

富強鑫集團 FCS Group



富強鑫精密工業股份有限公司 Fu Chun Shin Machinery Manufacture Co., Ltd.

71841 臺灣台南市關廟區埤頭里保東路269號
No.269, Baodong Road, Pitou Village, Guanmiao District, Tainan City 71841, Taiwan
TEL: +886-6-5950688 • FAX: +886-6-5951129 • E-mail: fcsco@fcs.com.tw

東莞富強鑫塑膠機械製造有限公司 Dongguan Fu Chun Shin Plastic Machinery Manufacture Co., Ltd.

中國廣東省東莞市大朗鎮石廈管理區金廈東路18號 郵編：523792
No.18, Jinsha East Road, Shixia Administration District, Dalang Town,
Dongguan City 523792, Guangdong Province, China
TEL: +86-769-83313753 • FAX: +86-769-83181903 • E-mail: cdg@fcs.com.tw

富強鑫(寧波)機器製造有限公司 Fu Chun Shin (Ningbo) Machinery Manufacture Co., Ltd.

中國浙江省寧波市江北區海川路115號 郵編：315032
No.115, Haichuan Road, Jiangbei District, Ningbo City 315032, Zhejiang Province, China
TEL: +86-574-56138688 • FAX: +86-574-56138600 • E-mail: cnb@fcs.com.tw

印度富強鑫

FCS Machinery (India) Private Limited

Block Number 218, Xceloni Industrial Estate, Near Intas Pharmaceutical,
Village Chancharvadi Vasna, Sarkhej Bavla Road, Taluka Sanand, Ahmedabad, Gujarat - 382213
TEL: +91-99-74107787 • E-mail: fcsindia@fcs.com.tw



新一代高效節能射出機
Advanced Servo Hydraulic Toggle IMM

FA SERIES

FA Series

高效率 - 生產效率提升15~20%
高性能 - 射出速度提升20%以上
高標準 - 符合CE、GB、ANSI規範

Highly Efficiency - Increasing production efficiency 15~20%.
High Performance - Improving injection speed by 20% ↑.
Energy Saving - Complying with CE, GB, and ANSI standard.

FCS四十餘年技術結晶與積累，創造了多樣性的產品及穩定的性能品質，同時也針對各行業不同產品特性，提供差異化技術整合與服務。**FA系列**為FCS全新發表之高性能曲肘油壓伺服節能機種，不僅規格升級，設計也更加優化，外觀造型仍堅持美學與人因工程兼備之要求，更整合高階電控系統優勢，可充分結合FCS工業4.0解決方案，是一款集性能、效能與智能於一體的智能化射出成型機，可廣泛應用於家用民生、文具、汽車、3C等產業，鞏固客戶競爭優勢。

With over 40 years of technological developments and innovations, FCS offers a new and optimized design with increased performance and reliability for a wide variety of industries.

The new **FA Series** delivers unmatched efficiency with its energy-saving servo hydraulic toggle system. The clamp and injection unit specifications have also been increased to allow our customers more flexibility in the range of molds they can run in the machine. The outside appearance of the machine was developed with friendly ergonomics to make working in and around the machine easy, comfortable and safe for the operator. The KEBA control now offers an enhanced capability to integrate the FCS IMF 4.0 system to assist in making your facility a Smart Injection Molding Machine Plant. Overall, these new enhancements to the FA Series will help our customers increase their competitiveness in the industry and propel them to the next stage in new machine technology.

集 捷超凡
域廣無涯



Exceptional performance
Enormous capability



家用五金製品
Housewares



電子產品外殼
Electronic
product casings

厚件容器
Thick-wall



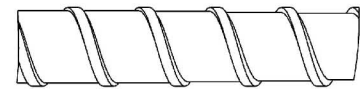
建築管件
PVC fittings



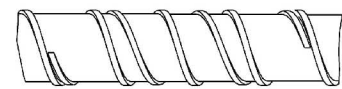
汽車部件
Automotive parts

射出單元 Injection Unit

一般螺桿
Normal screw



高混煉螺桿
High mixing performance screw

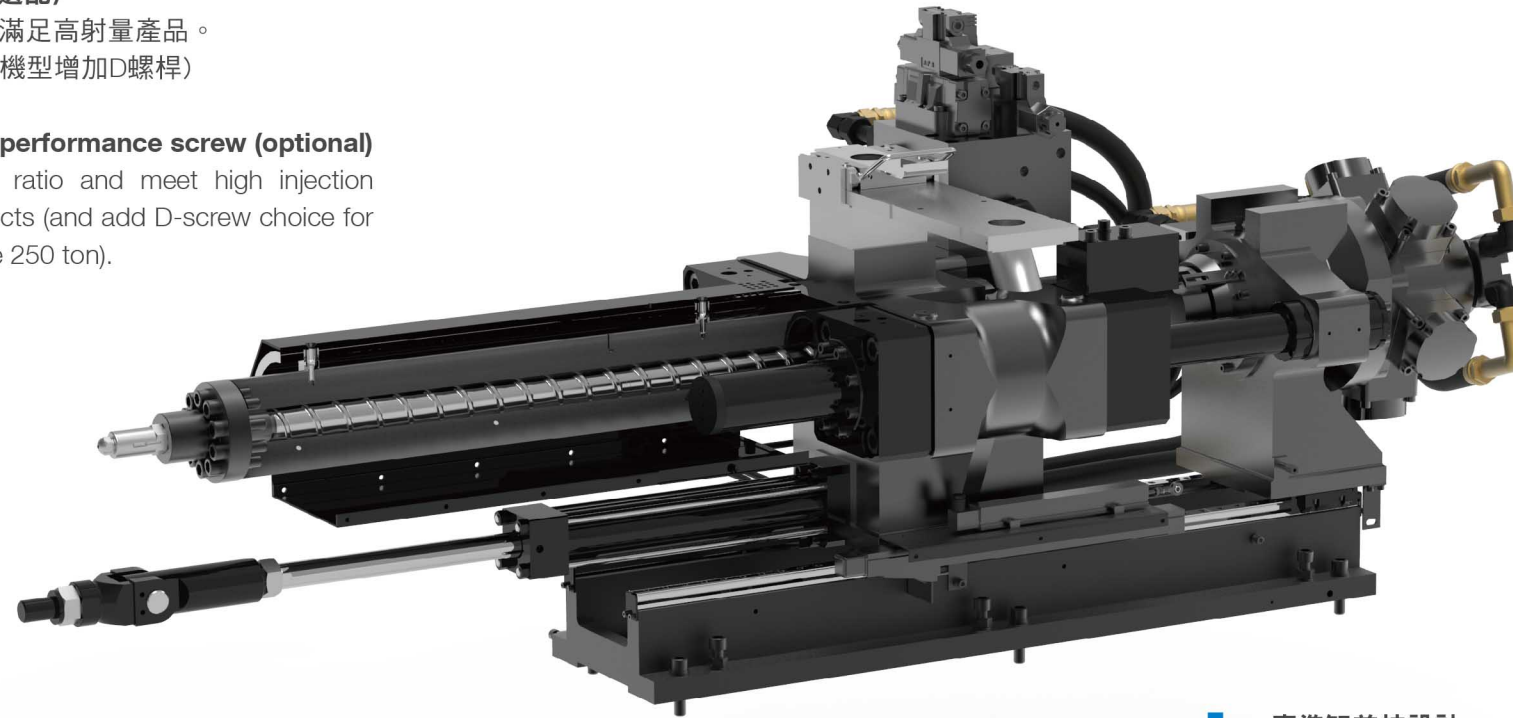


高混煉螺桿 (選配)

提升L/D比，滿足高射量產品。
(250 ton以上機型增加D螺桿)

High mixing performance screw (optional)

Improve L/D ratio and meet high injection volume products (and add D-screw choice for models above 250 ton).



射座線性滑軌

- 負荷輕、減少磨耗，射出控制精準穩定。
- 儲料基礎背壓阻力降低70%，減少熔膠溢流。

Linear guide for injection carriage

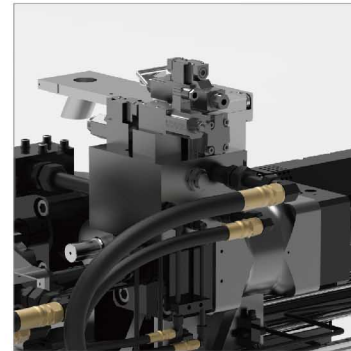
- Lower the wear and tear, and make the injection control precise and stable.
- Lower the storage back pressure resistance by 70%, and reduce the melt overflow.

系統壓力提升

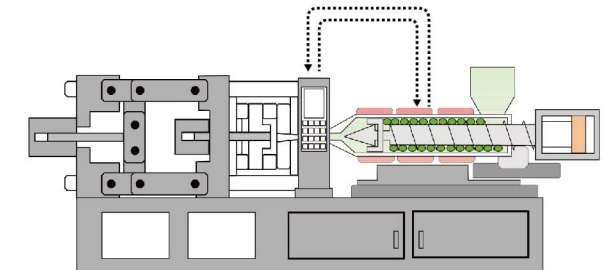
射出油路板與油缸整合優化，提升射出響應速度，擴大產品應用範圍。

System pressure improvement

The integrated and optimized hydraulic manifold and cylinder, improve the injection response, and expand the product application range.



全閉迴路系統 Closed-loop system



回授螺桿位置於控制器
Screw position feedback to the controller.

伺服射出全閉迴路

精準控制每模射速，射出時間穩定性 >99.9%，成型品重量穩定性佳。

Servo injection closed-loop system

Accurately controls the injection speed, injection time and shot weight.

座進缸前拉設計

減少機架受力，降低變形量，保持穩定射出力。

Injection carriage forward pull design

Reduce the frame deflection, and maintain a stable injection force.

模組化規格選型

提供高速款規格，彈性化滿足食品包裝、薄壁容器等產業需求。

Optional modular specification

High-speed option is available for food packaging industry and thin-walled product molding requirements.

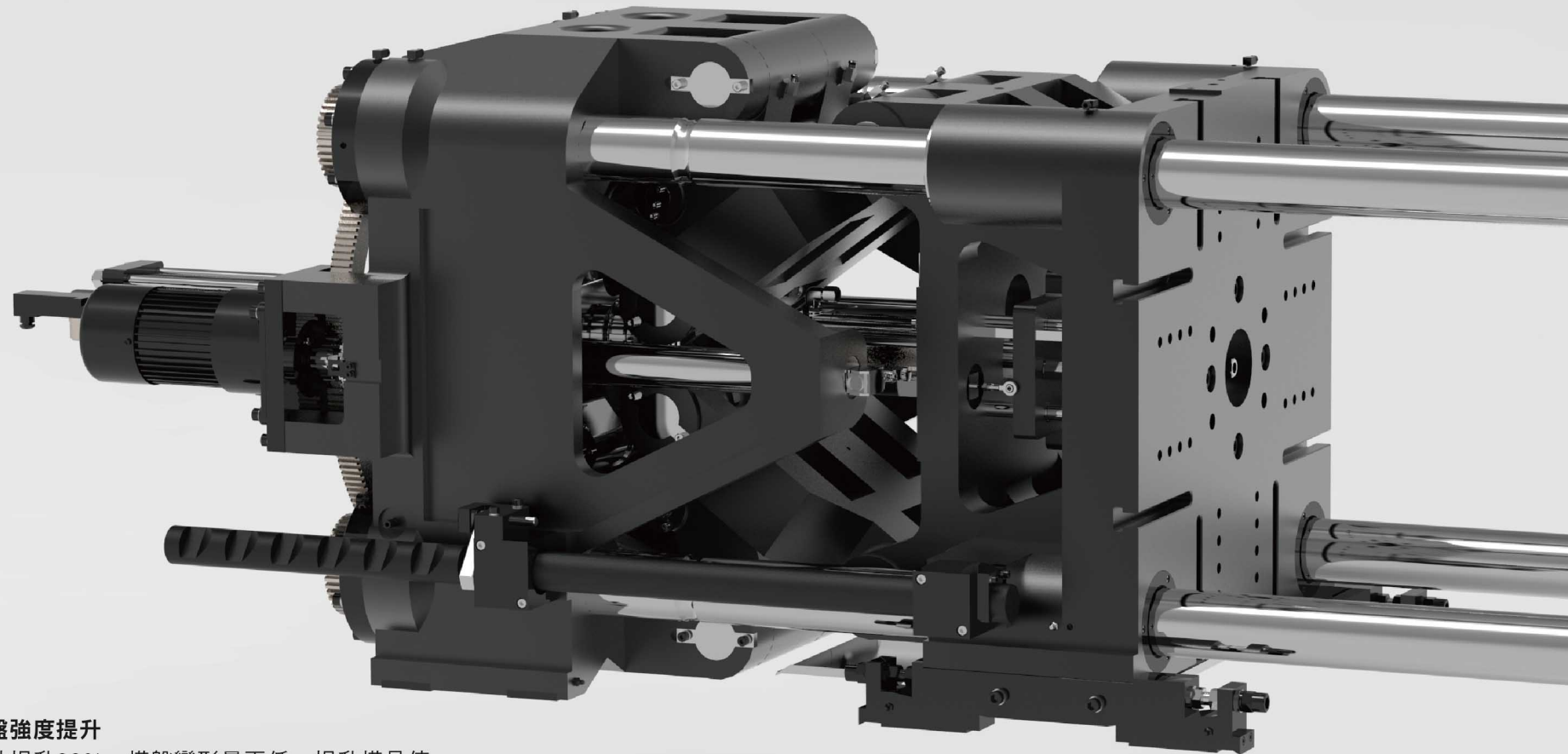
夾模單元 Clamping Unit

調模電動馬達

具煞車型電動馬達，調模位置控制穩定。

Mold adjusting via electric motor

New electric motor with brake for stable position control of Die Height.

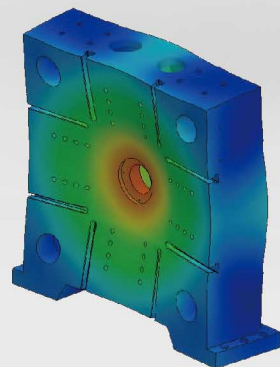


模盤強度提升

剛性提升30%，模盤變形量更低，提升模具使用壽命。

Platen strength improvement

Increase rigidity by 30%, lower deflection of mold plate, and improve the mold lifetime.

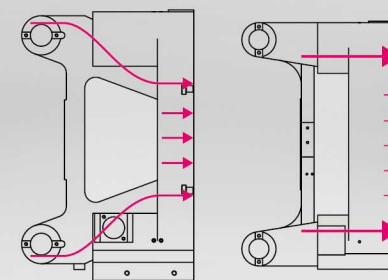


活動壁設計優化

- 力流線朝模盤中心集中，可減少模具變形。
- 具強制頂針退回設計功能，滿足模具產品特殊需求。

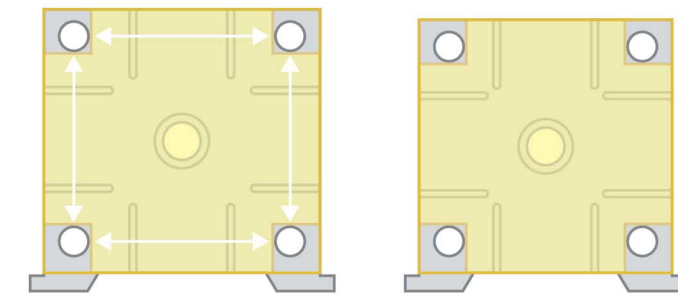
Moving platen optimization

- The clamping force flows through the center of the moving platen to help reduce mold wear.
- With mandatory ejector retracting design which meets the needs for special products.



FA Series

HT Series



FA Series

HT Series

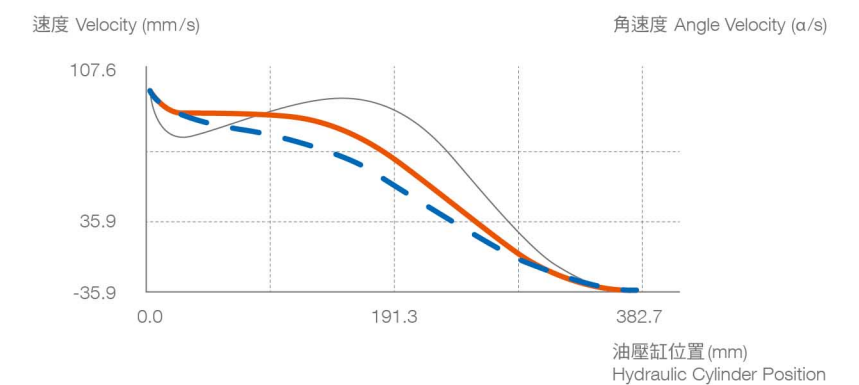
柱內距加大

模具應用彈性高。

Tie bar spacing increase

More flexible choices for mold application.

— 一般曲線 General curve
— 模擬曲線 Simulated curve
- - - 實測曲線 Measured curve



開關模平順性控制

關模速度曲線設計平滑化，導入S曲線速度命令，減少機台震動。

Precise control on clamp opening and closing speeds

S curve speed control allows for smooth transition with clamp speeds and reduces machine vibration.

電控單元 Control Unit

應用功能

- 全新設計畫面風格與圖示，操作更為便利。
- 具多階密碼保護功能，記錄與限制各階使用者參數修改。
- 提供統計製程控制及射出波形圖，提高生產品質與效率。
- USB資料存取介面，模具參數、顯示畫面存取便利。
- 採多重通訊介面(USB、串行接口、Ethernet、EtherCAT、Sercos III)。
- 支援OPC協定，且依據IEC-61131設計，其特點為模組化並易於軟硬體維護。
- 多種語言可供客戶選擇。

Application

- New control is designed for easy operator interface.
- The multi-level password protection function is used to record and limit the parameters modification from various levels of users.
- Provide statistical process control and injection waveforms to improve production quality and efficiency.
- Convenient access to USB data, mold parameters and display screens.
- Multiple communication interfaces (USB, serial interface, Ethernet, EtherCAT, Sercos III).
- Control supports OPC protocol and has a modular design to easily maintain the software and hardware.
- Multiple languages are available for users.

控制精度

- 加熱控制精度0.1°C並有效分段控制，以提升塑化能力。
- 位置控制精度0.1mm，可準確控制動作行程。

Control Precision

- Barrel heat zones are accurate to 0.1 degree C to ensure stable material plasticizing.
- Screw position is controlled with in 0.1mm to precisely control shot size and cushion position.

遠端監控

- 生產品質記錄。
- 模具資料上傳及下載。
- 機台稼動率及產能統計。
- 機台停機狀態顯示及記錄。
- 可將資訊匯出以進行看板管理。

Remote Control

- Production quality recording.
- Mold information upload and download.
- Machine utilization rate and production capacity statistics.
- Machine downtime status display and recording.
- Information can be exported for visual management.



控制器 Control	FCS 6500S	FCS 6500 (Optional)
螢幕尺寸 Screen Size	10"	12"
操作方式 Operation Method	按鍵 Button	按鍵&觸控 Button & Touch
反應時間 Reaction Time	2ms	1ms
螢幕顯示 Screen Display	• 800x600 像素 • 800x600 pixel	• 1600 萬色真彩顯示 • 16 million color palettes

規格表 Specifications

射出單元 Injection unit	夾模單元 Mold clamping unit										
	FA-60	FA-100	FA-125	FA-160	FA-200	FA-250	FA-300	FA-350	FA-400	FA-470	FA-530
130	★										
300		★									
400			★								
600				★							
850					★						
1050						★					
1400							★				
1700								★			
2350									★		
3350										★	
4550											★

- 射出單元規格可依產品需求選配。
- Injection units can be selected according to product requirements.
- ★星號為標準組合。
- ★ Star area means standard type.

ITEMS		UNIT	FA-60		FA-100		FA-125		FA-160		FA-200		FA-250							
射出單元 Injection unit	類型 Type	-	130		300		400		600		850		1050							
	螺桿直徑 Screw diameter	mm	24	28	32	36	40	36	40	45	40	45	50	45	50	55	50	55	60	65
	射出行程 Screw stroke	mm	115		160		180		200		220		240							
	理論射出容積 Theoretical shot volume	cm ³	52	71	129	163	201	183	226	286	251	318	393	350	432	522	471	570	678	796
	理論射出量 Shot weight of injection (PS)	gram	47	64	117	148	183	167	206	260	229	289	357	318	393	475	429	519	617	724
	射出壓力 Injection pressure	kgf/cm ²	2667	1959	2344	1852	1500	2241	1815	1434	2405	1900	1539	2430	1968	1626	2253	1862	1564	1333
	射出速度 Injection speed	mm/sec	180		120		120		120		100		100							
射出率 Injection rate	cm ³ /sec	81	111	96	122	151	122	151	191	151	191	236	159	196	237	196	237	283	332	
夾模單元 Mold clamping unit	閉模力 Mold clamping force	kN (tonf)	600 (60)		1000 (100)		1250 (125)		1600 (160)		2000 (200)		2500 (250)							
	夾模行程 Mold clamping stroke	mm	270		320		360		430		490		540							
	模厚 Mold thickness	mm	120-330		150-380		150-450		180-520		200-550		220-580							
	建議最小模具尺寸 Suggested min. mold dim. (H×V)	mm	210×210		240×240		275×275		310×310		345×345		380×380							
	大柱內距 Tie bar spacing (H×V)	mm	320×320		370×370		420×420		470×470		530×530		580×580							
	模盤尺寸 Mold platen (H×V)	mm	460×460		550×550		625×625		705×705		790×790		870×870							
	頂出行程 Ejector stroke	mm	70		100		120		140		140		150							
頂出力 Ejector force	kN (tonf)	25 (2.5)		35 (3.5)		35 (3.5)		35 (3.5)		65 (6.5)		65 (6.5)								
電氣單元 Electrical equipment	最大油泵動力 Max. pump driving motor	kW (380V)	18.2		18.2		18.2		28.3		28.3		36.7							
	溫度控制器 Temperature controller	set	4		5		5		5		5		5							
	電熱容量 Heater capacity	kW	4.4		7.8		9.7		13.3		15.7		19.5							
其他 Others	機械尺寸 Machine dimensions (L×W×H)	mm	4150×1350×1750		4750×1500×1820		5050×1540×1890		5540×1560×1980		6070×1630×2060		6620×1670×2190							
	油箱容量 Oil tank capacity	liter	190		190		230		300		300		370							
	機械重量 Machine weight	ton	3		4.6		5.5		7		8.9		11.3							
	最高系統壓力 Max. system pressure	kgf/cm ²	160		160		160		160		160		160							

ITEMS		UNIT	FA-300				FA-350			FA-400			FA-470			FA-530						
射出單元 Injection unit	類型 Type	-	1400				1700			2350			3550			4550						
	螺桿直徑 Screw diameter	mm	55	60	65	70	60	65	70	75	65	70	75	80	70	80	85	90	80	85	90	100
	射出行程 Screw stroke	mm	260				280			330			380			450						
	理論射出容積 Theoretical shot volume	cm ³	617	735	862	1000	791	929	1077	1236	1094	1269	1457	1658	1462	1909	2155	2416	2261	2552	2861	3533
	理論射出量 Shot weight of injection (PS)	gram	562	669	785	910	720	845	980	1125	996	1155	1326	1509	1330	1737	1961	2199	2057	2323	2604	3215
	射出壓力 Injection pressure	kgf/cm ²	2285	1920	1636	1411	2153	1835	1582	1378	2187	1886	1643	1444	2429	1860	1648	1470	2145	1900	1695	1373
	射出速度 Injection speed	mm/sec	110				110			100			110			100						
射出率 Injection rate	cm ³ /sec	261	311	365	423	311	365	423	486	332	385	442	502	423	553	624	699	502	567	636	785	
夾模單元 Mold clamping unit	閉模力 Mold clamping force	kN (tonf)	3000 (300)				3500 (350)			4000 (400)			4700 (470)			5300 (530)						
	夾模行程 Mold clamping stroke	mm	590				640			700			780			850						
	模厚 Mold thickness	mm	230-630				250-680			280-730			320-780			350-850						
	建議最小模具尺寸 Suggested min. mold dim. (H×V)	mm	430×410				470×445			500×480			540×530			560×540						
	大柱內距 Tie bar spacing (H×V)	mm	660×630				720×680			760×730			830×810			860×830						
	模盤尺寸 Mold platen (H×V)	mm	975×945				1065×1025			1115×1085			1215×1195			1270×1240						
	頂出行程 Ejector stroke	mm	150				160			180			200			220						
頂出力 Ejector force	kN (tonf)	65 (6.5)				65 (6.5)			110 (11)			110 (11)			160 (16)							
電氣單元 Electrical equipment	最大油泵動力 Max. pump driving motor	kW (380V)	36.7				71.9			71.9			73.4			73.4						
	溫度控制器 Temperature controller	set	5				5			6			6			7						
	電熱容量 Heater capacity	kW	22.1				26			30			35.9			40.5						
其他 Others	機械尺寸 Machine dimensions (L×W×H)	mm	7080×1690×2230				7520×1860×2370			8300×1910×2450			9220×2100×2350			9850×2150×2510						
	油箱容量 Oil tank capacity	liter	460				580			580			830			830						
	機械重量 Machine weight	ton	12				15.5			19.2			24.2			30.2						
	最高系統壓力 Max. system pressure	kgf/cm ²	160				160			160			160			160						

• 本資料僅供參考。因產品不斷研究改良，設計變更時恕不另作通知。 The features are for your reference only. Due to continuous improvements, we reserve the right to amend any of the above specifications without prior notice.
 • FA-250~530，D螺桿僅限用於高流動性塑料，例如PP、LDPE等。 FA-250~530, D screw will be only applicable to high MI value resin, for example PP, LDPE.

標準與選購配備 Standard & Optional Accessories

配備項目	ITEM	FA-60	FA-100	FA-125	FA-160	FA-200	FA-250	FA-300	FA-350	FA-400	FA-470	FA-530
射出安全護罩	Safety cover for injection	●	●	●	●	●	●	●	●	●	●	●
射出止逆裝置	Shot-off Nozzle	○	○	○	○	○	○	○	○	○	○	○
PVC、PC、壓克力、尼龍專用螺桿組	Special Screw for PC/PMMA/PA/PVC...	○	○	○	○	○	○	○	○	○	○	○
雙合金螺桿、料管	Bi-alloy Screw/Barrel	○	○	○	○	○	○	○	○	○	○	○
托拉式落料裝置	Sliding material feeding device	●	●	●	●	●	●	●	●	●	●	●
曲手：無給油軸承	Oiliness bearing (Toggle)	●	●	●	●	●	●	●	●	●	●	●
模壁T型槽	T-slot platen	●	●	●	●	●	●	●	●	●	●	●
隔熱墊板	Insulator sheets	○	○	○	○	○	○	○	○	○	○	○
活動式模定位圈	Check ring of mold (Replaceable)	●	●	●	●	●	●	●	●	●	●	●
成品落下口	Article Collecting Channel	●	●	●	●	●	●	●	●	●	●	●
電動安全門	Automatic safety gate (Electric type)	—	—	—	—	—	○	○	○	○	○	○
機械安全桿保護裝置	Mechanical Safety bar Protection device	○	○	○	○	○	○	○	○	○	○	○
水流分佈器8入8出(銅製)	Water manifold - 8 in & 8 out (copper)	●	●	●	●	●	●	●	●	●	●	●
水流分佈器10入10出(銅製)	Water manifold - 10 in & 10 out (copper)	○	○	○	○	○	○	○	○	○	○	○
全罩式鋁金	Whole machine housing	●	●	●	●	●	●	●	●	●	●	●
強制托退	Ejector pull back	●	●	●	●	●	●	●	●	●	●	●
電眼檢出	Electric eye detection	○	○	○	○	○	○	○	○	○	○	—
開模定位迴路	Mold opening positioning device	○	○	○	○	○	○	○	○	○	○	○
多段數位背壓(螢幕設定及顯示)	Multi-stage back pressure control (Screen set up and display)	●	●	●	●	●	●	●	●	●	●	●
射出閉迴路(伺服閥)	Closed-loop control for injection (servo valve)	○	○	○	○	○	○	○	○	○	○	○
曲手電動注油器(1組)	Auto lubrication system for toggle (1 set)	●	●	●	●	●	●	●	●	●	●	●
車壁潤滑附加手動注油器	Manual lubrication system (platen)	○	○	○	○	○	○	○	○	○	○	○
雙中子(一公一母)	Double core pulling device	○	○	○	○	○	○	○	○	○	○	○
四中子(二公二母)	Four core pulling device	○	○	○	○	○	○	○	○	○	○	○
轉牙裝置(計時/計次)	Unscrew device by timer or counter	○	○	○	○	○	○	○	○	○	○	○
自封式磁性吸油過濾器	With check valve magnetic suction filter	●	●	●	●	●	●	●	●	●	●	●
雙迴路(開模與托模同動)	Double loops system (mold open - ejector start)	○	○	○	○	○	○	○	○	○	○	○
雙迴路(開模與加料同動)	Double loops system (mold open - screw charge start)	○	○	○	○	○	○	○	○	○	○	○
三迴路(開模、托模與加料同動)	Parallel movement for material charging & mold ejecting during mold opening	○	○	○	○	○	○	○	○	○	○	○
伺服節能系統	Servo power-saving system	●	●	●	●	●	●	●	●	●	●	●
托模止逆閥	Non-return valve for ejector	●	●	●	●	●	●	●	●	●	●	●
射嘴獨立溫控	Temperature control of injection nozzle	●	●	●	●	●	●	●	●	●	●	●
落料口溫度顯示	Temperature display of material feeding section	●	●	●	●	●	●	●	●	●	●	●
落料口溫度顯示及控制	Temperature display & control of feeding gate	○	○	○	○	○	○	○	○	○	○	○
射出電阻尺	Linear potentiometer for injection	●	●	●	●	●	●	●	●	●	●	●
射座電阻尺	Linear potentiometer for injection carriage	●	●	●	●	●	●	●	●	●	●	●
夾模電阻尺	Linear potentiometer for clamping	●	●	●	●	●	●	●	●	●	●	●
托模電阻尺	Linear potentiometer for ejection	●	●	●	●	●	●	●	●	●	●	●
兩個風托(一公一母)	Air ejector sets	●	●	●	●	●	●	●	●	●	●	●
油溫顯示	Oil temperature display for hydraulic system	●	●	●	●	●	●	●	●	●	●	●
油溫顯示及控制	Oil temperature display & control	○	○	○	○	○	○	○	○	○	○	○
FCS-6500S微電腦控制器 (彩色：KEBA)	FCS-6500S controller (color& key screen:KEBA)	●	●	●	●	●	●	●	●	●	●	●
FCS-6500微電腦控制器 (彩色觸控：KEBA)	FCS-6500 controller (color & touch screen:KEBA)	○	○	○	○	○	○	○	○	○	○	○
電控穩壓器	Power stabilizer for controller	○	○	○	○	○	○	○	○	○	○	○
資料保護鎖(硬體鎖)	Data lock function (key)	●	●	●	●	●	●	●	●	●	●	●
三色警示燈	Three-color alarm lamp	●	●	●	●	●	●	●	●	●	●	●
CE安全插座	CE safty socket	●	●	●	●	●	●	●	●	●	●	●
電源插座	Power socket (110V/220V)	○	○	○	○	○	○	○	○	○	○	○
主電源斷路器	Main power breaker	●	●	●	●	●	●	●	●	●	●	●
24H料管自動定時預熱	24 hours auto-preheat for barrel sets	●	●	●	●	●	●	●	●	●	●	●
氣壓式閥澆口控制閥	Pneumatic type Valve Gate	○	○	○	○	○	○	○	○	○	○	○
不銹鋼漏斗	Stainless hopper	○	○	○	○	○	○	○	○	○	○	○
乾燥機	Hopper dryer	○	○	○	○	○	○	○	○	○	○	○
抽料機	Auto loader	○	○	○	○	○	○	○	○	○	○	○
模溫機	Mold temperature controller	○	○	○	○	○	○	○	○	○	○	○
乾燥機磁鐵	Magnet of hopper dryer	○	○	○	○	○	○	○	○	○	○	○
避震器	Anti-vibration mounting pad	●	●	●	●	●	●	●	●	●	●	●
工具箱組	Tool box	●	●	●	●	●	●	●	●	●	●	●
標準出車附件	Spare parts	●	●	●	●	●	●	●	●	●	●	●
外銷出車附件	Export accessories	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲

● 標準配備 Standard ○ 選購配備 Option ▲ 選附配備 Free Option — 無 N/A