

# KOGANEI

## 高精度定量吐出泵系列

### High-Precision Constant Dispensing Pump Series



电动波纹管泵  
Electric Bellows Pump



电动CT泵  
Electric CT Pump



电动RT泵  
Electric RT Pump



电动HT泵  
Electric HT Pump

# 高精度定量吐出泵系列

## High-Precision Constant Dispensing Pump Series

### ■小金井制泵系列的特点

- 接液部由氟树脂构成,适用于各种药液。
- 接液部采用无滑动部结构,几乎不产生粒子。
- 无需日常维护,实现保持高重复精度的定量吐出。

### Features of Koganei Pump Series

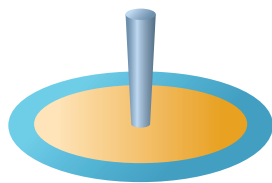
- The liquid contact area is composed of fluorine resin, and is resistant to various liquid chemicals.
- The liquid contact area is structured without a slide portion, to virtually avoid generation of particles.
- Daily maintenance is unnecessary, enabling constant dispensing maintained at high repeatability of dispensing volume.

### ■用途例

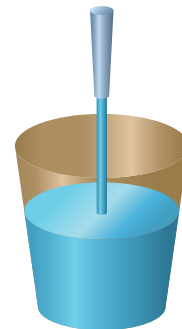
#### Application Examples

要求高重复精度和直线性的用途 ⇒ 定量性能重视型

Applications demanding advanced repeatability of dispensing volume and linearity ⇒ Constant dispensing performance enhanced type



例:在晶片上涂覆  
Example: Coating a wafer



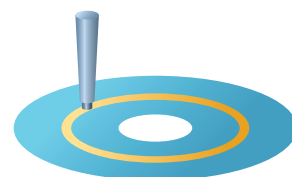
例:药液的填充、称量、混合  
Example: Filling, weighing  
and mixing liquid  
chemicals

要求从涂覆开始到结束的膜厚均匀性的用途 ⇒ 定流量性能重视型

Applications demanding film uniformity from coating beginning to end ⇒ Constant flow rate performance enhanced type



例:狭缝涂布  
Example: Slit coating



例:在磁盘上涂覆  
Example: Coating a disk

## ■ 泵产品系列

以半导体制造工序为起点,小金井制造的泵被广泛应用于FPD、电池、试剂等领域。  
用户可根据用途和所使用的工件,从驱动方式和泵类型等之中选择适合的泵。

### Pump Product Range

Koganei pumps are widely used in semiconductor manufacturing processes, as well as for flat panel displays (FPDs), batteries, and reagents, etc.

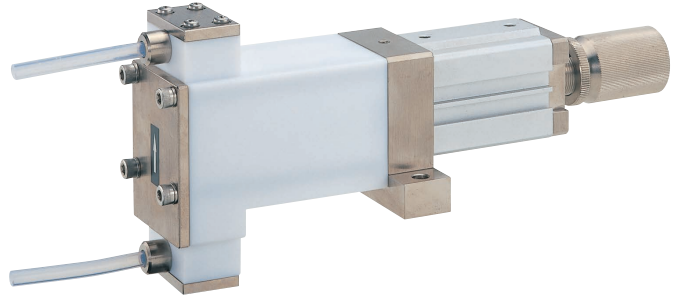
Select pumps from operating type or pump type that suit the applications or workpieces used by customers.

泵类型 Pump type	驱动方式 Operating type	系列名(基本型号) Series name (Basic model)	最大吐出量 ml Maximum dispensing volume ml	刊载页码 Page
定量 性能重视 型  Constant dispensing performance enhanced type	空气压驱动 (气缸驱动)  Pneumatic (Air cylinder)	波纹管泵 Bellows Pump (F-APB)	8、15、40、60、80	③
		PT泵 PT Pump (F-APP)	10、50	⑦~⑧
	步进电机驱动 Stepping motor	波纹管泵 Bellows Pump (F-EPB)	8、15、40、80	④
		CT泵 CT Pump (F-EPT)	6、10、20、60	⑤~⑥
		PT泵 PT Pump (F-EPP)	1、5、10、20、50、100、200	⑦~⑧
	定量性能 + 定流量 性能重视 型  Constant dispensing performance and constant flow rate performance enhanced type	AC伺服电机驱动 AC servo motor	CT泵 CT Pump (F-EPT)	30、60、100、200、300
PT泵 PT Pump (F-EPP)			100、200、300	⑨~⑩
HT泵 HT Pump (F-EPH)			100、200、300、500	⑨~⑩
步进电机驱动 Stepping motor		RT泵 RT Pump (F-EPR)	5、20	⑪

# 气动波纹管泵 Pneumatic Bellows Pump

## F-APB Series

- 接液部为特氟龙  
可适用于各种药液。
- 波纹管方式  
无滑动部,几乎不产生粒子。
- 使用调整螺母轻松设定吐出量  
气缸驱动,实现低成本。
- Liquid contact area is Teflon  
Capable of handling various liquid chemicals.
- Bellows method  
There is no sliding portion; so generation of particles is almost non-existent.
- Simple dispensing volume setting through using adjustment nut  
Achieves low cost through operating an air cylinder.



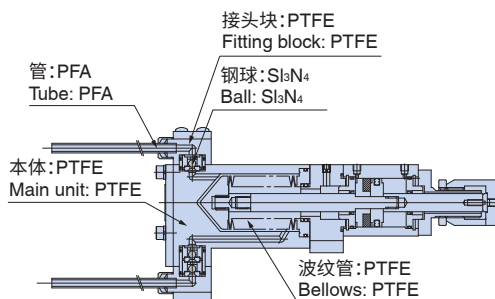
## 规格 Specifications

项目 Items	型号 Models	F-APB08-6W	F-APB15-8W	F-APB40-7W	F-APB60-1W
使用流体 Media		光刻胶、纯水、药液 Photoresist solution, pure water, chemical solution			
最大吐出量 Maximum dispensing volume		8 ml	15 ml	40 ml	60 ml
最大吐出压力 Maximum dispensing pressure		0.05 MPa			
吐出量重复精度 Repeatability of dispensing volume		±1% F.S.			
耐压 Proof Pressure		0.15 MPa			
质量 Mass		1.3 kg	1.4 kg	2.8 kg	3.2 kg

※其他型号和规格的详情请向就近的本公司营业所咨询。

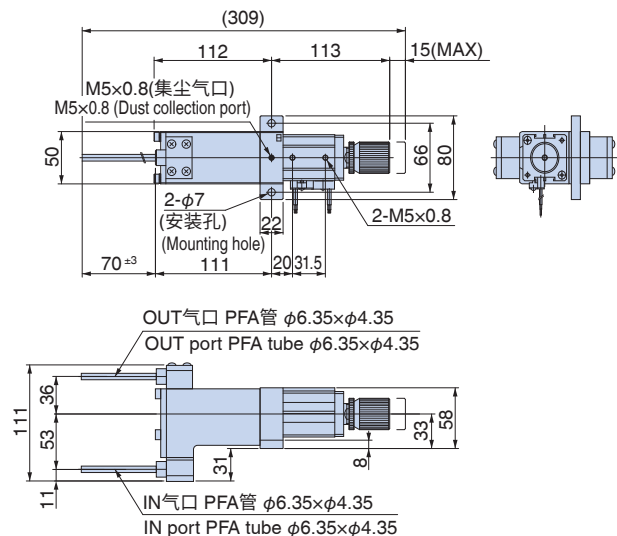
※For details about other models and specifications, inquire at the nearest Koganei sales office or the Koganei overseas department.

## 结构图 Inner Construction



## 尺寸图(mm) Dimensions (mm)

### F-APB08-6W

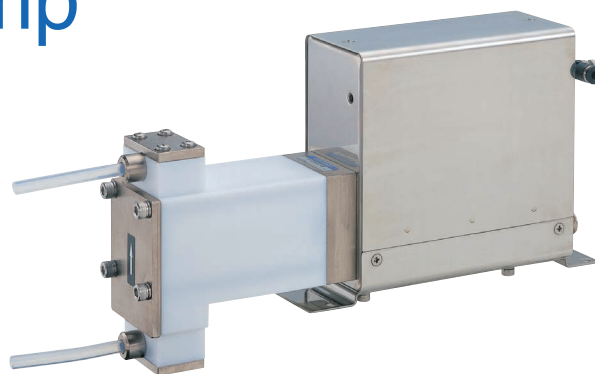


# 电动波纹管泵

## Electric Bellows Pump

### F-EPB Series

- 接液部为特氟龙  
可适用于各种药液。
- 波纹管方式  
无滑动部,几乎不产生粒子。
- 吐出量、吐出速度的控制简便  
步进电机驱动,实现数字化的吐出量控制。
- Liquid contact area is Teflon  
Capable of handling various liquid chemicals.
- Bellows method  
There is no sliding portion; so generation of particles is almost non-existent.
- Simple control of dispensing volume and dispensing speed  
Achieves digital dispensing volume control through operating a stepping motor.



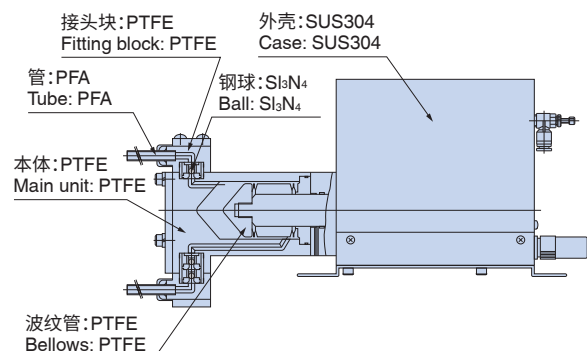
### 规格 Specifications

项目 Items	型号 Models	F-EPB08-4W	F-EPB15-3W	F-EPB40-1W
使用流体 Media		光刻胶、纯水、药液(可燃性物质不可) Photoresist solution, pure water, chemical solution (flammable substances not allowed)		
最大吐出 Maximum dispensing volume		8 ml	15 ml	40 ml
最大吐出压力 Maximum dispensing pressure		0.2 MPa		
吐出流量 Dispensing flow rate		0.1~4 ml/s		0.1~10 ml/s
吸入流量 Suction flow rate		0.1~4 ml/s		0.1~10 ml/s
最大流体粘度 Maximum viscosity of media		200 cP		100 cP
吐出量重复精度 Repeatability of dispensing volume		±1% F.S.		
耐压 Proof Pressure		0.3 MPa		
质量 Mass		3.1 kg	3.1 kg	3.6 kg

※其他型号和规格的详情请向就近的本公司营业所咨询。

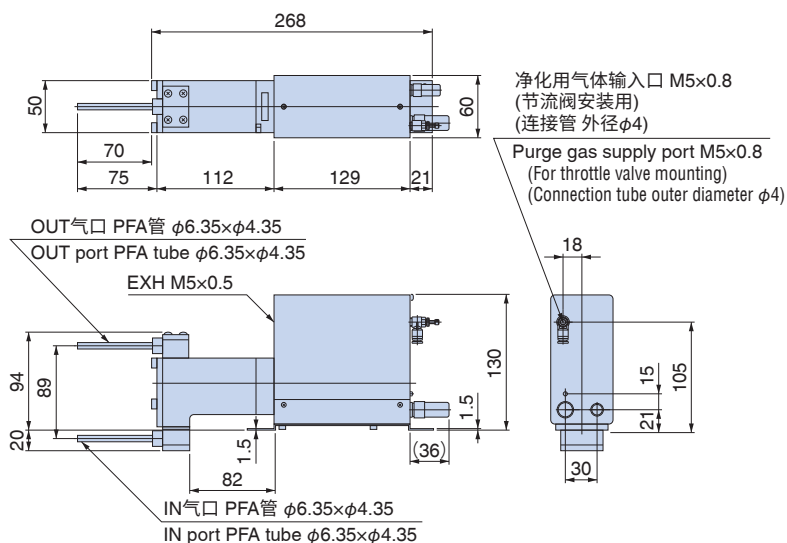
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### 结构图 Inner Construction



### 尺寸图(mm) Dimensions (mm)

#### F-EPB08-4W



# 电动CT泵

## Electric CT Pump

### F-EPT Series

## CT泵结构

### CT pump construction



#### 【CT (Coaxial Tubephram) 泵】

是取代橡胶膜片、波纹管的  
全新结构光刻胶的定量吐出泵！

#### 【CT (Coaxial Tubephram) Pump】

The CT pump, a precision dispensing unit for photoresist solutions, is completely new in construction and replaces current diaphragm or bellows construction units.

### ■特点 Features

#### 低粒子结构

泵腔的气管使用了表面粗糙度Rt在0.3 $\mu$ m以下的超光滑NEW PFA材质。还通过较小的接液部表面积(波纹管泵的约1/5)几乎杜绝了粒子产生。

#### Low particle structure

By using a smooth surface finish of Rt:0.3  $\mu$ m or less, the new PFA tubes used in the pump chamber result in almost non-particle generation due to "smaller wet surfaces" about 1/5 of current bellows type pumps.

#### 液体置换特性良好

泵腔为细管状，凭借几乎没有液体滞留部的理想流路形状，确保始终吐出新鲜的光刻胶。

#### Good replacing solution characteristic

The pump chamber is a thin tube shape. Its ideal flow path shape, with almost no solution residue, enables dispensing of fresh resist solution.

#### 除泡性好

药液的流路始终保持由下而上的方向，即使气泡流入也会随着气流从吐出口排出，可以不受气泡干扰地实现高精度的吐出。此外，在装置启动时导入液体之际的空气排放也很容易，最适于容易发生气泡的液体。

#### Good removal of bubbles

The resist solution's flow path travels from downwards to upwards. Consequently even if bubbles enter the solution, they will be conveyed to the discharging port and they will not affect the pump's performance enabling it to dispense with high precision. Upon start-up of equipment and pouring solution, it is easy to remove the air bubbles from the solution and it is ideal for solutions apt to generate bubbles.

#### 小型&高精度动作

独特的CT泵结构带来的紧凑外观，最适于多台使用。动力源为5相步进电机，采用精密丝杠作为进给丝杠，实现了高分辨率和高重复精度。此外，还能够通过编码器检测由于意外事故导致的失调。

#### Compact and high-precision operation

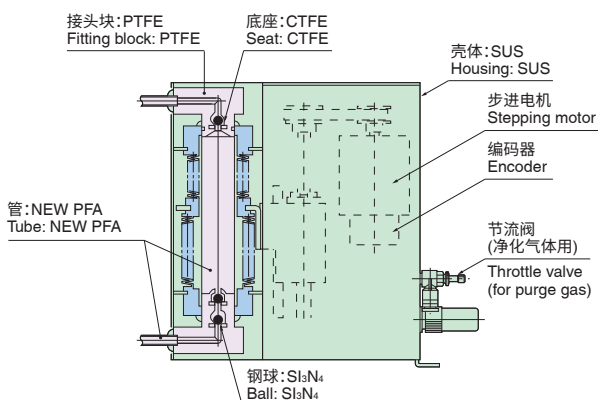
The ingenious CT pump construction offers a compact appearance ideally suited for use in side-by-side installations. A five-phase stepping motor and a precision feed screw are used for a drive achieving high resolution and repeatability, and an encoder will detect any potential faults, e.g. accidental "out of step".

#### 高可靠性的简单结构

是在同轴状的波纹管与气管间封入间接液的简单结构，为防止间接液泄漏以及空气进入，在连接部位进行焊接以保持高精度。可靠性高于多采用密封的传统泵。

#### Highly reliable simple construction

Simple construction containing liquid between coaxial bellows and tube welded joint section maintains high precision due to preventing loss of leaking liquid or air penetration. This arrangement is more reliable than current pumps using many seals.

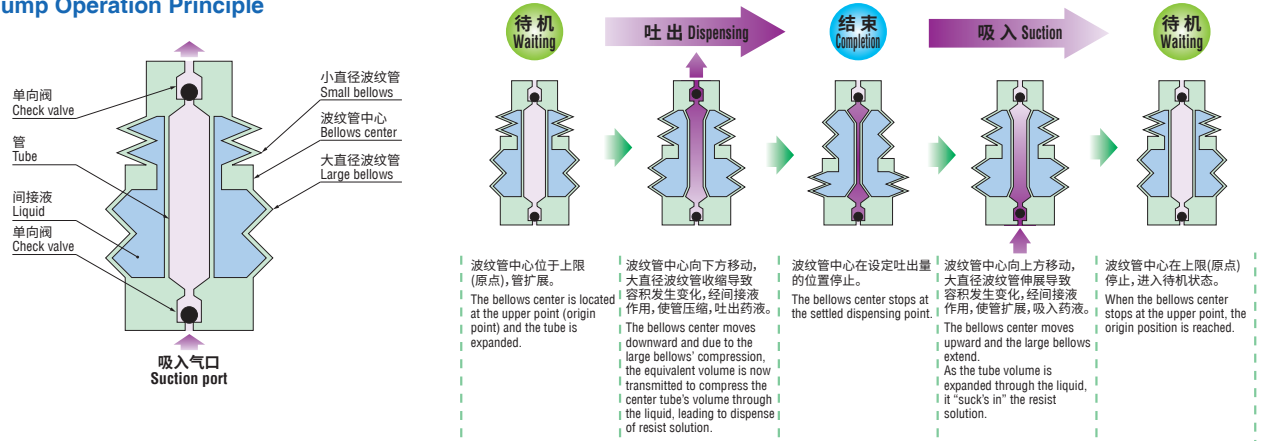


注：内置了电机温度异常检测用传感器，并且还备有氮气净化用的气口。  
但是，该泵并非防爆规格，用户的装置须采取充分的防爆措施。

Note: A sensor is built-in for detecting abnormal motor temperature rise and a port for supplying nitrogen purge gas is available.  
This pump is not an explosion prevention type.  
Consequently, explosion preventive measures will be required for customer site equipment where called for.

## CT泵动作原理图

### CT Pump Operation Principle



## 规格 Specifications

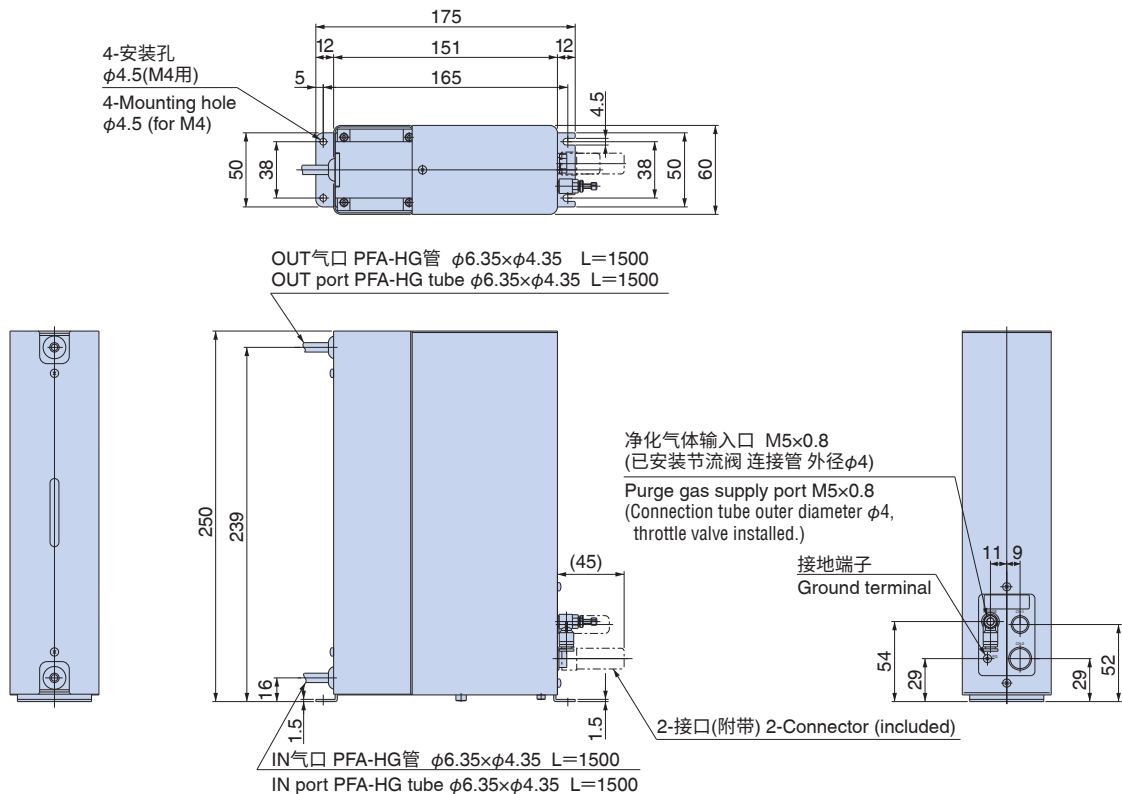
项目 Items	型号 Models	F-EPT06A1	F-EPT10A1
使用流体 Media		光刻胶、纯水、药液(可燃性物质不可) Photoresist solution, pure water, chemical solution (flammable substances not allowed)	
吐出量 Dispensing volume		0.5~6 ml	0.5~10 ml
最大吐出压力 Maximum dispensing pressure			0.15 MPa
吐出流量 Dispensing flow rate			0.1~4 ml/s
吸入流量 Suction flow rate			0.1~4 ml/s
最大流体粘度 Maximum viscosity of media			200 cP
吐出量重复精度 Repeatability of dispensing volume			±0.1% F.S.
耐压 Proof Pressure			0.2 MPa
质量 Mass		3.1 kg	3.6 kg

※其他型号和规格的详情请向就近的本公司营业所咨询。

※For details about other models and specifications, inquire at the nearest Koganei sales office or the Koganei overseas department.

## 尺寸图 (mm) Dimensions (mm)

### F-EPT10A1-T1/4



# 定量吐出PT泵系列

## Constant Dispensing PT Pump Series

### F-EPP, F-APP Series

#### ● 电动PT泵

可实现吐出量微调 and 流量设定的数字化控制。

#### ● 气动PT泵

气缸驱动型管式隔膜泵上市!

#### ● Electric PT Pump

Enables digital control of dispensing volume fine adjustment and flow settings.

#### ● Air Operated PT Pump

Air cylinder operated type of Tubephragm pump is now available.



电动PT泵  
Electric PT Pump



气动PT泵  
Air Operated PT Pump

### ■ 特点

采用本公司独特的8字形状管与波纹管组合的PT(Parallel Tubephragm)泵结构。

- 无滑动部, 几乎不会因泵动作而产生粒子。
- 无需像注射泵更换密封件那样的定期维护。
- 药液滞留少的结构, 防止光刻胶的凝胶化。
- 无外部气体进入、不易发生电解液结晶化的结构。

#### 用途例

- 半导体光刻工序的光刻胶涂覆
- 锂离子电池等各种电池制造工序的电解液注液
- 其他药液的定量吐出用途等

### Features

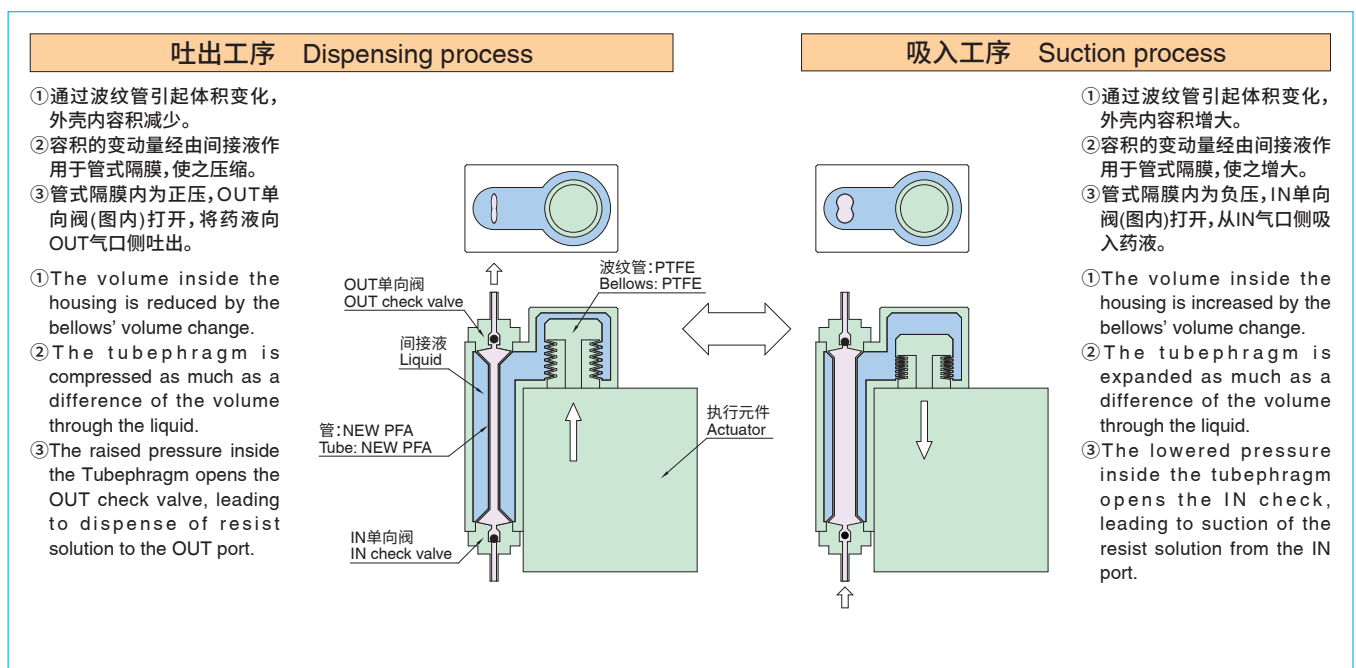
Employs a PT (Parallel Tubephragm) pump configuration that combines Koganei's unique 8-shaped cross sectioned tube with bellows.

- There is no sliding portion, so generation of particles due to pump operation is almost non-existent.
- Such as replacement of syringe pump seal and other periodic maintenance is unnecessary.
- Structure allows very little liquid chemical residues, preventing gelling of photoresist material.
- Structured for no ingress of outside air, crystallization of electrolytes rarely occurs.

#### Application Examples

- Photoresist liquid coating during semiconductor photolithography process
- Filling main electrolyte fluid in lithium ion batteries or other types of batteries on manufacturing processes
- Constant delivery for liquid chemicals, etc.

### ■ 结构图(动作说明图) Inner Construction (Operation Explanation)





## 规格 Specifications

### ● 电动PT泵 Electric PT Pump

项目 Items	型号 Models	F-EPP05-7W	F-EPP10-2W	F-EPP50-3W
使用流体 Media		光刻胶、纯水、药液(可燃性物质不可) Photoresist solution, pure water, chemical solution (flammable substances not allowed)		
吐出量 Dispensing volume		0.1~5.0 mℓ	0.1~10.0 mℓ	2~50 mℓ
最大吐出压力 Maximum dispensing pressure		0.2 MPa		0.3 MPa
容许最大负压 Allowable maximum vacuum pressure		-0.02 MPa		
吐出流量 Dispensing flow rate		0.1~4.0 mℓ/s		0.1~10.0 mℓ/s
吸入流量 Suction flow rate		0.1~4.0 mℓ/s		0.1~10.0 mℓ/s
最大流体粘度 Maximum viscosity of media		200 cP		
吐出量重复精度 Repeatability of dispensing volume		±0.1% (F.S.)		±0.5% (F.S.)
耐压 Proof Pressure		0.3 MPa		0.4 MPa
质量 Mass		2.5 kg	2.7 kg	6.4 kg

※其他型号和规格的详情请向就近的本公司营业所咨询。

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### ● 气动PT泵 Air Operated PT Pump

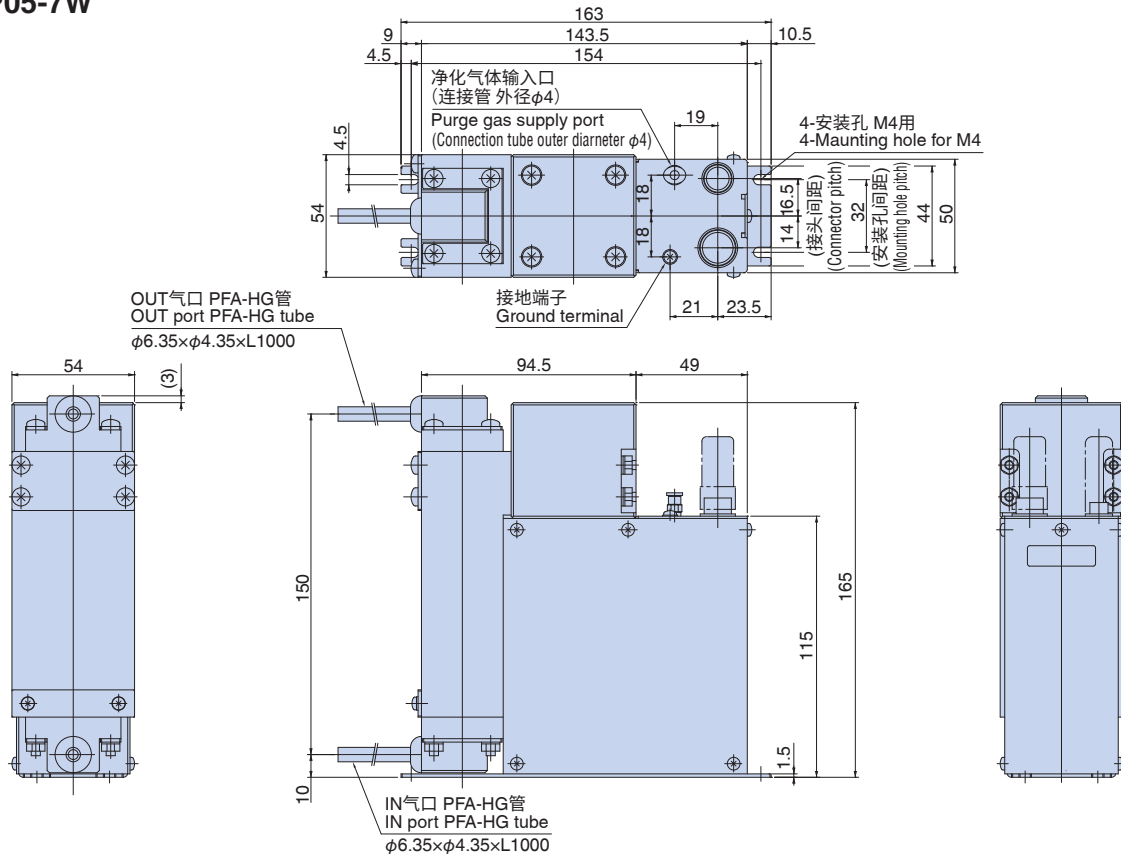
项目 Items	型号 Models	F-APP10-5W
使用流体 Media		光刻胶、纯水、药液 Photoresist solution, pure water, chemical solution
最大吐出量 Maximum dispensing volume		10 mℓ
最大吐出压力 Maximum dispensing pressure		0.15 MPa
容许最大负压 Allowable maximum vacuum pressure		-0.02 MPa
耐压 Proof Pressure		0.3 MPa
质量 Mass		1.9 kg

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## 尺寸图(mm) Dimensions (mm)

### F-EPP05-7W



# FPD工艺用电动 CT/PT/HT泵 AC伺服电机规格

## Electric CT/PT/HT Pump for FPD Processes AC Servo motor Specification

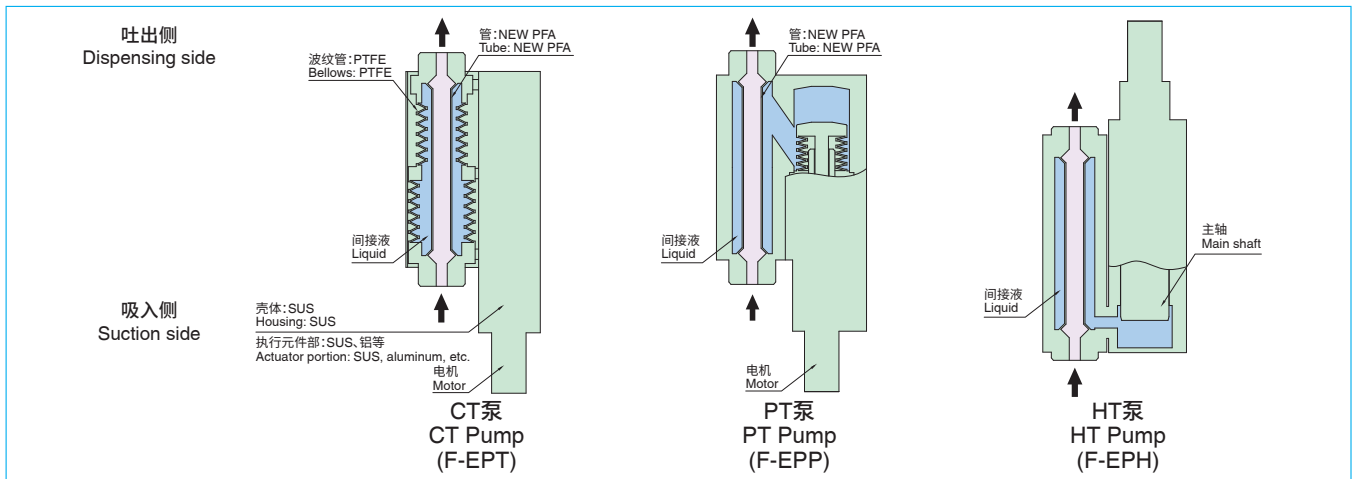
### F-EPT, F-EPP, F-EPH Series

高精度定量吐出性能与定流量性能相结合。  
实现波动较少的光刻胶涂布。  
实现最适合狭缝涂布的性能。

Constant flow rate performance has been added to the high-precision constant dispensing performance.  
Resist coating with minimal pulsing is enabled.  
Achieves optimum performance for slit coating.



#### 内部结构与部件材料 Inner Construction and Major Parts



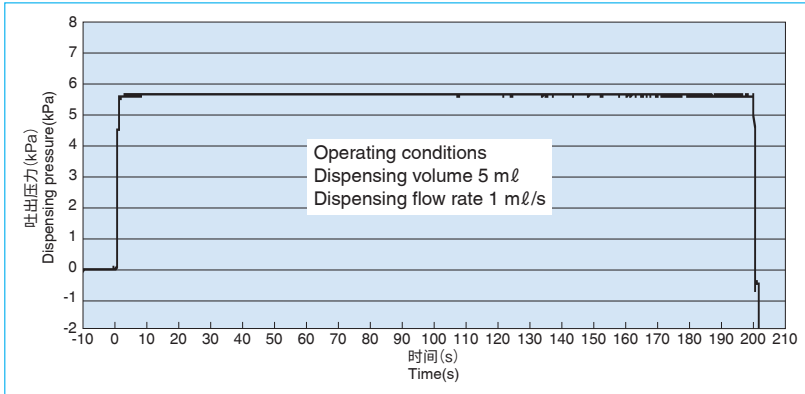
#### 特点

- **拥有众多实绩的管式隔膜结构和高可靠性**  
采用本公司独特的8字结构、三叶结构的管式隔膜。  
药液吐出部没有滑动部分, 发尘量低于注射式泵。
- **搭载AC伺服电机, 提高了流量的控制性**  
除了以往的高重复吐出精度外, 实现了无波动的药液吐出。  
使用AC伺服电机任意控制泵的吐出速度, 实现与电路板动作同步等, 扩展了控制性的领域。
- **不同容量的泵产品阵容涵盖了适合小型电路板用乃至大型电路板用等不同的尺寸**  
最大吐出量30/60/100/200/300ml, 可根据各电路板尺寸进行选择。

#### Features

- **Tubeaphragm structure with proven performance and high reliability**  
Employs Koganei's unique 8-shaped cross sectioned structure and trefoil structure tubeaphragm.  
There is no sliding portion in the liquid chemical dispensing area; it achieves lower particle generation than syringe type pumps.
- **Mounting of AC servo motor improves flow rate control performance**  
In addition to the established high repeatability of dispensing volume, it now offers liquid chemical dispensing without pulsation.  
The AC servo motor allows control of the pump dispensing speed, enabling synchronization with movement of substrate, which widens the scope for controllability.
- **Pump capacity lineup can handle all sizes from small to large substrates**  
Selectable from a lineup of maximum dispensing volumes 30/60/100/200/300 ml according to substrate size.

## ■ 吐出流量特性数据示例 Example of Dispensing Flow Rate Characteristics Data



※是通过恒定节流孔发生的压力控制流量的图表。本图反映的是具有代表性的特性，并不保证其特性。  
※The above graph shows generated pressure, an alternative measure of flow rate, at a constant orifice. This is for a representative characteristic of the pump, and not guaranteed performance.

## ■ 规格 Specifications

项目 Items	型号 Models	F-EPT30	F-EPT60	F-EPT100	F-EPT200	F-EPT300
使用流体 Media		光刻胶、纯水、药液(可燃性物质不可) Photoresist solution, pure water, chemical solution (flammable substances not allowed)				
吐出量 Dispensing volume		3~30 ml	6~60 ml	10~100 ml	20~200 ml	30~300 ml
最大吐出压力 Maximum dispensing pressure		0.05 MPa				
容许最大负压 Allowable maximum vacuum pressure		-0.02 MPa				
吐出流量 Dispensing flow rate		0.05~10 ml/s	0.05~15 ml/s	0.05~25 ml/s	0.1~25 ml/s	0.1~60 ml/s
吸入流量 Suction flow rate		0.05~10 ml/s	0.05~15 ml/s	0.05~25 ml/s	0.1~25 ml/s	0.1~60 ml/s
耐压 Proof Pressure		0.1 MPa				
质量 Mass		9.5 kg	14.2 kg	14.2 kg	28.6 kg	32 kg

※其他型号和规格的详情请向就近的本公司营业所咨询。

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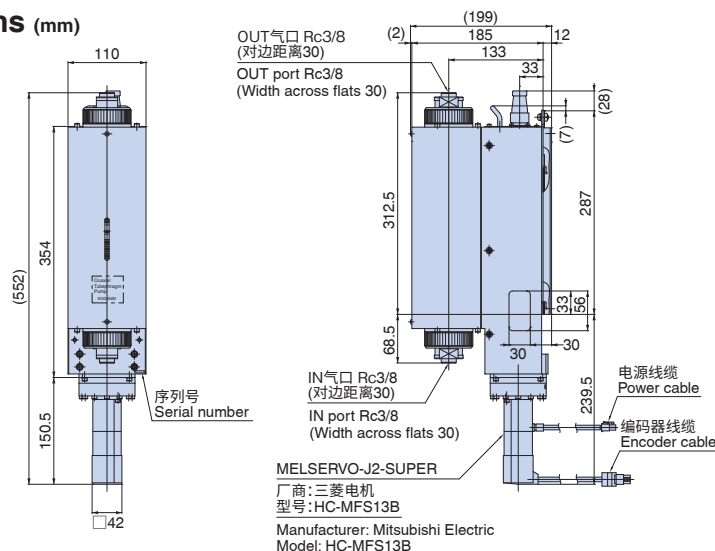
项目 Items	型号 Models	F-EPP200	F-EPP300	F-EPH200	F-EPH300
使用流体 Media		光刻胶、纯水、药液(可燃性物质不可) Photoresist solution, pure water, chemical solution (flammable substances not allowed)			
吐出量 Dispensing volume		20~200 ml	30~300 ml	20~200 ml	30~300 ml
最大吐出压力 Maximum dispensing pressure		0.05 MPa	0.07 MPa	0.1 MPa	0.1 MPa
容许最大负压 Allowable maximum vacuum pressure		-0.02 MPa			
吐出流量 Dispensing flow rate		0.5~20 ml/s	0.5~30 ml/s	0.5~20 ml/s	0.05~20 ml/s
吸入流量 Suction flow rate		0.5~20 ml/s	0.5~30 ml/s	0.5~20 ml/s	0.05~20 ml/s
耐压 Proof Pressure		0.1 MPa	0.1 MPa	0.15 MPa	0.15 MPa </td
质量 Mass		27.4 kg	29.3 kg	27.5 kg	32 kg

※其他型号和规格的详情请向就近的本公司营业所咨询。

※For details about other models and specifications, inquire at the nearest Koganei sales office or the Koganei overseas department.

## ■ 尺寸图(mm) Dimensions (mm)

### F-EPT100-6W



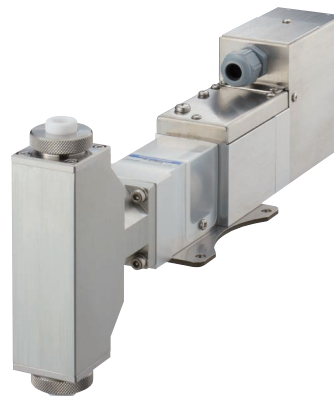
# 电动RT泵

## Electric RT Pump

### F-EPR Series

新结构RT(Rigid Tubephragm)泵  
作为管式隔膜泵的同时, 实现与柱塞泵及注射泵相同的特性。

New structure: RT (Rigid Tubephragm) pump.  
This is a tubephragm pump with similar characteristics to the plunger pump or syringe pump.



#### ■ 特点

除了**低发尘、液体置换特性良好、除泡性好**等管式隔膜泵的特点之外, 还实现了传统的树脂制泵所无法达到的**响应性**和**流量稳定性**。  
实现了微量吐出的定量吐出和定流量吐出!

#### ■ 最适用于如下用途!!

- 想改善狭缝涂布的启动速度!
- 使用柱塞泵、注射泵而苦恼于粒子问题。
- 流量不稳定, 困扰于出现涂布不匀。

#### ■ Features

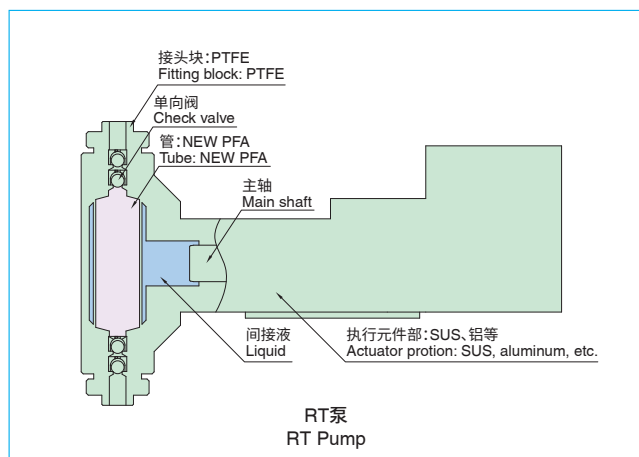
In addition to low particle generation, good replacing solution characteristics, and good removal of bubbles of tubephragm pump feature higher response and flow rate stability than have ever been achieved in plastic pumps. Enables constant dispensing and constant flow rate even in microscopic discharges.

#### ■ Application Examples

- Wants to improve slit coating startup.
- Emitting particles caused by use of plunger pumps or syringe pumps.
- Flow rate will not stabilize, causing coating uniformity failures.

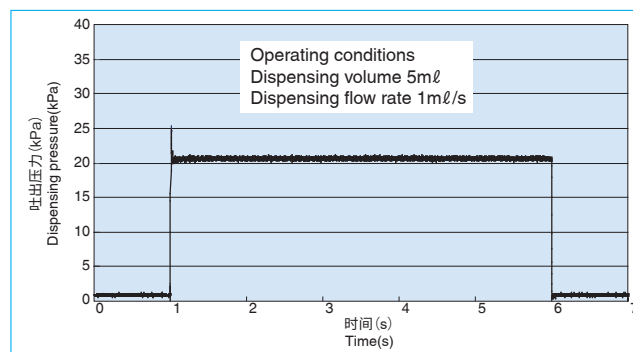
#### ■ 内部结构与部件材料

##### Inner Construction and Major Parts



#### ■ 吐出流量特性数据示例

##### Example of Dispensing Flow Rate Characteristics Data



※是通过恒定节流孔发生的压力控制流量的图表。本图表反映的是具有代表性的特性, 并不保证其特性。

※The above graph shows generated pressure, an alternative measure of flow rate, at a constant orifice. This is for a representative characteristic of the pump, and not a guaranteed performance.

#### ■ 规格 Specifications

项目 Items	型号 Models	F-EPR05-1W
吐出量 Dispensing volume		0.1~5 ml
最大吐出压力 Maximum dispensing pressure		0.1 MPa
容许最大负压 Allowable maximum vacuum pressure		-0.02 MPa
最大吐出流量 Maximum dispensing flow rate		4 ml/s
最大吸入流量 Maximum suction flow rate		4 ml/s
耐压 Proof Pressure		0.5 MPa

※其他型号和规格的详情请向就近的本公司营业所咨询。  
※For details about other models and specifications, inquire at the nearest Koganei sales office or the Koganei overseas department.

# 高粘度药液吐出用泵 Pump for High-Viscosity Liquid Chemicals Dispensing

最适合聚亚胺等高粘度药液吐出。

产生气泡令人困扰！  
想要减少药液的使用量！

↓ 如果是简单结构的CT泵...

消除了加压导致的气泡溶解。  
可大幅减少维护时的使用药液量。

Optimum for polyimide or other high viscosity liquid chemicals dispensing.

Bubbles keep forming.  
Wants to reduce the amount of liquid chemicals used.

↓ With a CT Pump of simple structure...

Can eliminate bubbles blending caused by pressurization.  
Can greatly reduce the volume of liquid chemicals used during maintenance.



## 规格 Specifications

项目 Items	型号 Models	F-EPT10-16W	F-EPT10-18W
吐出量 Dispensing volume		0.5~10 mℓ	
最大吐出压力 Maximum dispensing pressure		0.3 MPa	
吐出流量 Dispensing flow rate		0.1~2 mℓ/s	
吸入流量 Suction flow rate		0.1~2 mℓ/s	
最大流体粘度 Maximum viscosity of media		10000 cP	
吐出量重复精度 Repeatability of dispensing volume		±0.5% (F.S.)	
耐压 Proof Pressure		0.4 MPa	
质量 Mass		3.6 kg	

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## 泵单元 Pump Unit



分配单元  
Dispensing Unit

泵和过滤器、阀门等配管部件材料、控制元件单元化。

除了量产工序，作为试制品等的少量生产用的追加配管线使用也很方便！

Combines the pump, filter, valve, and other piping materials and control equipment into a single unit.

Convenient for mass production processes, and also for installing dispense process lines for prototypes and other small-lot production.



泵控制器  
Pump Controller

1台控制器可以控制多台泵。

触摸面板操作简便！还可通过加密实现操作限制！

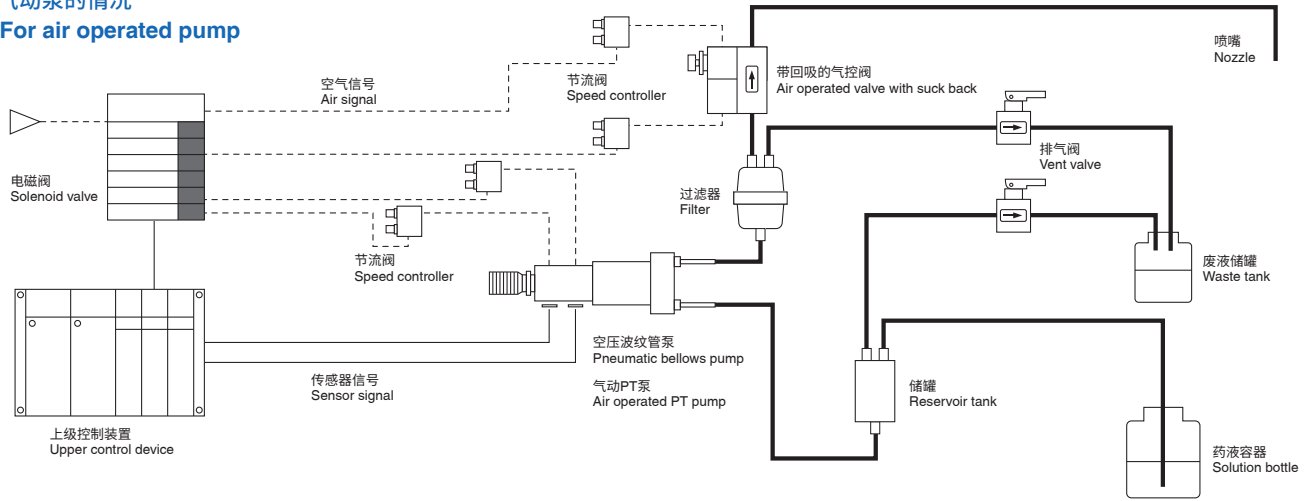
One controller can control several pumps simultaneously.

Touch panel offers simple operation.

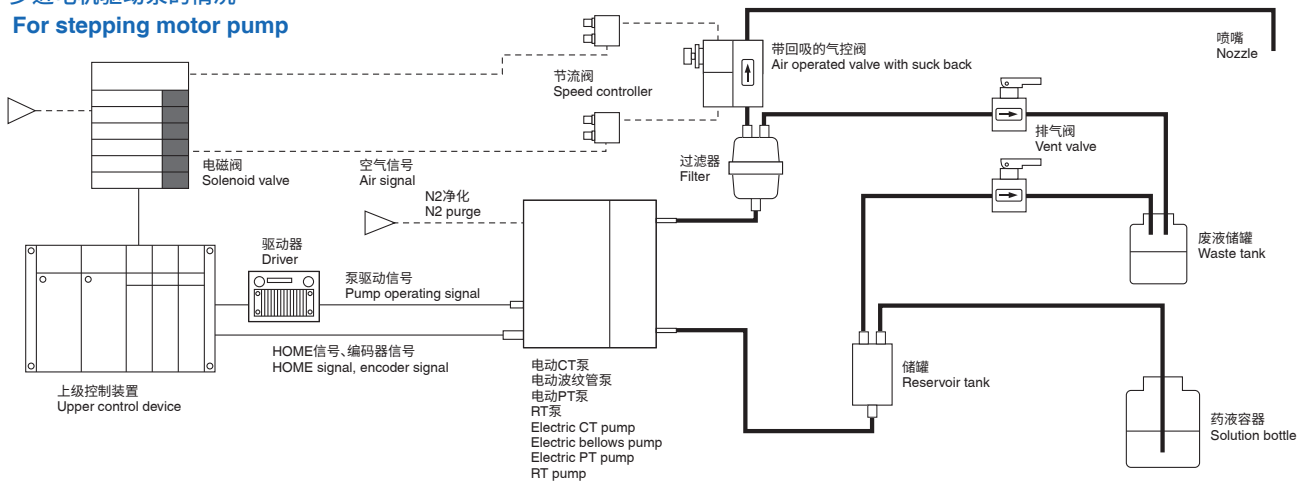
Password protection enables operator restraint.

## 系统示例 System Examples

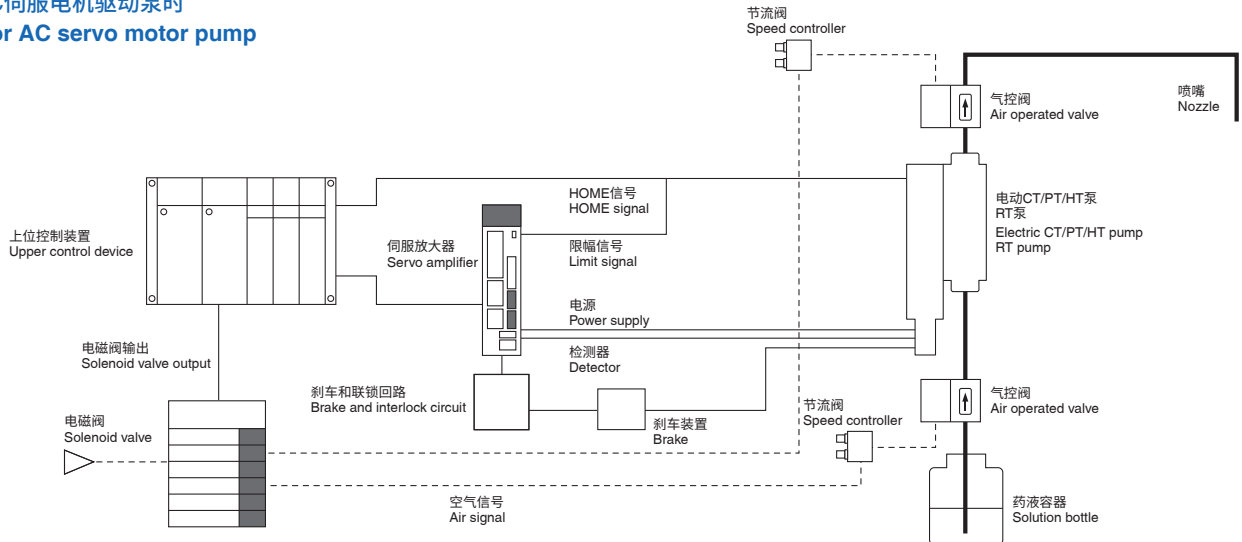
### 气动泵的情况 For air operated pump



### 步进电机驱动泵的情况 For stepping motor pump



### AC伺服电机驱动泵时 For AC servo motor pump



## 相关产品介绍 Introduction of Related Products

### 气控阀 2通阀、3通阀

Air Operated Type 2-port Valves, 3-port Valves



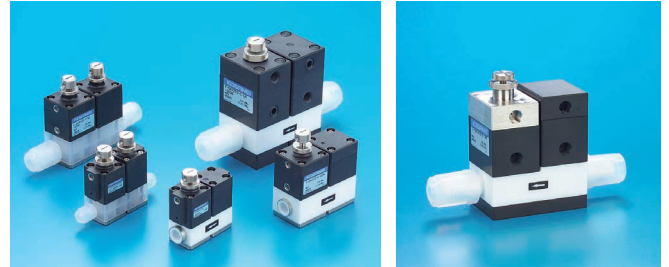
不仅具有丰富的配管规格和阀门功能，带流量调节等可选项也很丰富。进行了小型化，进一步节省空间。

In addition to diverse piping specifications and valve functions, flow rate adjustment and a rich array of other options are also available.

Achieves downsizing and other space-saving measures.

### 带回吸的气控阀

Air Operated Valves with Suck Back



防滴液用回吸阀和2通阀一体化。新增抑制回吸动作时的发泡现象的高粘度规格。

Combined a suck back valve, used for prevention of dripping chemicals, and a 2-port valve, into a single unit. High viscosity specification added to suppress bubble formation during suck back operation.

### 手动阀

Manual Valves



配管规格丰富的小型手动阀。最适合用作通风管线等的阀门。

Compact manual valve available in a rich variety of piping specifications. Optimum valves for vent lines etc.

### H系列接头

H Series Fittings

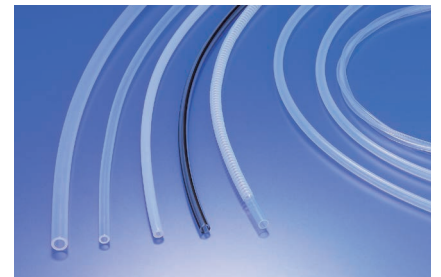


简单连接气管，无需专用工具。

Simple tube connection without need for dedicated tools.

### 氟树脂制气管

Fluoresin Tube Series

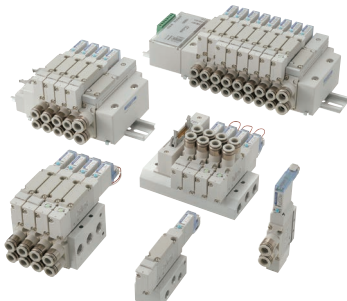


耐药品性优异，可用于各种药液。

Offers superior chemical resistance, enabling use with various liquid chemicals.

### 电磁阀 F系列

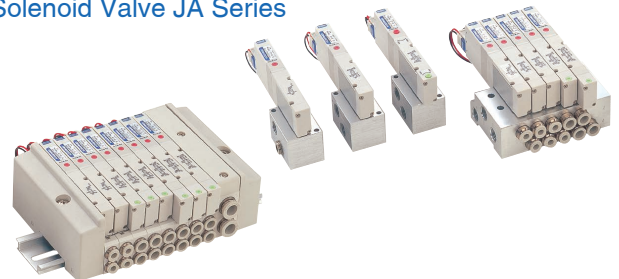
Solenoid Valve F Series



- 2位阀可以通过手动按钮的切换，实现单电磁线圈与双电磁线圈的功能选择。
- 采用异径尺寸两用接头，可连接不同尺寸的气管。
- Single solenoid valve or double solenoid valve function is selectable just by switching the manual override at the 2-position valve.
- Employs dual-use different-size fittings in which tubes of two different sizes can be connected.

### 电磁阀 JA系列

Solenoid Valve JA Series



- 实现了阀宽10mm、标准0.5W、低电流型0.25W的低耗电。
- 备有在1个阀中安装了2个3通阀的4位置3通阀。
- 对应串行传输及各种省配线。
- 最适用于先导操作的阀和 $\phi 40$ 以下的气缸驱动控制等。
- Achieves low electric power consumption (standard type:0.5 W, low current type:0.25 W) with the valve width 10 mm.
- Tandem 3-port valve is available with two 3-port valve functions in one valve body.
- Serial transmission and various wire saving types available.
- Optimum for pilot-operated valves or for operating up to  $\phi 40$  mm bore size cylinders.

咨询电话

**40086-40082**



## 株式会社小金井

- 本社 184-8533 东京都小金井市绿町3-11-28
- 营业本部 184-8533 东京都小金井市绿町3-11-28
- 海外营业部 184-8533 东京都小金井市绿町3-11-28

上海小金井国际贸易有限公司  
上海市天山路600弄1号同达创业大厦2601、2602室  
电话:(86)21-6145-7313  
传真:(86)21-6145-7323  
北京分公司 电话:010-6461-1481  
无锡分公司 电话:0510-8270-7601  
苏州分公司 电话:0512-6818-5395  
深圳分公司 电话:0755-8606-9761  
广州分公司 电话:020-3848-3840

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