VMV®

ZHEJIANG NEWTON FLUID CONTROL CO.,LTD

Headquarters(Wenzhou)
Zhiyi road,Lingxia industrial zone,Wuniu,Wenzhou,
Zhejiang,China.
Tel：86-577-67978269
Fax：86-577-67376711
E-mail:vmv@vmv-valve.com

CE PED ISO TS EAC CCS
www.vmvvalve.com

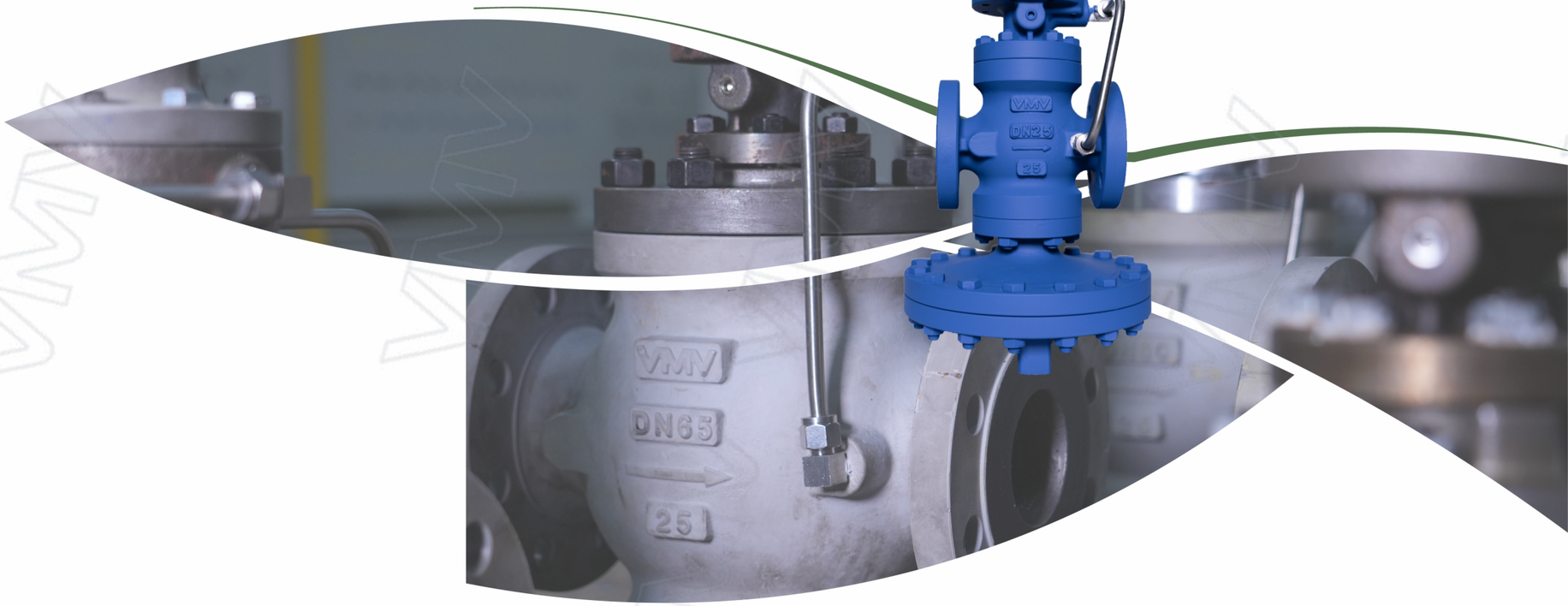
Scan More Wonderful

2025© Newton reserves the right to version and technical interpretation. Any counterfeiting will be investigated

2025© Newton Fluid Control Products Manufacturer

VMV®

V5001
Pilot Operated
Pressure Reducing Valve



About VMV

"Let our Valves create Maximum Value"--This is what the brand VMV stands for. ZHEJIANG NEWTON FLUID CONTROL CO.,LTD. is committed to providing comprehensive solutions for steam and thermal energy systems. Our products include bellows sealed valve series, steam trap series, control valve series and GGC valve series. Not just products service, but from the site survey, energy saving diagnosis, full range of product development, project landing, operation monitoring to from system solutions, all follow the principle of sustainable development.

Shanghai R&D Center

Our plant covers an area of 75,000 m^2, the laboratory covers 2,000 m^2, the factory has realized intelligent workshop management, including robot production line, intelligent CNC machine center, three-dimensional warehouse, dust free workshop, high and low temperature test laboratory, etc. We have also qualified with CE PED 0036, ISO9001, ISO14001, ISO45001, EAC, TS A1, CCS certificates etc.

350 Employees

75000m² Factory Area

37 Engineers

2000m² Laboratory Area

Flow Resistance Smart Test Device

Function:

Measurement of the rated Cv(Kv) value of control valves and outputting the flow characteristic curve.

Features:

1. PLC+ touch screen intelligent control can achieve one-button automatic testing of the Cv(Kv) value of the control valve and output the flow characteristic curve.
2. The detection data table is connected to the MES system and can transmit the detection data to the MES system in real time for storage.
3. One-button automated valve fixture mounting is convenient and fast.

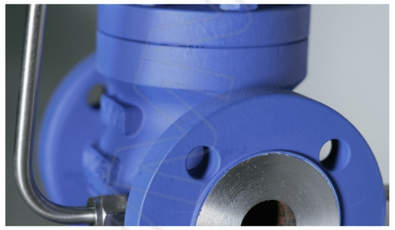
Product Introduction

In the steam system of heating, temperature control, refrigeration and even the entire field of industrial fluid automation, the pressure reducing valve is a common and indispensable fluid control component. Its main function is to reduce the high-pressure steam to the low-pressure steam required by the equipment to ensure that the equipment is in the most efficient working state. These valves operate without requiring any external power source or controller, utilizing the steam medium itself as the motive force to automatically adjust and stabilize the pressure downstream of the valve. Conventional pressure reducing valves often suffer from issues such as poor regulation accuracy, significant pressure fluctuations after reduction, short service life, and excessive leakage. In severe cases, they can even cause downstream over pressure, leading to emergency shutdowns and substantial losses for users.

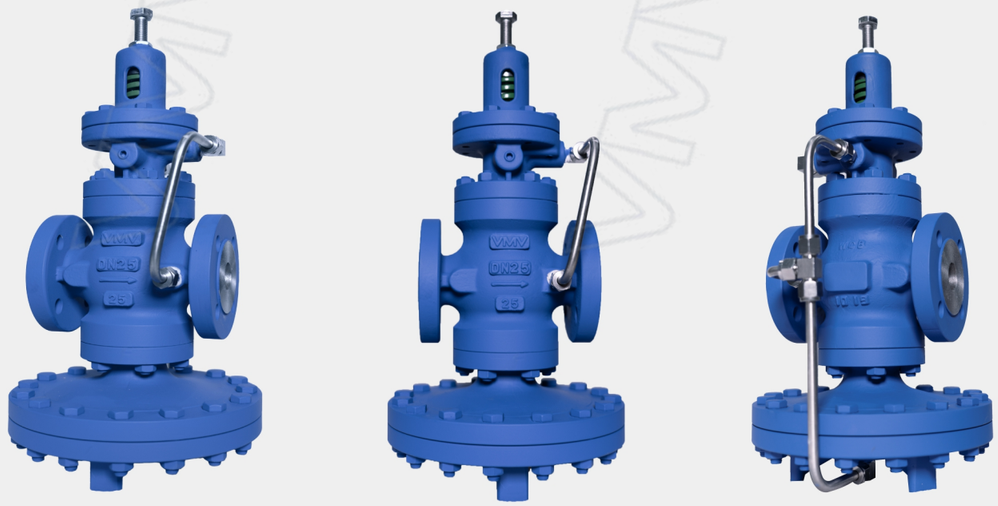
To address this series of risks, VMV Newton's R&D team conducted in.depth on-site investigations, gathered extensive operational data, and undertook significant technical development, Through rigorous testing and validation, we designed, manufactured, and have successfully delivered the V5001 series pilot-operated reducing valve, which fully meet user requirements.

The V5001 series pilot-operated pressure reducing valve offers the following features:

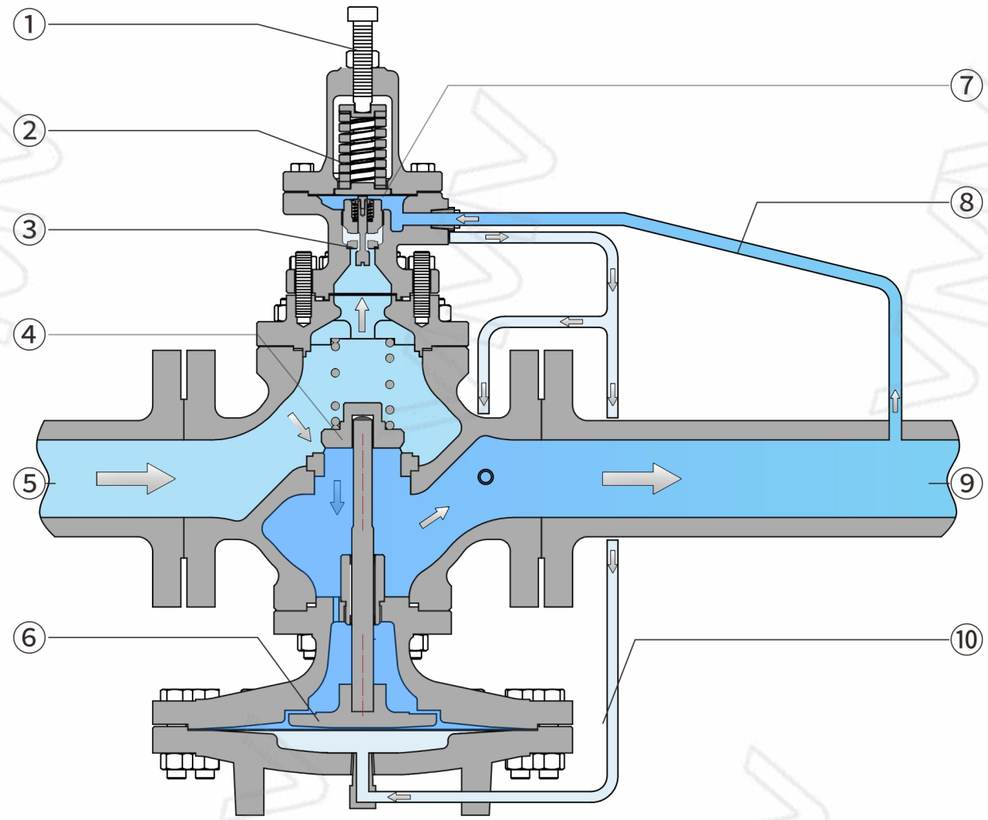
- High pressure reduction accuracy: ±3%
- Wide pressure adjustment range: 0.02-2MPa
- Large pressure reduction ratio: 20:1
- Good control stability
- Long service life
- High temperature and pressure resistance
- Large flow capacity
- Fast response speed



Product Three Views



Working Principle



Item	Name
1	Pressure regulation
2	Control spring
3	Pilot valve core and valve seat
4	Main valve core and valve seat
5	High pressure steam inlet
6	Main valve diaphragm
7	Pilot diaphragm
8	Downstream pressure sensing line
9	Low pressure steam outlet
10	Control pressure

1. The main valve is normally closed, and the pilot valve is normally open. When the regulating valve is put into operation, the steam enters the inner cavity of the pilot valve through the pilot valve core and the valve seat;

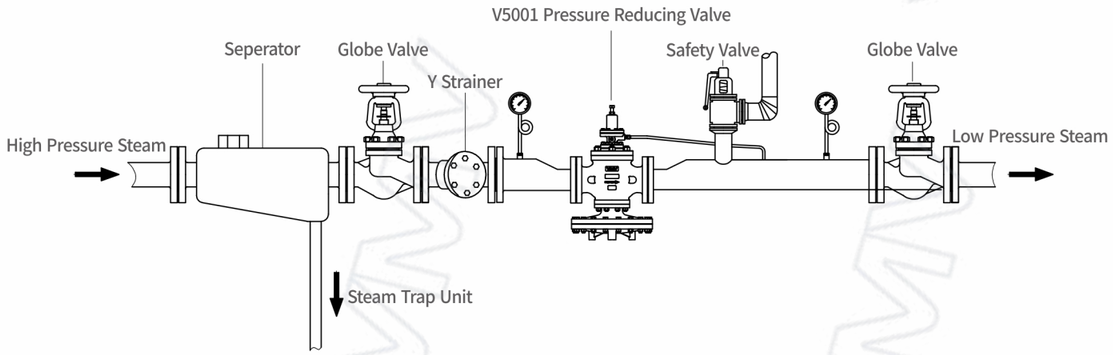
2. The steam is divided into two paths after the pilot inner cavity, one path is connected to the valve to release the steam pressure; the other path enters the main valve diaphragm, generating pressure to push the main valve core to open; the steam enters the rear pipeline from the main valve core and the valve seat; as the rear steam outlet pressure increases, it overcomes the force added by the control spring and the pilot valve core throttling, so that the main valve core is at an appropriate throttling opening, thereby maintaining the outlet pressure at the set value;

3. When the downstream pressure increases, the pilot valve core is closed, and the pressure is released from the main valve diaphragm through the control hole, thereby closing the main valve.

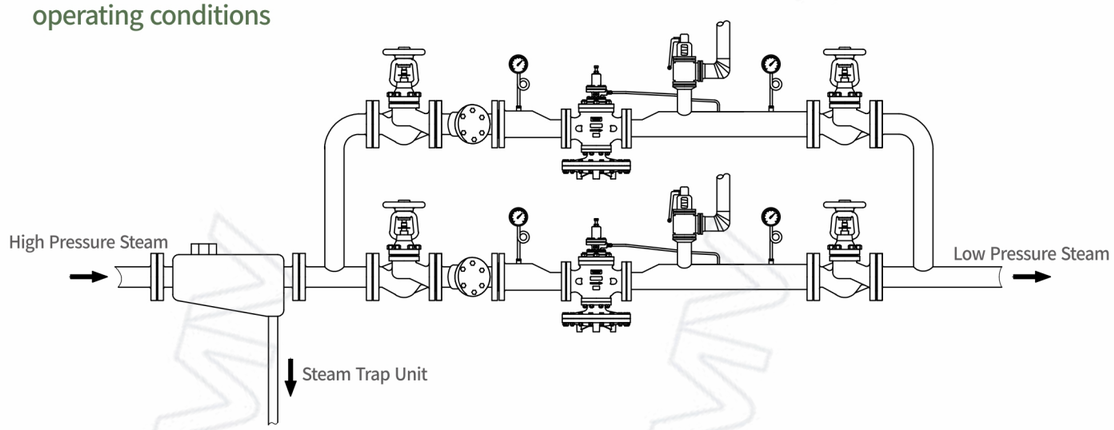
Any changes in load or pressure will be immediately sensed by the pilot diaphragm, and the position of the main valve will be adjusted accordingly to ensure that the downstream pressure is constant.

Typical Installation Diagram Example

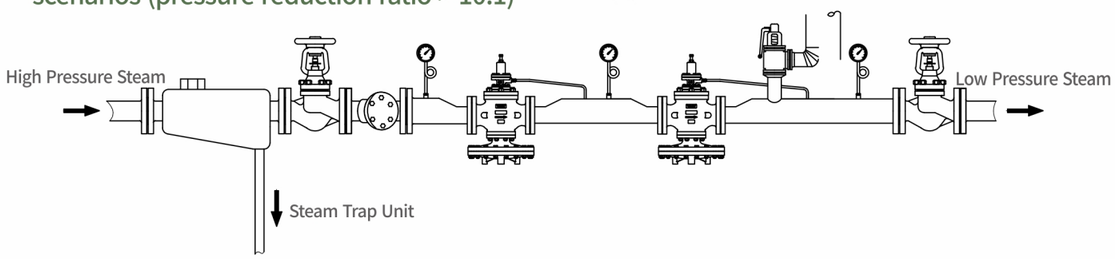
1.The standard-installed pressure reduction system



2. Parallel-installed pressure reduction system: used for large flow variations or backup operating conditions

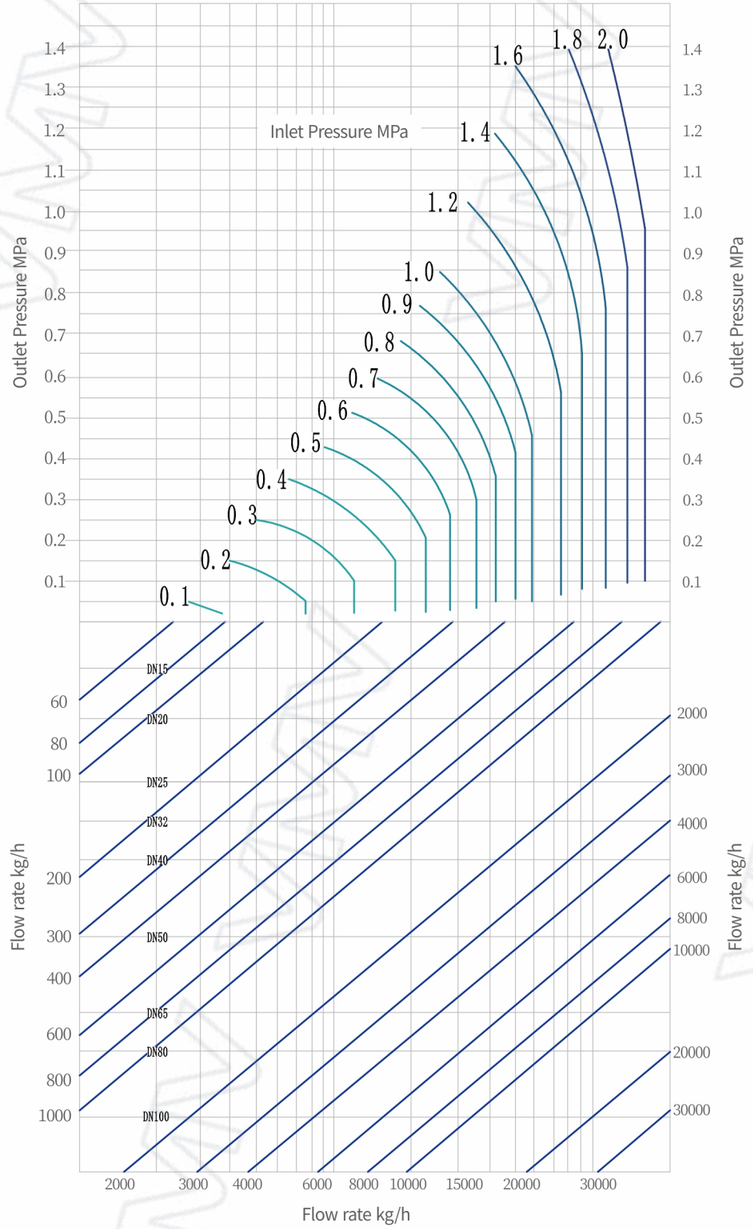


3. Series-connected pressure reduction system, used for high-pressure pressure reduction scenarios (pressure reduction ratio > 10:1)



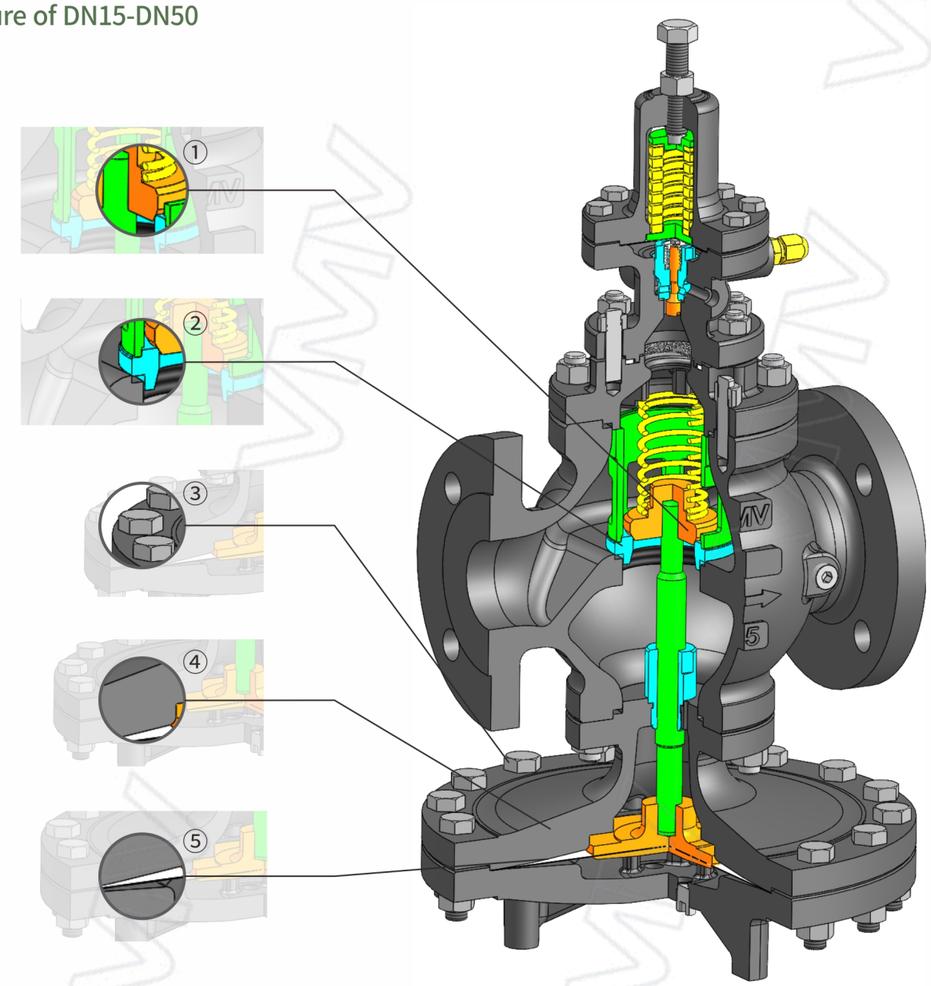
Size Selection Table (Medium: steam)

Note: The safety factor is set at 80% -90%



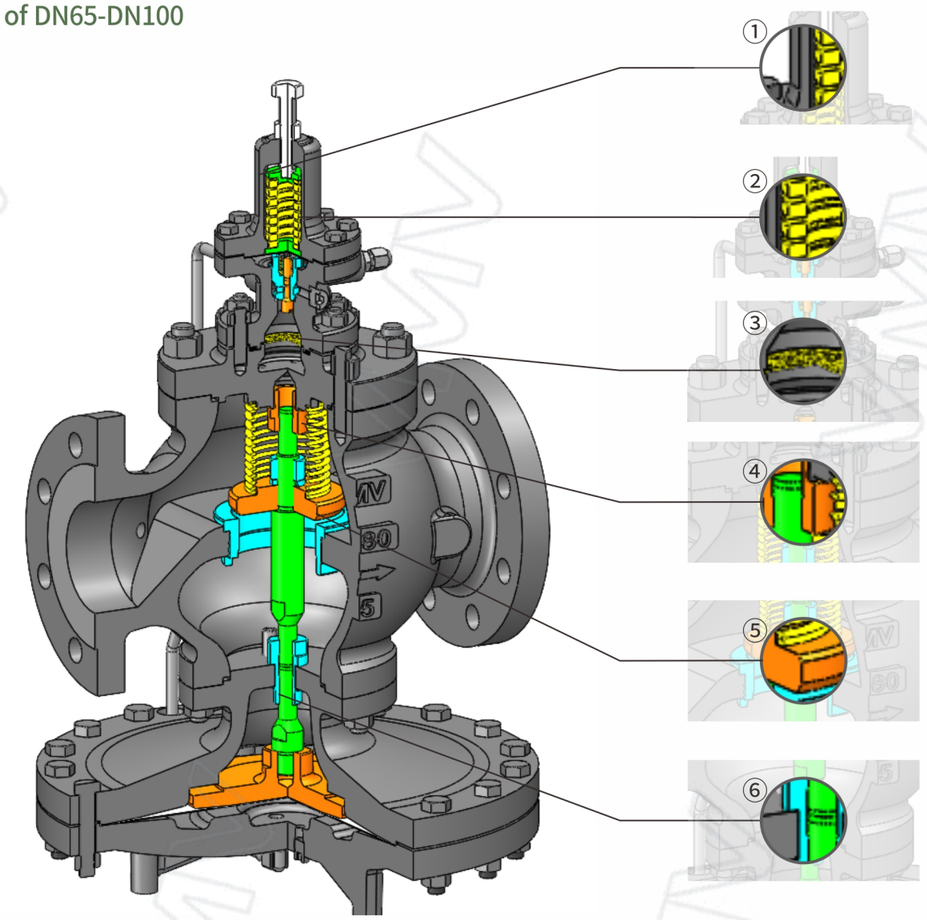
Structure and Characteristics

Structure of DN15-DN50



Item	Name	Function
1	Upward pressure valve seat structure	By loosening the valve cover bolts, the valve internals can be removed one by one, allowing for quick maintenance and replacement of the valve seat and internals at the user's site, saving users maintenance time
2	Floating valve core structure	When closed, it can ensure precise fit between the valve core and the sealing surface of the valve seat, resulting in lower leakage.
3	Bolt connection structure	All components can be disassembled, making maintenance and repair convenient and fast.
4	Super large diaphragm area structure	Large pressure can push the valve stem to move quickly, improving the adjustment accuracy.
5	Metal double-layer diaphragm structure	Metal diaphragm can ensure good sealing strength and tensile strength under high temperature steam conditions, not only with sensitive response, but also with longer service life.

Structure of DN65-DN100



Item	Name	Function
1	Pilot valve core structure	Small pressure changes behind the valve can cause the action of the pilot valve core, thereby guiding the rapid action of the large valve core, with fast response speed and high adjustment accuracy.
2	Multiple spring combination structures	When closed, it can ensure precise fit between the valve core and the sealing surface of the valve seat, resulting in lower leakage.
3	Built in large-area filter structure	It can prevent foreign objects from entering the pilot valve core and causing jamming and leakage, greatly improving the service life of the pilot valve core.
4	Dual directional structure of valve core	The valve core runs smoothly, reliably, and has higher adjustment accuracy.
5	Valve stem without packing structure	Reduce external leakage points, decrease the operating friction of the valve core, and improve the accuracy of valve core adjustment.
6	Single seat spherical sealing structure	Spherical sealing can automatically align the valve core, combined with single seat sealing, resulting in lower leakage.

Technical Parameters

Size: DN15~DN100

Pressure: PN16~PN40

Inlet max. pressure: 3MPa

Outlet pressure: 0.02-2MPa

Max. temperature: 315°C

Performance

Flow characteristic: quick-opening

Max. pressure reduction ratio: 20:1

Leakage level: <Rated flow 0.0001%

Min.differential pressure: 0.05MPa

Accuracy: ≤±3%

Body Materials & Temperature Ranges

Materials for valve internals

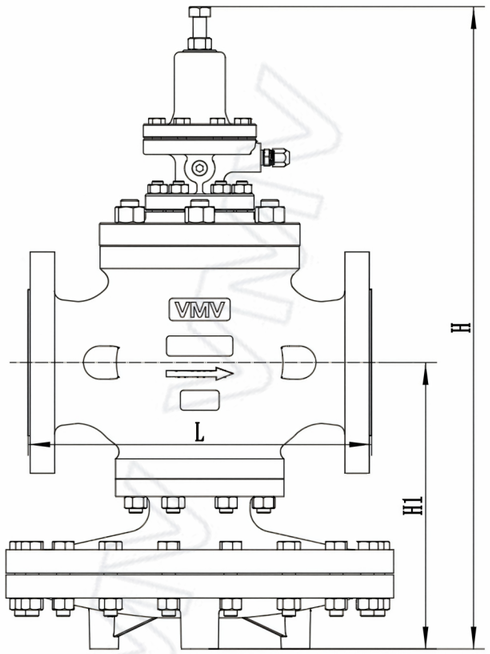
Body/Cover	Seat	Plug	Stem
WCB	420+HT	420+HT	410+HT
CF8	304+STL	304+STL	304

The use temperature of valve body material corresponds to the pressure range(MPa)

TEMP°C	PN16					PN25					PN40				
	WCB	WC6	WC9	CF8	CF8M	WCB	WC6	WC9	CF8	CF8M	WCB	WC6	WC9	CF8	CF8M
-196~-30	-	-	-	1.57	1.57	-	-	-	2.45	2.45	-	-	-	3.92	3.92
-29~38	1.61	1.63	1.63	1.57	1.57	2.52	2.55	2.55	2.45	2.45	4.03	4.08	4.08	3.92	3.92
50	1.58	1.63	1.63	1.51	1.52	2.47	2.55	2.55	2.36	2.37	3.95	4.08	4.08	3.78	3.8
100	1.46	1.63	1.63	1.29	1.33	2.29	2.54	2.54	2.02	2.08	3.66	4.06	4.07	3.23	3.33
150	1.43	1.57	1.58	1.17	1.22	2.23	2.45	2.48	1.83	1.9	3.57	3.93	3.96	2.93	3.04
200	1.38	1.51	1.54	1.09	1.13	2.16	2.37	2.41	1.70	1.76	3.46	3.79	3.85	2.72	2.82
250	1.32	1.46	1.46	1.03	1.05	2.06	2.28	2.29	1.60	1.65	3.29	3.64	3.66	2.56	2.63
300	1.22	1.35	1.35	0.97	1.00	1.91	2.11	2.11	1.51	1.56	3.06	3.38	3.38	2.42	2.50
350	1.17	1.27	1.27	0.93	0.96	1.82	1.98	1.98	1.46	1.5	2.92	3.18	3.18	2.33	2.40
375	1.15	1.23	1.23	0.92	0.94	1.80	1.91	1.91	1.44	1.47	2.88	3.06	3.06	2.30	2.36
400	1.09	1.15	1.15	0.90	0.93	1.70	1.80	1.80	1.41	1.45	2.72	2.89	2.89	2.26	2.32
425	0.91	1.11	1.11	0.88	0.92	1.42	1.73	1.73	1.37	1.44	2.27	2.77	2.77	2.20	2.30

Rated Cv Value

Size	DN 15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
Rated Cv	5	7	11	14	20	35	54	70	108

Dimension and weight

Size	L	H	H1	Weight
	mm	mm	mm	kg
DN15	150	410	180	14.8
DN20	150	410	180	15.7
DN25	160	420	185	20.3
DN32	180	450	205	23.5
DN40	200	450	205	25.1
DN50	230	515	225	30.6
DN65	290	565	265	65.2
DN80	310	590	275	71.3
DN100	350	680	335	112.2