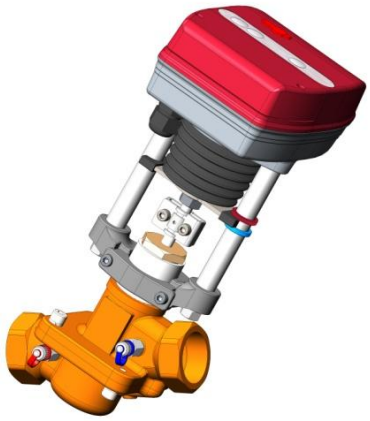
Fig. KBP16

PICV – Pressure Independent Control Valve

PN16

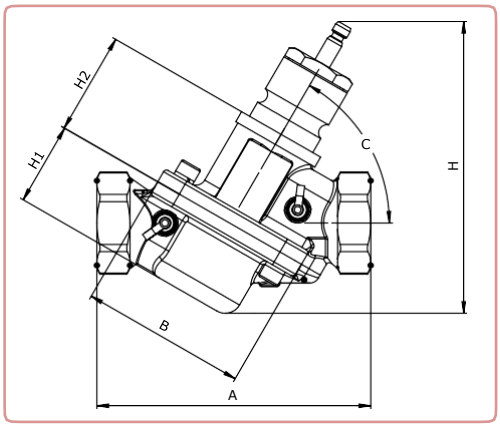
SPECIFICATION

- Pressure Rating: PN16
- Medium temperature -10 to 120°C
- Female threaded ends connection ISO7-1
- Brass body
- Stainless steel stem
- Stainless steel test points
- PTFE Sealing ring
- EPDM Diaphragm
- Actuator details:
    - Modulating : 24V DC, 0-10V DC



TECHNICAL NOTES:

- The valve needs to be installed so that the flow passes in the proper direction through the valve.
- The valve has to be installed upright.
- The valve should be installed in a clean water system (after flushing). In case the valve is installed during flushing or pressure testing, the valve must be fully opened, otherwise the diaphragm insert could get damaged.
- Install the actuator after the pipeline pressure test.

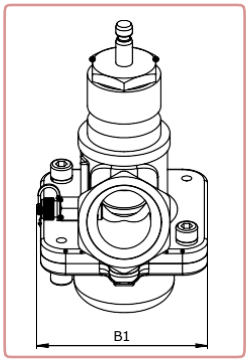


NOTES:

- Accuracy ±10%
- Maximum close-off pressure: 4 bar
- Differential pressure range 35 – 400 kPa
- Leakage rate: 0.02% of maximum flow rate

DIMENSIONS

DN	A	B	C	H1	H2	H	B1
32	146	90	60	53	58	175	95
40	165	100	60	50	62	177	103
50	190	120	60	65	74	203	120



DN (mm)	Opening (%) - Flow (m^3/h)														
	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
32	1.25	1.63	1.71	1.85	2.10	2.21	2.35	2.50	2.66	2.79	2.90	3.04	3.20	3.36	3.50
40	1.29	1.74	1.83	2.24	3.04	3.61	3.85	4.16	4.41	4.66	4.90	5.16	5.40	5.75	6.00
50	1.35	1.81	1.92	2.45	3.12	3.77	4.07	4.42	5.03	5.40	6.10	6.50	7.20	7.50	8.00

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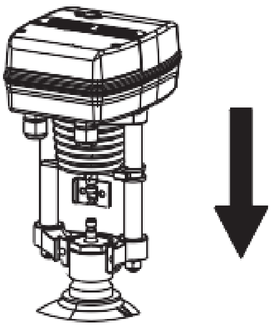
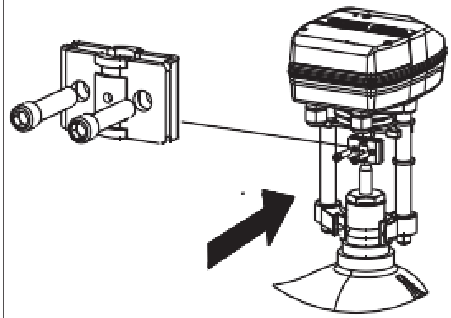
Actuator Assembly Instructions

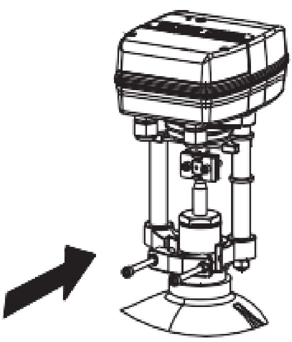
1. Take down the fixed fitting,and disentangle the clip.



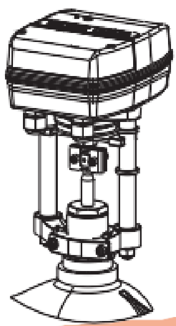
2. Make sure the actuator shaft is concentric with the valve stem (which can be observed from the hole) then tighten the two screws on the clip.



3. Pull the fixed fitting to the groove and lock it by tightening the two screws.



4. This is how the valve and actuator should look after correct assembly..



Electrical Actuator for PICV

Modulating Type (24V)

For KIDS PICV DN32 – DN250

Specification

- DC Brushless Electric Motor
- Power Supply: 24V AC/DC ±15%, 50Hz
- Power Consumption: Run 14VA; Max. 25VA
- Control Signal: 0(2)~10VDC, 0(4)~20mA
- Feedback Signal: : 0(2)~10VDC, 0(4)~20mA
- Stainless steel bracket
- Aluminum die casting base
- IP54 Protection Class

Type Summary

500N Actuator

Size (DN)	Type Description	Rating Force	Stroke	Operating Voltage	Control Signal	Feedback Signal	Running Time (50Hz)
DN32-DN40 (Modulating)	Proportional & 3 Position Type	500N	30mm	24VAC 24VDC	0(2)~10VDC 0(4)~20mA	0(2)~10VDC 0(4)~20mA	high speed: 1s/mm medium speed: 2s/mm

1000N Actuator

Size (DN)	Type Description	Rating Force	Stroke	Operating Voltage	Control Signal	Feedback Signal	Running Time (50Hz)
DN50-DN65 (Modulating)	Proportional & 3 Position Type	1000N	30mm	24VAC 24VDC	0(2)~10VDC 0(4)~20mA	0(2)~10VDC 0(4)~20mA	high speed: 1s/mm medium speed: 2s/mm

1000N Actuator

Size (DN)	Type Description	Rating Force	Stroke	Operating Voltage	Control Signal	Feedback Signal	Running Time (50Hz)
DN80-DN150 (Modulating)	Proportional & 3 Position Type	1000N	50mm	24VAC 24VDC	0(2)~10VDC 0(4)~20mA	0(2)~10VDC 0(4)~20mA	high speed: 1s/mm medium speed: 2s/mm

3000N Actuator

Size (DN)	Type Description	Rating Force	Stroke	Operating Voltage	Control Signal	Feedback Signal	Running Time (50Hz)
DN200-DN250 (Modulating)	Proportional & 3 Position Type	3000N	50mm	24VAC 24VDC	0(2)~10VDC 0(4)~20mA	0(2)~10VDC 0(4)~20mA	high speed: 1s/mm medium speed: 2s/mm

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Electrical Actuator for PICV

Modulating Type (24V)

For KIDS PICV DN32 – DN250

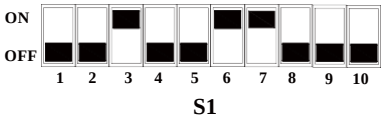
DIP Switch Instruction

Switch	Function		Description
S1-1	Starting of control/ feedback signal	ON	20%:the starting of control/feedback signal is 20%(namely 4~20mA or 0~10VDC)
		OFF	0:the starting of control/feedback signal is 0(namely 0~20mA or 0~10VDC)
S1-2	Type of control signal	ON	II:current signal
		OFF	UI:voltage signal
S1-3	Impedence match of control signal	ON	UI:voltage signal
		OFF	II:current signal
S1-4	Type of feedback signal	ON	IO:current signal
		OFF	UO:voltage signal
S1-5	Operating mode	ON	DA:When the control signal increase, actuator shaft extends;When the control signal decrease, actuator shaft retracts.
		OFF	RA:When the control signal increase, actuator shaft retracts;When the control signal decrease, actuator shaft extends.
S1-6	Losing control signal mode	ON	DW:When lose control signal (voltage type or current type), actuator will provide a min. control signal internally.
		OFF	UP: 1)When lose control signal (voltage type),actuator will provide a max. control signal internally. 2)When lose control signal (current type),actuator will provide a min. control signal internally.
S1-7	Self-stroking mode	ON	DF:Power on each time, self-stroking starts automatically.
		OFF	RF:Self-stroking starts only when press the red self-stroking button manually.
S1-8	Control mode (when S1-9 is OFF)	ON	3-position type
		OFF	Proportional type
S1-9	Control type	ON	RS485 interface control(Modbus protocol)
		OFF	Proportional type and 3-position type
S1-10	Speed	ON	high speed: 1s/mm
		OFF	medium speed: 2s/mm

Function Introduction

Proportional Type

Control signal/feedback signal：0~10VDC



S1

When the Actuator is proportional type, terminal B,O is power input, actuator can be controlled by connecting terminal O,E

As shown in the left, when equipped with Pressure Independent Control Valve, DIP Switch S1-5 is DA mode:

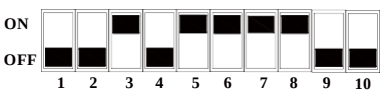
Control signal at terminal O,E increasing: actuator shaft retracts,valve stem extends,valve tends to open.

Control signal at terminal O,E decreasing, actuator shaft extends,valve stem retracts,valve tends to close.

Control signal at terminal O,E has no changing, actuator shaft and valve stem stay in present position.

When voltage (or current) signal is disconnected, this is equivalent to input a min. control signal, actuator shaft extends, valve closed.

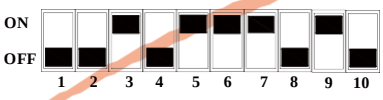
3-position Type
(the terminal O,E,Y doesn't work)



S1

When the Actuator is 3-position type, terminal B,O is power input, control the actuator by the switch O, UP, DOWN:
O, UP connected: actuator shaft extends, and valve stem retracts
O, DOWN connected: actuator shaft retracts, and valve stem extends
Notes: Terminal E,Y doesn't work by this time!

RS485 Bus Communication



S1

When the Actuator is RS485 bus communication, terminal B,O is power input, remote control by terminal 8,9:
Actuator can be controlled remotely by RS485 bus communication, actuator supports ModBus protocol.

Notes: Terminal O,E,Y,UP,DOWN doesn't work by this time!

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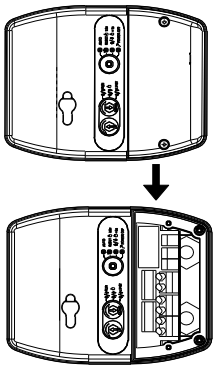
Electrical Actuator for PICV

Modulating Type (24V)

For KIDS PICV DN32 – DN250

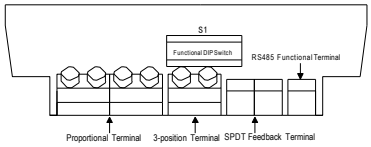
Wiring Instruction

1. Open the cover and prepare to wire.

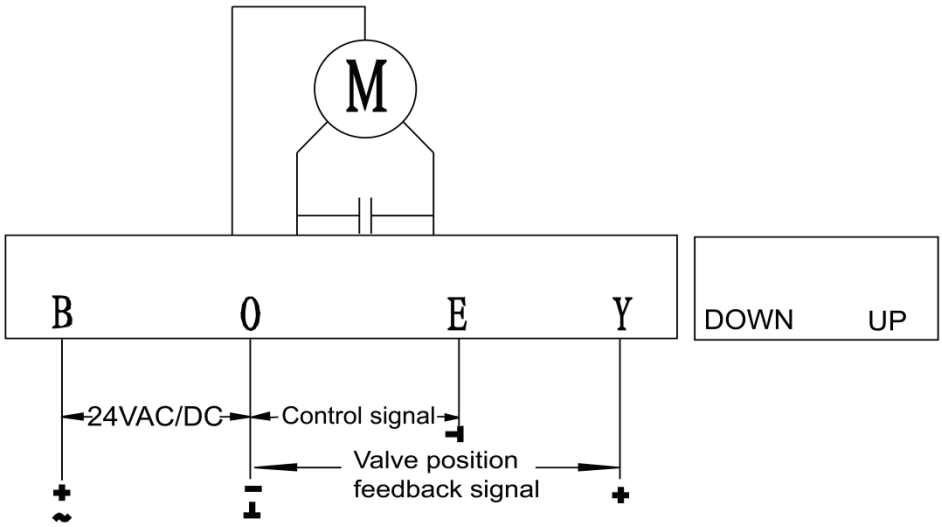


2.Wire correctly according to the wiring diagram.

24V Terminal Diagram



Wiring Diagram



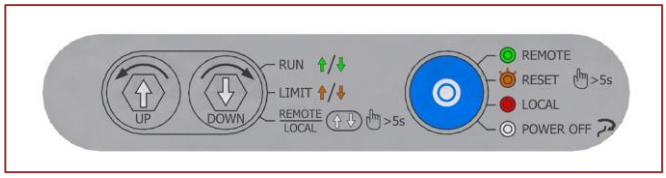
Proportional Type

Electrical Actuator for PICV

Modulating Type（24V）

For KIDS PICV DN32 – DN250

Indicating Light



❖Reset Light

Reset	Status	Description
Green	Always	Normal mode
Red	Always	Local mode
Yellow	Flickering（1Hz）	Self-stroking

❖Retractive Light-UP

UP	Status	Description
Green	Always	Normal mode
Yellow	Always	Reach upper limit position
Red	Flickering（1Hz）	Alarming
Red	Always	Local mode

❖Extended Light-DOWN

DOWN	Status	Description
Green	Always	Normal mode
Yellow	Always	Reach down limit position
Red	Flickering（1Hz）	Alarming
Red	Always	Local mode

Debugging Instruction

A.Connect actuator and valve body.

B. Wiring power and control signal wires.

C.Set DIP Switch to needed position. After the setting, turn on power of actuator, pre-setting function will come into effect. (DIP Switch can be set with power)

D. Turn on the actuator power.

E. Actuator Self-stroking: this step is for matching stroke of actuator and valve.

1)Actuator shaft extends to down limited position firstly and the Reset yellow indicating light will keep flickering (frequency is 1Hz). And then, it retracts to upper limited position and the Reset yellow indicating light will keep flickering (frequency is 1Hz). (Actuator will not be controlled by signal now).

2) Indicating light stops flickering after about 3 minutes and the Reset indicating light stop flickering. Self-stroking stops and the matching modulating of the valve and actuator is finished. By then, actuator running direction can be controlled by control signal.

Remarks: If self-stroking is needed in a power-on state, press down the Reset button on PCB over 5 seconds, and then the actuator start self-stroking. Self-stroking phenomenon are the same as step (1), (2) above.

F. Local mode:press the button UP and DOWN at the same time over 5s, loosen the buttons and actuator enter into local mode, at that time the UP, DOWN and Reset light will always be on red. If you need actuator shaft retracts, long press UP, the UP light will always be on green; If you need actuator shaft extends, long press DOWN, the DOWN light will always be on green. After reach to the expected position,repress UP and DOWN at the same time over 5s, and then loosen the buttons, it will exit the local mode.

Note:

1.The factory default setting is automatic self-stroking, it means that actuator will repeat automatic self-stroking when power on each time!

2.If you don't need automatic self-stroking function, you can set the 7th switch to OFF, it will change into manual self-stroking (Phenomenon as same with (1), (2).

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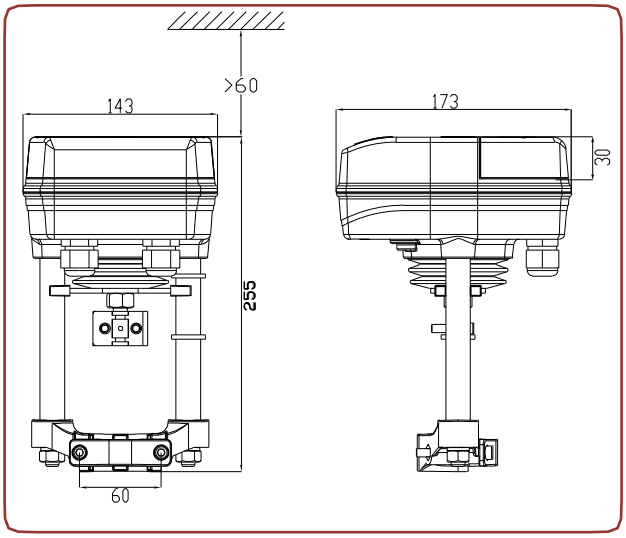
Electrical Actuator for PICV

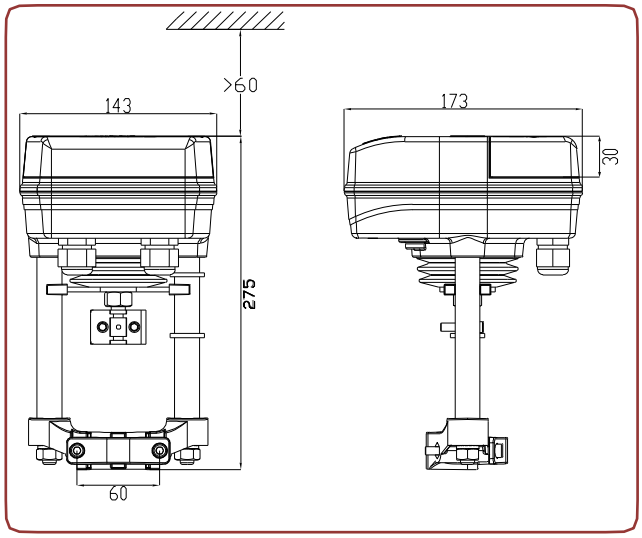
Modulating Type (24V)

For KIDS PICV DN32 – DN250

Dimension

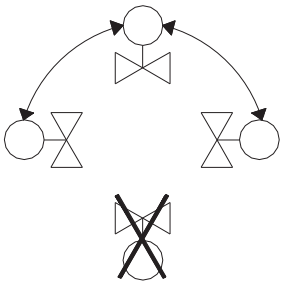


DN32-DN65



DN80-DN250

Installation Orientation



Note: Do not install the actuator in Downward position.

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Electrical Actuator for PICV

Modulating Type (24V)

For KIDS PICV DN32 – DN250

Technical Parameters

Operating Parameters	
Electric Motor	DC Brushless Motor
Operating Voltage DN32 to DN150	24VAC± 15%, 24VDC+ 15%
Frequency	50Hz / 60Hz
Power consumption	Run : 14VA ; Max. : 25 VA
Running speed	High speed : 1s/mm; Medium speed : 2s/mm
Sensitivity	Proportional type: 0.8% (factory setting)
Dead zone	2% (factory setting)
Impedance(only for proportional type) Voltage input impedance Current input impedance	 ＞100K ＜0.125K
Load requirements(only for proportional type) Voltage output load requirement Current output load requirement	 ＞1K ＜0.5K
Control signal	0(2)~10VDC, 0(4)~20mA
Feedback signal	0(2)~10VDC, 0(4)~20mA
Lifetime	100 000 times full open and close

Material	
Cover	PC
Bracket	Stainless steel
Base	Aluminum die casting

Environment Parameter	
Protection Level	IP54
*Permissible medium temperature Water valve	 -25~+150℃
Running Ambient tempreture: Ambient humidity:	 -10~+55℃ ≤95%RH
Transportation Ambient tempreture: Ambient humidity:	-30~+65℃ ≤95%RH
Storage Ambient tempreture: Ambient humidity:	 -15~+50℃ ≤95%RH

*Remark: when medium temperature in valve is below 0℃,such as:refrigerant(R12,R22,R134a ,R202) glycol and so on,valve stem should be protected by stem heater(Type:THOT...) to avoid the connection parts of valve body and valve stem frosting and icing.

Weight : 3.0 Kg (DN32-DN150)
Weight : 3.8Kg (DN200-DN250)

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