

NEW FLOW



Rubber Expansion Joints & Teflon Expansion Joints



Stainless Steel Expansion Joints & Flexible Connector



Vibration Isolators: Spring & Rubber



Butterfly Valves, Check Valves & Air Valve Conforming to AWWA/ISO Standard Manual & Motorized



Brass & Bronze Ball Valves, Gate Valves & Y-Strainers



AWWA C509 Resilient Seated Ductile Iron Gate Valve



Hydraulic Control Valves: PRV, SAV & Float Valve



Balancing Valves



High Performance Electric Motorize Actuator and Gearbox



Shut Off / Fail safe Actuator



Pressure Gauges and Thermometers

Single-Sphere Flexible Rubber Joint with Floating Flanges

OFLEX

Pursuing the TOZEN spirit, "A joint reliance", TOZEN's rubber joint OFLEX ensures ease of use.



Feature

Achievements

Having been used in more than 20 countries for over 30 years, TOZEN brand products proudly demonstrate their popularity.

Reliability

Unparalleled durability is guaranteed by the distinctive and strict design standards of TOZEN.

Quality

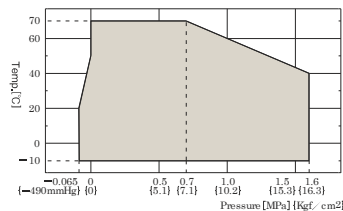
Manufactured in TOZEN's own factory under thorough control with ISO9001 quality management system.

Durability

Reciprocating pressure test for 20,000 cycles or above.

Operating Conditions and Performance

- Working Temperature vs. Working Pressure
- Busting Pressure: 4.8MPa or above at normal temp.



Applications

- This product is mainly applicable for piping systems in commercial and industrial buildings and plants.
- Applicable fluids are exclusively water including cold water, warm water, cooled water, sea water, etc.
- This product can not be used for, pool water, oil, or boiled water.

Structure

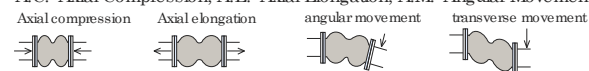
No.	Parts	Material
①	Flange	Mild Steel / Ductile Iron
②	Reinforcing Ring	Carbon Steel
③	Inner Rubber	Synthetic Rubber
④	Outer Rubber	Synthetic Rubber
⑤	Reinforcing Cord	Synthetic Fiber

- Flanges with mild steel and ductile iron in JIS10K, ANSI150, PN16 are standard. For other flanges, please consult us.
- Flange material can be changed to SUS304 and SUS316.
- Flange material for ANSI150 32mm is mild steel only.

Dimensions and Allowable Movements

Nominal Dia.		Dimension [mm]		Mass [Kg]	Allowable Movement [mm]				Installation Tolerances [mm]			
mm	inch	L	φd		T.M.	A.E.	A.C.	A.M.	T.M.	A.E.	A.C.	A.M.
32	1 1/4	125	35	3.1	10	6	10	10°	4	3	6	5°
40	1 1/2	125	35	3.7	10	6	10	10°	4	3	6	5°
50	2	125	45	4.9	10	7	10	10°	4	3	6	5°
65	2 1/2	125	60	5.8	10	7	10	10°	4	3	6	5°
80	3	125	70	7.2	10	7	10	10°	4	3	6	5°
100	4	150	95	8.1	10	10	10	7°	4	3	6	3°
125	5	175	120	11	10	10	10	7°	4	3	6	3°
150	6	200	145	14	10	12	10	5°	4	3	6	2°
200	8	200	195	20	10	12	10	5°	4	3	6	2°
250	10	250	245	28	10	15	10	5°	4	3	6	2°
300	12	250	290	37	10	15	10	5°	4	3	6	2°

·A.C.: Axial Compression, A.E.: Axial Elongation, A.M.: Angular Movement, T.M.: Transverse Movement



- Mass indicates only the case with PN16(Mild Steel) flanges.
- Products should be used within the given allowable movements only.
- Tolerances for installation are included in the allowable movements (Allowable movements = Tolerances for installation + Operating movements).
- Please note that the information in the above table is for single movement only.
- In case of complex movements, please do adjustment by using the following formula.
 $C.A.E. (C.A.C.) = A.A.E.(A.A.C.) \times \{1 - \frac{T.M.}{A.T.M.} + \frac{A.M.}{A.A.M.}\}$
 C.A.E. (C.A.C.): Correct Elongation Movement (Correct Compression Movement)
 A.A.E. (A.A.C.): Allowable Elongation Movement (Allowable Compression Movement)
 A.T.M.: Allowable Transverse Movement
 A.A.M.: Allowable Angular Movement
 Example: In case of 100mm joint, if 5mm transverse movement is needed, then the correct elongation should be: C.A.E = $10 \times \{1 - (\frac{5}{10} + \frac{0}{0})\} = 5\text{mm}$
- There is reaction force from rubber joints due to the load of the internal pressure, so during the installation, please fix the pipe tightly to ensure the joints work efficiently. In case the pipe cannot be fixed tightly, please use the control unit for the joints.



Reciprocating pressure test



Reciprocating pressure test

Note: The content of this catalog is subject to change without prior notice.

AGENT

Twin-Sphere Rubber Joint with Floating Flanges

TWINFLEX

Excellent performance for vibration absorption, displacement absorption and high-pressure resistance.



Feature

Achievements

Having been used in more than 20 countries for over 30 years, TOZEN brand products proudly demonstrate their popularity.

Reliability

Unparalleled durability is guaranteed by the distinctive and strict design standards of TOZEN.

Quality

Manufactured in TOZEN's own factory under thorough control with ISO9001 quality management system.

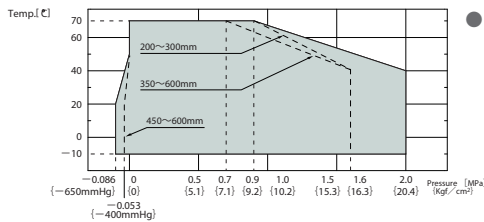
Durability

Reciprocating pressure test for 20,000 cycles or above.

Applications

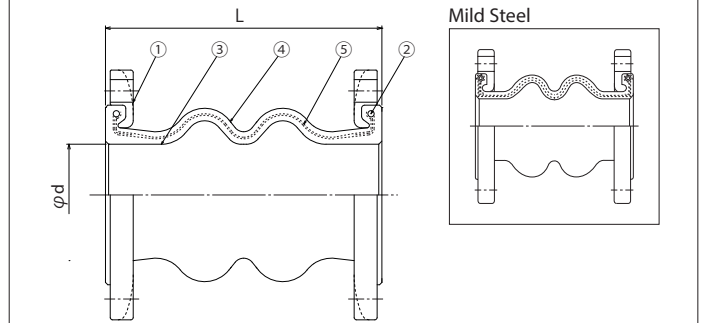
- This product is mainly applicable for piping systems in commercial and industrial buildings and plants.
- Applicable fluids are exclusively water including cold water, warm water, cooled water, sea water, etc.
- This product can not be used for pool water, oil, or boiled water.

Operating Conditions and Performance



- Bursting Pressure:
 32~150mm:
 5.0MPa or above at normal temp.
 200~300mm:
 3.5MPa or above at normal temp.
 350~600mm:
 4.8MPa or above at normal temp.

Structure



No.	Parts	Material
①	Flange	Ductile Iron / Mild Steel
②	Reinforcing Ring	Carbon Steel
③	Inner Rubber	Synthetic Rubber
④	Outer Rubber	Synthetic Rubber
⑤	Reinforcing Cord	Synthetic Fiber

Flange compatible dimension	Standard	JIS10K / ANSI150 / PN16	
	Other	Please consult us.	
Material	Standard	Mild Steel / Ductile Iron (For 350mm~600mm and ANSI150 32mm is mild steel only)	
	Can be changed	○	SUS304
		○	SUS316

Dimensions and Allowable Movements

Nominal Dia.		Dimension [mm]		Mass [Kg]	Allowable Movement [mm]				Installation Tolerances [mm]			
mm	inch	L	φd		T.M.	A.E.	A.C.	A.M.	T.M.	A.E.	A.C.	A.M.
32	1 1/4	175	35	3.3	20	10	20	20°	8	3	6	7.5°
40	1 1/2	175	35	3.9	20	10	20	20°	8	3	6	7.5°
50	2	175	45	5.0	20	10	20	20°	8	3	6	7.5°
65	2 1/2	175	60	6.1	20	10	20	20°	8	3	6	7.5°
80	3	175	70	7.4	20	10	20	20°	8	3	6	7.5°
100	4	225	95	8.6	25	15	30	20°	10	3	6	7.5°
125	5	225	120	11	25	15	30	20°	10	3	6	7.5°
150	6	225	145	14	25	15	30	20°	10	3	6	7.5°
200	8	325	195	22	30	20	40	20°	12	3	6	7.5°
250	10	325	245	32	30	20	40	20°	12	3	6	7.5°
300	12	325	290	42	30	20	40	20°	12	3	6	7.5°
350	14	250	340	56	15	15	20	15°	6	3	6	7.5°
400	16	250	390	66	15	15	20	15°	6	3	6	7.5°
450	18	275	440	67	15	15	20	15°	6	3	6	7.5°
500	20	275	490	83	15	15	20	15°	6	3	6	7.5°
600	24	300	590	123	15	15	20	15°	6	3	6	7.5°

- Mass indicates only the case with PN16 (Mild Steel) flanges.
- Please use within allowable displacement range .
- The installation allowance is included in the allowable displacement.
(allowable displacement = installation displacement + operation displacement)
- As shown in chart are data of non-concurrent displacement, please make correction for concurrent displacements.
For correction method, refer to "Attention for handling" or "TOZEN HP" (<http://www.tozen.com>)

Note: The content of this catalog is subject to change without prior notice.

Agent

TOZEN Corporation

8-4, Asahi, Yoshikawa
Saitama 342-0008 Japan

WE1E-1611

Twin-Sphere Screwed Type Flexible Rubber Joint

TWINFLEX Screwed Type

Excellent performance for vibration absorption, displacement absorption, and high-pressure resistance.



Feature

High Efficiency for Vibration and Noise Isolation

The twin sphere makes the spring constant small, decreases the body natural frequency and increases the efficiency of vibration absorption.

Withstandability

It can withstand a bursting pressure of over 5.0MPa and a maximum working pressure of 1.6MPa and with the combination of excellent formative technique and strong chemical fibre.

Large Displacement Absorption for Eccentricity, Axial Movement and Angular Movement

Since it can absorb large displacement, TWINFLEX screwed type flexible rubber joint is most appropriate for the protection of pipe line system. For example, it can prevent the destruction of connecting pipe due to earthquake and subsidence of ground.

Applicable for both Suction and Delivery

The joint fits for both suction and delivery.

Highly Reliable

The packing parts are strengthened with steel reinforcing rings to prevent the rubber body from slipping out of the fitting sides of flanges.

Convenient to install

When limited space is allowed for installation, the free type sockets can be screwed separately to pipe before fitting in the joint.

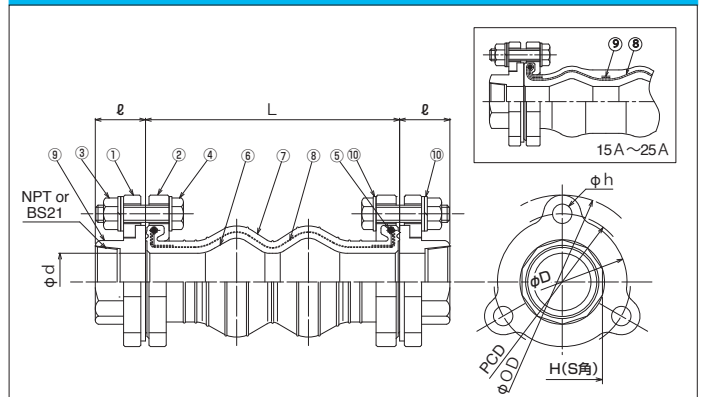
Durability

Reciprocating pressure test for 20,000 cycles or above.

Applications

- This product is mainly applicable for piping systems in commercial and industrial buildings and plants.
- Applicable fluids are exclusively water including cold water, warm water, cooled water, sea water, etc.
- This product can not be used for drinking water, pool water, oil, or boiled water.

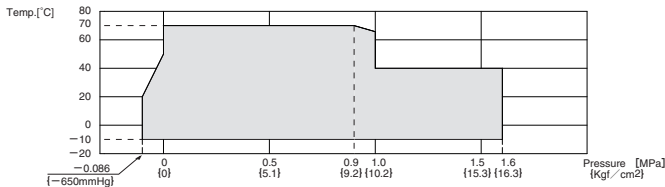
Structure



No.	Parts	Material	No.	Parts	Material
①	Flange-A	Ductile Iron	⑥	Inner Rubber	Synthetic Rubber
②	Flange-B	Ductile Iron	⑦	Outer Rubber	Synthetic Rubber
③	Nut	Mild Steel	⑧	Reinforcing Cord	Synthetic Fiber
④	Bolt	Mild Steel	⑨	Union Edge	Ductile Iron
⑤	Reinforcing Cord	Synthetic Fiber	⑩	Washer	Mild Steel

- The material of No. 1, 2 & 9 can be changed to SUS304 and SUS316.
- The product is also applicable for oil use by changing the rubber material. If need be, please contact us.

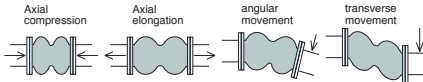
Operating Conditions and Performance



Dimensions and Allowable Movements

Nominal Dia. mm	inch	Dimension [mm]			Mass [Kg]	Union Edge [mm]		Flange [mm]				Allowable Movement [mm]				Installation Tolerances [mm]			
		L	φd	ℓ		Rc	H	φD	PCD	φh	φOD	T.M.	A.E.	A.C.	A.M.	T.M.	A.E.	A.C.	A.M.
15	1/2	120	25	30	1.7	1/2	41	68	70	11.0	93	15	10	15	15°	6	3	6	7.5°
20	3/4	120	25	30	1.8	3/4	41	68	70	11.0	93	15	10	15	15°	6	3	6	7.5°
25	1	120	25	30	1.9	1	41	68	70	11.0	93	15	10	15	15°	6	3	6	7.5°
32	1 1/4	175	35	35	3.1	1 1/4	50	90	95	13.5	121	20	10	20	20°	8	3	6	7.5°
40	1 1/2	175	35	35	3.3	1 1/2	56	90	95	13.5	121	20	10	20	20°	8	3	6	7.5°
50	2	175	45	40	5.4	2	69	106	110	13.5	135	20	10	20	20°	8	3	6	7.5°

A.C.: Axial Compression, A.E.: Axial Elongation,
A.M.: Angular Movement, T.M.: Transverse Movement



*Tolerances for installation are included in the allowable movements
(Allowable movements = Tolerances for installation + Operating movements).

*Please note that the information in the above table is for single movement only.

In case of complex movements, please do adjustment by using the following formula.

$$C.A.E. (C.A.C.) = A.A.E. (A.A.C.) \times \left\{ 1 - \left(\frac{T.M.}{A.T.M.} + \frac{A.M.}{A.A.M.} \right) \right\}$$

C.A.E. (C.A.C.): Correct Elongation Movement (Correct Compression Movement)

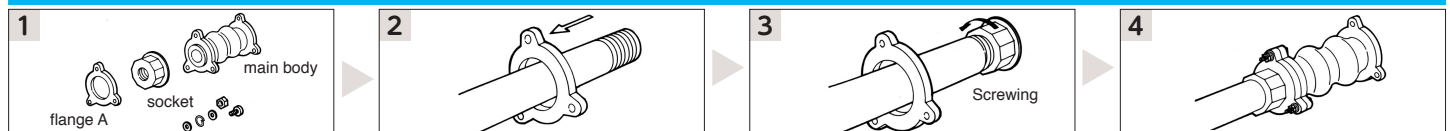
A.A.E. (A.A.C.): Allowable Elongation Movement (Allowable Compression Movement)

A.T.M.: Allowable Transverse Movement A.A.M.: Allowable Angular Movement

Example: In case of 50mm joint, if 10mm transverse movement is needed, then the correct elongation should be: C.A.E = 10 × {1 - (10/20 + 0/20)} = 5mm

*There is reaction force from rubber joints due to the load of the internal pressure, so during the installation, please use the metal fittings to fix the pipe tightly to ensure the joints work efficiently. In case the pipe cannot be fixed tightly, please use the control unit for the joints.

Connection Procedure



1 Remove the bolt and disassemble flange A and socket from the main body.

2 Put flange A through the counterpart pipe.

3 Screw the socket to the counterpart pipe.

4 Use bolts to connect flange A and B.

Note: The content of this catalog is subject to change without prior notice.

AGENT

TOZEN Corporation

8-4, Asahi, Yoshikawa
Saitama 342-0008 Japan

Flange Type

LS-Connector

4 types of LS connectors are available, which 20 mm, 50 mm, 100 mm, 200 mm of eccentricity.



Feature

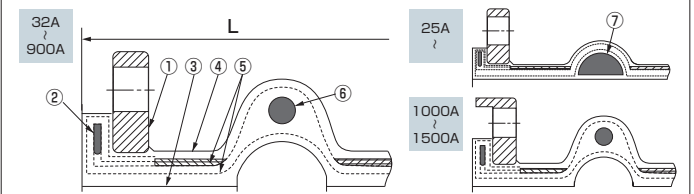
Absorption of Movement

All parts other than flanges are flexible. Large movement can be absorbed with small overall length.

Classification of Eccentricity

LS connector is classified in 4 types of lateral movement, which are 20mm, 50mm, 100mm, 200mm.

Construction



No.	Parts	Material	No.	Parts	Material
①	Flange	Mild Steel	⑤	Reinforcing Fiber	Synthetic Fiber
②	Reinforcing Ring	Mild Steel	⑥	Reinforcing Ring	Mild Steel
③	Inside Rubber	Synthetic Rubber	⑦	Filler	Special High Polymer Rubber
④	Outside Rubber	Synthetic Rubber			

- Aboveground and underground types are available.
- The above figures show the underground type.
- The size 20A and 25A are filled arch type.
- The filled arch type is also producible more than 32A.

Classification

Classification of Lateral Movement

For 20 mm, 50 mm, 100 mm, 200 mm

Aboveground / Underground Applications	Classification of Pressure	Max Operating Pressure(MPa)
Aboveground application (not applicable to Negative Pressure)	Low Pressure	0.2
	Middle Pressure	0.5
	High Pressure	1.0
Underground application Negative Pressure: -0.1MPa (-760mmHg)	Low Pressure	0.2
	Middle Pressure	0.5
	High Pressure	1.0
Max. Working Temp. Please consult us		

For higher pressure applications, please consult us.



Dimensions and Allowable Movements

Nominal Dia. [mm]	20 mm Lateral Movement 1 – Bellow (mm)				50 mm Lateral Movement 2 – Bellow (mm)				100 mm Lateral Movement 3 – Bellow (mm)				200 mm Lateral Movement 4 – Bellow (mm)			
	L	Elon.	Comp.	Mass [kg]	L	Elon.	Comp.	Mass [kg]	L	Elon.	Comp.	Mass [kg]	L	Elon.	Comp.	Mass [kg]
15	150	15	20	1.9	250	30	45	2.2	350	40	60	2.8	450	40	60	3.4
20	150	15	20	2.3	250	30	45	2.6	350	40	60	3.2	450	40	60	3.8
25	150	15	20	2.6	250	30	45	2.9	350	40	60	3.6	450	40	60	4.3
32	150	15	20	3.0	250	30	45	3.4	350	40	60	4.4	450	40	60	5.3
40	150	15	20	3.6	250	30	45	4.0	350	40	60	5.2	450	40	60	6.3
50	150	15	20	4.4	250	30	45	4.9	350	40	60	6.2	450	40	60	7.4
65	150	15	20	5.2	250	30	45	5.9	350	40	60	8.0	450	40	60	9.5
80	150	20	20	6.0	300	30	45	6.7	350	40	60	9.1	450	40	60	11
100	150	20	20	7.2	300	30	45	8.4	350	40	60	11	450	40	60	13
125	150	20	20	10	300	30	45	12	350	40	60	15	450	40	60	17
150	200	20	20	13	300	30	45	16	500	40	60	20	600	40	60	22
200	200	20	20	18	300	30	45	21	500	40	60	26	600	40	60	28
250	200	20	20	26	300	30	45	31	500	40	60	37	600	40	60	43
300	200	20	20	33	300	30	45	39	550	40	60	46	650	40	60	55
350	200	25	30	42	350	40	50	50	550	50	70	59	650	50	70	68
400	200	25	30	50	350	40	50	60	550	50	70	74	650	50	70	85
450	200	25	30	61	350	40	50	74	550	50	70	95	650	50	70	105
500	250	25	30	71	350	40	50	87	550	50	70	110	650	50	70	125
600	250	25	30	99	400	40	50	121	550	50	70	145	650	50	70	168
700	250	25	30	116	400	40	50	137	650	50	70	170	750	50	70	197
800	300	25	30	133	400	40	50	156	650	50	70	190	750	50	70	225
900	300	25	30	150	400	40	50	178	650	50	70	220	750	50	70	254
1000	300	25	30	170	450	40	50	197	700	50	70	250	800	50	70	287
1100	300	25	30	190	450	40	50	225	700	50	70	280	800	50	70	324
1200	300	25	30	217	450	40	50	254	700	50	70	310	800	50	70	357
1350	300	25	30	260	450	40	50	300	700	50	70	370	800	50	70	420
1500	350	25	30	405	450	40	50	460	750	50	70	590	950	50	70	680

L. = Overall Length Elon. = Elongation Comp. = Compression
 • Mass indicates the weight for underground type.
 • Please use each movement within allowable movements.
 • Please note that the information in the above table is for single movement only. In case of complex movements, please do adjustment by using the following formula.

C.A.E. (C.A.C.) = A.A.E.(A.A.C.) × {1 - ($\frac{T.M.}{A.T.M.} + \frac{A.M.}{A.A.M.})}$
 C.A.E. (C.A.C.): Correct Elongation Movement (Correct Compression Movement)
 A.A.E. (A.A.C.): Allowable Elongation Movement (Allowable Compression Movement)
 A.T.M.: Allowable Transverse Movement
 A.A.M.: Allowable Angular Movement

Note: The content of this catalog is subject to change without prior notice.

AGENT

TOZEN Corporation

8-4, Asahi, Yoshikawa
Saitama 342-0008 Japan

WE1-1308

Flange Type Metal Flexible Hose

SF7800

Prevention for damage of pipe and equipment by ground sinking, earthquake, etc. Making pipe alignment. Connection with machine and pipe.



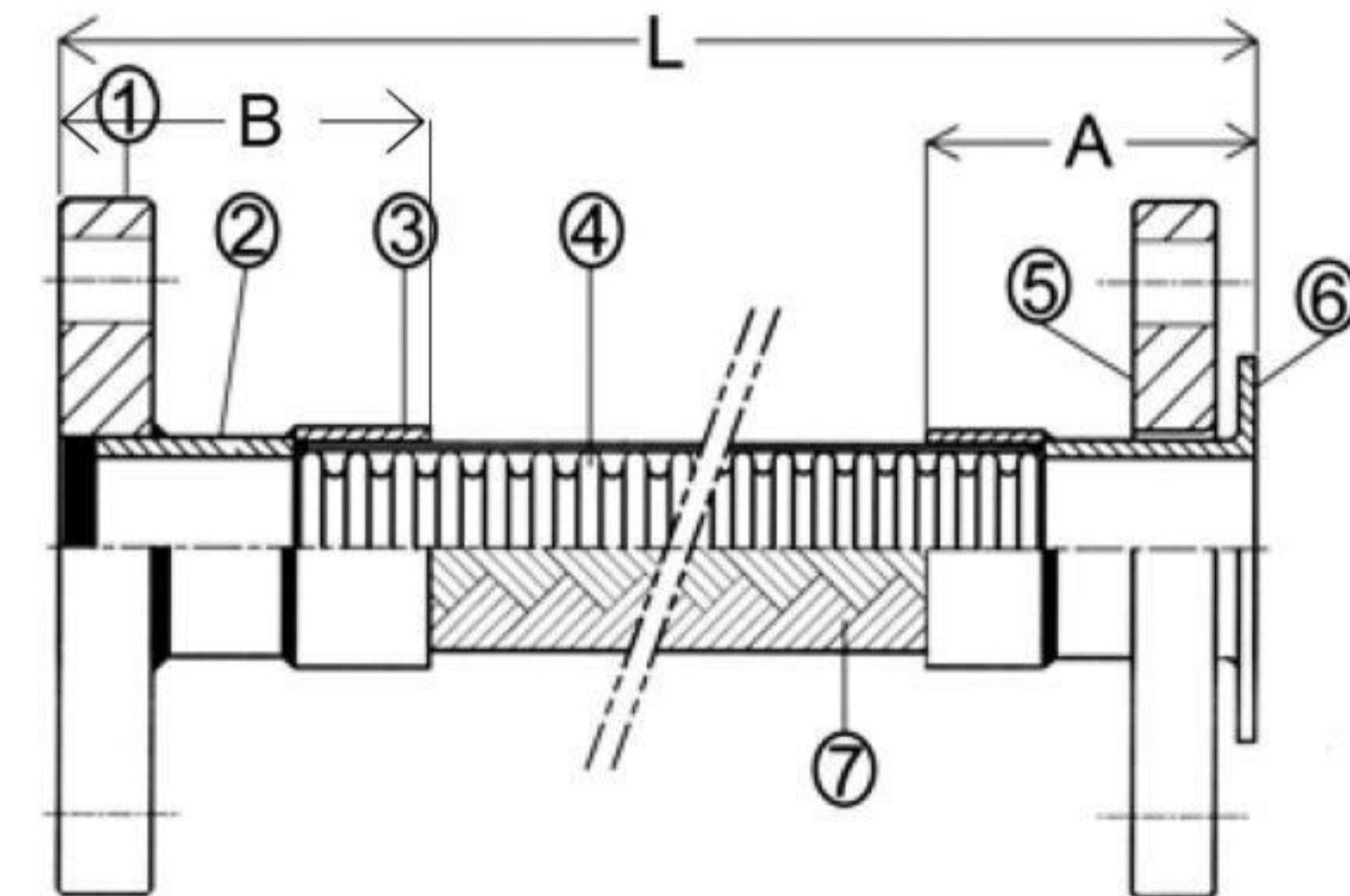
Feature

One end fixed and the other loose flange high pressure type for more than 0.98MPa (10kgf/cm²). Besides, it can be matched to high pressure inserting steel ring to the waist of tube.
Material: SUS304, 316

Applications

Connection of tank (oil, water, chemicals, etc.). Connection of plant piping.
Connection of water piping.

Structure



No.	Parts	Material
①	Fixed Flange	SS400,SUS304
②	Short Pipe	SS400,SUS304
③	Collar	SUS304
④	Flexible Tube	SUS304
⑤	Loosed Flange	SS400,SUS304
⑥	Lap Joint	CS,SUS304
⑦	Wire Braid	SUS304

Dimensions and Allowable Movements

Nominal Diameter		Length (L) [mm]	Effective Cross Section Area (cm ²)			Ineffective Length A+b [mm]
[mm]	[inch]		300mm	400mm	500mm	
25	1	200	29	78	147	145
32	1-1/4	250	19	56	111	159
40	1-1/2	250	15	49	101	175
50	2	350	11	35	74	175
65	2-1/2	410	9	30	63	175
80	3	450	6	23	51	195
100	4	560	4	18	41	195
125	5	660	4	15	35	195
150	6	815	3	12	27	200
200	8	1015	1	7	19	220
250	10	1220	N/A	6	16	220
300	12	1420	N/A	5	13	220
350	14	2700	N/A	2	6	230
400	16	3300	N/A	2	5	230

Installation Guide

Metal flexible hoses should not be bent to radius smaller than recommended in their specifications, otherwise fatigue and premature failure will occur. Avoid twisting of metal flexible hoses.

Note: The content of this catalog is subject to change without prior notice.

TOZEN Corporation

8-4, Asahi, Yoshikawa
Saitama 342-0008 Japan

WE48-1404



WAFER TYPE BUTTERFLY VALVE

SPECIFICATION

FOR ANSI CLASS 100 / CLASS 125 FLANGE MOUNTING
FACE-TO-FACE DIMENSION TO ISO 5752 / BS 5155 / BS EN 593
LEVER / WORM GEAR OPERATOR

PRESSURE / TEMPERATURE RATINGS

Working Pressure	200 psi
Testing Pressure	Shell : 350 psi Seat : 220 psi
Working Temperature	-4°F to 230°F (EPDM Seat) 14°F to 176°F (NBR Seat)
Suitable Media	Water, Oil & Gas

MATERIALS

Part	Material	ASTM
Body	Cast Iron	A126 Class B
	Ductile Iron	A536 Gr. 65-45-12
Disc	Ductile Iron	A536 Gr. 65-45-12
	Aluminum Bronze	B 148-97 C95400
	Stainless Steel 304	A351 CF-8
	Stainless Steel 316	A351 CF-8M
Seat Ring	EPDM	
	NBR	
	PTFE	
	Viton	
Shaft	Stainless Steel 410	S41000
	Stainless Steel 431	S43100
	Stainless Steel 316	S31600
Taper Pins	Stainless Steel 316	S31600
Key	Carbon Steel	
O-Ring	NBR	
Bushing	PTFE (2"~24")	
	Luberized Bronze (2"~40")	

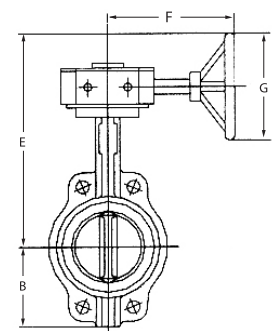
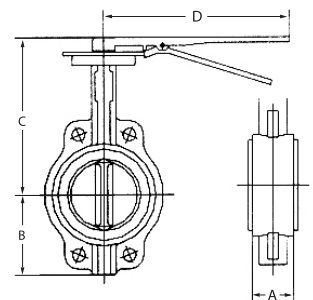
DIMENSIONS

Size	A	B	C	D	E	F	G	Cv
inch	inch	inch	inch	inch	inch	inch	inch	90°
2	1.7	3.1	7.7	10.5	10.7	6.8	5.9	135
2-1/2	1.8	3.5	8.2	10.5	11.3	6.8	5.9	220
3	1.8	3.8	8.4	10.5	11.5	6.8	5.9	302
4	2	4.5	9.2	10.5	12.2	6.8	5.9	600
5	2.1	5	9.7	10.5	12.8	6.8	5.9	1022
6	2.2	5.5	10.2	10.5	13.3	6.8	5.9	1579
8	2.4	6.9	12	14.1	17.8	9.4	11.2	3136
10	2.6	8	13.3	14.1	19.1	9.4	11.2	5340
12	3	9.6	15	14.1	20.7	8.9	11.2	8250
14	3	10.6	-	-	21.9	8.9	11.2	11917

BFV-WA

Class 125

2"~14"



LUG TYPE BUTTERFLY VALVE

SPECIFICATION

FOR ANSI CLASS 100 / CLASS 125 FLANGE MOUNTING
FACE-TO-FACE DIMENSION TO ISO 5752 / BS 5155 / BS EN 593
LEVER / WORM GEAR OPERATOR

PRESSURE / TEMPERATURE RATINGS

Working Pressure	200 psi
Testing Pressure	Shell : 350 psi Seat : 220 psi
Working Temperature	-4°F to 230°F (EPDM Seat) 14°F to 176°F (NBR Seat)
Suitable Media	Water, Oil & Gas

MATERIALS

Part	Material	ASTM
Body	Cast Iron	A126 Class B
	Ductile Iron	A536 Gr. 65-45-12
Disc	Ductile Iron	A536 Gr. 65-45-12
	Aluminum Bronze	B 148-97 C95400
	Stainless Steel 304	A351 CF-8
	Stainless Steel 316	A351 CF-8M
Seat Ring	EPDM	
	NBR	
	PTFE	
	Viton	
Shaft	Stainless Steel 410	S41000
	Stainless Steel 431	S43100
	Stainless Steel 316	S31600
Taper Pins	Stainless Steel 316	S31600
Key	Carbon Steel	
O-Ring	NBR	
Bushing	PTFE	
	Luberized Bronze	

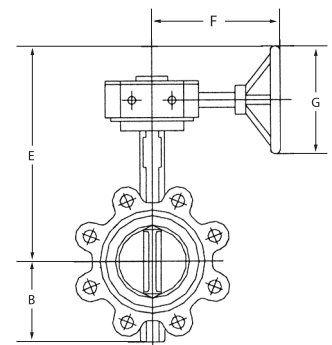
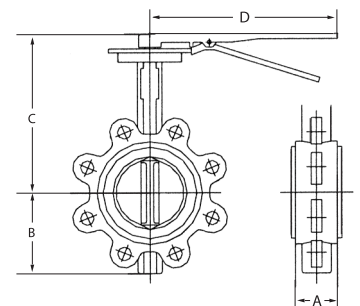
DIMENSIONS

Size inch	A inch	B inch	C inch	D inch	E inch	F inch	G inch	Cv 90°
2	1.7	3.1	7.7	10.5	10.7	6.8	5.9	135
2-1/2	1.8	3.5	8.2	10.5	11.3	6.8	5.9	220
3	1.8	3.8	8.4	10.5	11.5	6.8	5.9	302
4	2	4.5	9.2	10.5	12.2	6.8	5.9	600
5	2.1	5	9.7	10.5	12.8	6.8	5.9	1022
6	2.2	5.5	10.2	10.5	13.3	6.8	5.9	1579
8	2.4	6.9	12	14.1	17.8	9.4	11.2	3136
10	2.6	8	13.3	14.1	19.1	9.4	11.2	5340
12	3	9.6	15	14.1	20.7	8.9	11.2	8250
14	3	10.6	-	-	21.9	8.9	11.2	11917

BFV-LA

Class 125

2"~14"



DOUBLE FLANGE BUTTERFLY VALVE (CONCENTRIC TYPE)

SPECIFICATION

CONCENTRIC TYPE • FLANGED TO BS 4504 PN10 / PN16
FACE-TO-FACE DIMENSION TO ISO 5752 / BS 5155 (DOUBLE FLANGE SHORT BODY) / BS EN593 / EN558-1 BASIC SERIES 13 (DOUBLE FLANGE SHORT BODY) / API 609
LEVER / WORM GEAR OPERATOR

PRESSURE / TEMPERATURE RATINGS

Working Pressure	16 bar
Testing Pressure	Shell : 24 bar Seat : 17.6 bar
Working Temperature	-20°C to 110°C (EPDM Seat) -10°C to 80°C (NBR Seat)
Suitable Media	Water & Oil

MATERIALS

Part	Material	BS
Body	Ductile Iron	2789 Gr. 500/7, 420/12
Disc	Ductile Iron	2789 Gr. 500/7, 420/12
	Aluminum Bronze	1400 AB2
	Stainless Steel 304	304 C15
	Stainless Steel 316	316 C16
Seat Ring	EPDM	
	NBR	
	Viton	
Shaft	Stainless Steel 410	410 S21
	Stainless Steel 431	431 S29
Taper Pins	Stainless Steel 316	316 S16
Key	Carbon Steel	
O-Ring	NBR	
Bushing	Luberized Bronze	

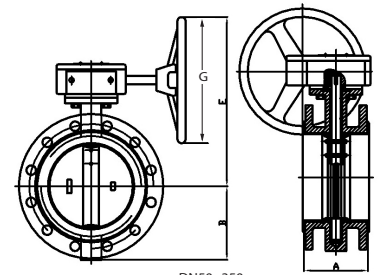
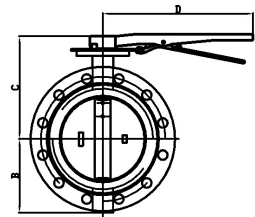
DIMENSIONS

Size mm	A mm	B mm	C mm	D mm	E mm	G mm	Cv 90°
50	108	80	142	267	223	150	135
65	112	80	166	267	247	150	220
80	114	95	163	267	244	150	302
100	127	114	182	267	263	150	600
125	140	113	202	267	283	150	1022
150	140	139	212	267	293	150	1579
200	152	175	245	358	398	300	3136
250	165	203	280.5	358	433.5	300	5340
300	178	242	311	358	465	300	8250
350	190	272	-	-	516	300	11917
400	216	333	-	-	624	390	16388
450	222	364	-	-	655	390	21705
500	229	389	-	-	697	390	27908
600	267	464	-	-	772	390	43116

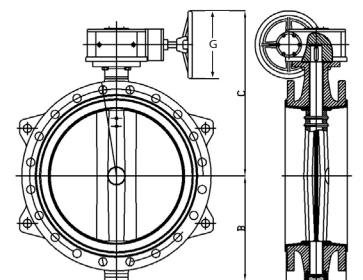
BFV-DCB

PN16

DN50~600



DN50~350



DN400~600



AQ range overview

Weatherproof Quarter-turn Actuators

- **Adaptation to all quarter-turn valves**
 - > 15 - 500 N.m (direct)
- **Type of Controls:**
 - > Electromechanical SWITCH
 - > Integrated control: new LOGIC (v2)
- **BC Duty & Modulating Classification:**
 - > On-Off: Class A
 - > Inching/Positioning: Class B
 - > Modulating: Class III (except AQL)
- **Environment:**
 - > IP68 / NEMA4X
 - > Corrosive environment: C3
 - > T: -20°C ...+60°C



> SWITCH models



AQ1L to AQ7L



AQ5 to AQ50

> LOGIC models



AQ5 to AQ50



Main features

COMPACT & OPTIMIZED DESIGN

- > Product architecture & torque range adapted to customers' requirements
- > Multi-voltage & multi-frequency products (A01L to A07L): suitable whatever your location on the globe
- > Optimized logistics: short delivery time.

RELIABLE DESIGN

- > BERNARD CONTROLS design methodology built-up on the nuclear market highly demanding requirements
- > 75+ years of continuous experience: BC inventor of the first compact quarter-turn electric actuator
- > 100% of products tested with automatic process before delivery

INTEGRATED CONTROLS

LOGIC VERSION:

- > Turn-key, time & cost-saving solution
- > Non-intrusive setting for enhanced safety and reliability
- > New LOGIC (v2), compatible with common fieldbus protocols
- > Bluetooth communication (as standard)

ELECTRONIC OPTIONS (Local command & Local command + Positioner) available on SWITCH version

EASY TO USE

- > Easy commissioning: pre-wired products (1-phase only), set up of travel limitation system with a simple screwdriver...
- > LCD Display for user-friendly commissioning and local command on LOGIC version
- > BERNARD CONTROLS new mobile application for commissioning, troubleshooting, documentation...
- > Declutch-free manual override: essential for quick intervention on site



DUCTILE IRON RESILIENT SEAT GATE VALVE

SPECIFICATION

NON-RISING STEM • INSIDE SCREW
CONFORMS TO AWWA C509 • FLANGED TO ANSI CLASS 125

PRESSURE / TEMPERATURE RATINGS

	2" ~ 12" □ □	14" ~ 24"
Working Pressure	200 psi □ □	150 psi
Testing Pressure	Shell : 350 psi □	262.5 psi
	Seat : 200 psi □	150 psi
Working Temperature □ □	14°F to 248°F (EPDM Coated)	
□ □	14°F to 180°F (NBR Coated)	
Suitable Media □ □	Water, Oil & Gas	

MATERIALS

Part	Material	ASTM
Body	Ductile Iron	A536 65-45-12
Bonnet	Ductile Iron	A536 65-45-12
Disc	Ductile Iron (EPDM / NBR Coated)	A536 65-45-12
Stem	Stainless Steel	AISI 420
O-Ring	EPDM NBR	
Wrench Nut	Ductile Iron	A536 65-45-12
Handwheel	Ductile Iron	A536 65-45-12

DIMENSIONS

Size inch	L inch	H (Handwheel) inch	H (Wrench Nut) inch	D inch
2	7	9.4	10	7
2-1/2	7.5	10	10.7	7
3	8	11	11.7	7
4	9	12	12.6	7
5	10	15	15.6	10
6	10.5	16.4	17	10
8	11.5	20.7	20.7	12
10	13	24.5	24.5	14
12	14	28	28	14
14	15	34	34	17.1
16	16	40	40	21.1
18	17	40.6	40.6	24
20	18	47.3	47.3	24
24	20	53.3	53.3	30

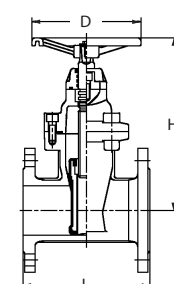
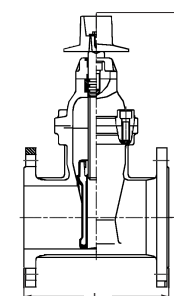
Note:

- If used for gas application, please consult our sales office.
- Design and specifications are subject to change without prior notice.

DRGV-A

Class 125

2"~24"



CAST IRON RISING STEM GATE VALVE

SPECIFICATION

RISING STEM • OUTSIDE SCREW AND YOKE
MSS SP-70 • FLANGED TO ANSI CLASS 125

PRESSURE / TEMPERATURE RATINGS

	2"~12"	14"~24"
Working Pressure	200 psi	150 psi
Testing Pressure	Shell : 350 psi Seat : 200 psi	Shell : 262 psi Seat : 150 psi
Working Temperature□□	14°F to 248°F	
Suitable Media□ □	Water, Oil & Gas	

* 200 psi pressure rating is available for 14"~24". The body material shall be Ductile Iron.

MATERIALS

Part	Material	ASTM
Body	Cast Iron	A126 Class B
Bonnet	Cast Iron	A126 Class B
Disc	Cast Iron	A126 Class B
Seat Ring	Gunmetal	B62 C83600
Stem	Brass Stainless Steel	B16 C36000 AISI 420
Packing	Graphite	Non-Asbestos
Handwheel	Cast Iron	A126 Class B

DIMENSIONS

Size inch	L inch	H (Open) inch	D inch
2	7	13.8	7.5
2-1/2	7.5	15.4	7.5
3	8	17.9	7.5
4	9	22.1	11.8
5	10	26	11.8
6	10.5	30.8	13.8
8	11.5	36.6	13.8
10	13	46.6	15.7
12	14	54.8	17.7
14	15	62.8	20
16	16	74.8	22
18	17	87	24
20	18	98	24
24	20	116.5	30

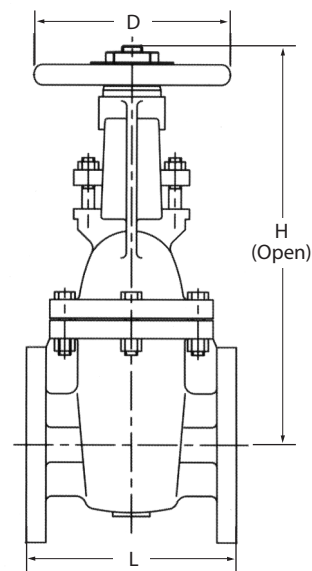
Note:

1. □ JIS B2239 10K and other flange standards available upon request.
2. □ If used for gas application, please consult our sales office.
3. □ Design and specifications are subject to change without prior notice.

R-CGV-A

Class 125

2"~24"



CAST IRON DUAL DOOR CHECK VALVE

SPECIFICATION

FOR ANSI CLASS 125 FLANGE MOUNTING
FACE-TO-FACE DIMENSION TO ISO 5752-82

PRESSURE / TEMPERATURE RATINGS

Working Pressure <input type="checkbox"/>	<input type="checkbox"/> 200 psi (2"~24")
<input type="checkbox"/>	<input type="checkbox"/> 150 psi (28"~32")
Testing Pressure <input type="checkbox"/>	<input type="checkbox"/> Shell : 350 psi (2"~24")
<input type="checkbox"/>	<input type="checkbox"/> 225 psi (28"~32")
<input type="checkbox"/>	<input type="checkbox"/> Seat : 220 psi (2"~24")
<input type="checkbox"/>	<input type="checkbox"/> 165 psi (28"~32")
Working Temperature <input type="checkbox"/>	<input type="checkbox"/> 14°F to 248°F (EPDM Seat)
<input type="checkbox"/>	<input type="checkbox"/> 14°F to 176°F (NBR Seat)
Suitable Media <input type="checkbox"/>	<input type="checkbox"/> Water, Oil & Gas

MATERIALS

Part	Material	ASTM
Body	Cast Iron	A126 Class B
Disc	Ductile Iron	A536 Gr. 65-45-12
	Aluminum Bronze	B148-97 C95400
	Stainless Steel 304	A351 CF-8
	Stainless Steel 316	A351 CF-8M
Spring	Stainless Steel 316	S31600
Shaft	Stainless Steel 316	S31600
Seat	EPDM	
	NBR	

Ductile Iron body available upon request.

DIMENSIONS

Size inch	A inch	B inch	C inch	D inch	Size inch	A inch	B inch	C inch	D inch
2	1.7	4.1	1.1	0.8	12	4.5	16.1	5.9	1.7
2-1/2	1.8	4.8	1.4	0.8	14	5	17.7	6.8	1.8
3	2.5	5.3	1.7	1.1	16	5.5	20.4	7.8	2.1
4	2.5	6.8	2.1	1.1	18	6	21.5	8.6	2.3
5	2.8	7.6	2.5	1.2	20	6	23.8	9.5	2.3
6	3	8.7	3	1.2	24	7	28.1	11.7	2.9
8	3.5	10.9	4	1.3	28	9	31.5	14	3.6
10	4.5	13.3	5	2	32	9.5	36.6	16	4

*B = Outside diameter for ANSI class 125(2"~24") & ANSI class 100(28"~32") flange mounting.

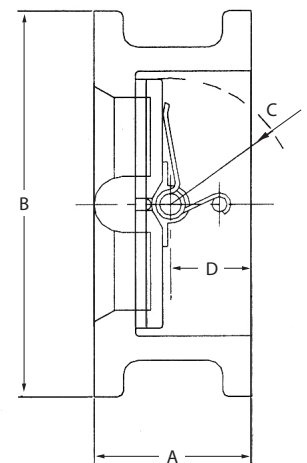
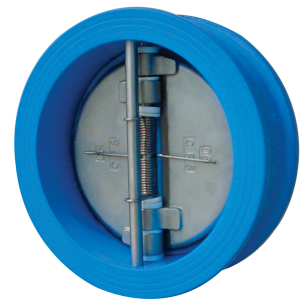
Note:

- JIS B2239 10K and other flange standards available upon request.
- If used for gas application, please consult our sales office.
- Design and specifications are subject to change without prior notice.

CDCV-WA

Class 125

2"~32"



CAST IRON SWING CHECK VALVE

SPECIFICATION

BRONZE / RESILIENT SEAT
MSS SP-71 • FLANGED TO ANSI CLASS 125

PRESSURE / TEMPERATURE RATINGS

Working Pressure <input type="checkbox"/>	<input type="checkbox"/> 200 psi
Testing Pressure <input type="checkbox"/>	<input type="checkbox"/> Shell : 350 psi
<input type="checkbox"/>	<input type="checkbox"/> Seat : 220 psi
Working Temperature <input type="checkbox"/>	<input type="checkbox"/> 14°F to 248°F (Gunmetal / EPDM)
<input type="checkbox"/>	<input type="checkbox"/> 14°F to 176°F (NBR)
Suitable Media <input type="checkbox"/>	<input type="checkbox"/> Water, Oil & Gas

MATERIALS

Part	Material	ASTM
Body	Cast Iron	A126 Class B
Disc	Cast Iron	A126 Class B
Seat Ring	Gunmetal	B62 C83600
Disc Ring	Gunmetal EPDM NBR	B62 C83600

DIMENSIONS

Size inch	L inch	H inch
2	8	4.4
2-1/2	8.5	5.3
3	9.5	5.6
4	11.5	6.4
5	13	7.8
6	14	8.3
8	19.5	10.1
10	24.5	11.8
12	27.5	13
14	31	17.7
16	36	20.5
18	36	21.7
20	40	23.2
24	48	26.8

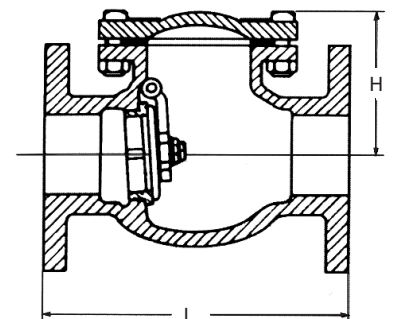
Note:

- JIS B2239 10K and other flange standards available upon request.
- If used for gas application, please consult our sales office.
- Design and specifications are subject to change without prior notice.

CCV-A

Class 125

2"~24"



CAST IRON Y TYPE STRAINER

SPECIFICATION

BOLTED COVER WITH BLOW-OFF DRAIN PLUG
STAINLESS STEEL PERFORATED SCREEN
FLANGED TO ANSI CLASS 125

PRESSURE / TEMPERATURE RATINGS

Working Pressure	□ 200 psi
Testing Pressure	□ 350 psi
Working Temperature	□ 14°F to 248°F
Suitable Media	□ Water, Oil & Gas

MATERIALS

Part	Material	ASTM
Body	Cast Iron	A126 Class B
Cover	Cast Iron	A126 Class B
Screen	Stainless Steel	S30400
Blow-Off Plug	Carbon Steel	

Ductile Iron body available upon request.

STANDARD SCREENS

Size (inch)	Hole Dia. (inch)	Free Flow Area (inch ²)
2"~6"	0.059	104
8"~14"	0.098	26
16"~24"	0.138	22

DIMENSIONS

Size inch	L inch	H inch	Plug Size inch
2	9.1	6.3	1
2-1/2	11.4	7.1	1
3	12.2	8.5	1
4	13.8	9.3	1.5
5	15.7	10.8	1.5
6	18.9	12	1.5
8	23.6	15.4	2
10	28.7	21.3	2
12	33.5	26.8	2
14	38.6	29.1	2
16	43.3	33.3	2
18	47.2	33.0	2
20	49.2	35.7	2
24	57.1	42.4	2

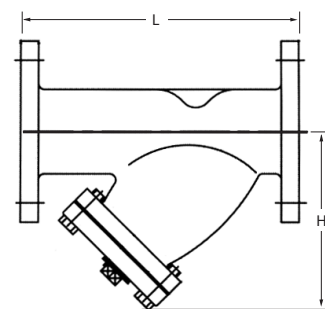
Note:

- JIS B2239 10K and other flange standards available upon request.
- If used for gas application, please consult our sales office.
- Design and specifications are subject to change without prior notice.

CYS-A

Class 125

2"~24"



DDRV-B
DDRV-B25

**FIXED ORIFICE
DOUBLE REGULATING VALVE**



PRODUCT DATA SHEET

FIXED ORIFICE DOUBLE REGULATING VALVE

**Model : DDRV-B
DDRV-B25**

65mm (2½") ~ 300mm (12")



APPLICATION

Tozen Double Regulating Valves are installed and used in centralised heating and cooling systems to obtain design flow rates of each terminal units and balancing the circuits in the building.

FUNCTION

- Balancing
- Measuring
- Pre-setting
- Isolating

FEATURES

- Y-pattern globe design.
- Integral fixed orifice plate to form a fixed orifice flow measurement unit with regulation and isolation function.
- Accuracy of +/-5% at full open position of the valve.
- Equipped with 2 measuring nipples for differential pressure measurement.
- Microset handwheel adjustment with easily readable settings.
- Multi-turn adjustment range for maximum flow control.
- Double regulating feature allows valve opening to be set with allen key.
- Long neck for thermal insulation.
- Ductile iron body of PN16 & PN 25 pressure rating.
- Comply to BS 7350.

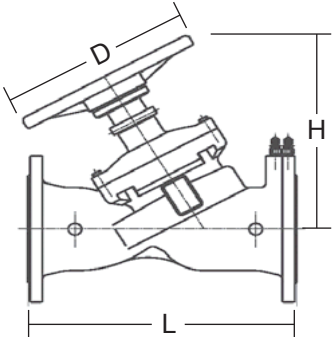
SPECIFICATION

- Type : Fixed orifice
- Size range : 65mm ~ 300mm
- Max. working pressure : 16bar (DDRV-B)
: 25bar (DDRV-B25)
- Testing pressure (Shell) : 24bar (DDRV-B)
: 37.5bar (DDRV-B25)
- Testing pressure (Seat) : 17.6bar (DDRV-B)
: 27.5bar (DDRV-B25)
- Working temperature : -10°C to 120°C
- Connection : EN1092-2 PN16/25
(Other flange standard available upon request)
- Standard : Comply to BS 7350

MATERIALS

Part	Material	ASTM	EN
Body	Ductile Iron	A536 65-45-12	EN-JS 1050
Bonnet	Ductile Iron	A536 65-45-12	EN-JS 1050
Stem	Stainless Steel 410	S41000	BS970 410S21
Disc	EPDM Coated Ductile Iron	A536 65-45-12	EN-JS 1050
Gland (65 - 150mm)	DZR Brass	B453 C35330	EN 12164 CW602N
Gland (200 - 300mm)	Ductile Iron	A536 65-45-12	EN-JS 1050
Gland Nut	DZR Brass	B453 C35330	EN 12164 CW602N
Measuring Nipples	DZR Brass	B453 C35330	EN 12164 CW602N
Handwheel	Ductile Iron	A536 65-45-12	EN-JS 1050
Orifice Insert	DZR Brass	B453 C35330	EN 12164 CW602N
Packing	EPDM	-	-

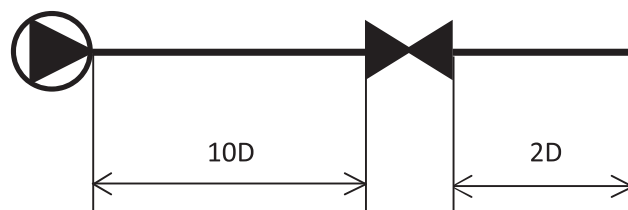
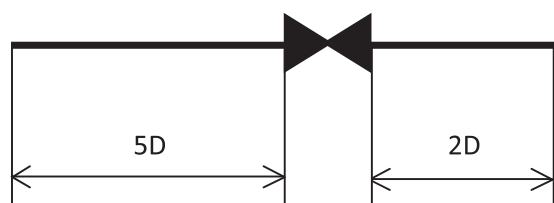
DIMENSIONS & COEFFICIENTS

	Size (mm)	L (mm)	H (mm)	D (mm)	Weight (kg)	Kvs
		65	290	265	200	17
	80	310	270	200	20	131.24
	100	350	310	240	29	189.33
	125	400	340	290	40	354.73
	150	480	340	290	52	472.39
	200	600	537	350	113	735.55
	250	730	570	420	185	1153.21
	300	850	690	420	248	1712.62

Note: Kvs at fully open position.

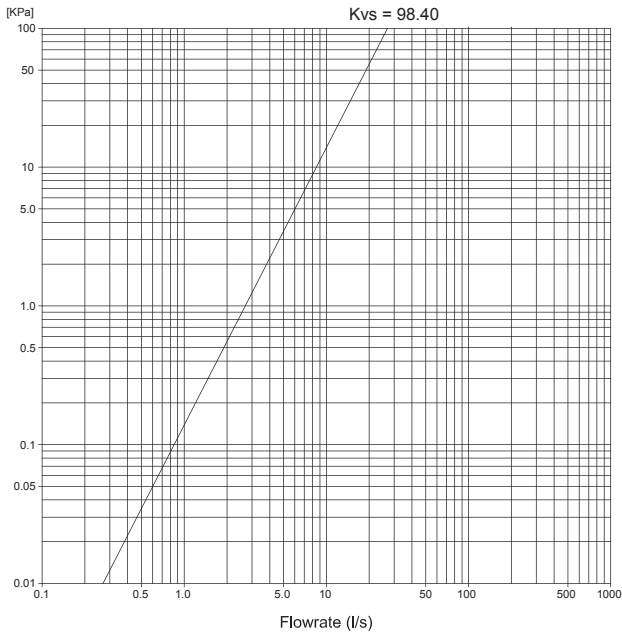
Installation

- The Double Regulating Valve shall be installed with the arrow marking on the valve body in accord to the same flow direction in the pipe. It may be installed at any angle.
- The gasket must be assembled between the flanges when the valve is installed. It can ensure that the valve is concentric with the pipe and the exact measurement data can be read.
- Avoid welding with pipe while it is connected. Tighten flanges bolts alternately, diagonally and repeatedly with the same force.
- Up and down stream from the valve is required to avoid turbulence which will affect the accuracy.

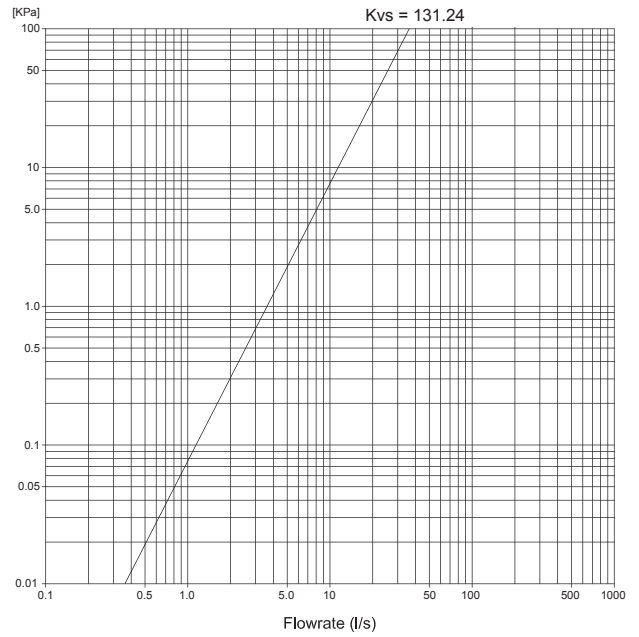


FLOW MEASUREMENT GRAPHS

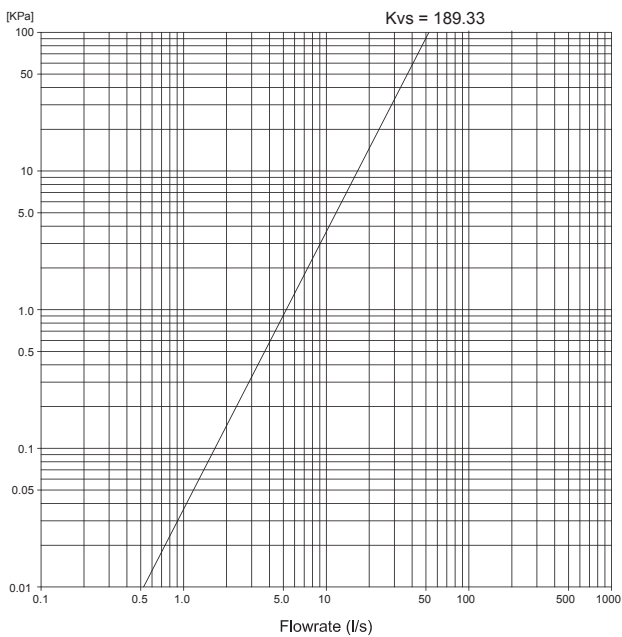
DDRV-B / DDRV-B25
Diameter : 65mm



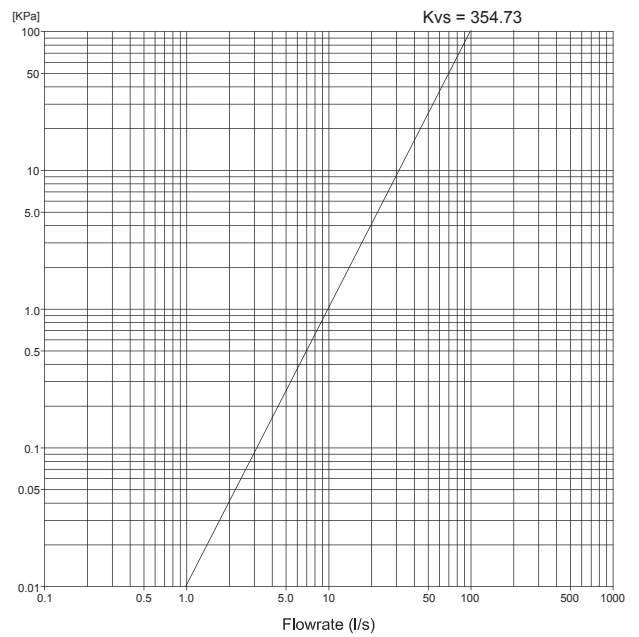
DDRV-B / DDRV-B25
Diameter : 80mm



DDRV-B / DDRV-B25
Diameter : 100mm

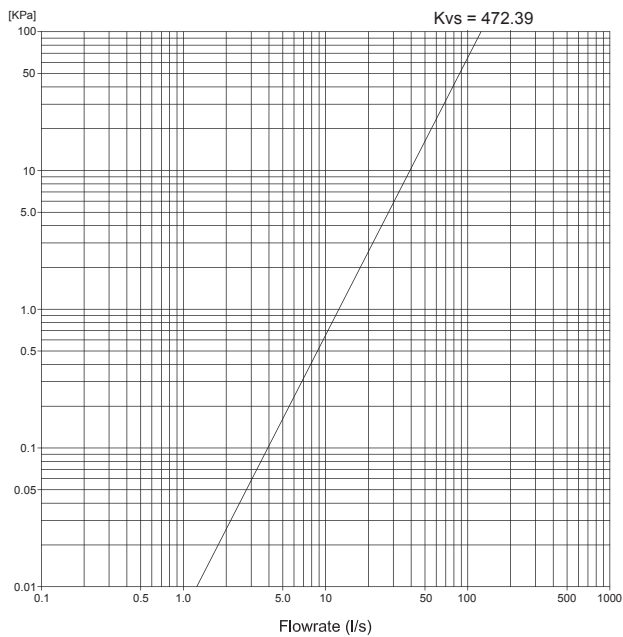


DDRV-B / DDRV-B25
Diameter : 125mm

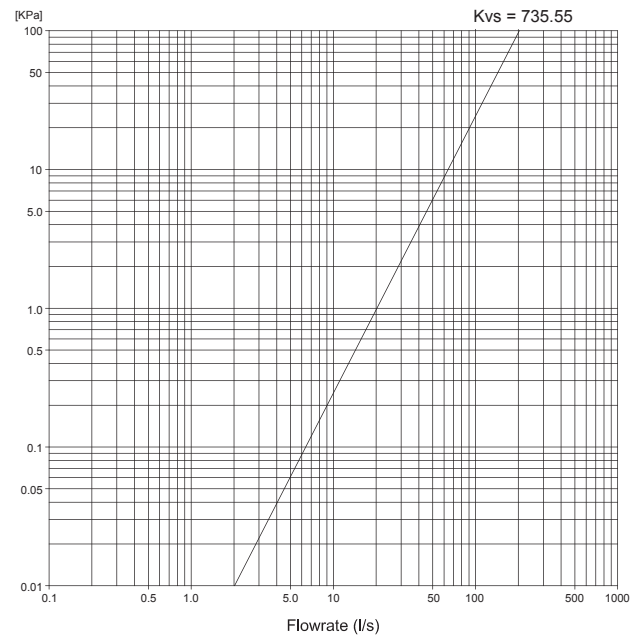


FLOW MEASUREMENT GRAPHS

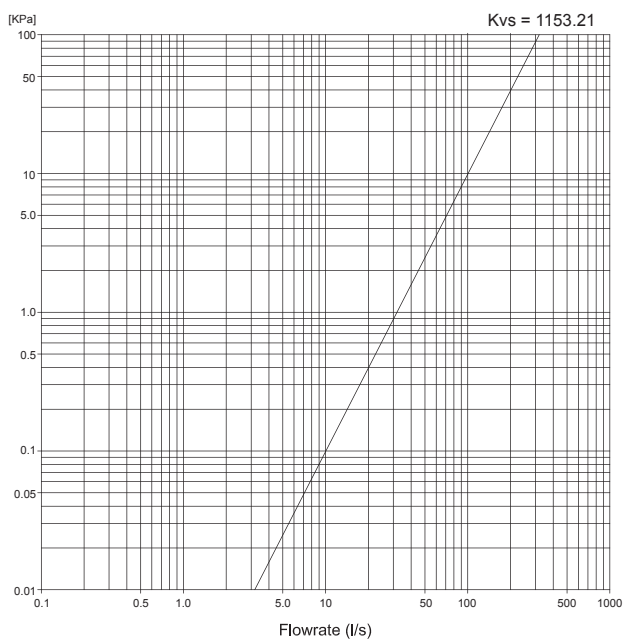
DDRV-B / DDRV-B25
Diameter : 150mm



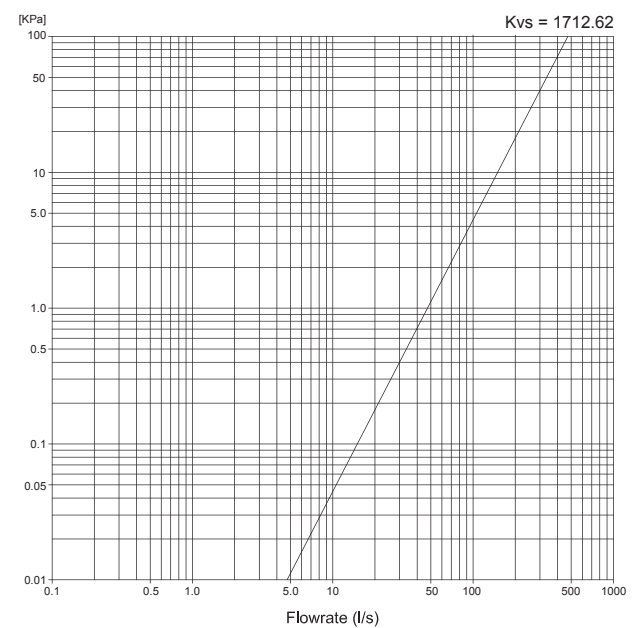
DDRV-B / DDRV-B25
Diameter : 200mm



DDRV-B / DDRV-B25
Diameter : 250mm



DDRV-B / DDRV-B25
Diameter : 300mm





Design and specification are subject to change without prior notice.

V0913

TOZEN Corporation
8-4, Asahi, Yoshikawa
Saitama 342-0008, Japan

GDRV-101

**FIXED ORIFICE
DOUBLE REGULATING VALVE**



PRODUCT DATA SHEET

FIXED ORIFICE DOUBLE REGULATING VALVE

Model : GDRV-101

15mm (1/2") ~ 50mm (2")



APPLICATION

Tozen Double Regulating Valves are installed and used in centralised heating and cooling systems to obtain design flow rates of each terminal units and balancing the circuits in the building.

FUNCTION

- Balancing
- Measuring
- Pre-setting
- Isolating

FEATURES

- Y-pattern globe design.
- Integral fixed orifice plate to form a fixed orifice flow measurement unit with regulation and isolation function.
- Accuracy of +/-5% at full open position of the valve.
- Equipped with 2 measuring nipples for differential pressure measurement.
- Microset handwheel adjustment with easily readable settings.
- Multi-turn adjustment range for maximum flow control.
- Double regulating feature allows valve opening to be set with allen key.
- Long neck for thermal insulation.
- Bronze body of PN25 pressure rating.
- Comply to BS 7350.

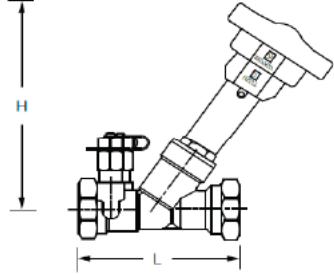
SPECIFICATION

- Type : Fixed orifice
- Size range : 15mm ~ 50mm
- Max. working pressure : 25bar
- Testing pressure : 37.5bar (Shell)
27.5bar (Seat)
- Working temperature : -10°C to 120°C
- Connection : BS 21 (ISO 7)
ANSI B1.20.1
- Standard : Comply to BS 7350

MATERIALS

Part	Material	ASTM	EN
Body	Bronze	B62 B83600	EN1982 CC491K
Bonnet	DZR Brass	B453 C35330	EN12165 CW602N
Stem	DZR Brass	B453 C35330	EN12165 CW602N
Disc	DZR Brass	B453 C35330	EN12165 CW602N
Orifice Insert	DZR Brass	B453 C35330	EN12165 CW602N
Measuring Nipples	DZR Brass	B453 C35330	EN12165 CW602N
O-Ring	EPDM	-	-
Handwheel	ABS	-	-

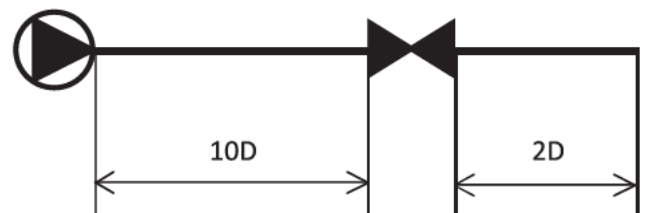
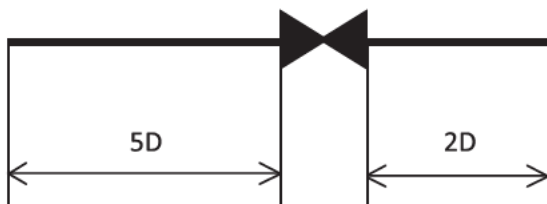
DIMENSIONS & COEFFICIENTS

	Size (mm)	L (mm)	H (mm)	Weight (kg)	Kvs
	15	90	109	0.6	2.20
20	98	110	0.6	4.60	
25	105	125	0.8	8.50	
32	120	128	1.1	16.70	
40	130	145	1.4	26.10	
50	150	148	2.0	43.20	

Note: Kvs at fully open position.

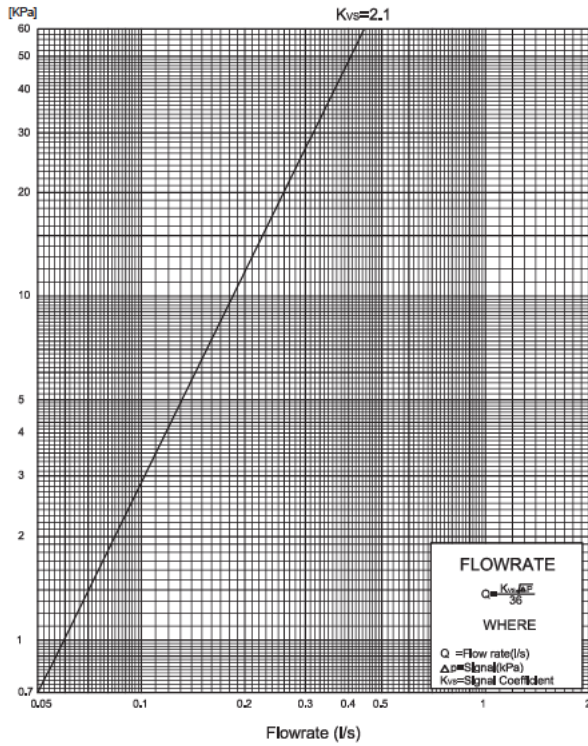
Installation

- The Double Regulating Valve shall be installed with the arrow marking on the valve body in accord to the same flow direction in the pipe. It may be installed at any angle.
- Use adequate seal material to protect the thread on pipe side from leaking or rusting. For connection, use proper tool (spanner, etc) to screw correctly in accordance to thread standard. Do not connect by using wrench on valve side.
- Up and down stream from the valve is required to avoid turbulence which will affect the accuracy.

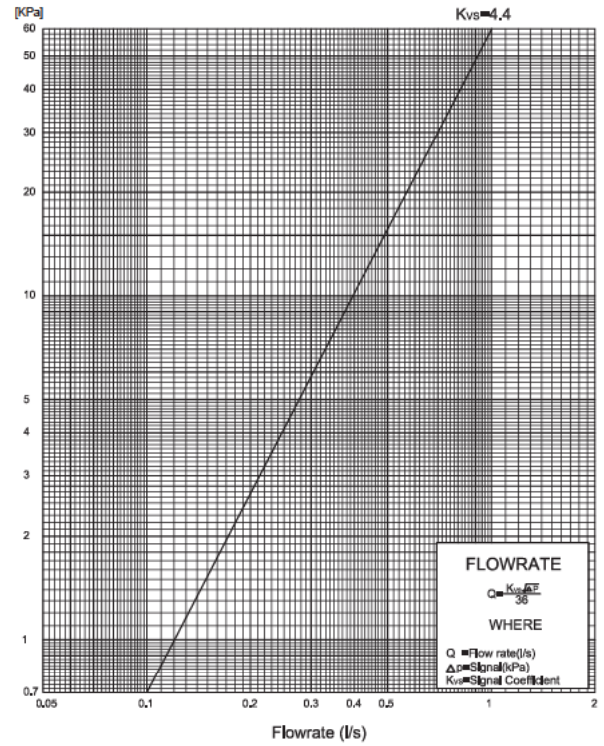


FLOW MEASUREMENT GRAPHS

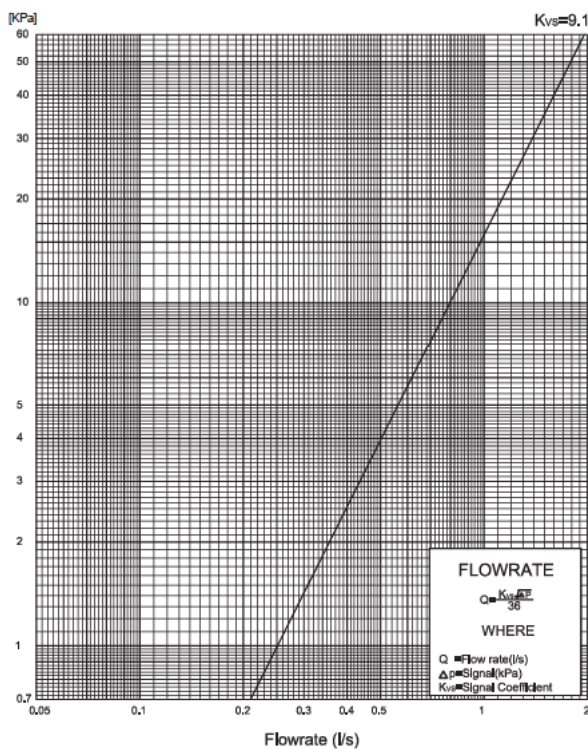
GDRV-101
Diameter : 15mm



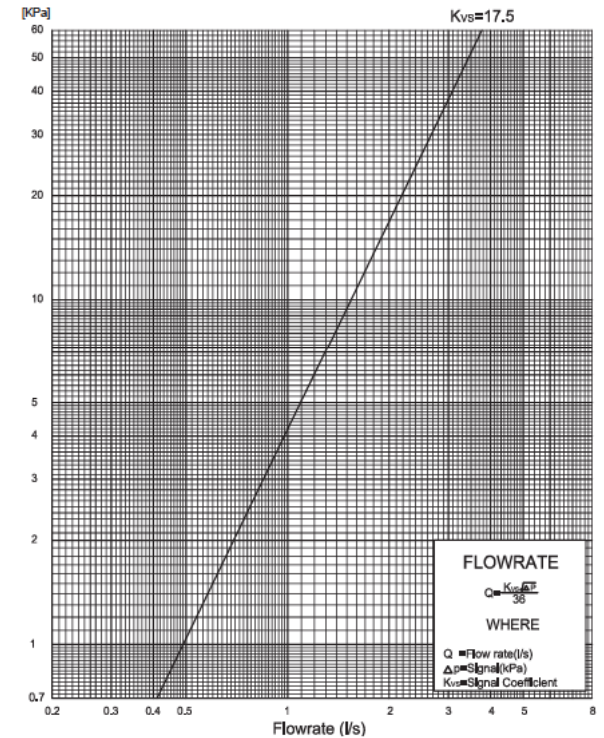
GDRV-101
Diameter : 20mm



GDRV-101
Diameter : 25mm

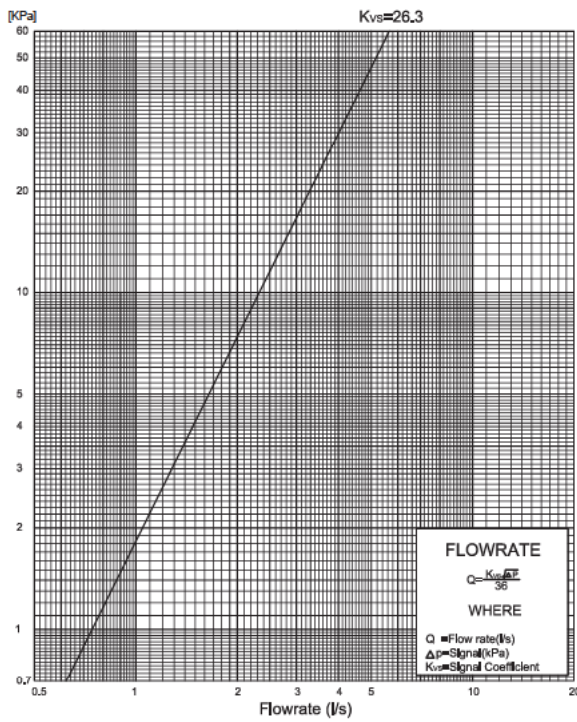


GDRV-101
Diameter : 32mm

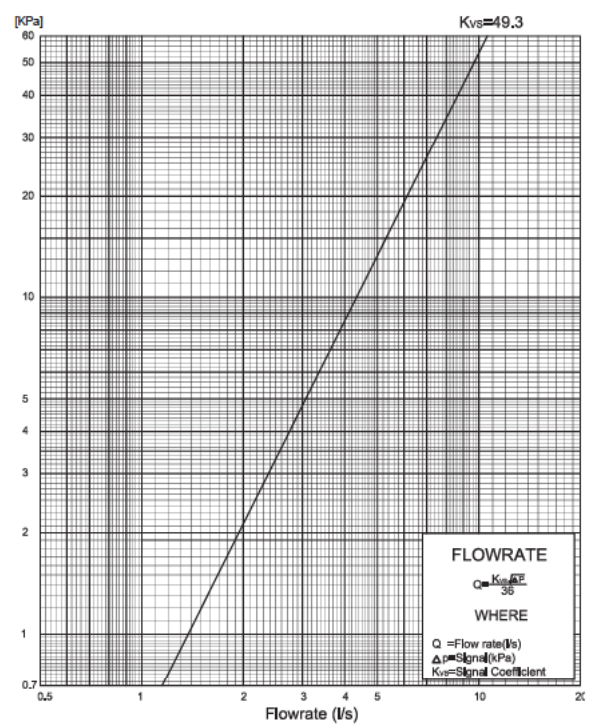


FLOW MEASUREMENT GRAPHS

GDRV-101
Diameter : 40mm



GDRV-101
Diameter : 50mm





BRASS BALL VALVE

SPECIFICATION

MSS SP-110
SCREWED BODY CAP • FULL BORE
BLOW-OUT PROOF STEM • PTFE SEAT
THREADED TO BS 21 (ISO 7) / ASME B1.20.1 OR NPT

PRESSURE RATINGS

Working Pressure	28 bar C.W.P. 10.3 bar @ 186°C
Testing Pressure	Shell: 42 bar Hydrostatic Seat: 31 bar Hydrostatic 80psi (5.5 bar) Air
Working Temperature	-10°C ~ 180°C
Suitable Media	Water & Oil

MATERIALS

Part	Material	ASTM
Body	Brass	C37700
Cap	Brass	C37700
Ball	Brass	C37700
Seat	PTFE	
Stem	Brass	C37700
Nut	Steel	
Handle	Steel	

DIMENSIONS

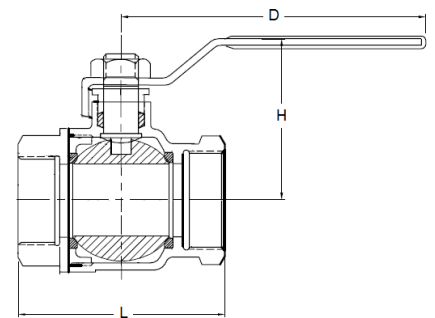
Size		L		H		D	
mm	inch	mm	inch	mm	Inch	mm	inch
10	3/8	48.0	1.9	44.5	1.8	83.0	3.3
15	1/2	57.5	2.3	50.0	2.0	98.0	3.9
20	3/4	64.0	2.5	51.0	2.0	98.0	3.9
25	1	76.0	3.0	63.0	2.4	124.0	4.9
32	1-1/4	88.0	3.5	69.0	2.7	142.0	5.6
40	1-1/2	96.0	3.8	74.5	2.9	142.0	5.6
50	2	112.0	4.4	84.5	3.3	166.0	6.5

Note:

- Design and specifications are subject to change without prior notice.

BBV

Type 400



BRONZE BALL VALVE

SPECIFICATION

MSS SP-110
SCREWED BODY CAP • FULL BORE
BLOW-OUT PROOF STEM • PTFE SEAT
THREADED TO BS 21 (ISO 7) / ASME B1.20.1 OR NPT

PRESSURE RATINGS

Working Pressure	42 bar C.W.P 10.3 bar @ 186°C
Testing Pressure	Shell: 62 bar Hydrostatic Seat: 45.5 bar Hydrostatic 80psi (5.5 bar) Air
Working Temperature	-10°C ~ 180°C
Suitable Media	Water & Oil

MATERIALS

Part	Material	ASTM
Body	Bronze (Gunmetal)	C83600
Cap	Bronze (Gunmetal)	C83600
Ball	Brass	C37700
Seat	PTFE	
Stem	Brass	C37700
Seal	PTFE	
Gland	Brass	C36000
Handle	Steel	

DIMENSIONS

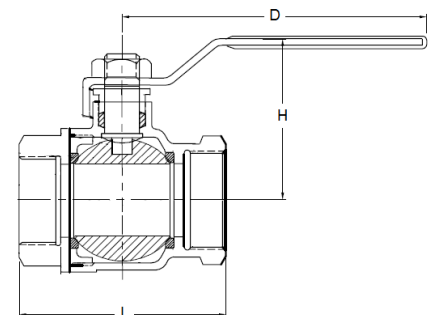
Size		L		H		D	
mm	inch	mm	Inch	mm	inch	mm	inch
10	3/8	45.8	1.8	49.0	1.9	87.0	3.4
15	1/2	54.4	2.1	49.0	1.9	96.0	3.8
20	3/4	62.8	2.5	53.0	2.1	96.0	3.8
25	1	77.0	3.0	66.5	2.6	127.0	5.0
32	1-1/4	85.6	3.4	72.5	2.9	127.0	5.0
40	1-1/2	94.1	3.7	79.0	3.1	142.0	5.6
50	2	110.8	4.4	88.5	3.5	165.0	6.5

Note:

- Design and specifications are subject to change without prior notice.

GBV

Type 600



DZR BRASS GATE VALVE

SPECIFICATION

BS 5154, EN 12288
SCREWED-IN BONNET • SOLID WEDGE DISC
NON-RISING STEM • INTEGRAL SEAT • ASBESTOS FREE
THREADED TO BS 21 (ISO 7) / ASME B1.20.1 OR NPT

PRESSURE RATINGS

Working Pressure	20 bar C.W.P 9 bar at 180°C
Testing Pressure	Shell: 30 bar Hydrostatic Seat: 22 bar Hydrostatic or 6 bar Air
Working Temperature	-10° ~ 180°C
Suitable Media	Water & Oil

MATERIALS

Part	Material	BS EN
Body	DZR Brass	12165 CW602N
Bonnet	DZR Brass	12165 CW602N
Disc	DZR Brass	12165 CW602N
Stem	DZR Brass	12165 CW602N
Packing	PTFE	
Packing Nut	Brass	12165 CW614N
Gland	Brass	12165 CW614N
Handwheel	Aluminium	

DIMENSIONS

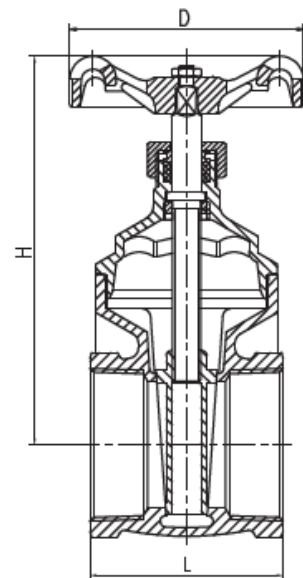
Size		L		H		D	
mm	inch	mm	inch	mm	inch	mm	inch
15	½	48.0	1.9	70.0	2.8	50.0	2.0
20	¾	50.5	2.0	81.0	3.2	60.0	2.4
25	1	58.0	2.3	98.5	3.9	70.0	2.8
32	1¼	63.5	2.5	118.5	4.7	80.0	3.2
40	1½	67.5	2.7	129.5	5.1	90.0	3.5
50	2	73.0	2.9	164.5	6.5	100.0	4.0

Note:

- Design and specifications are subject to change without prior notice.

D-BGV

PN 20



BRONZE GATE VALVE

SPECIFICATION

MSS SP-80
SCREWED-IN BONNET • SOLID WEDGE DISC
NON-RISING STEM • INTEGRAL SEAT • ASBESTOS FREE
THREADED TO BS 21 (ISO 7) / ASME B1.20.1 OR NPT

PRESSURE RATINGS

Working Pressure	25 bar C.W.P. 10.3 bar Saturated Steam
Testing Pressure	Shell: 37.5 bar Hydrostatic Seat: 27.5 bar Hydrostatic 80psi (5.5 bar) Air
Working Temperature	-10°C ~ 180°C
Suitable Media	Water & Oil

MATERIALS

Part	Material	ASTM
Body	Bronze	C83600
Bonnet	Bronze (for size 15A~25A) Brass (for size 32A~100A)	C83600 C37700
Disc	Bronze	C83600
Stem	Brass	C37700
Packing	PTFE	
Packing Nut	Brass	C36000
Gland	Brass	C36000
Handwheel	Aluminium	

DIMENSIONS

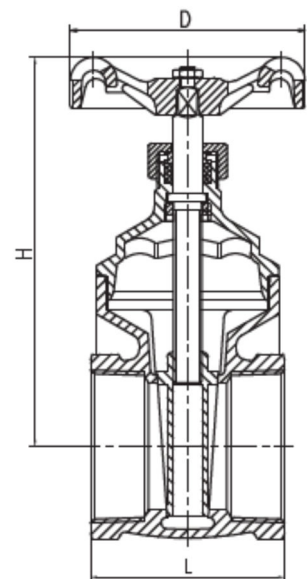
Size		L		H		D	
mm	inch	mm	inch	mm	Inch	Mm	inch
15	½	48.0	1.9	72.5	2.9	60.0	2.4
20	¾	50.5	2.0	84.5	3.2	70.0	2.8
25	1	59.5	2.3	99.0	3.9	70.0	2.8
32	1¼	65.5	2.6	117.0	4.6	80.0	3.2
40	1½	70.5	2.8	131.0	5.2	90.0	3.5
50	2	75.0	2.9	164.0	6.5	100.0	4.0

Note:

- Design and specifications are subject to change without prior notice.

GGV

Class 150



BRONZE Y TYPE STRAINER

SPECIFICATION

Y-PATTERN BODY • SCREWED CAP
STAINLESS STEEL SCREEN • ASBESTOS FREE
THREADED TO BS 21 (ISO 7) / ASME B1.20.1 OR NPT

PRESSURE / TEMPERATURE RATINGS

Working Pressure	25 bar) C.W.P 10.3 bar Saturated Steam
Testing Pressure	37.5 bar Hydrostatic 80psi (5.5 bar) Air
Working Temperature	-10°C ~ 180°C
Suitable Media	Water & Oil

MATERIALS

Part	Material	ASTM
Body	Bronze (Gunmetal)	B62 C83600
Cap	Bronze (Gunmetal)	B62 C83600
Screen	Stainless Steel	AISI 304
Gasket	Non-Asbestos Sheet	

STANDARD SCREENS

Size		Hole Diameter		Opening
mm	inch	mm	inch	(%)
15 ~ 50	½ ~ 2	1.31 x 0.76	0.05 x 0.03	35

DIMENSIONS

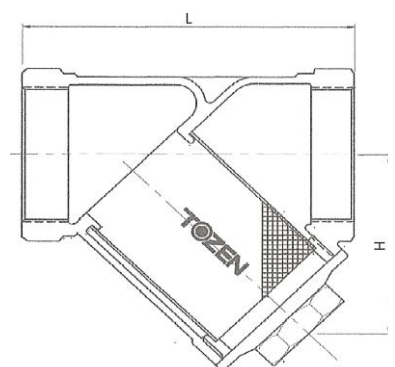
Size		L		H	
mm	inch	mm	inch	mm	inch
15	½	52.0	2.0	40.5	1.6
20	¾	66.5	2.6	48.0	1.9
25	1	81.5	3.2	57.0	2.2
32	1¼	93.0	3.7	73.6	2.9
40	1½	108.0	4.3	76.0	3.0
50	2	125.0	4.9	94.0	3.7

Note:

1. Design and specifications are subject to change without prior notice.

GYS-L

Class 150



BRONZE SWING CHECK VALVE

SPECIFICATION

MSS SP-80
SCREWED CAP • SWING TYPE DISC • INTEGRAL SEAT
THREADED TO BS 21 (ISO 7) / ASME B1.20.1 OR NPT

PRESSURE RATINGS

Working Pressure	300 psi (20.7 bar) C.W.P. 150 psi (10.3 bar) Saturated Steam
Testing Pressure	Shell: 450 psi (31 bar) Hydrostatic Seat: 330 psi (22.7 bar) Hydrostatic 80psi (5.5 bar) Air
Working Temperature	-10°C ~ 180°C
Suitable Media	Water & Oil

MATERIALS

Part	Material	ASTM
Body	Bronze	C83600
Cap	Bronze	C83600
Disc	Bronze	C83600
Hanger	Bronze	C83600
Disc Nut	Brass	C36000
Plug Nut	Brass	C36000

DIMENSIONS

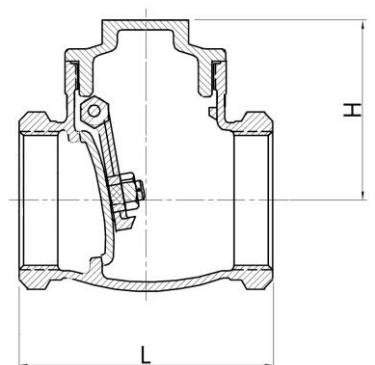
Size		L		H	
mm	inch	mm	inch	mm	Inch
15	½	48.5	1.9	30.5	1.2
20	¾	55.5	2.2	38.5	1.5
25	1	71.5	2.8	43.5	1.7
32	1¼	82.2	3.2	51.0	2.0
40	1½	88.5	3.5	60.5	2.4
50	2	109.0	4.3	76.5	3.0

Note:

- Design and specifications are subject to change without prior notice.

GSCV

Class 150





Rubber Vibration Isolation Hanger

PTH series

Vibration control for plumbing, duct, ceiling equipment.

Benefit

- Combination of rubber and case
- Excellent vibration isolating performance
- Wide range of sizes

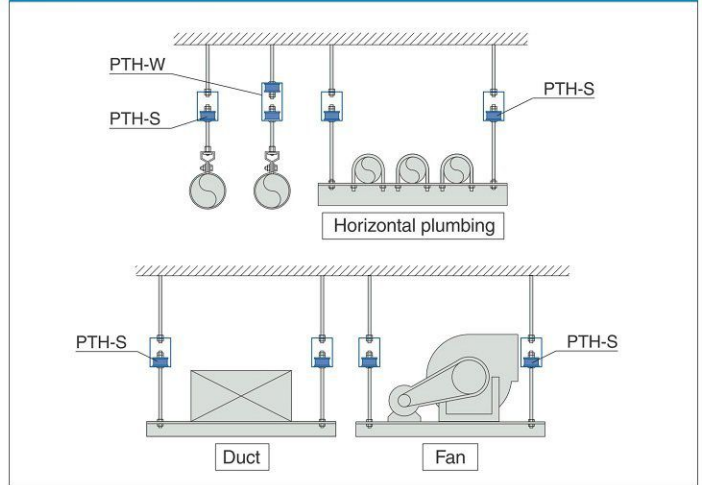
Feature

- Great load bearing quality. With a wide range of sizes, it can support most of the loads
- With pre-setup of rubber and case makes installation easier
- Double nut attachable specified by the Ordinance of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT).
- Available in Single and Double type, depends on your selection

Intended Purpose

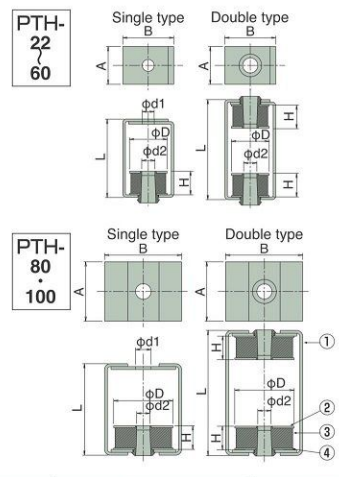
Used as vibration proof rubber for suspension supporting of facility equipment with followings:
horizontal plumbing, duct, fan, fan coiled unit, package A/C, line pump.

Typical applications



Structure and dimension

Type	Dimension (mm)							The maximum bolt diameter	Static spring constant N/mm (kgf/mm)	Load range of usage N (kgf)	Natural frequency Hz
	A	B	L	φd1	φd2	φD	H				
PTH-22S	22	34	85	11	10.5	22	25	M10 (W ^{3/8})	35 (3.6)	69~147 (7~15)	13~8.8
PTH-22W			110	-					9.2~6.3		
PTH-30S	30	44	90	11	12	30	21		137 (14)	98~441 (10~45)	21~10
PTH-30W			110	-					15~7.1		
PTH-40S	40	55	105	15	14	40	25		216 (22)	294~883 (30~90)	15~8.9
PTH-40W			130	-					11~6.3		
PTH-50S	50	66	105	15	14	50	23		490 (50)	686~1765 (70~180)	15~9.5
PTH-50W			130	-					11~6.7		
PTH-60S	60	76	110	15	14	60	28	647 (66)	1373~2746 (140~280)	12~8.7	
PTH-60W			140	-				8.7~6.2			
PTH-80S	80	100	130	18	16	80	40	785 (80)	2157~4903 (220~500)	11~7.2	
PTH-80W			170	-				7.7~5.1			
PTH-100S	100	130	160	20	20	100	45	1157 (118)	3923~8336 (400~850)	9.8~6.7	
PTH-100W			205	-				6.9~4.7			
PTH-100hS	100	130	160	20	20	100	45	1863 (190)	6865~12749 (700~1300)	9.4~6.9	
PTH-100hW			205	-				6.6~4.9			



Number	Name	Material
①	Hunger	SS400
②	The upper side of metal fittings	SS400
③	Rubber itself	Synthetic rubber
④	The lower side of metal fittings	SS400

- Bolt, nut and washer are not included.
- The metal component is covered by electrolytic zinc-coated

The single rubber

Model number	Model number
PTH-22	PTH-60
PTH-30	PTH-80
PTH-40	PTH-100
PTH-50	PTH-100h

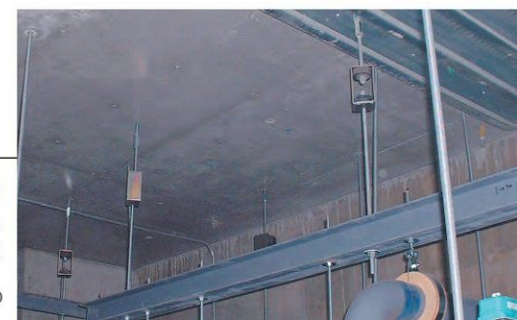
Handling instructions

- The product has to be protected from any damage.
- Please note that the product must be avoided adhesion such as strong acid, strong alkali, organic solvent, fat and oil.
- Rubber needs to be attached as equalized loading toward the vertical and compression direction.
- Please make sure to use the device within a given load range.
- The product must be protected from spark like welding.
- The product must be attached with double nut.
- When supporting pipes, pulps, flange and the other weights need to be considered for calculation.
- Product should be chosen after calculating the load weight to the each hanging bolt when the multiple pipes are hung all together.
- The impact or excessive force could lead to release the parts from assembled product.

This brochure may be revised without prior notice. We apologize in advance for any inconvenience this may cause.

Agent

TOZEN Corporation
8-4, Asahi, Yoshikawa
Saitama 342-0008 Japan



PTH-S,-S2

Spring Vibration Isolating Hanger

-SG,-SG2

Spring And Rubber Vibration Isolating Hanger



Description

TOZEN PTH-S Series vibration isolating hangers consist of a steel box incorporated with a free standing-laterally stable steel spring with load transfer steel cup and rubber washer. PTH-SG comes in series with noise absorbing hanger rubber properties of both materials. Both design permits installation in the hanger rods or at the ceiling.

The designs of the spring elements are comply to JIS 2704 for a semi-permanent use. To assure stability, outside diameter of the springs do not less than 0.8 times of the compressed height of the spring at rated load. All springs are designed to provide a minimum of 50% overload capacity. Model PTH-S spring hangers are available with 25 mm and 50 mm deflection with standard load capacity from 25 Kgs to 5,600 Kgs, while PTH-SG spring and rubber hangers are available with load capacity up to 825 Kgs. PTH-S and PTH-SG series vibration isolating hangers are recommended for the isolation of vibration produced by suspended mechanical equipment, low speed suspended fans, transformers, ductwork, piping, etc.

Application

Tozen PTH-S and PTH-SG hangers are used to isolate suspended sources of both audible and inaudible noise and vibration. Suspended mechanical equipment such as in-line fans, cabinet fans, piping and ductwork in close proximity to mechanical equipment, are typical uses of TOZEN PTH-S and PTH-SG hangers. Standard PTH-S and PTH-SG hangers are shipped fully assembled and ready for installation in threaded metal rod suspension systems. Tozen PTH-S and PTH-SG hangers can be provided with labor saving accessories for adaptation to wire or strap suspension system. Both Model PTH-S and PTH-SG hangers may be factory preloaded or provided with positioning plate for ease in erecting piping at a fixed elevation. Higher load capacities, larger deflections and 30 degree ARC capacity available.

Specification

Type 1, Vibration isolators for suspended equipment, with minimum static deflection requirement exceeding of 6 mm shall be hangers consisting of a free standing, laterally stable steel spring with load transfer steel cup with rubber washer in series, assembled in a welded steel box. The spring elements shall have an outside diameter not less than 0.8 times of the compressed height of the spring at rated load. All springs shall be designed to provide a minimum of 50% overload capacity. Vibration isolating hangers shall be Model PTH-S as manufactured by Tozen Corporation.

Type2, Vibration isolators for suspended equipment with minimum static deflection requirement exceeding 6 mm and where both high and low frequency vibrations are to be isolated, shall be hangers consisting of a laterally stable steel spring in series with a mounted noise absorbing rubber insert, assembled in a welded steel box. The spring elements shall have an outside diameter not less than 0.8 times of the compressed height of the spring at rated load. The combination vibration isolating hangers shall be Model PTH-SG, as manufactured by Tozen Corporation.

Dimensions

PTH-S TYPE

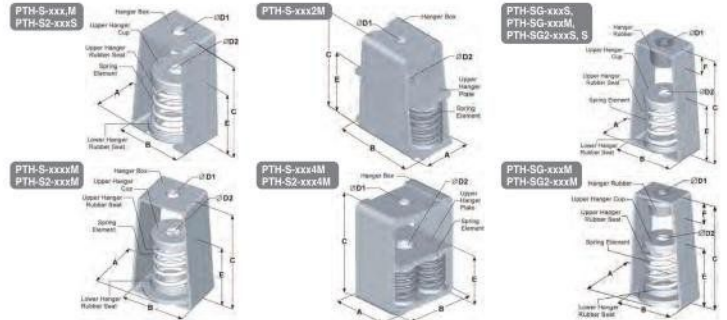
25mm DEFLECTION

MODEL	RATED CAPACITY		SPRING CONSTANT (kg/mm)	SPRING COLOR	DIMENSION (mm)						
	(kgs)	(Lbs)			A	B	C	D1	D2	E	F
PTH-S-10S	10	22	0.4	GREEN	58	85	145	13	15	92	-
PTH-S-15S	15	33	0.6	BLUE							
PTH-S-25S	25	55	1	WHITE							
PTH-S-35S	35	77	1.4	YELLOW							
PTH-S-50S	50	110	2	ORANGE							
PTH-S-80S	80	176	3.2	VIOLET							
PTH-S-120S	120	264	4.8	RED							
PTH-S-175S	175	385	7	SILVER							
PTH-S-225S	225	495	9	BROWN							
PTH-S-300M	300	660	12	RED							
PTH-S-450M	450	990	18	GREEN	84	120	180	17	18	115	-
PTH-S-600M	600	1320	24	SILVER	105	125	200	25	18	123	-
PTH-S-825M	825	1815	33	BROWN							
PTH-S-1100M	1100	2420	44	BLUE							
PTH-S-1202M	1200	2640	48	SILVER							
PTH-S-1652M	1650	3630	66	BROWN							
PTH-S-2202M	2200	4840	88	BLUE							
PTH-S-2802M	2800	6160	112	BLUE+BROWN							
PTH-S-3304M	3300	7260	132	BROWN							
PTH-S-3604M	3600	7920	144	BROWN+SILVER							
PTH-S-4404M	4400	9680	176	BLUE							
PTH-S-5604M	5600	12320	224	BLUE+BROWN							

PTH-S2 TYPE

50mm DEFLECTION

MODEL	RATED CAPACITY		SPRING CONSTANT (kg/mm)	SPRING COLOR	DIMENSION (mm)						
	(kgs)	(Lbs)			A	B	C	D1	D2	E	F
PTH-S2-25S	25	55	0.5	WHITE	84	120	210	15	18	135	-
PTH-S2-35S	35	77	0.7	YELLOW							
PTH-S2-50S	50	110	1	ORANGE							
PTH-S2-80S	80	176	1.6	VIOLET							
PTH-S2-125S	125	275	2.5	RED							
PTH-S2-175S	175	385	3.5	SILVER							
PTH-S2-250S	250	550	5	BROWN							
PTH-S2-175M	175	385	3.5	ORANGE							
PTH-S2-245M	245	539	4.9	VIOLET							
PTH-S2-350M	350	770	7	RED							
PTH-S2-525M	525	1155	10.5	GREEN	105	140	255	21	24	168	-
PTH-S2-750M	750	1650	15	SILVER							
PTH-S2-1052M	1050	2310	21	GREEN							
PTH-S2-1502M	1500	3300	30	SILVER							
PTH-S2-2102M	2100	4620	42	SILVER+BROWN							
PTH-S2-3004M	3000	6600	60	SILVER							
PTH-S2-4204M	4200	9240	60	SILVER+BROWN							



PTH-SG TYPE

25mm DEFLECTION

MODEL	RATED CAPACITY		SPRING CONSTANT (kg/mm)	SPRING COLOR	DIMENSION (mm)													
	(kgs)	(Lbs)			A	B	C	D1	D2	E	F							
PTH-SG-25S	25	55	1.0	WHITE	58	85	180	11	15	92	28							
PTH-SG-35S	35	77	1.4	YELLOW														
PTH-SG-50S	50	110	2.0	ORANGE														
PTH-SG-80S	80	176	3.2	VIOLET														
PTH-SG-120S	120	264	4.8	RED														
PTH-SG-300M	175	385	7.0	SILVER														
PTH-SG-450M	300	660	12	RED														
PTH-SG-600M	450	990	18	GREEN								84	130	220	18	18	115	44
PTH-SG-825M	600	1320	24	SILVER								120	170	270	20	24	124	56
PTH-SG-175S	825	1815	33	BROWN														

PTH-SG2 TYPE

50mm DEFLECTION

MODEL	RATED CAPACITY		SPRING CONSTANT (kg/mm)	SPRING COLOR	DIMENSION (mm)													
	(kgs)	(Lbs)			A	B	C	D1	D2	E	F							
PTH-SG2-25S	25	55	0.5	WHITE	84	140	235	11	18	135	29.5							
PTH-SG2-35S	35	77	0.7	YELLOW														
PTH-SG2-50S	50	110	1	ORANGE														
PTH-SG2-80S	80	176	1.6	VIOLET														
PTH-SG2-125S	125	275	2.5	RED														
PTH-SG2-175M	175	385	3.5	ORANGE														
PTH-SG2-245M	245	539	4.9	VIOLET														
PTH-SG2-350M	350	770	7	RED														
PTH-SG2-525M	525	1155	10.5	GREEN								120	180	310	20	24	168	56
PTH-SG2-750M	750	1650	15	SILVER														

NOTE-1: All springs have an minimum additional travel to solid equal to 50% of rated load.
 NOTE-2: Please refer to relevant brochure or consult factory for greater deflection and loading.
 NOTE-3: Spring constant applies to spring only.
 NOTE-4: Please consult factory for pre-compressed model and 30 degree arc capacity.

Installation instruction

- 1) Consider the height and location of the hanger and prepare the upper and lower hanging rod(bolt) in same proper length.
- 2) Attach the upper hanging rod(bolt) to the ceiling.
- 3) Connect the lower hanging rod (bolt) to the hanger. Pre-compress the hanger spring element (Approx. 10 mm) by tighten a restraint nut and washer at the bottom of the hanger.
- 4) Attach the hanger to the upper hanging rod(bolt).

- 5) Attach the hanging rod(bolt) to the pipe, duct or equipment bracket.
- 6) Install all other hangers by repeating instruction 1-5.
- 7) After the pipe or equipment is filled with water, release the restraint nut. Leveling adjust the hanger by the nut at the top of the element to obtain even level installation.
- 8) Final check the spring hanger in a proper deflection and don't install the hanging rod(bolt) in a inclined position.

Note: The content of this catalog is subject to change without prior notice.

AGENT

TOZEN Corporation

8-4, Asahi, Yoshikawa
Saitama 342-0008 Japan

WE1-1308



PTH-G,GG

Vibration Isolating Rubber Hanger

Description

TOZEN PTH-G vibration isolating rubber hangers are designed to reduce the transmission of vibration and noise produced by suspended equipment, piping and ductwork. PTH-G hangers incorporated with a noise absorbing rubber insert with cast-in load transfer plate at the top and bottom, assembled into a steel box. Ultimate design of PTH-G hanger rubbers allows greater deflection without accelerating deterioration. PTH-G hangers are available in deflection maximum up to 6 mm with capacities from 25 Kgs to 450 Kgs. PTH-G rubber hangers may be selected where first cost must be minimized. MODEL PTH-G is recommended for the isolation of vibration produced by suspended mechanical equipment, axial and exhausts fans, ductwork, piping, etc. Double deflection model PTH-GG adds another rubber element at the top of the hanger box.

Application

TOZEN PTH-G vibration-isolating hangers are used to isolate suspended sources of audible frequency vibration, or isolation of noise in piping and ductwork systems. Model PTH-G hangers are shipped fully assembled and ready for installation in threaded rod suspended systems. Model PTH-G hangers can be provided with labor saving accessories for adaptation to wire or strap suspension systems.

Specification

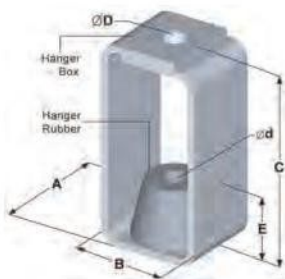
Vibration isolators for suspended equipment, piping and ductwork with maximum static deflection requirements under operation load conditions not exceeding 6 mm shall be hangers consisting of a neoprene or synthetic rubber noise absorbing insert encased in a welded steel box.

The rubber insert shall be moulded from oil resistant compounds with cast in load transfer plate at the top and bottom, shall be color-coded or otherwise identified to indicate load capacity.

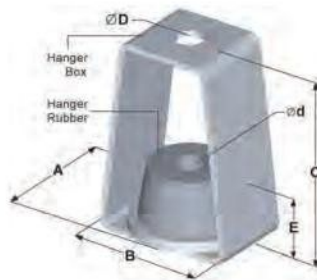
Vibration isolating rubber hanger assembly shall be Model PTH-G, as manufactured by Tozen Corporation.

Dimensions

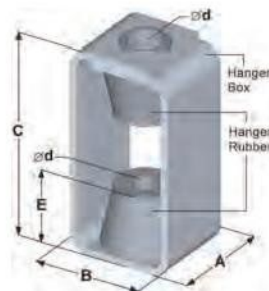
PTH-G-25, 35, 50



PTH-G-80, 120, 150, 200, 300, 450



PTH-GG-25, 35, 50



PTH-GG-80, 120, 150, 200, 300, 450



MODEL	DESIGN LOADING		RUBBER COLOR CODE	MAXIMUM STATIC DEFL.	DURAMETER	A	B	C		d		D	E
	(Kgs)	(Lbs)						PTH-G	PTH-GG	PTH-G	PTH-GG		
PTH-G-25	25	55	WHITE	4	40	36	45	90	115	11	11	11	28
PTH-G-35	35	77	YELLOW		50								
PTH-G-50	50	110	ORANGE		55								
PTH-G-80	80	176	PINK	5	40	60	75	105	140	16	16	15	37
PTH-G-120	120	264	RED		50								
PTH-G-150	150	330	ORANGE		55								
PTH-G-200	200	440	PINK	6	40	85	103	132	195	18	18	18	50
PTH-G-300	300	660	RED		50								
PTH-G-450	450	990	GREEN		55								

NOTE-1: Hanger elements have similar straight line deflection curve.

NOTE-2: Please refer to relevant brochure or consult factory for wire or strap suspension systems.

Note: The contents of this catalogue are subject to change without notice.

Agent : TOZEN Corporation

Round Vibration Proof Rubber

PTM Series

Versatility and low cost.



Feature

Wide load range

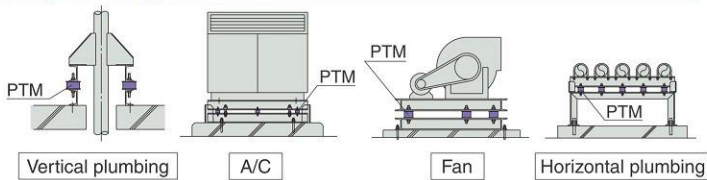
Multiple use and low cost

- Simple structure. High performance of vibration control.
- Compatible with wide range of vibration proof, from lightweight to heavy weight equipment.
- Suitable for outdoor use as this equipment is made by weather resistance rubber.

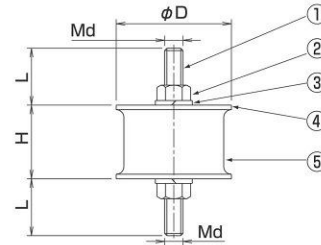
Applications

Floor type vibration proof rubber for pump, A/C, fan, electric motor, compressor, vertical/horizontal plumbing. The most basic type of vibration proof rubber. Usually, this rubber is found between upper and lower steel frame.

Typical applications



Structure



No.	Parts	Material	No.	Parts	Material
①	Attachment bolt	SS400	④	Metal fittings	SS400
②	Attachment nut	SS400	⑤	Rubber body	CR (chloroprene)
③	Spring washer	SWRH			

● The metal component is covered by electrolytic zinc-coated

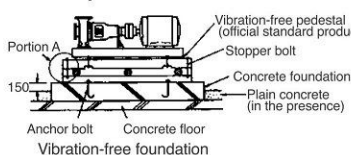
Dimension/performance

Type	Body dimensions (mm)				Static spring constant N/mm (kgf/mm)	Load range of usage N (kgf)	Natural frequency Hz
	D	H	L	Md			
PTM - 01	20	15	18	M6	167 (17)	98~245 (10~25)	23~15
PTM - 02	25	18	18	M6	164 (17)	196~392 (20~40)	17~12
PTM - 04	35	26	23	M8	181 (18)	294~735 (30~75)	14~8.9
PTM - 06	45	34	23	M8	202 (21)	588~1079 (60~110)	11~7.8
PTM - 08	55	40	32	M10	290 (30)	785~1716 (80~175)	11~7.4
PTM - 09	66	34	37	M12	647 (66)	1373~3138 (140~320)	12~8.2
PTM - 10	76	41	37	M12	612 (62)	2550~3923 (260~400)	8.8~7.1
PTM - 11	91	49	37	M12	689 (70)	3138~5394 (320~550)	8.4~6.4
PTM - 12	112	66	47	M16	842 (86)	4413~9316 (450~950)	7.8~5.4
PTM - 13	152	69	52	M20	1821 (186)	7845~19613 (800~2000)	8.7~5.5

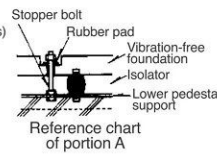
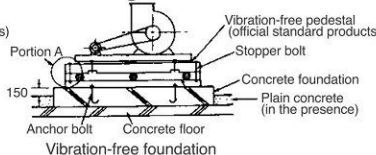
Dynamic spring constant of vibration control rubber is 1.3 times higher than that of a static one.

The excerpt from standard drawing of public construction equipment

(a) Pump



(b) Centrifugal fan



Handling instructions

- Please note that the product must be avoided adhesion such as strong acid, strong alkali, organic solvent, fat and oil.
- Rubber needs to be attached as equalized loading toward the vertical and compression direction.
- The product must be protected from spark like welding.

This brochure may be revised without prior notice. We apologize in advance for any inconvenience this may cause.

Agent

TOZEN Corporation
8-4, Asahi, Yoshikawa
Saitama 342-0008 Japan



PTM-A, -A2, -A3

Floor mounting single spring isolator

-AM, -AM2,

Heavy loading multiple spring isolator



PTM-A, A2, A3



PTM-AM-xxx2M, PTM-AM2-xxx2M



PTM-AM-xxx4M, PTM-AM2-xxx4M

Description

TOZEN Model PTM-A & PTM-AM series isolators are unhooused, spring, vibration isolators, designed for high deflection. The PTM-A employs the use of a single spring element, while the PTM-AM employs multiple spring elements for heavier applications. These laterally stable steel spring isolators are constructed with a leveling device at the top of the isolator and a non-skid acoustical pad at the bottom. Both models are constructed with upper and lower ductile cast iron holding cups to hold the spring element. In addition, PTM-A & PTM-AM have a mounting base plate to allow the isolator to be bolted to a structure and a resilient washer as part of the nonskid acoustical pad. The resilient washer helps prevent the transmission of noise and vibration from the base plate and mounting bolt to the structure.

The design of the spring elements, within the isolators, complies with established standard JIS B2704, for semipermanent use. To assure lateral stability, the outside diameter of the spring element is greater than 80% of the height of the compressed spring element when at rated load. All the spring elements are designed to provide a minimum of overloading capacity of 50%.

PTM-A & PTM-AM series vibration isolator are available in the standard deflections at 25 mm, and also available in deflections of 50 and 75 mm. Load capacity of the PTM-A isolators range from 25 to 1,400 Kgs (55 to 3080 lbs) and up to 5,600 Kgs (12320 lbs.) for PTM-AM isolators.

Tozen PTM-A & PTM-AM series of spring isolators are highly effective in the control of both high and low frequency vibrations produced by mechanical equipment, such as Reciprocating Air or Refrigeration Compressors, Pumps, Air Conditioning and Air Handling Equipment, Centrifugal and Axial Fans, Internal Combustion Engines and similar types of equipment.

Application

PTM-A & PTM-AM series spring isolators are recommended for use in isolating floor mounted sources of noise and vibration located near critical quiet areas.

PTM-A series spring isolators are typically used to reduce the transmission of noise and vibration from low speed mechanical equipment into a building structure.

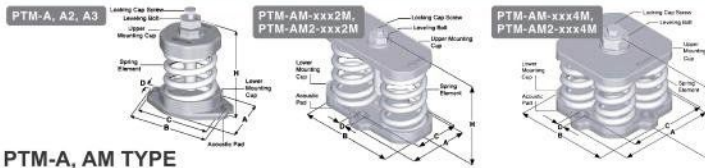
PTM-A & AM series spring isolators can be used in a wide range of applications involving the isolation of mechanical equipment, such as Reciprocating Air or Refrigeration Compressors, Close Coupled and Base Mounted Pumps, Package Air Handling and Refrigeration Equipment, Centrifugal Fans, Internal Combustion Engines and similar equipment.

Specification

The vibration isolators shall be free standing, with laterally stable steel spring elements, without housings, snubbers or guides. The isolators shall be constructed with the ductile cast iron upper mounting cup and the ductile cast iron lower mounting cup to hold the spring element, and a non-skid acoustical pad is attached under the lower cup. The isolators shall be provided with an adjusting bolt, cap screw and washer in top of the isolator for leveling and attachment to the equipment. The spring elements of the isolator shall have an outside diameter greater than 80% of the height of the compressed spring element at rated load. All spring elements shall be designed to provide a minimum overloading capacity of 50%.

The isolators shall be selected to provide operating static deflection shown on the Vibration Isolation Schedule or as indicated by the project specifications. Isolators shall be color coded or otherwise identified to indicate load capacity.

Dimensions



PTM-A, AM TYPE
25 mm DEFLECTION SINGLE & MULTIPLE SPRING VIBRATION ISOLATOR

MODEL	RATED CAPACITY		SPRING CONSTANT (kg/mm)	SPRING ELEMENT			OPERATING HEIGHT (H) (mm)	DIMENSION (mm)				LOCKING CAP SCREW (L.S)	LEVELING BOLT (L.B)
	(kg)	(Lbs)		SPRING COLOR	OD (mm)	FREE HEIGHT (mm)		A	B	C	D		
PTM-A-25S	25	55	1.0	WHITE									
PTM-A-35S	35	77	1.4	YELLOW									
PTM-A-50S	50	110	2.0	ORANGE									
PTM-A-80S	80	176	3.2	VIOLET	50	80	120	61	107	89	10	M10x32	M16x70
PTM-A-120S	120	264	4.8	RED									
PTM-A-175S	175	385	7.0	SILVER									
PTM-A-225S	225	495	9.0	BROWN									
PTM-A-200M	200	440	8.0	VIOLET									
PTM-A-300M	300	660	12.0	RED									
PTM-A-450M	450	990	18.0	GREEN									
PTM-A-600M	600	1320	24.0	SILVER	75	100	150	88	136	117	13	M12x43	M22x80
PTM-A-825M	825	1815	33.0	BROWN									
PTM-A-1100M	1100	2420	44.0	BLUE									
PTM-A-1400M	1400	3080	56.0	BLUE+BROWN									
PTM-AM-1652M	1650	3630	66.0	BROWN									
PTM-AM-2202M	2200	4840	88.0	BLUE	75	100	144	112	198	75	14x18	M12x43	M22x80
PTM-AM-2802M	2800	6160	112.0	BLUE+BROWN									
PTM-AM-3304M	3300	7260	132.0	BROWN									
PTM-AM-4404M	4400	9680	176.0	BLUE	75	100	152	197	197	161	14x18	M16x45	M30x90
PTM-AM-5604M	5600	12320	224.0	BLUE+BROWN									

NOTE-1: All springs are laterally stable and suitable for free standing application. (Outside diameter > 80% of deflection height)
NOTE-2: Please refer to relevant brochure or our technical division for greater deflection and loading.

PTM-A2, AM2 TYPE
50 mm DEFLECTION SINGLE & MULTIPLE SPRING VIBRATION ISOLATOR

MODEL	RATED CAPACITY		SPRING CONSTANT (kg/mm)	SPRING ELEMENT			OPERATING HEIGHT (H) (mm)	DIMENSION (mm)				LOCKING CAP SCREW (L.S)	LEVELING BOLT (L.B)
	(kg)	(Lbs)		SPRING COLOR	OD (mm)	FREE HEIGHT (mm)		A	B	C	D		
PTM-A2-25S	25	55	0.5	WHITE									
PTM-A2-35S	35	77	0.7	YELLOW									
PTM-A2-50S	50	110	1.0	ORANGE									
PTM-A2-80S	80	176	1.6	VIOLET	75	120	170	88	136	117	13	M12x43	M22x80
PTM-A2-125S	125	275	2.5	RED									
PTM-A2-175S	175	385	3.5	SILVER									
PTM-A2-250S	250	550	5.0	BROWN									
PTM-A2-175M	175	385	3.5	ORANGE									
PTM-A2-245M	245	539	4.9	VIOLET									
PTM-A2-350M	350	770	7.0	RED	90	145	195	101	155	130	13	M12x43	M22x115
PTM-A2-525M	525	1155	10.5	GREEN									
PTM-A2-750M	750	1650	15.0	SILVER									
PTM-A2-1050M	1050	2310	21.0	SILVER-BROWN									
PTM-AM2-1502M	1500	3300	30.0	SILVER	90	145	189	130	230	92	14x18	M14x43	M22x80
PTM-AM2-2102M	2100	4620	42.0	SILVER-BROWN									
PTM-AM2-3004M	3000	6600	60.0	SILVER									
PTM-AM2-4204M	4200	9240	84.0	SILVER-BROWN	90	145	196	244	244	203	14x18	M16x45	M30x90

NOTE-1: All springs are laterally stable and suitable for free standing application. (Outside diameter > 80% of deflection height)
NOTE-2: Please refer to relevant brochure or our technical division for greater deflection and loading.

PTM-A3, TYPE
75 mm DEFLECTION SINGLE & MULTIPLE SPRING VIBRATION ISOLATOR

MODEL	RATED CAPACITY		SPRING CONSTANT (kg/mm)	SPRING ELEMENT			OPERATING HEIGHT (H) (mm)	DIMENSION (mm)				LOCKING CAP SCREW (L.S)	LEVELING BOLT (L.B)
	(kg)	(Lbs)		SPRING COLOR	OD (mm)	FREE HEIGHT (mm)		A	B	C	D		
PTM-A3-180S	180	396	2.4	ORANGE									
PTM-A3-255S	255	561	3.4	VIOLET	90	170	220	101	155	130	13	M12x43	M22x115
PTM-A3-375S	375	825	5.0	RED									

NOTE-1: All springs are laterally stable and suitable for free standing application. (Outside diameter > 80% of deflection height)
NOTE-2: Please refer to relevant brochure or our technical division for greater deflection and loading.

Installation instruction

- Block or lift up the equipment to a level so that the equipment's leg or base is 5 mm higher than isolator's operating height (see catalogue). If common base & height saving isolator bracket is used, keep 50-mm clearance between the base and floor. Maintain this height until piping installation is completed.
- Locate the spring isolator under the hole in equipment's leg or isolator's bracket. Connect locking cap screw and washer, but do not tighten.
- Transfer the equipment weight to the spring by taking two counter-clockwise turns on each leveling bolt around the unit until springs are compressed just enough to remove the blocks.
- Tighten the locking cap screw to lock the assembly.

Note: The contents of this catalogue are subject to change without notice.

Agent : TOZEN Corporation

Remarks

- DO NOT install the equipment on the support of a free spring. This will cause an insufficient operating height for the spring isolator when the installation is completed.
- Weight of vertical piping and valves must be supported by the suspension hangers or supports.
- Install the flexible joint at the end of the installation, following the pre-extension instruction which may be specified or suggested by the flexible joint manufacturer.
- Bolting down the isolator to the floor, in most cases, is not necessary as the non-slip rubber pad or mounting cup will prevent movement. Where bolting is required, avoid a direct metal contact between bolt and mounting, to prevent transmission of noise; the bolt shank shall be clear in the hole and a rubber washer used under the bolt head. Bolts shall only be tightened a half turn more than hand tight.



PTM-C,-C2

Housed Spring Isolator

Description

PTM-C series spring vibration isolators are designed and constructed for high deflection, with laterally stable spring elements and assembled into telescoping cast iron housing. Each cast iron housing is equipped with an 8 mm thick, ribbed, noise absorbing pad that is bonded to the bottom. Each isolator has an internal or external adjusting/leveling bolt as a part of the top assembly. The ribbed, noise absorbing pad has an integrated resilient washer that prevents the transmission of noise and vibration from the contact of the bolt and mounting base plate to the structure. Holes or slots are provided in all of the isolators for bolting the isolator to the structure. Model PTM-C series spring isolators are available in standard deflection of 25 and 50 mm with load capacity from 200 Kgs to 1,400 Kgs (440 to 3080 lbs). Tozen Model PTM-C spring isolators are typically used to isolate vibration produced by mechanical, industrial, or process machinery, where more damping is required and less motion can be tolerated than with free standing spring isolators.

Application

TOZEN Model PTM-C spring isolators are used to isolate high and low frequency vibration generated by floor mounted mechanical equipment located in non-critical and semi-critical areas.

Model PTM-C spring isolators are typically used to isolate the vibration produced by light weight mechanical equipment having the lowest operating speed of 1,200 rpm, located on grade supported slabs, or short structural floor spans, or when the isolator to equipment connection is such that a leveling bolt can be extended above the mount and act as a leveling and attachment bolt for the supporting equipment.

Specification

The vibration isolators shall be constructed with cast iron housed steel spring elements, a load cap and rubber sponge snubbers. The snubbers shall be designed to stabilize the isolator and prevent metal on metal contact within the top or bottom of the housed section. The top loading plate shall be constructed with a leveling bolt and lock nut.

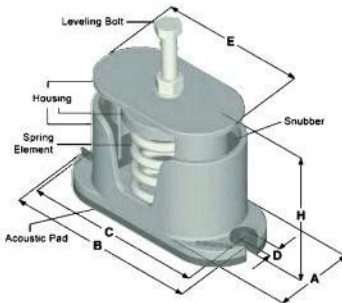
The housing's bottom shall be bonded to an 8 mm thick, ribbed, rubber pad and shall be slotted or drilled to allow for the bolting of the isolator to the supporting structure.

Outside diameter of the spring elements shall be greater than 80% of the compressed height of the spring element at the rated load. All spring elements shall be designed to provide a minimum 50% overload capacity.

Spring shall be selected to provide operating static deflections shown on the Vibration Isolation Schedule or as indicated on the project specifications. Springs shall be color coded or otherwise identified to indicate load capacity.

Vibration isolators shall be Model PTM-C as manufactured by Tozen Corporation.

Dimensions



PTM-C TYPE

25 mm DEFLECTION ANTI-VIBRATION MOUNTING

MODEL	RATED CAPACITY		SPRING CONSTANT (kg/mm)	SPRING COLOR	OPERATING HEIGHT (H)	(A)	(B)	SLOT PITCH (C)	SLOT HOLE (D)	TOP PLATE LENGTH (E)	LEVELING BOLT (LB)
	(kgs)	(Lbs)									
PTM-C-200M	200	440	8	VIOLET	145	94	216	194	13	162	M16
PTM-C-300M	300	660	12	RED							
PTM-C-450M	450	990	18	GREEN							
PTM-C-600M	600	1320	24	SILVER							
PTM-C-825M	825	1815	33	BROWN							
PTM-C-1100M	1100	2420	44	BLUE							
PTM-C-1400M	1400	3080	56	BLUE+BROWN							

PTM-C2 TYPE

50 mm DEFLECTION ANTI-VIBRATION MOUNTING

MODEL	RATED CAPACITY		SPRING CONSTANT (kg/mm)	SPRING COLOR	OPERATING HEIGHT (H)	(A)	(B)	SLOT PITCH (C)	SLOT HOLE (D)	TOP PLATE LENGTH (E)	LEVELING BOLT (LB)
	(kgs)	(Lbs)									
PTM-C2-175M	175	385	3.5	ORANGE	185	110	254	229	16	195	M16
PTM-C2-245M	245	539	4.9	VIOLET							
PTM-C2-350M	350	770	7	RED							
PTM-C2-525M	525	1155	10.5	GREEN							
PTM-C2-750M	750	1650	15	SILVER							
PTM-C2-1050M	1050	2310	21	SILVER+BROWN							

NOTE-1: All springs are free standing and laterally stable. (Outside diameter do not less than 0.8 times of compressed height).

NOTE-2: Please refer to relevant brochure of factory for greater deflection and loading.

NOTE-3: PTM-C type External Leveling Bolt (LB) is suitable for maximum 25 mm. bracket or base thickness, please specify for equipment base thicker than 25 mm.

Installation instruction

A) For PTM-C (External level adjusted) spring isolators

1. Take out the leveling bolt and lock nut from the top of the isolator.
2. Lift or block up the equipment's leg or isolator bracket to 5mm higher isolator's operating height (see catalogue) and slide the isolators into position. Put the leveling bolt & lock nut back into position.
3. Transfer the equipment weight to the spring by taking two clockwise turns on each leveling bolt around the unit until the springs are compressed just enough to remove blocks.
4. Tighten the lock nut to lock the assembly.

Remarks

- a) When the equipment is not subject to rise to the required height, height saving bracket may be attached to the equipment. The height of bracket connection from the bottom of the base shall be 50mm less than the isolator's operating height or to keep a 50mm clearance between the ground and equipment.
- b) DO NOT install the equipment on the support of free spring; it would cause an insufficient operating height for the spring isolator when the installation is completed.
- c) Weight of vertical piping and valves shall be supported by the suspension hangers or other supports.
- d) Install the flexible joint at the completion of the installation, following the pre-extension instructions which may be specified or suggested by the flexible joint manufacturer.
- e) Where bolting is required, avoid a direct metal contact between bolt and mounting, to prevent transmission of acoustical frequencies; the bolt shank shall be clear in the hole and a rubber washer used under the bolt head. Bolts shall only be tightened a half turn more than hand tight.

Note: The contents of this catalogue are subject to change without notice.

Agent : TOZEN Corporation



PTM-GP

Floor Mounted Rubber Vibration Isolator

Description

TOZEN Model PTM-GP vibration isolator are one-piece mounted neoprene with one cast-in load transfer steel plate at the top and base-plate at the bottom. The rubber is loaded in both shear and compression to provide the desirable straight line rubber-in-shear deflection curves as well as overload protection. The rubber-ribbed baseplate provides skid resistance and need not be bolted to the floor on most installations. The standard neoprene rubber is oil resistant and had been designed to operate within the strain limits of the isolator to provide the maximum isolation and longest expectancy.

Model PTM-GP is available in 9 sizes with load capacity from 30 Kgs to 450 Kgs. Standard static deflection of PTM-GP is 8-10mm.

Application

TOZEN PTM-GP rubber floor mounted can be used to isolate noise and high frequency vibration generated by mechanical equipments located on a grade supported structural slab or pier. Model PTM-GP is recommended for the isolation of vibration produced by small pumps, vent sets, low pressure packaged air handling units, etc., and usually selected when first cost must be minimized.

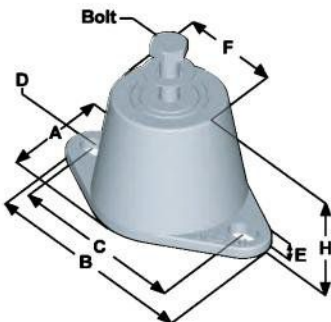
Specification

Vibration isolators shall be moulded from neoprene or oil resistant synthetic rubber. Rubber isolator shall incorporated with a cast-in-top steel load transfer plate in the load surface for bolting to the supported equipment and skid resistant baseplate with holes provided for anchoring to supporting structure.

Material

Body — Neoprene rubber
 Inserts — Mild Steel

Dimensions



MODEL	RATED CAPACITY		MARKING LOAD	DURA-METER	FREE HEIGHT H	A	B	C	D	E	F	Bolt
	(Kgs)	(Lbs)										
PTM-GP-30	30	66	30	40	35	40	84	60	8x13	5	30	M8x25
PTM-GP-50	50	110	50	50								
PTM-GP-75	75	165	75	60								
PTM-GP-100	100	220	100	40	50	60	104	80	9x16	6	45	M10x25
PTM-GP-150	150	330	150	50								
PTM-GP-200	200	440	200	60								

Note: The contents of this catalogue are subject to change without notice.

Agent : TOZEN Corporation

PTM-D,-D2 -DS,-DS2,

Restrained single and multiple spring isolator



PTM-D - 451M, 601M, 826M, 1101M, 1404M
PTM-D2-176, 246, 351, 526, 751, 1051



PTM-D-1652M, 2202M, 2802M
PTM-D2-1502, 2102



PTM-D-3304M, 4404M, 5604M
PTM-D2-3004, 4204



PTM-DS-6606AM, 7506AM, 8406AM, 8808M, 10008M, 11208M
PTM-DS2-4506AM, 6306AM, 8408AM

Description

TOZEN PTM-D series vibration isolators consist of free standing laterally stable steel springs assembled into ductile iron housing assemblies fabricated to limit vertical movement of the isolated equipments when if equipment loads are reduced or if the equipments are subjected to large external forces. Spring elements are complete with an internal adjusting and leveling bolt. Holes are provided at the upper plate for bolting to supported equipment. A 10mm thick non-skid noise absorbing rubber pad is bonded at the bottom plate with holes for bolting to the structure. All the spring elements are comply to JIS 2704 for semi-permanent use. To assure lateral stability, outside diameter of the spring elements do not less than 0.8 times of the compressed height of the spring at rated load. All the spring are designed to provide a minimum of 50% overload capacity.

PTM-D series vibration isolator are shipped with standard deflections of 25 and 50 mm, and available up to 50mm, with load capacities from 450 Kgs to 5,600 Kgs. Model PTM-D spring isolators are recommended for the isolation of vibration produced by equipment carrying a large fluid load which may be drained, such as boilers and chillers, and for the isolation of cooling towers, air cooled condensers, etc, where motion due to wind loads must be minimized.

Application

Type PTM-D mounts are typically used to reduce the transmission of noise and vibration into supporting structures from equipments carrying a large fluid load that may be drained, such as boilers and for cooling towers, which also require hold down for wind loads.

Specification

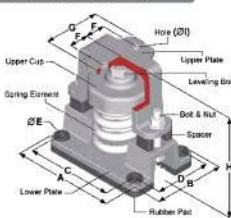
Vibration isolators for equipment which is subject to load vibrations and large external or torquing forces shall consist of laterally stable steel springs assembled into a ductile iron housing assembly designed to limit vertical movement of the supported equipment.

Housing assembly shall be of ductile iron members and consist of a load transfer plate at the top complete with holes, adjusting and leveling bolts, vertical restraints, isolation washers and a bottom plate with non-skid noise isolation pad and holes provided for anchoring to supporting structure.

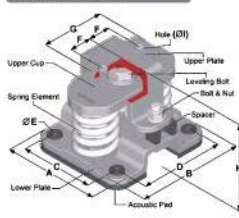
Spring elements shall have a outside diameter not less than 0.8 times to the compressed height of the spring rated load. All springs shall be designed to provide a minimum of 50% overload capacity.

Dimensions

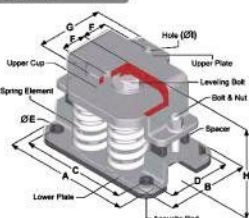
PTM-D - 451M, 601M, 826M, 1101M, 1404M
PTM-D2-176, 246, 351, 526, 751, 1051



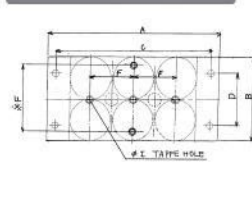
PTM-D-1652M, 2202M, 2802M
PTM-D2-1502, 2102



PTM-D-3304M, 4404M, 5604M
PTM-D2-3004, 4204



PTM-DS-6606AM, 7506AM, 8406AM,
8808M, 10008M, 11208M
PTM-DS2-4506AM, 6306AM, 8408AM



PTM-D TYPE

25mm DEFLECTION RESTRAINED SPRING ISOLATOR

MODEL	RATED CAPACITY		SPRING CONSTANT (kg/mm)	SPRING COLOR	OPERATING HEIGHT (H)	DIMENSION (mm)							
	(Kgs)	(Lbs)				A	B	C	D	ØE	F	G	ØI
PTM-D-450M	450	990	18	GREEN	170	172	121	137	86	16	30	88	14
PTM-D-601M	600	1320	24	SILVER									
PTM-D-826M	825	1815	33	BROWN									
PTM-D-1101M	1100	2420	44	BLUE									
PTM-D-1401M	1400	3080	56	BLUE+BROWN									
PTM-D-1652M	1650	3630	66	BROWN	170	180	200	136	156	20	40	118	18
PTM-D-2202M	2200	4840	88	BLUE									
PTM-D-2802M	2800	6160	112	BLUE+BROWN	185	255	167	211	1235	20	48.5	135	18
PTM-D-3304M	3300	7260	132	BROWN									
PTM-D-4404M	4400	9680	176	BLUE									
PTM-D-5604M	5600	12320	224	BLUE+BROWN									

NOTE-1: All springs are free standing and laterally stable. (Outside diameter do not less 0.8 times of compressed height)
NOTE-2: All springs are designed to provide additional travel to solid of at least 50% rated load.
NOTE-3: Please refer to relevant brochure or factory for greater deflection and loading

PTM-DS TYPE

25mm DEFLECTION RESTRAINED SPRING ISOLATOR

MODEL	RATED CAPACITY		SPRING CONSTANT (kg/mm)	SPRING COLOR	OPERATING HEIGHT (H)	DIMENSION (mm)							
	(Kgs)	(Lbs)				A	B	C	D	ØE	F	G	ØI
PTM-DS-4956MA	4950	10890	198	BROWN	205	420	175	380	100	20	110	-	M16 X 3
PTM-DS-6606MA	6600	14520	264	BLUE									
PTM-DS-7506MA	7500	16500	300	BLUE+WHITE									
PTM-DS-8406MA	8400	18480	335	BLUE+BROWN	205	475	175	435	100	20	115	-	M16 X 2
PTM-DS-8808M	8800	19360	352	BLUE									
PTM-DS-10008M	10000	22000	400	BLUE+WHITE									
PTM-DS-11208M	11200	24640	448	BLUE+BROWN									

NOTE-1: All springs are free standing and laterally stable. (Outside diameter do not less 0.8 times of compressed height)
NOTE-2: All springs are designed to provide additional travel to solid of at least 50% rated load.
NOTE-3: Please refer to relevant brochure or factory for greater deflection and loading
NOTE-4: PTM-DS is carbon steel type.

PTM-D2 TYPE

50mm DEFLECTION RESTRAINED SPRING ISOLATOR

MODEL	RATED CAPACITY		SPRING CONSTANT (kg/mm)	SPRING COLOR	OPERATING HEIGHT (H)	DIMENSION (mm)							
	(Kgs)	(Lbs)				A	B	C	D	ØE	F	G	ØI
PTM-D2-176	175	385	3.5	ORANGE	210	190	130	152	95	16	38	106	16
PTM-D2-246	245	539	4.9	VIOLET									
PTM-D2-351	350	770	7	RED									
PTM-D2-526	525	1155	10.5	GREEN									
PTM-D2-751	750	1650	15	SILVER									
PTM-D2-1051	1050	2310	21	SILVER+BROWN	210	232	196	187	152	20	42	120	16
PTM-D2-1502	1500	3300	30	SILVER									
PTM-D2-2102	2100	4620	42	SILVER+BROWN									
PTM-D2-3004	3000	6600	60	SILVER	220	300	200	260	162	20	66.5	170	20
PTM-D2-4204	4200	9240	84	SILVER+BROWN									

NOTE-1: All springs are free standing and laterally stable. (Outside diameter do not less 0.8 times of compressed height)
NOTE-2: All springs are designed to provide additional travel to solid of at least 50% rated load.
NOTE-3: Please refer to relevant brochure or factory for greater deflection and loading

PTM-DS2 TYPE

50mm DEFLECTION RESTRAINED SPRING ISOLATOR

MODEL	RATED CAPACITY		SPRING CONSTANT (kg/mm)	SPRING COLOR	OPERATING HEIGHT (H)	DIMENSION (mm)							
	(Kgs)	(Lbs)				A	B	C	D	ØE	F	G	ØI
PTM-DS2-4506MA	4500	9900	90	SILVER	250	430	207	390	132	20	110	-	M16 X 3
PTM-DS2-6306MA	6300	13860	126	SILVER+BROWN									
PTM-DS2-8408MA	8400	18480	168	SILVER+BROWN	250	540	207	500	132	20	147 (ØF)	-	M16 X 3

NOTE-1: All springs are free standing and laterally stable. (Outside diameter do not less 0.8 times of compressed height)
NOTE-2: All springs are designed to provide additional travel to solid of at least 50% rated load.
NOTE-3: Please refer to relevant brochure or factory for greater deflection and loading
NOTE-4: PTM-DS is carbon steel type.

Installation instruction

- 1) Check that the internal leveling nut is adjusted up to underside of the upper plate.
- 2) Lift or block up the equipment to 5mm higher than isolator's operating height (see catalogue) and slide the isolators into position and adjust the leveling nut until the upper plate is in contact with equipment base. Insert fastening screws (if used) through the equipment base into top of the mounting and tighten.
- 3) Check alignment of the base so that restraining bolts are central with clearance holes in the restraining bracket.
- 4) Transfer the equipment weight to the spring by taking two counter-clockwise turns on each leveling bolt around the unit until springs are compressed just enough to remove blocks.
- 5) Adjust restraining nuts to give 2-3mm clearance between the restrain washer and the underside of the restraining bracket. Check the leveling again after the system is filled with water.
- 6) Tighten the lock nut to lock the assembly.

Note: The contents of this catalogue are subject to change without notice.

Agent : TOZEN Corporation

Remarks

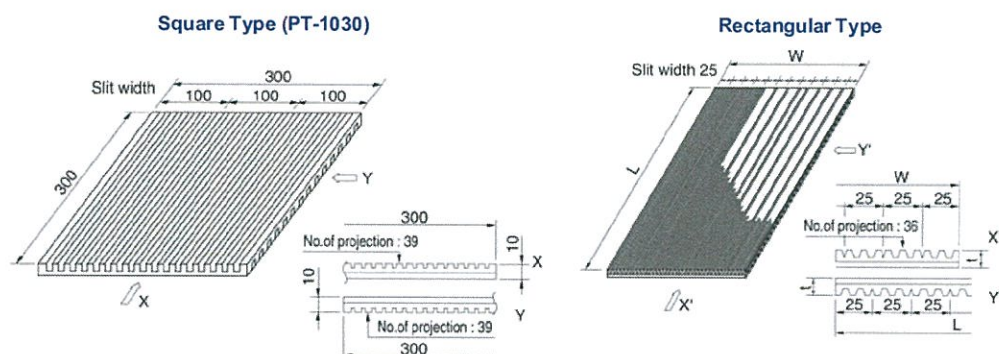
- a) When the equipment are not subject to raise to the required height, height saving bracket may be attached to the equipment. The height of bracket connection from the bottom of the base shall be 50mm less than the isolator's operating height or to keep a 50mm clearance between the ground and equipment.
- b) DON'T install the equipment on the support of free spring, it would cause an insufficient operating height for the spring isolator when the installation is completed.
- c) Weight of vertical piping and valves shall be taken over by the suspension hangers or support.
- d) Install the flexible joint at final, follow the pre-extension instruction which may specified or suggested by the flexible joint manufacturer.
- e) Where bolting is required, avoid a direct metal contact between bolt and mounting, to prevent transmission of acoustical frequencies; the bolt shank shall be clear in the hole and a rubber washer used under the bolt head. Bolts shall only be tightened a half turn more than hand tight.

PT-MAT VIBRATION ISOLATING RUBBER PAD

DESCRIPTION : TOZEN PT-MAT can be cut out to any suitable square or rectangular sizes easily to suit various mounting footings of machines or equipment for effective isolation of shock and vibration. In most cases no anchor bolting is required. Ingeniously designed having ribs of upper and lower surface arranged at right angles and optimum rubber hardness (55-60 durameter) PT-MAT performs effectively against shock and vibration both laterally and vertically. At the same time noise caused by vibration is thus also reduced. In view of design and material aspects PT-MAT can withstand and absorb greater impact from various machines and equipment. It provides larger buffer capacity per unit area. Compared with other vibration isolation devices PT-MAT is the most economical type available due to mass production. Each sheet can be fully utilized without waste. The 3 different thickness(t) of PT-MAT are recommended for 2-4 kgf/cm².

APPLICATION :

- Vibration isolation for equipment like packaged air handling units, pumps, etc.
- Isolation between the pipe and pipe support, etc.



● **Load Stress-Deflection and Natural Frequency-Load Stress Relationship**

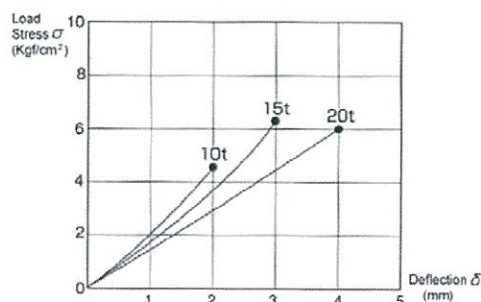


Fig.1 Characteristic of Load Stress-Deflection

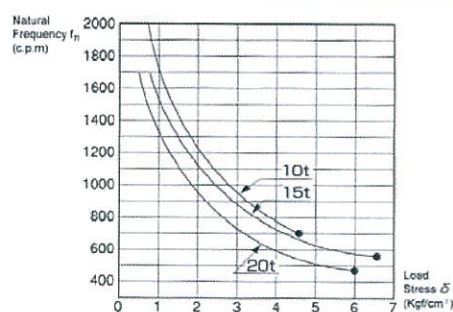
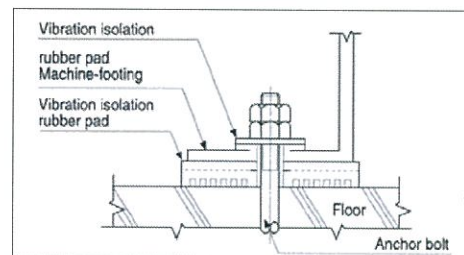


Fig.2 Characteristic of Natural Frequency-Load Stress

TYPE	ITEM NO.	DIMENSION (mm)			ALLOWABLE LOADING (kg/cm ²)	MASS (kgs)
		t	W	L		
Square	PT-1030	10	300	300	4	0.9
Rectangular	PT-1100	10	100	1000	4	1.0
	PT-1150	10	150	1000	4	1.5
	PT-1300	10	300	1000	4	3.0
	PT-1510	15	100	1000	4	1.6
	PT-1515	15	150	1000	4	2.4
	PT-1530	15	300	1000	4	4.8
	PT-2010	20	100	1000	4	2.2
	PT-2015	20	150	1000	4	3.3
	PT-2030	20	300	1000	4	6.5



Related equipment **Water Hammer Arrester**

MOOHA

Water Hammer Arrester that smoothly absorbs and eases the water hammer.



Feature

Water Hammer Absorption

It can be directly connected in the piping that is different from the accumulator type. It has excellent water hammer absorption effect without inhibiting the fluid flow.

Easy Installation

It can be installed easily and freely even in a narrow space. Please choose a direction for installation according to the site situation.

Operating Conditions and Performance

Maximum allowable working pressure: 1.6MPa {16.3kgf/cm²} and below
Maximum operating temperature: 60°C and below

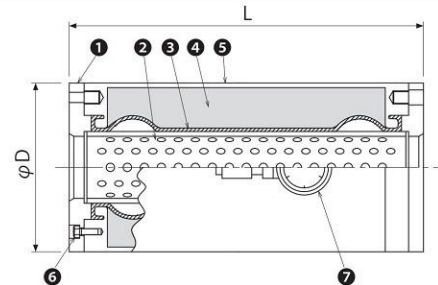
- Before using, check that the maximum working pressure and temperature are within the working range.

Perforated Pipe — Small holes are drilled in the pipe regularly placed in series with the flow, and connected with the inner side of the elastic tube.

Elastic Tube — The tube outside of the perforated pipe uses the rubber with excellent elasticity and airtightness, and the both ends are fixed with flanges.

Air Chamber — There is an air chamber between the tube and the casing. The 0.5MPa air is filled in advance in the air chamber.

Structure

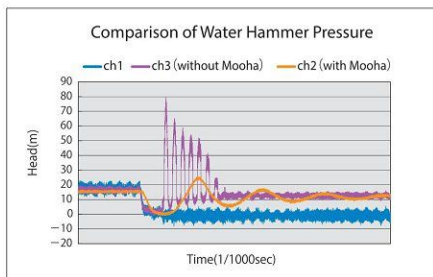
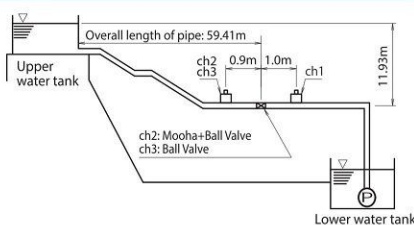


No.	Parts	Material	No.	Parts	Material
①	Flange	SS400	⑤	Casing	S20C
②	Perforated Pipe	PVC-U	⑥	Hex. Socket Head Cap Screw	S45C
③	Elastic Tube	CSM	⑦	Pressure Gauge	—
④	Air Chamber	Air is filled upon delivery.			

- The above materials given here are for the standard products.

Flange compatible dimension	Standard	PN16
	changeable	○ PN25
		○ JIS10K
		○ JIS20K
		○ ANSI 150LB
Material	Standard	SS400
	changeable	× FCD450
		○ SUS304
		○ SUS316
	× PVC	

Comparison of Water Hammer Pressure



From the above comparison table, the water hammer pressure with Mooha installation is 1.5 times of the water pressure before shielding with the ball valve, and 4.3 times in case of without Mooha installation. So the water hammer difference between with and without Mooha is about 68% attenuated. In addition, according to the long period of the water hammer waveform, the relaxation of the pressure and the shock force due to water hammer could be confirmed.

Dimensions

Model	Nominal Dia. [mm]	Dimension [mm]		Capacity of Air Chamber [ℓ]	Mass [kg]
		φD	L		
MH-25	25	127	156	1	7
MH-50	50	168	270	3	16
MH-80	80	194	380	6	28
MH-100	100	219	440	8	36
MH-125	125	273	560	16	66
MH-150	150	325	640	27	97

- Bolts are provided.
- Mass and air chamber capacity given here are for the standard products with PN16 flange.

Performance

When the pressure wave that generates water hammer passes through the Mooha, its pressure is transmitted to the tube through the pipe. The tube that keeps balance in the normal pressure is instantly swollen due to its elasticity, and serves to absorb the water hammer.



This brochure may be revised without prior notice. We apologize in advance for any inconvenience this may cause.

Agent

TOZEN Corporation

8-4, Asahi, Yoshikawa
Saitama 342-0008 Japan

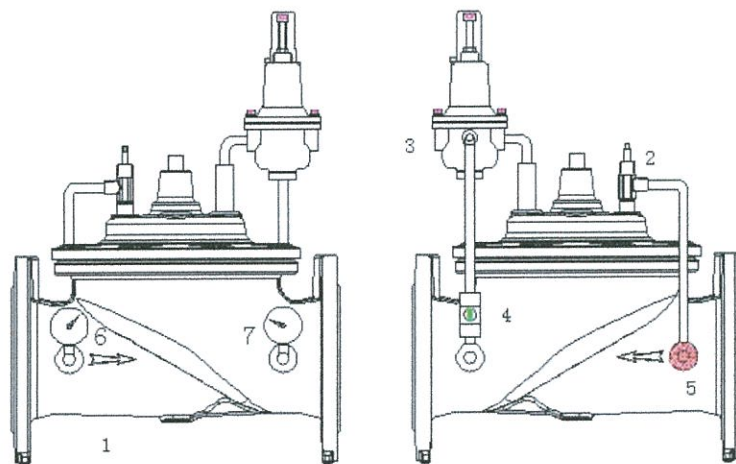


Pressure Reducing Valve

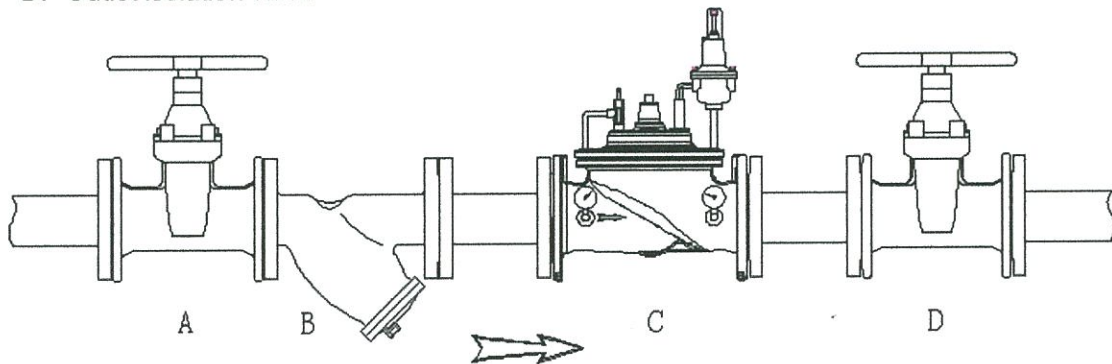


The Model 200 Pressure Reducing Valve automatically reduces a higher inlet pressure to a steady lower downstream pressure, regardless of changing flow rate and/or varying inlet pressure. This valve is an accurate, pilot-operated regulator capable of holding downstream pressure to a re-determined limit. When downstream pressure exceeds the pressure setting of the control pilot, the main valve and pilot valve close drip-tight.

1. Main valve
2. Needle valve
3. Pilot
4. Ball valve
5. Strainer
6. *Pressure Gauge
7. *Pressure Gauge



- A. Inlet isolation valve
- B. Strainer
- C. Pressure reducing valve
- D. Outlet isolation valve

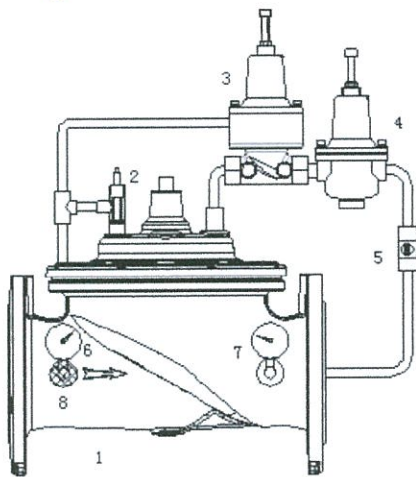


Pressure Reducing & Sustaining Valve



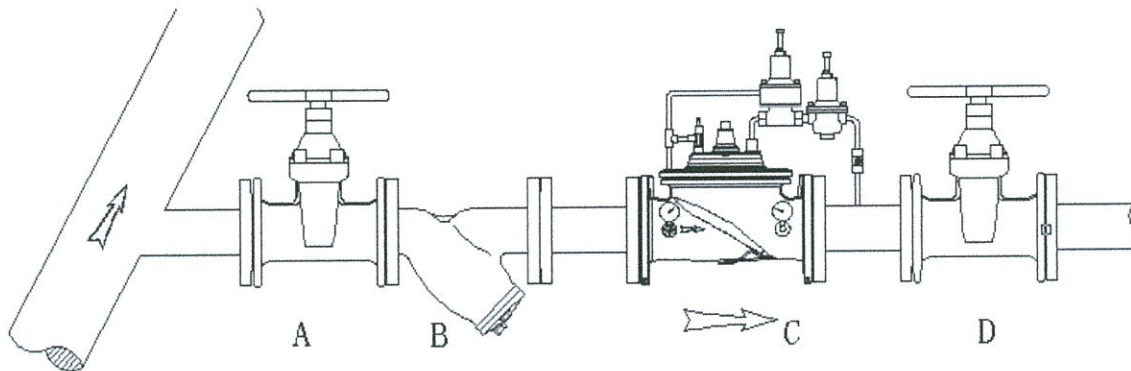
The Model 520 Combination Pressure Reducing and Pressure Sustaining Valve automatically performs two independent functions. It maintains a constant downstream pressure, regardless of fluctuating demand and sustains the upstream pressure to a pre-determined minimum.

The pressure reducing control responds to slight variations in downstream pressure and immediately repositions the main valve to maintain the desired downstream pressure. The pressure sustaining control is normally held open by the upstream pressure, but modulates should the pressure drop to the control set point. This, in turn, modulates the main valve to sustain the desired upstream pressure.



1. Main valve
2. Needle valve
3. Pressure relief Pilot
4. Pressure reducing Pilot
5. Ball valve
6. Strainer
7. *Pressure Gauge

- A. Inlet isolation valve
- B. Strainer
- C. Pressure reducing & sustaining valve
- D. Outlet isolation valve

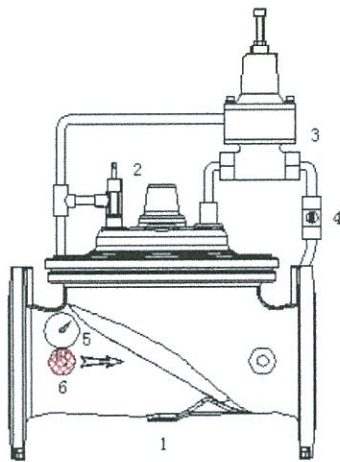


Pressure Sustaining/Relief Valve



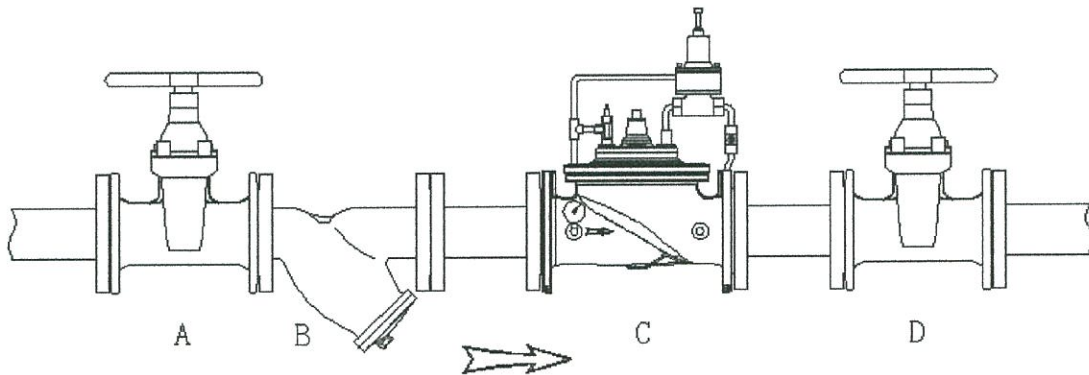
The Model 500 Pressure Sustaining/Relief Valve is a hydraulically operated, pilot-controlled, modulating valve designed to maintain constant upstream pressure within close limits. This valve can be used for pressure relief, pressure sustaining, back pressure, or unloading functions in a by-pass system.

In operation, the valve is actuated by line pressure through a pilot control system, opening fast to maintain steady line pressure but closing gradually to prevent surges. Operation is completely automatic and pressure settings may be easily changed by adjusting screw on top of the pilot.



1. Main valve
2. Needle valve
3. Pressure relief Pilot
4. Ball valve
5. Strainer
6. *Pressure Gauge

- A. Inlet isolation valve
- B. Strainer
- C. Pressure relief valve
- D. Outlet isolation valve

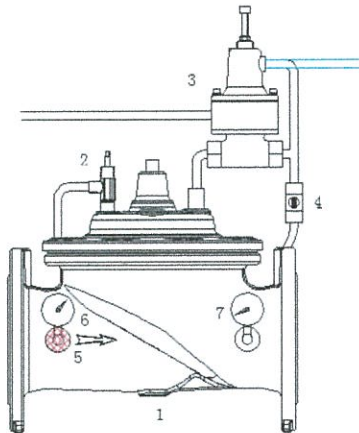


Differential pressure Valve



The Model 800 Differential Pressure Valve is a hydraulically operated, pilot-controlled, modulating valve. It is designed to maintain a constant pressure differential between any two pressure points in a system where the closing of the valve directly causes the differential pressure to increase. The valve tends to open on an increase in differential pressure and close on a decrease in differential pressure.

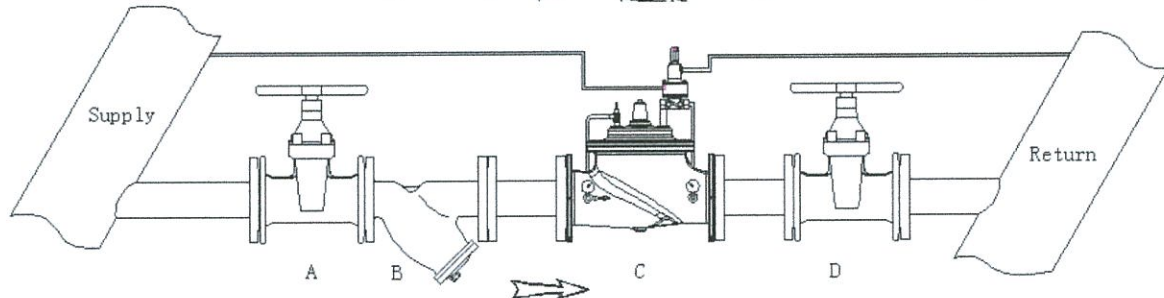
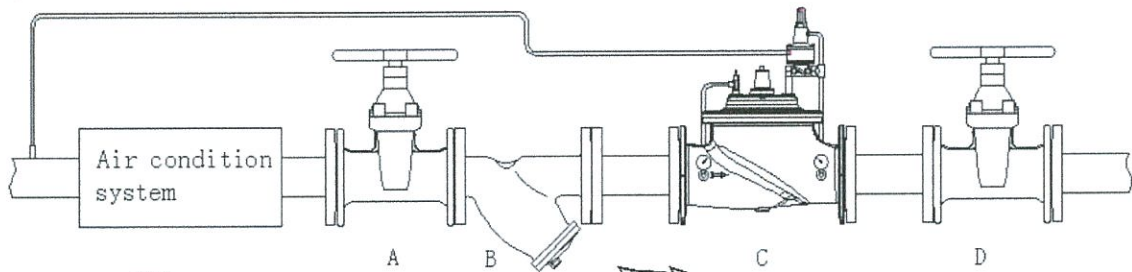
In operation, the valve is actuated by line pressure through a pilot control system sensing from two points across which a differential is to be maintained. Operation is completely automatic and pressure settings may be easily changed.



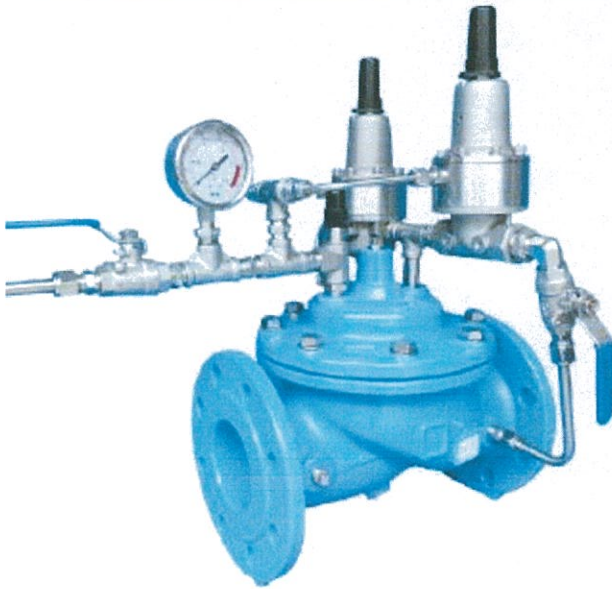
Main valve
Needle valve
Differential pressure Pilot
Ball valve
Strainer
*Pressure Gauge
*Pressure Gauge

Below are 2 typical application

- A. Inlet isolation valve
- B. Strainer
- C. Differential pressure valve
- D. Outlet isolation valve



Surge anticipator Valve



The Model 550 Surge Anticipator Valve is indispensable for protecting pumps, pumping equipment and all applicable pipelines from dangerous pressure surges caused by rapid changes of flow velocity within a pipeline.

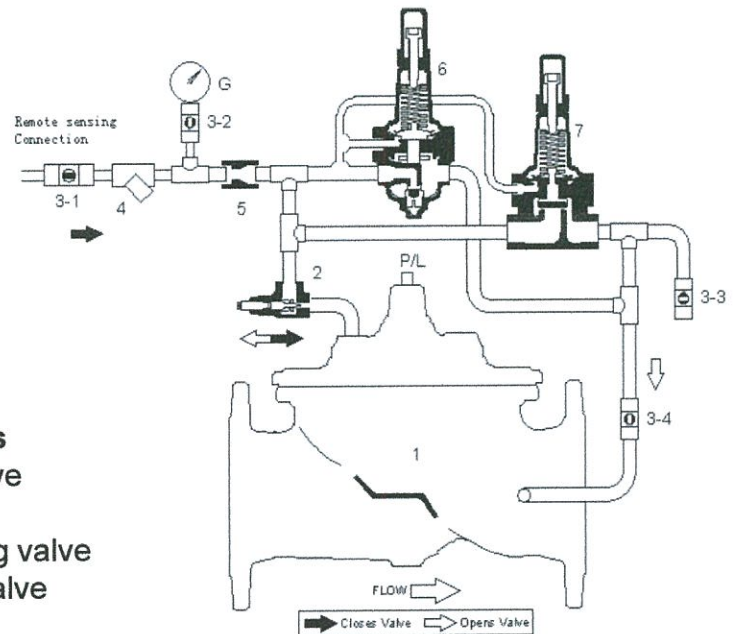
When pumping systems are started and stopped gradually, harmful surges do not occur. However, should a power failure take place, the abrupt stopping of the pump can cause dangerous surges in the system which could result in severe equipment damage. Power failure to a pump will usually result in a down surge in pressure, followed by an up surge in pressure. The surge control valve opens on the initial low pressure wave, diverting the returning high pressure wave from the system. In effect, the valve has anticipated the returning high pressure wave and is open to dissipate the damage causing surge. The valve will then close slowly without generating any further pressure surges.

Standard Features

1. Main valve
2. Needle valve
3. Ball valve
4. Strainer
5. Restriction
6. Lower pressure relief pilot
7. High pressure relief pilot

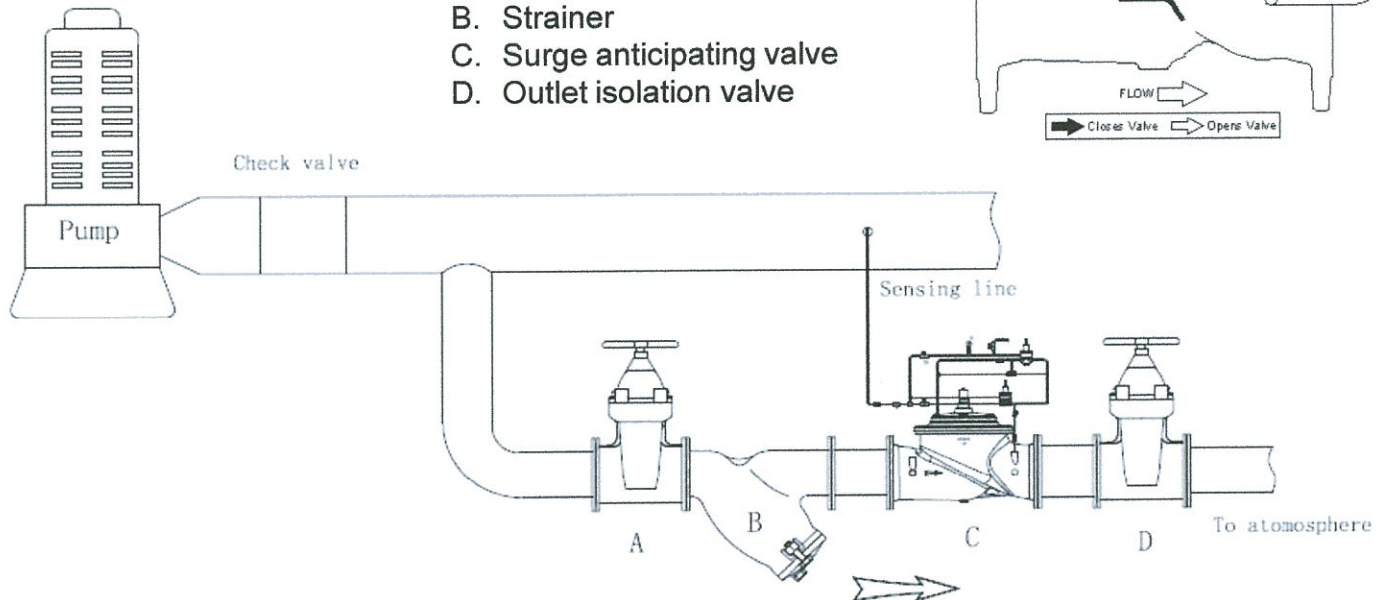
Optional Features

- B. Ball valve
- G. Pressure Gauge
- P. Position indicator
- L. Limit switch



Typical Applications

- A. Inlet isolation valve
- B. Strainer
- C. Surge anticipating valve
- D. Outlet isolation valve

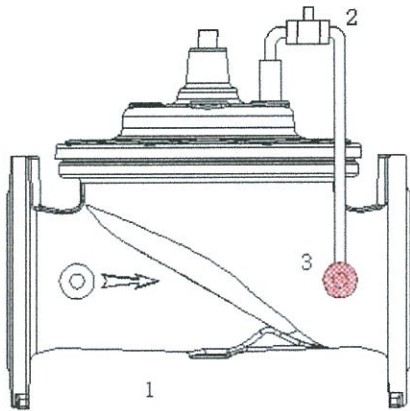




The Model 300 Check Valve is a hydraulically operated No-Slam Check Valve. This valve opens when the pressure at the inlet exceeds the discharge pressure. A gradual rate of opening prevents sudden opening surges. When a pressure reversal occurs the higher downstream pressure is applied to the cover chamber through the control tube lines, and the valve closes drip tight. This valve is ideally suited for use where a positive shutoff is required. The rubber disc assures tight sealing even if the fluid contains grit or other small-size particles.

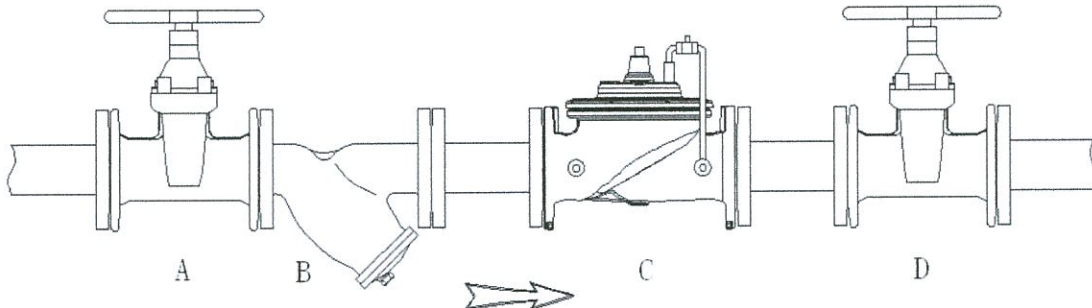
- The velocity of Open/Shutoff can be controlled by the ball valve 2 on the outlet control tube line.

Note: The effectiveness of this valve is related to pipeline velocity. We recommend a maximum flow based on pipeline velocity of 3m/s. If pipeline velocities, consideration should be given to adding a Pressure Relief Valve to the system.



1. Main valve
2. Ball valve
3. Strainer

- A. Inlet isolation valve
- B. Strainer
- C. Check valve
- D. Outlet isolation valve



TOZEN

A joint reliance

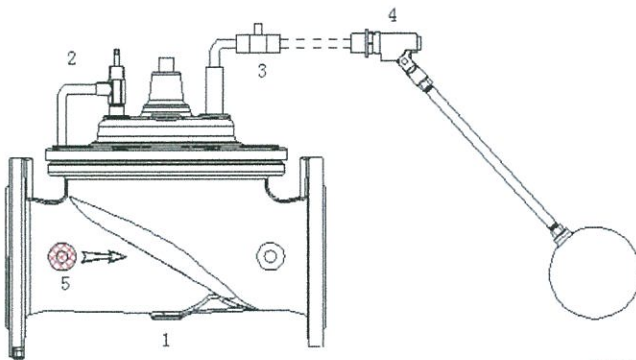
Float Valve



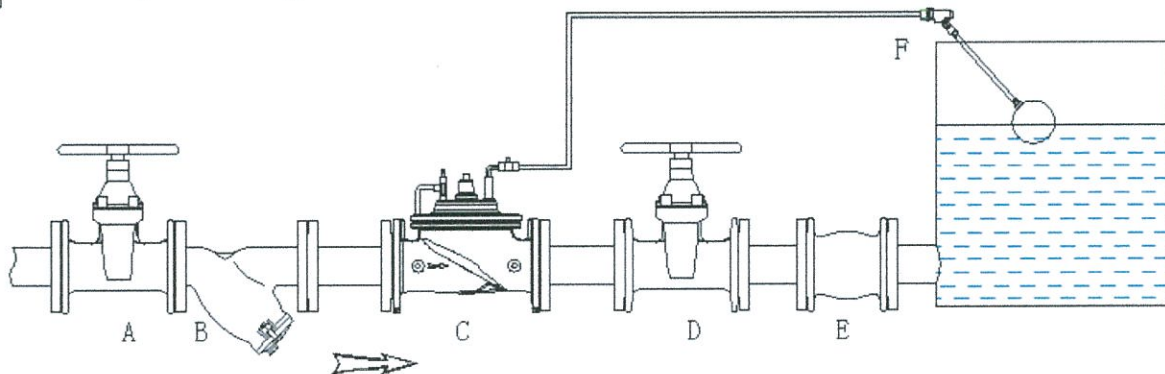
The Model 100 Float Valve is a non-modulating valve that accurately controls the liquid level in tanks. This valve is designed to open fully when the liquid level reaches a preset low point, and close drip-tight when the level reaches a preset high point. The float pilot is remotely installed inside of reservoir.

This is a hydraulically operated, diaphragm valve with the pilot control and float mechanism mounted on the cover of the main valve.

1. Main valve
2. Needle valve
3. Ball valve
4. Float pilot
5. Strainer



- A. Inlet isolation valve
- B. Strainer
- C. Float valve
- D. Outlet isolation valve
- E. Flexible connector
- F. Remote float pilot



Direct Acting Pressure Reducing Valve



Design and test standard:

ASSE 3001 Water Pressure Reducing Valves for Domestic Water Distribution Systems

EN1567 Water pressure reducing valves and combination water reducing valves-Requirements and tests

Features:

- Balanced Design
- Bigger diaphragm and react more sensitive
- Special design “yoke” stem, avoiding block
- Install and operation in any position
- Easy installation and maintenance

Specification:

Size: 3/8”--2”

Type: Direct Acting

Connection: PT/NPT

Material: SUS 304/316/ Bronze

Media: Pure water

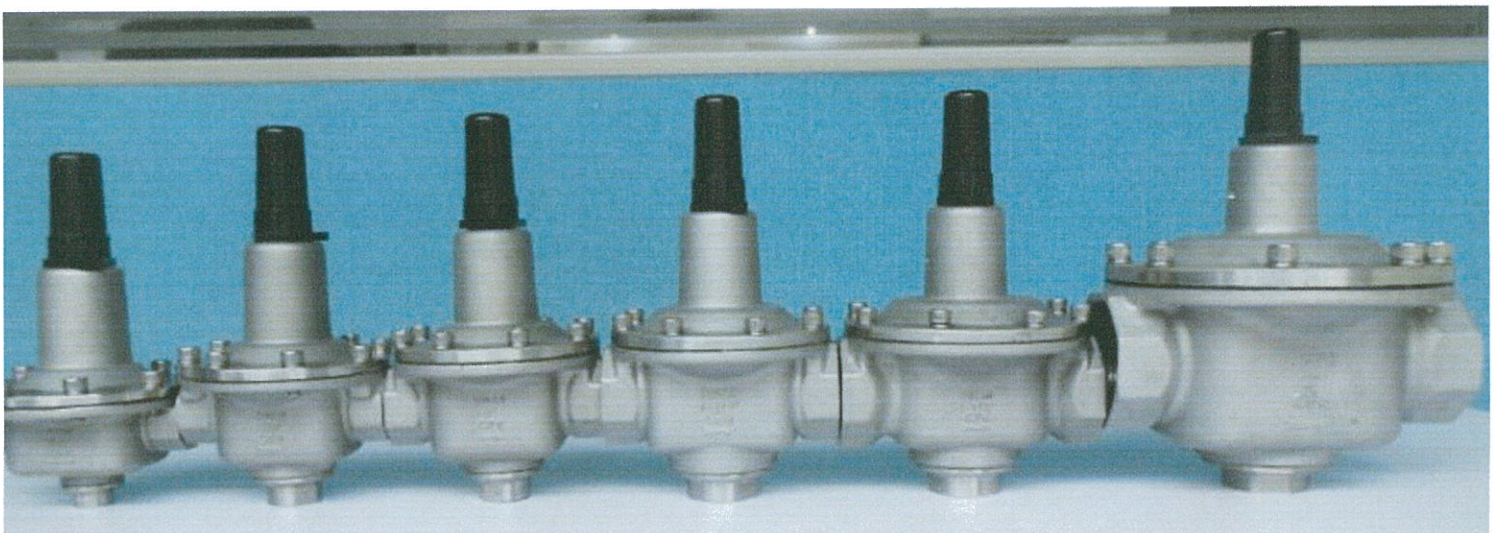
Working temperature: 0-80 °C

Pressure range: PN16

Function

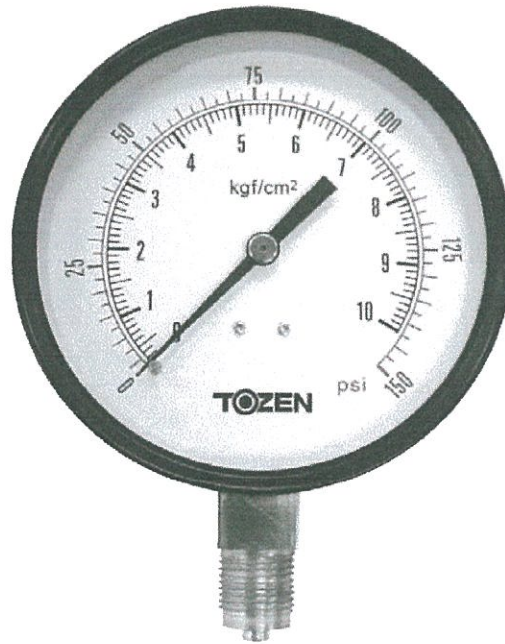
The Model K200S Pressure Reducing Valve automatically reduces a higher inlet pressure to a steady lower downstream pressure, regardless of changing flow rate and/or varying inlet pressure.

This valve is an accurate regulator capable of holding downstream pressure to a re-determined limit. When downstream pressure exceeds the pressure setting , the valve close drip-tight.



GENERAL PRESSURE GAUGE - GP SERIES

TOZEN GP series pressure gauge is designed and used for pressure measurement for various industries. This durable gauge is ideal for services on water, air, oil and other pressure media not comosive to brass.



SPECIFICATION

Nominal Diameter	2 1/2" (65mm), 4" (100mm)
Dial	White aluminium with black & red markings
Case	Steel, Painted Black
Lens	Glass
Pointer	Aluminium, Painted Black
Socket	Brass
Connection	1/4" (2 1/2" Dial), 3/8" (4" Dial) BSP Bottom Entry
Movement	Brass
Operating Pressure	75% of Full Scale Value
Ambient Temperature	-10°C to 60°C
Protection	IP 52

PRODUCT CODE

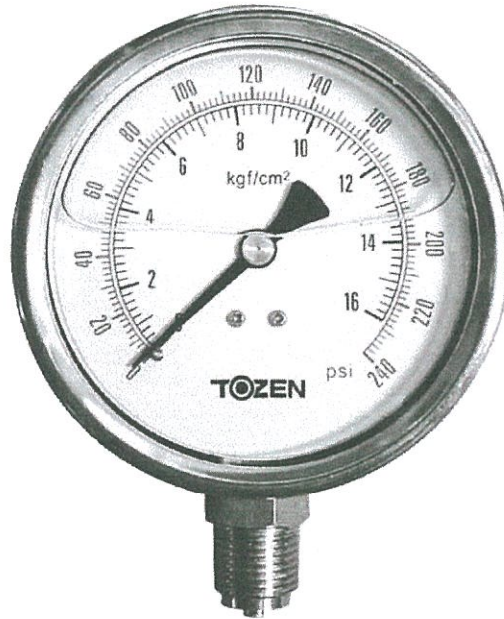
Range	Product Code
-760mm/HG ~ 4kgf/cm²/psi	GPC4CA
0 ~ 7kgf/cm²/psi	GP07CA
0 ~ 10kgf/cm²/psi	GP010CA
0 ~ 16kgf/cm²/psi	GP016CA
0 ~ 20kgf/cm²/psi	GP020CA

Note:

1. Other range and unit available upon request.
2. Specifications are subject to change without prior notice.

STAINLESS STEEL PRESSURE GAUGE - SP SERIES

TOZEN SP series stainless steel casing pressure gauge is designed and used for pressure measurement for various industries. This durable gauge is ideal for services on water, air, oil and other pressure media.



SPECIFICATION

Nominal Diameter	公称直径	2 1/2" (65mm), 4" (100mm)
Dial		White aluminium with black & red markings
Case		Stainless Steel 304
Lens		Polycarbonate
Pointer		Aluminium, Painted Black
Socket		Brass, Stainless Steel 304
Connection		1/4" (2 1/2" Dial), 3/8" (4" Dial Brass Socket). 1/2" (4" Dial Stainless Steel Socket). BSP Bottom Entry
Movement		Brass, Stainless Steel 304
Operating Pressure		75% of Full Scale Value
Ambient Temperature		-10°C to 60°C
Protection		IP 65

PRODUCT CODE

Range	Product Code
-760mm/HG ~ 4kgf/cm²/psi	SPC4CA
0 ~ 7kgf/cm²/psi	SP07CA
0 ~ 10kgf/cm²/psi	SP010CA
0 ~ 16kgf/cm²/psi	SP016CA
0 ~ 20kgf/cm²/psi	SP020CA

Note:

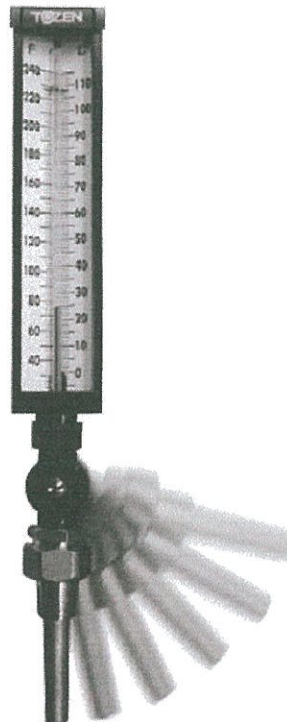
1. Other range and unit available upon request.
2. Specifications are subject to change without prior notice.

INDUSTRIAL THERMOMETER - IT SERIES

TOZEN IT series adjustable angle industrial thermometer is widely used in HVAC and other industrial applications. It is fully adjustable to provide full 360° positioning on the vertical axis and 180° rotation on the horizontal axis. The thermometer can be “locked” into any position within this arc.

APPLICATIONS

New construction, plumbing, water lines, boilers, heating, ventilation and air conditioning



SPECIFICATION

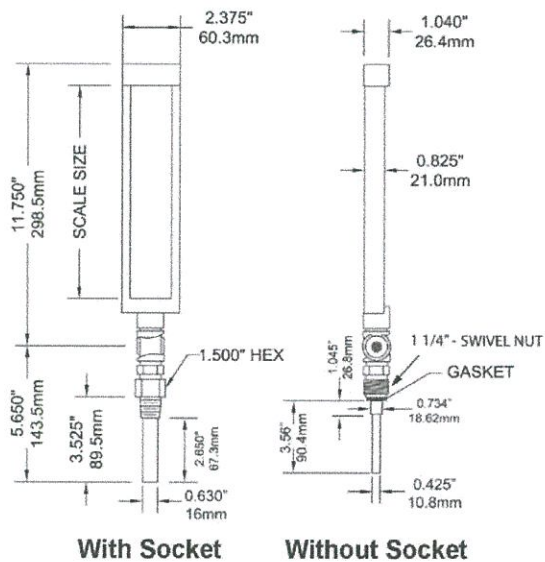
Scale Casing	9" (230mm) Valox® case, Impact Resistant
Lens	Glass
Liquid Filling	Organic Liquid Fill
Stem Length	3½" (90mm) & 6" (150mm)
Thermowell	¾" Brass Separable Socket (SS optional)
Scale Reading	Celsius (°C) & Fahrenheit (°F)
Connection	¾" BSP With Thermowell 1¼" UNF Swivel Nut (No Thermowell)
Accuracy	±1%
Protection	IP 54

PRODUCT CODE

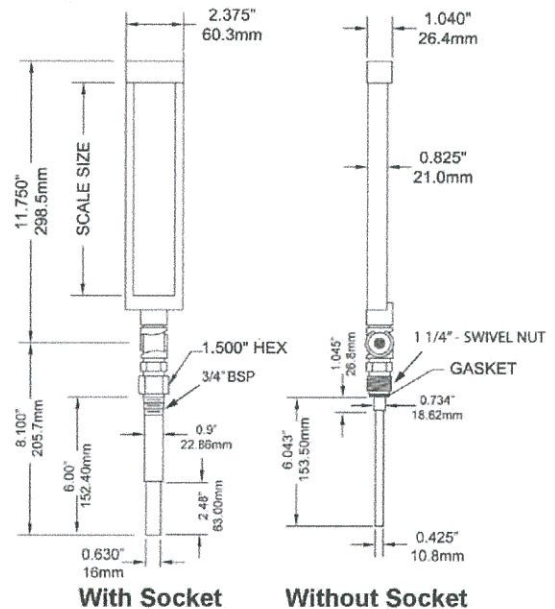
Range	Stem Length	
	3½" (90mm)	6" (150mm)
-40°C ~ 40°C / -40°F ~ 110°F	IT4/01V	IT6/01V
-15°C ~ 50°C / 0°F ~ 120°F	IT4/02V	IT6/02V
-15°C ~ 70°C / 0°F ~ 160°F	IT4/03V	IT6/03V
0°C ~ 80°C / 30°F ~ 180°F	IT4/04V	IT6/04V
0°C ~ 115°C / 30°F ~ 240°F	IT4/05V	IT6/05V
0°C ~ 150°C / 30°F ~ 300°F	IT4/06V	IT6/06V

DIMENSIONAL

3.5" Stem



6" Stem



- Specifications are subject to change without prior notice.