

# TIIS Flameproof approval and Intrinsically Safe approval Double Acting Electro-Pneumatic Valve Positioners

## Models HEP 25 / 26

### OVERVIEW

Mounted on control valves, HEP Electro-Pneumatic Valve Positioners model HEP25/26 control valve positions swiftly and accurately by supplying or discharging air from pneumatic actuators in response to input signals from controllers.

### FEATURES

- The magnet is a high-precision mobile coil. With a terminal box, it forms an explosion-proof structure. To check the inside, the covers of these models can be removed during operation.
- The rare-earth metal magnet has excellent magnetic characteristics. The mobile coil is round and energized by a flat spring. It requires no leads.
- Since each model is compact and lightweight, it can be used with even a small actuator. No piping is required

because the KZ03 pressure regulator with filter can be directly attached to the positioner.

### China RoHS

This device is used in the Oil & Gas, Petrochemical, Chemical, Pulp & Paper, Food & Beverage, Machinery, Steel/Metal & Mining, and Automobile industries and therefore does not fall under the China RoHS Legislation. If this device is used in semiconductor manufacturing equipment, labeling on the device and documents for the China RoHS may be required. If such documents are required, consult an Azbil Corp. representative.

### SPECIFICATIONS

#### **Models**

Model HEP25: TIIS Flameproof approval

Model HEP26: TIIS Intrinsically safe approval

#### **Input signals**

4 to 20 mA DC,

Half range (4 to 12 mA DC and 12 to 20 mA DC)

#### **Input resistance**

250 ± 10 Ω (4 to 20 mA DC input)

#### **Output characteristics**

Linear, equal-percentage, and quick-opening



HEP 25 / 26 (Double action)

#### **Air supply pressure**

200 to 690 kPa {2.0 to 7.0 kgf/cm<sup>2</sup>}

#### **Air consumption**

15 ℓ/min(N)

(steady-state under air supply pressure 490 kPa {5.0 kgf/cm<sup>2</sup>})

#### **Maximum passing air volume**

250 ℓ/min(N)

(steady-state under air supply pressure 490 kPa {5.0 kgf/cm<sup>2</sup>})

#### **Air connection**

Rc 1/4 (standard), 1/4 NPT internal thread

#### **Electrical connection**

G1/2, 1/2 NPT (model HEP26 only)

#### **Ambient temperature range**

HEP25: -10 to +70°C

HEP26: -10 to +60°C

#### **Ambient humidity range**

10 to 90% RH

#### **Specified actuators**

VP5 to 7

#### **Performance**

##### **Accuracy**

± 1% F.S.

**Dead band**

Within 0.1% F.S.

**Travel adjustment range**

12 to 100 mm

**Type of protection**

**TIIS Flameproof approval (model HEP25)**

With Flameproof terminal box or one with cable gland  
Complies with JIS C0903 Class d2G4 and JIS F8001

**TIIS Intrinsically safe approval (model HEP26)**

Complies with JIS C0903 Class i3aC5  
(With signal line supply voltage of 23.5 to 27.5V DC)  
Zener Barrier No.: 8907/51-24/45 (Certificate No.: 29911)

**Additional mechanism** (factory-mounted upon request)

- Model KZ03 pressure regulator with filter
- Universal elbow of Flameproof construction
- Cable grand adaptor

**Outer dimensions**

Refer to Figure 2.

**Weight**

4 kg (4.7 kg with pressure regulator with filter)

**Housing**

Aluminum alloy

**Finish**

- Standard finish (acrylic-baked)
- Corrosion-proof finish (epoxy-baked, Y138B)
- Corrosion-proof silver finish (acrylic-baked, Y138D)

*Note) Silver finish is not suitable in alkaline atmospheres.*

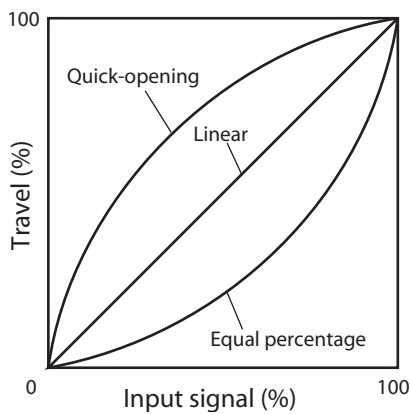
**Standard finish colors**

**Case**

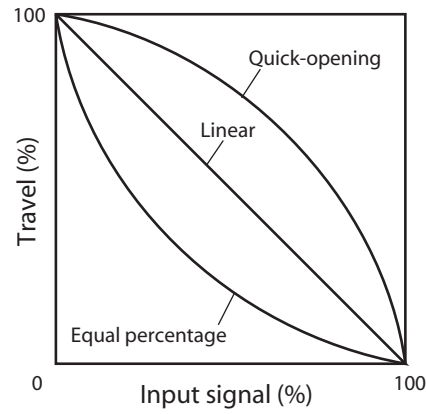
Dark beige (Munsell 10YR 4.7/0.5)

**Cover**

Light beige (Munsell 4Y 7.2/1.3)



a. Reverse-action actuator



b. Direct-action actuator

**Figure 1 Input/Output characteristics**

**Selection of input/output characteristics**

Since control valve flow rate characteristics are set by the selection of valve plug characteristics, select linear as the input/output characteristics of the positioner. However, if the valve plug's flow rate characteristics, which are determined by the valve type and structure, are not what is required, select equal-percentage or quick-opening. Overall flow rate characteristics of control valve can then be adjusted with the positioner.

**Table 1 Adjustment of control valve flow rate characteristics using positioner**

Valve plug characteristics	I/O characteristics of positioner	Overall flow rate characteristics of control valve
Linear	Quick-opening	Quick-opening
Linear	Equal-percentage	Equal-percentage
Equal-percentage	Quick-opening	Linear

**MODEL SELECTION**

Basic model                      Selection                      Option I                      Option II  
 HEP    

2	
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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
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(11)	(12)
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(13)
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**Basic model**

HEP25 (TIIS Flameproof)
HEP26 (TIIS Intrinsically safe)

*Note)*

\*1 Not for Japanese local market due to SI unit

\*2 When replacement, the finish of the existing HEP is corrosion resistant (Y138A), select this code of "S".

\*3 When replacement, the finish of the existing HEP is silver paint (Y138C), select this code of "D".

\*4 Specification of pressure regulator are selected by supply air pressure, painting and pressure gauge. The pressure regulator with filter must be separated with HEP (on selection 12, choose code "2") when any of following conditions are matched.

- In case, the mounting position of actuator is not vertical.
- In case, other equipments are put between pressure regulator and HEP.
- In case, there are conjunction between pressure regulator and HEP.
- In case, code "D" on selection 13, on Option II is chosen.

**Selection**

Selection			Code
(1)	Input signal	4 to 20 mA (Accuracy ± 1% F.S.)	1
		4 to 12 mA (Accuracy ± 2% F.S.)	3
		4 to 12 ± 1 mA (Accuracy ± 2% F.S.)	4
		12 to 20 mA (Accuracy ± 2% F.S.)	5
		12 ± 1 to 20 mA (Accuracy ± 2% F.S.)	6
(2)	Air supply pressure	130 ≤ Ps ≤ 150 kPa (Suitable press. gauge scale 200 kPa)	1
		150 < Ps ≤ 300 kPa (Suitable press. gauge scale 400 kPa)	2
		300 < Ps ≤ 400 kPa (Suitable press. gauge scale 600 kPa)	3
		400 < Ps ≤ 450 kPa (Suitable press. gauge scale 600 kPa)	4
		450 < Ps ≤ 500 kPa (Suitable press. gauge scale 1000 kPa)	5
(3)	Unit of pressure gauge	kPa	A
		kgf/cm <sup>2</sup> *1	B
		MPa	C
		bar	D
		psi *1	E
(4)	Input/output character	Linear (Standard)	L
		Equal % (EQ%)	E
		Quick opening (QO)	Q
(5)	Actuator action	Direct action	D
		Reverse action	R
(6)	Actuator type	---	Refer to Table 2
(7)	Air connection	Rc1/4 (Standard)	R
		1/4NPT	N
		1/4NPT (with Rc1/4 - 1/4NPT adaptor)	A
(8)	Electrical connection	G1/2	G
		1/2NPT	N
		1/2NPT (with G1/2 - 1/2NPT adaptor)	A
(9)	Finish	Standard finish *2	S
		Corrosion-proof finish (Baked epoxy paint Y138B)	B
		Silver corrosion-resistant finish (Baked acrylic paint Y138D) *3	D
(10)	Positioner action	Direct action (Standard)	D
		Reverse action	R

**Table 2 Bracket for double acting actuator**

Actuator type	Mounting bracket (Mounting plate / bolts)
	Code
VP5	H1
VP6	H2
VP7	H3
SLOP560	H4
SLOP1000	H5
SLOP1500	H6
SLOP1000X	H7
SLOP1500X	H8

**Option I**

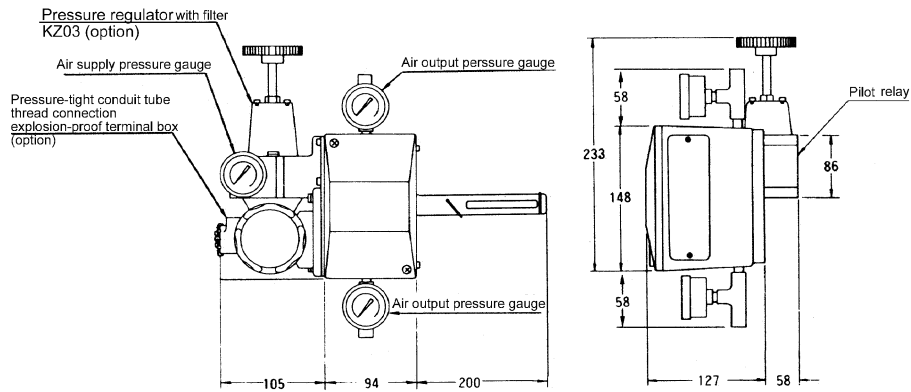
(11)	Material of Bracket / bolt	Not attached	X
		SS400 Zinc plating / SUS304	C
		SUS304 / SUS304	D
(12)	Pressure regulator with filter	Regulator type KZ03 (assemble to HEP) *4	1
		Regulator type KZ03 (not assemble to HEP) *4	2
		No option	X

**Option II**

(13)	No selection	X
	Universal elbow, Explosion-proof (G1/2, SUS304)	A
	Press-tight cable packing adaptor (G1/2)	B
	Not applicable to 1/2NPT connection in selection (8)	
	Stainless filter (SH4040) for pressure regulator with filter	F
Tropicalization (SP0039)	N	

**DIMENSIONS**

[Unit: mm]



**Figure 2 External dimensions**

Please read the "Terms and Conditions" from the following URL before ordering or use:

<http://www.azbil.com/products/bi/order.html>

*Specifications are subject to change without notice.*

**azbil**

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