集 鴻 五 金 有 限 公 司
Chip Hong Hardware Sdn. Bhd. Company No. 201201039335 (1023813-W)
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PICV 03012

Description

Dynamically balanced electric regulating two-way valves are used to control flow in regional refrigeration systems. Electric or electric actuator is assembled to transmit the control signal of electric controlling equipment and connect the regulator. And has the communication function to transfer to the upper computer, which is conducive to the energy saving operation control of the system.

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Key features

Valve diameter DN15 ~ DN25, nominal pressure PN16/25, suitable for liquid temperature up to 100 °C.

The combined dynamic balanced electric regulating two-way valve comprises a valve body, a film actuator and an adjustable orifice plate (connected to the electric heating actuator), and the maximum flow rate can also be mechanical at the orifice plate.

Regulating characteristic

- Low maintenance and no auxiliary energy required
- Compact design
- Single seat body with a balanced spool ensures high accuracy for maximum adjustable flow
- Control quality is independent of pipe network pressure difference, for example, temperature control equipment is used to control temperature
- Suitable for water and other liquids, so that the material is not susceptible to corrosion

Figure 1A Electric regulating or switching actuator

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Type (Figure 1A Figure 1B Figure 1C)

Body material is brass with threaded joint;
Dynamic balance electric regulation two-way valve;
Through DIN EN14597 standard inspection, Multi-type electric or electric actuator
Electric actuator with relevant communication functions;
Used for temperature control and maintenance purposes.

Figure 1C Main valve

Figure 1B Electric heating switch or regulator actuator

Working principle

The process medium flows through the combined in the direction indicated by the PICV valve body arrow. Dynamic balance electric regulation two-way control valve. Orifice (1.2) release area and spool (3) determine the flow rate. A pressure difference ∆p is generated when the process medium flows through the orifice. The pressure difference is transmitted through the pressure guide tube (11) and the spool hole to the working diaphragm (6.1), where it is converted into the positioning force. The thin film actuator controls the p limit at the orifice plate and the flow determined by the orifice plate to ensure that the spool spring force is balanced with the thrust of the actuator. The maximum flow rate is adjusted by the set point regulator (12) to adjust the maximum opening of the orifice plate. If the flow required by the device is lower than the adjusted maximum flow, the electric actuator will position the orifice plate accordingly. Since the pressure difference through the orifice plate (limited) should remain constant when the network pressure difference changes, the weight of the control valve (orifice plate based on electric operating pressure) is approximately 1. Therefore, the control quality of climate compensation temperature control equipment is not affected by the pressure difference through the pipe network.

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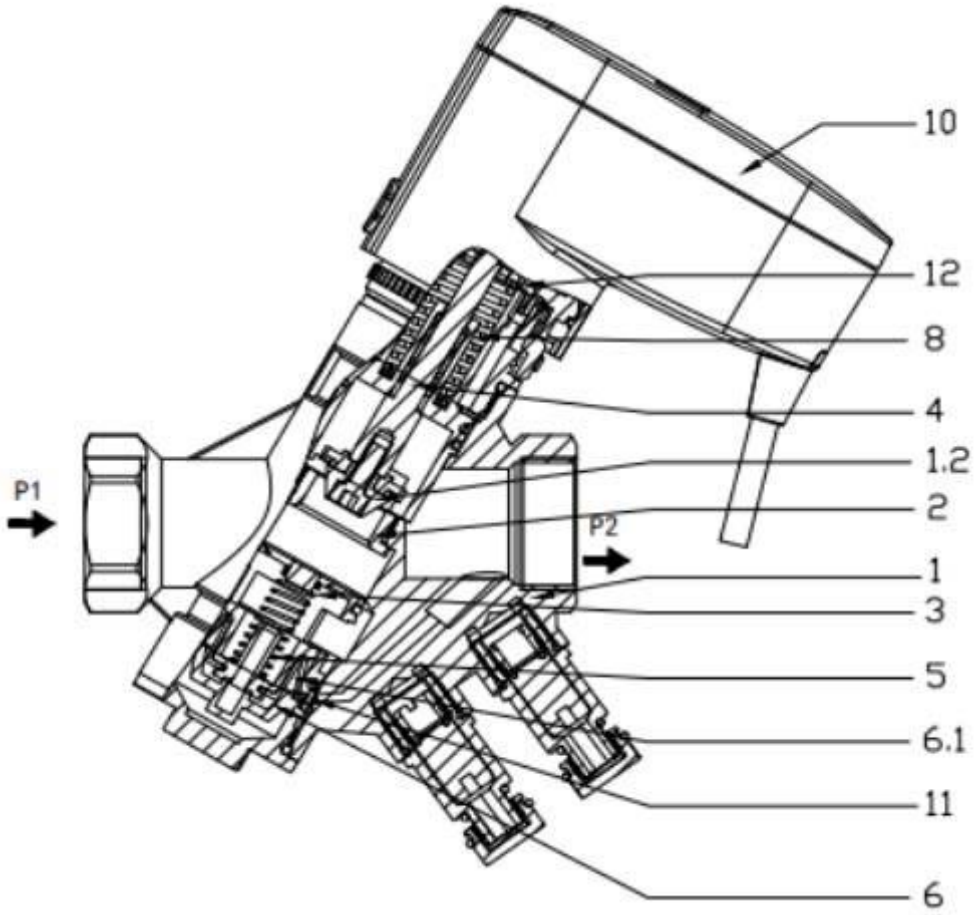

1 Valve body	6 Thin film actuator (shell)
1.2 Orifice plate for regulating flow set points	6.1 Working diaphragm
2 Valve seat	8 Reset spring
3 Spool	10 Electric actuator
4 Valve stem	11 Pressure tube
5 Positioning spring	12 Set point regulator belt

Figure 2 PICV with Electric regulating or switching actuator

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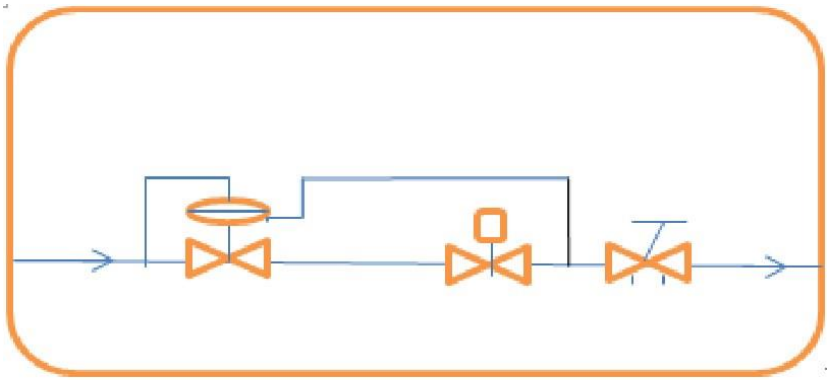
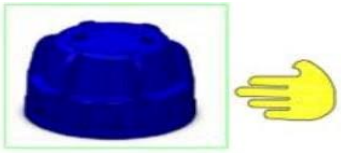
The dynamic balance electric regulating two-way valve (PICV) controls the flow

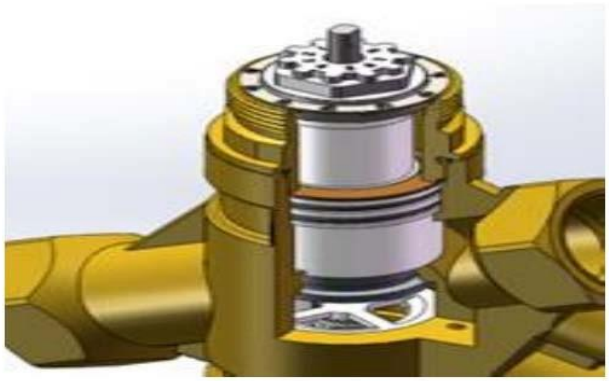
- Automatically adjust the flow rate according to the cold/heat load at the controlled loop/end;
- Maintain a constant flow rate under varying system pressure differential



Adjustment step

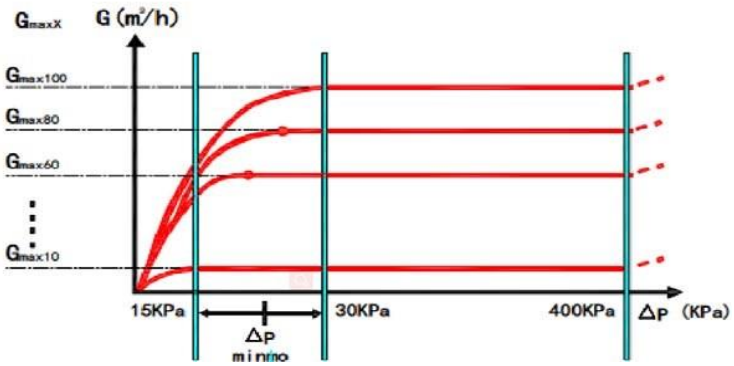
The maximum flow is designed to the desired design flow range
Open the guard and adjust the maximum flow with a wrench on the adjusting dial.
Refer to the flow meter and rotate





Scope of work

In order to ensure that the flow rate is always stable independent of the pressure difference, it is necessary to ensure that the entire valve works within the minimum pressure difference and maximum pressure difference range



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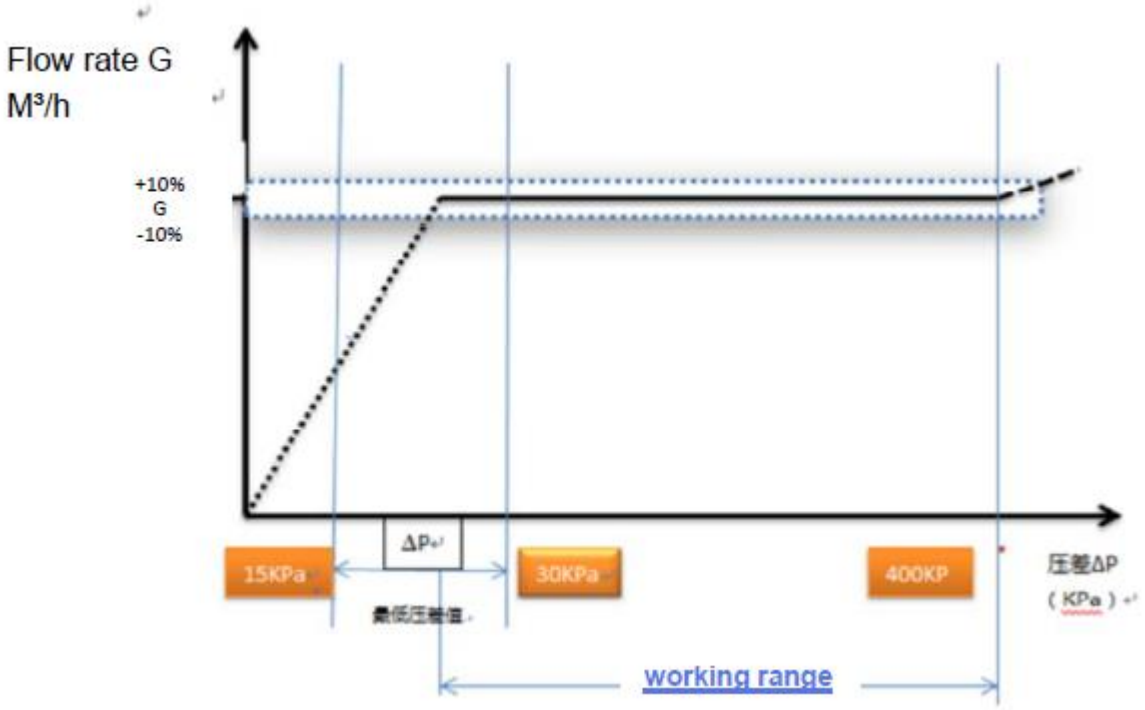
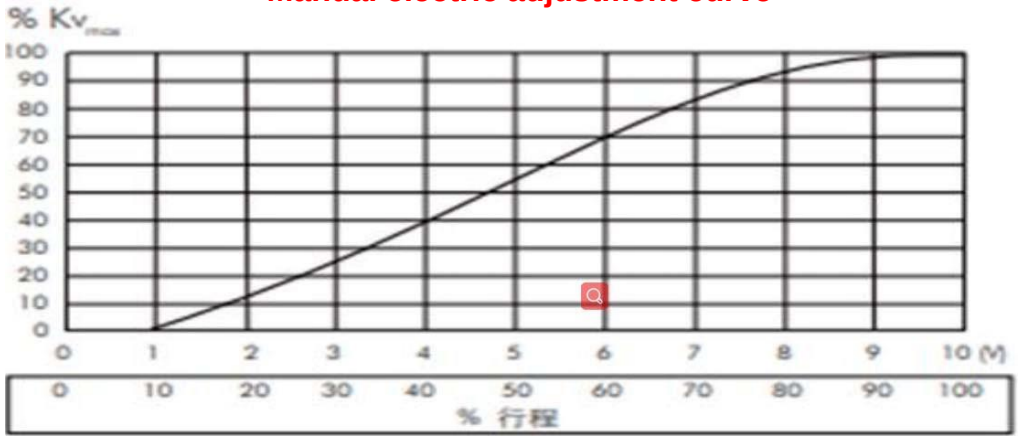
Control precision



Lift of electric regulating valve or electric heating driver

After setting the maximum flow value, the electric actuator automatically adjusts the flow value according to the cooling and heating load required by the system under the instruction of the external regulator

Manual electric adjustment curve



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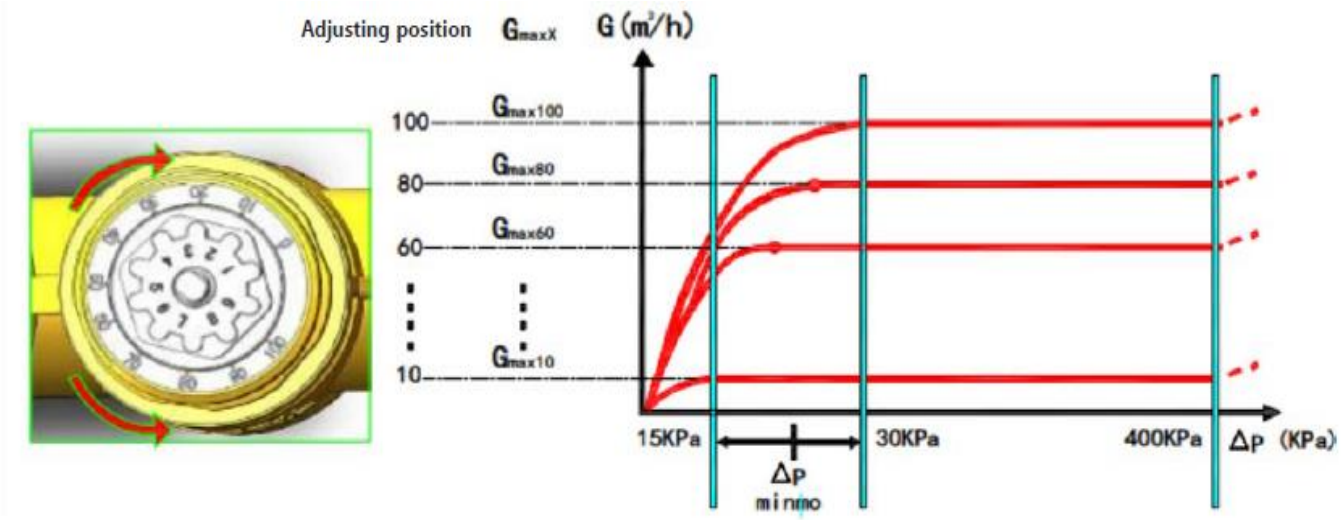
Pressure Difference Control

By balancing differential pressure and internal spring tension, the differential pressure regulator dynamically controls a constant pressure difference ΔP between the upstream/downstream of the valve. If the differential pressure increases, the piston of the differential pressure regulator acts upward to reduce the flow of water through the valve and maintain a stable differential pressure; In this case, the flow value does not change



To ensure constant flow independent of differential pressure changes, the entire valve differential pressure must be within the range of the minimum low pressure differential (see flow performance adjustment table) and the maximum differential pressure of 400 kPa

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Detailed adjustment data for DN15

DN15	0.6V	0.8V	1V	2V	3V	4V	5V	6V	8V	9V	9.5V	10V
9	150	182	191	249	323	431	545	639	785	834	852	872
8	158	181	197	250	328	438	537	623	767	808	819	832
7	165	190	201	249	325	415	510	584	705	733	741	747
6.5	148	179	196	254	322	413	511	578	673	698	705	707
6	162	192	201	250	319	397	474	535	602	617	619	620
5.5	146	183	201	251	314	388	463	512	571	572	573	676
5	152	187	198	248	311	369	415	448	472	478	479	482
4	161	189	202	228	298	331	366	393	400	414	414	417
3	163	185	191	186	263	290	305	313	321	322	324	325
2	142	159	16	130	200	211	218	220	223	224	224	226
1.5	90	110	117	85	134	138	139	139	141	142	143	143
1	38	67	70		86	88	89	89	92	89	95	96

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Detailed adjustment data for DN20

DN20	0.6V	0.8V	1V	2V	3V	4V	5V	6V	7V	8V	9V	9.5V	10V
9	194	219	241	308	437	565	701	844	1010	1216	1326	1378	1450
8	184	210	233	310	420	552	680	822	964	1138	1259	1331	1365
7	183	207	229	314	428	547	670	804	936	1099	1191	1222	1235
7.5	193	211	230	301	427	537	662	796	910	1051	1105	1120	1136
6.5	180	208	227	307	404	530	646	758	862	921	992	1009	1028
6	194	215	233	303	406	525	632	723	789	813	840	849	857
5.5	180	205	228	299	397	513	611	680	720	724	748	765	760
5	182	208	228	294	393	492	572	623	646	663	681	684	686
4	174	200	221	285	375	439	481	513	539	559	562	563	568
3.5	176	201	218	274	345	393	425	452	476	489	494	495	520
3	176	194	210	257	301	338	354	374	385	391	392	398	420
2	162	178	185	213	236	247	253	259	263	263	264	274	298
1.5	149	155	160	177	188	192	196	197	198	198	221	243	256
1	121	123	126	132	136	137	138	139	139	139	119	119	118

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Technical data

DN	15	20	25
Kv	4	6.3	8
Pressure	PN25		
working △P range	1Bar to 4Bar		
Temperature	liquid 120°C		
Flow set point range unit for water m 3 /h			

The minimum allowable pressure difference ΔPmin through the control valve is calculated as follows:

$$\Delta P_{\min} = \Delta \mathrm{P}_{\mathrm{r}estriction} + \left(\frac{V}{K_{VS}} \right)^2$$