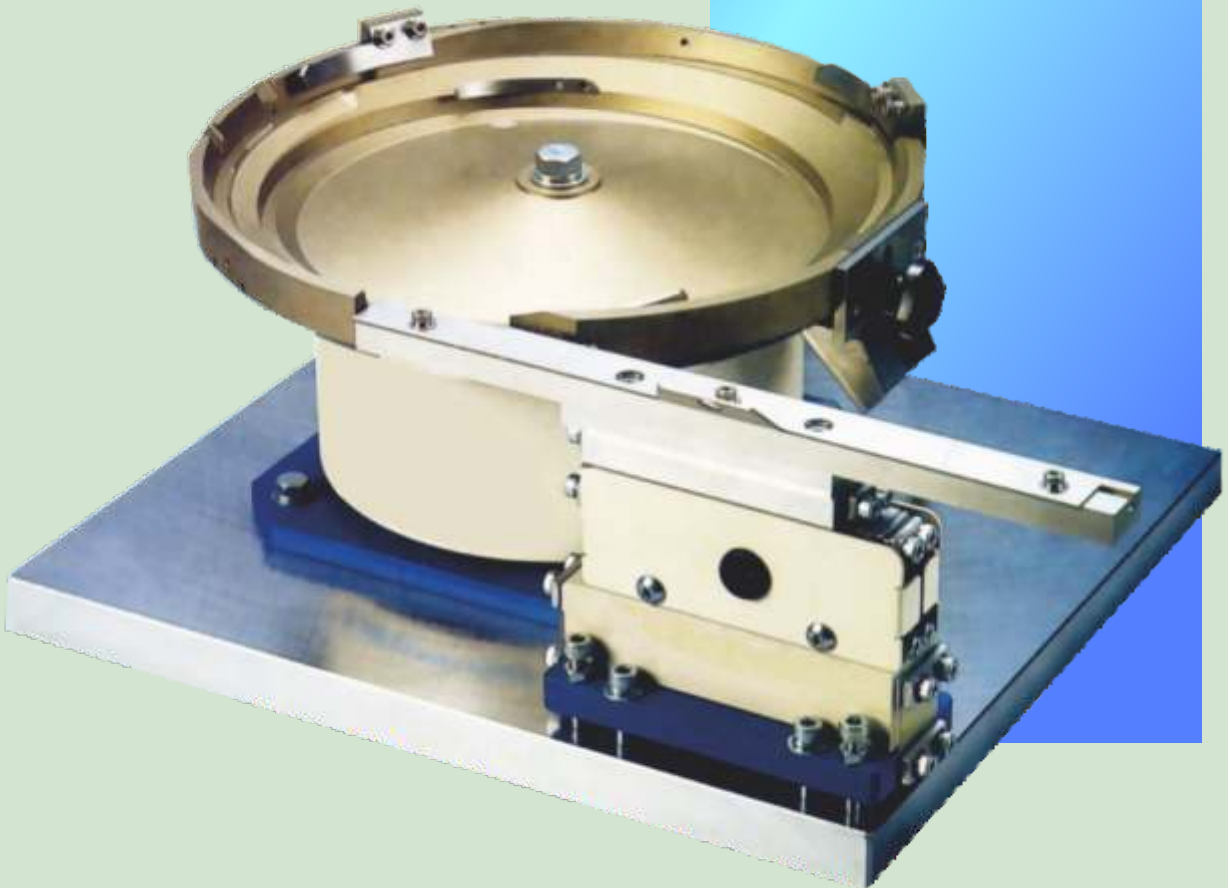


INNOVATION
**PIEZO
FEEDER**

ELECTRO
**MAGNETIC
FEEDER**



精密加工件的振動送料機

A bowl feeder applicable to precision machining of miniature workpieces

HOPE TO BE DRIVING POWER OF THE WORLD

圓盤振動機

Bowl feeder

壓電式振動送料機是以由鈦酸鹽和鋇酸鹽為主要成分的壓電陶瓷製成的壓電素子為驅動來源的振動送料機。

它是利用壓電素子的施加電壓產生機械變形的壓電效應 (Piezo Effect) 形成的振動來完成零件輸送的劃時代的送料機。

這種振動機用途廣泛，可通過中心固定或四周固定隨意安裝各種振動盤。由於驅動裝置沒有使用線圈及轉子，所以電氣及機械構造非常簡單，從而具有良好的耐久性。

The piezoelectric parts feeder drive essentially consists of a fine ceramic piezo-resonator of lead titanate and lead zirconate. This cutting-edge parts feeder is directly driven for feeding through vibration by means of the piezo effect in which strain is generated by applying an electric current.

The vibrator is suited for a wide range of applications and different bowls may be installed at any position with a center or a peripheral lock. Non-standard bowls can also be installed with mounting holes drilled on the top plate. The drive unit has no coil or iron core and is durable as well as simple in its mechanism.

特徵 Features

1 勿需調整彈簧片

因為通過簡單的控制器的頻率設定就能達到理想的運行狀態，所以在機器裝配或使用頻率50/60Hz發生變動時，無需對共振彈簧片進行調整，振動機使用壽命長。

It is not necessary to adjust the spring

It is not necessary to adjust the resonance spring after assembly and switch the frequency between 50 Hz and 60 Hz according to the region of use. Many years of trouble-free operation can be ensured by simply setting the controller frequency.

2 廣泛的供料速率

可以透過電壓控制來選擇廣泛的供料速率。

A wide range of feed rates

A wide range of feed rates can be selected with the voltage control.

3 穩定的料件輸送

通過加重外罩，增加了慣性力距，增強了對反彈力的吸收，實現了更加穩定的振動。即使是在高速輸送領域也能提供安定的振動。

Reliable feeding

Stable feeding is possible, regardless of the specific parameters of use or of power fluctuation.

4 對料件無電磁效應

振動裝置對小型、磁性料件不會產生任何的磁氣影響，有利於零件的篩選。

No magnetic effect on workpiece

There is no magnetic effect on small or magnetic workpieces from the feeder and trouble-free tooling is ensured.

5 適合於輕薄微小料件的輸送

以高效直接的驅動彈簧片，可使輕薄微小的料件在無晃動的情況之下進行料件的輸送。

Suitable for processing thin, small workpieces

A directly driven spring with a higher oscillation factor permits the feeding of small and thin items without any jiggling.

6 顯著的節能效果

壓電素子具有機械能和電能之間的轉換特性，所以比較於傳統的電磁裝置，可達到70%以上的節能效果。

A significant energy-saving effect

Piezo Feeder allows a 70% or more reduction in power consumption than electromagnetic feeders.

7 100V、200V 的電源共用

使用專用控制器，可達成100V、200V的共用。

Can be used with 100/200V power sources

The use of a dedicated controller allows operation with either 100 or 200V power sources.

SAVING ENERGY

壓電式送料機比較於電磁式送料機，減少電能的消耗達到70%以上。

Piezo Feeder allows a 70% or more reduction in power consumption than electromagnetic feeders.

NO-FLUX

由於沒有磁鐵，振動機在無磁性效應下，使得小型、磁性的工件更容易加工。

Due to the lack of magnet, no magnetic effect is given by the drive unit, permitting the easy tooling of small and magnetic workpieces.

NO-HEAT

作用中的壓電素子不會發熱。

Piezo-resonator do not heat up.

BOWL FEEDER



SANKI PIEZO RESONATOR

更進化的壓電式振動機

The piezo feeder has further advanced.

抗油、防塵性能的提昇！

Improved in resistance to oils and dust!

利用獨家塗裝技術使得陶瓷表面產生絕緣效果。

Its ceramic surfaces have been coated for insulation with the use of our own technology.

耐用性的提昇！

Improved in durability!

經過優化後的壓電素子，其電極型態及特性比較於一般產品，耐用性提昇了1.5至2倍。

Its durability has been upgraded by about 50% to 100% as compared with existing models by optimizing the piezoelectric ceramic properties and electrode shape.

進化性能的提昇

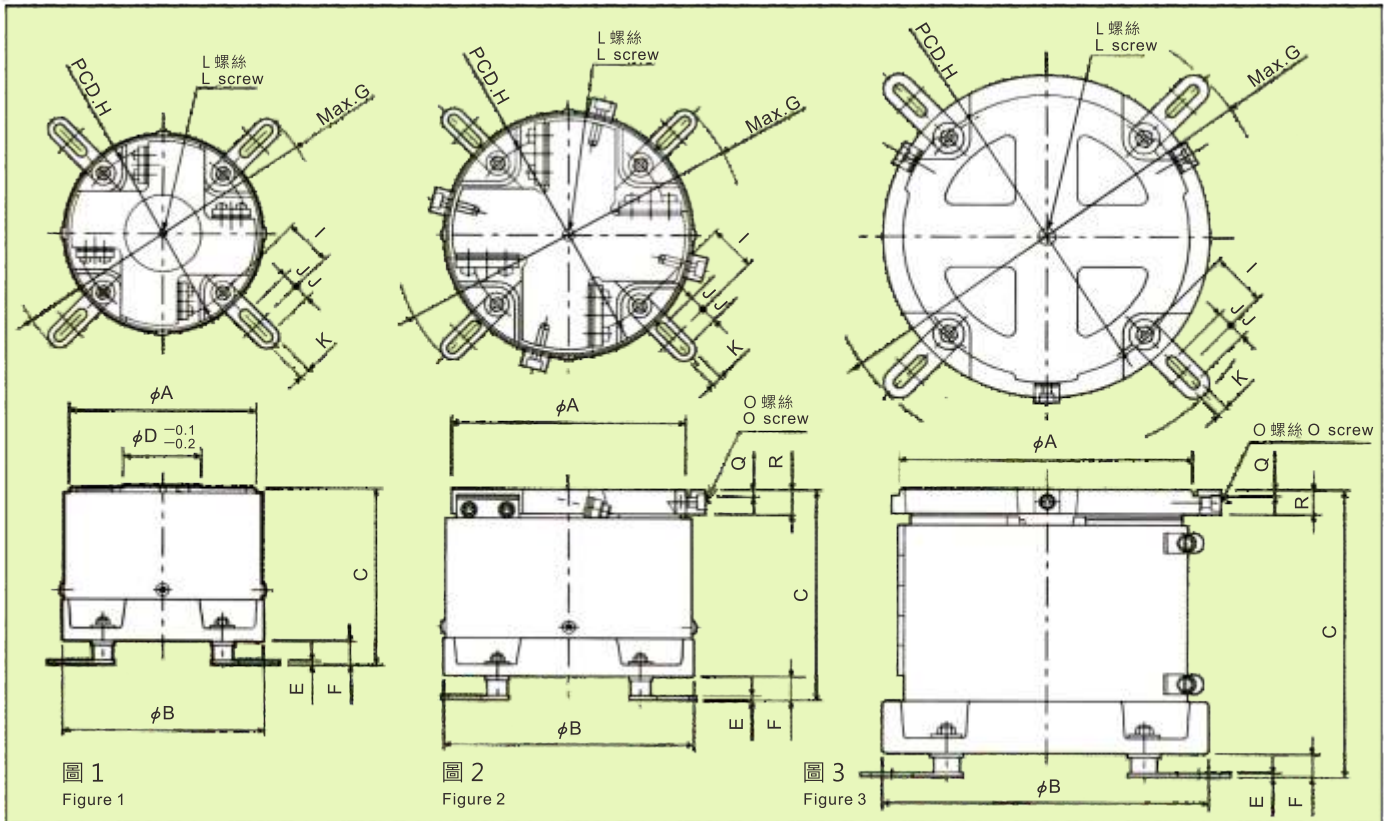
Improved in resistance to displacement!

經過改良成份後的壓電陶瓷，和現有一般產品相比較，工作性能提昇了約20%。

Its performance has been upgraded by about 20% as compared with the existing models by modifying the piezoelectric ceramic properties

壓電素子
Piezo-resonator



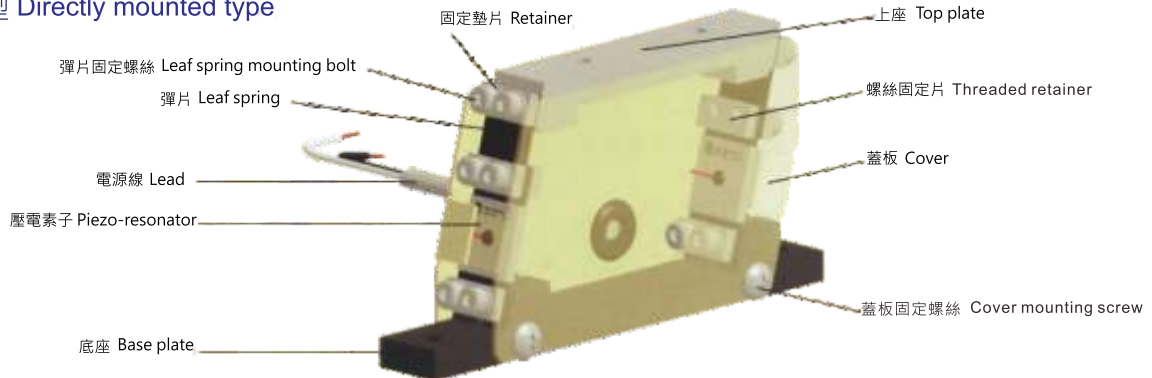


形式 Model	符號 Symbol	A	B	C	D	E	F	G	H	I	J	K	L	O	Q	R	圖號 Drawing No.
PEF - 90A		90	100	100	50	2.3	15	175	80	30	10	7	M6	-	-	-	1
PEF - 120A		120	130	115				205	110				2				
PEF - 150A		150	160	137	-	3.2	19	225	130	45	15	10	M8	4-M5	4.5	16	3
PEF - 190A		190	210	187				290	180				35	3-M5		19	
PEF - 230A		230	260	205				330	220				M12	3-M8	24		
PEF - 300A		300	320	225	4.5	25	534	414	270	60	10	10	M16	3-M10	6	24	3
PEF - 390B		390	440	252				534	380				50	3-M10		25	
PEF - 460B		460	530	304				645	465				60	4-M10	25		

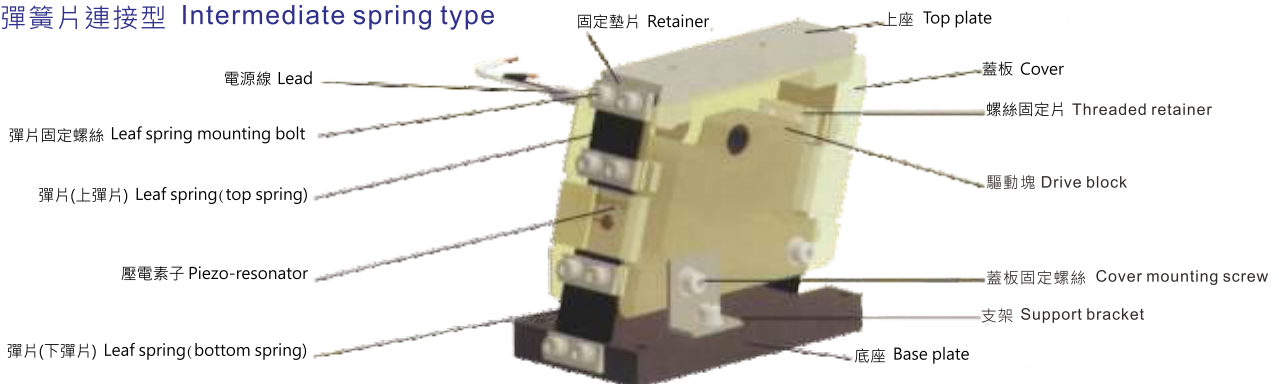
形式 PEF Model	90A	120A	150A	190A	230A	300A	390B	460B		
輸入電壓 Input voltage AC(V)	0-250									
輸入電流 (標準盤) Input current(standard bowl) (mA)	8	15	37	65	90	165				
共振頻率(標準盤) Resonating frequency(Standard bowl)*1(Hz+/-10Hz)	255	240	233	210	165	152	120	100		
彈簧角度 (標準) Spring angle (Standard) (5°)	15									
壓電素子型式 Piezo-Resonator type	SR-1639B	SR-2443B	SR-3860B	SR-5086A1		SR-65100A1	SR-68105C	SR-80116A		
壓電素子使用片數 Piezo-Resonator (片 pcs)	2			3						
塗裝色 Surface coating	本體表層 Unit cover			日塗工 Nittokoh S3-309						
	本體基底 Unit Base			日塗工 Nittokoh S2-1034						
振動機重量 Vibrator mass (kg)	1.7	3.3	5.3	12.3	17.8	32.6	54	105		
振動盤最大尺寸 Permissible maximum bowl size	盤徑 Bowl diameter (∅)		120	150	250	310	370	500	620	760
	盤重 Bowl mass (kg)		0.3	0.6	2	3	5	8	14	25
最大工作重量 Permissible work mass (kg)	0.2	0.4	0.8	1.5	2.5	3	5			
作業溫度 Operating temperature range (°C)	0~40									
作業濕度 Operating humidity range (No condensation) (% RH)	10~90									
適用控制器 Applicable controller	標準 Standard		P1 系列 P1 Series		P2 系列 P2 Series		P3 系列 P3 Series			
	反饋 Feedback		P1-F 系列 P1-F Series		P2-F 系列 P2-F Series		P3-F 系列 P3-F Series			

配置和組件 Confiuration and components

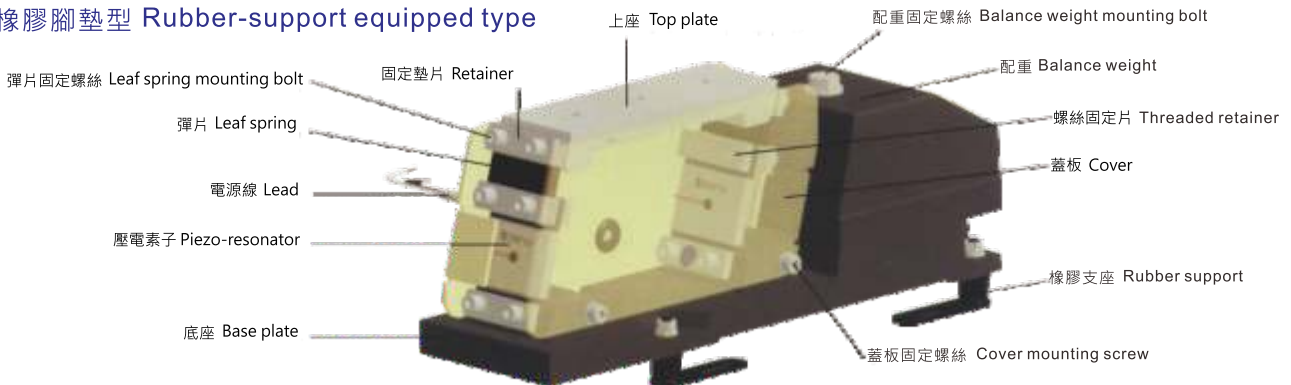
直接連接型 Directly mounted type



彈簧片連接型 Intermediate spring type



橡膠腳墊型 Rubber-support equipped type



規格 Specifications

形 式 Model of PEF	直接連接型 Directly mounted type					彈簧片連接型 Intermediate spring type					橡膠腳墊型 Rubber-suuport equipped type				
	L5A	L15A	L25A	L60A	L125A	L30AG	L75AG	L150AG	L200AG	L250AG					
輸入電壓 Input voltage	AC(V)					0~250									
輸入頻率 Input frequency	(Hz)					60~300									
輸入電流 Input current	5	8		17	24	7	13	20	30						
共振頻率 Resonating frequency (Ha+/-10Hz)	160	135	130	110	86	182	158	110	105	75					
驅動裝置 Drive type	壓電素子 Piezo-resonator														
軌道全長 MAX Maximum chute length (mm)	200	250	300	350	500	300	400	500	600	700					
軌道寬度 MAX Maximum chute width (mm)	15	20	22	33	45	20	34	45	48	50					
軌道重量 MAX Maximum chute mass (kg)	0.2	0.3	0.5	1.2	2.5	0.6	1.5	3.0	4.0	5.0					
工作溫度 Operating temperature range (°C)	0~40														
工作濕度 Operating humidity range (%/RH)	10~90														
塗裝顏色 Surface coating	本體：日塗工 S2-1034 蓋板：日塗工 S3-309 Nittoko S2-1034 for unit/Nittoko S3-309 for cover														
本體重量 Mass (kg)	0.5	0.8	1.4	3.8	9	2	3.5	7	13	18					
適用的控制器 Applicable controller	標準 Stanard	P1系列 P1 Series		P2系列 P2 Series		P1系列 P1 Series		P2系列 P2 Series							
	反饋 Feedback	P1-F系列 P1-F Series		P2-F系列 P2-F Series		P1-F系列 P1-F Series		P2-F系列 P2-F Series							

■直線送料機(直振送料機)

IN-LINE FEEDER (Straight-ahead feeder) CS type

採用產機的原生開發架構，受到多數客戶廣泛採用的機型之一。

與JA型的圓盤式振動機一樣，採用了水平放置的磁鐵和玻璃纖維製作的彈簧片，達到了穩定的輸送料件作業。

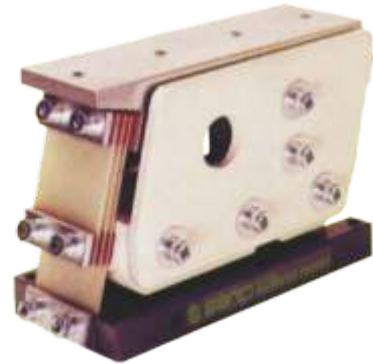
Employing Sanki's originally developed structure, this best-selling machine is widely used by many customers. Like the JA-type bowl feeder, it enables various kinds of work pieces to be transferred at a constant rate through the use of horizontally- arranged magnets and glass fiber leaf springs.

彈簧片連接型 Model CS-0/CS-1/CS-2

Joint spring type

在驅動裝置和底座之間使用了連接彈簧，降低了底座的反作用力，適合應用於微小的料件

The feeder is secured by a joint sprint provided between the drive unit and the mounting base to reduce the reactive force applied to the base. It is especially useful for thinner workpieces.



橡膠腳墊型 Model CS-L350AG

Rubber insulator type

將橡膠腳安裝在送料機的底座上，可確保極低的反作用力，在高速大量傳送料件的時候，可以有效的產生振動效果。

Rubber legs are used to mount the feeder to the base to ensure an extremely low reactive force and effectively generate vibration in the case of transferring a large number of workpieces at a high rate.



■規格 Specifications

Date	Model	CS-0		CS-1		CS-2		CS-L350AG
彈片角度 Spring angle	(θ°)	15						20
輸入電壓 Input voltage	AC(V)	100	200	100	200	100	200	200
允許電流 Permissible current	(mA)	120	50	160	90	600	280	1200
輸入頻率 Input frequency	(Hz)	50 / 60						
振動機重量 Vibrator mass	(kg)	1.3		3.8		10.0		38.0
驅動波形 Drive wavefom		全波 Full wave						半波 Half wave
塗裝色 Paint color		本體：日塗工 Base plate:Nittokoh S2-1034				側板(蓋板)：日塗工 S3-309 Side plate(cover):Nittokoh S3-309		
適用控制器 Applicable controller		MFC-N3F						MFC-S2A

■軌道最大尺寸及重量 Maximum dimensions and mass of chutes

Model	Chute	總長(mm) Overall length	寬(mm) Width	厚(mm) Thickness	重量(kg) Mass
CS-0		200	30	10	0.5
CS-1		300	45	15~20	1
CS-2		500	60	15~20	2
CS-L350AG		950	—	—	10

送料機系統包括了存放料件的儲料斗、定位整列和選別的圓盤送料機以及直線送料機，提供給生產線上的需求，使用具有優良性能的產台送料機系統，以確保每一個料件正確性的供給。

The parts feeding system consists of a hopper for storing parts, a bowl feeder for positioning the parts, lining up and screening, and an in-line feeder that feeds parts as they are required in the production-line. Excellent performance and reliability is ensured for each component when Sanki's piezoelectric feeder is used.

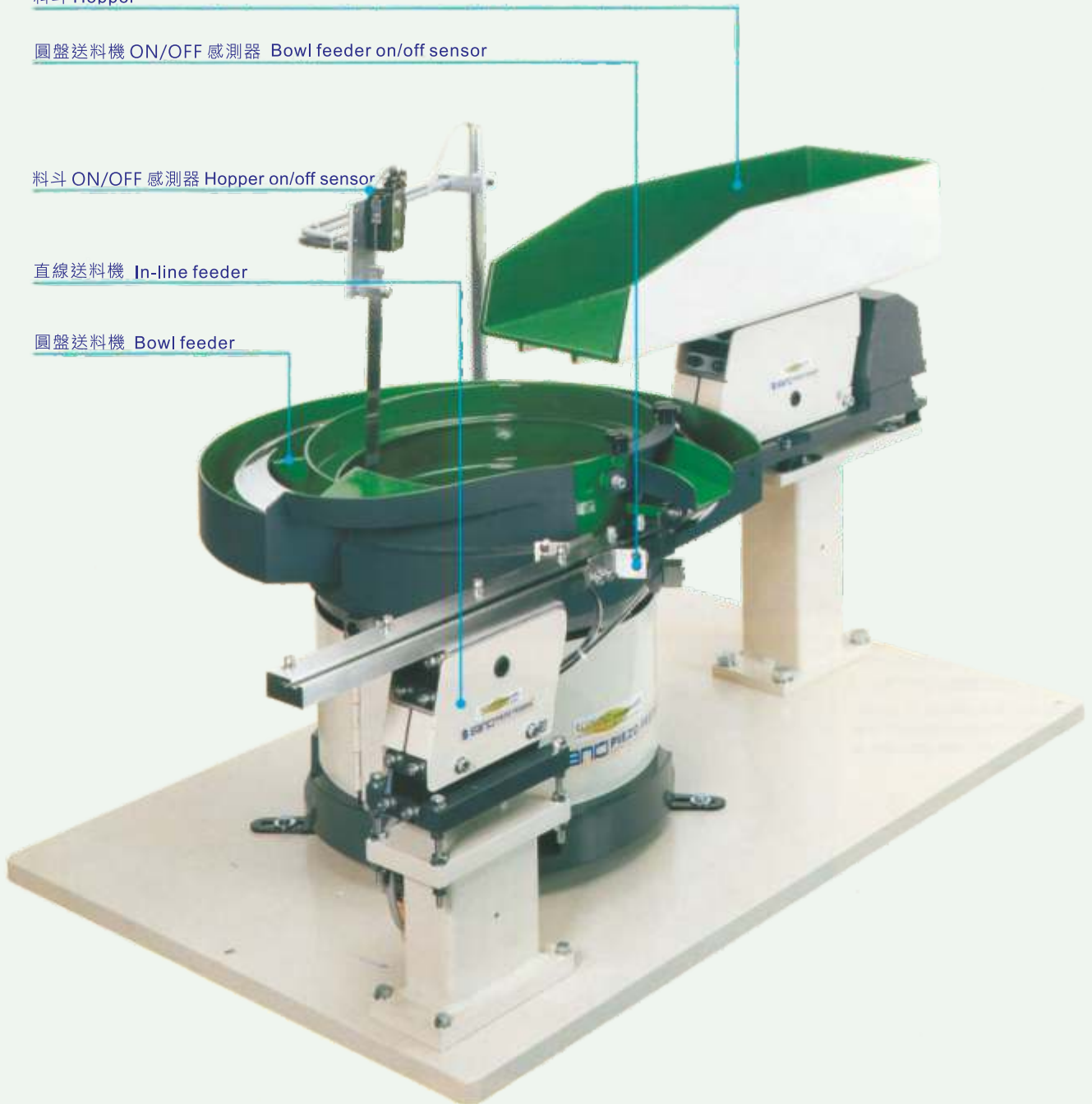
料斗 Hopper

圓盤送料機 ON/OFF 感測器 Bowl feeder on/off sensor

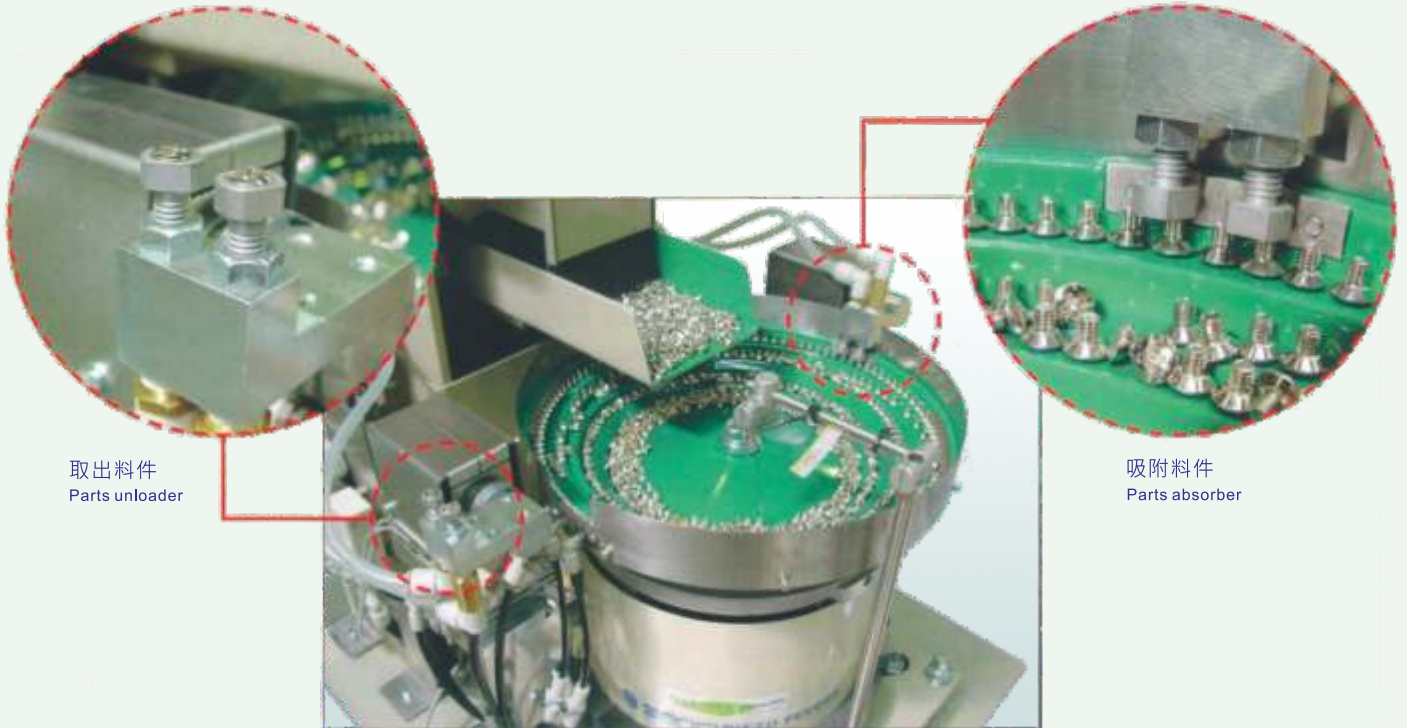
料斗 ON/OFF 感測器 Hopper on/off sensor

直線送料機 In-line feeder

圓盤送料機 Bowl feeder



應用實例 Examples of application



取出料件
 Parts unloader

吸附料件
 Parts absorber

平頭螺絲整列振動送料機 Parts feeder system w/escape for countersunk head screws



選別感測器 Screening by sensor
 無法依據重量及送料速率判定的料件，可以依照外型及顏色進行選別。

Parts that are difficult to screen according to Center of gravity or feed rate can be screened according to shape or color.

整列區段(吊掛)

Line-up Section (hanger)

節省空間。
 糾結的料件在直線段更正確地篩選。
 以重力限制的方式，使料件以單列的方式進入直線整列區段。

Space saving
 Entangled parts are more correctly screened at linear section.
 Parts are put into a single line before the line-up section to limit the feeding weight.



螺絲加工橢圓形振動盤 Oval machined parts feeder for screws

振動送料機系列 Parts Feeder Series



往覆式送料機
Para Feeder



白鐵盤面送料機
SUS Bowl Feeder



鋁合金盤面送料機
Aluminium Bowl Feeder

產台振動送料機是一種自動供料裝置，和其他送料機相比它具有送料效率高、整列定向性能好、工作穩定可靠、結構簡單、工件間相互摩擦小、不易損傷物料、通用性好、改換品種方便、送料速度容易調節等優點；在供料過程中，可以利用擋板、缺口或偏重等方法對零件進行定向整理、分離篩選後供料；也可在高溫、低溫或真空環境中操作。因而它被廣泛應用於輕工、電子產品、鐘錶元件的自動加工、裝配等機械上，在醫藥、食品、自動輸送、稱重、包裝上也得到非常廣泛應用。

Our parts feeder system is a customized automatically parts feeding machinery. Compared with other brands, it is more stable, reliable and effective. Furthermore, it is also more comprehensive, easy to adjust and most importantly, more people friendly.

During the feeding process, we use the physical characteristics of the parts to sort the parts in certain direction which our client request, and because our parts feeder system can be used under a wild range of temperature and even in a vacuum environment, it is widely used in various of fields.

振動送料機應用零件範圍			Applications	
LED 類 LED	半導體類 Semiconductor	二極體類 Dipole	光學類 Optical Elements	被動元件類 Passive Devices
晶片類 Chips	五金、橡膠、組合件類 Hardware	食品類 Food	醫療類 Medical Devices	連接器 Connectors



靜電消除器
Static Electricity Eliminator



軸套
Power Lock



聯軸器
Coupling



一體式針輪(棘輪)
Pin Wheel



凸輪
Cam

本靜電消除器非電量放電或離子風扇形式，而是採用電力線除電的全新產品。可針對各種物件狀況作有效的除電作業。如：移動物體、異形物體、大型物件、輕量物件、微小物等各種帶電狀況，配合可任意角度裝設的放電電極作簡單而有效的除電，是一理想的靜電消除裝置。

本公司所專業生產之針輪配件係針對精密電子設備包裝帶(Reel)需求所開發出來之產品，主要是要取代以往打Pin之針輪設計，解決以往精度不足，Pin針容易斷裂，同心圓不佳等等缺陷所延伸之精品。

Our static electricity eliminator use the method (line of electric force) to effectively remove the static electricity, compared with the previous methods (corona discharge & ionic fan) it is more ideal for moving, large or miniature objects and even can be applied on objects with different shapes. Also, the electrodes can be adjusted in different angle, it is definitely the most ideal eliminator ever.

Apart from the static electricity eliminator, we also produce brilliant accessories such as Power lock, Coupling, Pin wheel and Cam, especially for our Pin wheel, it is designed to take over the traditional design (Pins are inserted), our pin wheel is made in one-piece, which largely solve the precision problem and create a more convenient using experience.

本公司另可依需求特製凸輪等特規產品，歡迎洽詢。

Our accessories are mostly customized, please feel free to contact us if interested.

周邊商品 Concession



精密滑台
Precision Stage



分割器
Index



線性馬達
Linear Motor



搖擺機
Shakers



同步電動缸系列
Synchronous Cylinder Series

設計研發部
Research & Development



鋁盤加工部
Aluminium Bowl Machining Dept



五軸加工部
5-Axis Machining Dept



白鐵加工部
SUS Bowl Machining Dept



特殊加工部-1
Special Machining Dept-1



特殊加工部-2
Special Machining Dept-2



特殊加工部-3
Special Machining Dept-3





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