



# PRODUCT LINEUP

## HIGH PRESSURE VALVES

- Gate Valves
- Globe valves
- Check valves
- Safety valves
- Etc.



Since March 1922

**TVE** TVE Co., Ltd.  
Challenge for the **NEXT**

5-12-1 Nishitachibana-cho, Amagasaki-shi, Hyogo 660-0054, Japan



<https://www.toavalve.co.jp/english/>



# A Leading Company of High Pressure Valve Industry

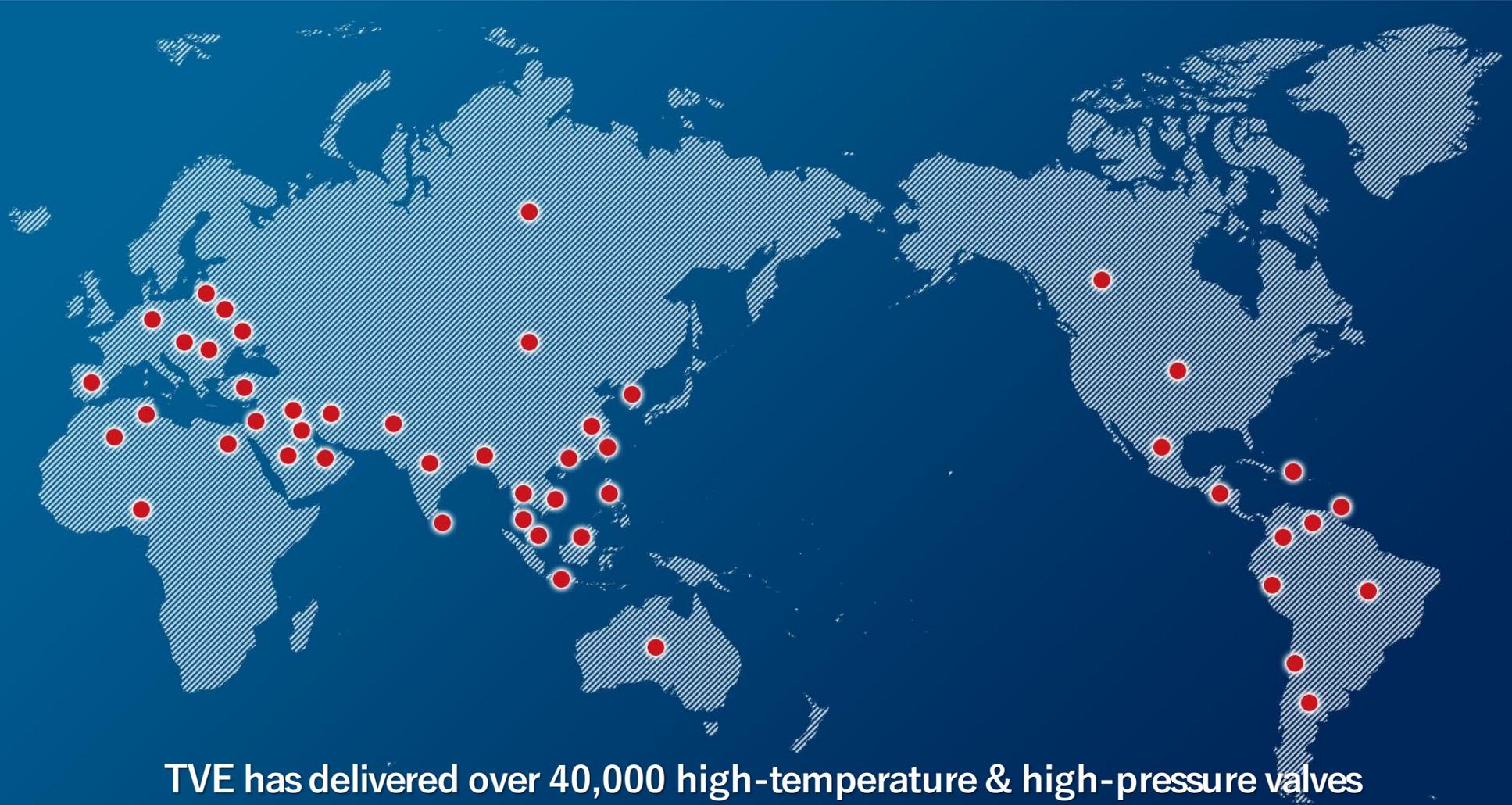
Nuclear power plants **48** units

Thermal power plants **148** units

Almost all nuclear and thermal power plants employ TVE valves.

 ... Nuclear Power Plant  
 ... Thermal Power Plant

# High-pressure and High-temperature Valves All over the World



TVE has delivered over 40,000 high-temperature & high-pressure valves to customers in over 40 countries around the world.

# Index

## ■ Product Information (P.5 – P.11)

- High-temperature and High- pressure Valves
- TVE Major Products for Thermal Power Plants
- Body Materials
- Steel Casting
- Valve Structure
- P-T Ratings (Pressure-Temperature Ratings)

## ■ Product Lineup (P.12 – P.23)

- Standard Product Range
- Forged & Cast steel Gate Valves
  - Parallel Slide Gate Valves
- Forged & Cast steel Globe Valves
  - Quick Change Needle Valves
  - Y-Globe Valves and Needle Valves
- Forged & Cast steel Check Valves
  - Screw Down Stop Check Valves
- Safety Valves, Relief Valves

## ■ Figure Number System (P.24 – P.25)

- TVE Valve Type No.

## ■ Company Information (P.26. – P.28)

## Meeting global quality standards with advanced production systems and strict quality control

### Taking pride in our role as the industry's leading manufacturer

We manufacture valves that meet customer requirements by conducting measurements and analyses with our own performance tests, including non-destructive testing, steam testing, pressure testing, and leakage testing for each process involving materials, processing, and welding. The requirements for safety, reliability, and quality are not relaxed in manufacturing. In each process from design and procurement to steelmaking, manufacturing, testing, inspection and maintenance, everyone is challenged to maintain quality and implement quality control as evidenced by our certification of ISO 9001 registration.



### We conduct a variety of tests for each unit to ensure uncompromising quality.



#### Non-destructive inspection

Inspection of the surface of the material for cracks, scratches, and internal defects



#### Steam test

Our equipment is capable of conducting high-temperature and high-pressure testing, reproducing specific environments, and conducting steam tests with our in-house boiler.



**Pressure resistance test**  
We verify that the required specifications are met by subjecting the valve body to high pressure.



**Leak test**  
The leak test confirms the integrity of the valve.

### Supplier's Declaration of Conformity with JIS Product Standards and ISO 9001 Certification

We supply high-temperature and high-pressure cast steel products, low-temperature and high-pressure cast steel products, and cast stainless steel products under an ISO 9001-certified quality management system along with a Supplier's Declaration of Conformity with the JIS Q 1000 standard.





# PRODUCT INFORMATION

# High-temperature and High-pressure Valves

Valve Type	Valve Classification	For Nuclear Power Plants	For Thermal Power Plants/ General Industries	Nominal Diameter (mm)	Applicable Pressure
Globe valve	Globe valve	Feedwater pump stop valve	Suitable for various purposes	15-800	
	Y-valve	High-pressure heater outlet check valve	Suitable for low-pressure-loss applications		
	Angle valve	Blowdown valve	Drain valve		
Needle valve	Needle valve for high differential pressures	Feedwater pump stop valve	Main steam pipe drain valve	15-200	
	Angle needle valve	Continuous blow valve			
Gate valve	Wedge gate valve	Fuel transfer pipe gate valve	Main steam stop valve	15-800	150 Lb   4500 Lb
	Parallel slide valve				
Check valve	Lift check valve	Drain sampling check valve	Mainly applicable to smaller diameters	15-750	
	Swing check valve	Safety injection system check valve	Feedwater pump bypass check valve		
	Tilting check valve	Feedwater pump outlet check valve			
	Screw-down stop check valve	High-pressure water heater water supply outlet valve	Boiler water circulation pump outlet valve		
	Swing check valve with cylinder	Main steam isolation valve	Bleed check valve		
	Swing check valve with counterweight	Main steam check valve	Mainly for shock-absorbing applications		
Safety valve	Open safety valve	Main steam safety valve	Drum safety valve Safety valve for marine vessels	40-200	0.1 MPa   46.2 MPa
	Sealed safety valve	Pressurizer safety valve	High-pressure gas tank safety valve	100-150	
	Sealed relief valve	Residual heat removal pump inlet relief valve	High-pressure water heater relief valve	20-200	



Globe valve      Needle valve for high differential pressure      Wedge gate valve



Swing check valve      Tilting check valve      Swing check valve with cylinder



Open safety valve      Safety valve for marine vessels      Sealed relief valve

## General Valves

- Gate
- Needle
- Globe
- Check

## Actuators

- Manual
- Gear
- Motor

## Pressure Class

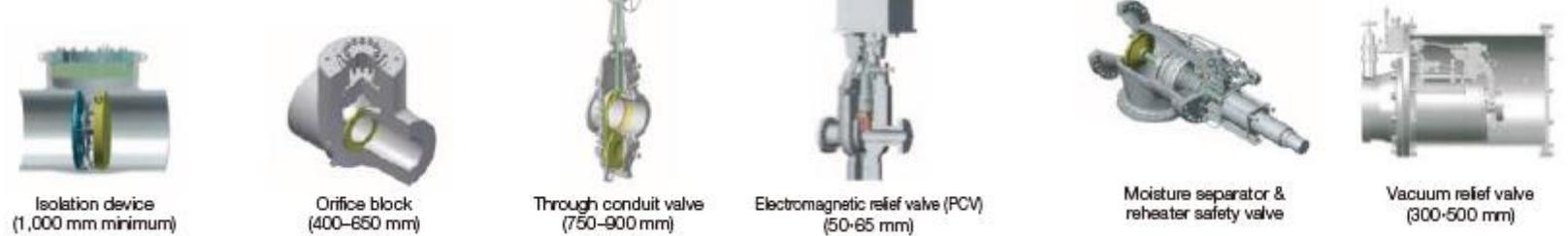
900lb-4500lb

## Body Materials

-Casting  
WCB, WC6, WC9, C12A, etc.

-Forging  
A105, F11, F22, F91, etc.

Special valves: Nominal diameter appears in parentheses.



Isolation device (1,000 mm minimum)      Orifice block (400-650 mm)      Through conduit valve (750-900 mm)      Electromagnetic relief valve (PCV) (50-85 mm)      Moisture separator & reheater safety valve      Vacuum relief valve (300-500 mm)

## Safety Valves

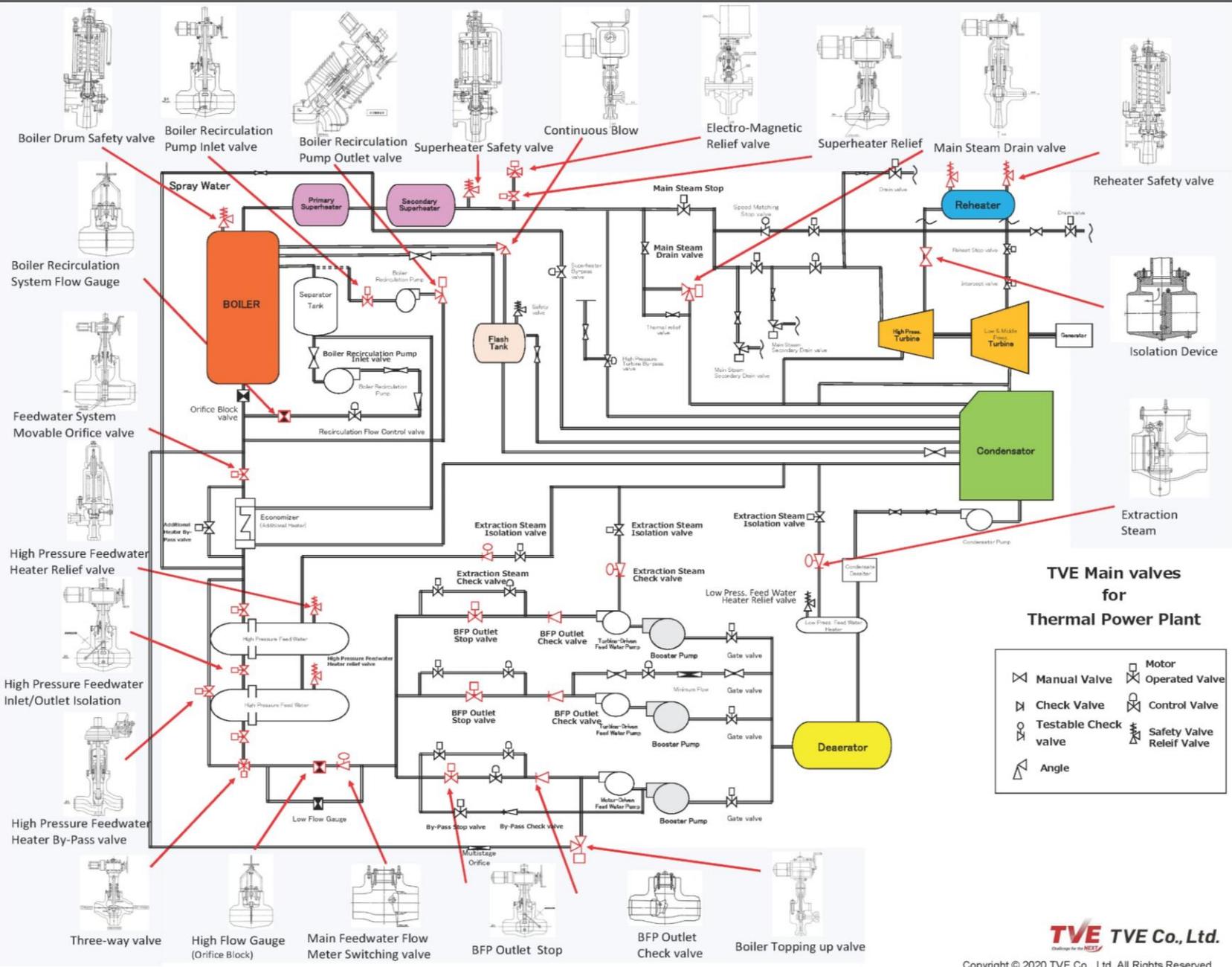
For boilers and superheaters

## Relief Valves

For boilers and turbines

# TVE Major Products for Thermal Power Plants

-TVE High Pressure valves-



**TVE TVE Co., Ltd.**

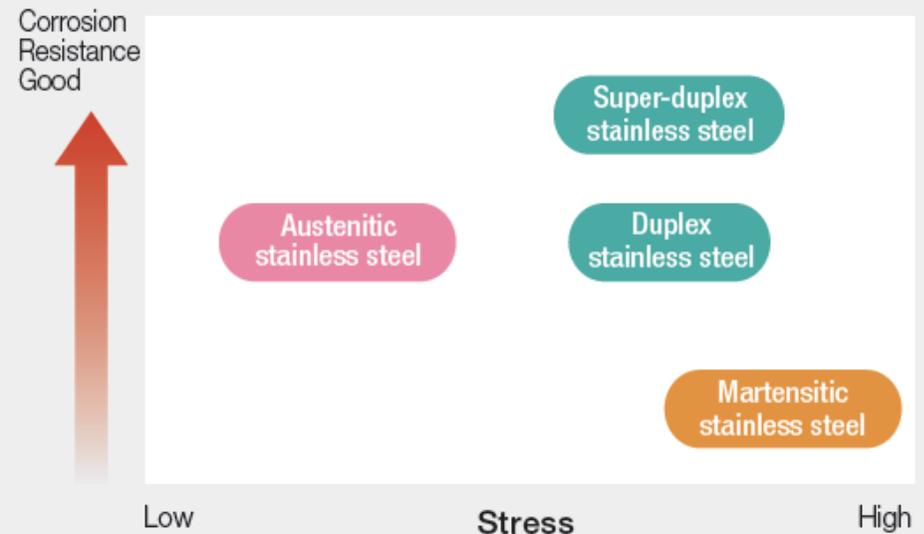
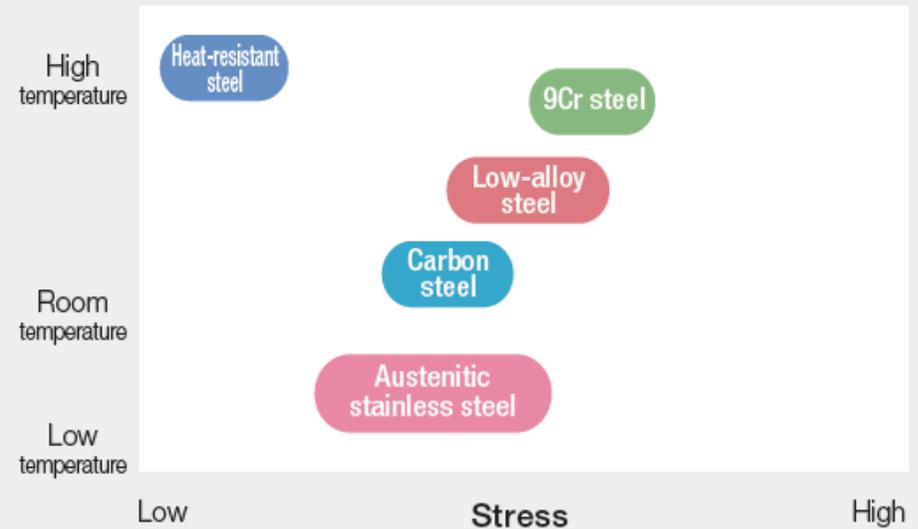
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# Body Materials

## Property Matrix of Applicable Steel Grades

The steel type that is actually used depends on the customer's application. We have the capability to manufacture cast steel products to accommodate various requirements such as high pressure and high or low temperature.

Classification	Steel Grade
Carbon steel	WCA, WCB, WCC, LCB, LCC
Low-alloy steel	WC1, LC1, LC3, WC6, Gr.8, WC9, C5
9Cr steel	C12A, C12
Martensitic stainless steel	CA15, CA15M, CA6NM
Duplex stainless steel	4A
Super-duplex stainless steel	5A, 6A
Austenitic stainless steel	CF8, CF8M, CF3M, CF3, CF8C, CG3M, CG8M
Heat-resistant steel	HD, HF, HH, HH Type II, HT, HT30, HI, HK30, HK40

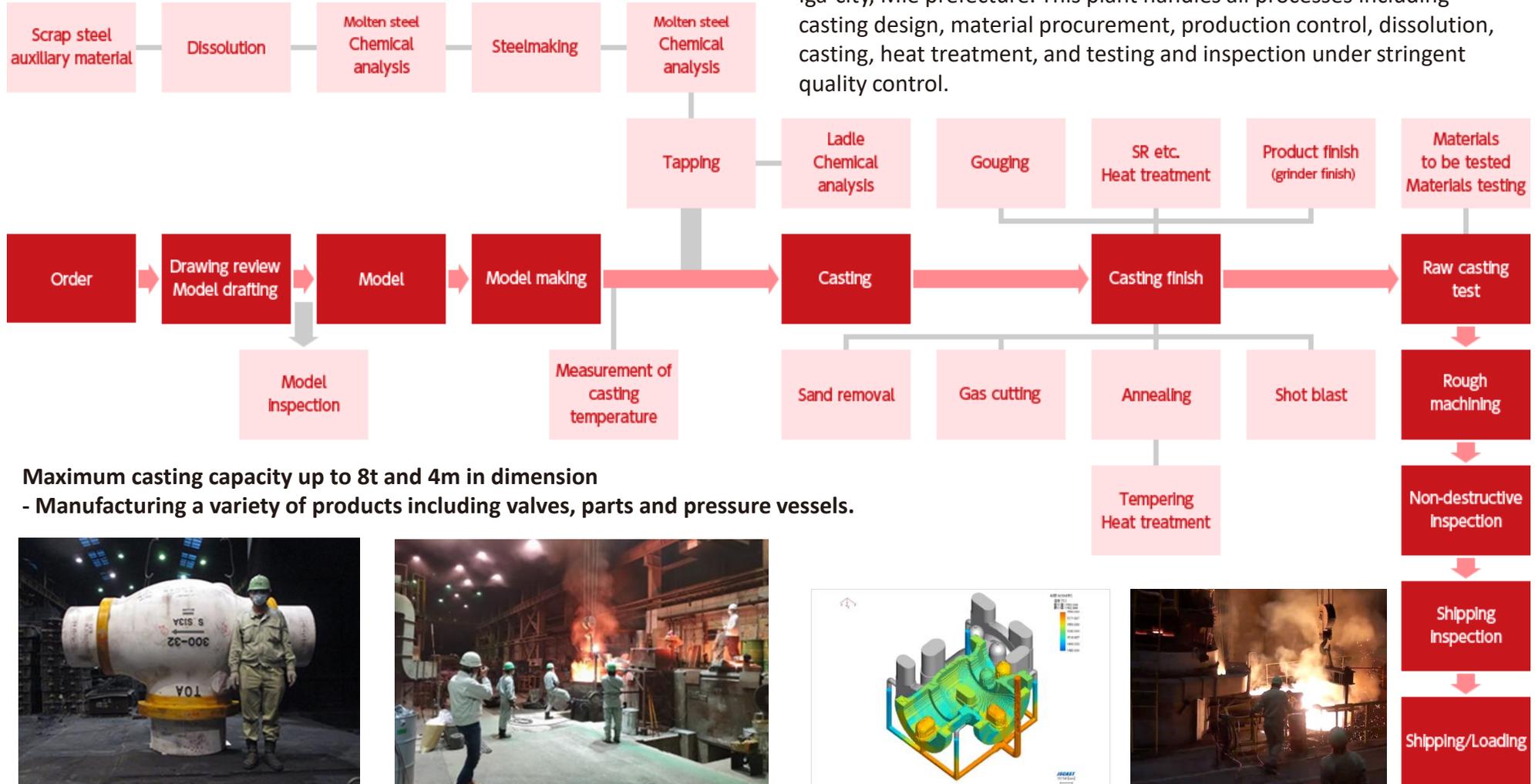


# Steel Casting

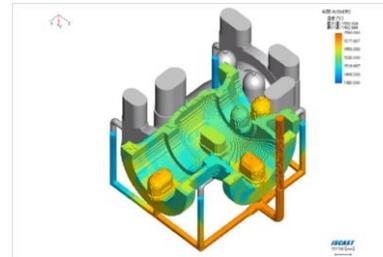
TVE's own foundry in Japan

## ■ The TVE Quality

Our own production facilities here in Japan are the main provider of large cast steel products. Cast steel products such as valve bodies — the most important components of TVE valve products — are produced by our Steelmaking Division at the TVE foundry located in Iga-city, Mie prefecture. This plant handles all processes including casting design, material procurement, production control, dissolution, casting, heat treatment, and testing and inspection under stringent quality control.

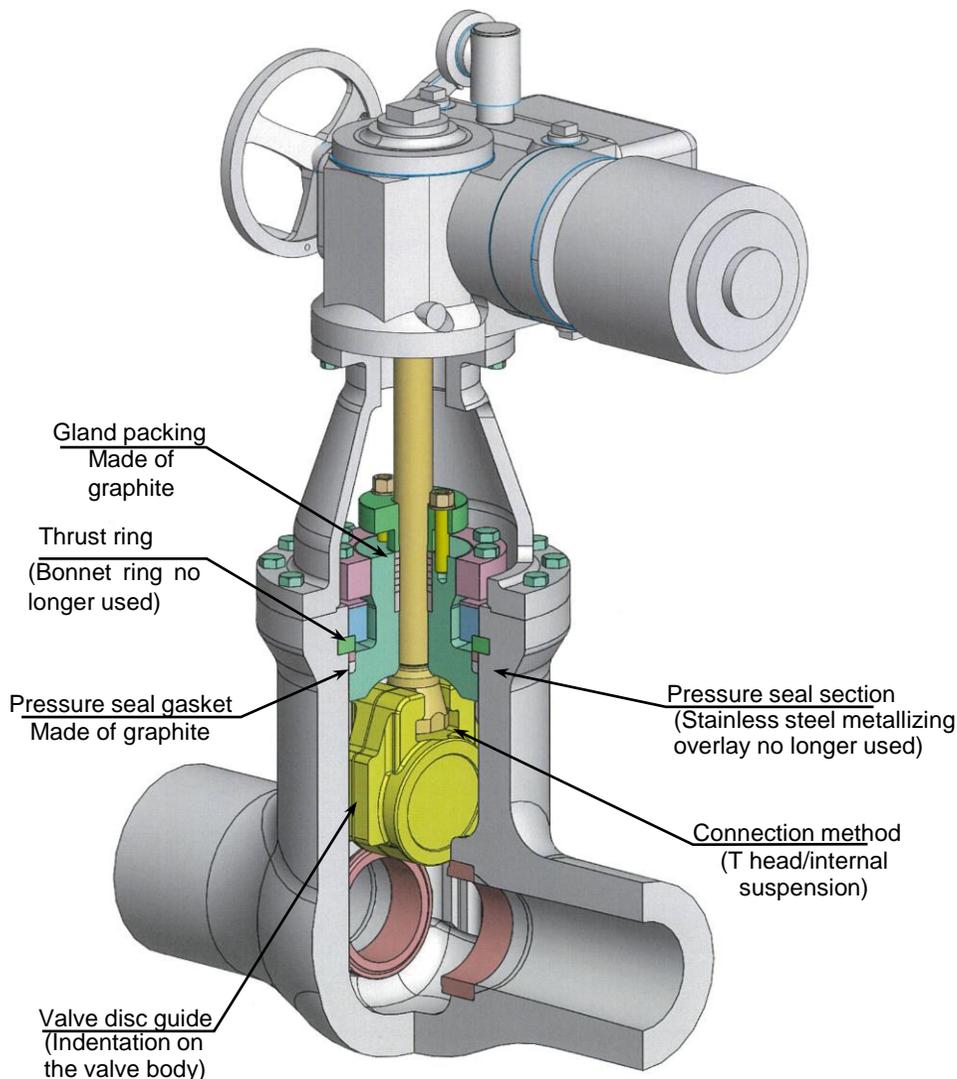


Maximum casting capacity up to 8t and 4m in dimension  
 - Manufacturing a variety of products including valves, parts and pressure vessels.



# Valve Structure

## - TVE High Pressure Valve



### 1. Pressure seal gasket

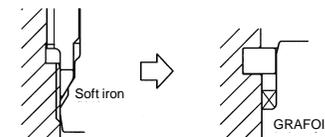
Material change: Soft iron → Graphite

Confirmatory test

- Properties for thermal reduction: The material was measured on an automated derivative differential thermal scale, and it was confirmed that the material did not lose any heat quantity at all up to 570 °C in a non-oxidizing atmosphere (recreating the normal assembly clearance).

Applicable to valves for USC boilers and it shows excellent results

- Protrusion prevention: Putting stainless steel nets over the top and bottom of the GRAFOIL completely solves the issue. (Japanese Patent No. S63-29972)



### 2. Gland packing

Material used: Graphite

Confirmatory test

- Leakage test: TOA has constructed its own hot water plant with PWR conditions (157 kg/cm, 300°C) and has its own research results as part of gland packing research that began in 1980.
- Packing service life: A reciprocating test of 2,500 times with a 150 mm stroke under PWR conditions was implemented. A leak of just 2 cc or less was confirmed.

This technology is also applied to valves for thermal power plants.

- Asbestos-free: Adopted for standard specifications.

### 3. Gasket contact part 18-8 SS metallizing overlay/valve disc guide

Structure changes: The gasket material was upgraded and the 18-8 SS metallizing overlay is no longer used.

: An indented groove was placed in the valve body as the guide for the valve disc, and guide welding is no longer used.

### 4. Size reduction

Structure changes: New disc connection method (T-head & internal suspension)  
Applied thrust ring instead of bonnet ring

Confirmatory test: Thorough confirmation was implemented through a qualification test consisting of pressure resistance, steam flow, endurance, and a disassembly/assembly test using the 1500-12B full model.

# P-T Ratings (Pressure-Temperature Ratings)

## Carbon steel (A-trim)

Temperature °C	Working Pressures by class						
	150	300	600	900	1500	2500	4500
-29 to 38	19.6	51.1	102.1	153.2	255.3	425.5	765.9
50	19.2	50.1	100.2	150.4	250.6	417.7	751.9
100	17.7	46.6	93.2	139.8	233.0	388.3	699.0
150	15.8	45.1	90.2	135.2	225.4	375.6	676.1
200	13.8	43.8	87.6	131.4	219.0	365.0	657.0
250	12.1	41.9	83.9	125.8	209.7	349.5	629.1
300	10.2	39.8	79.6	119.5	199.1	331.8	597.3
325	9.3	38.7	77.4	116.1	193.6	322.6	580.7
350	8.4	37.6	75.1	112.7	187.8	313.0	563.5
375	7.4	36.4	72.7	109.1	181.8	303.1	545.5
400	6.5	34.7	69.4	104.2	173.6	289.3	520.8
425	5.5	28.8	57.5	86.3	143.8	239.7	431.5

Source: Excerpt from ASME B16.34-2020

<Selection example>

“Application: For thermal power generation,” “Material: Carbon steel,”  
“Working temperature: 350°C,” “Working pressure: 313 Bar”

→ **Selected class: 2500**

## C12A (X-trim)

Temperature °C	Working Pressures by class						
	150	300	600	900	1500	2500	4500
-29 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	50.3	100.3	150.6	250.8	418.2	752.8
200	13.8	48.6	97.2	145.8	243.4	405.4	729.8
250	12.1	46.3	92.7	139.0	231.8	386.2	694.8
300	10.2	42.9	85.7	128.6	214.4	357.1	642.6
325	9.3	41.4	82.6	124.0	206.6	344.3	619.6
350	8.4	40.3	80.4	120.7	201.1	335.3	603.3
375	7.4	38.9	77.6	116.5	194.1	323.2	581.8
400	6.5	36.5	73.3	109.8	183.1	304.9	548.5
425	5.5	35.2	70.0	105.1	175.1	291.6	524.7
450	4.6	33.7	67.7	101.4	169.0	281.8	507.0
475	3.7	31.7	63.4	95.1	158.2	263.9	474.8
500	2.8	28.2	56.5	84.7	140.9	235.0	423.0
538	1.4	25.2	50.0	75.2	125.5	208.9	375.8
550	1.4	25.0	49.8	74.8	124.9	208.0	374.2
575	1.4	24.0	47.9	71.8	119.7	199.5	359.1
600	1.4	18.6	37.2	55.9	93.1	155.1	279.3
625	1.4	12.6	25.2	37.9	63.1	105.1	189.3
650	1.4	8.2	16.5	24.7	41.1	68.6	123.4

NOTES  
Flanged-end valve ratings terminate at 538°C.

## Temperature/Pressure

Valves must be selected considering the three major factors of (1) pressure, (2) temperature, and (3) properties of the fluid (corrosiveness, etc.). (3) Properties of the fluid include whether it is a liquid or a gas, and whether it is corrosive, toxic, combustible, or the like.

With regard to (1) pressure and (2) temperature, generally, the material becomes weaker as the temperature increases.

As valves are used for a wide variety of applications, it is extremely inefficient to design a valve that is optimal for each combination of pressure and temperature for each individual use. Therefore, valves are selected referring to a pressure/temperature standard (P-T Rating) which establishes temperatures and maximum pressures for which the valve can be used at that temperature for each material group.

In a P-T Rating, the pressure is illustrated using categories of pressure called the “nominal pressure.” Nominal pressures have different formats depending on the standards used. These include the nominal pressure (K) in JIS standards, the nominal pressure (pressure class) in ASME and the like, and the pressure (PN) in ISO.

# PRODUCT LINEUP

TOA  
1500-II-16  
150F1491  
87880

F1800036-011

# Standard Product Range

-Forged and Cast Steel Valves

Valve Type	ASME Class	SIZE (inch/mm)															
		1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16
		15	20	25	32	40	50	65	80	100	125	150	200	250	300	350	400
GATE	900	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
	1500	o	o	o		o	o	o	o	o	o	o	o	o	o	o	o
	2500	o	o	o		o	o	o	o	o	o	o	o	o	o	o	o
	3500							o	o	o	o	o	o	o	o	o	o
	4500	o	o	o		o	o	o	o	o	o	o	o				
GLOBE	900	o	o	o	o	o	o	o	o	o							
	1500	o	o	o	o	o	o	o	o	o							
	2500	o	o	o	o	o	o	o	o	o							
	3500							o	o	o							
	4500	o	o	o	o	o	o	o	o	o							
CHECK	900	o	o	o		o	o										
	1500	o	o	o		o	o	o	o	o	o	o	o	o	o	o	o
	2500	o	o	o		o	o	o	o	o	o	o	o	o	o	o	o
	3500																
	4500	o	o	o		o	o	o	o								

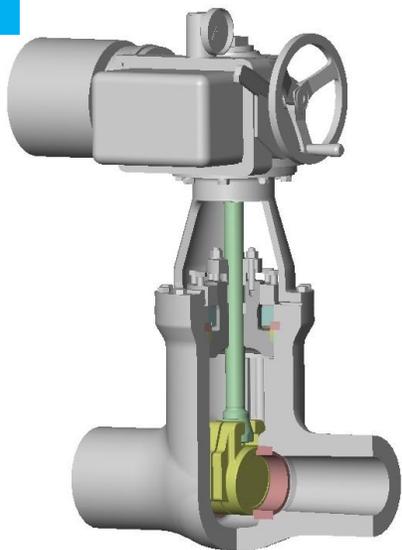
\* Nominal size larger than 18 inch are available for special orders

## General Design Specifications

Items	American Std.
Shell wall thickness and general valve design	ASME B16.34
Pressure-temperature ratings	ASME B16.34
Face-to-face dimensions	ASME B16.10
End-to-end dimensions	
End flange dimensions	ASME B16.5
Gasket contact facing	
Welding end dimensions	ASME B16.25

# GATE VALVES Forged & Cast steel

Gate



## Design Features

Items	American Std.
Shell wall thickness and general valve design	ASME B16.34
Pressure-temperature ratings	ASME B16.34
Face-to-face dimensions	ASME B16.10
End-to-end dimensions	ASME B16.10
End flange dimensions	ASME B16.5
Gasket contact facing	ASME B16.5
Welding end dimensions	ASME B16.25

## General Design Specification

Items	Description
Operating condition	High temp. & High pressure
Class	900-4500
Size	15A-600A
Screw & Yoke	Outside screw & yoke
Actuator	Handwheel/Gear/Motor
Bonnet type	Bolted/Pressure seal
Connection	BW/SW/Flange
Disc Type	Double/Wedge/Parallel
Port Type	Reduced Port

## Materials

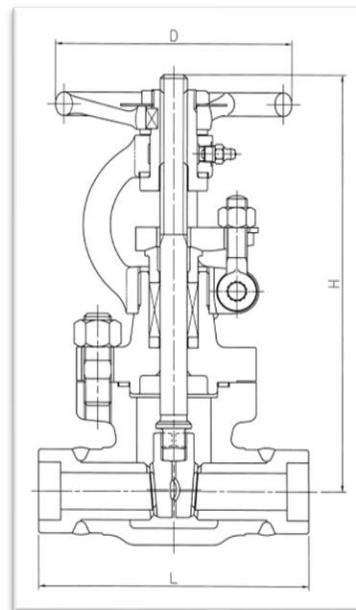
Part No.	Part Name	Material(ASTM)			
		A-Trim	B-Trim	C-Trim	X-Trim
1	BODY	A105/WCB	F11/WC6	F22/WC9	F91/C12A
2	BONNET	A105/WCB	F11/WC6	F22/WC9	F91/C12A
3	DISC	A105/WCB	F11/WC6	F22/WC9	F91/C12A
4	SEAT	A105	F11	F22	F91
5	STEM	SUS403	OHTARON1	OHTARON1	OHTARON1

\* OHTARON1 is a 16 Cr-stainless steel stem material for high-temperature & high-pressure service developed by TVE.

CLASS 900

GATE VALVES

SIZE 15~150A



## Design Specification

Items	Description		
	Size	15~50A	65~150A
Bonnet type	Std.	Bolted	Bolted
	Std.	Double	Wedge
Disc Type	Opt.	Parallel	Parallel
	Std.	Socket Weld	Butt Weld
Connection	Opt.	Flange/BW	Flange
	Std.	Handwheel	Handwheel
Operator	Opt.	Motor Actuator	Motor Actuator

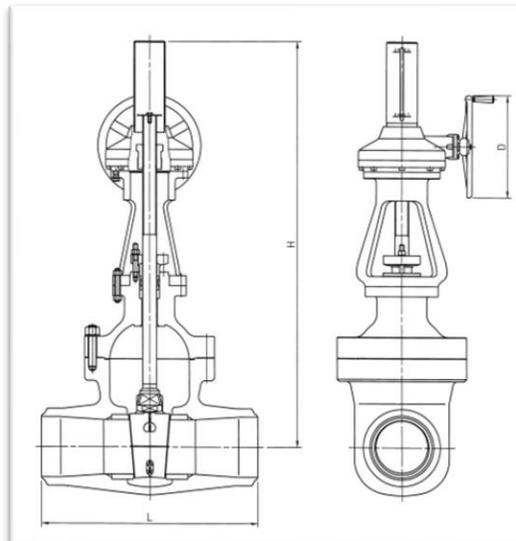
## Valve Dimensions

Class	Size	15	20	25	40	50
900	L	140	155	160	165	170
	H	235	280	280	405	435
	D	120	140	140	200	200
Class	Size	65	80	100	125	150
	L	419	381	457	559	610
900	H	655	745	825	920	1060
	D	355	400	450	500	600

CLASS 900

GATE VALVES

SIZE 200~400A



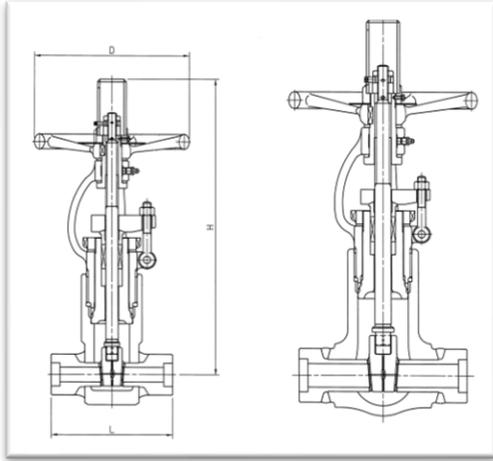
## Design Specification

Items	Description	
Bonnet type	Std.	Bolted
	Std.	Wedge
Disc Type	Opt.	Parallel
	Std.	Butt Weld
Connection	Opt.	Flange
	Std.	Gear Actuator
Operator	Opt.	Motor Actuator

## Valve Dimensions

Class	Size	200	250	300	350	400
900	L	737	838	965	1029	1130
	H	1430	1580	1810	1910	2160
	D	310	460	610	610	610

\* Dimensions H & L are subject to change depending on operator types.



Size 15mm thru 25mm

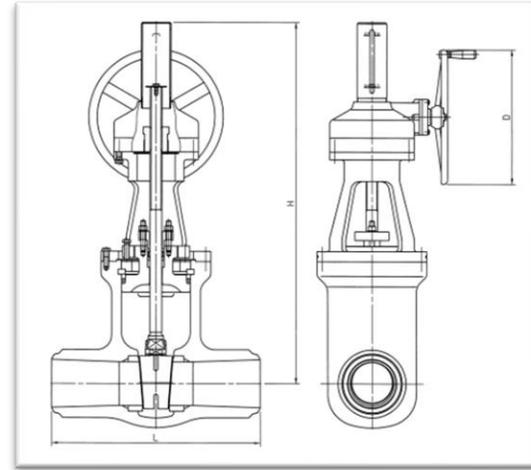
Size 40mm, 50mm

Design Specification

Items	Description	
Bonnet type	Std.	Pressure Seal
Disc Type	Std.	Double
	Opt.	Parallel
Connection	Std.	Socket Weld
	Opt.	Flange/BW
Operator	Std.	Handwheel
	Opt.	Motor Actuator

Valve Dimensions

Class	Size	15	20	25	40	50
1500	L	180	180	180	250	280
	H	430	445	445	535	535
	D	230	230	230	280	280
2500	L	180	180	180	250	300
	H	430	430	430	590	590
	D	230	230	230	320	320

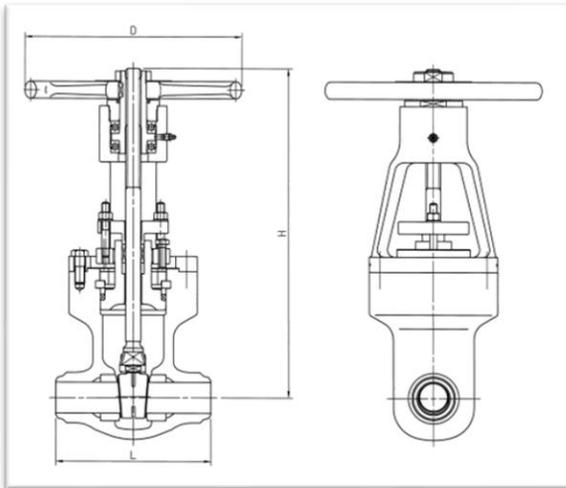


Design Specification

Items	Description	
Bonnet type	Std.	Pressure Seal
Disc Type	Std.	Wedge
	Opt.	Parallel
Connection	Std.	Butt Weld
	Opt.	Flange
Operator	Std.	Gear Actuator
	Opt.	Motor Actuator

Valve Dimensions

Class	Size	200	250	300	350	400
1500	L	711	864	991	1067	1194
	H	1240	1380	1580	1720	1950
	D	460	460	610	610	760
2500	L	762	914	1041	1118	1245
	H	1180	1375	1555	1750	1880
	D	460	610	610	760	760

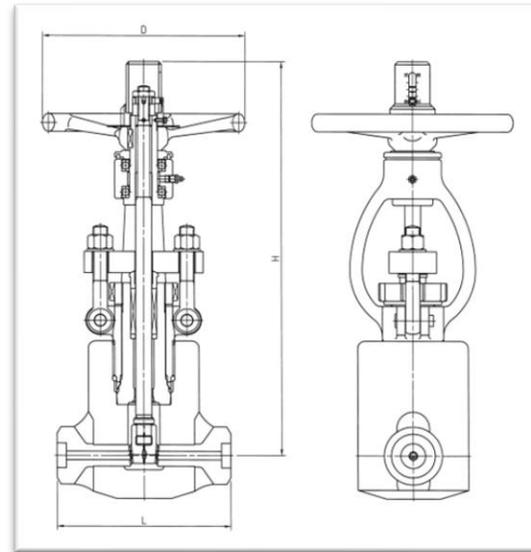


Design Specification

Items	Description	
Bonnet type	Std.	Pressure Seal
Disc Type	Std.	Wedge
	Opt.	Parallel
Connection	Std.	Butt Weld
	Opt.	Flange
Operator	Std.	Handwheel
	Opt.	Motor Actuator

Valve Dimensions

Class	Size	65	80	100	125	150
1500	L	254	305	406	483	559
	H	615	665	755	780	905
	D	355	400	450	500	600
2500	L	330	368	457	533	610
	H	605	655	730	835	950
	D	400	450	500	600	700



Design Specification

Items	Description	
Bonnet type	Std.	Pressure Seal
Disc Type	Std.	Double
	Opt.	Parallel
Connection	Std.	Socket Weld
	Opt.	Flange/BW
Operator	Std.	Handwheel
	Opt.	Motor Actuator

Valve Dimensions

Class	Size	15	20	25	40	50
4500	L	240	240	240	350	350
	H	550	550	550	695	695
	D	280	280	280	360	360

# Parallel Slide Disc Gate Valves

For High temperature  
High pressure service



## General Design Specification

Items	Description
Operating condition	High temp. & High pressure
Class	900-4500
Size	15A-600A
Screw & Yoke	Outside screw & yoke
Actuator	Handwheel/Gear/Motor
Bonnet type	Bolted/Pressure seal
Connection	BW/SW/Flange
Disc Type	Parallel
Port Type	Reduced Port

## Design Specification

Items	Description	
Bonnet type	Std.	Pressure Seal
Disc Type	Std.	Wedge
	Opt.	Parallel
Connection	Std.	Butt Weld
	Opt.	Flange
Operator	Std.	Handwheel
	Opt.	Motor Actuator

## Valve Dimensions

Class	Size	65	80	100	125
3500	L	457	368	457	533
	H	770	860	960	1025
	D	450	500	600	700
4500	L	550	580	550	—
	H	865	1015	1075	—
	D	500	600	700	—

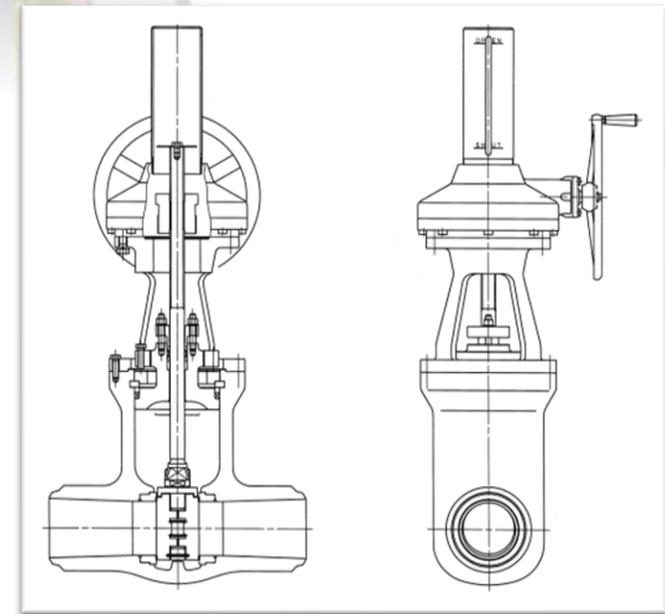
## Design Specification

Items	Description	
Bonnet type	Std.	Pressure Seal
Disc Type	Std.	Wedge
	Opt.	Parallel
Connection	Std.	Butt Weld
	Opt.	Flange
Operator	Std.	Gear Actuator
	Opt.	Motor Actuator

## Valve Dimensions

Class	Size	200	150	200	250	300
3500	L	—	610	762	914	1041
	H	—	1280	1345	1500	1730
	D	—	460	610	610	760
4500	L	580	750	860	—	—
	H	1305	1420	1435	—	—
	D	460	610	610	—	—

Class	Size	350	400		
3500	L	1118	1245		
	H	1855	2045		
	D	760	760		
4500	L	—	—		
	H	—	—		
	D	—	—		



# GLOBE VALVES Forged & Cast steel

Globe



## Design Features

Items	American Std.
Shell wall thickness and general valve design	ASME B16.34
Pressure-temperature ratings	ASME B16.34
Face-to-face dimensions	ASME B16.10
End-to-end dimensions	ASME B16.10
End flange dimensions	ASME B16.5
Gasket contact facing	ASME B16.5
Welding end dimensions	ASME B16.25

## General Design Specification

Items	Description
Operating condition	High temp. & High pressure
Class	900-4500
Size	15A-100A
Screw & Yoke	Outside screw & yoke
Actuator	Handwheel/Gear/Motor
Bonnet type	Bolted/Seal/Pressure seal
Connection	BW/SW/Flange

## Materials

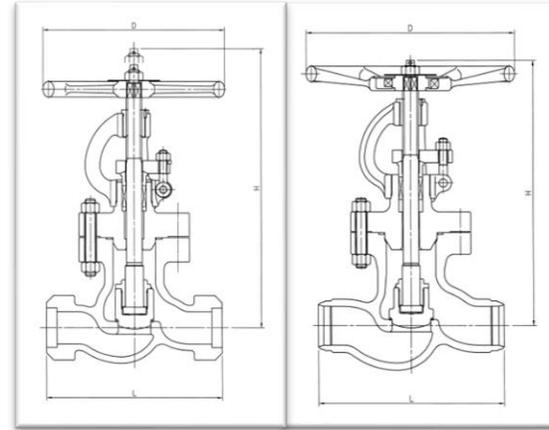
Part No.	Part Name	Material(ASTM)			
		A-Trim	B-Trim	C-Trim	X-Trim
1	BODY	A105/WCB	F11/WC6	F22/WC9	F91/C12A
2	BONNET	A105	F11	F22	F91
3	DISC	A105	F11	F22	F91
5	STEM	SUS403 OHTARON1	OHTARON1	OHTARON1	OHTARON1

\* OHTARON1 is a 16 Cr-stainless steel stem material for high-temperature & high-pressure service developed by TVE.

CLASS 900

GLOBE VALVES

SIZE 15~100A



Size 15mm thru 50mm

Size 65mm thru 100mm

## Design Specification

Items	Description	
Bonnet type	Std.	Bolted
Connection	Std.	Socket Weld
	Opt.	Flange/BW
Operator	Std.	Handwheel
	Opt.	Motor Actuator

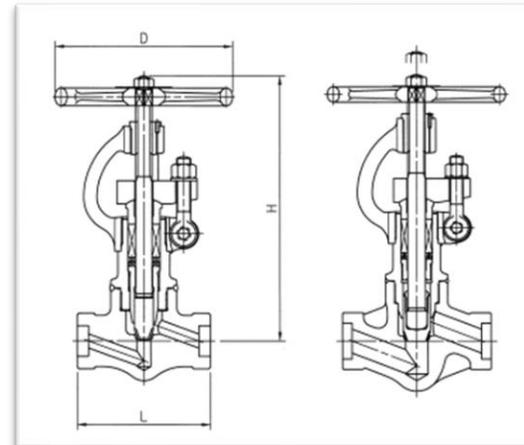
## Valve Dimensions

Class	Size	15	20	25	32	40	50
900	L	120	150	170	230	230	270
	H	225	255	290	370	370	435
	D	125	160	180	224	224	280
Class	Size	65	80	100			
900	L	419	381	457			
	H	495	560	680			
	D	320	400	450			

CLASS 1500/2500/4500

GLOBE VALVES

SIZE 15~50A



Size 15mm thru 25mm

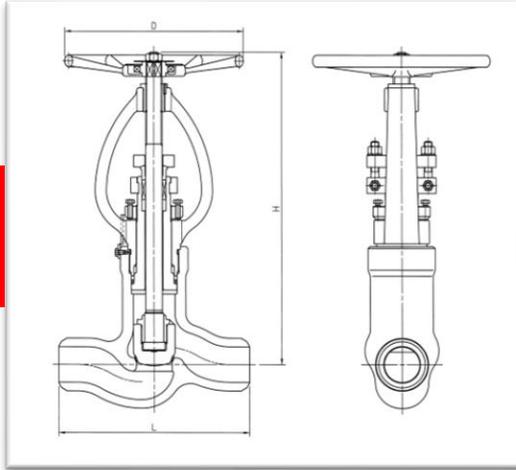
Size 32mm thru 50mm

## Design Specification

Items	Description	
Bonnet type	Std.	Seal
Connection	Std.	Socket Weld
	Opt.	Flange/BW
Operator	Std.	Handwheel
	Opt.	Motor Actuator

## Valve Dimensions

Class	Size	15	20	25	32	40	50
1500	L	110	120	150	220	220	250
	H	250	285	320	405	405	475
	D	140	160	200	300	300	320
2500	L	120	120	150	220	220	250
	H	285	285	315	405	405	475
	D	160	160	200	300	300	320
4500	L	150	150	150	250	250	250
	H	355	355	355	435	435	435
	D	250	250	250	320	320	320

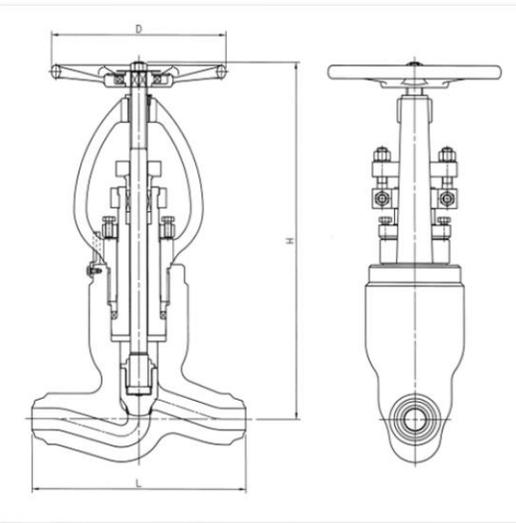


## Design Specification

Items	Description	
Bonnet type	Std.	Pressure Seal
	Std.	Butt Weld
Connection	Opt.	Flange
	Std.	Handwheel
Operator	Opt.	Gear/Motor Actuator

## Valve Dimensions

Class	Size	65	80	100
1500	L	340	390	480
	H	670	710	855
	D	360	360	450
2500	L	420	470	570
	H	740	825	870
	D	360	400	450



## Design Specification

Items	Description	
Bonnet type	Std.	Pressure Seal
	Std.	Butt Weld
Connection	Opt.	Flange
	Std.	Handwheel
Operator	Opt.	Gear/Motor Actuator

## Valve Dimensions

Class	Size	65	80	100
3500	L	420	470	550
	H	805	895	990
	D	360	400	450
4500	L	508	578	673
	H	1050	1040	1135
	D	400	450	500

# Quick Change Needle Valves



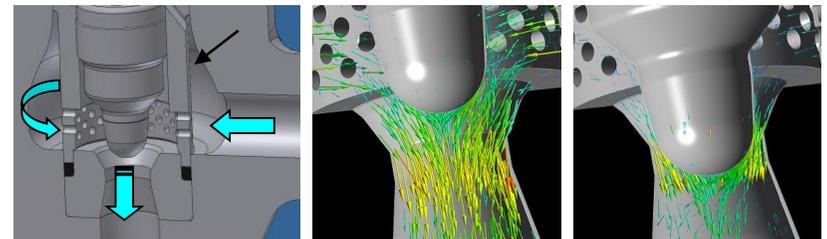
1. Easy and fast to change valve seats and cages damaged by erosion.
2. Optimized flow control structure against erosion.

## General Design Specification

Items	Description
Operating condition	High temp. & High pressure
Class	900-4500
Size	15A-150A
Screw & Yoke	Outside screw & yoke
Actuator	Handwheel/Gear/Motor
Bonnet type	Bolted/Pressure seal
Connection	BW/SW

The valve seat of needle valve used under harsh conditions may need to be replaced often due to aging and repeated damage such as erosion.

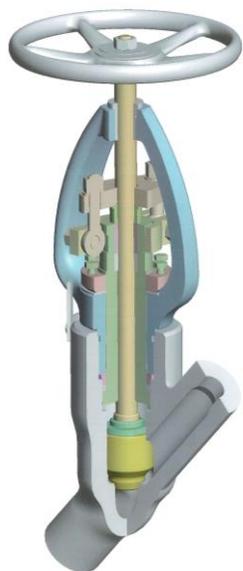
This quick-change type needle valve has been developed in order to make the valve seat replacement easier and faster than the original method.



Using graphite gasket &amp; cage

Optimized flow control structure

# Y-GLOBE VALVES Forged & Cast steel



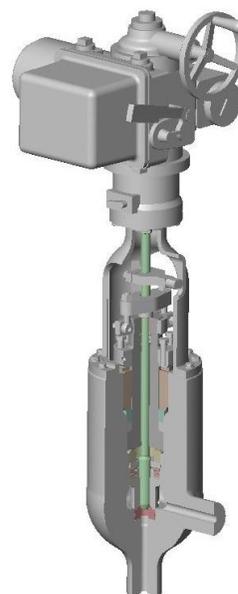
## Design Features

Items	American Std.
Shell wall thickness and general valve design	ASME B16.34
Pressure-temperature ratings	ASME B16.34
Face-to-face dimensions End-to-end dimensions	ASME B16.10
End flange dimensions Gasket contact facing	ASME B16.5
Welding end dimensions	ASME B16.25

## General Design Specification

Items	Description
Operating condition	High temp. & High pressure
Class	900-4500
Size	15A-100A
Screw & Yoke	Outside screw & yoke
Actuator	Handwheel/Gear/Motor
Bonnet type	Bolted/Seal/Pressure seal
Connection	BW/SW/Flange

# NEEDLE VALVES Forged & Cast steel



## Design Features

Items	American Std.
Shell wall thickness and general valve design	ASME B16.34
Pressure-temperature ratings	ASME B16.34
Face-to-face dimensions End-to-end dimensions	ASME B16.10
End flange dimensions Gasket contact facing	ASME B16.5
Welding end dimensions	ASME B16.25

## General Design Specification

Items	Description
Operating condition	High temp. & High pressure
Class	900-4500
Size	15A-100A
Screw & Yoke	Outside screw & yoke
Actuator	Handwheel/Gear/Motor
Bonnet type	Bolted/Seal/Pressure seal
Connection	BW/SW/Flange

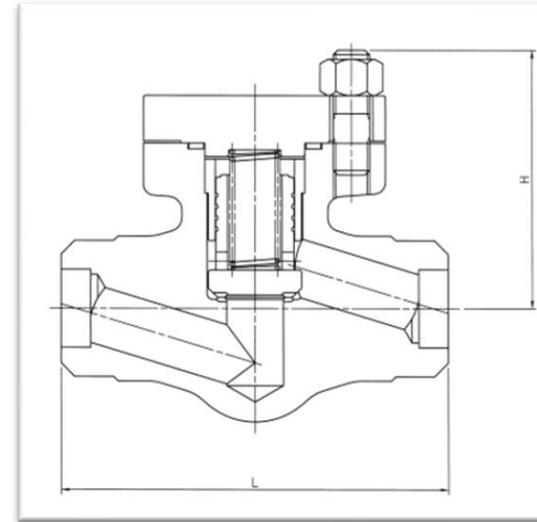
Part No.	Part Name	Material(ASTM)			
		A-Trim	B-Trim	C-Trim	X-Trim
1	BODY	A105/WCB	F11/WC6	F22/WC9	F91/C12A
2	BONNET	A105	F11	F22	F91
3	DISC	A105/F11	F11	F22	F91
5	STEM	SUS403 OHTARON1	OHTARON1	OHTARON1	OHTARON1

# CHECK VALVES Forged & Cast steel

CLASS 900

CHECK VALVES

SIZE 15~50A



### Design Specification

Items	Description	
Bonnet type	Std.	Bolted
Connection	Std.	Socket Weld
	Opt.	Flange/BW
Operator	Std.	—

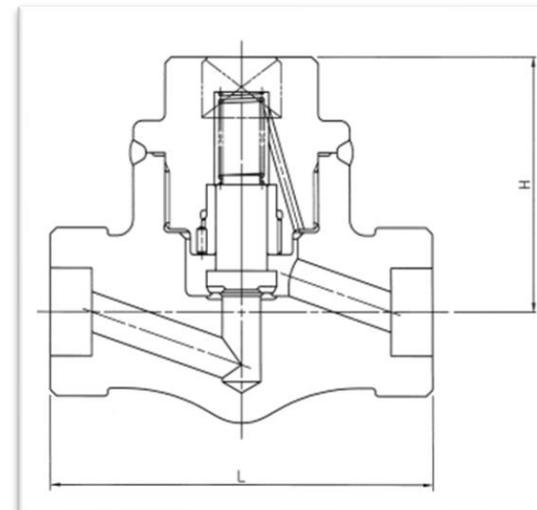
### Valve Dimensions

Class	Size	15	20	25	40	50
900	L	120	150	170	230	270
	H	95	105	115	180	200
1500	L	110	120	150	220	250
	H	75	80	90	130	145

CLASS 1500/2500/4500

CHECK VALVES

SIZE 15~50A



### Design Specification

Items	Description	
Bonnet type	Std.	Seal
Connection	Std.	Socket Weld
	Opt.	Flange/BW
Operator	Std.	—

### Valve Dimensions

Class	Size	15	20	25	40	50
2500	L	120	120	150	220	250
	H	80	80	90	130	145
4500	L	150	150	150	250	250
	H	105	105	105	135	135

### Design Features

Items	American Std.
Shell wall thickness and general valve design	ASME B16.34
Pressure-temperature ratings	ASME B16.34
Face-to-face dimensions	ASME B16.10
End-to-end dimensions	ASME B16.10
End flange dimensions	ASME B16.5
Gasket contact facing	ASME B16.5
Welding end dimensions	ASME B16.25

### General Design Specification

Items	Description
Operating condition	High temp. & High pressure
Class	900-4500
Size	15A-400A
Screw & Yoke	Outside screw & yoke
Actuator	—
Bonnet type	Bolted/Seal/Pressure seal
Connection	BW/SW/Flange

### Materials

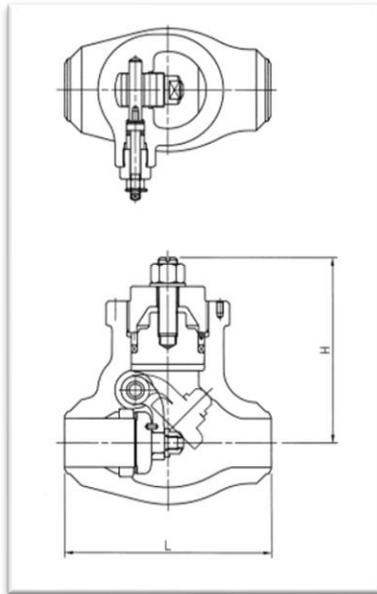
Part No.	Part Name	Material(ASTM)			
		A-Trim	B-Trim	C-Trim	X-Trim
1	BODY	A105/WCB	F11/WC6	F22/WC9	F91/C12A
2	BONNET	A105	F11	F22	F91
3	DISC	A105	F11	F22	F91
4	SEAT	A105	F11	F22	F91
5	STEM	SUS304	OHTARON1	OHTARON1	OHTARON1

\* OHTARON1 is a 16 Cr-stainless steel stem material for high-temperature & high-pressure service developed by TVE.

Check

# Screw Down Stop Check Valves

Check



**Design Specification**

Items	Description	
Bonnet type	Std.	Pressure Seal
Connection	Std.	Butt Weld
	Opt.	Flange
Operator	Std.	—

**Valve Dimensions**

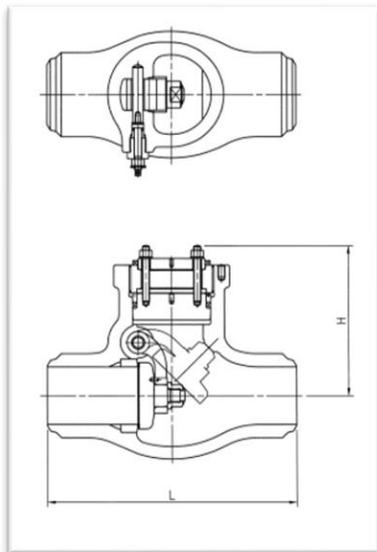
Class	Size	65	80	100	125	150
1500	L	254	305	406	483	559
	H	230	270	280	325	340
2500	L	330	368	457	533	610
	H	240	275	305	320	365
4500	L	370	420	—	—	—
	H	290	295	—	—	—



For High temperature  
High pressure service

**General Design Specification**

Items	Description
Operating condition	High temp. & High pressure
Class	900-4500
Size	15A-400A
Screw & Yoke	Outside screw & yoke
Actuator	Handwheel/Gear/Motor
Bonnet type	Bolted/Seal/Pressure seal
Connection	BW/SW/Flange

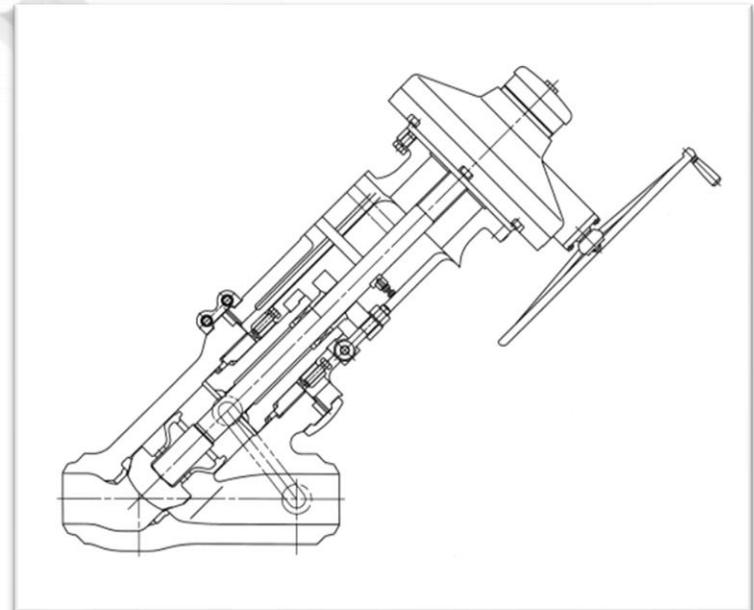


**Design Specification**

Items	Description	
Bonnet type	Std.	Pressure Seal
Connection	Std.	Butt Weld
	Opt.	Flange
Operator	Std.	—

**Valve Dimensions**

Class	Size	200	250	300	350	400
1500	L	711	864	991	1067	1194
	H	400	475	530	585	640
2500	L	762	914	1041	1118	1245
	H	415	465	540	675	730



# Safety valves for the boiler

Drum, Super Heater and Reheater etc.



1. Compact and lightweight.
2. Easy installation and maintenance.
3. Easy sizing and selection.

Standard Product Range

Size (mm)	Set Pressure (MPa)					
	0.1~2.2	~5.0	~7.2	~12.2	~20.6	~38.2
25	■	■	■	■	■	■
40	■	■	■	■	■	■
50	■	■	■	■	■	■
65	■	■	■	■	■	■
80	■	■	■	■	■	■
100	■	■	■	■	■	■
125	■	■	■	■	■	■
150	■	■	■	■	■	■
200	■	■	■	■	■	■

max.set press. (MPa)	max.design press. (MPa)	(kg/cm <sup>2</sup> )	nominal size(upper: metric, lower: inch)												
			20A	25A	32A	40A	50A	65A	80A	90A	100A	125A	150A	200A	
			3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	
39.40	38.24	390													
35.56	34.51	352													
27.78	26.96	275													
21.22	20.59	210													
20.00	19.41	198													
15.56	15.10	154													
12.23	11.86	121													
7.28	7.06	72													
5.06	4.90	50													
3.34	3.23	33													
2.23	2.15	22													
1.12	1.07	11													

max.set press.=max.design press x 1.03

**Newly developed series No.**



**[Body Material]**

ASTM A105, F11, F22, F91, F304, F316, WCB, WC6, WC9, C12A & C5, CF8 & CF8M

JIS SF490A~SFVA F28, SCPH2, 21, 32, 62 & 91, SUSF304, F316, SCS13A & SCS14A

# SAFETY VALVES / RELIEF VALVES



Main steam safety valves

Nominal diameter (mm)	100•125•150
Fluid	Steam
Pressure range	7.46–8.58 MPa *2
Temperature range	292–301°C (saturation temperature) *2
Materials	JIS SCPL1



Electromagnetic relief valves (PCV)

Nominal diameter (mm)	50•65
Fluid	Steam
Pressure range	42.9 MPa max.
Temperature range	650°C max.
Materials	Cr-Mo steel (JIS, ASME and ASTM standards and interpretation of technical standards for steel for thermal power generation equipment)



Open safety valve

Nominal diameter (mm)	40–200
Fluid	Steam
Pressure range	0.1–42.9 MPa max.
Temperature range	650°C max.
Materials	Carbon steel, Cr-Mo steel (JIS, ASME and ASTM standards and interpretation of technical standards for steel for thermal power generation equipment)



Sealed relief valves

Nominal diameter (mm)	20–200
Fluid	Gas, liquids (water), steam
Pressure range	0.1–46.2 MPa *1
Temperature range	Room temperature to 373°C *1
Materials	Carbon steel, Cr-Mo steel, stainless steel (JIS, ASME and ASTM standards)

\*1 Pressure range and temperature range vary with the fluid.



Pressurizer safety valve

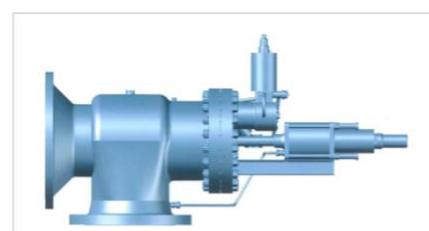
Nominal diameter (mm)	100•150
Fluid	Steam
Pressure range	17.16 MPa *2
Temperature range	353°C (saturation temperature) *2
Materials	JIS SCS14A

\*2 Actual delivered value



General-purpose safety valves (type S1627)

Nominal diameter (mm)	20•25•40•50
Fluid	Steam, gas (air, nitrogen)
Pressure range	0.1–2.2 MPa
Temperature range	Room temperature to 225°C
Materials	JIS SCS13A



Moisture separation heater relief valves

Nominal diameter (mm)	400•600
Fluid	Steam
Pressure range	1.07–1.59 MPa *2
Temperature range	195–316C *2
Materials	JIS SCPH2

\*2 Actual delivered value



Cross-around pipe safety valves

Nominal diameter (mm)	550
Fluid	Steam
Pressure range	1.52–1.69 MPa *2
Temperature range	256–260C *2
Materials	JIS SCPH2

\*2 Actual delivered value



# FIGURE NUMBER SYSTEM

- TVE Valve Type No.

# Figure number system

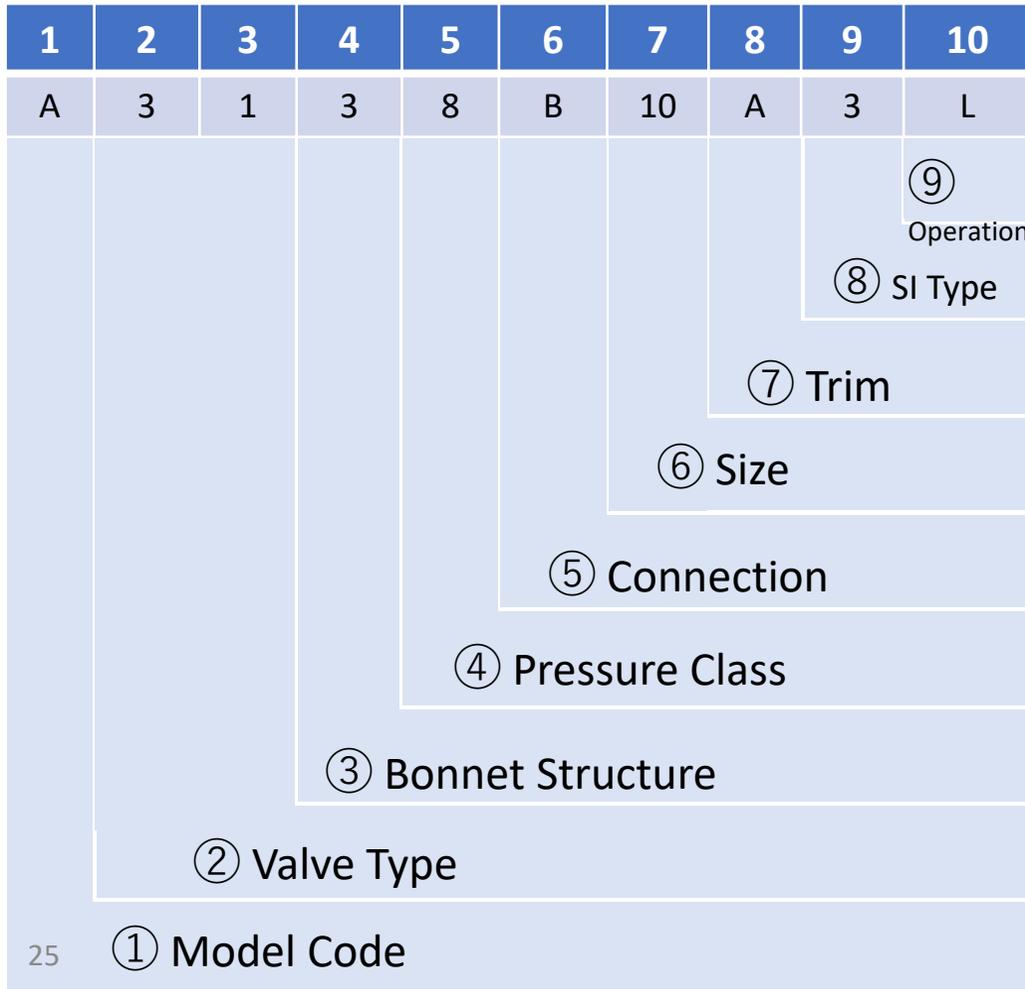
- TVE Valve Type No.



## A3138B-10A3-L

1	A type	6	Connection BW
2	Globe valve	7	Size 100A
3	Globe valve	8	A trim
4	Pressure Seal Bonnet	9	ASME B16.34
5	Class 2500lb	10	Motor Operation

For TVE Gate, Globe and Check valves, etc.  
Please refer to the table below.



### ① Model Code

e.g. Type A, B, D, E

### ② Valve Type

31: Globe 32: Angle Globe 33: Y-Globe 34: Needle 35: Angle Needle  
41: Screw Down Stop Check 44: Lift Check 47: Swing Check  
51: Wedge Gate 55: Parallel Slide Gate  
9: Quick Change Needle/Orifice block/Brow down, etc.

### ③ Bonnet Structure

1: Bolted 2: Pressure Seal Bonnet 3: Seal Bonnet 4: Flange, etc.

### ④ Pressure Class

1: 150lb 2: 300lb 4: 600lb 5: 900lb 6: 1500lb 7: 2000lb 8: 2500lb  
9: 3500lb 0: 4500lb

### ⑤ Connection

A: ANSI Flange B: Bett Weld S: Socket Weld etc.

### ⑥ Size

1: 15A (1/2inch) 2: 20A (3/4inch) 3: 25A (1inch) 4: 40A (1 1/2inch)  
5: 50A (2inch) 8: 80A (3inch) 10: 100A (4inch) 15: 150A (6inch)  
20: 200A (8inch) 25: 250A (10inch) 30: 300A (12inch) 35: 350A (14inch)  
40: 400A (16inch) 45: 450A (18inch) 50: 500A (20inch) 55: 550A (22inch)  
60: 600A (24inch) 65: 650 (26inch) etc.

### ⑦ Trim

A: WCB/A105 B: WC6/F11 C: WC9/F22 H: CF8M/F316 X: C12A/F91 etc.

### ⑧ SI Type

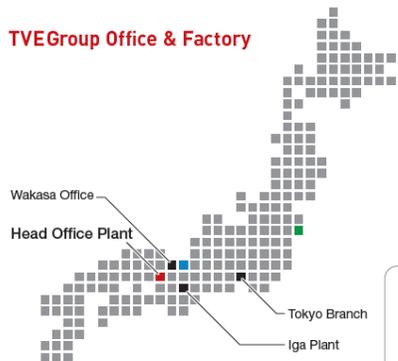
3: ASME B16.34 4: ASME B16.34 SPECIAL CLASS

### ⑨ Operation

H: Hand-wheel L: Motor Operation P: Gear Operation etc.

# Company Information

## TVE Group Office & Factory



### Group Company

- Toa Service Co., Ltd.
- Toa Create Co., Ltd.
- TVE Refine Metal Co., Ltd.
- TVE GLOBAL ASIA PACIFIC Pte. Ltd.



## TVE Co., Ltd.

■ Establishment : March 1922

■ Capital : JPY 1,739,559,810

■ Number of employees : 331 (at September 30, 2020)

### 【Scope of business】

Manufacturing and selling of various valves and cast products along with providing valves maintenance services

### 【Address】

5-12-1 Nishitachibana-cho, Amagasaki-shi, Hyogo 660-0054, Japan  
TEL: +81-6-6416-1184

# TGA

**TVE Global Asia Pacific Pte. Ltd.**

Located in Singapore, TGA is the **Asia-Pacific Regional headquarters** of TVE.

The company, providing valve maintenance services, was founded in 2002 and also the first overseas office in Singapore opened by a Japanese valve manufacturer.

TGA has been expanding the scope of its valve sales and service activities from Singapore to neighboring countries.



Valve sales



Maintenance



Testing

**TGA** obviously supplies high-temperature, high-pressure valves of the TVE brand, but it also has access to valves of other manufacture through a vast procurement network it has developed. For more information, contact to TGA.

TGA offers customers a number of valve servicing options between on-site maintenance, pickup and servicing at the company's service shop and oversight engineering. Whichever option you choose, TGA will assign service techs specialized in the kind of valve maintenance required to get the job done.

TGA is a SINGLAS-certified service shop and can conduct a wide range of tests including actuation tests for safety valve, leak tests for butterfly valves and ball valves etc., pressure resistance tests and more.

**Company Name**  
**TVE Global Asia Pacific Pte. Ltd.**  
**(TGA)**

**Address :** 12J Enterprise Road Singapore 627689  
**Establishment :** 2002

TEL +65 6355-0027

Email sales@tveglobal.sg

#### Contents of Business

- Supply Valves, Spare parts, Gasket & Gland Packing etc.
- Valve Maintenance
- Solution / Delegate Supervisor on site
- Repair for damaged parts
- Fabricate (Spare parts and damaged parts etc.)
- Testing (Seat Leakage test, Popping Test etc.)



TGA  
(Singapore)

# M Meeting the Challenges of the Next 100 Years

Since its founding in 1922, TVE has excelled at realizing the full potential of valve engineering.

## Company Chronology

March 1922



Ota Kogyo Shokai is established.

The Company begins manufacturing and selling valves, cocks and steam traps.

The Company is renamed Toa Valve Co., Ltd.

The Company is listed on the Second Section of the Osaka Securities Exchange.

The first main steam stop valve manufactured in Japan is delivered to the Sendai Thermal Power Plant of the Tohoku Electric Power Company.

The Company delivers valves to Japan's first commercial nuclear power plants — Tsuruga Unit 1 (a BWR) and Mihama Unit 1 (a PWR)

The Company delivers Japan's first pressurizer safety valve to a PWR Nuclear Power Plant (Genkai Unit 1).

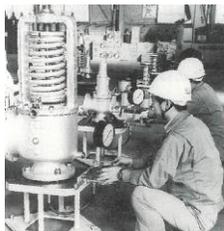
September 1942

October 1961

1962



1969–1973

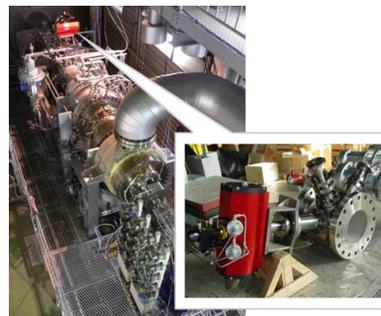


March 2002



The Company delivers a 1175-mm low-temperature rethermal steam pipe stop valve (isolation device), Japan's largest, to Unit 1 of the Misumi Power Station.

October 2002



Toa Valve Overseas Pte. Ltd. is established in Singapore.

The Company delivers an exhaust gas pressure adjustment valve to JAXA (Japan Aerospace Exploration Agency) as part of the rebuilding of annular combustion test equipment.

The Head Office of the Toa Valve Group merges with its subsidiary, Toa Valve Engineering Co., Ltd., and is renamed Toa Valve Engineering Inc.

April 2010

October 2011



The Company delivers a 600-mm moisture separation heater escape valve to the AP1000 Sanmen No. 1 Nuclear Power Plant in China.

February 2016

August 2020

The Company concludes a capital and business alliance with KITZ Corporation.

October 2020

March 2022

TOA VALVE OVERSEAS Pte. Ltd., our Singapore subsidiary, is renamed TVE GLOBAL ASIA PACIFIC Pte. Ltd.

The company is renamed TVE Co., Ltd.

The 100<sup>th</sup> anniversary.

