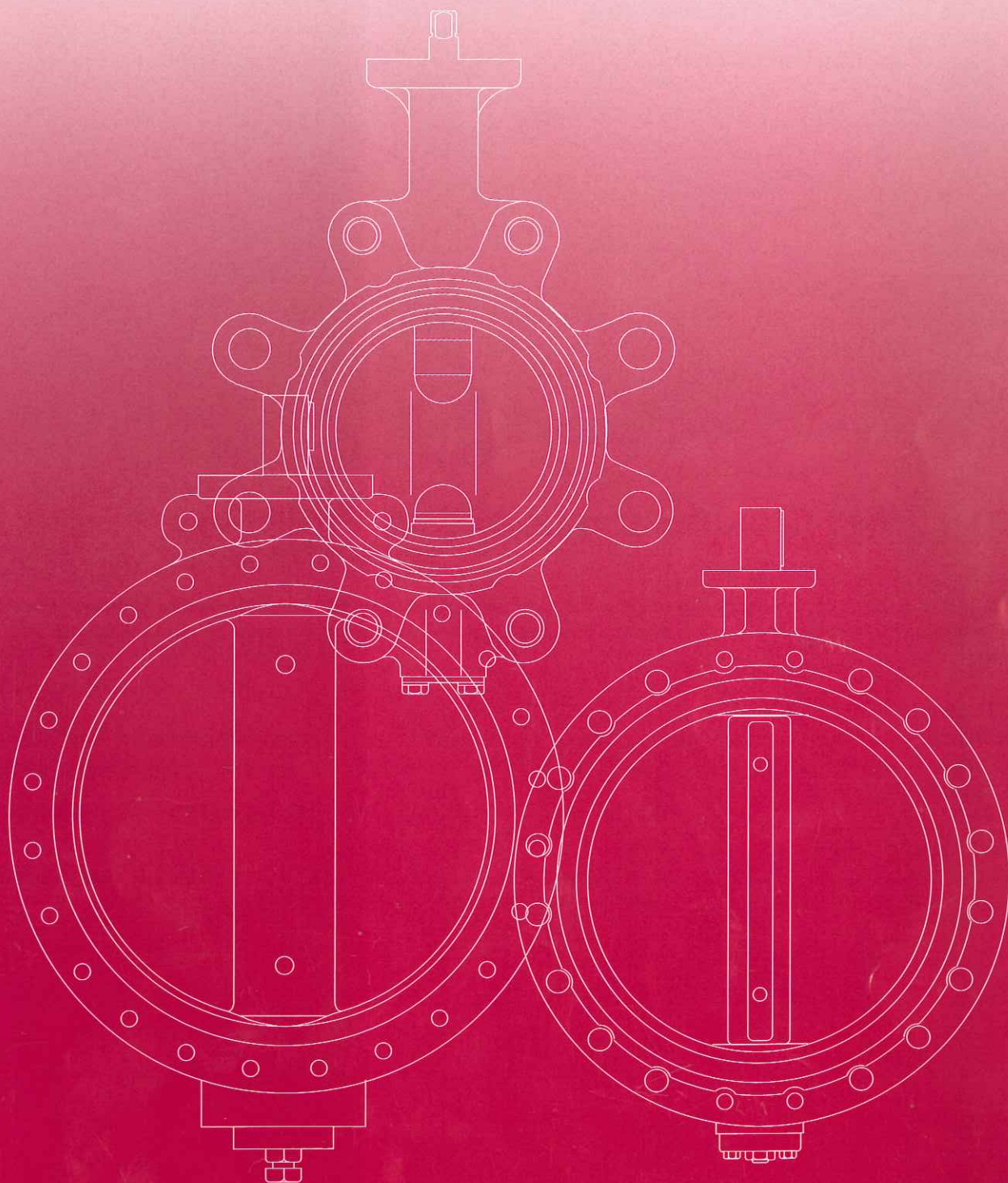


**TOMOE**<sup>®</sup>

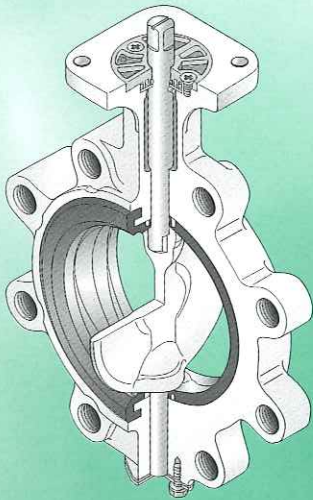
**Shipside Butterfly Valves with  
Double Flanged or Lugged Bodies**

**704G/722F/720F**

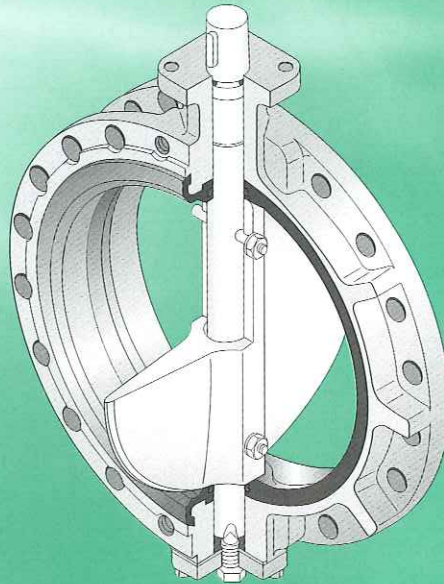


**TOMOE VALVE CO.,LTD.**

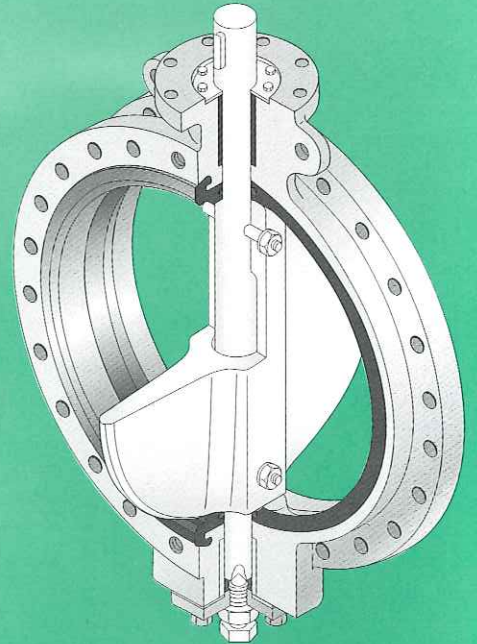
# 704G (Lugged) 722F/720F (Double flanged)



704G



722F



720F

## Bubble Tight Closure and Long Life

### Introduction

Today's ships have to work hard. With the extensive use of automated systems, minimum manning levels, extended journeys and quick turn round times, maintenance time is at a premium. Equipment must be ultra reliable and also meet the latest standards.

### Long life and leak tight

The 704G/722F/720F are designed to meet all of these requirements. They are tough valves made to international standards with worldwide marine approvals. Long term leak tightness was achieved through attention to details in the spindle sealing and seat design.

### Low cost maintenance

The seat and disc can easily be replaced under a planned maintenance schedule. This replaceability does not affect the valve's function as this seat is positively located in machined grooves in the valve body.



Lock lever



Worm gear



Center handle



Pneumatic cylinder



Motorized

Standard specifications			
Type	704G	722F	720F
	Lugged type	Flanged type	
Valve nominal size	50mm to 100mm*1	125mm to 800mm	850mm to 1350mm
Applicable flange standard	JIS 10K (JIS 5K, ANSI 125 /150, PN10)*2		
Max. working pressure	1.0MPa		
Body shell test	1.5MPa		
Seat leak test	1.1MPa		
Working temperature range	-10 to 80 degrees C (NBR), -20 to 120 degrees C (EPDM)		
Standard materials*3	Body	Cast steel, JIS SCPH2	
	Disc	SCS 14 (316SS)	SCS13 (304SS)
	Stem	SUS 420J2	SUS 403
	Seat ring*4	NBR, EPDM	
Painting	Epoxy primer finish (Munsell N7)		

\*1. Available up to 600mm.

\*2.Semi-standard. Consult us

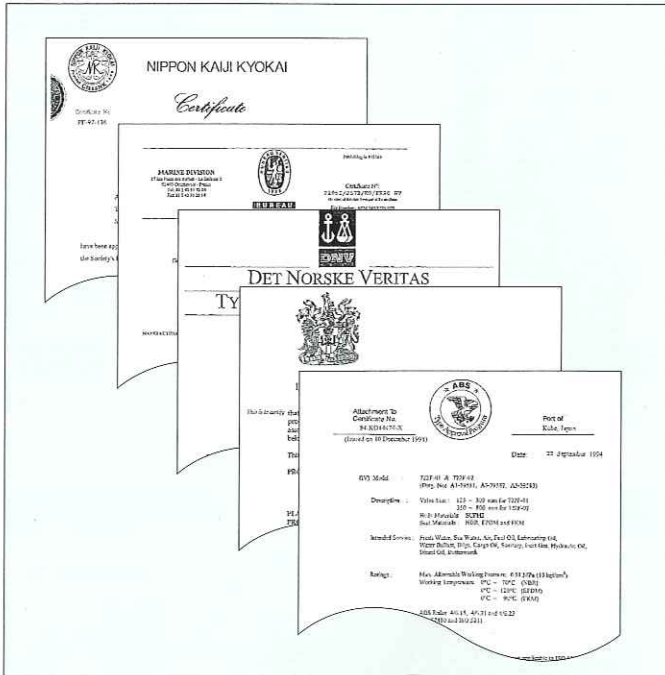
\*3.Other materials, such as ductile iron body, aluminum bronze disc, etc., are also available. Consult us.

\*4.Seating on 1000mm types and above are vulcanized to the body.

### Certification / Approval

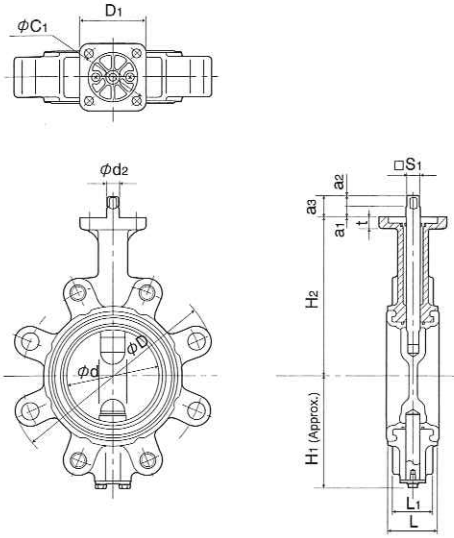
**Satisfies requirements of the major certification/approvals such as.**

- Det Norske Veritas (DNV)
- Lloyd's Register of Shipping (LR)
- American Bureau of Shipping (ABS)
- Nippon Kaiji Kyokai (NK)
- Bureau Veritas (BV)
- Korean Register of Shipping (KR)



Dimension list

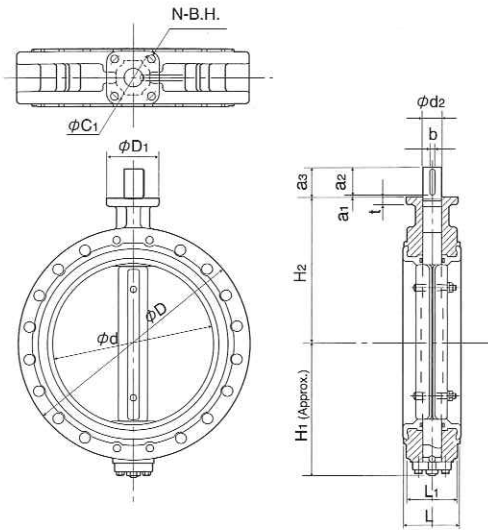
704G



704G Dimensions

Nominal size	Dimension (mm)																			Approx. weight (kg)
	mm	inch	d	L	L <sub>1</sub>	D	H <sub>1</sub>	H <sub>2</sub>	d <sub>2</sub>	a <sub>1</sub>	a <sub>2</sub>	a <sub>3</sub>	S <sub>1</sub>	D <sub>1</sub>	t	C <sub>1</sub>	RE	BH		
50	2	56	43	33	155	67	138	10		10.5	21.5	8							3.4	
65	2 1/2	69		36	175	78	151							70	12	70	10	9	4.4	
80	3	84	46	36	187	85	156	12	11	11.5	22.5	10							5.0	
100	4	104	52	42	220	117	167	14				12							7.7	
125	5	130		46	250	143	191	16			16.5	27.5	14						8.8	
150	6	153.5	56	46	276	164	202	18						102	14	102	23.5	11	10.4	
200	8	199	60	50	334(329)	176	227	22	10	20	30	18							16.3	
250	10	253	68	58	402	215	280	28											27	
300	12	302		78	472(438)	253	312	32	5	30	35	24		125	16	125	32.4	13	39	
350	14	337		70	533(505)	276	348			40									66	
400	16	394	102	90	596.7	338	383	40		45				140	23	140	28	19	107	
450	18	441	114	102	633.8(620)	368	413	46		56	3								128	
500	20	492	127	115	691	403	453	50	6	70									170	
600	24	584	154	142	819.3(795)	458	528	55						165		165		23	275	

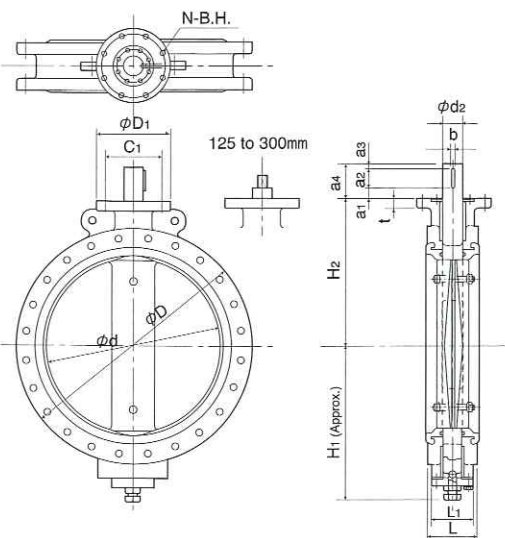
722F



722F Dimensions

Nominal size	Dimension (mm)																			Approx. weight (kg)
	mm	inch	d	L	L <sub>1</sub>	D	H <sub>1</sub>	H <sub>2</sub>	d <sub>2</sub>	a <sub>1</sub>	a <sub>2</sub>	a <sub>3</sub>	S <sub>1</sub>	b	D <sub>1</sub>	t	C <sub>1</sub>	RE	BH	
125	5	129			250	139	165		18	11	16.5	27.5	14							18
150	6	154	100		280	157	180								102	14	102	24	11	19
200	8	194			330	181	210	22	10	20	30	18								37
250	10	250			400	221	250	30												43
300	12	296	110		445	251	280	32	5	30	35	24			125	16	125	32	13	52
350	14	334	120	110	490	298	320	40		45	54		12							70
400	16	384	130	116	560	334	360	46		56	65			140	20	140		19		93
450	18	435	150	134	620	356	390		50				14							132
500	20	482	160	140	675	382	420		6											182
550	22	531			745	418	460			70	79				25					225
600	24	581	170	156	795	476	490		55					16	165	165				270
650	26	627			845	586	510	65		60	75		18	260	32	220			23	415
700	28	670	180	160	905	629	560		10											585
750	30	723	190	170	970	659	590	75		80	95		20	320	35	280				680
800	32	772	200	180	1020	679	620													810

720F



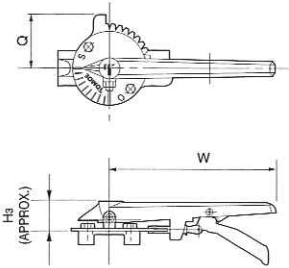
720F Dimensions

Nominal size	Dimension (mm)																			Approx. weight (kg)
	mm	inch	d	L	L <sub>1</sub>	D	H <sub>1</sub>	H <sub>2</sub>	d <sub>2</sub>	a <sub>1</sub>	a <sub>2</sub>	a <sub>3</sub>	a <sub>4</sub>	b	D <sub>1</sub>	t	C <sub>1</sub>	N	BH	
850	34	822	210		1070	709	650		75		80	5	95	20		40				※
900	36	858	230		1120	759	685													※
1000	40	975	250	210	1235	819	745		10					320		280	8	23		※
1100	44	1070	280	210	1345	874	820	95		100		10	120	24		45				※
1200	48	1170	300	225	1465	948	880													※
1350	54	1314	330	300	1630	1030	960	120	60	140			210	32						※

※Please consult us.

## Manual actuators

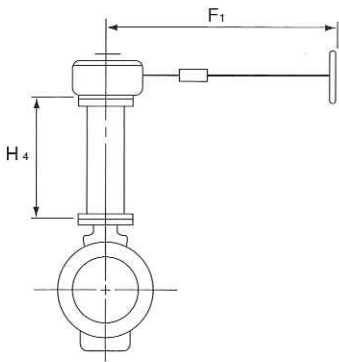
### Lock lever type 1G



#### Dimension list

Nominal size		Dimension (mm)			Approx. weight (kg)
mm	inch	H <sub>3</sub>	Q	W	
50	2	39	75	220	1.2
65	2 1/2				
80	3				
100	4				
125	5	43	87.5	300	2.0
150	6				
200	8	42	102.5	350	

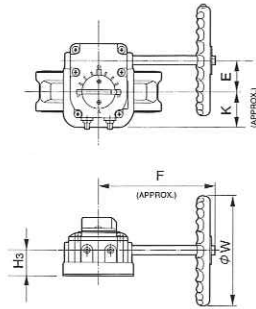
#### Extension Stem / Shaft



Special dimensions are available upon your request. please specify H<sub>4</sub> dimension and F<sub>1</sub>.

### Worm gear type 2U/2S

2U (50mm to 600mm)  
2S (650mm to 800mm)

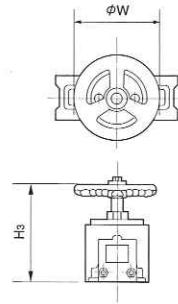


#### Dimension list

Nominal size		Dimension (mm)					Approx. weight (kg)
mm	inch	H <sub>3</sub>	E	K	F	W	
50	2	29.5	160	36	46	100	2.3
65	2 1/2						
80	3						
100	4						
125	5	34.5	173.5	44	53	160	4.2
150	6						
200	8	41.5	198	67	75	200	8.0
250	10						
300	12	48	222.5	87.5	90	280	14.0
350	14	50	266	90	105		
400	16						
450	18						
500	20						
550	22	61	352	113	140	400	31.0
600	24						
650	26	65	400	140	198	450	48.0
700	28	75	457	185	267	500	97.0
750	30						
800	32						

### Center handle type 2G/2R

2G (50mm to 300mm)  
2R (350mm to 600mm)

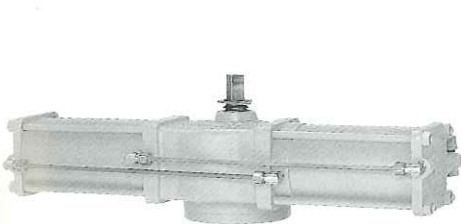


#### Dimension list

Nominal size		Dimension (mm)		Approx. weight (kg)
mm	inch	H <sub>3</sub>	W	
50	2	136	100	2.9
65	2 1/2			
80	3			
100	4			
125	5	133	100	4.0
150	6			
200	8	151	200	8.0
250	10			
300	12	161	355	36.0
350	14	279		
400	16			
450	18			
500	20		343	450
550	22			
600	24			

## Auto-actuated

### Pneumatic



3A

### Hydraulic



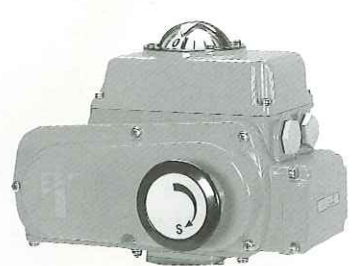
3Z

### Pneumatic



3I

### Electric motor



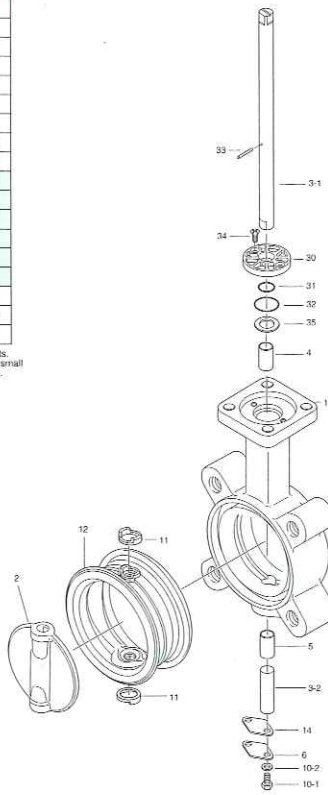
4I

## Parts list / construction of 704G (50 to 100mm)

### 704G (50 to 100mm)

No.	Description	Q'ty
1	Body	1
2	Disc	1
3-1	Upper stem	1
3-2	Lower stem	1
4	Bearing	1
5	Bearing	1
6	Bottom cover	1
10-1	Hex bolt	2
10-2	Sp.washer	2
★ 11	Secondary ring	2
★ 12	Seat ring	1
★ 14	Gasket	1
★ 30	Bushing	1
★ 31	"O"ring	1
★ 32	"O"ring	1
33	Spring pin	1
34	Machine screw	2
35	Plate	1

Remark: The ★ indicates recommended spare parts. They are supplied as "Seat ring set" with a small hexagonal spanner to remove set screws.



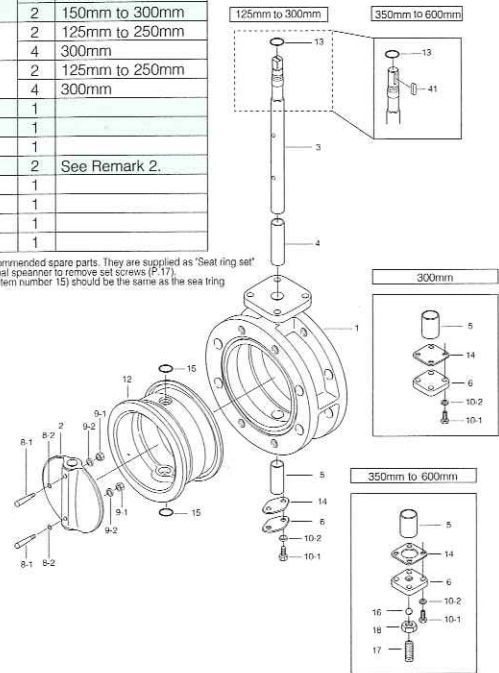
## Parts list / construction of 722F (125 to 600mm)

### 722F (125 to 600mm)

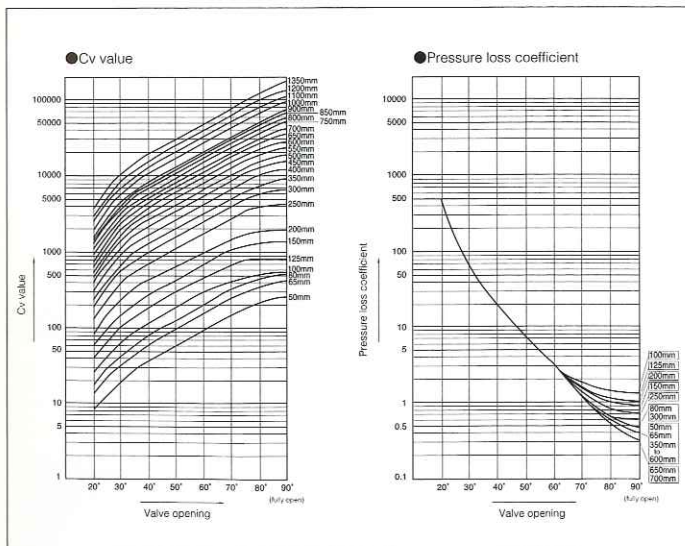
No.	Description	Q'ty	Remarks
1	Body	1	
2	Disc	1	
3	Stem	1	
4	Bushing	1	
5	Bushing	1	
6	Bottom cover	1	
★ 8-1	Taper bolt	1	125mm
★ 8-2	"O"ring	2	150mm to 300mm
★ 9-1	Hex nut	1	125mm
★ 9-2	Sp.washer	2	150mm to 300mm
10-1	Hex bolt	2	125mm to 250mm
		4	300mm
10-2	Sp.washer	2	125mm to 250mm
		4	300mm
★ 12	Seat ring	1	
★ 13	"O"ring	1	
14	Gasket	1	
★ 15	"O"ring	2	See Remark 2.
16	Bolt	1	
17	Set screw	1	
18	Nut	1	
41	Key	1	

Remark 1: The ★ indicates recommended spare parts. They are supplied as "Seat ring set" with a small hexagonal spanner to remove set screws (P.17).

Remark 2: The O-ring material (item number 15) should be the same as the sea tring (item number 12).

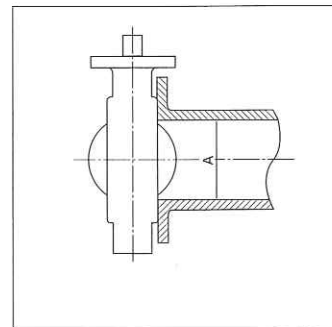


## Cv value / pressure loss coefficient



## Minimum internal diameters of piping

Nominal size	Minimum internal diameters of piping A(mm)		
	mm	inch	704G 722F 720F
50	2	34	— —
65	2 1/2	51	— —
80	3	70	— —
100	4	91	— —
125	5	—	81 —
150	6	—	118 —
200	8	—	170 —
250	10	—	227 —
300	12	—	279 —
350	14	—	314 —
400	16	—	365 —
450	18	—	411 —
500	20	—	456 —
550	22	—	502 —
600	24	—	563 —
650	26	—	612 —
700	28	—	653 —
750	30	—	705 —
800	32	—	754 —
850	34	—	— 803
900	36	—	— 834
1000	40	—	— 950
1100	44	—	— 1040
1200	48	—	— 1138
1350	54	—	— 1277



## Piping bolts sizes

Type	Nominal size		JIS 5K		JIS 10K	
	mm	inch	Hexagon bolts	Hexagon	Hexagon bolts	Hexagon
704G	50	2	—	8-M12×30×25	—	8-M16×35×30
	65	2 1/2	—	8-M12×35×30	—	8-M16×35×30
	80	3	—	8-M16×35×30	—	16-M16×35×30
	100	4	—	16-M16×40×35	—	16-M16×40×35
722F	125	5	8-M16×60×38	8-M16×40×35	8-M20×65×46	8-M20×45×37
	150	6	8-M16×60×38	8-M16×40×35	8-M20×70×46	8-M20×50×42
	200	8	8-M20×65×46	8-M20×50×42	16-M20×70×46	8-M20×50×42
	250	10	16-M20×70×46	8-M20×50×42	16-M22×75×50	8-M22×50×42
	300	12	16-M20×70×46	8-M20×50×42	24-M22×75×50	8-M22×50×42
	350	14	16-M22×80×50	8-M22×55×47	24-M22×80×50	8-M22×55×47
	400	16	24-M22×85×50	8-M22×55×47	24-M24×90×54	8-M24×60×50
	450	18	24-M22×90×50	8-M22×60×50	32-M24×100×54	8-M24×65×54
	500	20	32-M22×90×50	8-M22×60×50	32-M24×100×54	8-M24×70×54
	550	22	32-M24×100×54	8-M24×65×54	32-M30×110×66	8-M30×70×54
	600	24	32-M24×100×54	8-M24×65×54	40-M30×110×66	8-M30×70×54
	650	26	40-M24×100×54	8-M24×70×54	40-M30×110×66	8-M30×80×66
	700	28	40-M24×100×54	8-M24×70×54	40-M30×110×66	8-M30×80×66
	750	30	40-M30×110×66	8-M30×80×66	40-M30×115×66	8-M30×80×66
720F	850	34	40-M30×110×66	8-M30×80×66	48-M30×115×66	8-M30×80×66
	900	36	40-M30×115×66	8-M30×75×66	48-M30×120×66	8-M30×80×66
	1000	40	40-M30×130×72	16-M30×90×66	40-M36×145×84	16-M36×110×78
	1100	44	40-M30×130×72	16-M30×90×66	40-M36×145×84	16-M36×110×78
	1200	48	48-M30×130×72	16-M30×90×66	48-M36×150×84	16-M36×110×78
	1350	54	56-M30×135×72	16-M30×90×66	56-M42×165×96	16-M42×110×90

### Remarks:

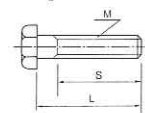
1. The bolt for valve positioning uses the screw hole.
2. The hexagon bolt is used in the screw hole part for valve positioning.
3. Please use a hexagon nut with 80% threading.
4. For uses other than marine, use SS400 as the bolt (and nut) material.

### Example

Hexagon bolts: 4 - M30 × 95 × 65

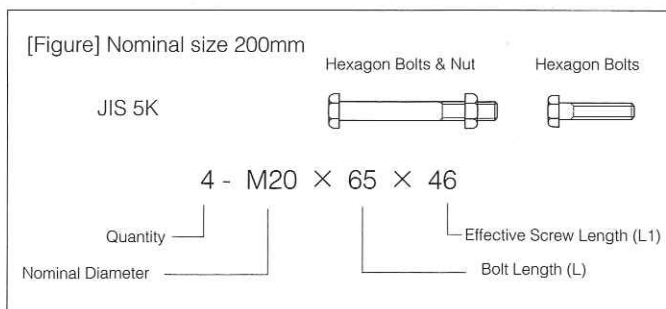
N M L S

### Hexagon bolts

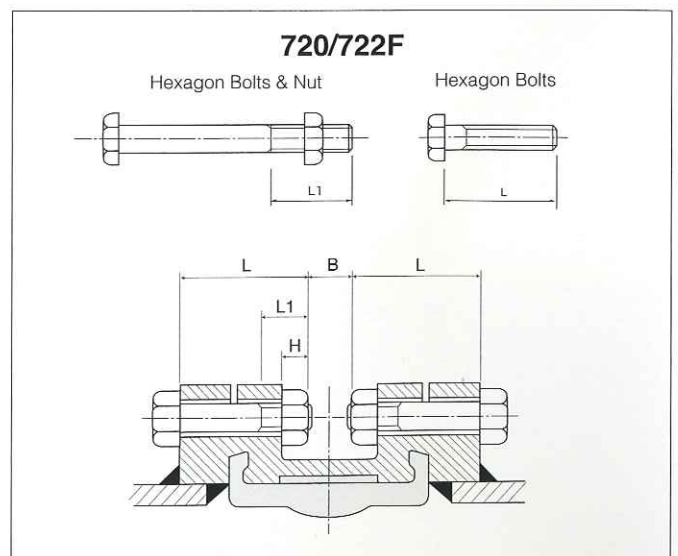


## Piping bolt specifications

Bolt length with a steel flange is given below. The height of nut shall be 80% of nominal bolt diameter.  $B > H$  in the diagram for easy nut removal.



The quantity indicated in the specifications table show to the number on one side of flange.



## Comparisons (720F vs 722F)

### Face to Face Dimension

The Face to Face Dimensions of 720F (Old Model) and 722F (New Model) for 125mm and above are exactly the same. (JIS F 7480)

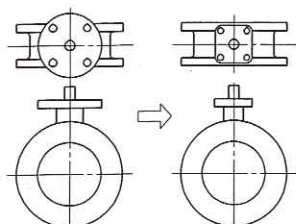
### Interchangability of main Components

The Seat Ring is interchangeable on 125mm and above. (Up to 900mm)

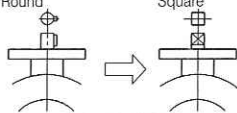
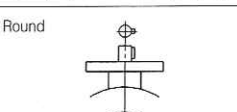
### Top Flange Dimensions

Fig 722F (Up to 600mm) is with ISO top mounting flange although Fig 720F is with Tomoe standard.

#### Top flange shape

Description	Size	(mm)		
		720F	722F	
 <p>No Change in 650mm and over.</p>	125	$\phi$ 125 (PCD95)	□102 (PCD102)	
	150			
	200			
	250	ISO top mounting flange for 722F	$\phi$ 155 (PCD125)	□125
	300			
	350	$\phi$ 200 (PCD170)	□140 (PCD140)	
	400			
	450			
	500	$\phi$ 260 (PCD220)	□165 (PCD165)	
	550			
600				

#### Stem end

Description	Size	(mm)	
		720F	722F
	125	ISO compliance	key 5X5X24 □14
	150		
	200		
	250		
	300		
 <p>No Change in 650mm and over.</p>	350	Tomoe standard	key 10X8X40 key 12X8X45 key 12X8X50 key 14X9X70 key 15X10X60 key 16X10X70 key 18X12X60
	400		
	450		
	500		
	550		
	600		

## Companion Product

FIG.705G(Semi Lugged)is also available as for non-shipside nor bottom and on sea chest.

Major marine type approved.

Nominal size	50 to 300mm	350 to 600mm
Flange Accomodation	JIS 5K,10K ANSI 125/150Lb DIN PN10, BS 4504 NP10	
Max working Pressure	1.0MPa	
Working temperature range	NBR(-10 to 80°C) EPDM(-20 to 120°C)	
Body material	Ductile Iron	Cast Iron or Ductile Iron

For further details, see 700G/704G/705G catarogue.



Semi-Lugged

- ◎ The specifications are subject to change without notice. Please consult us for the latest specifications.
- ◎ All copy rights reserved.

## TOMOE VALVE CO.,LTD. [www.tomoe.co.jp](http://www.tomoe.co.jp)

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