

DBV-30



DBV-40



DBV-30/40

**DYNAMIC BALANCE VALVE**



## DBV-30/40 DYNAMIC BALANCE VALVES

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### DBV-30 SELECTION TABLE



DBV-30		
Dia	Min. Max. Flow Rate (m <sup>3</sup> /h)	Min. Max. Flow Rate (lt/min)
1/2"	0,09 - 0,60	1,50 - 10,00
3/4"	0,09 - 0,60	1,50 - 10,00
1"	0,09 - 0,60	1,50 - 10,00
1 1/4"	0,30 - 2,40	5,00 - 40,00
1 1/2"	0,60 - 3,60	10,00 - 60,00
2"	0,60 - 7,20	10,00 - 120,00

### DBV-40 SELECTION TABLE



DBV-40		
Dia	Min. Max. Flow Rate (m <sup>3</sup> /h)	Min. Max. Flow Rate (lt/min)
65	5,00 - 27,00	83,00 - 450,00
80	5,00 - 27,00	83,00 - 450,00
100	10,00 - 54,00	167,00 - 900,00
125	15,00 - 81,00	250,00 - 1.350,00
150	20,00 - 108,00	333,00 - 1.800,00
200	35,00 - 189,00	584,00 - 3.150,00
250	60,00 - 324,00	1.000,00 - 5.400,00
300	75,00 - 405,00	1.250,00 - 6.750,00

# DBV-40 DYNAMIC BALANCE VALVES

Ayvaz DBV-40 is designed especially for the applications of heating cooling system, industrial installations, building mechanic installations and enable to fix the flow of air conditioning system.

It provides the selected flow on the line automatically by way of cartridge. Ayvaz DBV-40 provides to remain the selected flow in stable level in system even under 40 pressure fluctuation.

## FEATURES

- Stainless steel cartridges with adjusted flow
- Required flow value is provided automatically in system
- There is n required lenght for pipe before and after DBV-40
- There is n no need any consumption for system adjustment
- DBV-40 balance bvalves is produced from DN65 to DN250



<b>Valve Body</b>	: St.37
<b>O-Ring</b>	: EPDM
<b>Pressure Rate</b>	: PN 16 Strainer is recommended
<b>Temperature</b>	: -20 / +120 °C
<b>Different. Pres. Valve</b>	: 12 -600 kPa
<b>Flow Interval</b>	: 6,47 -3,94 m <sup>3</sup>
<b>Clamping Ring</b>	: Stainless Steel 306

## Selection:

For the selection of Ayvaz DBV-40 balance valve;

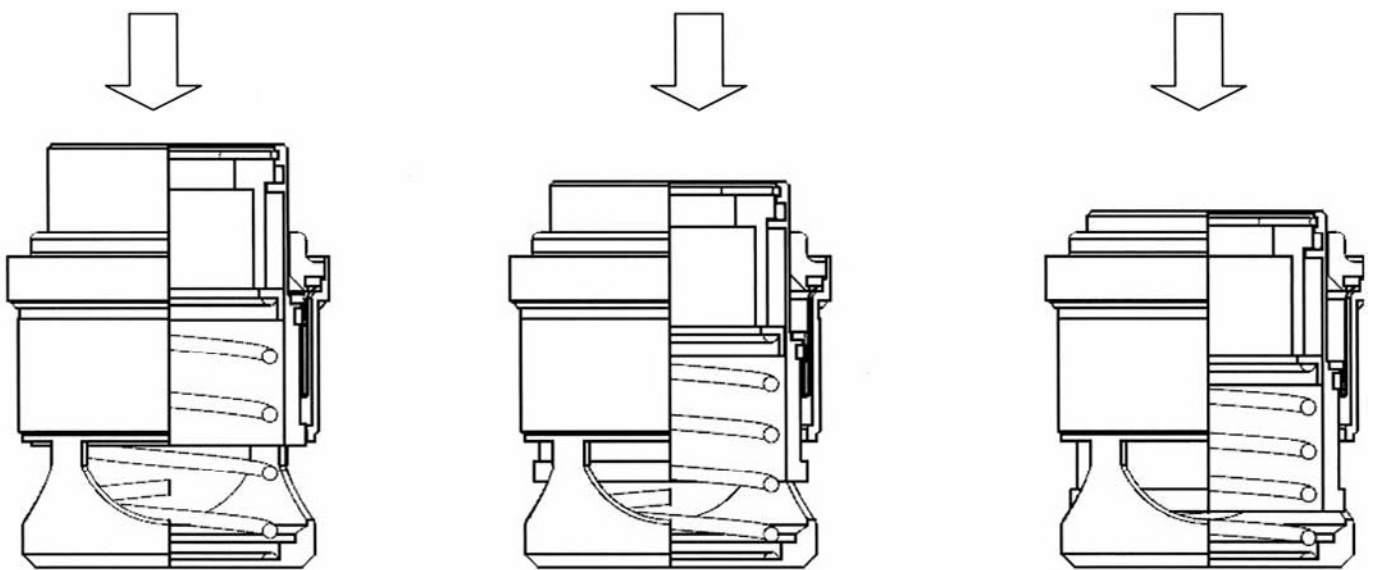
1. Flow amount
2. Pipe diameter
3. Differential Pressure required to be known

It needs to determine if the system has stable flow or changeable flow, while making the selection of flow interval. Hereby, changeable flow system, pumps with inverter controlled or the system that feeds with proportional controlled valve.

# DBV-30/40 DYNAMIC BALANCE VALVES

## WORKING PRINCIPLE

It is used stainless steel cartridges which its liquid flow calibrates to obtain required design flow for Ayvaz DBV-40 balance valve. It is formed only one movable piece that absorbs sudden flow changes automatically. Passed flow amount on the line be held on required flow rate by way of this cartridge. Orifice of cartridge is designed to obtain required flow and spring of cartridge is calibrated. In each cartridge's working interval works to providing  $5\% \pm$  sensibility. During its working, the cartridge that adjust flow value hold the orifice area on required breaks that needs to be. It works on pressure differential between 34-600 kPa to provide accurate flow. Using more than one cartridge provides to obtain the required flow value, for the flow which has more flow gauge than obtained from one cartridge for high used flow valves. Sum of the flow that pass in cartridges is equal to flow amount that pass on valve.



It works as a stable orifice valve, under the value of cartridge differential pressure.

If cartridge is on determined differential pressure interval. Transit area is adjusted as proportional to enable to design flow.

Cartridge again become its stable orifice way, when pressure differential value reach over the cartridge's differential pressure value.

# DBV-40 DYNAMIC BALANCE VALVES

Flow m <sup>3</sup> /H	Flow L/H	Flow L/D	Flow L/S	Min Δp	KV
6,18	6181	103,01	1,717	0,34	10,6
6,36	6356	105,93	1,765	0,34	10,9
6,53	6531	108,84	1,814	0,34	11,2
6,82	6822	113,70	1,895	0,34	11,7
7,11	7114	118,56	1,976	0,34	12,2
7,23	7230	120,51	2,008	0,34	12,4
7,94	7944	132,40	2,207	0,36	13,2
8,61	8613	143,55	2,393	0,37	14,2
9,76	9765	162,75	2,712	0,41	15,3
10,63	10629	177,15	2,953	0,41	16,6
11,14	11141	185,69	3,095	0,41	17,4
12,10	12102	201,70	3,362	0,41	18,9
13,47	13465	224,42	3,74	0,44	20,3
15,29	15288	254,80	4,247	0,47	22,3
17,33	17327	288,78	4,813	0,53	23,8
18,24	18240	304,01	5,067	0,57	24,2
21,85	21845	364,09	6,068	0,7	26,1
22,92	22924	382,07	6,368	0,7	27,4
24,51	24509	408,48	6,808	0,75	28,3
25,72	25721	428,68	7,145	0,75	29,7

Flow calculating for cartridges (It is valid under Min Δp)

$$Q = kV \times \sqrt{\Delta p}$$

Q = Flow (m<sup>3</sup>/h)

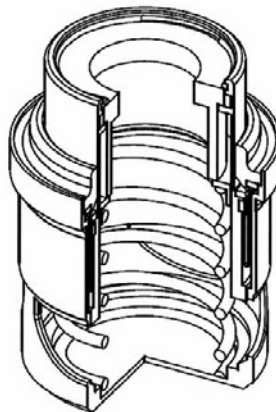
kV = Opening valve rate

Δp = Differential Pressure

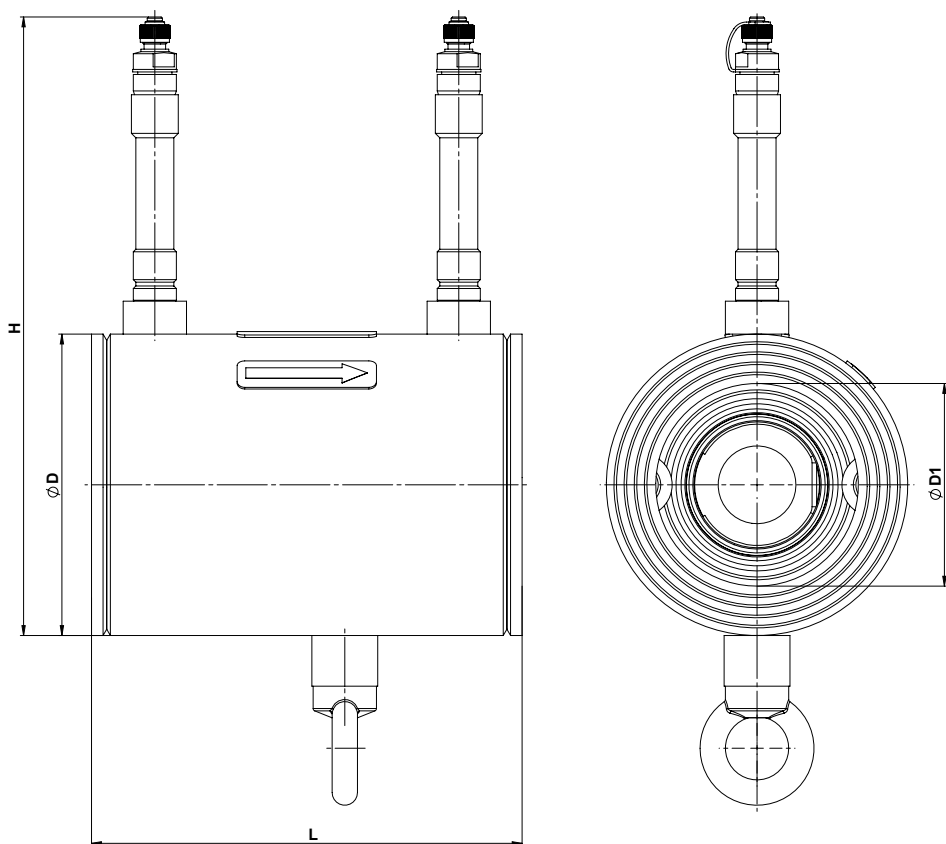
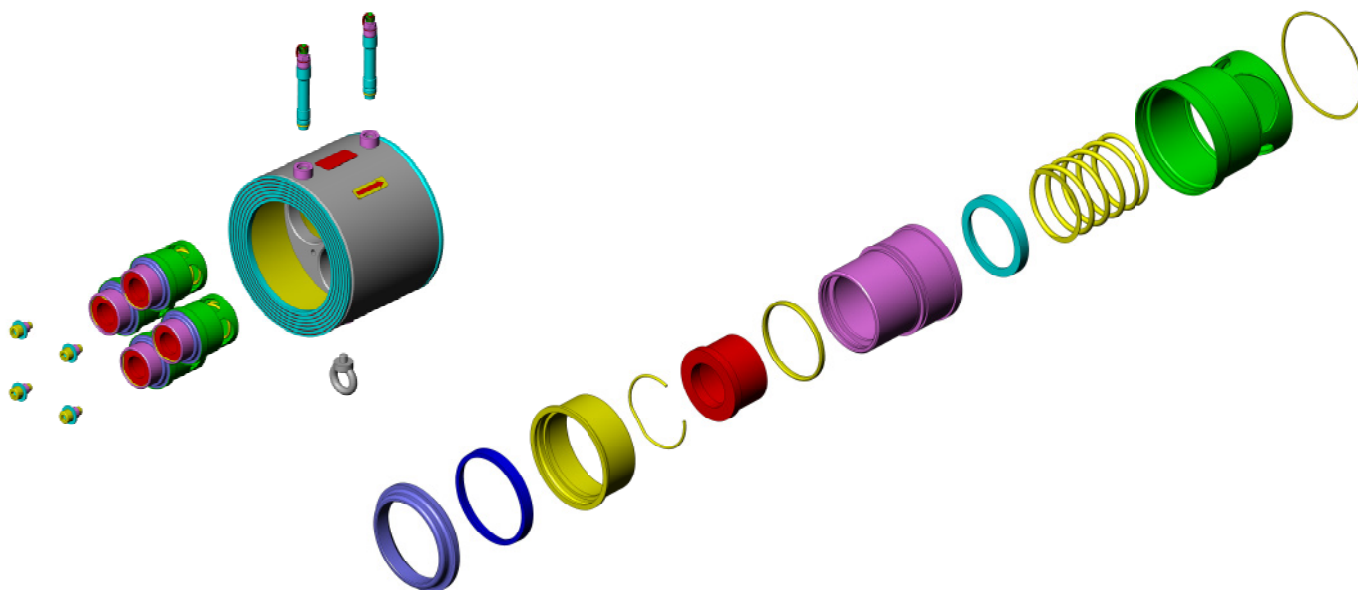
Ayvaz DBV-40 Cartridges work as set values. Not influenced from any pressure fluctuation. Flow is held stable in differential pressure changes.

## CARTRIDGES TECHNICAL SPECIFICATION

<b>Cartridge Body</b>	: AISI304
<b>O-Ring</b>	: EPDM
<b>Pressure Rate</b>	: PN16
<b>Temperature</b>	: -20 / +120 °C
<b>Diff. Pres. Changes</b>	: 34 -600 kPa
<b>Flow Rate</b>	: 6,18 - 25.72 m <sup>3</sup>
<b>Diaphragm</b>	: HNBR



# DBV-30 DYNAMIC BALANCE VALVES



DN	L	$\varnothing D$	$\varnothing D1$	H
DN65	170	119	80	244
DN80	170	131	80	256
DN100	170	163	100	288
DN125	170	193	125	318
DN150	170	216	150	341
DN200	170	271	200	396
DN250	170	326	650	451

## DBV-30 DYNAMIC BALANCE VALVES

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### AUTOMATIC FLOW CONTROL VALVE



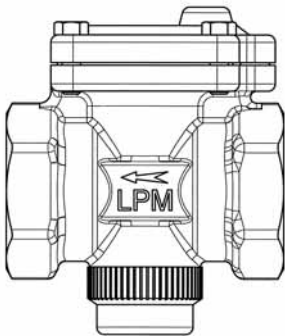
<b>Diameter</b>	: 1/2" - 2"
<b>Fluid</b>	: Cold Water/Hot Water
<b>Working Pressure Range</b>	: 0,5 - 3
<b>Max. Working Temp.</b>	: 120 °C
<b>Mounting</b>	: Threaded
<b>Body</b>	: Brass
<b>Disc</b>	: Stainless Steel
<b>Diaphragm</b>	: EPDM

Automatic control valves, stabilize automatically the required in used systems. Provides automatic flow by keeping the pressure that formed on going and returning lines in unsteady systems. Having simple working and its structure these valves bring huge facilities to system. Provides a balanced flow by way of its diaphragm and control spring. Bringing some easiness to systems such as required pressure set adjustments with detecting the difference pressures, enabling to tolerate disadvantages of particle, residue etc. That originated in system made them to be preferable and moreover detecting the pressure difference that originated in additions and removals at system, automatic adaptation to system without any extra adjustment is the most preferable reason of it.

### ADVANTAGES OF AYVAZ DYNAMIC BALANCE VALVES

- AYVAZ DYNAMIC VALVES WORK ACCORDING TO AUTOMATIC BALANCED BASE.
- SPRING TYPE BALANCE VALVES AUTOMATICALLY CONTROL THE FLOW AND PRESSURE.
- MINIMIZE THE FLOW ERROR MARGIN BY WAY OF HAVING STRUCTURE OF ITS DIAPGRAM AND PRESSURE CONTROL SPRING AS COMPARED WITH STANDART CARTRIDGE TYPE BALANCE VALVES.
- FLOWCHANGES SET CAN BE ADE EASILY.
- DUE TO APPLIABLE DESING , SOUND AND VIBRATION ABSORPTIONS IN HIGH.
- SINCE THERE IS A CONSTANT FLOW IN SYSTEM, RESIDUE AND DIRTINESS.
- FORMATION IS VERY LOW. EASILY DISMANTLING TO BE CLEANED.

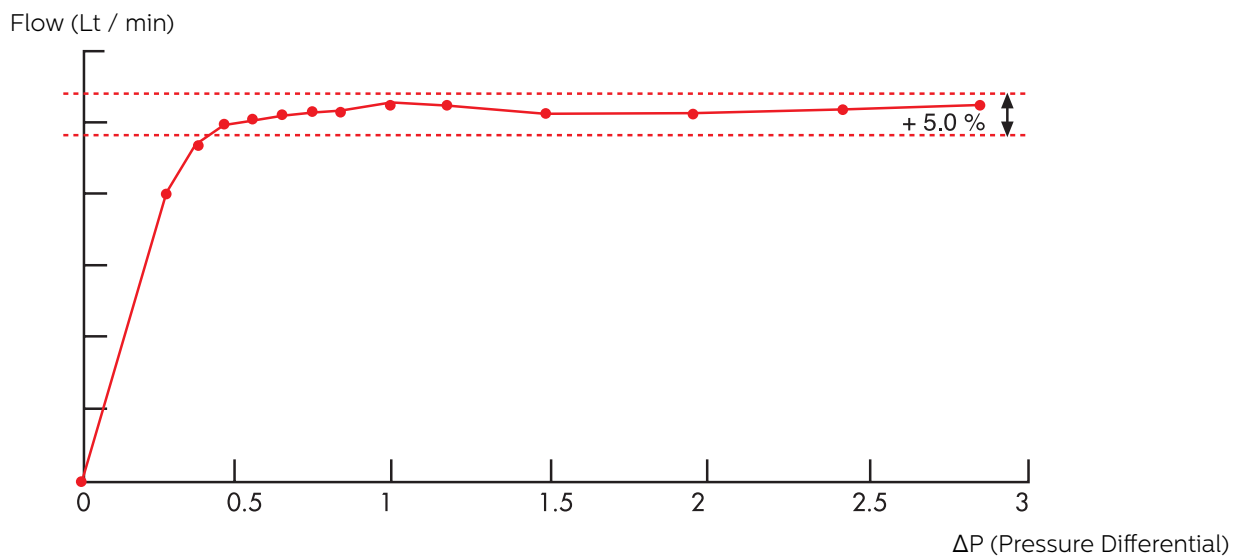
# DBV-30 DYNAMIC BALANCE VALVES



Diameter	L(mm)	H1(mm)	H2(mm)	Weight(kg)
1/2"	95	39	49	0,64
3/4"	95	39	49	0,64
1"	100	39	49	0,79
1 1/4"	114	45	60	1,40
1 1/2"	132	55	69	2,25
2"	165	60	83	3,9

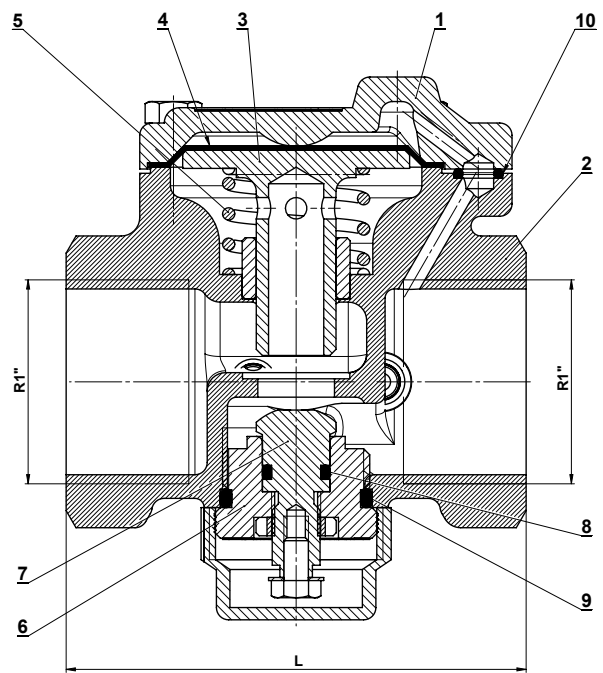
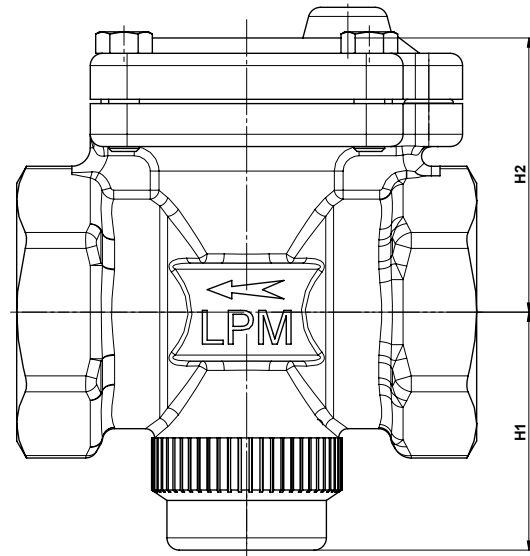
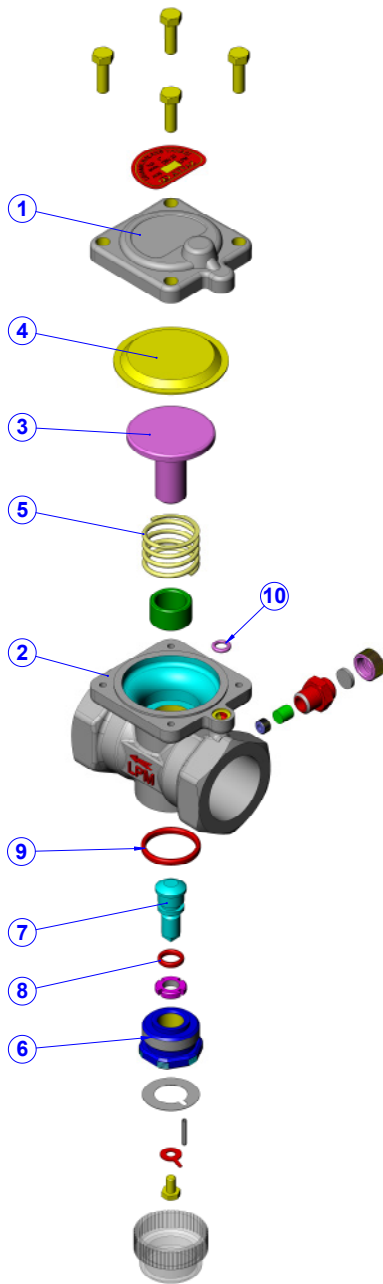
Product	$\Delta P$ (Pressure Difference)	Diameter	Flow
DBV-30	0,5 - 3	1/2"	1,5-10
		3/4"	1,5-10
		1"	1,5-10
		1 1/4"	5-40
		1 1/2"	10-60
		2"	10-80

TABLE OF FLOW SET INTERVAL  
GRAPHIC ACCORDING TO DIFFERENTIAL PRESSURE FLOW CHANGES





# DBV-30 DYNAMIC BALANCE VALVES



A-A

No	Part Name	Material
1	Cover	Ms 58
2	Body	Ms 58
3	Flow Control Stem	Ms 58
4	Diaphragm	EPDM
5	Flow Adj. Spring	AISI 302
6	Flow Adj. Stem Bearing	Ms 58
7	Flow Adj. Stem	Ms 58
8	Flow Adj. Stem O-ring	EPDM
9	Seat O-ring	EPDM
10	Cover O-ring	EPDM

Dia	H1	H2	L
1/2"	39	42,5	71
3/4"	39	42	71
1"	40	45	75
1 1/4"	45	52	84
1 1/2"	55	62	100
2"	59	76	126

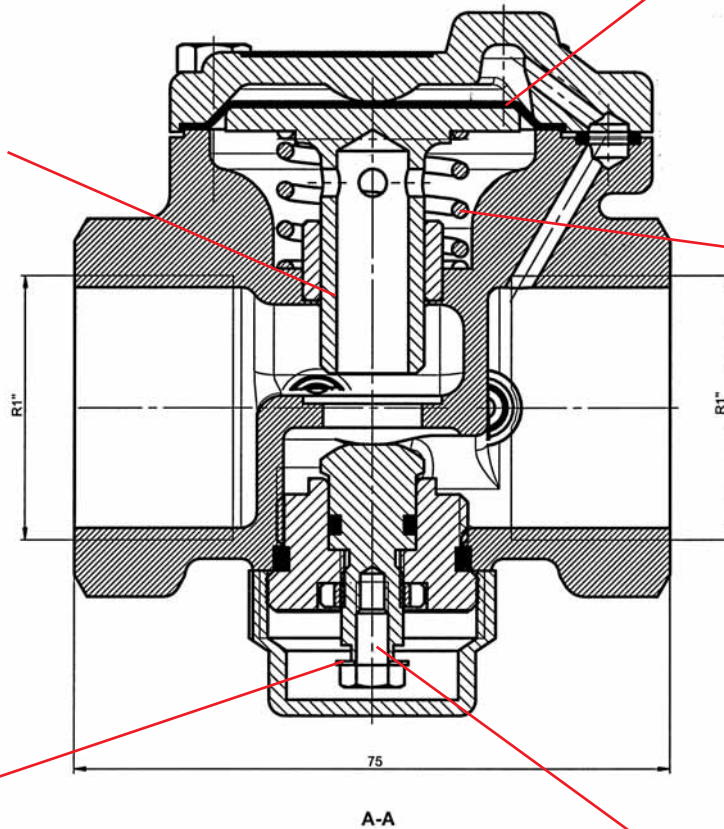
# DBV-30 DYNAMIC BALANCE VALVES

## BODY LEVER

- Provides continual surface stickness applying to cleaning operations at certain intervals.

## DIAPHRAGM

- Error margin is minimum at diaphragm type
- High endurance



## PRESSURE FLOW SET SPRING

## TEST PLUG

- Used to measure pressure and flow amount while system working.

## FLOW SET WASHER

- Flow set rate changes is made.

## STABILIZER

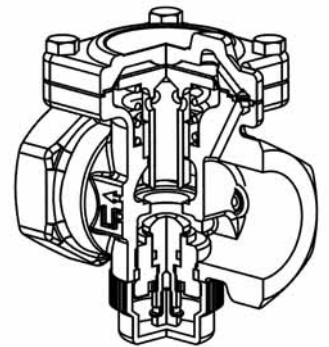
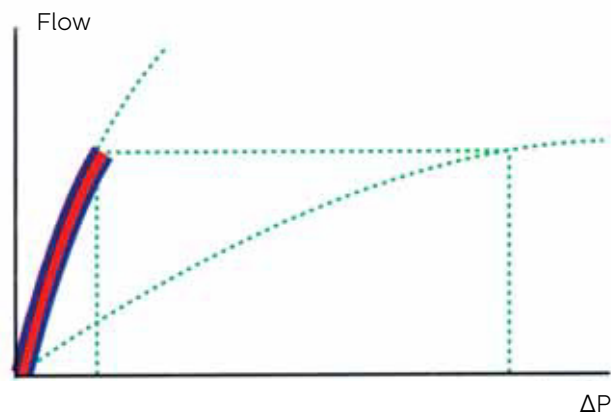
- Balanced the sensitive flow which is made at high speed flow.

## BOLT

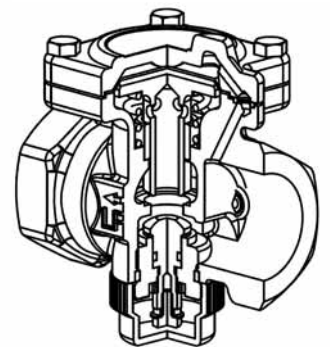
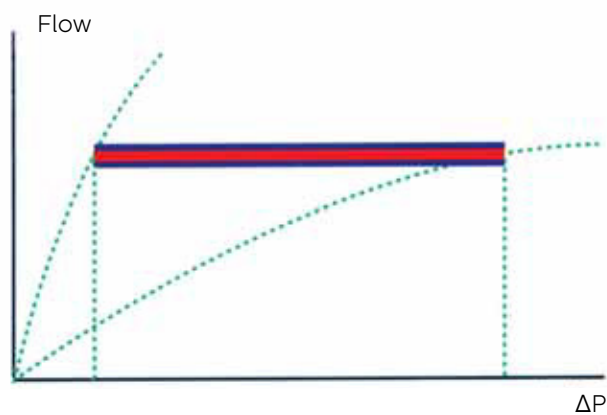
## DBV-30 DYNAMIC BALANCE VALVES

### SYSTEM PRESSURE > WORKING PRESSURE

If the system pressure lower than the working pressure (under 0,3 kgf/cm<sup>2</sup>), flow speed shows increasing until comes the working pressure limit because of, there is not efficient pressure enable to work valve.



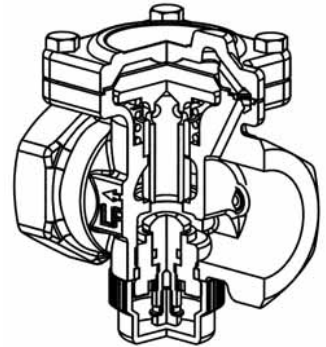
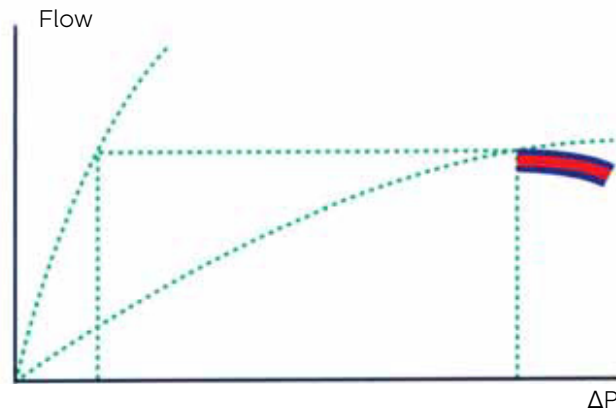
If the system pressure equal to working pressure (0,3-5,0kgf/cm<sup>2</sup>), Flow speed is fixed by diaphragm which affect to pressure difference and pressure control spring.



## DBV-30 DYNAMIC BALANCE VALVES

### SYSTEM PRESSURE > WORKING PRESSURE

When system pressure is higher than working pressure, flow pressure that applied to diaphragm would increase. Therefore, pressure control valve will close and flow amount pass on the systems would decrease.



### FIXING THE FLOW SET

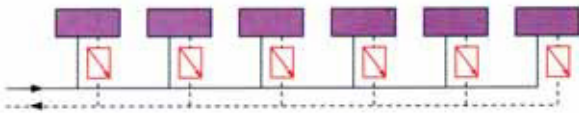
Needs to adjust the indicator where below valve with special key in order to change flow set.



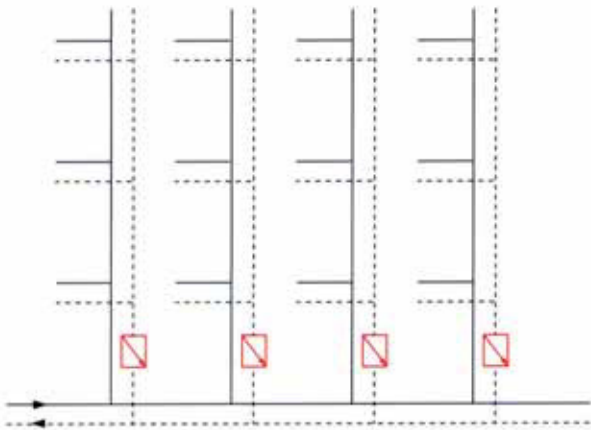
# DBV-30 DYNAMIC BALANCE VALVES

## APPLICATIONS

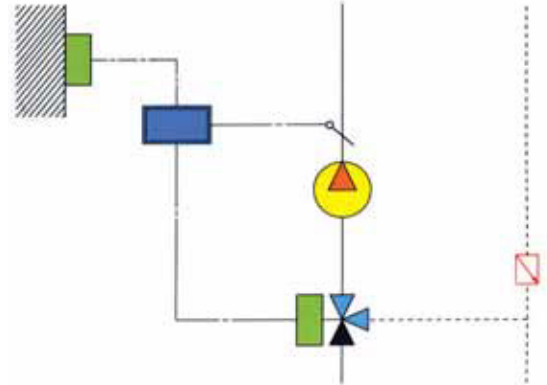
DYNAMIC BALANCE VALVE APPLICATIONS AT HOUSES



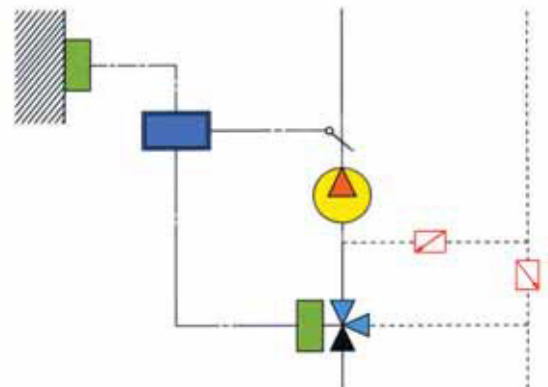
APPLICATIONS AT PIPE COLUMN LINE



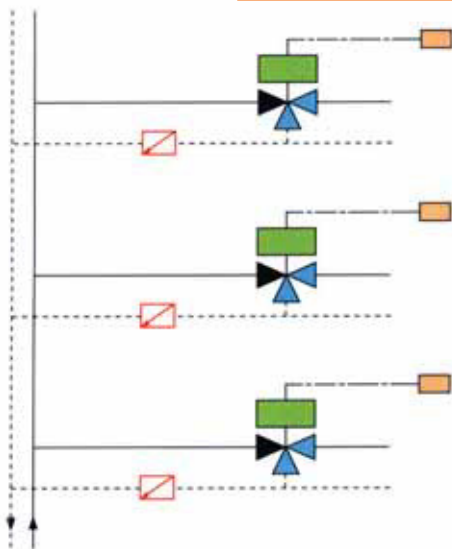
TEMPERATURE CONTROL SYSTEMS



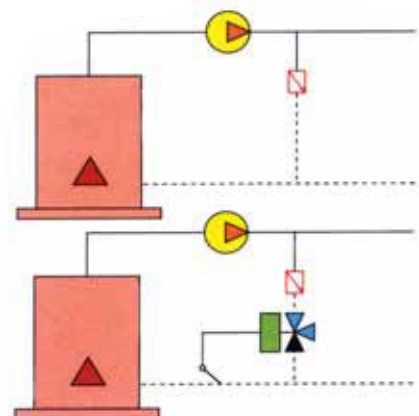
TEMPERATURE CONTROL SYSTEMS



WITH 3 WAY VALVE APPLICATIONS



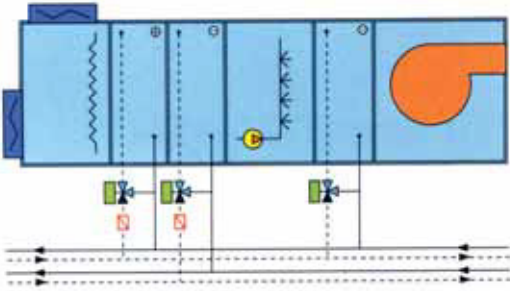
PRESSURE CONTROL SYSTEMS



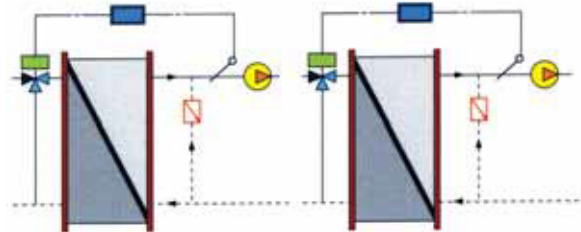
# DBV-30 DYNAMIC BALANCE VALVES

## APPLICATIONS

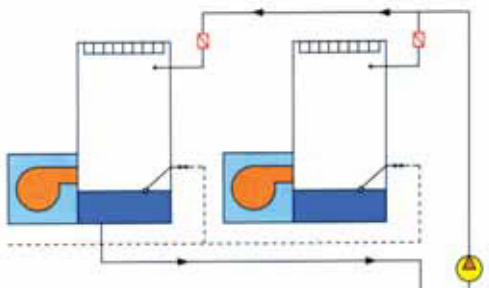
WITH 3 WAY VALVE CONTROL  
PIPE APPLICATIONS



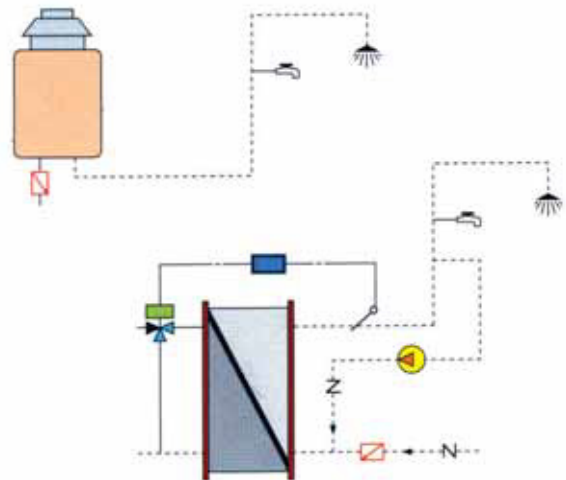
LOCALIZING SYSTEM



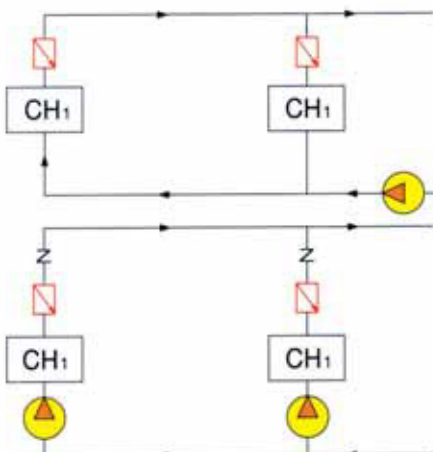
COOLING TOWER



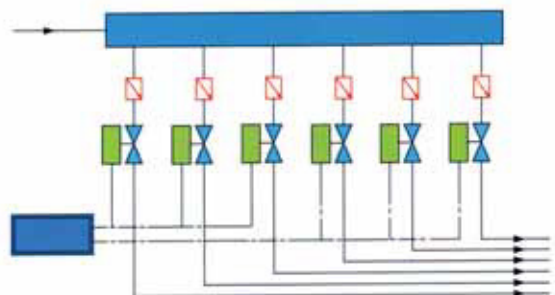
WATER SYSTEM



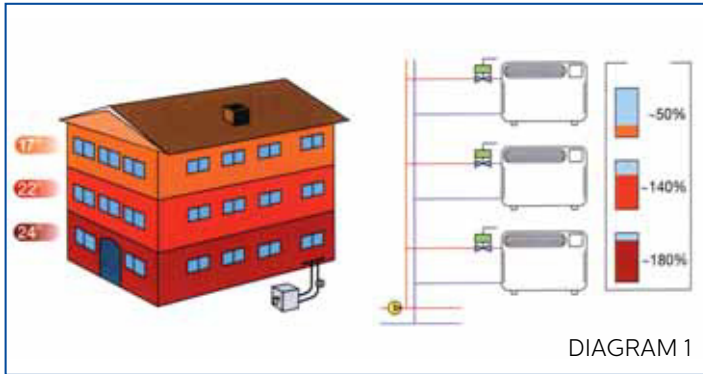
COLD WATER SYSTEM



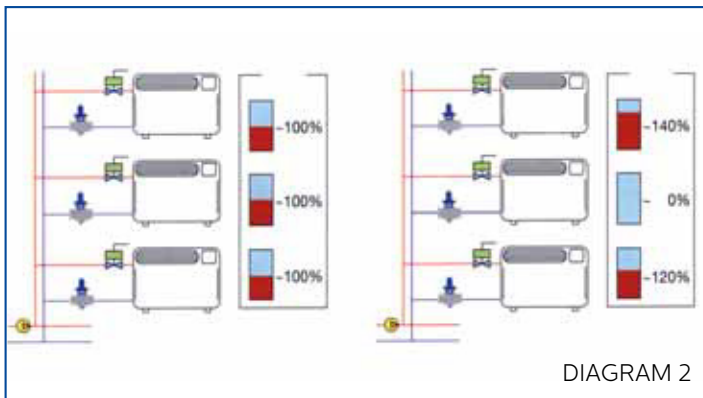
FLOW DELIVERY SYSTEM



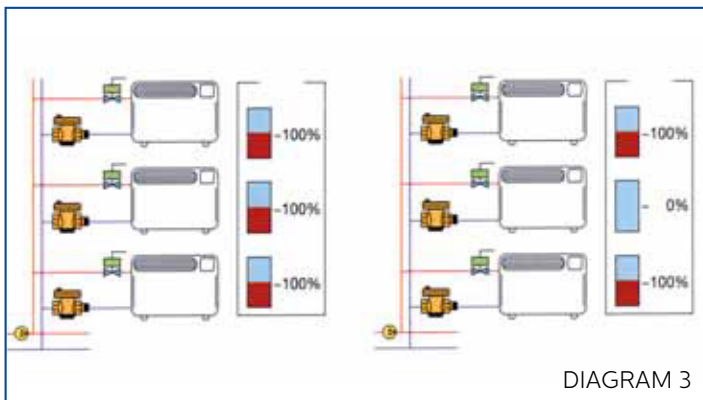
# DBV-30 DYNAMIC BALANCE VALVES



BECAUSE OF NOT ENABLING TO BALANCE IN SYSTEM WHICH AUTOMATIC PRESSURE BALANCER FLOW VALVE IS NOT USED, FLOW SPEED CAN NOT BE CONTROLLED AND THIS CAUSE DIFFERENT TEMPERATURE LOSSES AT DIFFERENT POINTS AS CAN BE SEEN AT DIAGRAM 1, FLOW DIFFERENCE IS VERY HIGH.



IN CASE THERE IS A CLOSED POSITION POINT IN SYSTEMS WHICH STATIC BALANCE VALVE IS USED CAUSE NOT TO ENABLE BALANCE AND FLOW DIFFERENCES CAN NOT BE FORMED. THEREFORE, NOT ENABLING TO CONTROL FLOW DIFFERENCE, CAUSE DIFFERENT FLOW SPEED AT DIFFERENT POINT AND HEREBY CAUSE DIFFERENT FLOW PROPORTION AT DIFFERENT POINTS. AS YOU CAN SEE DIAGRAM 2; ALTHOUGH THERE IS NOT ANY FORMATION OF FLOW DIFFERENCE, FLOW DIFFERENCE CAN BE OBSERVED.



STABLE FLOW SPEED IS PROVIDED BECAUSE OF CONTROLLING PRESSURE IN SYSTEMS WHICH AUTOMATIC BALANCE VALVE (AYVAZ DIAPHRAGM TYPE BALANCE VALVE) IS USED. EVEN BALANCING IS CUT AT ANY POINT, FLOW DIFFERENCE CAN NOT BE SEEN. THE SYSTEM, THAT AUTOMATIC VALVE IS USED, CAN BE OBSERVED AT.

# DBV-30/40

## DYNAMIC BALANCE VALVE



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