KKK manufactured by KANE

KANE KOGYO CO.,LTD.

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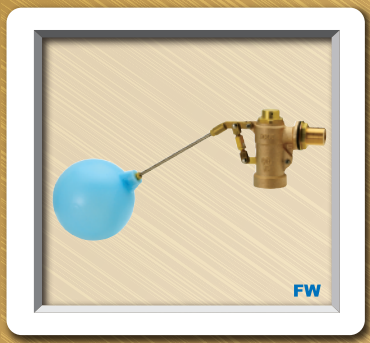
JWWA APPROVED
JIS CERTIFICATION FACTORY

PUB HDB APPROVED
PSB TESTED

KRK manufactured by KANE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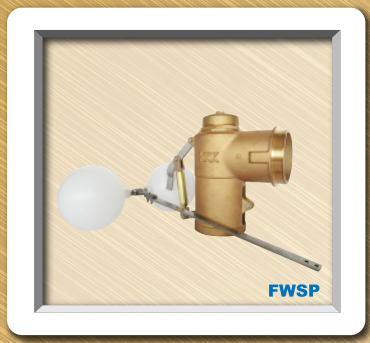
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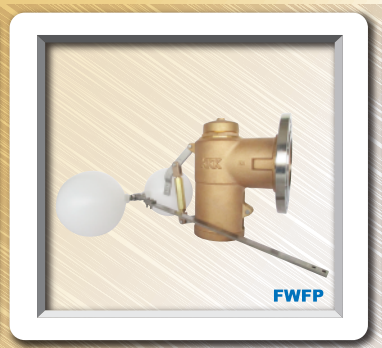
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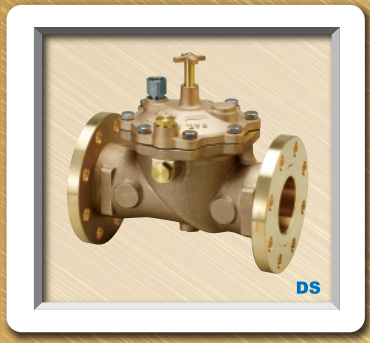
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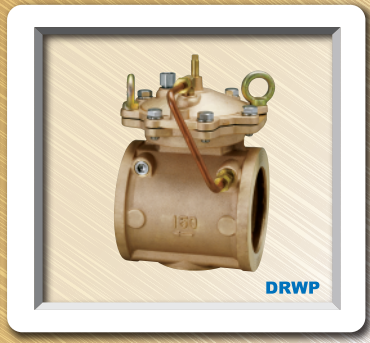
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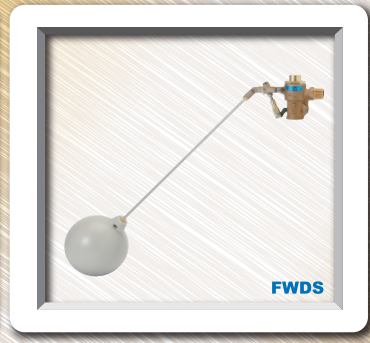
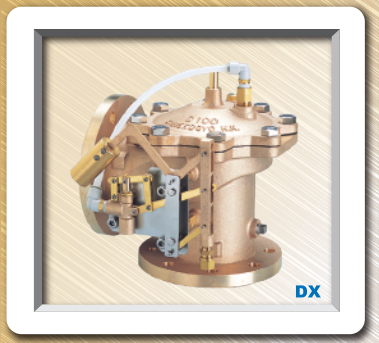

FWDS

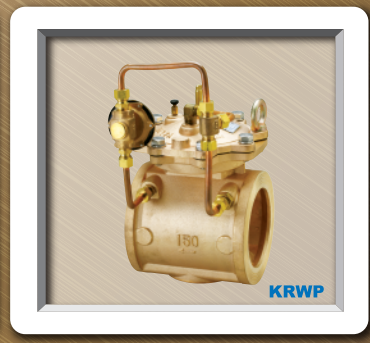

FWD

VALVES
L I N E U P


DX

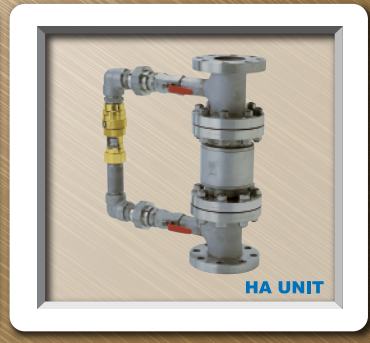

KRY


KRW


KRWP


KRT


KRD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QB

ISO9001 / ISO14001 Certified
Japanese Industrial Standards Certification Factory

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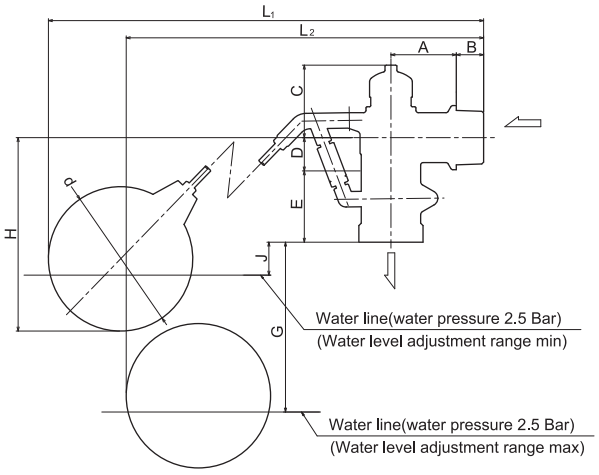
MADE IN JAPAN

■Pressure Balanced Float Valve

MODEL

FW





THREADED END JIS BSP 15 to 100mm & FLANGED END JIS 10K 65 to 150mm

●Basic Application:

These float valves use the weight and buoyancy of their float to keep water levels constant inside water reservoir tanks.

●Operating Conditions:

MODEL	FW
Applicable Fluid	Water
Working Temperature	0 to 60 ℃
Working Pressure (inlet)	above 0 to 10 Bar
Shell Test Pressure	17.5 Bar

●Materials:

Description	Material
Body	Bronze
Strainer	Stainless Steel(Optional)
Lever Arm	Stainless Steel(Size:15,20,25,30,40,125,150)
	Brass(Size:50)
	Bronze(Size:65,80,100)
Floats	Polyethylene
Valve Spindle	Brass
Adjustable Connector	Brass
Disc	NBR

※Copper float is available.

●Dimensions:

unit:mm

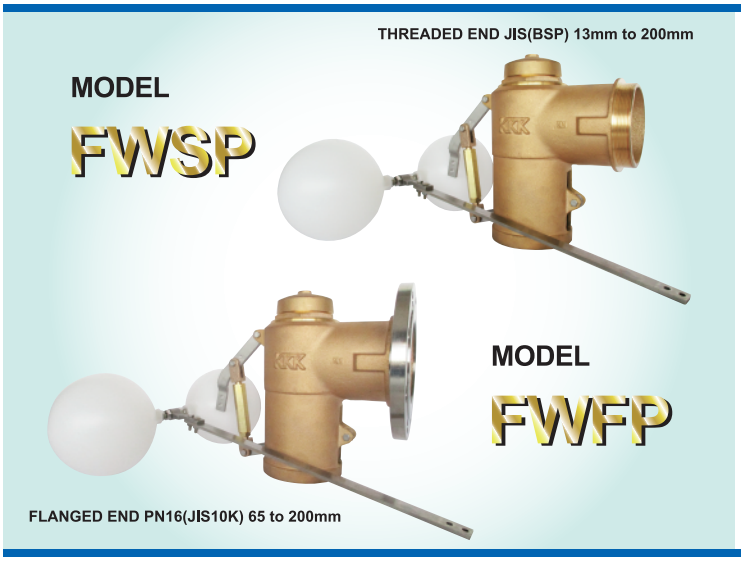
Nominal size mm	Nominal size inch	A	B	C	D	E	L_1	L_2	J	H	Allowance of J	G	Allowance of G	Length of Lever arm	Float d	Connection Standard
15	1/2	25	30	27.5	15	27	(348)	(316)	110	200	±20	(140)	±20	180	100	JIS B 2061
20	3/4	40	35	33	20	37.5	(422)	(386)	120	239	±20	(150)	±20	210	120	
25	1	50	35	36.5	25	53	(470)	(405)	100	224	±20	(170)	±20	235	120	
32	1-1/4	50	22	60	25	54.5	(450)	(424)	100	220	±25	(145)	±25	235	120	JIS B 0203 & BS21
40	1-1/2	55	23	62	27	60	(495)	(472)	120	257	±25	(160)	±25	280	120	
50	2	68	26	72	28	69	(550)	(526)	130	282	±25	(170)	±25	280	150	
65	2-1/2	90	30	80.5	46	74	(743)	(700)	150	344	±30	(220)	±30	510	150	JIS B 0202 & BS21 & JIS B 2239
80	3	100	30	87	53	85	(890)	(820)	160	374	±30	(250)	±30	615	180	
100	4	130	30	105	70	102	(995)	(960)	220	400	±30	(310)	±30	725	180	
125	5	168	34	132.5	92	144	(1300)	(1280)	200	490	±30	(280)	±30	800	180/180	
150	6	168	34	132.5	92	144	(1300)	(1280)	200	490	±30	(280)	±30	800	180/180	

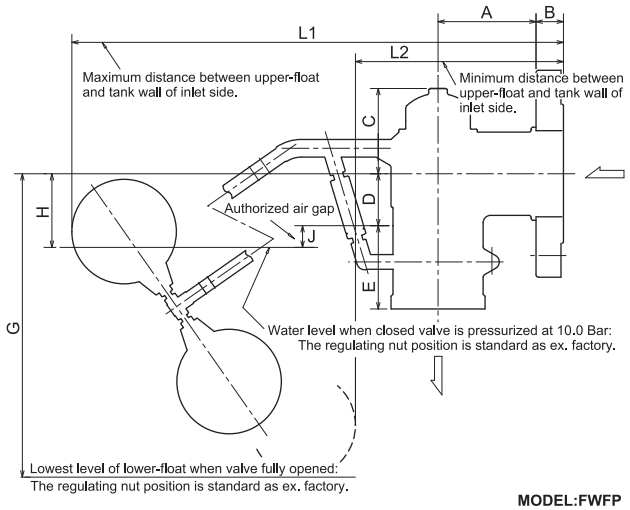
( )Rough estimate

●Features:

1. Our Float valves come with an adjustable lever that can be adjusted as required, to maintain the desired water level.
2. Our Float valves come with a built-in stainless steel strainer to protect the valve seat and to prevent it from clogging, jamming or overflowing.
3. Our Float valves' unique design can be fitted with a wave suppression pipe to provide wave suppression when requested.
4. Bronze prevents rust contamination of potable water.
5. The polyethylene float never pollutes the drinking water.
6. The smooth operation of the pressure-balanced mechanism minimizes vibration noise known as water hammer.

■Pressure Balanced Float Valve





●Basic Application:

Float valves use the weight and buoyancy of their float to keep water levels constant inside water reservoir tanks.

●Operating Conditions:

MODEL	FWSP / FWFP
Applicable Fluid	Water
Working Temperature	0 to 60 ˚C
Working Pressure (inlet)	above 0 to 16 Bar
Shell Test Pressure	24 Bar

●Materials:

Description	Material
Body	Bronze
Strainer	Stainless Steel(Optional)
Lever Arm	Stainless Steel
Floats	Polyethylene
Valve Spindle	Bronze
Adjustable Connector	Brass
Flange(FWFP)	Stainless Steel
Disc	EPDM/NBR

※Copper float is available.

●Dimensions:

unit:mm

Nominal size		A	B		C	D	E	L_1	L_2	L_1	L_2	J	H	Allowance of L_1 to H	G	Allowance of G	Length of lever arm	Upper float	Lower float	Connection Standard	
mm	inch		FWSP	FWFP				FWSP		FWFP										FWSP	FWFP
15	1/2	25	30	16	27.5	15	27	(395)	(150)	(381)	(136)	80	95	±20	(300)	±30	150	120	—	JIS B 2061	ISO7005-3 (BS 4504) PN16
20	3/4	40	35	18	33	20	37.5	(485)	(130)	(468)	(113)	90	110	±20	(365)	±30	180	150	—		
25	1	50	35	18	36.5	25	53	(475)	(110)	(458)	(93)	100	125	±20	(390)	±30	200	150	—		
32	1-1/4	50	22	20	60	25	54.5	(555)	(20)	(555)	(20)	140	165	±25	(400)	±35	255	150	120	JIS B 0203 & BS21	
40	1-1/2	55	23	20	62	27	60	(585)	(15)	(585)	(15)	150	177	±25	(445)	±35	300	150	120		
50	2	68	26	26	72	28	69	(625)	(65)	(628)	(68)	165	193	±25	(485)	±35	350	150	120		
65	2-1/2	90	28	28	80.5	46	74	(830)	(140)	(833)	(143)	180	226	±30	(600)	±45	432	150	120	JIS B 0202 & BS21	
80	3	100	28	28	87	53	85	(840)	(180)	(843)	(183)	230	283	±30	(690)	±45	482	150	150		
100	4	130	30	30	87	53	119	(930)	(120)	(930)	(120)	280	333	±30	(730)	±60	534	150	150		
150	6	130	32	32	105	70	140	(1065)	(100)	(1080)	(100)	430	500	±30	(890)	±60	750	180	150		
(200)	8	260	40	40	132.5	92	144	(1300)	(300)	(1300)	(300)	430	522	±40	(1260)	±80	1050	180	180		

( )Rough estimate

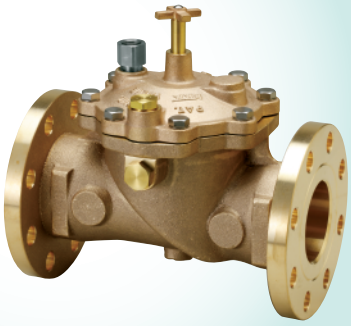
●Features:

1. The unique design of smaller double floats helps to increase water storage capacity and reduce water tank height requirements.
2. Higher working pressure provides a tightness of seat that prevents leakage, overflow, and high maintenance costs.
3. The double float design provides a double-safety feature. Even if one of the floats leak, the other will still function.
4. KKK Float Valves come with an adjustable lever that can be adjusted as required.
5. KKK Float Valves come with a built-in stainless steel strainer to protect the valve seat and to prevent it from clogging, jamming or overflowing.
6. KKK Float Valves' unique design can be fitted with a wave suppression pipe to provide wave suppression when requested.
7. Bronze prevents rust contamination of potable water.
8. The Polyethylene float never pollutes the drinking water.

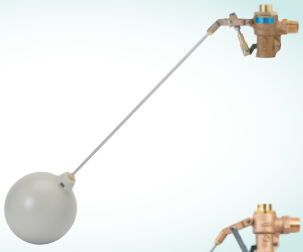
■Pilot Operated Float Valve

MODEL
DS





MODEL
FWDS



MODEL
FWD



●Basic Application:

Pilot operated float valves are used in water reservoir tanks to keep the water level constant.

●Operating Conditions:

MODEL	DS
Applicable Fluid	Water
Working Temperature	0 to 80 °C
Working Pressure (inlet)	above 0.3 to 16 Bar

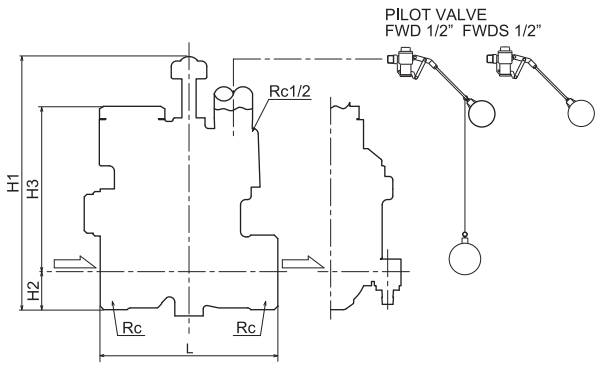
●Materials:

Description	Material
Body	Bronze
Cover	Bronze
Diaphragm	EPDM
Diaphragm plate	Stainless Steel
Spring	Stainless Steel
Adjustable Spindle	Brass
Strainer	Stainless Steel

●Dimensions:

unit:mm

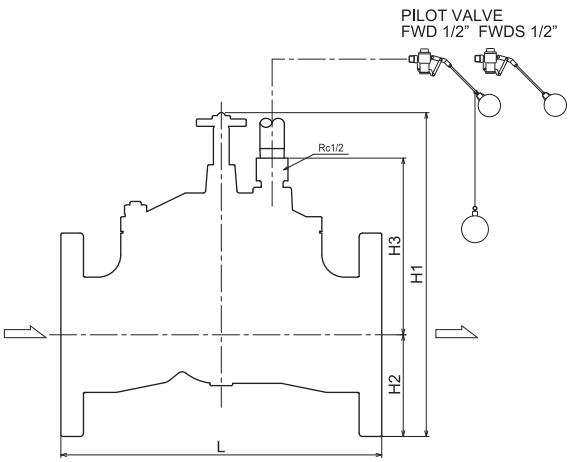
Connection Standard:JIS B 0203 & BS21



THREADED END BSPN JIS 20mm to 50mm

Nominal size mm	Nominal size inch	L	H1	H2	H3	END
20	3/4	90	136	19	90	3/4"
25	1	100	142	21	94	1"
32	1-1/4	110	154	26	99	1-1/4"
40	1-1/2	120	159	30	98	1-1/2"
50	2	140	173	37	104	2"

Connection Standard:JIS B 2240 & ISO7005-3



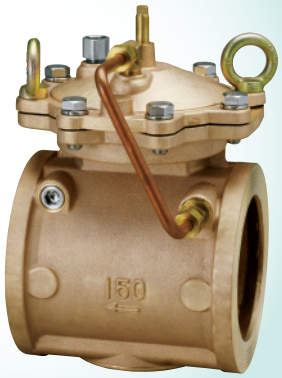
FLANGED END JIS10K (PN16) 65mm to 300mm

Nominal size mm	Nominal size inch	L	H1	H2	H3	Flange
65	2-1/2	250	267.5	87.5	140	JIS 10K
80	3	280	287.5	92.5	155	
100	4	340	315	105	184	
150	6	404	350	140	184	
200	8	510	437	165	228	
250	10	572	473	200	228	
300	12	642	667.5	222.5	265	
65	2-1/2	254	272.5	92.5	140	PN16
80	3	284	295	100	155	
100	4	348	320	110	184	
150	6	408	352.5	142.5	184	
200	8	518	442	170	228	
250	10	580	475.5	202.5	228	
300	12	650	675	230	265	

■Pilot Operated Float Valve Wafer Type

MODEL

DRWP



Pilot Valve

MODEL

FWD



●Basic Application:

Pilot operated float valves are used in water reservoir tanks to keep the water level constant.

●Operating Conditions:

MODEL	DRWP
Applicable Fluid	Water
Working Temperature	0 to 80 ℃
Working Pressure (inlet)	above 0.3 to 16 Bar

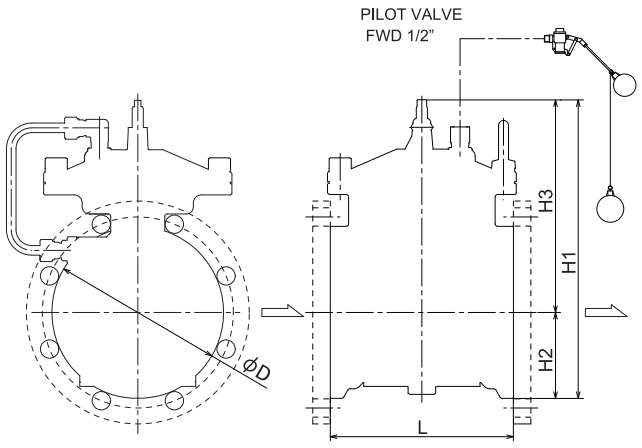
●Materials:

Description	Material
Body	Bronze
Cover	Bronze
Diaphragm	EPDM
Diaphragm plate	Stainless Steel
Spring	Stainless Steel
Adjustable Spindle	Brass
Seat	Stainless Steel

●Dimensions:

unit:mm

Connection Standard:JIS B 2240 & PN16(BS4504)



WAFER CONNECTION JIS10K or PN16 65mm to 200mm

Nominal size mm	Nominal size inch	L	H1	H2	H3	ϕD	END
65	2-1/2	140	(252)	61	(191)	122	JIS 10K
80	3	180	(281)	66	(215)	132	
100	4	190	(301.5)	78.5	(223)	157	
125	5	225	(339)	94	(245)	188	
150	6	230	(373)	108	(265)	216	
200	8	310	(479)	134	(345)	268	
65	2-1/2	140	(253.5)	62.5	(191)	125	PN16
80	3	180	(285)	70	(215)	142	
100	4	190	(303)	80	(223)	160	
125	5	225	(341)	96	(245)	192	
150	6	230	(373)	108	(265)	216	
200	8	310	(480.5)	135.5	(345)	271	

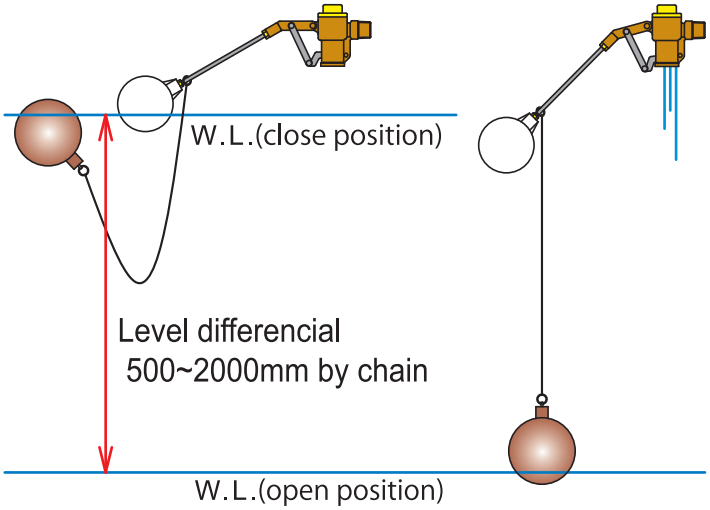
●Features:

1. The small-bore size of the pilot valve is advantageous in securing water reserve with a small air gap.
2. The water level of the storage tank can be easily adjusted by extending or shortening the length of the pipes.
3. The perforated stainless strainer lengthens diaphragm and seat life with its filtering and dynamic flow speed control.
4. Flow rate can be controlled from full open to full close by turning the adjustable spindle (especially useful in drought conditions).
5. Stainless steel seats avoid damage from dust much more effectively than bronze ones.
6. In comparison with side cover units, internal components.
7. Pilot operated valves are recommended when separately installing main valves (even over a long distance).
8. Bronze prevents red rust contamination of potable water.

■Pilot Valves for DRWP

MODEL
FWD



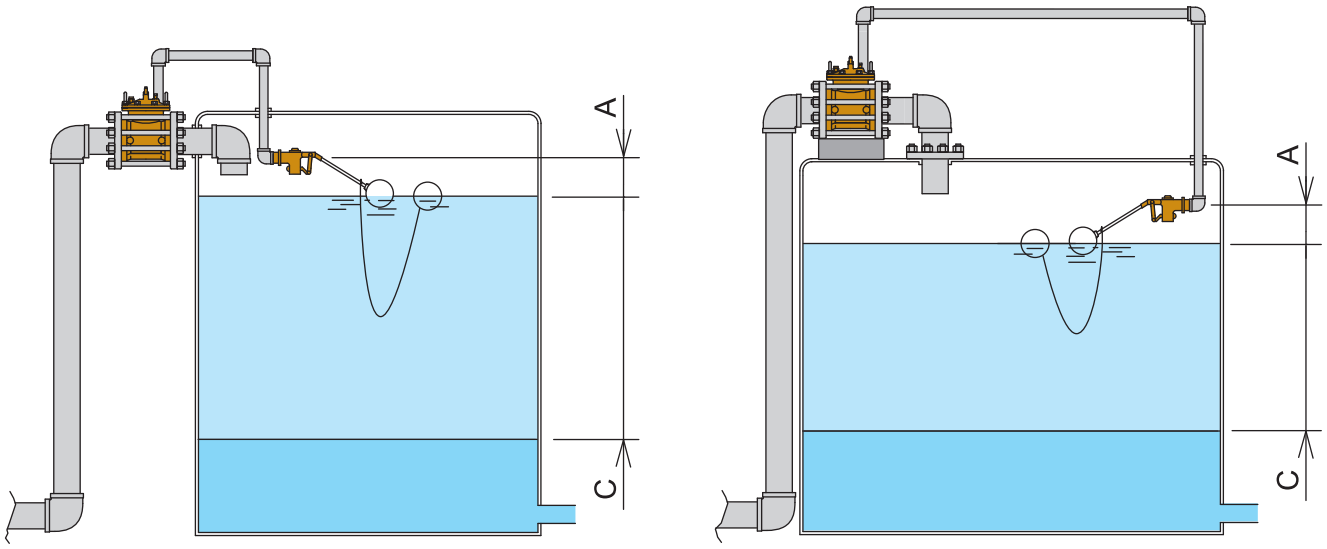


●Advantages:

1. The FWD pilot valve is designed to close tight when the water level reaches a preset maximum height (for the first time operation). Afterwards, it opens whenever the water level drops approx. 500, 1000, 1500 or 2000mm. Thus FWD provides accurate water level control in the tank.
2. The FWD pilot valve is designed with a float attached at the end of a chain. Large water differential between the valve opening and closing can be achieved according to the chain length.
3. The FWD pilot can be installed at any height.
4. The FWD pilot has no guide. This prevents water contamination from worms or dust from outside the tank.
5. FWD pilot can be removed easily for maintenance purposes.
6. FWD pilot can reduce a lot of pump noise and pump electricity consumption, during peak hour of pumping thus lengthening the pump's life.

INSTALLATION DIAGRAM

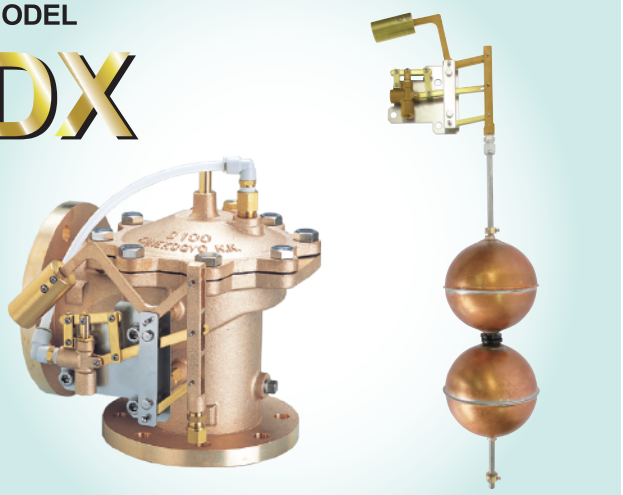
A:150mm (minimum) B:170mm C:500, 1000, 1500, 2000mm

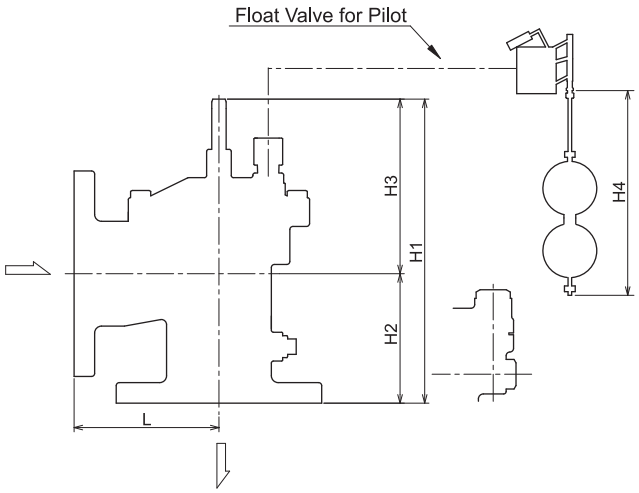


■Pilot Operated Float Valves Flanged End

MODEL

DX





●Basic Application:

Pilot Operated Float Valves DX are used with water reservoir tanks to keep the water level constant.

●Operating Conditions:

MODEL	DX
Applicable Fluid	Water
Working Temperature	0 to 60 °C
Working Pressure (inlet)	above 0.3 to 16 Bar
Shell Test Pressure	24 Bar

●Materials:

Description	Material
Body	Bronze
Cover	Bronze
Diaphragm	EPDM
Guide	Bronze
Spring	Stainless Steel
Seat	Stainless Steel
Strainer	Stainless Steel
Resistor A,B	Plastic

●Dimensions:

unit:mm

Nominal size		L	H1	H2	H3	H4	END Flang Connection
mm	inch						
80	3	140	281	126	132	1000 to 2000	PN16 (BS 4504)
100	4	170	308	137	171		
150	6	200	338	167	171		

●Features:

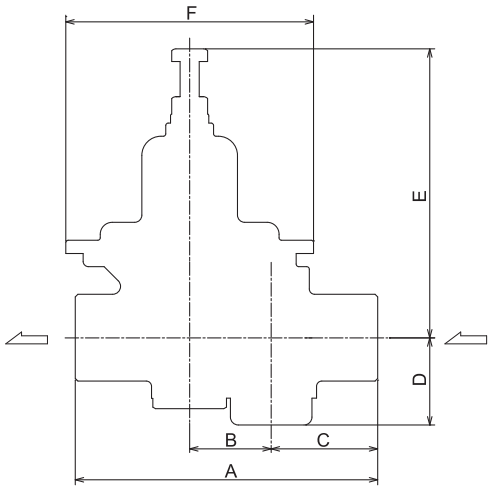
1. Extremely compact design is advantageous in limited space installation.
2. The water level of the storage tank can easily be adjusted by changing the length of the rod.
3. Perforated strainer lengthens diaphragm life.
4. Flow rate can be controlled from full open to full close by screwing the adjustable spindle (especially useful during droughts).
5. The stainless steel seat prevents damage from dust much more effectively than a bronze one.
6. In comparison with a side cover, the top cover features easy maintenance of internal components.
7. Bronze prevents red rust contamination of potable water.

■Pressure Reducing Valve

MODEL

KRY





●Basic Application:

KRY Pressure Reducing Valves are used at various places, such as buildings, plants, cold/hot water supply systems, etc. The KRY valve limits the water supply pressure to keep it below a desired pressure in all cases.

●Operating Conditions:

MODEL	KRY
Applicable Fluid	Water
Working Temperature	0 to 80 °C
Working Pressure (inlet)	above 0 to 16.0 Bar
Set Pressure Range Selection ※	15～40mm : 1.0～3.5Bar, 3.5～ 5.5Bar 5.5～7.5Bar, 7.5～12.0Bar
	50mm : 1.0～2.0Bar, 2.0～ 3.5Bar 3.5～6.5Bar, 6.5～12.0Bar
Standard Set Pressure (outlet)	2 Bar
Shell Test Pressure	24 Bar
Rated Flow Rate (L/min)	15～25mm : 50 L/min 32～40mm : 100 L/min 50mm : 120 L/min

※Choice of spring range

●Materials:

Description	Material
Body	Bronze
Spindle	Bronze
Diaphragm	EPDM
Disc	EPDM
Disc Cap	Bronze
Cover	Bronze
Spring	Oil Temp.Wire
Strainer	Stainless Steel
Strainer Cap	Bronze
Adjustable Spindle	Brass

●Dimensions:

unit:mm

Connection Standard:JIS B 0203 & BS 21							
Nominal size		A	B	C	D	E	F
mm	inch						
15	1/2	115	32	39.5	33.2	(~109)	φ90
20	3/4	115	32	39.5	33.2	(~109)	φ90
25	1	115	32	39.5	33.2	(~109)	φ90
32	1-1/4	140	48	43	47.5	(~124.5)	φ90
40	1-1/2	140	48	43	47.5	(~124.5)	φ90
50	2	153	53	46.5	(72.2)	(~122)	φ90

●Features:

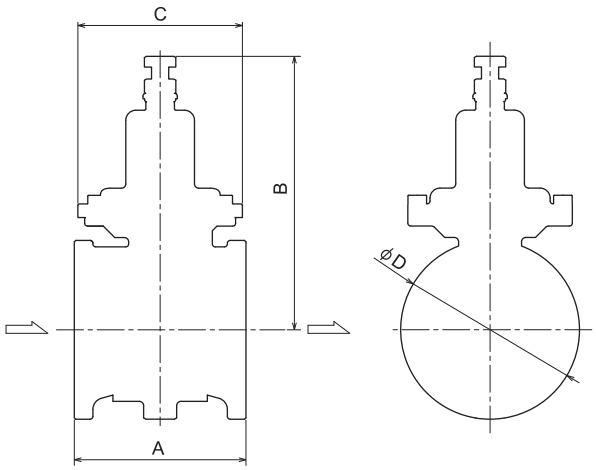
1. Bronze is used in the body, valve spindle, and other parts to resist rust and zinc contamination. Stainless steel materials are also used in the main parts to ensure water purity.
2. KRY uses a balanced pressure mechanism that responds to changes in the water supply pressure to ensure stable secondary pressure.
3. This unit incorporates a strainer which can be cleaned easily by simply removing the strainer cap at the supply side.
4. KRY can be installed either vertically or horizontally.

■Pressure Reducing Valve Wafer Type

MODEL

KRW





●Basic Application:

Pressure Reducing Valves KRW are used at various places, such as buildings, plants, cold/hot water supply systems, etc.

●Operating Conditions:

MODEL	KRW
Applicable Fluid	Water
Working Temperature	0 to 80 ℃
Working Pressure (inlet)	above 0 to 16.0 Bar
Set Pressure Range Selection ※	65,80,125mm : 1.0～2.0Bar, 2.0～3.5Bar, 3.5～ 6.5Bar, 6.5～12.0Bar 100mm : 1.0～4.0Bar, 4.0～7.0Bar, 7.0～10.0Bar, 10.0～12.0Bar 150mm : 1.0～2.0Bar, 2.0～4.0Bar, 4.0～ 7.0Bar, 7.0～10.0Bar
Standard Set Pressure (outlet)	2 Bar
Shell Test Pressure	24 Bar
Rated Flow Rate (L/min)	65mm : 190 L/min, 80mm : 430 L/min, 100mm : 650 L/min, 125mm : 1100 L/min 150mm : 1300 L/min

※Choice of spring range

●Dimensions:

unit:mm

Nominal size		A	B	C	ϕD	
mm	inch				JIS10K	PN16
65	2-1/2	120	~200	ϕ115	122	125
80	3	140	~270	ϕ133	132	142
100	4	160	~350	Oct 177	157	160
125	5	190	~400	Oct 200	188	192
150	6	230	~500	Oct 237	216	216

●Materials:

Description	Material
Body	Bronze
Valve Spindle	Bronze / Stainless Steel*
Diaphragm	EPDM
Spring	Oil Temp Wire
Cover	FC
Adjustable Spindle	Brass
Disc	EPDM

* 65～125mm Bronze 150mm Stainless Steel

●Features:

1. KRW`s special wafer design provides easy installation and reduces its weight by 50% thereby successfully shortening previous installation time by 50%.
2. KRW uses a balanced pressure mechanism which responds to the changes in water supply pressure.
3. Main parts are made of bronze and stainless steel to prevent rust contamination.
4. Simple disassembly and assembly features easy maintenance.
5. KRW can be installed either vertically or horizontally.

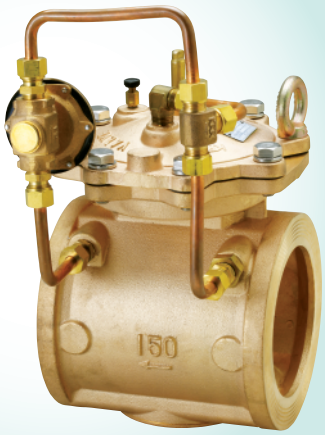
●Caution:

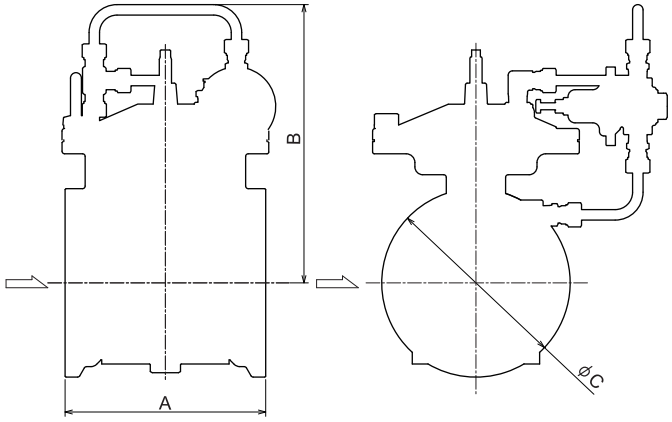
This is a wafer style designed valve.
Installation must be between flanges with gaskets and tightened using long stub bolts and nuts.

■Pilot Operated Pressure Reducing Valve, Wafer Type

MODEL

KRWP





●Basic Application:

Pressure Reducing Valves KRWP are used with water distribution pipes, plumbing system, plants. where large flow and space saving is required. ※1

●Operating Conditions:

MODEL	KRWP
Applicable Fluid	Water
Working Temperature	0 to 80 ℃
Working Pressure (inlet)	above 0 to 16.0 Bar
Set Pressure Range Selection ※	1.0～3.5Bar, 3.5～ 5.5Bar 5.5～7.5Bar, 7.5～12.0Bar
Standard Set Pressure (outlet)	2 Bar
Shell Test Pressure	24 Bar

※Choice of spring range

●Dimensions:

unit:mm

Nominal size		A	B	ϕC	
mm	inch			JIS10K	PN16
65	2-1/2	140	(295)	122	125
80	3	180	(315)	132	142
100	4	190	(350)	157	160
125	5	225	(320)	188	192
150	6	230	(330)	216	216
200	8	310	(390)	268	271

●Materials:

Description	Material	Description	Material
Body	Bronze	Disc	EPDM
Cover	Bronze	Valve Seat	Bronze
Diaphragm	EPDM	Disc Cap	Bronze
Flow Regulator	Bronze	Pilot Valve	Bronze
Valve Spindle	Stainless Steel		

●Features:

1. KRWP has been designed as wafer style for easy installation by reducing its weight by 50% and successfully shortening previous installation time by 50%.
2. Main parts are made of bronze and stainless steel to prevent rust contamination.
3. The open degree of the main valve is manipulated by an adjustable spindle to control water flow.
4. Simple disassembly and assembly features easy maintenance.
5. KRWP can be installed either vertically or horizontally.

●Caution:

This is a wafer style designed valve. Installation must be between flanges with gaskets and tightened using long stub bolts and nuts. In case of vertical installation, make sure all air inside the diaphragm chamber is completely discharged to the atmosphere.

※1 Direct actuated pressure reducing valves control the downstream pressure during the condition of water flowing and under the valve closing condition.
Pilot operated pressure reducing valves can control the outflow pressure during the water is flowing.

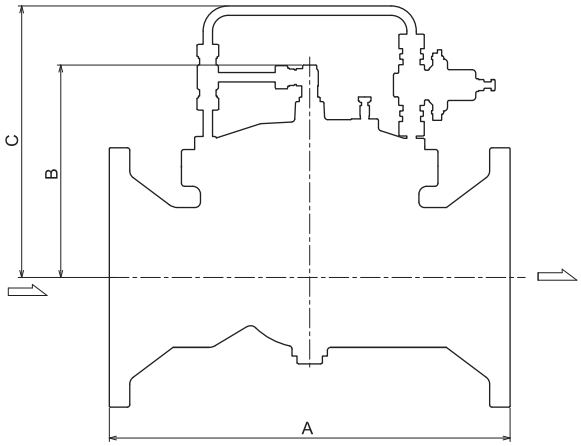
■ Pilot Operated Pressure Reducing Valve For Fire Hydrant / Sprinkler piping System

MODEL

KRT



※The photo is for illustrative purposes only.



FLANGED END ANSI CLASS150

●Basic Application:

Pressure Reducing Valves KRT are used at water distribution pipes, buildings, plants. where large flow is required.

●Operating Conditions:

MODEL	KRT
Applicable Fluid	Water
Working Temperature	0 to 80 ℃
Working Pressure (inlet)	above 0 to 20 Bar
Set Pressure Range Selection ※	1.5～2.0Bar, 2.0～ 3.5Bar, 3.5～7.0Bar, 7.0～12.0Bar
Standard Set Pressure (outlet)	7 Bar
Shell Test Pressure	30 Bar

※Choice of spring range

●Materials:

Description	Material	Description	Material
Body	Ductile Iron	Valve Seat	Stainless Steel
Cover	Ductile Iron	Adjustable Spindle	Brass
Diaphragm	EPDM	Guide	Bronze
Diaphragm Shaft	Stainless Steel	Pilot Valve	Bronze
Spring	Stainless Steel	Flow Regulating	Bronze

●Dimensions:

unit:mm

Connection Standard:ASME B 16.5					
Nominal size		A	B	C	Flange
mm	inch				
100	4	314	210	370	ANSI CLASS150
150	6	400	250	400	
200	8	526	330	460	

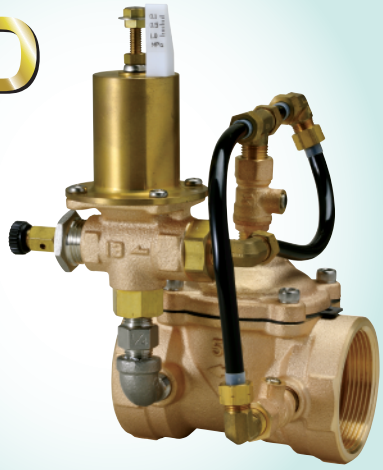
●Features:

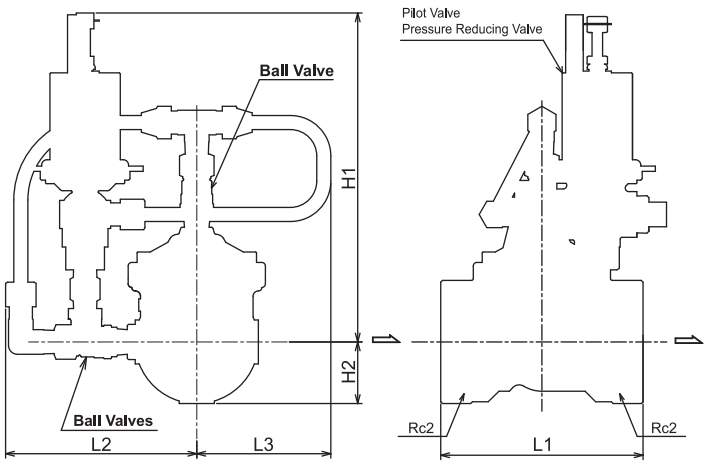
1. KRT is a pilot operated pressure reducing valve, which provides greater water flow with stable pressure.
2. The open degree of the needle valve is adjusted with work conditions of KRT.
3. The main body of KRT is coated with epoxy resin.
4. Simple disassembly and assembly features easy maintenance.
5. The open degree of the main valve can be adjusted by turning the spindle to restrain water flow.

■Pilot Operated Constant Pressure Reducing Valve

MODEL

KRD





●Basic Application:

KRD units are used in hotels, hospitals and condominiums where a stable pressure of cold and hot water supply is required under any conditions.
In cases where water heaters and pumps are used, the increase and decrease of outflow temperature is also caused by the fluctuation of outlet pressure.
It is possible to solve the above problems by installing a KRD on all water pipes and hot water pipes before taps and showers.

●Operating Conditions:

MODEL	KRD
Applicable Fluid	Water (Cold/Hot)
Working Temperature	Cold : 0 to 80°C , Hot : 0 to 90°C
Working Pressure (inlet)	1.5 to 16 Bar
Set Pressure (outlet)	1 to 10 Bar
Standard Set Pressure (outlet)	3 Bar
Shell Test Pressure	24 Bar

●Materials:

Description	Material
Body	Bronze
Diaphragm	EPDM/FKM
Spring	Stainless Steel
Cover	Bronze
Pipe	PA/Copper

●Dimensions:

unit:mm

Connection Standard:JIS B 0203 & BS21						
Nominal size		L1	L2	L3	H1	H2
mm	inch					
40	1-1/2	110	(103)	(76)	(187)	25
50	2	115	(109)	(76)	(187)	50

●Features:

1. The KRD is a pilot operated pressure reducing valve that provides greater flow with constant outlet pressure.
2. The open degree of the needle valve has been set to maintain a stable outlet pressure to within 6% of the outlet pressure fluctuation.
3. KRD has low head loss and provides fixed pressure from little flow to great flow.
4. Outlet pressure can be easily set from 0.1MPa to 1.0MPa. (Set pressure scale indicated)
5. The main parts of the KRD are made of bronze and stainless steel to prevent rust contamination.

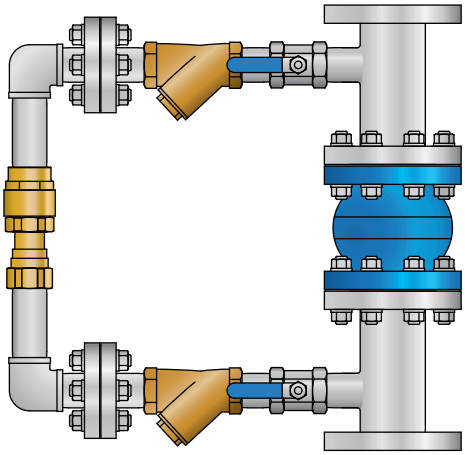
■Water Hammer Eliminator : HA unit

MODEL

HA



HA unit



*Locally Assembled HA unit

●Operating Conditions:

MODEL	HA unit
Applicable Fluid	Water
Working Temperature	0 to 60 °C
Working Pressure for HA	above 0 to 50 Bar
Working Pressure for HA unit	20 Bar, 25 Bar, 30 Bar
Shock Elimination Ability	300 Bar
Connection Fiange	PN16, PN25

●HA unit Nominal Pipe Size:

inci	2”	2 1/2”	3”	4”	5”	6”	8”	10”	12”
mm	50	65	80	100	125	150	200	250	300

●Basic Application:

The Water Hammer Eliminator HA unit, the key component of the Assembly, was engineered for use in high-rise buildings to eliminate the back pressure of water hammering caused by stopping of the booster and transfer pumps.
It can be widely used for the water pumping system of high building such like Office, Hotel, Hospital, Condominium, Towers, Buildings.
A check valve should be installed just after the pump, also ensure that the HA unit Assemble is installed downstream of the first check valve. When the pump stops, the HA unit can successfully release water hammer pressure by discharg-ing water from the drain port. The HA unit drain should be connected to a water tank or discharged to a floor trap connection.

●Features:

1. HA can successfully eliminate the noise of water hammering in 0.02 seconds.
2. HA is able to release the extra pressure of water-hammer to protect pipes, pumps, valves, fittings and other equipment from water hammering damage.
3. HA is more durable than conventional water hammer arrestors.
4. HA doesn`t need extensive water volume or pipe size/length calculations before installation.

■Water Hammer Eliminator : HA unit

●Available HA unit Materials:

Description	Material
KKK Water Hammer Eliminator (HA)	Bronze
Silent Check Valve	Ductile Iron
	Cast Steel
	Stainless Steel
Ball Valve(Full Bore)	Bronze
	Dzr Brass
	Brass
Y-Strainer	Bronze
	Dzr Brass
	Brass
Flamge	Stainless Steel
	Steel
	Ppr
Union	Stainless Steel
	Forged Steel
	Ppr
Pipe System	Carbon Steel
	Stainless Steel
	Copper

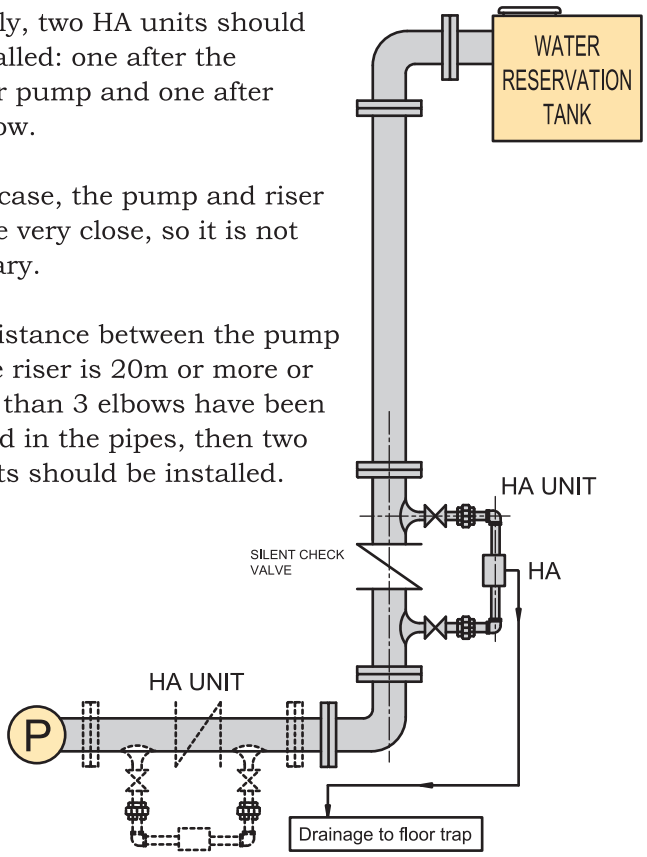
※ : Locally

●Overview Of HA unit Installation:

Basically, two HA units should be installed: one after the transfer pump and one after the elbow.

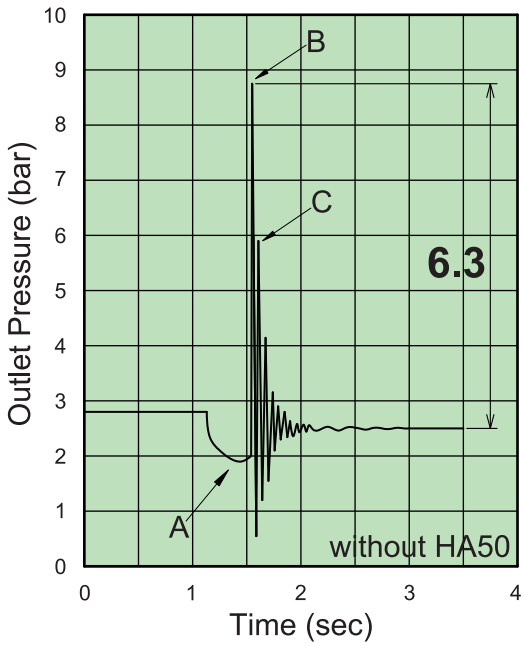
In this case, the pump and riser pipe are very close, so it is not necessary.

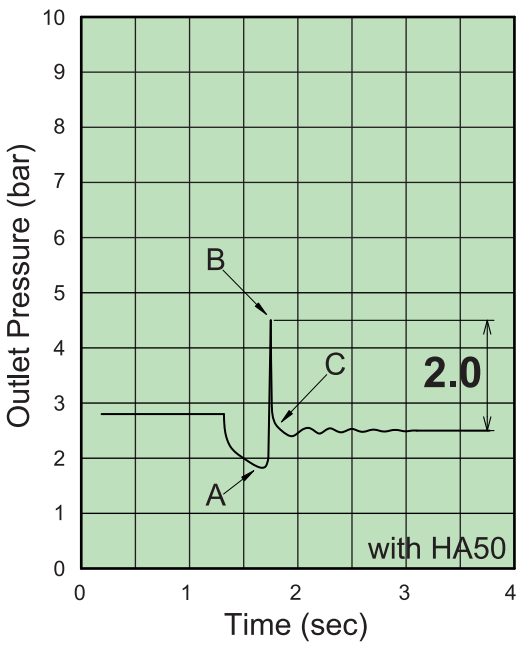
If the distance between the pump and the riser is 20m or more or if more than 3 elbows have been installed in the pipes, then two HA units should be installed.



●Water Hammer Characteristics:

Test Conditions : 1. Velocity in pipe 2m/sec 2. Vertical pipe lenght 20m (Nominal size 2", Flow rate 236L/m)





Remark : We reserve the rights to change the technical information at anytime without prior notice.

■Water Hammer Eliminator : HA unit

●HA Operating Principles:

HA allows up to 0.2 bars of pressure difference between the check valve chamber and the relief valve. HA relief valve starts to discharge water to the atmosphere when the down- stream pressure of HA becomes 0.2 bars higher than the upstream pressure

1. Normal Condition (Booster/Transfer Pumps is operating):

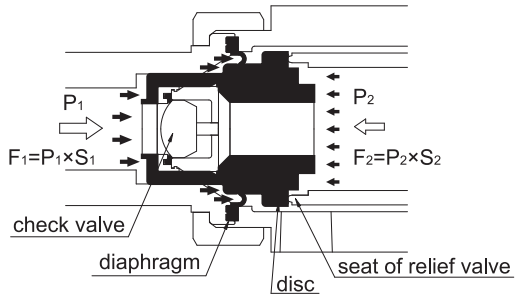
Downstream pressure after the check valve is lower than upstream pressure before the check valve.

2. Hammer Condition (Pump is stopped):

The weight of downstream water suddenly causes back flow. Backflow water punches the check valve seat causing the first noise, or shock, of water hammering.

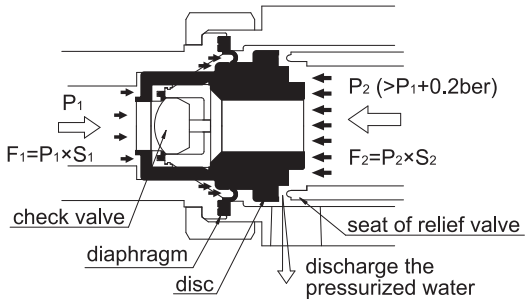
3. Eliminate Condition (Just after first shock):

If the first shock is bigger than 0.2bars, then the HA relief valve unit starts to discharge extra pressurized water to the atmosphere in 2/100 of a second until the downstream pressure becomes the same as upstream pressure.



$F_1=P_1\times S_1 > F_2=P_2\times S_2$ ⇨ HA relief valve is closing.

FIG1.Nominal condition



$F_1=P_1\times S_1 > F_2=P_2\times S_2$ ⇨ HA relief valve is closing.

FIG2.Eliminating condition

●Differences Between a Conventional Pump Room and a HA Unit Pump Room

Conventional System

1. FIG.1 needs a lot of space for the pressure tanks.
2. The pressure tanks need yearly maintenance and are very expensive.
3. The pressure tanks can not prevent water hammering caused by check valve damage.

HA Unit Advantages

1. In FIG.2, not much space is needed for the pump room.
2. One HA unit is enough to replace several pressure tanks!!
3. The HA unit can eliminate water hammering even when a check valve is damaged.
4. High Pressure up to 30Bar.
5. Simply to instratation.

HA Unit: Achieves Extraordinary Cost Savings!!!

Piston type

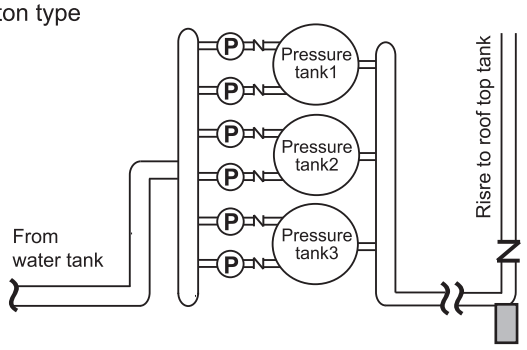


FIG1.Conventional Pump Room

Water hammer arrestor

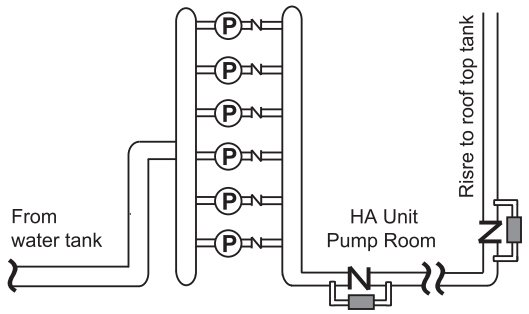


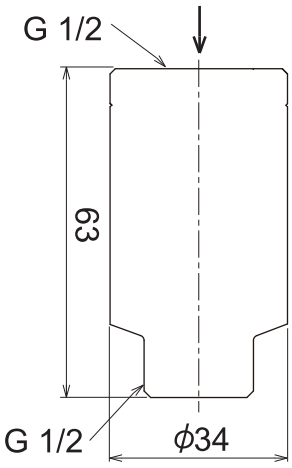
FIG2.New style of Pump Room

■Pressure Vacuum Breaker

MODEL

QB





●Operating Conditions:

MODEL	QB	
Nominal Size	15 mm	1/2 inch
Applicable Fluid	Water	
Working Temperature	0 to 85 °C	
Working Pressure (inlet)	0 to 16 Bar	
Installation Type	In-line	
Check valve unit	mounted	

●Materials:

Description	Material
Case	Bronze
Cap	Bronze
Vacuum disc	Silicon
Check Valve	Synthetic resin
Check disc	Silicon
Spring	Stainless Steel

●Features:

1. Model QB is designed as a pressure vacuum breaker to install to upstream side of the Kitchen, Toilet and Bath room where the terminal stop functions are incorporated with their shower head.
2. Model QB is an in-line type of the backflow prevention device, and is not only incorporating a check valve function but also incorporating a dynamic check valve chamber. This shows that Model QB has two functions as conventional vacuum breaker and check valve.
3. Model QB can prevent backflow contamination of washing machine, garden sprinkler system etc.

●Typical applications:

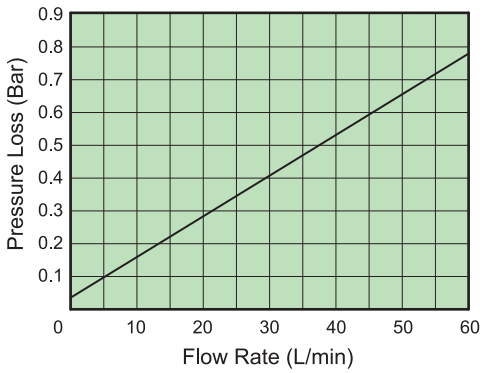


◇Pressure Vacuum Breaker

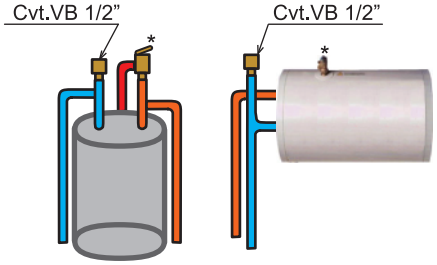
Caution: *2
From floor/ water level.to QB shall be kept at least 150mm.



●Pressure Characteristics:

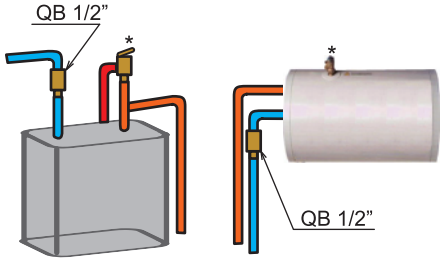


◇Conventional Vacuum Breaker
(without check function)



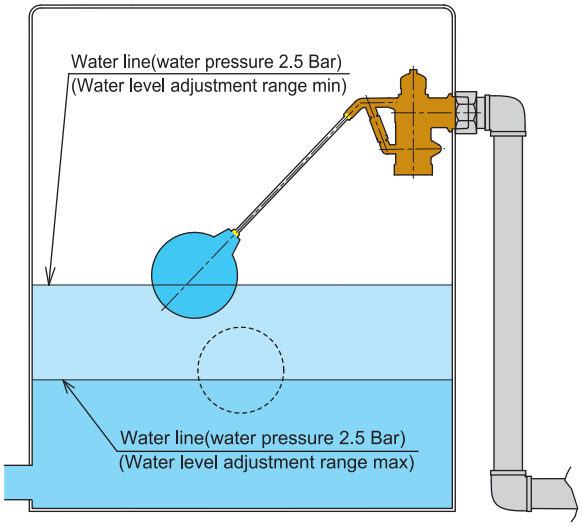
*Pressure/ Thermal Relief Valve

◇Pressure Vacuum Breaker
(check valve incorporated)

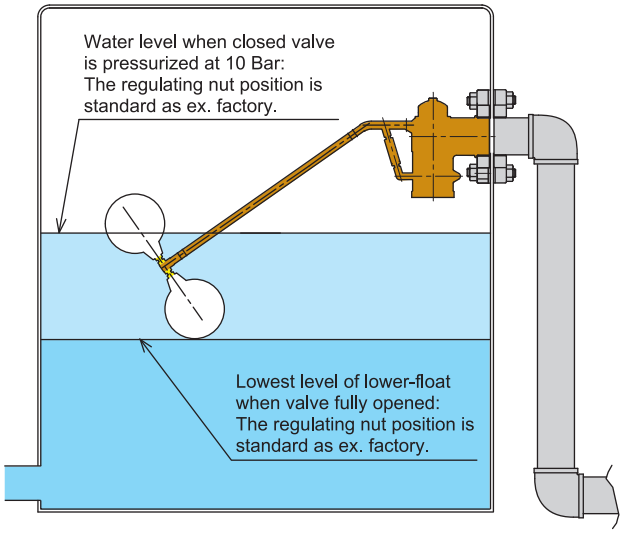


■Float Valves : Installation Diagram

MODEL：FW



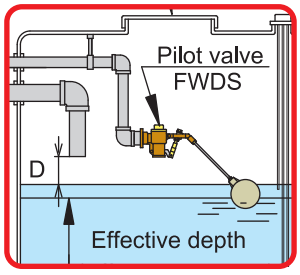
MODEL：FWSP/FWFP



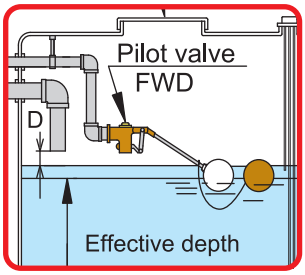
■Pilot Openated Float Valves : Installation Diagram

MODEL:DS,DRWP (FWDS,FWD)

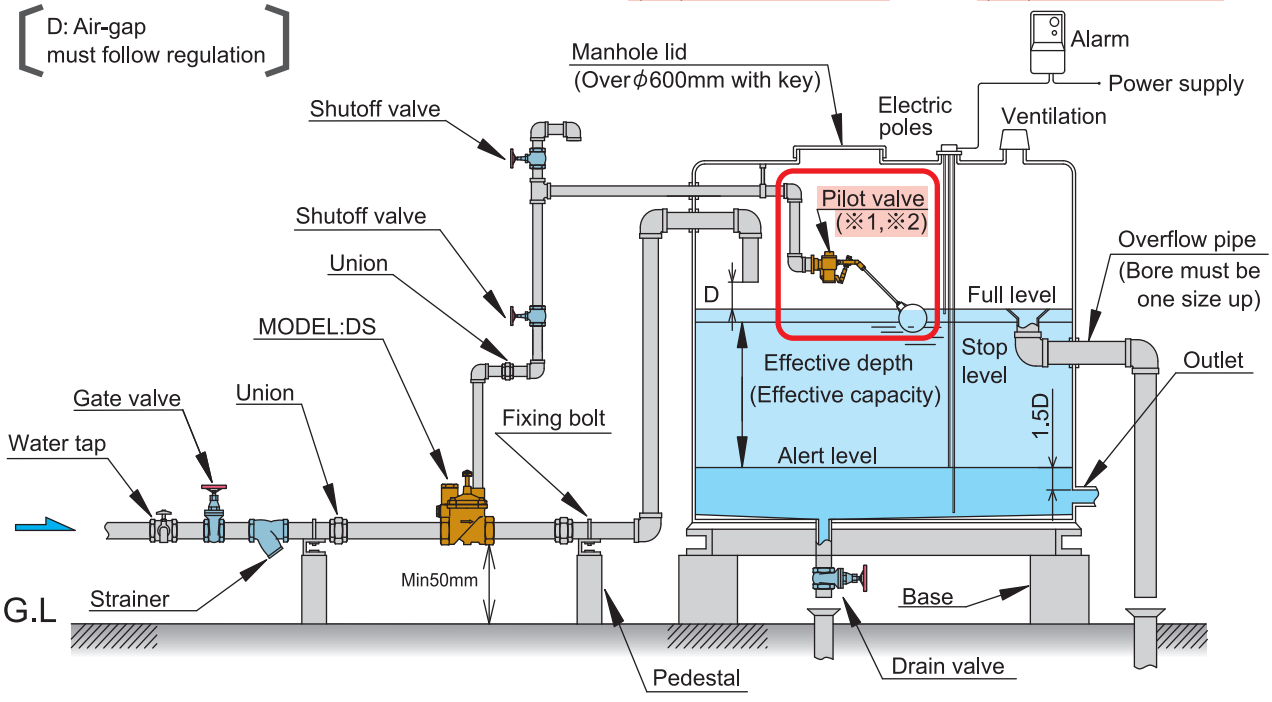
※Below is the standard installation in Japan.



(※1)Pilot valve：FWDS



(※2)Pilot valve：FWD



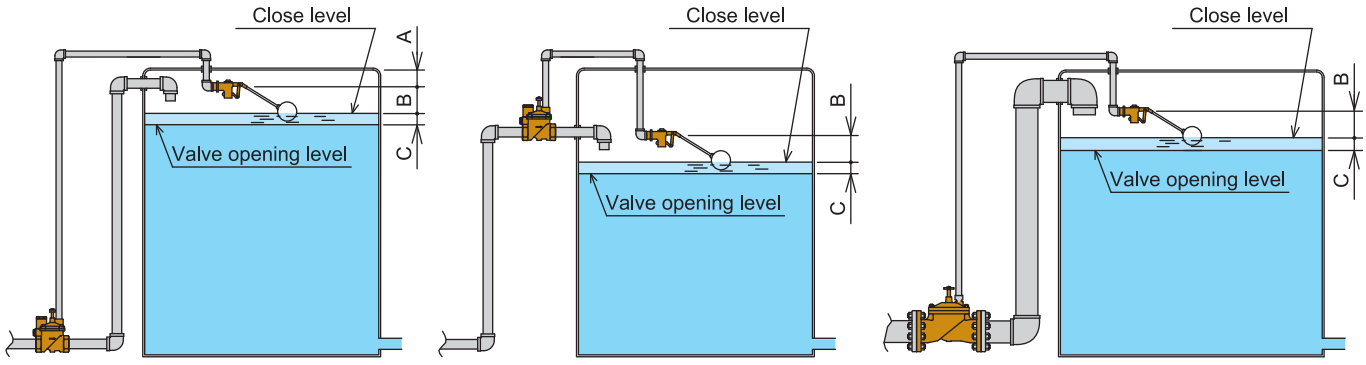
●Caution:

Please make sure to install FWD as such that during FWD operation, the float to open the valve and chain (of 500,1000,2000mm) won’ t wind into any nearby pipes, etc.

■Pilot Operated Float Valves : Installation Diagram

MODEL : DS PILOT VALVE(FWDS)

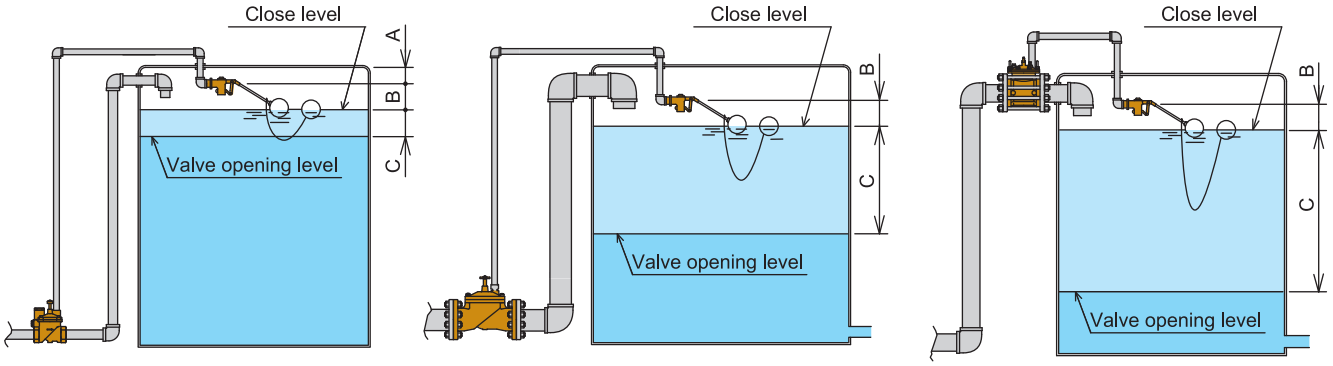
A:150mm (minimum) B:170mm C:100mm (level differential)



MODEL: DS　　MODEL: DS(flange)

MODEL : DS, DRWP PILOT VALVE(FWD)

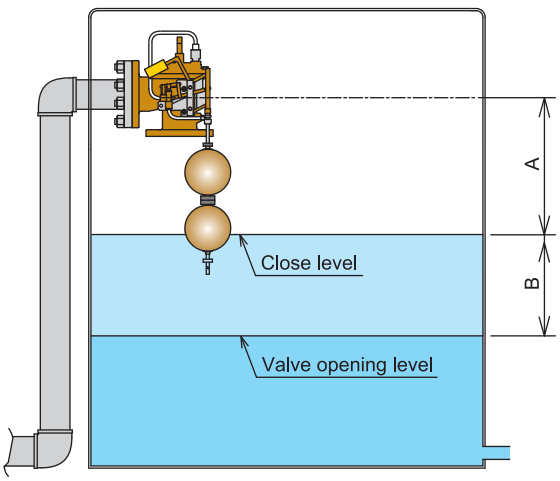
A:150mm (minimum) B:170mm C:500, 1000, 1500, 2000mm



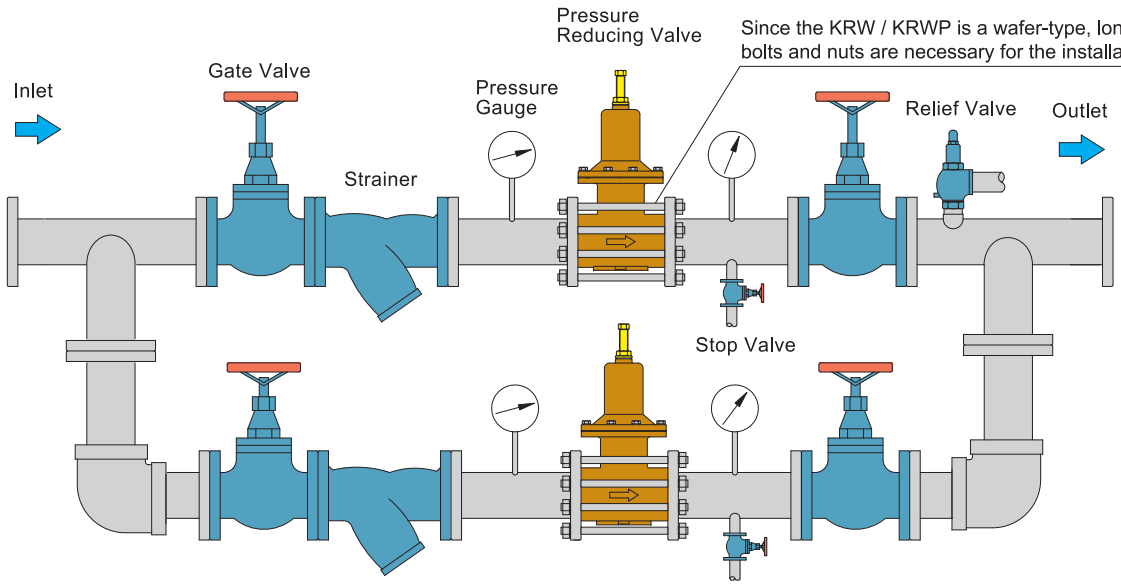
MODEL: DS　　MODEL: DS(flange)　　MODEL: DRWP

MODEL : DX INSTALLATION ＜Inside Tank＞

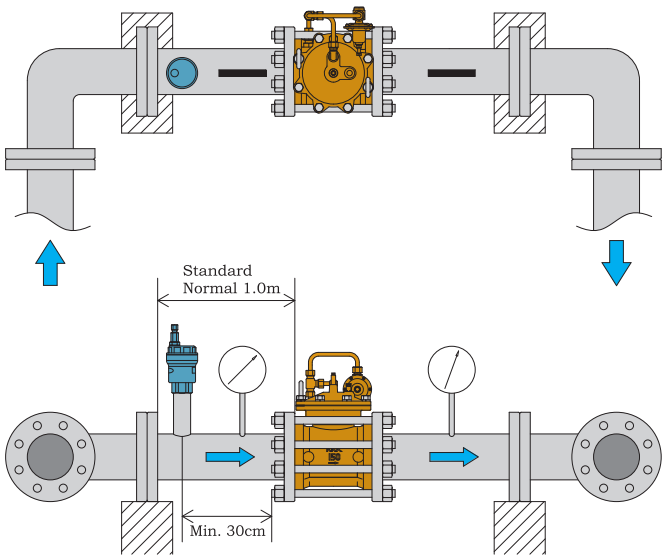
A:500～1800mm B:100～1400mm



■Pressure Reducing Valves : Installation Diagram



※ Open the stop valve during maintenance.
※ Setting pressure of bypass side ≧ main side +0.5-1.0bar.



●Caution:

Don't install KRW/KRWP/KRT main valves at tilted angles on horizontal pipes.
This may cause serious vibration or noise due to incomplete discharging of the air inside the main or pilot valve and diaphragm chamber of the main valve.

●Note:

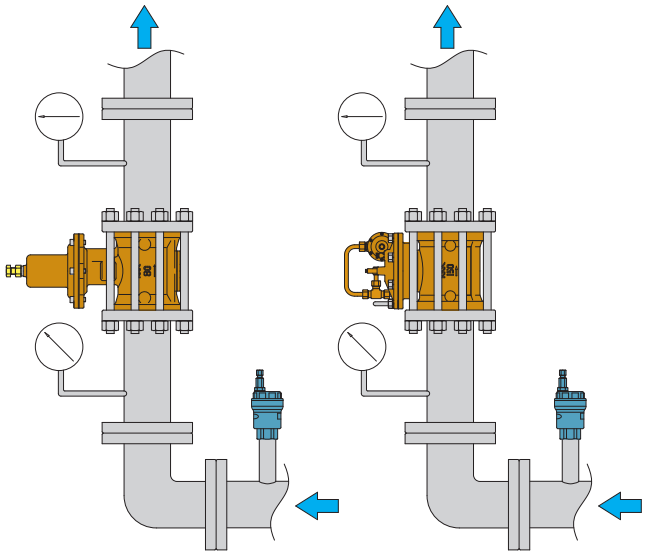
In case there is no space like the above piping, keep a distance of 1.0 to 1.5m of piping between the elbows and the P.R.V. Install an air vent (size 1" or above) before the KRWP within a minimum distance of 30cm.
To prevent unexpected turbulant flow, it is not recommended to install elbows within a distance that is 10 times the bore size.

●Caution:

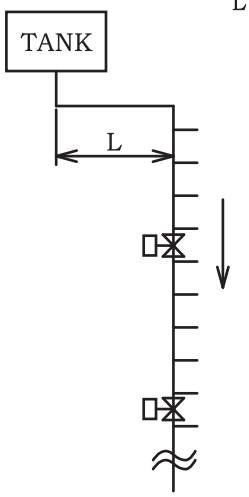
In case of vertical installation of KRW/KRWP/KRT, it is insufficient to discharge air in the main or pilot valve by opening the air releasing cock.
Unfasten several diaphragm bolts and nuts until all the air is discharged. Without the above precaution, serious vibration or noise may occur due to the incomplete discharging of the air inside the main or pilot valve and diaphragm chamber of the main valve.

●Note:

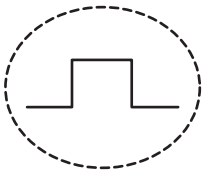
In the case of vertical KRW/KRWP/KRT installation when there is no place to install an air vent on the riser, be sure to install an air vent on the horizontal pipe before the valve.



■Pressure Reducing Valves : Installation Note



L: Please do not apply a horizontal piping on the roof.
Recomended length : with in 10 meters.
If L is long , it may cause water hammer.



Please avoid using an angle piping which may easily cause dead air space.
It may cause vibration.

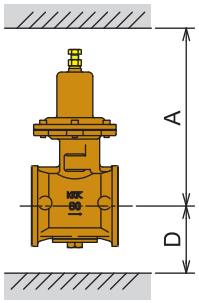
●CAUTIONS: (See installation diagrams)

1. Bypass Pipe
   A bypass pipe, necessary to facilitate cleaning or maintenance of the pipes, should be installed as shown.
2. Straight Pipe
   A straight pipe should be installed before the main valve to secure stable operation of the valve. The length of the straight pipe should be 10 times the pipe bore size to prevent turbulant flow.
3. Air Vent
   An air vent should be installed before the main valve to discharge all the air to prevent vibration and noise in the system.
4. Pressure Gauge
   Pressure gauges should be installed at the inlet side and the outlet side of the main valve, or downstream of the bypass pipe where the gauge can be easily read.

●Maintenance Spaces for KRW,KRWP,DRWP,KRT

Maintenance spaces should be as shown below.

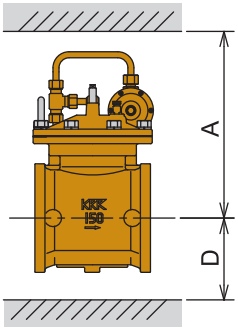
MODEL : KRW

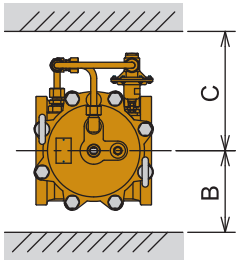


unit : mm

Size	A	D
65	400	400
80	500	400
100	600	450
125	700	450
150	800	500

MODEL : KRWP/DRWP

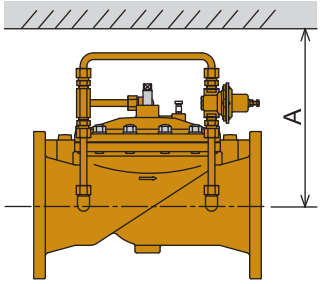


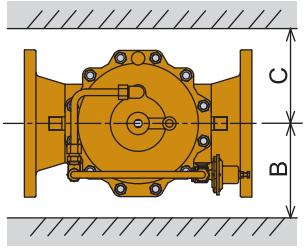


unit : mm

Size	A	B	C	D
65	600	400	450	450
80	600	400	450	450
100	600	450	500	500
125	600	450	500	500
150	600	500	500	500
200	700	500	600	600

MODEL : KRT

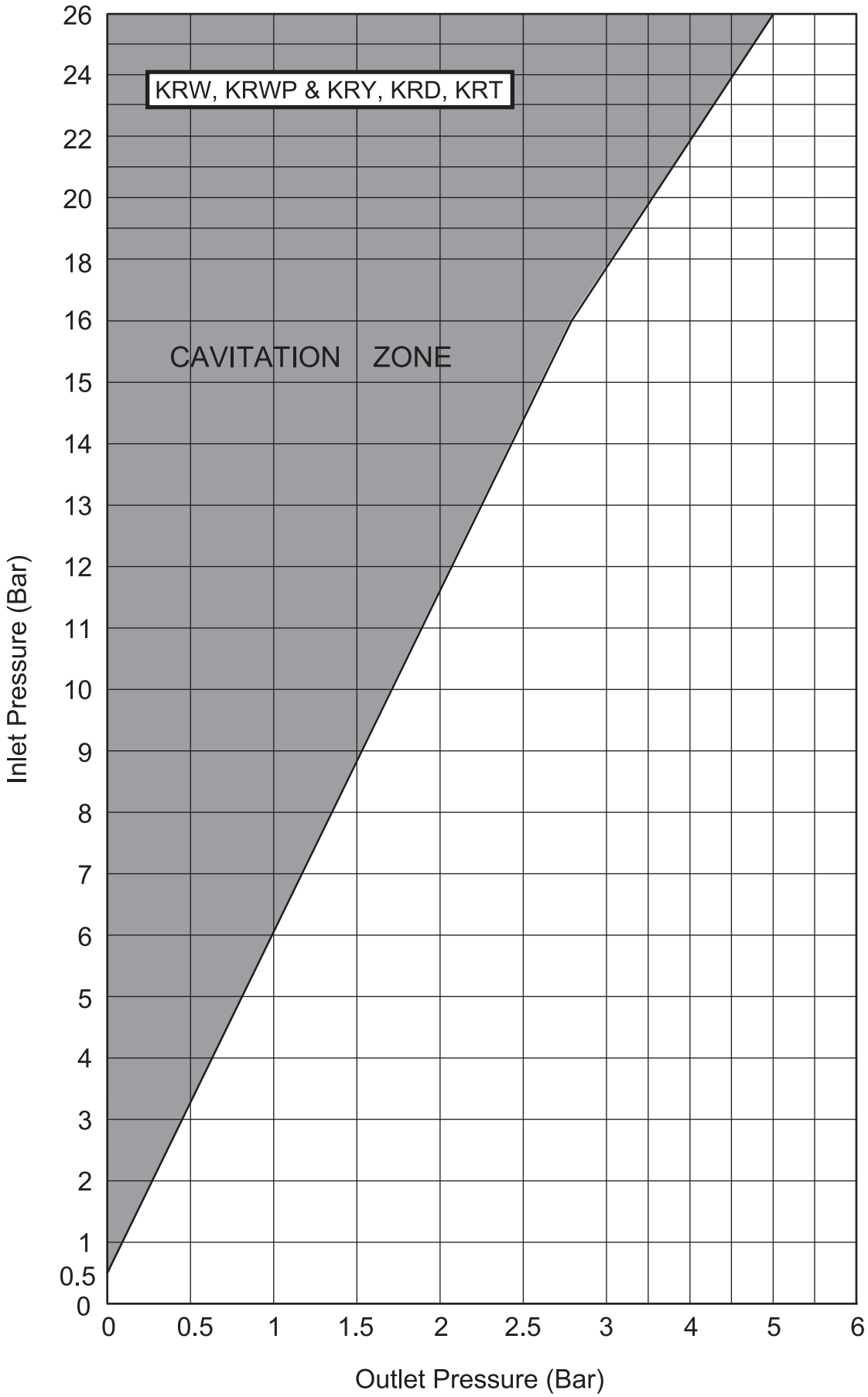




unit : mm

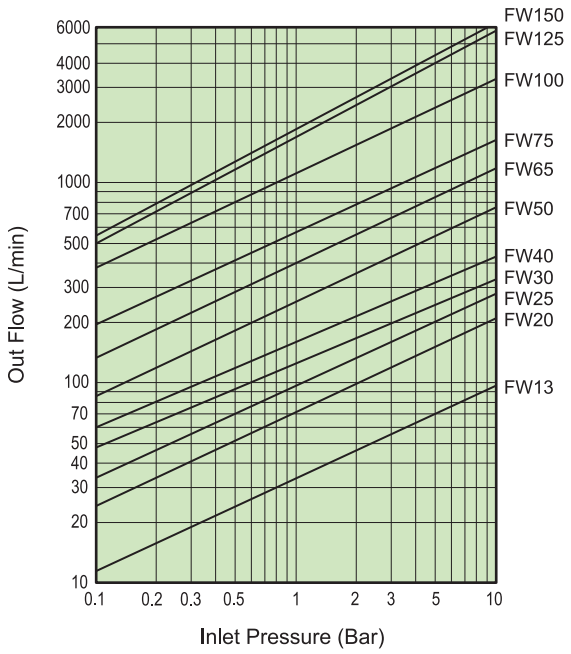
Size	A	B	C
150	1200	900	900
200	1400	1000	1000
250	1500	1200	1200
300	1600	1300	1300

Pressure Reducing Valve Cavitation Chart

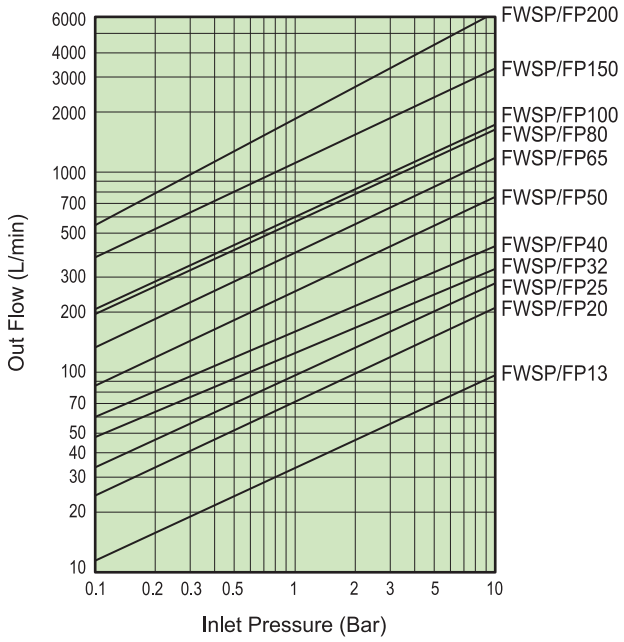


Flow Characteristics : KKK Float Valves

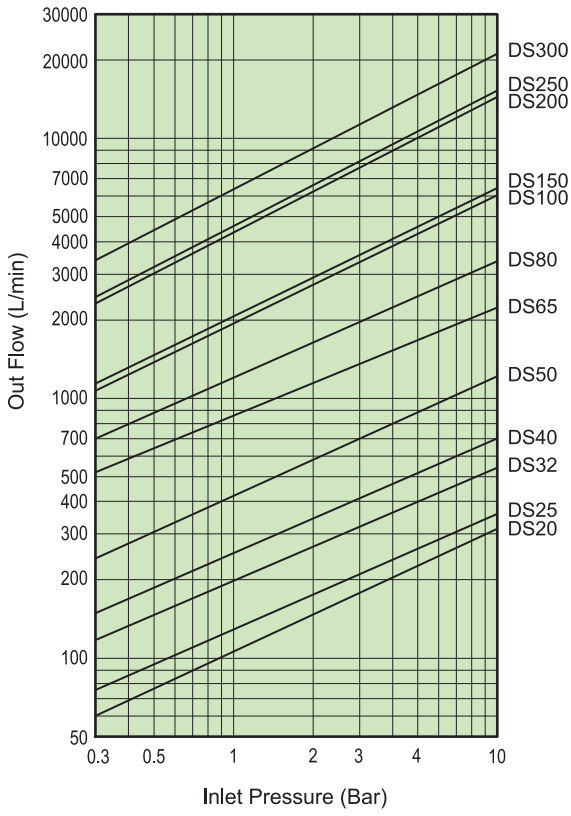
MODEL : FW



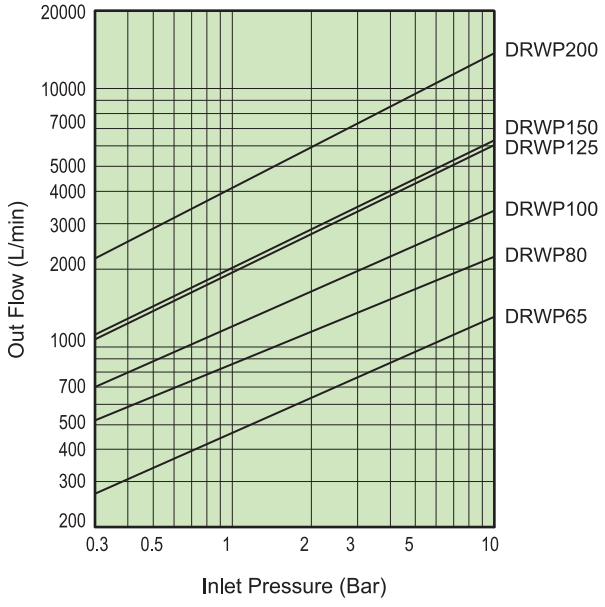
MODEL : FWSP/FWFP



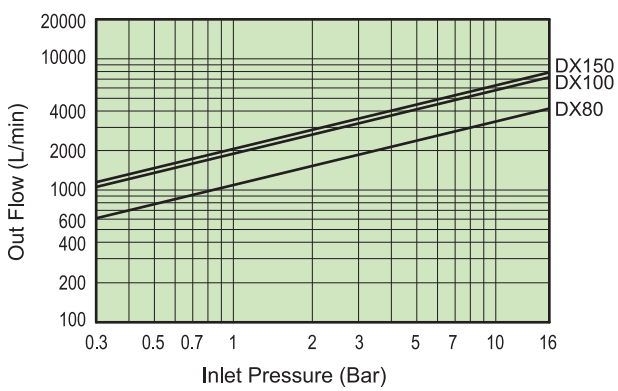
MODEL : DS



MODEL : DRWP

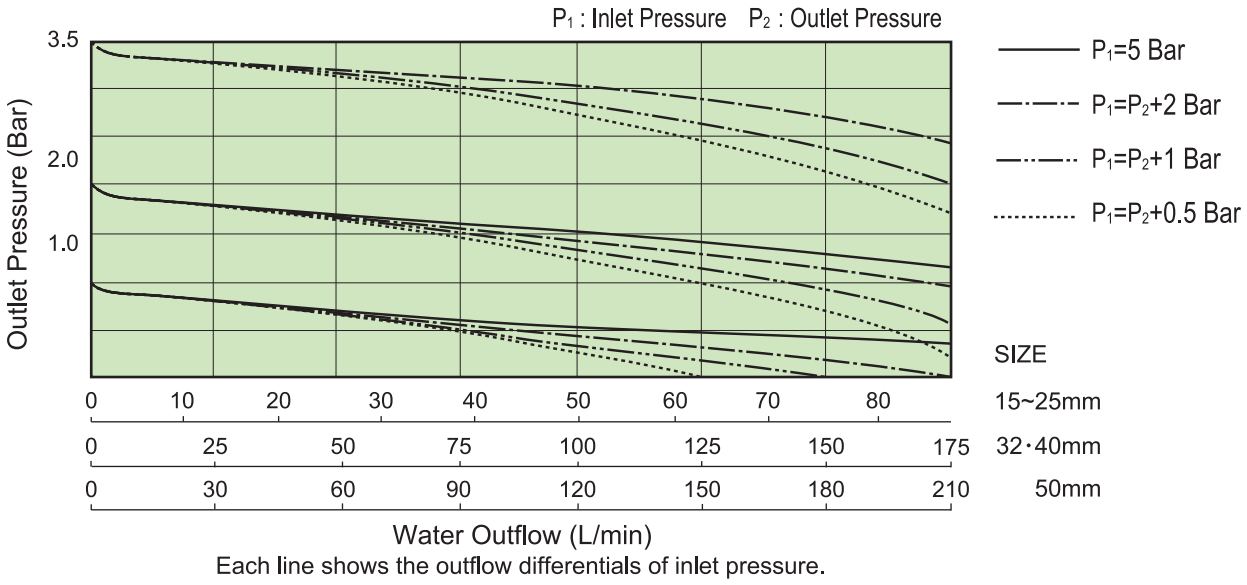


MODEL : DX



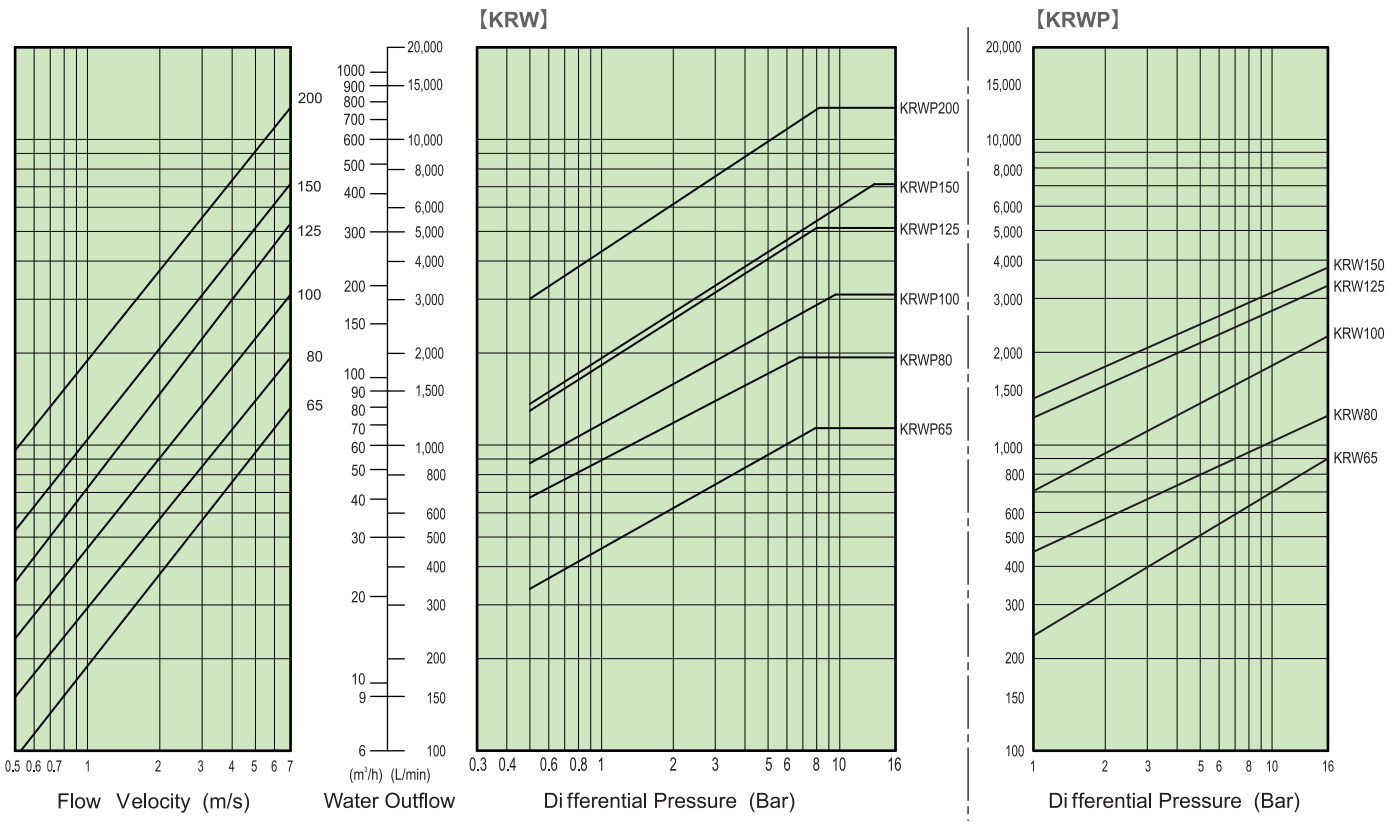
■Flow Characteristics : KKK Pressure Reducing Valves

MODEL：KRY



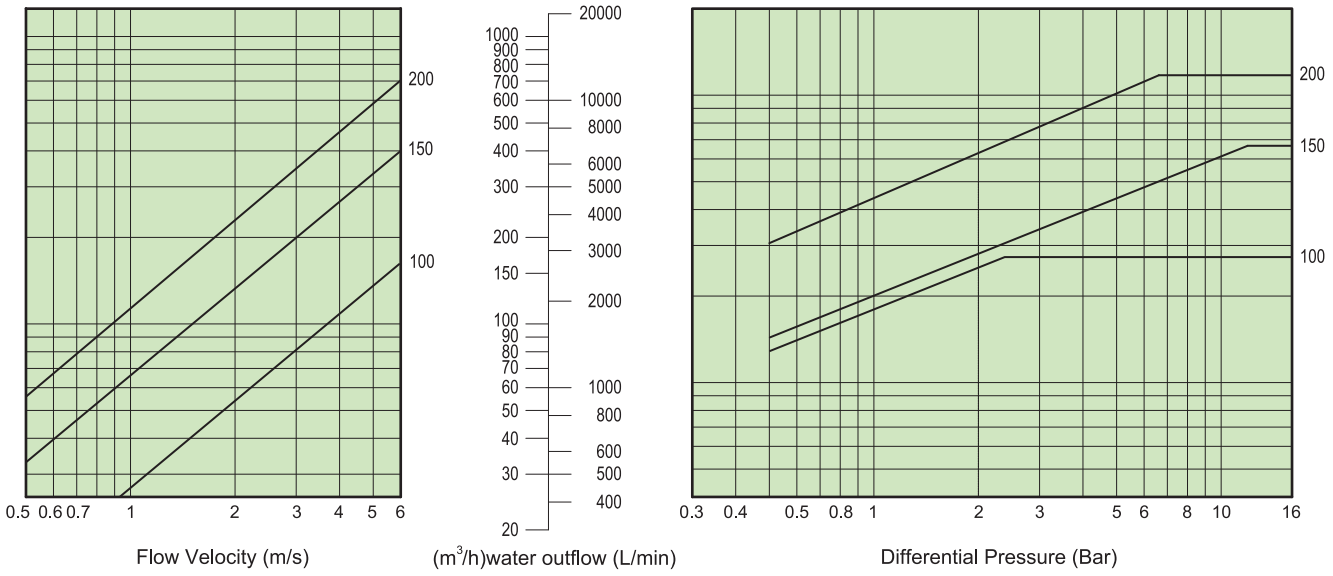
Each line shows the outflow differentials of inlet pressure.

MODEL：KRW / KRWP



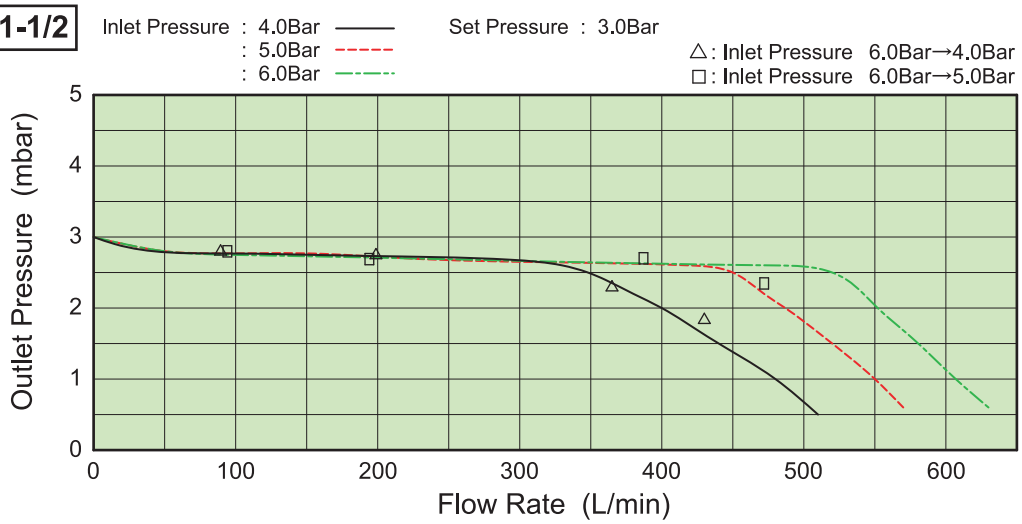
■Flow Characteristics : KKK Pressure Reducing Valves

MODEL : KRT



MODEL : KRD

KRD 1-1/2



KRD 2

