

# Auto-flow Balance Valves

## Hydraulic Balance Solution



Global Flow Control Combination

**TALOAR**<sup>®</sup>

Taloar Changzhou  
FLUID SYSTEMS, 2023

# Ideal Automatic Flow Balance Control Solution



## TALOAR Global Flow Control Combination

Taloar is a world leading supplier of flow control products and services, providing a diverse range of fluid control products that has wide applicability to commerce, water service and industry. Taloar products cover a comprehensive line of general manual valves, fire valves, hydraulic control valves, balance valves, electric control valves, as well as industrial ball valves, butterfly valves, instrument valves, and so on, some of which have been recognized by the world's most authoritative UL, FM, and CE approvals. Today, Taloar can provide more than 12,000 kinds of products that demonstrate outstanding performance to protect customer's operating systems against any potential security threats, whether in extreme temperature conditions at low or high temperatures and whether operated manually or automatically, so that we can ensure the operating system security.

**Taloar combines** the latest mechanical technologies and advanced automation systems in its production to ensure our products consistently maintain excellent quality. Taloar always cares and concerns for our users, which is not just a slogan, but a fundamental aspect ingrained in every decision and action taken by the company.



## Concept of Balance Valves

Balance valves are mainly used for flow balancing control at the terminals. Solving the unbalancing in the loops of the commercial and industrial HVAC systems. The cooling and heating changes of the air-conditioning systems and their operating effects are closely related to the proper application of balancing valves. TALOAR's hydraulic balancing technology enables full hydraulic balancing, thus cutting energy consumption, and enhancing warming comfort. Based on this technology, TALOAR provides a lot of working models and technical services for this particular item, gaining immense project experiences.



## Indoor Comfort

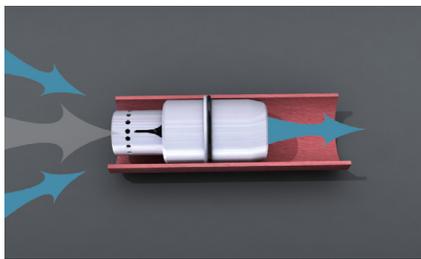
The hydraulic balancing technology solves problems arising from excessive difference between setting of the air-conditioning system and the actual temperature. Here is an instance. If the terminal of the piping system that runs in full load under ideal conditions has the actual flow lower than the designed flow, it will cause huge energy waste. If such problem is not rectified, it will cause uneven cooling/heating effects and water unbalancing at the terminals, and the system cannot provide the expected performance. TALOAR strongly suggested that all HVAC pipelines should equipped with balancing valves to ensure precise flow measurements, and precise distribution of the flow to all areas within the HVAC system.

## Why Using Auto-Flow Balance Valves

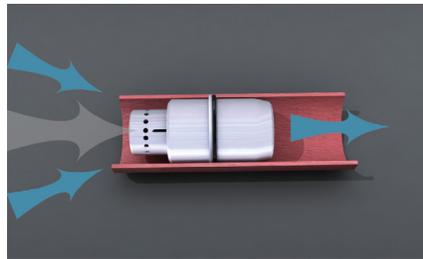
Auto-flow balance valves are designed to be used in auto-flow control of chillers, boilers, heat exchangers, pumps, fan coil units, cooling towers and water heating systems. Auto-flow balance valves work to maintain constant flow of water systems within normal working differential pressure range. They play an important role in energy saving, and system stability improvement.

## Operating Principles of Auto-Flow Balance Valves

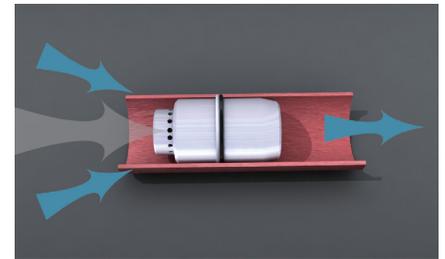
When system pressure fluctuates within working differential pressure range or when end devices are added or changed, leaving the flow in pipeline remains constant. In case of differential pressure increase, the auto-flow balance valve keeps flow unchanged by narrowing the orifice hole in the cartridge. In case of differential pressure decrease, the orifice hole in the cartridge opens up, leaves the flow remains constant.



If differential pressure is lower than the lower limit of flow control, the cartridge keeps open fully, allowing flow to change below the rated value.



If differential pressure is within flow control limits, the cartridge changes its opening enlarged automatically according to differential pressure change, allowing flow precision to remain within  $\pm 5\%$  constantly.



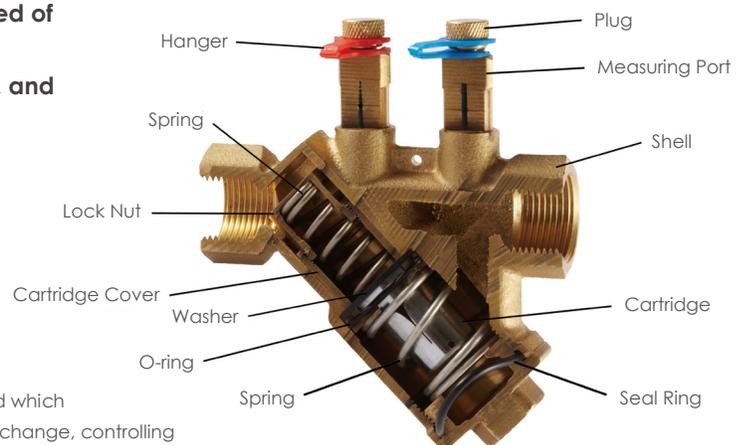
If differential pressure is higher than the upper limit of flow control, the cartridge shrinks completely, with flow area reduced, allowing flow to change above the rated value.

## Design of Auto-Flow Balance Valves

The auto-flow balance valve of TALOAR is mainly composed of a shell, a cartridge and a spring. The maximum flow of the cartridge is designed according to different system needs, and is pre-set prior to delivery.

Each 1/2"-20" auto-flow balance valve provides with two self-sealing flow and temperature measuring ports (1/4" BSPT thread) on top of the shell.

The cartridge with a variable orifices hole is precisely and uniquely designed which automatically regulate the flow area according to the differential pressure change, controlling flow rate is within  $\pm 5\%$  designed range. One or more cartridge(s) can be installed inside the shell according to valve size and flow rate. In general, flow measurement is not required on site. Instead, it only needed to verify whether differential pressure is within the given spring range by measurement. Therefore, system testing workload is significantly reduced. Each auto-flow balance regulating valve has name plate with parameters precisely indicating regulated flow rate and differential pressure range.



# Auto-Flow Balance Valves

PN25/ 350PSI

TALOAR small-sized brass balance valves can automatically maintain the flow of the water systems constant under normal working differential pressure range, which does not require field or site commissioning. The shell is of low-resistance Y structure. The detachable bottom bonnet makes it easy to inspect, repair, replace the cartridge and sewage draining. Measuring ports on both ends enjoy good self-sealing performance. High-precision valve disc ensures correct and persistence of constant flow.

## Product Features

- Auto constant flow, field or site commissioning is not required.
- Reduced energy consumption and improved system stability.
- Low-resistance Y shell structure.
- Precise flow orifice design leads to low error  $\pm 5\%$ .
- Stainless steel spring, with longer service life.
- Detachable bonnet, making it easy to replace the cartridge and drain sewage.
- Easy installation, time saving.
- Plug-in measuring point, allowing quick connection.

## Technical Parameters

Pressure Ratings: PN25/350PSI

Working Temperature:  $-10^{\circ}\text{C} \sim 120^{\circ}\text{C}$

Size:  $\frac{1}{2}'' - 1\frac{1}{2}''$ , DN15 mm-DN40 mm

End Type: BSPT or NPT

Medium: Water

## Material Specifications

Body: Brass

Bonnet: Brass

Cartridge: Chrome-plated Brass

Spring: Stainless Steel

Measuring port: Brass

Seal: EPDM

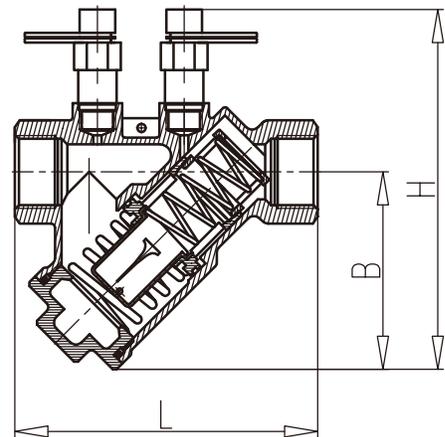


**1125**  $\frac{1}{4}''$



**T320**

$\frac{1}{2}'' - 1\frac{1}{2}''$



## Dimensions/Weights

mm	15	20	25	32	40
In	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
L	103	110	125	160	170
H	131	131	137	155	175
B	72	72	76	95	110
Lbs	1.98	2.21	2.65	3.31	4.41
kg	0.90	1.00	1.20	1.50	2.00

\* Note: In valve installation, it is strongly suggested that sufficient space should be left for easy maintenance in the future. A strainer shall be mounted in front of the valve to prevent foreign matter blocking the valve.

# Auto-Flow Balance Valves

## PN25/ 350PSI

TALOAR ductile iron wafer-type auto-flow balance valves can automatically maintain the flow of water systems constant within normal working differential pressure range, which does not require field or site commissioning. The shell is coated with epoxy resin. Measuring ports on both ends enjoy good self-sealing performance. High-precision valve core ensures correct and persistence of constant flow.



**W500-D**

2" - 20"

## Product Features

- Auto constant flow, field or site commissioning is not required.
- Reduced energy consumption and improved system stability.
- Elaborate flow hole design, flow error within  $\pm 5\%$ .
- Stainless steel cartridge and spring, with longer service life.
- Detachable bolt, making it easy to replace the cartridge.
- Small and light, space saving.
- Plug-in measuring point, allowing quick connection.

## Technical Parameters

**Pressure Ratings:** PN25

**Working Temperature:** -10°C~120°C

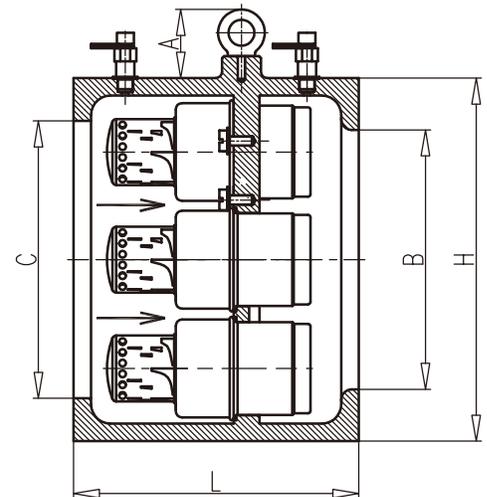
**Size:** 2" - 20" , DN50 mm-DN500 mm

**End Type:** ANSI or BSEN flange

**Medium:** Water



**1125 1/4"**



## Material Specifications

**Body:** Ductile Iron

**Cartridge:** Stainless Steel

**Spring:** Stainless Steel

**Measuring port:** Brass

**Seal:** EPDM

\* Note: In valve installation, it is strongly suggested that sufficient space should be left for easy maintenance in the future. A strainer shall be mounted in front of the valve to prevent foreign matter from blocking the valve.

## Dimensions/Weights

mm	50	65	80	100	125	150	200	250	300	350	400	450	500
In	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20
L	180	180	180	220	220	220	220	220	223	223	242	242	242
B	50	65	80	100	125	150	200	250	300	350	400	450	500
C	83	83	83	133	140	162	214	280	328	382	440	487	545
A	-	-	-	-	-	53	53	53	69	69	69	69	69
H	106	120	132	177	193	220	280	341	400	448	510	560	618
Quantity of Bolts	4	8	8	8	8	8	12	12	16	16	16	20	20
Lbs	12.3	12.8	13.7	23.2	33.1	47.4	66.2	76.1	111.4	130.1	198.5	244.8	330.8
kg	5.6	5.8	6.2	10.5	15.0	21.5	30.0	34.5	50.5	59.0	90.0	111.0	150.0

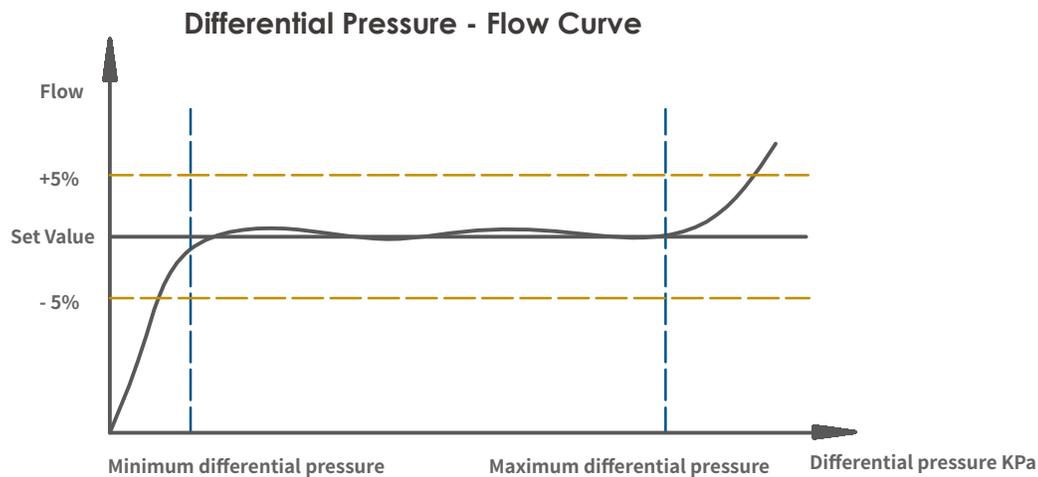
# Differential Pressure - Flow Technical Parameters (Kpa m<sup>3</sup>/h)

Dimension (In mm)	Pressure Differential range(KPa)	Flow Range (m <sup>3</sup> /h)	Dimension (In mm)	Pressure Differential range(KPa)	Flow Range (m <sup>3</sup> /h)
½" - 1" (DN15-DN25)	15-150	0.432~1.51	10" (DN250)	15-150	3~165
	20-200	0.54~1.98		22-210	4~220
	30-300	0.68~2.77		33-330	5~253
	80-800	1~4.18		35-250	5~473
1¼" - 1½" (DN32-DN40)	15-150	0.54~3.13	12" (DN300)	90-900	8~770
	20-200	0.68~3.67		15-150	3~225
	30-300	0.79~4.82		22-210	4~300
	80-800	1.44~7.52		33-330	5~345
2" - 3" (DN50-DN80)	15-150	3~15	14" (DN350)	35-250	5~645
	22-210	4~20		90-900	8~1050
	33-330	5~23		15-150	3~300
	35-250	5~45		22-210	4~400
	90-900	8~70		33-330	5~460
4" (DN100)	15-150	3~30	16" (DN400)	35-250	5~860
	22-210	4~40		90-900	8~1400
	33-330	5~46		15-150	3~375
	35-250	5~86		22-210	4~400
	90-900	8~140		33-330	5~575
5" (DN125)	15-150	3~45	18" (DN450)	35-250	5~1075
	22-210	4~60		90-900	8~1750
	33-330	5~69		15-150	3~465
	35-250	5~129		22-210	4~620
	90-900	8~210		33-330	5~713
6" (DN150)	15-150	3~60	20" (DN500)	35-250	5~1333
	22-210	4~80		90-900	8~2170
	33-330	5~92		15-150	3~555
	35-250	5~172		22-210	4~740
	90-900	8~280		33-330	5~851
8" (DN200)	15-150	3~105	-	35-250	5~1591
	22-210	4~140		90-900	8~2590
	33-330	5~161		-	-
	35-250	5~301		-	-
	90-900	8~490		-	-

## Determine Differential Pressure /Flow Range for Auto-Flow Balance Valves

TALOAR auto-flow balance valves designed five (5) designed flow range and differential pressure options for you to choose from. Example:differential pressure for 6" auto-flow balance valve: 15-150 KPa, 22-210 KPa, 33-330 kPa, 35-250 KPa, 90-900 KPa. 15-150 KPa stands for the minimum differential pressure within the designed flow range, and 90-900 KPa the maximum differential pressure within the designed flow range.

Differential pressure range for an end device: actual head of pump minus part resistance loss, such as the loss at check valve, strainer and thermostat valve, and pipeline end pressure loss; if the maximum differential pressure is lower than 210 KPa, but higher than 150 KPa, 22-210 KPa shall be selected for differential pressure .



## Installation Tips!

1. Before installing auto-flow balance valves, please read the following notes carefully to prevent function failure due to improper installation causing impairing operating effect of the system.
2. Flush and clean pipelines thoroughly before installation to ensure pipelines are free from debris, impurities, sand, gravel and other foreign matter. Remove all strainers before cleaning to keep pipelines smooth.
3. It is suggested that strainers should be installed at inlets of valves to prevent valves from function failure due to blockage by foreign matters.
4. Ensure sufficient space around valves during installation for easy maintenance, measurement and disassembly in the future.
5. Check technical parameters required for the valve by referring to those indicated in the nameplate to ensure flow range meets application requirements.
6. Ensure water flow direction keeps consistent with the arrow direction indicated in the valve body. Wrong direction will cause system blockage or even system breakdown.
7. Do not damage measuring ports and lifting lug (larger than 6") during installation.
8. Assign trained and experienced installation workers to ensure smooth installation.
9. Make a full inspection after completion to ensure proper installation.



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