 CF8 + PFA LINED ( STEM: XM-19 + PFA LINED)	ASTM A351 CF8M + PFA LINED ( STEM: XM-19 + PFA LINED)
SEAT	PTFE	
PACKING	PTFE	
GLAND FLANGE	ASTM A351 CF8	
GLAND BOLT	ASTM A193 B8	
GLAND NUT	ASTM A1948	
BODY BOLT	ASTM A193 B8	
BODY NUT	ASTM A194 8	
GLAND	ASTM A351 CF8	
HANDLE	S5304	
LOCKING PLATE	SS304	
SPRING	SS304	
HANDLE SCREW	SS304	
SCREW	SS304	

## :- List of Components Split type ball and stem design



PART NAME	MATERIAL	
BODY	ASTM A216 WCB+PFA LINED	ASTM A531 CF8M + PFA LINED
END CAP	ASTM A216 WCB+PFA LINED	ASTM A531 CF8M + PFA LINED
BALL	ASTM A531 CF8M + PFA LINED	ASTM A531 CF8M + PFA LINED
STEM	ASTM A276 316+ PFA LINED	ASTM A276 316+ PFA LINED
SEAT	PTFE	
STEM PACKING	PTFE	
GLAND NUT	SS304	
HANDLE	SS304	
HANDLE COVER	PLASTIC	
HANDLE NUT	SS304	
STOP PIN	SS304	
STUD	ASTM A193 B8	
BOLT NUT	ASTM A194 8	
GLAND BOLT	SS304	
GLAND FLANGE	ASTM A351 CF8	





[www.terofox.com](http://www.terofox.com)



**Terofox Valves Integrated Corp.**

No. 789 Zhongming S Rd, South Dist.,  
Taichung City 402, Taiwan (R.O.C.)

Tel: +886-4-22655306

Fax: +886-4-22650723

Email: [info@terofox.com](mailto:info@terofox.com)

Authorized Distributor

