

# AEP

## 系列智能阀门定位器

SMART VALVE POSITIONER CONTROLS VALVE  
STROKE ACCURATELY ACCORDING



## AEP 系列智能阀门定位器

## AEP Smart Valve Positioner controls

### 概要:

AEP 系列智能阀门定位器是从控制器或控制系统接受 4~20mA 的电流信号,通过高性能单片机的处理,可精确控制阀门开度、进行自动设定及 PID 最佳控制。它附带有阀位反馈、HART 通讯等强大的功能,已成为新一代主力产品。

### GENERAL

AEP Smart Valve Positioner controls valve stroke accurately according to input signal of 4~20mA being input from controller. In addition, highly efficient microprocessing operator built in the product performs various and powerful functions like Auto calibration, PID control, Alarm and Hart protocol.

### 技术参数

型号 Model	AEP-300L		AEP-300R	
	单作用 Singal	双作用 Double	单作用 Singal	双作用 Double
作用形式 Acting Type				
输入信号 Input Singal	4 ~ 20mADC			
最低电流信号 Minium Singal current	3.2mA(标准型 Standard),3.8mA(带 Hart)			
气源输入压力 Supply Pressure	1.4 ~ 7kgf/cm <sup>2</sup> (0.14 ~ 0.7MPa)			
行程 Stroke	10 ~ 150mm		0 ~ 60°、0 ~ 90°	
阻抗 Impendence	最大 Max 500Ω/20mA DC			
气源接口 Air Conection	RC1/4, NPT1/4			
压力表接口 Gauge Conection	RC1/8, NPT1/8			
电源接口 Conduit Entry	G1/2(标准型 Standard),NPT1/2(选项 Options)			
防护等级 Protection	IP66			
环境温度 Ambilent Temperature	-30 ~ 80℃			
线性 Lineralty	± 0.5 %F.S.			
滞后度 Hysteresis	0.5 %F.S.			
灵敏度 Sensibility	± 0.2 %F.S.			
重复性 Repeatlity	0.3 %F.S.			
流量 Flow capacity	70LPM			
耗气量 Air Consumption	2LPM 以下(输入压力为 1.4 kgf/cm <sup>2</sup> 时),3LPM 以下(输入压力为 7 kgf/cm <sup>2</sup> 时)			
液晶工作温度 LCD Temp Condition	保管温度:Store temperature -30 ~ 85℃,工作温度:Work temperature -10 ~ 70℃			
输出特性 Output Charactericts	线性 Linear、快开 Quick open、等百分比 Equal percentage、用户自定义 User define(可设定 16 点 set sixteen points)			
抗振系数 Vibration Effect	6g			
环境温度 Humidity	5 ~ 95RH(40℃时)			
通讯(选项)Communcation(optional)	HART 通讯(无 DDI)			
反馈信号(选项)Feedback Singal(optional)	4 ~ 20mA(DC 10 ~ 30V)			
材质 Maiteral	压铸铝 Aluminum Diecasting			
重量 Weight	1.5kg(3.3ib)			
涂漆 Painting	环氧聚酯电喷 Epoxy Polyestere Powder Coating			
壳体颜色 Color	天蓝色或黑色 Blue or Black			

上述参数以大气温度 20℃,绝压 760mmHg,相对湿度 65 %RH 为基准。

Based on temperature 20℃, absolute pressure 760mmHg and relative humidity 65%

## 主要特征和功能 Features and functions

1、产品外部装有液晶屏 (LCD), 因此可以在现场直接确认定位器的状态。LCD equipped outside of product makes to check the positioner condition in the field directly.

2、抗振性强, 可适用于绝大部分现场。It endures severe vibration.

3、运行中气源压力的变化不影响产品的工作。It is operated normally regardless of change of supply pressure during operation.

4、简单操作按钮即可进行自动设定。Auto calibration method is very simple.

5、结构精小, 在小型执行机构上也容易安装。It is easily equipped on small actuator because of its small size.

6、耗气量小, 对于大型工厂可节约能源, 经济性好。Air consumption is so small that operating cost in huge plants is decreased

7、可适用于低电压(8.5V), 因此对于控制系统几乎没限制。Because it can be used in low voltage (8.5V), there is no limitation in controller

8、外部装有可调节性节流孔, 对于在小型执行机构产生的振荡, 可以边观察边调节节流孔到最佳状态。Variable orifice is applied and so in case of small actuator the hunting is controlled to the optimum condition during operation.

9、可任意设定快开、线性、等百分比等输出特性。The adjustment of Valve characteristics (Linear, Quick open, Equal percentage) is available.

10、用户可任意设定 16 个点来实现特殊的输出特性。Specific flow control is available with setting 16 point at users' command.

11、强制全开和全关的起始点百分比可任意设定。Tight Shut-Close and Shut-Open can be set voluntarily.

12、在现场不用其他设备, 通过简单操作按钮即可进行 PID 设定。PID parameters can easily adjusted in the field without additional communicator

13、通过手动开关(A/M), 可对执行机构直接进行手动控制。The pressure of Air filter regulator is sent to Actuator directly with using A/M switch.

14、可进行 4 ~ 12mA, 12 ~ 20mA 的分程控制。Split range such as 4-20mA, 12-20mA is available.

15、通过手动调整可制定零点和量程, 进行分程控制。Setting Zero and Span as partial section is available by Hand Calibration function.

16、阀门采取自动控制方式, 因此很容易检测错误状态。The valve defect is easily checked because the valve can be operated voluntarily.

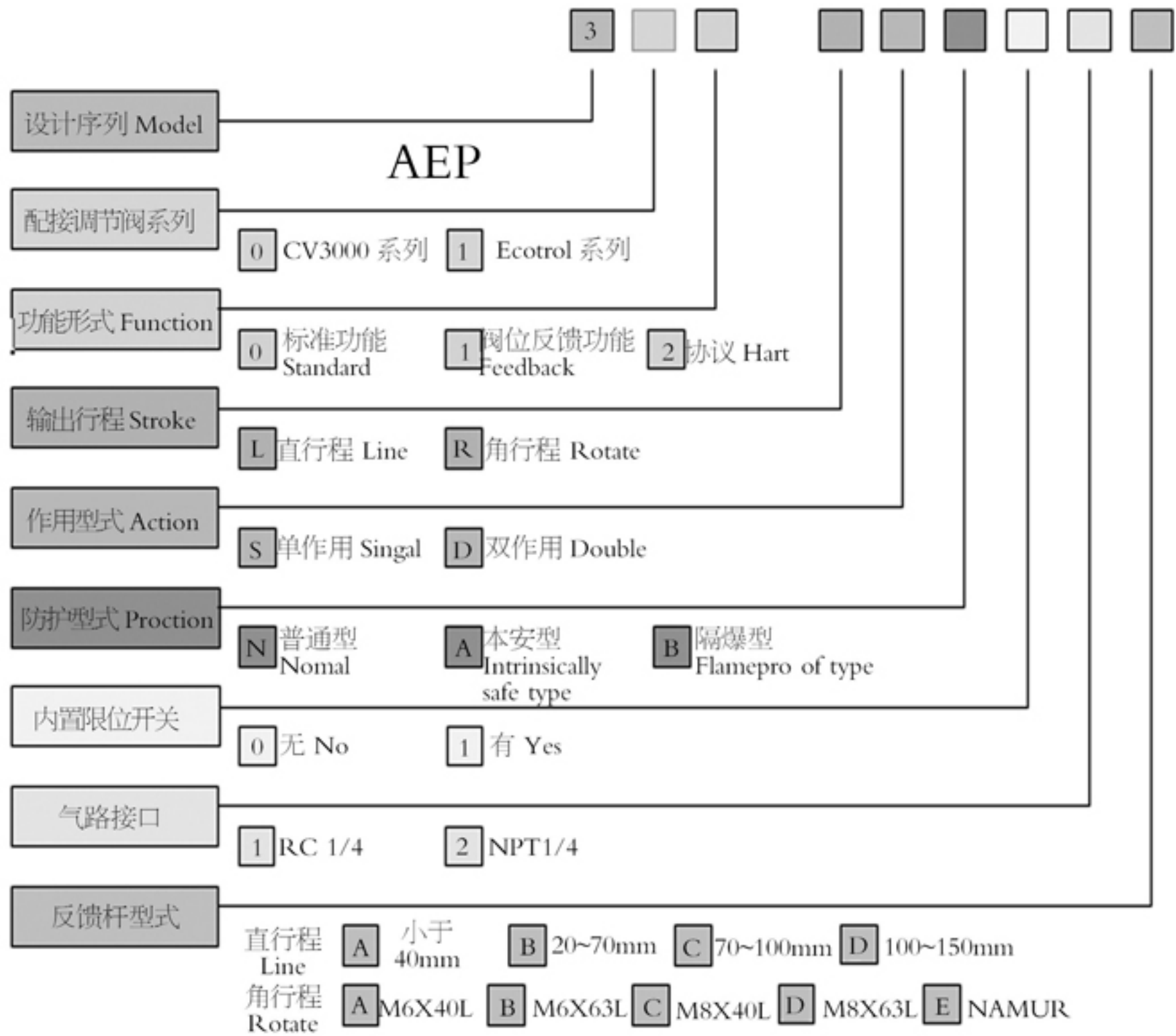
17、IP66 的防护等级。It has IP 66 protection grade

18、不需要其他配件, 用一个直插型接头就可把空气过滤减压阀装在定位器上。Air filter regulator can be attached with the product with only one linear nipple without extra piping.

19、选用耐腐蚀性强的环氧聚酯进行电喷处理, 因此可在具有腐蚀性的大气环境中长时间使用。Because of Epoxy polyester powder coating, it can be used for long period of time in corrosive air.

20、内部结构非常简单, 进行了模块化设计, 从而减少了故障的机率, 维护简便。Because of simple and modulized inner structure, maintenance is very easy.

### 型号分类及订货标记 Ordering Number

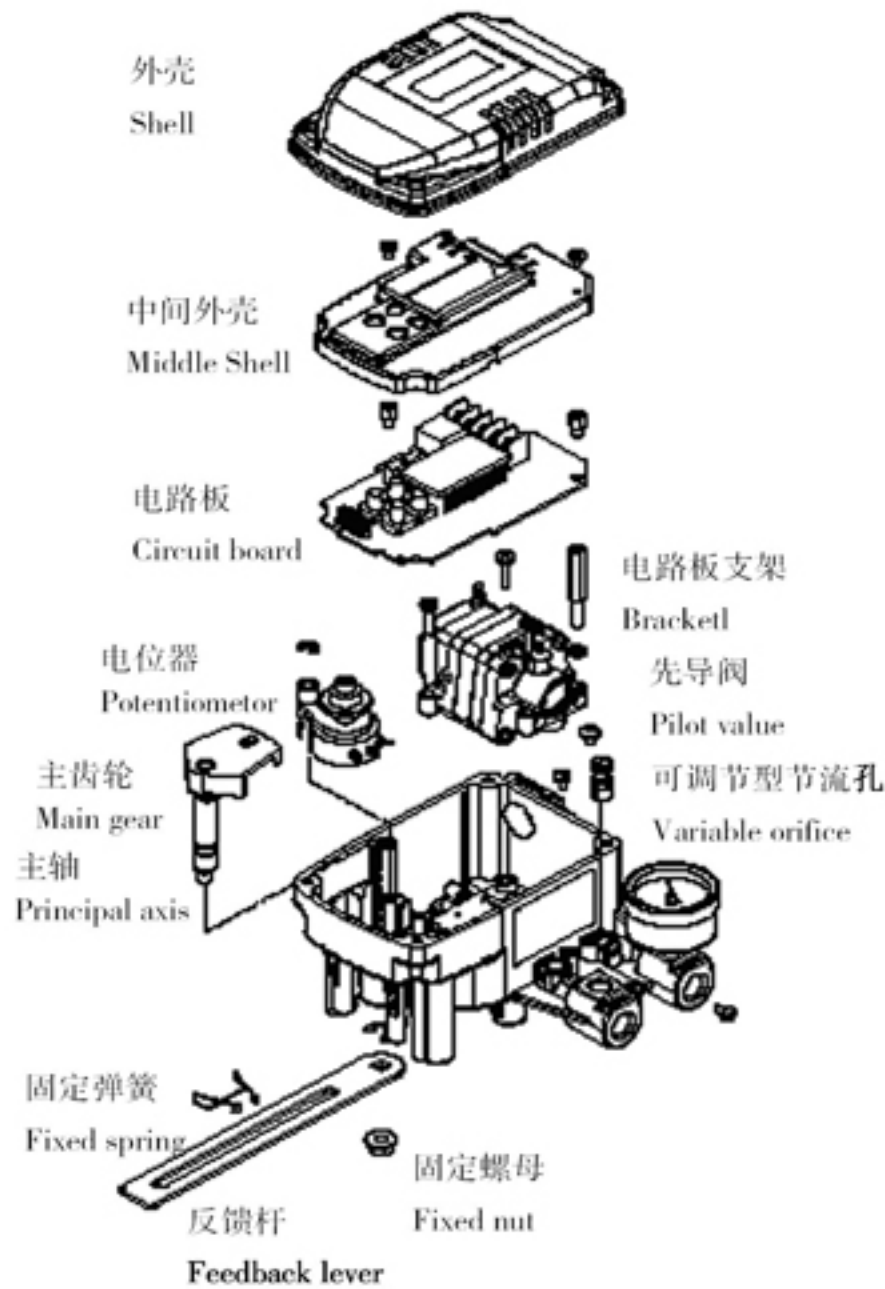




### 内部结构 Structure

AEP-300L(直行程)内部结构如下图所示(角行程除了反馈杆其他部分相同)。内部结构采用简单、模块化的设计,使得维修很方便。

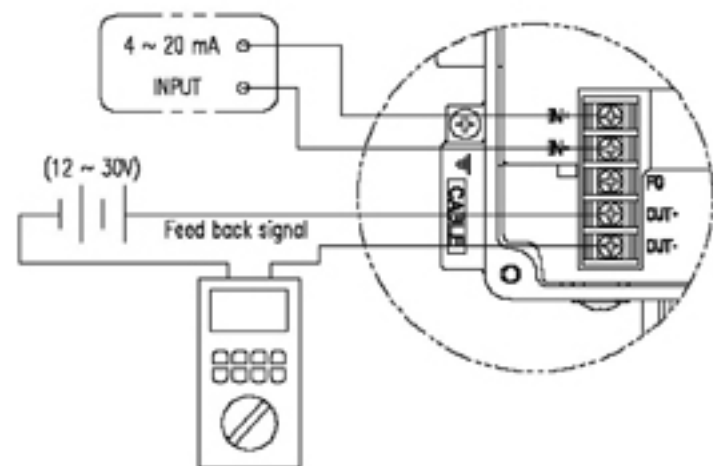
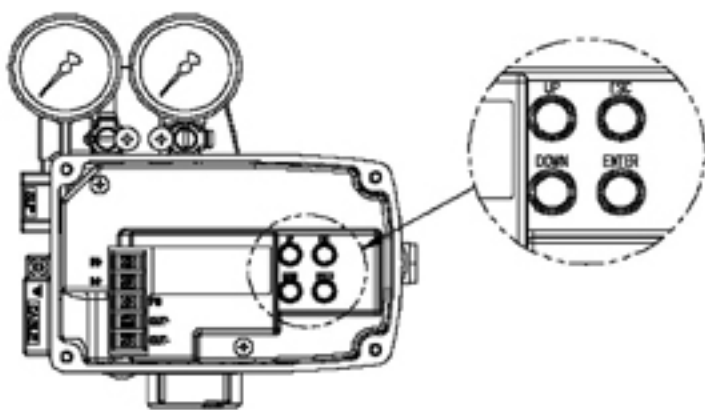
The structure of AEP-300L(Linear)is as follows(That of rotary is as linear type except feedback lever)



### 操作按钮说明 Button Notes

AEP-300 系列用 4 个按钮可以实现很多功能。  
AEP-300 Series perform various functions with using four buttons

### 外部接线图 Power connection



## 正常模式说明 Nomal mode illustration

产品外部装有液晶屏(LCD),因此可以在现场直接确认定位器的状态。

LCD equipped outside of product makes to check the positioner condition in the field directly.

正常工作模式

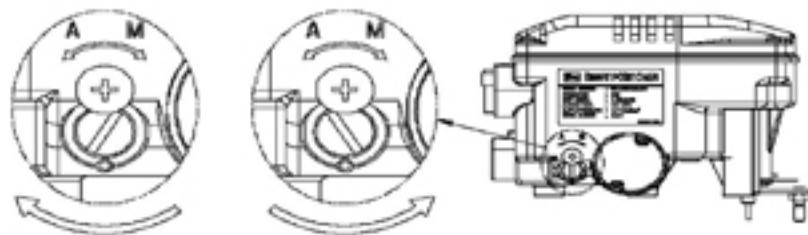


PV 的表示  
当前 LCD 表示内容

## 自动 / 手动开关 A/M Switch

开关设为自动时,按 AEP-300 的动作要求,向执行机构输入气源压力;开关设为手动时,管道气源压力不受 AEP-300 动作控制,直接输入执行机构。

If this switch is set as Auto, supply pressure is transmitted to actuator by the operation of AEP-300 and if it is set as Manual, supply pressure of air filter regulator is transmitted to actuator regardless of AEP-300.



手动设定 manual      自动 Auto

## 自动设定 Auto Calibration

用户实现 AEP-300 的功能时,按 AUTO1 操作进行。When AEP-300 is installed on the valve in the field after setting, We recommend to use "AUTO1" calibration.

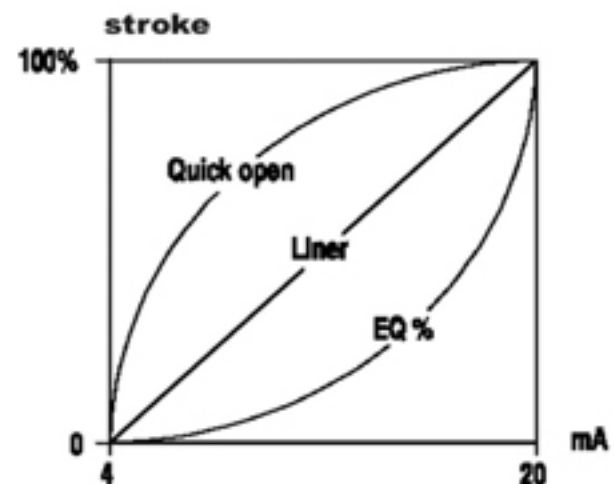
阀门公司或设定最初参数按 AUTO2 操作进行。"AUTO2" calibration is for valve company or initial parameters setting of AEP-300.

根据不同执行机构的进气量,自动调校大约需要 2-3 分钟,自动设定 1、2、3 可以自动判断并设定正/反作用。It takes about 2-3 minutes for auto calibration and it can be different by actuator's volume. AUTO1、AUTO2 and AUTO3 calibration set RA/DA automatically.

自动设定的 5 种类型和内容如下表 5 Type of Auto calibration and content as follows:

内 容 content 种类 type	零点 Zero point	量程 End point	KP, KI, KD	BIAS	V-O	RA/DA
AUTO1	○	○	×	○	○	○
AUTO2	○	○	○	○	○	○
AUTO3	×	×	○	○	○	○
BIAS	×	×	×	○	×	×
V-O	×	×	×	×	○	×

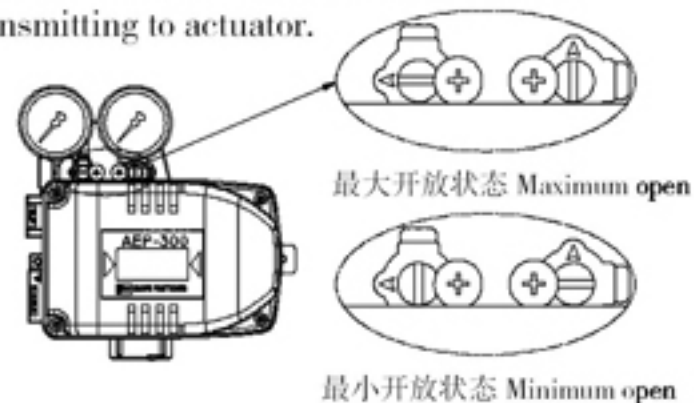
## 输出特性 Output Characters



## 可调节性节流孔 Variable Orifice

在小型执行机构上使用,有可能发生振荡,使用一字螺丝刀适当的调节节流孔,减小传送到执行机构的空气流量,就可以解决振动问题。

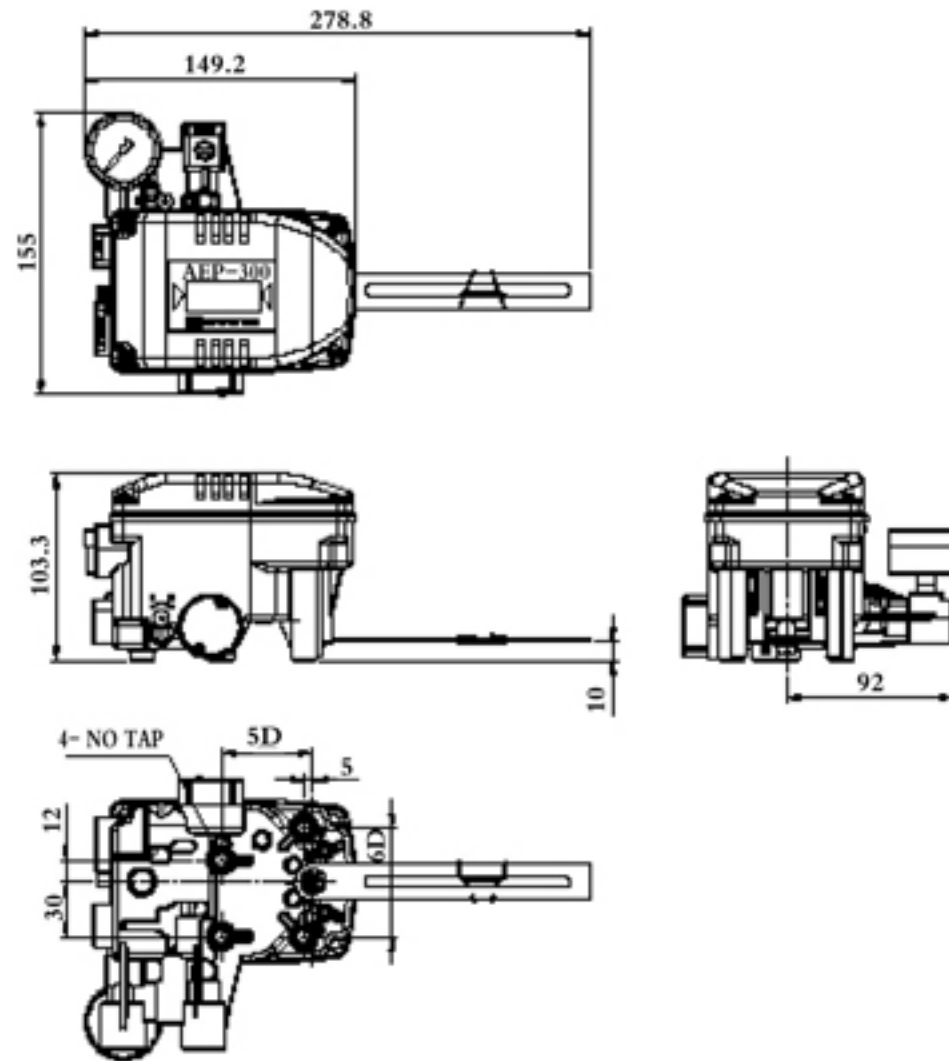
The actuator volume is too small, hunting can be occurred. In this case, adjust variable orifice with using (-) driver, then hunting is prevented by reducing flow rate of supply pressure transmitting to actuator.



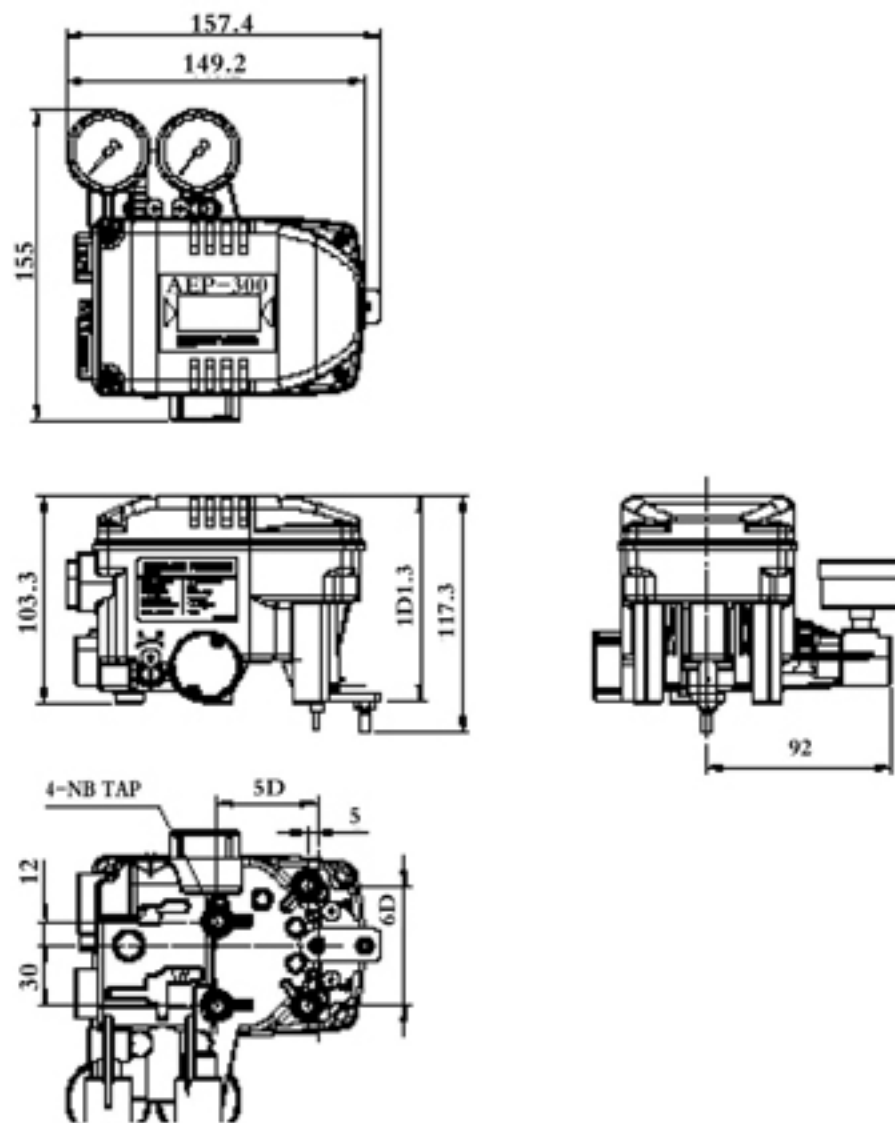
最大开放状态 Maximum open

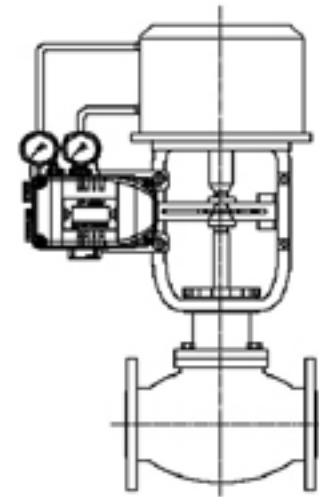
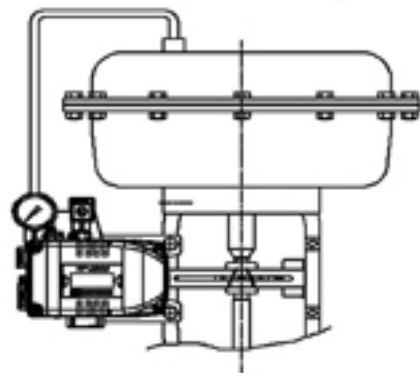
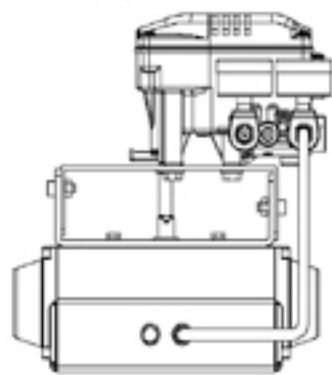
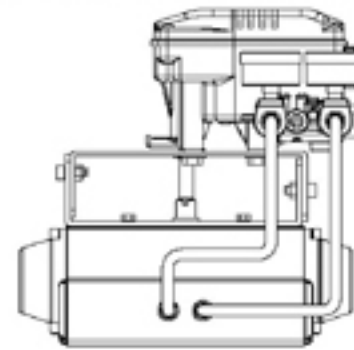
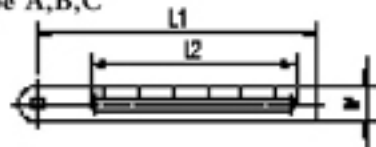
最小开放状态 Minimum open

AEP-300L 外形尺寸图 AEP-300L drawing

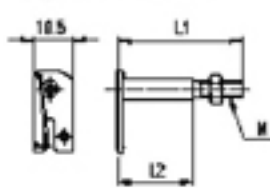
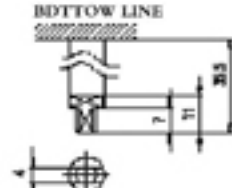
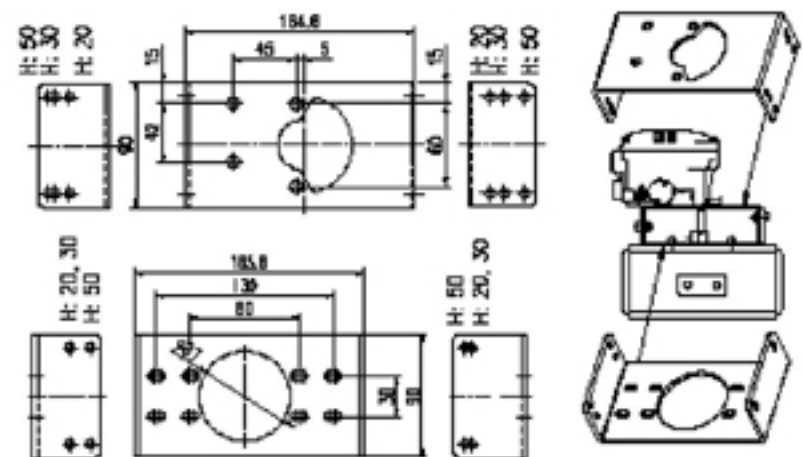


AEP-300R 外形尺寸图 AEP-300R drawing



**AEP 系列定位器与执行机构安装示意图**
**AEP installation example**

**AEP-300LS 和单作用执行机构连接示意图**
**AEP-300LS installation on signal actuator**

**AEP-300LD 和双作用执行机构连接示意图**
**AEP-300LD installation on double actuator**

**AEP-300RD 和双作用执行机构连接示意图**
**AEP-300RD installation on signal actuator**
**AEP-300RS 和单作用执行机构连接示意图**
**AEP-300RS installation on double actuator**
**反馈杆尺寸 Type A,B,C**

**Type D**


反馈杆型号 Feedback type	行程 Stroke (mm)	L1 (mm)	L2 (mm)	W (mm)
A	10 ~ 40	99	76.5	20
B	20 ~ 70	153.5	113	
C	70 ~ 100	217	123.5	
D	100 ~ 150	301.9		

**Type A,B,C,D**

**Type E**

**角行程安装支架 Rotate bracket**


反馈杆型号 Feedback type	L1 (mm)	L2 (mm)	M
A	40	15	M6
B	63	37	
C	40	15	M8
D	63	37	
E	NAMUR		



50年控制阀制造经验  
**QUALITY SINCE 1959**

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