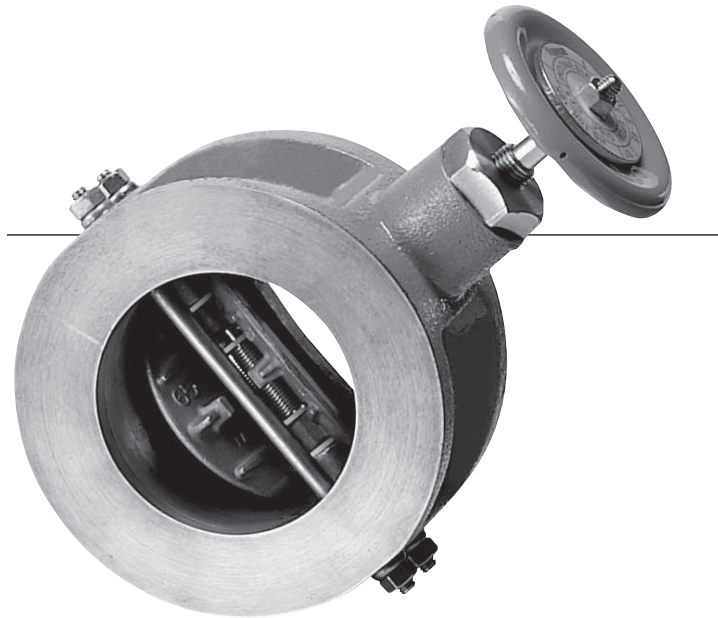
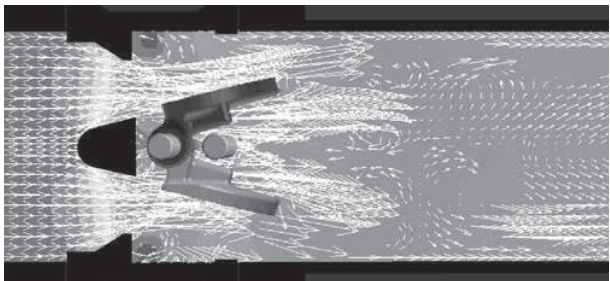


MKT Series 907H / 908H



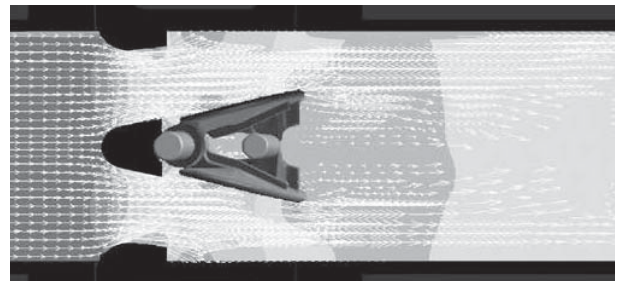
Prevention of chattering.
A new generation of check valves that reduce piping space and allow direct attachment of the pump.

Previous Product



High pressure ← → Low pressure

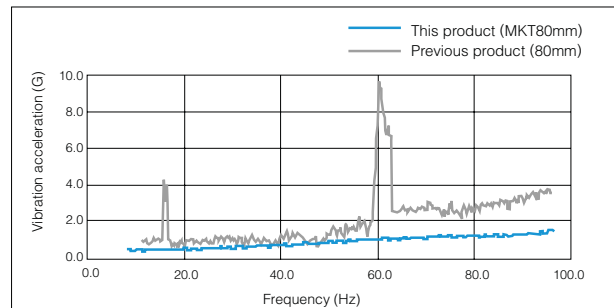
MKT Series



(Note) The colors indicate the pressure distribution. Red indicates high pressure and blue indicates low pressure. Flow speed is indicated by arrow size.

Based on fluid theory and vibration analysis, we have achieved a new mechanism that does not allow chattering even at high flow speeds and during fluid fluctuations.

Vibration Frequency Characteristics



As indicated above, there are no vibration peaks at any of the frequencies and damage due to vibration is prevented.

Features and Benefits

Helps reduce installation space, resulting less cost and lesser time.

Over 80% of piping space reduced around pump

Designed for anti-vibration, that previously found on the upstream side of check valves is no longer necessary and the piping space around the pump has been greatly reduced.

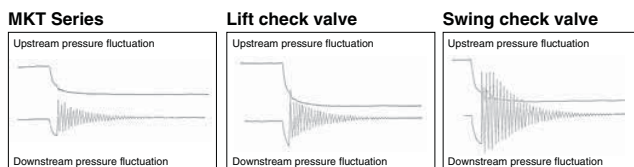
Direct pump installation possible

Designed for anti-vibration, the pump can now be installed directly. In fact, it achieved a smaller bore diameter that is 2 to 3 sizes smaller than previous one.

Prevents water hammer

The combination of a light, compact plate with a small moment of inertia and an optimized spring quickly stop the flow when the pump is turned off, preventing water hammer.

The figure below contains measurement data of pressure fluctuations when the pump is suddenly stopped. Compared to other models, the MKT series have a smaller pressure fluctuation amplitude on the downstream side which makes it effective in preventing water hammer.



Suitable for all needs

Being able to handle water, steam, gases, and other fluids, all needs can be met. Also, use of a fluorocarbon resin sheet and stainless steel body allows chemicals, corrosive fluids and high temperature liquids (200 degrees C max.) to be used which means a wide range of application environments can be covered.

Standard Specifications

		907H	908H
Valve design		Wafer-type double-plate check valve	
Valve nominal size ※1		50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400mm	50, 65, 80, 100, 125, 150, 200, 250, 300mm
Valve type		Check valve with bypass	
Applicable flange standard		JIS 10K, 16K, 20K, ASME B16.5 Class125/150	
Face-to-face dimensions		JV8-1 (stainless steel valves, wafer-type check valves), SAS358	
Max. working pressure		2.0MPa	
Allowed flow velocity		50-200mm : 0.5 m/s to 10 m/s, 250-300mm : 0.8 m/s to 10 m/s,	
Seat leakage		Tight shut	
Test pressure	Pressure resistance of body	3.0MPa	
	Valve seat leak	High-pressure test 2.2MPa(hydraulic)	
Working temperature range (without freezing)		NBR seat : 0 to 60 degrees C, *EPDM seat : 0 to 100 degrees C	
Standard materials	Main body	A536 Gr.65-45-12 (ductile iron)	A351 CF8 (stainless steel)
	Plate	A351 CF8 (stainless steel)	
	Pin	304 stainless steel	
	Spring	304 stainless steel	
	Seat ring ※2	NBR, *EPDM	
Pipe gasket		Required (please purchase a commercially available gasket that satisfies the flange standards)	
Coating		Resin baked finish (Munsell 2.5BG 6/12-Green)	No coating

※1 250mm and 300mm include rubber sleeves. Compared to the ones without rubber sleeves, loss of pressure increases 8% around. 907H 350mm & 400mm can be made to order. Please contact us for the details.

※2 The rubber seat is vulcanized to the valve body.

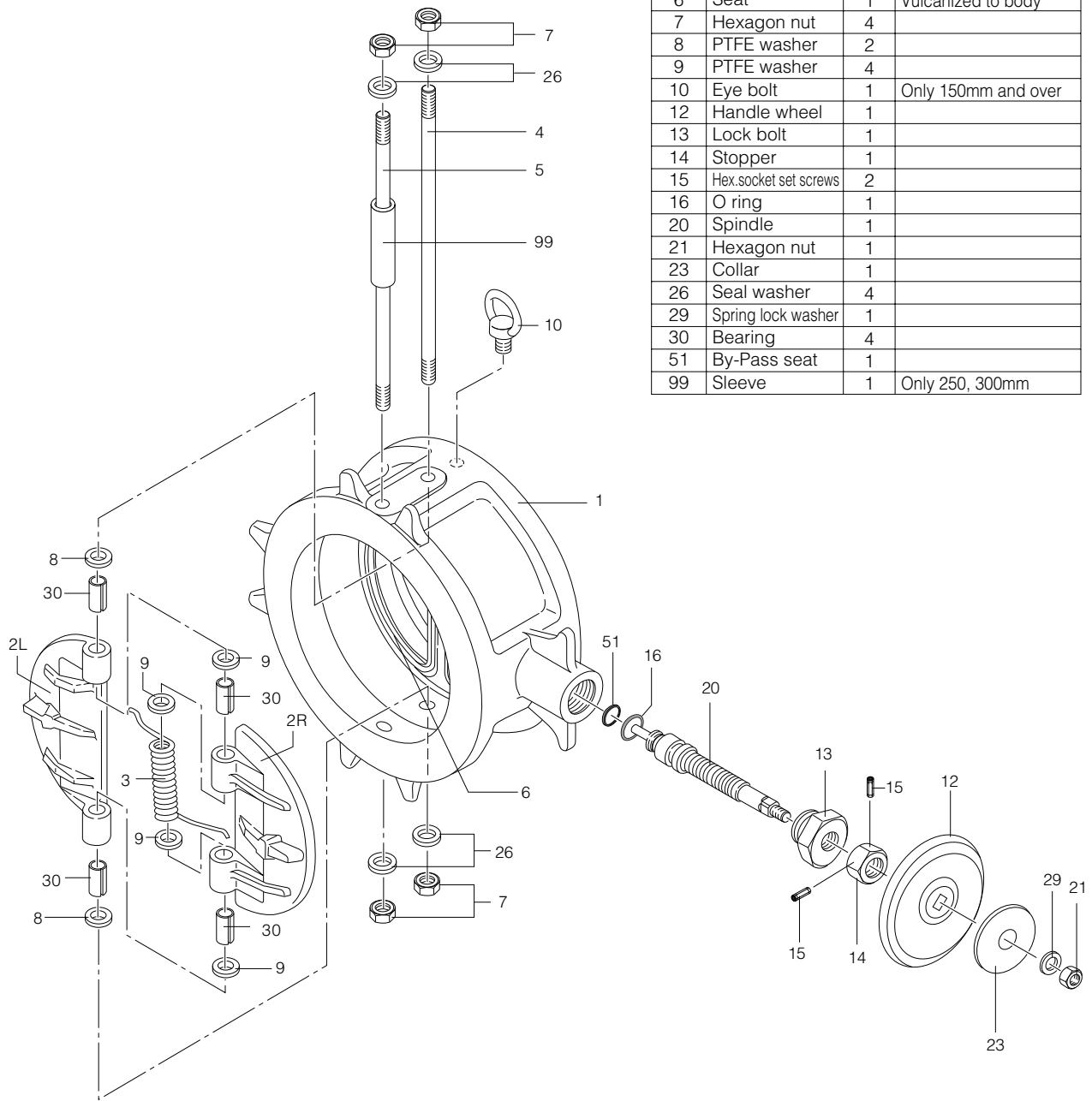
* Never use an EPDM rubber seat ring if the valve is being used for oil or for a fluid containing even a slight amount of oil.

Butterfly Valve
TRITEC
TT2
334A
302A/303Q
304A/304Q
302Y/304Y
304M (HLV)
507V/508V
DTM
846T/847T/847Q
841T/842T
700Z
700G/704G/705G
700GB
731P/732P/732Q/752W
71LG
700E/700K/700S
704G/722F/720F
KRV
227P
907H/908H (MKT)
903C

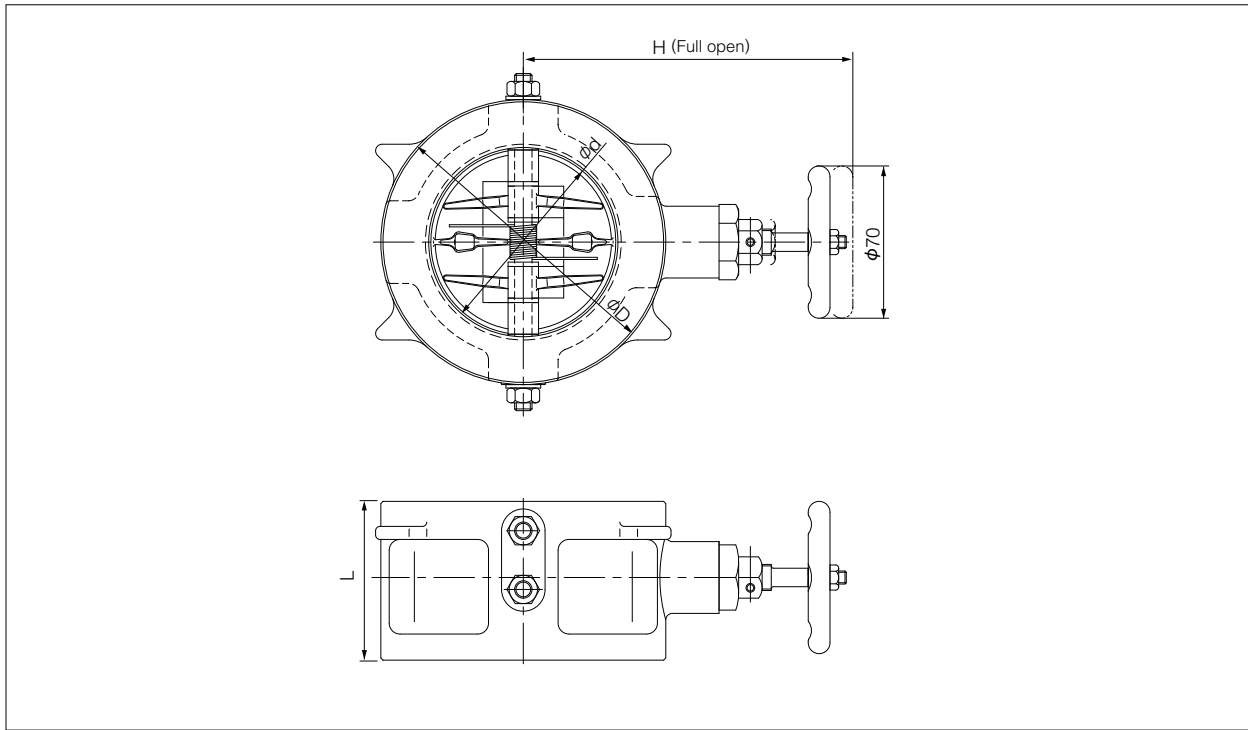
MKT Expanded view of components

■MKT Disc Expanded View/ Parts List

No.	Description	Q'ty	Remarks
1	Body	1	
2L	Left plate	1	
2R	Right plate	1	
3	Spring	1	200 mm, 250 mm, 300 mm: 2
4	Hinge pin	1	
5	Stop pin	1	
6	Seat	1	Vulcanized to body
7	Hexagon nut	4	
8	PTFE washer	2	
9	PTFE washer	4	
10	Eye bolt	1	Only 150mm and over
12	Handle wheel	1	
13	Lock bolt	1	
14	Stopper	1	
15	Hex.socket set screws	2	
16	O ring	1	
20	Spindle	1	
21	Hexagon nut	1	
23	Collar	1	
26	Seal washer	4	
29	Spring lock washer	1	
30	Bearing	4	
51	By-Pass seat	1	
99	Sleeve	1	Only 250, 300mm



MKT Principal dimensions



Butterfly Valve

TRITEC

TT2

334A

302A/303Q

304A/304Q

302Y/304Y

**304M
(HLV)**

507V/508V

DTM

846T/847T/847Q

841T/842T

700Z

700G/704G/705G

700GB

**731P/732P/
732Q/752W**

71LG

700E/700K/700S

704G/722F/720F

KRV

227P

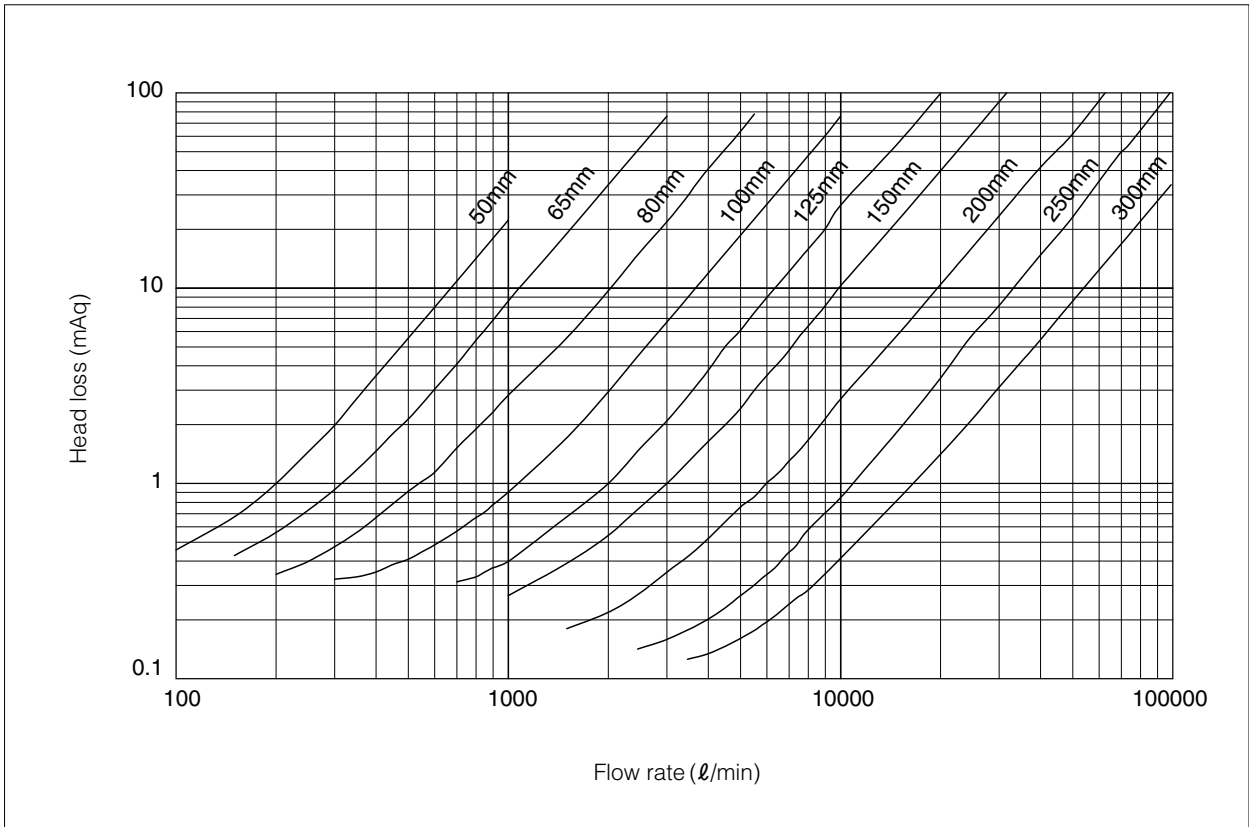
**907H/908H
(MKT)**

903C

MKT Dimension

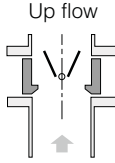
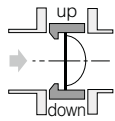
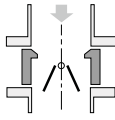
Nominal size		Dimension (mm)				Approx. Mass (kg)	
mm	inch	ϕd	ϕD	L	H	SCS	FCD
50	2	58	101	60	135	2.7	2.5
65	2 1/2	74	121	67	142	3.7	3.5
80	3	87	131	73	149	4.7	4.4
100	4	105	156	73	186	6.2	5.9
125	5	134	187	86	200	9.2	8.7
150	6	160	217	98	213	13.1	12.4
200	8	210	267	127	239	22.6	21.5
250	10	258	330	146	282	37.5	35.6
300	12	306	375	181	308	56.2	53.4

MKT Head loss vs. Flow



MKT Selection Criteria

Chart 1 Selection table by application and spring

Application	Velocity	Flow Direction	Spring type
A Fluid: Liquid and Installation: directly after 3D expanding pie or elbow※1	See Chart 2	 <p>Up flow</p>	Low torque spring with rubber sleeve
B Fluid Gas (air)	10m/s ~ 50m/s, and line and differential pressure 0.1MPa ~ 2MPa		200mm and smaller: Special selection (※2) 250mm and above: standard selection
C Fluid Liquid* *If installed directly after expanding pipe, it should not be more than 2D	0.5m/s ~ less than 2m/s		200mm and smaller: special selection (low torque spring) 250mm and above: standard selection
	2m/s ~ less than 10m/s		Standard torque spring
	2m/s ~ less than 10m/s	Horizontal pipe layout 	Standard torque spring
	Less than 5m/s Valve size less than 200mm	Down flow(※3) 	High torque spring

※1 Please do not install MKT directly after 4D or more expanding pipe due to possible abnormal noise, damage and leakage. Selection C can be applied if 5D or more expanding pipe.

※2 For valve size 200mm and smaller, pressure loss at full open will increase due to rubber sleeve.

※3 There is possible seat leakage by reverse flow in case of down flow.

※ Please contact us for application other than above application to avoid possible abnormal noise, damage, and leakage.

※ Selection C can be applied if MKT is installed before expanding pipe.

Chart 2 Minimum necessary average velocity for MKT installed after 3D expanding pipe and elbow

Valve size	50, 65, 80, 100mm	125, 150, 200mm	250, 300mm
Minimum necessary velocity	1.2m/s	1.6m/s	2.2m/s
Maximum allowable velocity	10m/s	10m/s	10m/s

Butterfly Valve

TRITEC

TT2

334A

302A/303Q

304A/304Q

302Y/304Y

304M (HLV)

507V/508V

DTM

846T/847T/847Q

841T/842T

700Z

700G/704G/705G

700GB

731P/732P/732Q/752W

71LG

700E/700K/700S

704G/722F/720F

KRV

227P

907H/908H (MKT)

903C

MKT Applicable pipe list in case of A

Nominal size		SGP	Sch20	Sch40	Sch10S	Sch20S
mm	inch					
50	2	○	○	○	○	○
65	2 1/2	○	○	○	○	○
80	3	○	○	○	○	○
100	4	○	○	○	○	○
125	5	○	○	○	○	○
150	6	○	○	○	○	○
200	8	○	○	○	○	○
250	10	○	○	○	○	○
300	12	○	○	○	○	○

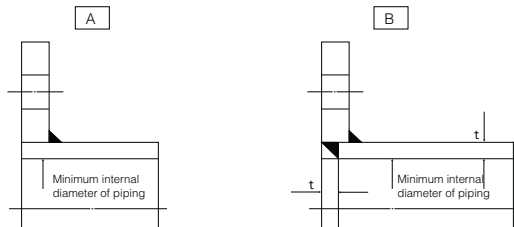
MKT Applicable pipe list in case of B

Nominal size		SGP	Sch20	Sch40	Sch10S	Sch20S
mm	inch					
50	2	○	○	○	○	○
65	2 1/2	○	○	○	○	○
80	3	○	○	○	○	○
100	4	○	○	○	○	○
125	5	○	○	○	○	○
150	6	○	○	○	○	○
200	8	○	○	○	○	○
250	10	○	○	○	○	○
300	12	○	○	○	○	○

Minimum internal diameters of piping (mm)

Nominal size		Minimum internal diameters of piping (mm)
mm	inch	
50	2	35.0
65	2 1/2	45.5
80	3	56.0
100	4	80.6
125	5	98.2
150	6	122.1
200	8	156.8
250	10	204.7
300	12	222.9

Remark: ○: Installation possible, —: No standard



MKT Cracking Pressure (Opening Pressure)

Minimum required pressure difference for flowing in forward direction

Nominal size		CV value	Standard torque spring		Low torque spring	
mm	inch		mmAq	MPa	mmAq	MPa
50	2	46.0	116	0.00114	12	0.00012
65	2 1/2	74.5	113	0.00111	13	0.00013
80	3	138	160	0.00157	22	0.00022
100	4	251	82	0.00080	16	0.00016
125	5	435	49	0.00048	12	0.00012
150	6	685	58	0.00057	15	0.00015
200	8	1340	79	0.00077	16	0.00016
250	10	2330	59	0.00058	12	0.00012
300	12	3760	50	0.00049	10	0.00010

MKT Piping Bolt and Nut Sizes

Nominal size		JIS10K	JIS16K	JIS20K	ASME B16.5 Class150
mm	inch				
50	2	4-M16×140×35	8-M16×140×35	8-M16×140×35	4-U5/8-11×145×40
65	2 1/2	4-M16×150×40	8-M16×150×40	8-M16×150×40	4-U5/8-11×160×40
80	3	8-M16×160×40	8-M20×175×50	8-M20×175×50	4-U5/8-11×170×40
100	4	8-M16×160×40	8-M20×175×50	8-M20×175×50	8-U5/8-11×170×40
125	5	8-M20×180×50	8-M22×200×50	8-M22×200×50	8-U3/4-10×190×50
150	6	8-M20×200×50	12-M22×215×50	12-M22×215×50	8-U3/4-10×205×50
200	8	12-M20×230×50	12-M22×240×50	12-M22×240×50	8-U3/4-10×240×50
250	10	12-M22×260×50	12-M24×275×60	12-M24×275×60	12-U7/8-9×265×55
300	12	16-M22×300×50	16-M24×315×60	16-M24×315×60	12-U7/8-9×305×55

Remark: *Use a hexagon nut with 80% threading.
*Material: "SS400" (Unichrome plating)

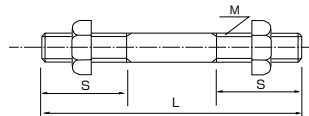
●The bolt lengths are in accordance with JIS and thickness of steel flanges.

Long bolts and nuts

Example

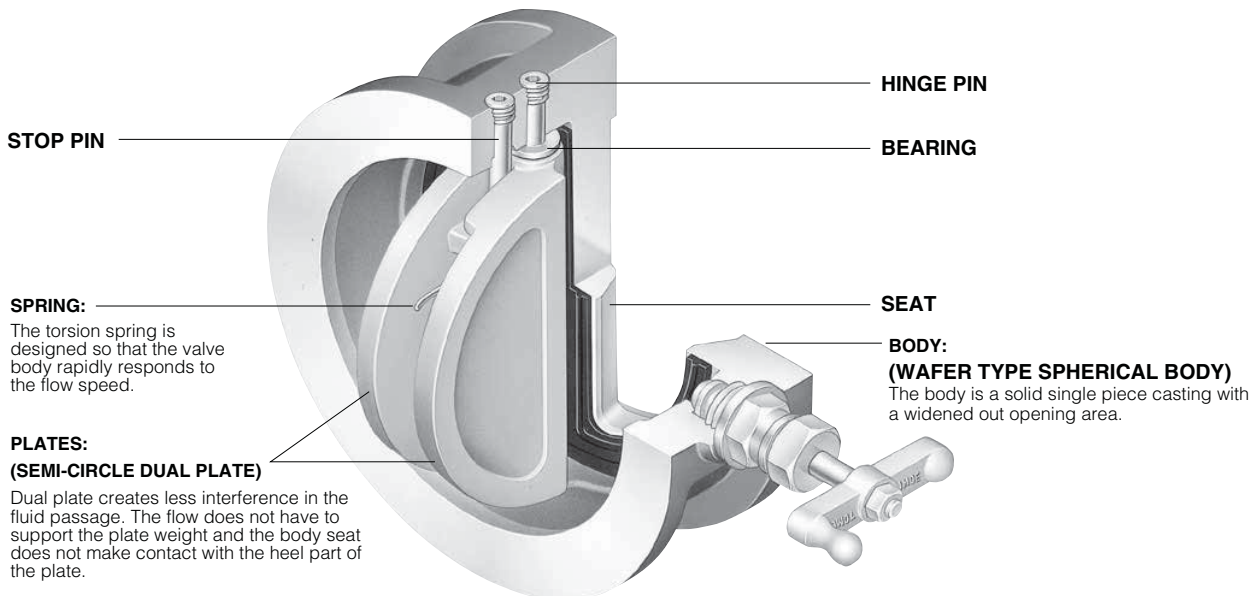
Long bolts: 16 - M22 × 300 × 45

N	M	L	S



Butterfly Valve
TRITEC
TT2
334A
302A/303Q
304A/304Q
302Y/304Y
304M (HLV)
507V/508V
DTM
846T/847T/847Q
841T/842T
700Z
700G/704G/705G
700GB
731P/732P/732Q/752W
71LG
700E/700K/700S
704G/722F/720F
KRV
227P
907H/908H (MKT)
903C

Bata-Check 903C



Outstanding Features

1. Lightweight and Compact

Lightweight and compact design that have never been realized in conventional sewing check valves.

2. Alleviation from Water Hammer

Instant response by spring-biased dual plates that prevent water hammer.

3. Tight Sealing

Shock-resistance and tight sealing effect ensured by resilient seat.

4. Free Installation Direction

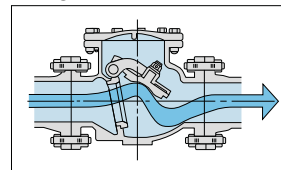
Installed either horizontally or vertically in the piping.

5. Low Head Loss

Opening area is expanded to the allowable limit and head loss of flow passage is less compared to similar dual type check valves.

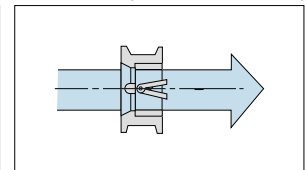
Comparison Between Wing Check Valve and Bata Check

Swing Check Valve

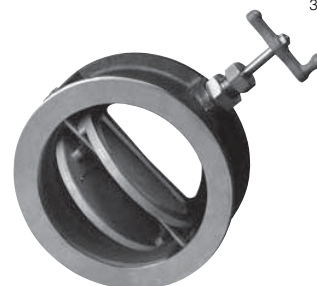


1. Plate stroke is long.
2. Face to Face dimension is long.
3. Slow response
4. Difficult to install vertically.

Bata Check (wafer check valve)



1. Plate stroke is short
2. Lightweight and compact due to wafer type body.
F. to F. dimension is reduced to about 1/4 and the weight is about 1/5.
3. Maintenance-free due to simple structure.



Standard Specifications

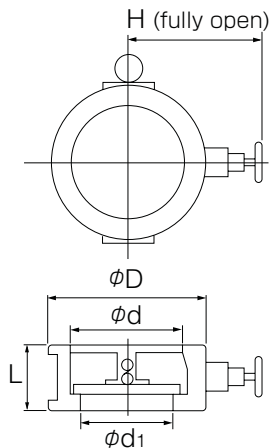
Size	50mm to 300mm
Face to face	TOMOE dimension
Flange accommodation	JIS 10kgf/cm ² , ANSI 125 Lbs
Max working pressure	0.98 Mpa
Temperature	Min. -20 degrees C, Max. +80 degrees C (NBR) +120 degrees C (EPDM)
Test pressure	Body hydrostatic test : 1.47 Mpa Seat hydrostatic test : 1.08 Mpa

Spring Selection Criteria

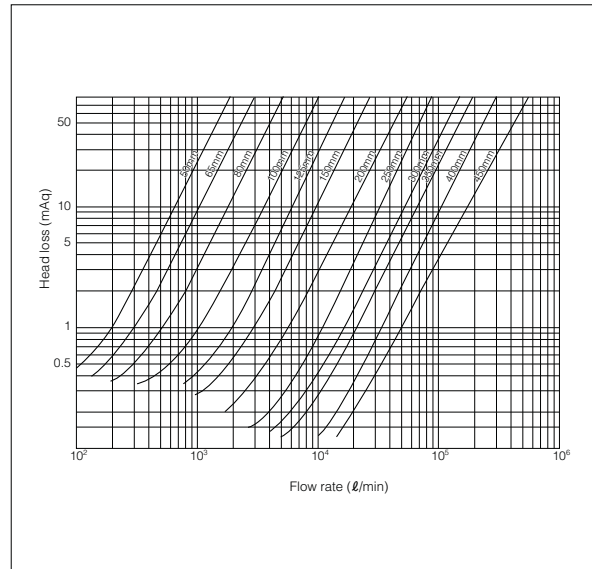
Spring type	Bata check conditions of use 1.0 MPa type.
Low torque spring	Parallel piping in which gas (compressible liquid) or liquid line pressure is between 0.05 and 0.10 MPa or up-flow line in which fluid flows from bottom to top.
Standard torque spring	Parallel piping in which liquid line pressure is between 0.1 and 0.7 MPa or up-flow line in which fluid flows from bottom to top.
High torque spring	Liquid line pressure is 0.7 MPa or higher or down-flow lines in which fluid flows from top to bottom. *Please use a high torque spring in the pump outlet regardless of the pressure.

903C Principal Dimensions

Nominal size		Dimension (mm)					Approx. Weight (kg)
mm	inch	ϕd	ϕD	ϕd_1	L	H	
50	2	62	101	42	56	157	2.4
65	2 1/2	73	121	48	56	162	3.4
80	3	89	131	63	60	170	3.9
100	4	115	156	82	66	184	5.5
125	5	142	187	110	70	200	8
150	6	168	217	128	76	213	10
200	8	220	267	174	95	239	17
250	10	273	330	218	108	286	28
300	12	324	375	260	144	309	44



Head Loss vs. Flow



Butterfly Valve
TRITEC
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302A/303Q
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731P/732P/732Q/752W
71LG
700E/700K/700S
704G/722F/720F
KRV
227P
907H/908H (MKT)
903C

ISO 9001

Due to our highly-evaluated quality system throughout all processes across the entire company, from designing and development to order acceptance, procurement, manufacturing, inspection and shipment, registration of the ISO9001 international standard for quality management systems has been approved.



※The certification authority : Tomoe Valve Co., Ltd. (Japan) JIC
 Shanghai Tomoe Valve Co., Ltd. (China) Lloyd's
 Tomoe Valve Limited (UK) Lloyd's
 PT. Tomoe Valve Batam (Indonesia) Lloyd's

Certifying authority	Certifying authority accredited by JICQA (JIC Quality Assurance Ltd.), Dutch Accreditation Council (RvA) and Japan Accreditation Board
Date of registration	September 11, 1995
Registration number	No.0091
Scope of registration	Designing, development and servicing of butterfly valves, actuators, and accessories

ISO9001 is a standard for a quality system for the entire company, whose scope ranges from quality policy of managers and clarification of responsibility to development, designing, order acceptance, procurement, manufacturing, inspection, shipment, servicing and even education and training. This standard requires systems that supply high-quality products trusted by users.

Waterworks approvals

700G

◇Approved by Singapore public utility board.
 License Number WE 92413/29

779J

◇Registration number E-306
 Certified by Japan Water Works Association



Fire safe approvals

302A · 334A

◇API Std 607 4th Edition

TOMOE TRITEC

◇BS 6755 Part 2/API 6FA and
 API Std 607 4th/5th Edition

TT2

◇API Std 607 4th/5th Edition

For fire safety



The symbol on the left indicates that the product is certified by the Fire Equipment and Safety Center of Japan; it is displayed on each product.

Note: When you contact us, please ask our sales staff for "fire-fighting" products.

700ZF

◇Certification Number VA-115

302Y

◇Certification Number VA-070

700G

◇Certification Number VA-065-1

334A

◇Certification Number VA-103

702G

◇Certification Number VA-066-1

903C

◇Certification Number VA-078

731P(50~300mm)

◇Certification Number VA-068-1

906C

◇Certification Number VA-080

732P(50~300mm)

◇Certification Number VA-069-1

907H

◇Certification Number VA-011

● Dry models other than 302Y cannot be used in places where products are exposed to flame or in environments where pipes are constantly filled with gas.

However, these models can be used if covered with fire-resistant material such as Rockwool¹, of thickness more than 50 mm, to avoid direct flame.

¹ For selection of Rockwool, please inquire with fire authorities in your district.

● In environments such as above, please use 302Y (dry model).

● Rubber seated valves whose certification numbers have no suffixed numbers after hyphens are certified as wet models.

Marine approvals

Nippon Kaiji Kyokai (NK)	NK 98FV601B	704G, 722F
	NK 93FV601B	700S, 700E, 720F
	NK 94FV601B	337Y
	NK 92FV603B	700G, 901C, 903C
	NK 93FV606B	705G
	NK 05FV601B	700Z(Application planned)
	NK 09FV601B	302Y, 304Y, 302A, 304A, TT2AFR
	NK 10FV604B	907H, 908H
Lloyd's Register of Shipping	LR 00/10044	704G, 722F
	LR 96/10037	705G
American Bureau of Shipping	A.B.S 02-YO230943/1-PDA	705G, 704G, 704R, 705R, 722F, 720F
	A.B.S 09-YO490943/2-PDA	302Y, 304Y, 302A, 304A, TT2AFR
Bureau Veritas (France)	02572/FO BV	720F
	09498/A0 BV	704G
	09499/A0 BV	722F

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