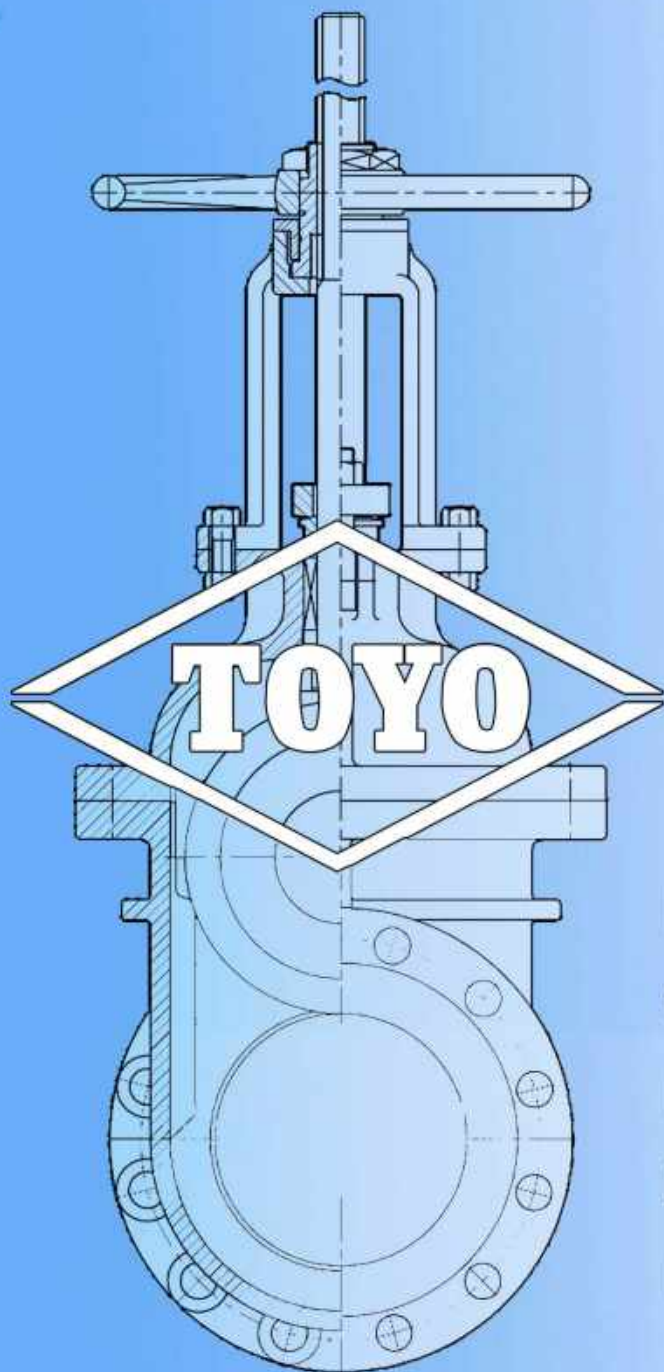


RED-WHITE

TOYO



**Bronze Brass Valve**  
**Cast Iron Valve**  
**Ductile Iron Valve**  
**Stainless Steel Valve**  
**Butterfly Valve**

RED-WHITE



**東洋バルブ**

**TOYO VALVE CO., LTD.**

<http://www.toyovalve.co.jp/>

# RED-WHITE



## COMPANY

---

Based on "Market In" concept, we respond to customers' diverse needs painstakingly and promptly. Since its founding in 1919, we as a flow control product manufacturer, we have consistently focused on product development, manufacturing and marketing to respond to customers' needs promptly.

Since 2004, we have been running our business principled to customers' satisfaction by building up closer ties with our group companies; to improve the quality to high level, improve the delivery lead time, pursuit globally competitive price.

In the future, focusing on improvements to strengthen internal controls and corporate ethics, trust company that aims to promote both domestic and international new business development of new products.

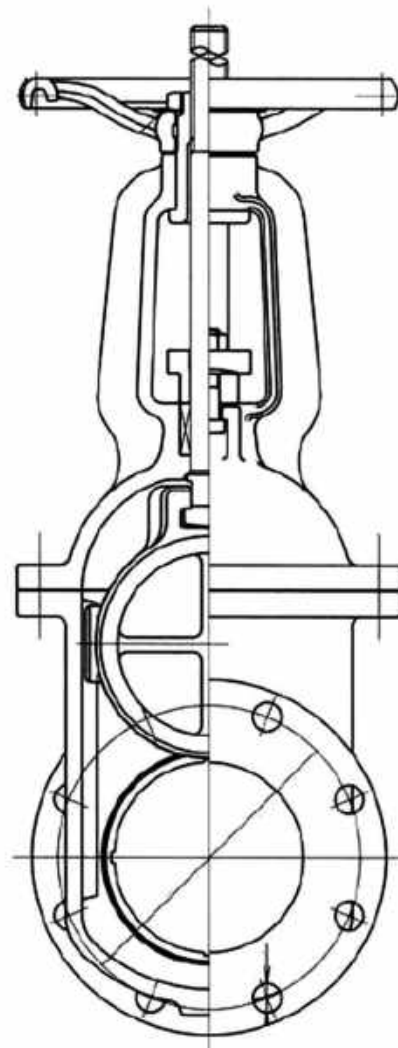
## PRODUCT

---

Toyo/Red-White's Valves-Meeting the Wide Range of Industries' Needs Toyo/Red-White's Valves Are Used Around the World Complemented by complete lines of high quality products, Toyo/Red-White's valves have steadily contributed to a wide field of industrial development, from housing to electric power.

Today, as an international enterprise Toyo Valve Co., Ltd. markets its products, not only domestically but in more than 100 countries overseas, and thus has assisted improvements in environmental and industrial growth worldwide.

One major feature of which Toyo Valve can be proud is its comprehensive after-sale servicing system that ensures long and trouble-free usage of Toyo/Red-White's quality products.





# CONTRIBUTING TO TOMORROW'S SOCIETY AS A FLUID CONTROL SPECIALIST



Toyo/Red-White's Valves Are used on High-rise buildings at Shinjuku, Tokyo Metropolitan Subcenter

## Brochure Guide

- (1) Refer to the individual specification sheet or the drawing for details of a product.
- (2) Main unit of this catalog are shown in SI, Mpa, Celcius(C), milimeter (mm) and Psig, Farhenheit (F).
- (3) Refer to the attach P-T rating about applicable Pressure and Temperature.
- (4) The non-asbestos product is used for the gland packing and gasket of bronze, brass and cast iron valves as a manufacturer's standard. Please consult about other product.
- (5) Bronze and cast iron strainers have the perforated metal screen equivalent to 14-16 meshes. Other meshes of the screen are also available upon request. Please contact us.
- (6) Teflon is Du Pont's tradename.

# Bronze Threaded Valve



Type	Gate			Gate			Gate			Gate			Globe			Globe			
	Class 125			PN16			Class 150			Class 150			Class 100			Class 150			
<b>Fig</b>	<b>125E-B5-N</b>			<b>H-B5-PN16</b>			<b>150-B5-N</b>			<b>150-B5RU-NR-NPT/UCBRI&gt;</b>			<b>100N-BG-N</b>			<b>150E-BG-N</b>			
<b>Product Code</b>	<b>206A</b>			<b>275P</b>			<b>204A</b>			<b>298</b>			<b>210A</b>			<b>213A</b>			
<b>inch</b>	<b>mm</b>	<b>L</b>	<b>H</b>	<b>D1</b>	<b>L</b>	<b>H</b>	<b>D1</b>	<b>L</b>	<b>H</b>	<b>D1</b>	<b>L</b>	<b>H</b>	<b>D1</b>	<b>L</b>	<b>H</b>	<b>D1</b>	<b>L</b>	<b>H</b>	<b>D1</b>
1/4	8	42	75	48	43	76	48	48	96	55	51	137	55	40	67	48	44	67	48
1/2	15	45	81	48	48	86	55	53	112	63	56	158	70	53	81	63	65	94	70
3/4	20	50	90	55	53	98	63	62	123	70	66	181	70	63	95	70	77	104	80
1	25	57	106	63	60	118	70	69	141	80	68	216	80	73	104	80	85	127	90
1 1/4	32	61	119	70	63	126	70	75	164	90	74	257	90	81	127	90	100	145	100
1 1/2	40	67	135	80	71	154	80	86	197	100	84	297	100	94	147	100	119	173	110
2	50	74	159	90	87	180	90	105	224	110				115	178	110	139	199	125
2 1/2	65	90	201	110	96	211	100	116	261	125				131	200	125	158	214	140
3	80	100	223	125															
4	100	140	302	160															
<b>Body</b>	Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze			
<b>Bonnet/Cap</b>	Cast Bronze			Cast Bronze			Forged Brass			Cast Bronze			Forged Brass			Forged Brass or Cast Bronze			
<b>Stem/Pin</b>	Dezincification Resistant Brass			Dezincification Resistant Brass			Dezincification Resistant Brass			Cast Bronze			Dezincification Resistant Brass			Dezincification Resistant Brass			
<b>Disc/Ball</b>	Dezincification Resistant Brass or Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze			
<b>Packing</b>	Aramid Fiber Graphite			Aramid Fiber Graphite			Aramid Fiber Graphite			Flexible Graphite&Aluminium			Aramid Fiber Graphite			Aramid Fiber Graphite			
<b>Hand Wheel</b>	Aluminium Die-Cast						Aluminium Die-Cast			Aluminium Die-Cast			Aluminium Die-Cast			Aluminium Die-Cast			
<b>Note</b>	Screwed Bonnet (Size 2 1/2 to 4), Inside Screw, Non-Rising Stem			Non-Rising Stem			Screwed Bonnet, Inside Screw, Non-Rising Stem			Union Bonnet, Inside Screw			Screwed Bonnet, Inside Screw			Screwed Bonnet, Inside Screw			



Type	Swing Check			Swing Check			Swing Check			Strainer			Ball					
	Class 125			Class 125			Class 150			Class 150			Class 600					
<b>Fig</b>	<b>125-BNS-N</b>			<b>125H-BNS-N</b>			<b>150H-BNS-N</b>			<b>150-BT-N</b>			<b>Fig</b>	<b>600RC-N</b>				
<b>Product Code</b>	<b>234</b>			<b>236A</b>			<b>238</b>			<b>380</b>			<b>Product Code</b>	<b>5026</b>				
<b>inch</b>	<b>mm</b>	<b>L</b>	<b>H</b>	<b>D1</b>	<b>L</b>	<b>H</b>	<b>D1</b>	<b>L</b>	<b>H</b>	<b>D1</b>	<b>L</b>	<b>H</b>	<b>D1</b>	<b>inch</b>	<b>mm</b>	<b>L</b>	<b>H</b>	<b>D1</b>
1/4	8				54	40		60	39		80	49		1/4	8	50	37	70
1/2	15	60	39		56	40		72	49		100	57		1/2	15	65	40	80
3/4	20	70	45		70	49		84	58		115	70		3/4	20	68	44	80
1	25	80	52		80	58		99	70		135	82		1	25	79	50	110
1 1/4	32	92	62		95	71		113	79		160	98		1 1/4	32	86	55	110
1 1/2	40	102	67		110	80		131	95		195	121		1 1/2	40	96	65	150
2	50	122	79		128	95		162	114		230	148		2	50	109	72	150
2 1/2	65	150	91		156	114		186	132		240	180		2 1/2	65	138	100	200
3	80	165	102		184	131								3	80	167	112.5	300
4	100													4	100			
<b>Body</b>	Cast Bronze			Cast Bronze			Cast Bronze			Cast Bronze			<b>Body</b>	Forged Brass				
<b>Bonnet/Cap</b>	Forged Brass			Forged Brass			Forged Brass			Forged Brass			<b>Bonnet/Cap</b>	Brass / Nickel Plated				
<b>Stem/Pin</b>	Forged Brass			Copper			Copper			Gasket: Non-Asbestos			<b>Stem/Pin</b>					
<b>Disc/Ball</b>	Forged Brass			Cast Bronze			Cast Bronze			Screen: Stainless Steel			<b>Disc/Ball</b>	Brass / Chrome Plated				
<b>Packing</b>										O-Ring: FKM			<b>Seat</b>	PTFE				
<b>Hand Wheel</b>													<b>O-Ring</b>	FKM				
<b>Note</b>	Screwed Cap, Plug: Brass Rod			Screwed Cap, Y Pattern, Plug: Brass Rod			Screwed Cap, Y Pattern, Plug: Brass Rod			Screwed Cap			<b>Note</b>	Full Bore				

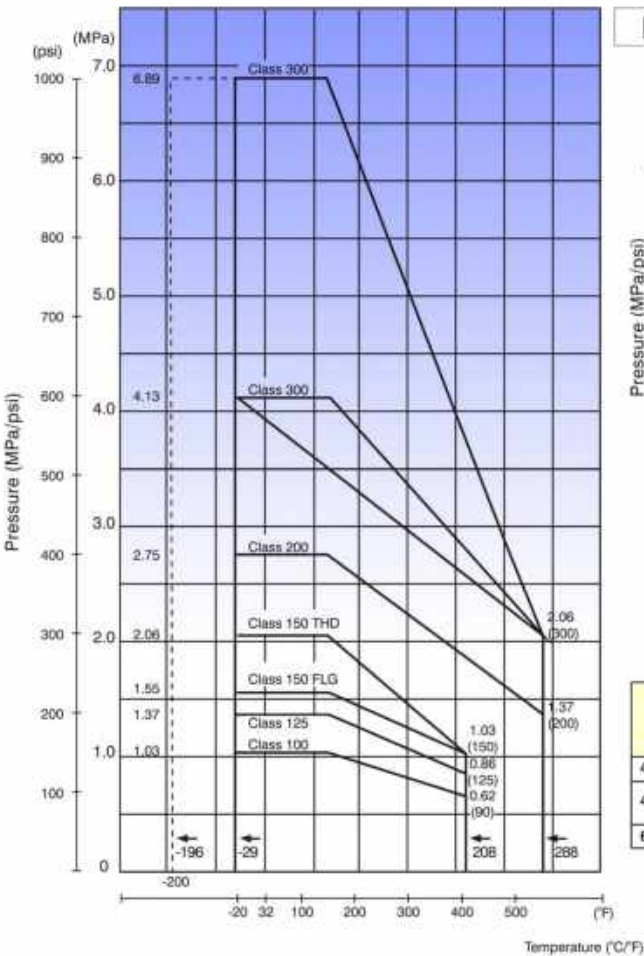
# Pressure-Temperature Ratings

## Bronze and Brass Valves (Extracted from MSS SP-80)

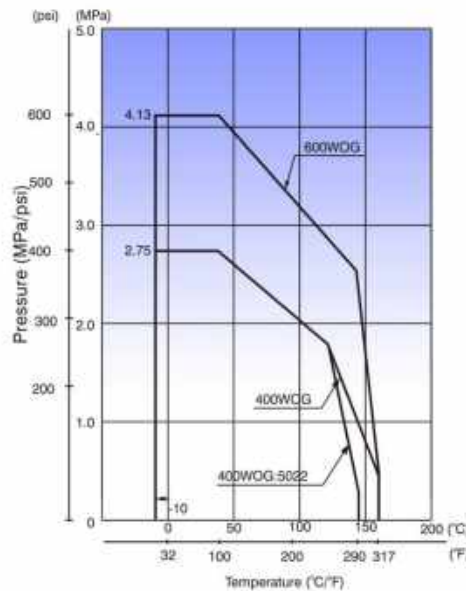
### Pressure-Temperature Ratings

Service temperature		100		125		150		200		300		300		300	
		THD				FLG				THD					
°C	°F	MPa	psi	MPa	psi	MPa	psi	MPa	psi	MPa	psi	MPa	psi	MPa	psi
-29-66	-20-150	1.03	150	1.37	200	2.06	300	1.55	225	2.75	400	4.13	600	6.89	1000
93	200	0.93	136	1.27	185	1.86	270	1.44	210	2.58	375	3.86	560	6.34	920
121	250	0.86	126	1.17	170	1.65	240	1.34	195	2.41	350	3.61	525	5.72	830
149	300	0.79	116	1.06	155	1.44	210	1.24	180	2.24	325	3.37	490	5.10	740
177	350	0.68	100	0.96	140	1.24	180	1.13	165	2.06	300	3.10	450	4.48	650
204	400	0.63	92	-	-	-	-	-	-	1.89	275	2.82	410	3.86	560
208	406	0.62	90	0.86	125	1.03	150	1.03	150	-	-	-	-	-	-
232	450	-	-	-	-	-	-	-	-	1.72	250	2.58	375	3.30	480
260	500	-	-	-	-	-	-	-	-	1.55	225	2.34	340	2.68	390
288	550	-	-	-	-	-	-	-	-	1.37	200	2.06	300	2.06	300
Saturated steam		0.68	100	0.86	125	1.03	150	1.03	150	1.37	200	2.06	300	2.06	300
Test pressure	shell water	1.55	225	2.06	300	3.10	450	2.41	350	4.13	600	6.20	900	10.34	1500
	seat air	0.55	80	0.55	80	0.55	80	0.55	80	0.55	80	0.55	80	0.55	80

NOTE: Class 100 outside of MSS SP-80



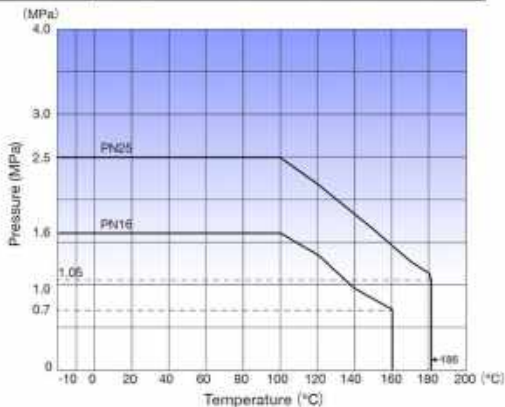
## Ball Valves



### Pressure-Temperature Ratings

Class	Fig.	WOG 38°C (3°F)		Test pressure	
		MPa	psi	Shell (water)	Seat (air)
400 WOG	5022	2.75	400	4.13	600
400 WOG	other than 5022	2.75	400	4.13	600
600 WOG		4.13	600	6.20	900

## PN16, PN25



Service Temperature (°C)	PN16	PN25
-10 to 100	1.6	2.5
120	0.95	2.18
150	1.35	1.65
170	0.7	1.28
180	-	1.13
186	-	1.05
198	-	-
200	-	-

Bronze Threaded Valve

# Cast Iron Valve



Fig	EA125-FSRF10KFF<GA101>			EA125-FSF10KFF<GA101>			EAEN16-FSRF<GA101>			EAEN16-FSF<GA101>			(PHOX)EN25-FSRF			
Product Code	420AF			410AF			500AF			501AF			423E			
Inch	mm	L	H	D1	L	H	D1	L	H	D1	L	H	D1	L	H	D1
2	50	178	322	178	178	282	180	178	322	178	178	282	180	215.9	385	175
2 1/2	65	190	379	200	190	309	180	190	379	200	190	309	180	241.3	437	200
3	80	203	432	200	203	366	200	203	432	200	203	366	200	282.5	493	254
4	100	229	528	254	229	415	254	229	528	254	229	415	254	304.8	611	300
5	125	254	620	254	254	475	254	254	620	254	254	475	254	381	716	300
6	150	267	722	280	267	531	300	267	722	280	267	531	300	403.2	813	348
8	200	292	922	300	292	642	300	292	922	300	292	642	300	419.1	1023.5	400
10	250	330	1137	350	330	775	350	330	1137	350	330	775	350	457	1211	457
12	300	356	1351	400	356	860	400	356	1351	400	356	860	400	502	1386	457
Body	Cast Iron			Cast Iron			Cast Iron			Cast Iron			Cast Iron			
Bonnet/Cover	Cast Iron			Cast Iron			Cast Iron			Cast Iron			Cast Iron			
Stem	Brass			Brass			Brass			Brass			Forged Brass			
Disc	Cast Iron			Cast Iron			Cast Iron			Cast Iron			Cast Iron			
Packing	Graphite												Graphite			
Hand Wheel	Cast Iron			Cast Iron									Cast Iron			
Trim	Bronze			Bronze			Bronze			Bronze			Bronze			
Note	End Connection: JIS10K			End Connection: JIS10K									Bolted Bonnet, Outside screw&yoke			



Fig	EA125-FGF10KFF<GA101>			EAEN16-FGF<GA101>			EA125-FNSF10KFF<GA101>			(PHOX)EN25-FNSF			EAEN16-FNSF<GA101>			
Product Code	405AF			510AF			430AF			433E			520AF			
Inch	mm	L	H	D1	L	H	D1	L	H	D1	L	H	D1	L	H	D1
2	50	203	275	178	203	275	178	203	103		267	135		203	103	
2 1/2	65	216	301	178	216	301	178	216	119		292	150		216	119	
3	80	241	353	200	241	353	200	241	141		318	166		241	141	
4	100	292	403	254	292	403	254	292	162		356	190		292	162	
5	125	330	461	300	330	461	300	330	187		400	206		330	187	
6	150	356	528	300	356	528	300	356	211		444	244		356	211	
8	200	495	604	348	495	604	348	495	270		533	291		495	270	
10	250							622	314		622	337		622	314	
12	300							699	356		711	383		699	356	
14	350							787	560					787	560	
16	400							914	589					914	589	
18	450							914	645					914	645	
20	500							1016	702					1016	702	
Body	Cast Iron			Cast Iron			Cast Iron			Cast Iron			Cast Iron			
Bonnet/Cover	Cast Iron			Cast Iron			Cast Iron						Cast Iron			
Stem	Forged Brass			Brass												
Disc	Cast Iron			Cast Iron			Cast Iron			Cast Iron			Cast Iron			
Packing	Graphite			Graphite												
Hand Wheel	Cast Iron															
Hinge Pin							Stainless Steel						Stainless Steel			
Note	End Connection: JIS10K						End Connection: JIS10K			Bolted Cover						

# Cast Iron Valve

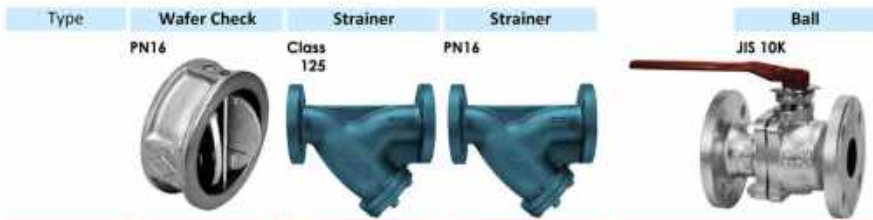


Fig	E16-FNW			EA125-FTF10KFF<GA101>			EAEN16-FTF<GA101>			Fig	10-FBF-N-L				
Product Code	443B			450AF			530AF			Product Code	470L				
inch	mm	L	H	D1	L	H	D1	L	H	D1	inch	mm	L	H	D1
2	50				230	158		230	158		1/2	15	110	102	130
2 1/2	65				290	176		290	176		3/4	20	120	105	130
3	80				310	199		310	199		1	25	130	114	160
4	100				350	240		350	240		1 1/4	32	140	121	160
5	125				400	292		400	292		1 1/2	40	165	124	230
6	150				480	320		480	320		2	50	180	128	230
8	200				600	399		600	399		2 1/2	65	190	154	400
10	250				730	517		730	517		3	80	200	163	400
12	300	143	386		850	568		850	568		4	100	230	199	460
14	350	184	446		980	642		980	642		5	125	300	219	460
16	400	191	498		1100	750		1100	750		6	150	340	292	1000
18	450	203	558		1200	784		1200	784		8	200	450	352	1500
20	500				1250	857		1250	857						
Body	Cast Iron			Cast Iron			Cast Iron			Body	Cast Iron				
Bonnet/Cover				Cast Iron			Cast Iron			Bonnet/Cover	Cast Iron				
Disc	Cast Bronze									Stem	SUS304				
Hinge Pin	Stainless Steel									Ball	Stainless Steel				
Screen				Stainless Steel			Stainless Steel			Packing	PTFE				
Seat Rubber	NBR									Gasket	PTFE				
										Seat	PTFE				
Note				End Connection: JIS10K						Note	Full Bore				

## 1. Castings 鑄件

All gray iron castings meet or exceed the chemical and physical requirements of BS1452Gr.220. 符合 BS1452Gr.220 標準。

## 2. End Connections 接口

End flange dimensions and drilling conform to BS4504 PN16. End flanges are finished in accordance with MSS SP-6.

Face-to-face dimensions conform to BS5150, BS163, BS5152, BS5153 and BS5155. 多款法蘭接口可選擇，包括英美日等標準。

## 3. Final Testing 測試

Each Toyo Valve cast iron valve is subjected to hydrostatic shell and seat tests for casting soundness and tight closure as specified in MSS SP-70, SP-71 and Federal Specification WW-V-58B for general land use. If requested, each valve is also given an air seat test. 每只閥門均作獨立水壓測試，以符合出廠標準。

## 4. Markings and Identification Plates 商標

Markings embossed on each valve body conform to the standard marking requirements of MSS SP-25.



Each valve is also provided with an identification plate which indicates figure number, size, service pressure rating, the manufacturer's trademark, trim and body materials and other necessary information.

## 5. Valve Design Information 設計資料

### • Bonnet and Cover

Bonnets and covers are securely bolted to bodies with a non-asbestos gasket in the joint. 採用不含石棉填料，確保用家安全。

### • Boltings

Bonnet boltings for all types and classes have hexagon-headed bolts and nuts of a physical strength not less than the requirements of ASTM A307 Grade B in accordance with MSS SP-70 and SP-71 for maximum pressure tightness in exacting service conditions. 所有螺絲均符合 ASTM A307 Grade B 標準。

### • Stems

All stems are cut to lefthand and righthand 29° trapezoidal threads, respectively. 閥桿為高拉力，切割成 29° 連接閥碟。

### • Stuffing Box

Stuffing boxes are sufficiently deep to provide a tight stem seal and long-lasting packing life. Standard stem packings are non-asbestos packings for general land use. 特大閥蓋以便容納閥桿填料並加強其壽命。

### • Handwheel

The handwheel, constructed of ductile iron or gray iron, is rugged, easy to grip and easy to operate. Handwheels are marked with the direction of movement for opening the valve. 符合手型設計並有開關方向指示，以球墨鑄製造。

### • Boss Locations

Blind bosses for drainage and bypasses are located as specified in MSS SP-45.

### • Finish

All unmachined exterior iron surfaces are painted blue.

# Cast Iron Valve

## Toyo Dual Plate Check Valve

- **A water hammer is prevented (Silent Check Type)**

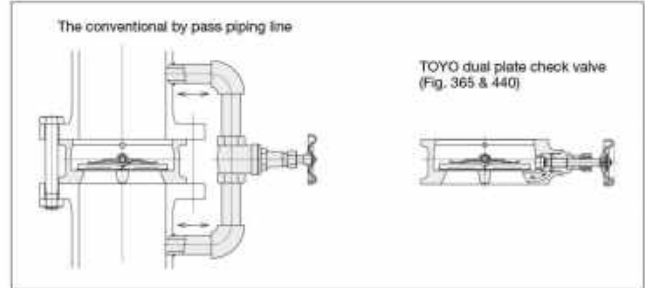
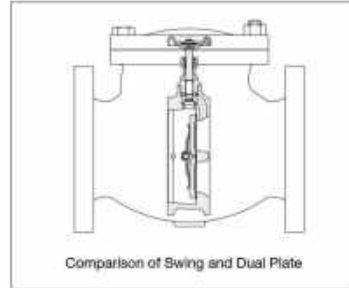
By action of the coil spring built in a valve, plates are gently opened at the time of starting a pump or it closes quickly when a pump stops. For this reason, a water hammer is prevented and generating a shock pressure is controlled.

- **It is compact.**

A small and lightweight wafer body. As compared with a swing check, the face-to-face dimension is about 1/4 and the weight is about 1/5. Piping work is easy, and attachment space for installation is also small.

- **By-pass piping is unnecessary. (Fig. 365 and 440)**

Since the by-pass valve is built in, the by-pass piping for discharge of the fluid in a pipe or priming when starting a pump are unnecessary. It is a big merit on design and construction.



## Cv Value

The Cv value – which is used by TOYO VALVE to indicate the capacity of a valve – is a flow rate represented in terms of U.S. gallons per minute when clear water at 60°F flows through a valve, in which the differential pressure between its outlet and inlet is kept at 1 psi – 6.89kPa.

The Cv value can be determined by experiment, and the relation between the Cv value and the flow rate or pressure drop, when the fluid is water.

In case of water, the pressure drop or the flow rate can be obtained by the following formulas.

$$\Delta P = 0.134 \frac{Q^2 G_L}{C_v^2}$$

$$Q = 2.735 C_v \sqrt{\frac{\Delta P}{G_L}}$$

$\Delta P$  = pressure drop (MPa)

$G_L$  = specific gravity of fluid when setting water to 1

$Q$  = flow rate (m<sup>3</sup>/h)

$C_v$  = Cv value

## Cast Bronze Valves

Valve type		GATE	GLOBE		ANGLE	CHECK		BALL	STRAINER
Nominal size			210A	211A/213A		LIFT	SWING	FULL BORE	
mm	Inch	206A			260A				230A
8	3/4	2.8					1.5		
10	3/8	5.7	2	2	2.5	2	2.8		
15	1/2	15	3	3.5	4	3.5	5	26	4.5
20	3/4	18	4.5	6.5	7.5	6.5	9	46	7.5
25	1	29	8.5	12	13	11	20	80	14
32	1 1/4	59	16	21	23	19	36	105	19
40	1 1/2	120	23	30	34	28	51	141	30
50	2	190	38	49	55	46	92	215	47
65	2 1/2	335	64	87	97	81	162		
80	3	486	93		166	123	247		
100	4	772				163			

## Cast Iron Valves

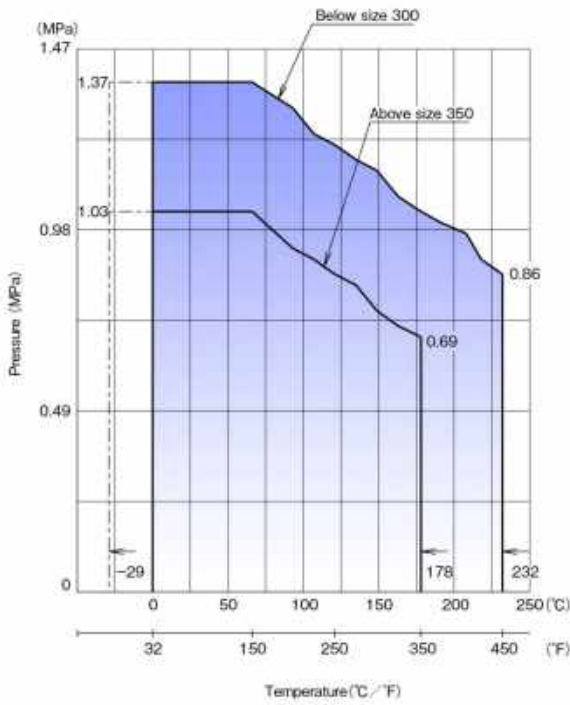
Valve type		GATE	GLOBE	CHECK		BALL	STRAINER	BALL FOOT
Nominal size				435A	DUAL PLATE	FULL BORE		
mm	Inch	415AE/421AE	400A				440	470
15	1/2					26		
20	3/4					53		
25	1					95		
32	1 1/4					165		
40	1 1/2	129	33	54	40	235		17
50	2	216	55	110	56	485	51	28
65	2 1/2	345	88	143	93	730	80	44
80	3	495	126	206	157	1240	116	75
100	4	875	224	440	325	2250	205	125
125	5	1370	350	575	540	3550	325	190
150	6	1920	485	830	815	5200	465	330
200	8	3600	920	1500	1450	9900	845	380
250	10	5680	1450	2370	2350		1350	
300	12	8290	2120	3470	3640		2080	
350	14				5480			
400	16				7930			



## Pressure-Temperature Ratings

### Cast Iron Valves (Extracted from MSS SP-70, 71 & 85)

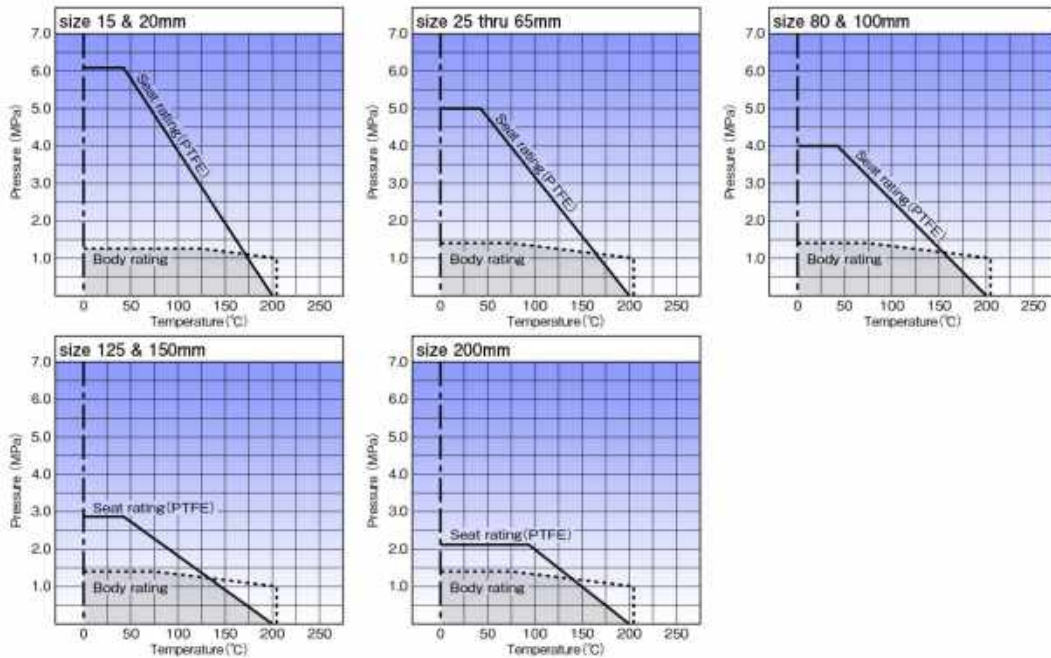
#### Class 125 Gate, Globe and Check Valves



Pressure-Temperature Ratings

Temperature		Size 50 thru 300	Above size 350
°C	°F	Mpa	Mpa
-29-66	-20-150	1.37	1.03
93	200	1.31	0.93
107	225	1.24	0.90
121	250	1.21	0.86
135	275	1.17	0.83
149	300	1.14	0.76
163	325	1.07	0.72
178	350	1.03	0.69
191	375	1.00	
208	400	0.97	
218	425	0.90	
232	450	0.86	
Saturated steam		0.86	0.68
Test pressure	shell water	2.41	1.83
	seat air	0.55	0.55

#### 10K Cast Iron Ball Valves



# Butterfly Valve



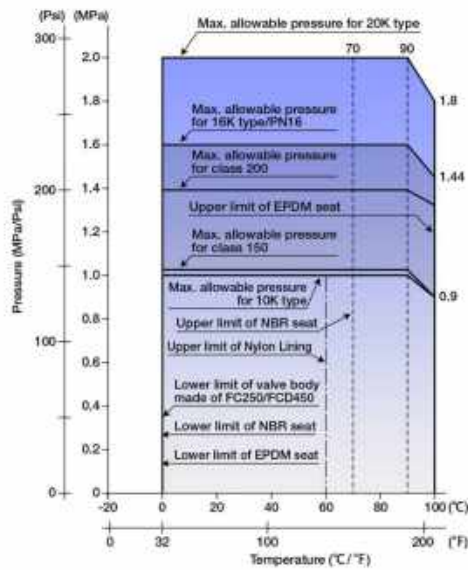
Fig	10ALM-N-LUE<Z0T01>			10ALM-N-GUE<Z0T01>			PN16L1-N<Z0T04>			PN16L2-N<Z0T04>			PN16L1-N-UME<Z0T04>			
Product Code	550LA			550GA			957-DNSL			957-DNSG			957-MESL			
inch	mm	L	H	D1	L	H	D1	L	H	D1	L	H	D1	L	H	D1
1 1/2	40	33	162	188	56	281	100									
2	50	43	167	188	60	335	140	43	191	90	43	194	90	43	194	90
2 1/2	65	46	175	188	33	201	100	46	199	104	46	202	104	46	202	104
3	80	46	185	188	43	205	100	46	217	124	46	236	124	46	236	124
4	100	52	195	188	46	213	100	52	227	146	52	246	146	52	246	146
5	125	56	239	260	46	223	100	56	265	176	56	274	176	56	274	176
6	150	56	251	260	52	233	100	56	277	206	56	286	206	56	286	206
8	200				56	269	100	60	295	257	60	325	257	60	325	257
10	250										68	381	312			
12	300										78	406	364			
14	350										78	461	407			
16	400										102	516	466			
18	450										114	540	522			
20	500										127	623	575			
24	600										154	671	680			
Body	Aluminum Die-cast			Aluminum Die-cast			Ductile Iron			Ductile Iron			Ductile Iron			
Stem	Stainless Stell			Stainless Stell			Stainless Stell			Stainless Stell			Stainless Stell			
Disc	Stainless Stell			Stainless Stell			Ductile Iron			Ductile Iron			Stainless Stell			
Seat Rubber	EPDM			EPDM			NBR			NBR			EPDM			
Note																



Fig	PN16L2-N-UME<Z0T04>			10L2-N-UE<Z0T02>			20L2-N-UE			
Product Code	957-MESG			562-UESG			570-UESG			
inch	mm	L	H	D1	L	H	D1	L	H	D1
2	50	43	194	90				43	194	80
2 1/2	65	46	202	104				46	202	80
3	80	46	136	124				46	236	110
4	100	52	146	146				52	246	110
5	125	56	174	176				56	274	110
6	150	56	186	206				56	286	110
8	200	60	325	257				60	325	170
10	250	68	381	312	68	461	250	68	381	250
12	300	78	406	364	78	486	250	78	406	250
14	350	78	461	407	78	562	310	78	445	310
16	400	102	516	466	102	617	310	102	500	310
18	450	114	540	522	114	641	319	114	540	360
20	500	127	623	575	127	728	360	127	589	500
22	550							154	646	500
24	600	154	671	680	154	776	360	154	671	500
Body	Ductile Iron			Ductile Iron			Ductile Iron			
Stem	Stainless Stell			Stainless Stell			Stainless Stell			
O Ring	EPDM			EPDM			EPDM			
Disc	Stainless Stell			Stainless Stell			Stainless Stell			
Seat Rubber	EPDM			EPDM			EPDM			
Note										

## Pressure-Temperature Rating

### ■ Rubber Seat



Note: 1. The maximum allowable working pressure is affected by the mating flange when installing the valve with JIS5K flanges.  
 Static water flow: 0.7MPa  
 Pulsated water flow: 0.6MPa

### ● Application of Pressure-Temperature Rating

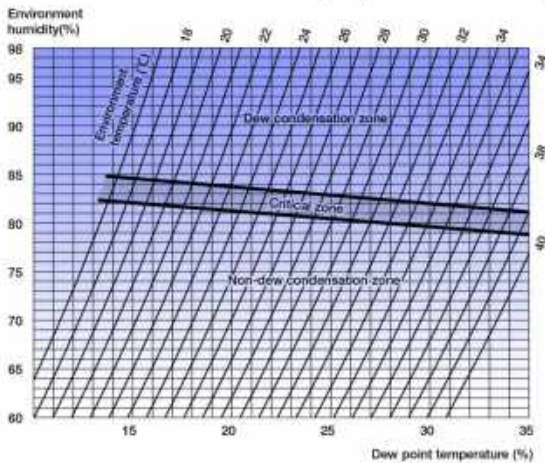
- This diagram is prepared with based on maximum allowable working pressure and temperature, pressure-temperature characteristics of EPDM in JIS B2032 (Wafer type rubber-seated butterfly valves).  
 In actual application, it is necessary to expect the safety allowance in consideration of piping design conditions, etc.  
 Generally, the following safety allowance is recommended.
  - For large size  
10 - 15%.
  - For pulsated flow or steam (Teflon® or metal seat)  
20 - 25%.
- In case of applying some regulations, such as Japanese government standards, etc., it may be restricted in material, temperature, design, strength, etc. Beforehand, please refer to related regulation or standard.
- In JIS B2032, the maximum allowable flow velocity of fluid when the valve is fully opened is specified as 3m/s at nominal pressure 10K and 4m/s at nominal pressure 16K, and 30m/s in case of gas. If the flow velocity exceeds these criteria, the pipe diameter should be revised.

### ▲ Caution:

- A rubber seat (NBR/EPDM) may deteriorate at an early stage in service for hot water supply line.
- An EPDM seated butterfly valve shall not be used for all oil applications.

### ■ Dew condensation-proof capacity (Fig. 550)

— Relation between environment (temperature and humidity) and dew point temperature —



<Note> Critical zone... Boundary zone between dew condensation zone and non-dew condensation zone  
 The figure is given certain range in consideration of atmospheric pressure by the difference in height above sea level and climate, the circumstance around pipe, temperature change of the fluid in pipe (cold water), dispersion of data, etc.

# Ductile Iron Valve



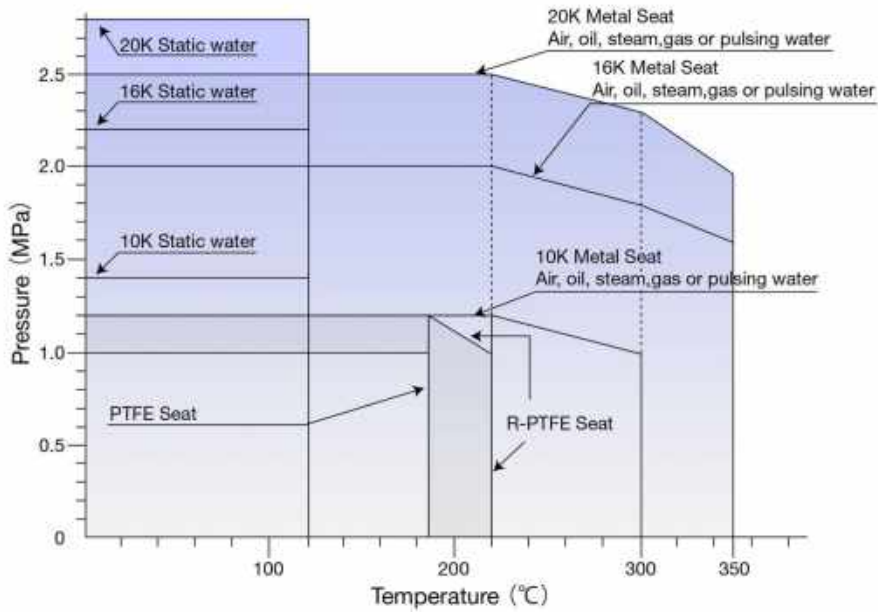
Fig.	16-DSRF-N(BB)			20-DSRF-N(BB)			20-DGF-N(BB)			16-DGF-N(BB)			16-DNSF-N			
Product Code	633			653A			651A			631			635A			
inch	mm	L	H	D1	L	H	D1	L	H	D1	L	H	D1	L	H	D1
2	50	178	352	200	216	395	200	267	243	225	203	302	200	203	120	
2 1/2	65	190	410	200	241	450	200	292	347	250	216	313	225	216	135	
3	80	203	479	250	283	520	250	318	382	250	241	356	250	241	145	
4	100	229	566	250	305	595	250	356	457	300	292	377	250	292	165	
5	125	254	667	300	381	725	300	400	534	350	330	460	300	330	200	
6	150	267	779	300	403	820	350	444	593	400	356	524	350	356	260	
8	200	292	993	350	419	1070	400	559	697	560	495	585	400	495	317	
10	250	330	1181	400	457	1247	450									
12	300	356	1404	450	502	1451	500									
Body	Ductile Iron			Ductile Iron			Ductile Iron			Ductile Iron			Ductile Iron			
Bonnet/Cover	Ductile Iron			Ductile Iron			Ductile Iron			Ductile Iron			Ductile Iron			
Stem	Stainless Steel			Stainless Steel			Stainless Steel			Stainless Steel						
Disc							Stainless Steel(hard facing)			Stainless Steel/Ductile Iron			Stainless Steel			
Body Seat	Stainless Steel			Stainless Steel			Stainless Steel(hard facing)			Stainless Steel			Stainless Steel			
Note																



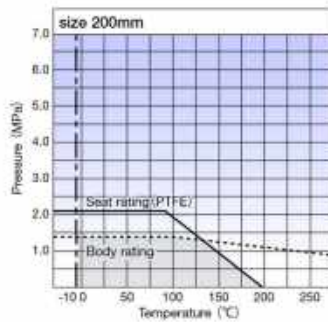
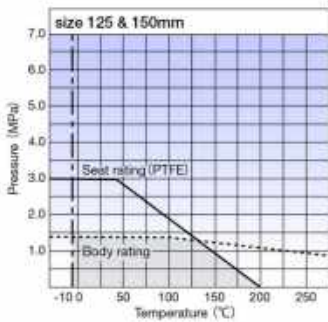
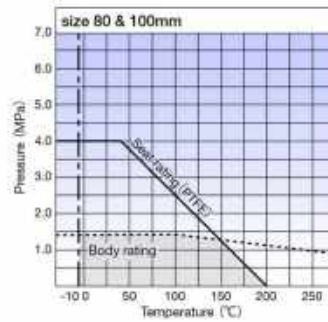
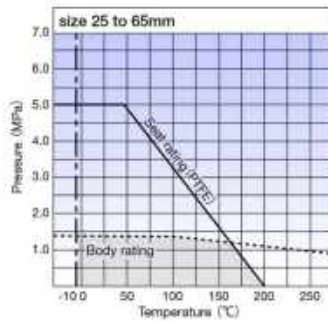
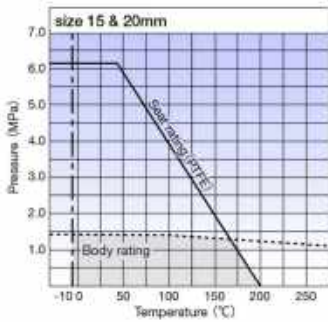
Fig.	20-DNSF-N			10-DNF-N			20-DNW			16-DTF-N			20-DTF-N			(PHOX)EN-25-DTF			
Product Code	655A			634A			645			638			658A			678E			
inch	mm	L	H	D1	L	H	D1	L	H	D1	L	H	D1	L	H	D1	L	H	D1
3/8	10													120	65				
1/2	15				108	50								125	65				
3/4	20				117	53					140	63	91	140	70				
1	25				127	61					150	77	114	160	85				
1 1/4	32				140	69					170	30	134	185	124				
1 1/2	40				165	75		54	128		190	100	146	200	135				
2	50	267	135		203	87		56	133		250	168	218	250	163		216	140	
2 1/2	65	292	145					60	150		305	212	285				241	162	
3	80	318	160					67	156		360	242	340				283	184	
4	100	356	185					68	169		415	284	391				305	225	
5	125	400	220					83	183		465	325	450				381	280	
6	150	444	240					95	216		515	370	502				403	318	
8	200	533	275					127	243		580	462	645				521	405	
10	250							140	290		680	536	757				635	485	
12	300							181	315		800	625	882				749	580	
14	350							184	330										
16	400							191	355										
18	450							204	388										
Body	Ductile Iron			Ductile Iron			Ductile Iron+NBR			Ductile Iron			Ductile Iron			Ductile Iron			
Bonnet/Cover	Ductile Iron			Stainless Steel			Cast Bronze			Ductile Iron			Ductile Iron			Ductile Iron			
Disc	Stainless Steel/Carbon Steel			Stainless Steel			Cast Bronze												
Screen										Stainless Steel			Stainless Steel (40 mesh)			Stainless Steel			
Body Seat	Stainless Steel			Stainless Steel															
Note																			

## Pressure - Temperature Ratings

GATE, GLOBE, CHECK, STRAINER / SCREWED, FLANGED ENDS



### 10K DUCTILE IRON BALL VALVES (FIG 607L)



# Stainless Steel Valve



Type		Gate			Swing Check			Strainer			Ball		
		JIS10K			JIS10K			JIS10K			Class 600		
Fig		802			804			809			3550		
Product Code		802			804			809			3550		
inch	mm	L	H	D1	L	H	D1	L	H	D1	L	H	D1
1/4	8										39	31	60
3/8	10										44	36	70
1/2	15	54	97	70	65	45		85	60		56.5	41	85
3/4	20	58	102	70	80	55		100	65		59	44	85
1	25	65	112	80	90	61		115	77		71	48	100
1 1/4	32	74	123	80	105	71		135	90		78	54	100
1 1/2	40	78	150	100	120	72		150	100		83	65	125
2	50	87	167	100	125	81		180	115		100	72	125
Body		Stainless Steel			Stainless Steel			Stainless Steel			Stainless Steel		
Bonnet/Cover					Stainless Steel			Stainless Steel					
Stem		Stainless Steel									Stainless Steel		
Disc		Stainless Steel			Stainless Steel						Stainless Steel		
Packing		Flexible Graphite+PTFE Braided Packing											
Seat											R-PTFE		
Screen								Stainless Steel					
Hinge Pin					Stainless Steel								
Plug					Stainless Steel								

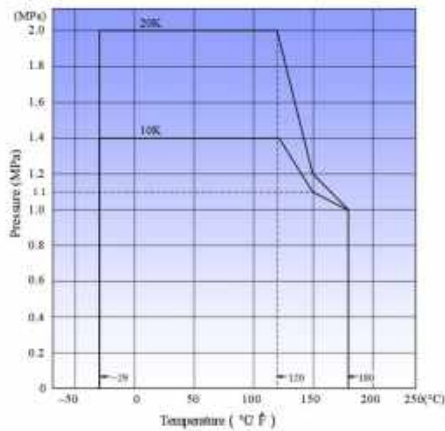


Type		Gate			Swing Check			Ball		
		JIS10K			JIS10K			Class 600		
Fig		10-USRF-VA			10-UNSF-VA			A10-UBF-L		
Product Code		803J			805J			3011L		
inch	mm	L	H	D1	L	H	D1	L	H	D1
1/2	15	108	201	90				108	81	130
3/4	20	117	211	90				117	84	130
1	25	127	224	100				127	93	160
1 1/4	32	140	240	100				140	97	160
1 1/2	40	165	284	140				165	113	230
2	50	178	336	160	203	121		178	120	230
2 1/2	65	190	474	180	216	134		190	150	400
3	80	203	494	200	241	148		203	161	400
4	100	229	523	225	292	162		229	189	460
5	125	254	606	250	330	192		356	209	800
6	150	267	711	250	356	217		394	262	980
8	200	292	924	300	495	264		457	317	1971
10	250	330	1126	350						
Body		Stainless Steel			Stainless Steel			Stainless Steel		
Bonnet/Cover		Stainless Steel			Stainless Steel			Stainless Steel		
Stem		Stainless Steel						Stainless Steel		
Disc/Ball		Stainless Steel			Stainless Steel			Stainless Steel		
Hinge Pin					Stainless Steel					
Plug					Stainless Steel					
Screen										
Arm					Stainless Steel					
Note								Full Bore		

## Pressure-Temperature Ratings

### U-Series Stainless Steel Valves

#### Gate, Globe, and Check Valves, strainers / screwed & flanged ends

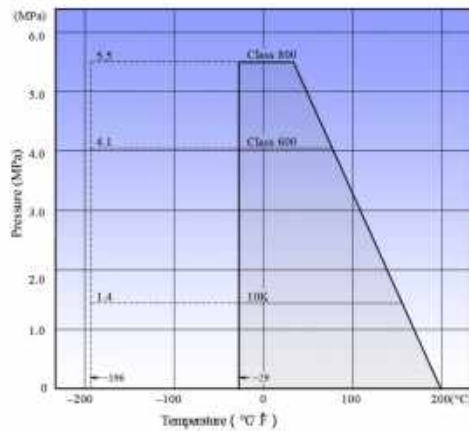


Service conditions		Class	10K	20K (Fig. 809)
Static water	Less than 120°C		1.4	2.0
	Less than 150°C		1.1	1.2
Air, oil, gas, steam	Less than 180°C		1.0	1.0

\*Do not use our products in flammable or toxic gas service.

#### Ball Valves / screwed end type

UZ-N (3550), UZ-N-T (3550W), UMU (4580), UM02-(4760A) or 10-UB-N (3060)



Service conditions		Class	600WOG	800WOG	10K
Water, oil, gas			4.1	5.5	1.4
	Saturated steam		1.0	1.0	1.0

\*Do not use our products in flammable or toxic gas service.

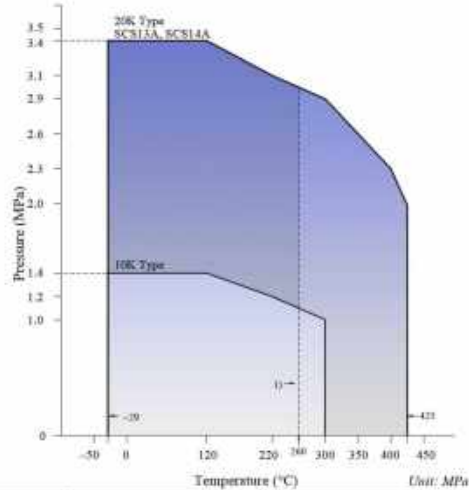
### VA-Series Stainless Steel Valves

#### JIS Flanged Valves

Nominal pressure		10K	20K
Body material	SCS13A, SCS14A		
	SCS13A, SCS14A		
Temperature	below 120°C	1.4	3.4
	220°C	1.2	3.1
	300°C	1.0	2.9
	350°C	—	2.6
	400°C	—	2.3
	425°C	—	2.0

#### Notes:

- 1) The max. working temperature for standard products is restricted to 260°C by gland packing, gasket or material.
- 2) In case of use at 260°C and above, applicable selection for gland packing & gasket is required.
- 3) Do not use our products in flammable or toxic gas service.



#### ASME B16.34 Table 2-2.1A & 2-2.2A

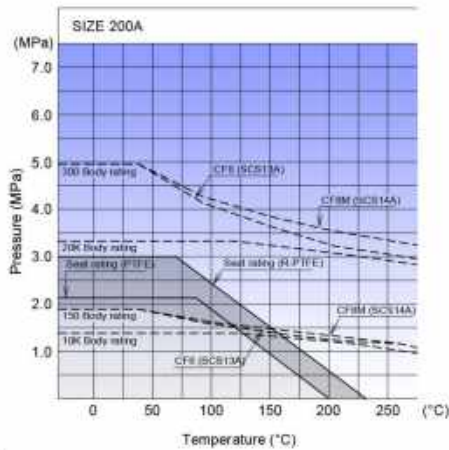
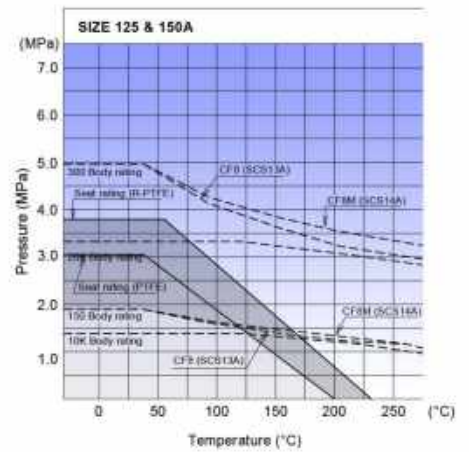
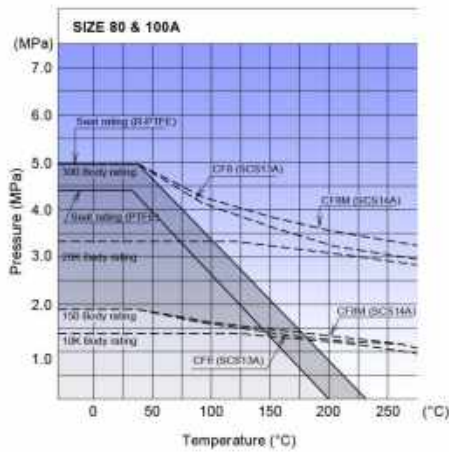
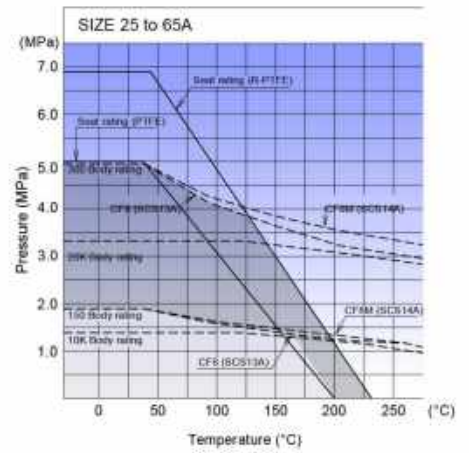
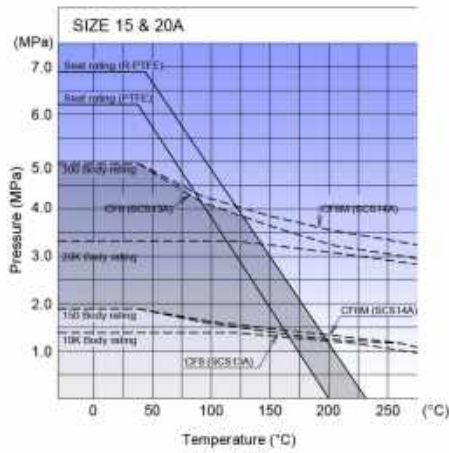
Service temperature		Class 150		Class 300	
(°C)	(°F)	A351 Gr. CF8 (SCS13A)	A351 Gr. CF8M (SCS14A)	A351 Gr. CF8 (SCS13A)	A351 Gr. CF8M (SCS14A)
-29-38	-20-100	1.90	1.90	4.96	4.96
93	200	1.59	1.62	4.14	4.27
149	300	1.41	1.48	3.72	3.86
204	400	1.31	1.34	3.41	3.55
260	500	1.17	1.17	3.20	3.31
316	600	0.97	0.97	3.03	3.10
343	650	0.86	0.86	2.96	3.03
371	700	0.76	0.76	2.90	3.00
399	750	0.66	0.66	2.86	2.93
427	800	0.55	0.55	2.79	2.90

# Stainless Steel Valve

## Pressure-Temperature Ratings

### 10/20K, Class 150/300 Stainless Steel Flanged Ball Valves

A10-UBF-L(301L)



#### Wafer Check Valves Rubber Seat (with Bypass-Valve)

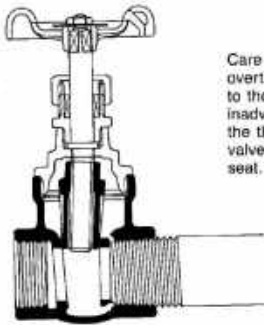
Fig. 10-UNW (806), 10K

Unit: MPa

Service conditions	Seat material			
	NBR	FKM	EPDM	
Static water	below 80°C	1.4	1.4	1.4
	above 120°C	—	—	1.4
Oil, water, air	below 80°C	1.0	1.0	1.0
	above 120°C	—	1.0	1.0

Note: An EPDM seat shall not be used for all oil application.



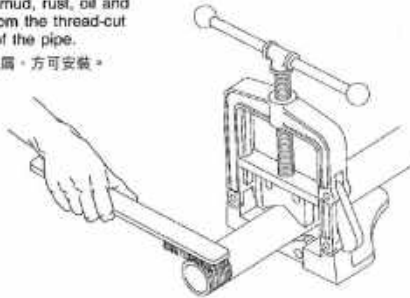


Care should be taken not to overtighten the pipe connected to the valve. If the pipe is inadvertently screwed deep into the threaded chamber of the valve, it may deform the body seat.

注意：應避免喉管過度旋入閥體，破壞閥座結構。

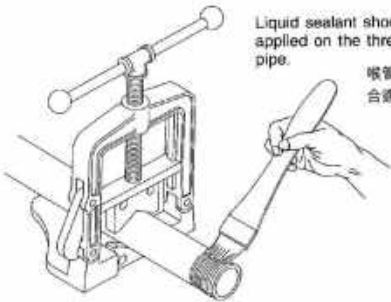
Prior to pipe connection, remove all foreign material deposits, such as mud, rust, oil and swarf, from the thread-cut portion of the pipe.

先清潔螺紋，方可安裝。



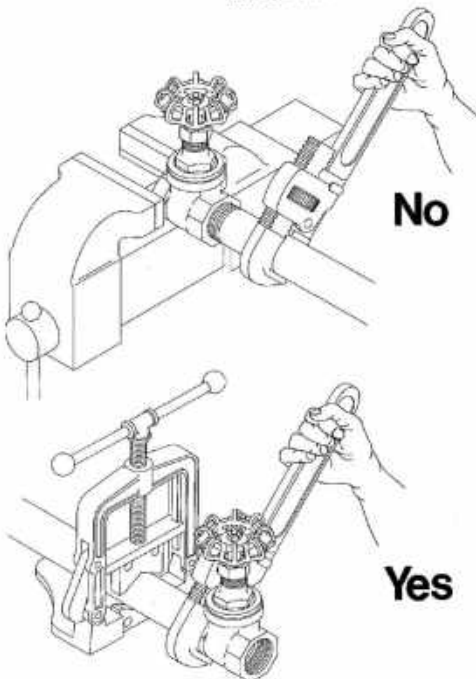
Liquid sealant should always be applied on the thread of the pipe.

喉管之螺紋可加上合適的潤滑油。



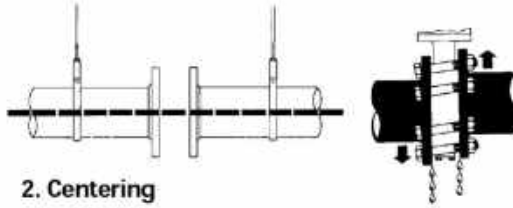
注意：安裝閥門只可於閥體上用力旋入，不可於喉管用力旋入，以免破壞閥門。

To connect the valve and pipe, always hold the pipe in a pipe vice, and apply the wrench onto the connected end of the valve.



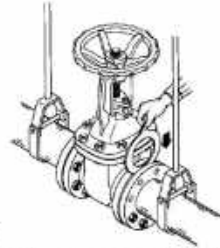
## 1. Cleaning

Foreign substances such as sand, mud, scale, or molten spatter in the valve will hamper operation and damage valve parts. Clean the interior of the pipes with air, water or steam as necessary. 先清潔閥門內部之沙泥、鐵屑等雜物。



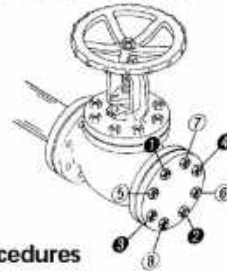
## 2. Centering

Support the piping and pipe shafts so they are in a straight line. More precise centering is necessary for wafer type valves. 喉管兩端必需水平對中，以免產生不必要之壓力。



## 3. Installation

Install the valves so that the pipes are in a straight line, lightly fasten the bolts on the lower part of the flange by hand, and insert the gaskets on which lubricant (gasket paste) has been applied. The bolts on the bottom determine and maintain the position. Attach the remaining bolts in the same way and use sockets or wrenches of the correct size to tighten them. 先用手旋緊法蘭底部之螺絲，加上墊圈，並以板手旋緊。



## 4. Bolt-Tightening Procedures

Tighten the bolts using the "crossover" method. Do so repeatedly and in order until the nuts are completely secure. 請按圖所指示的次序多旋緊螺絲。



## 5. Flushing

Once pipe installation is completed, open all valves completely and flush the piping with air, water or steam. After flushing, close the valves completely and check that they function properly. If the valves do not close, disassembly and inspection should be performed. 安裝完成後，必需將喉管作最後沖洗，方可使用。