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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 Manufacturing (India) Private Limited

Block Number 218, Xcelon Industrial Estate, Near Intas Pharmaceutical, Village Chancharvadi Vasna,
Sarkhej Bavla Road, Taluka Sanand, Ahmedabad, Gujarat - 382213
TEL: +91-99-98897768 • E-mail: fcsindia@fcs.com.tw

FCS
www.fcs.com.tw



全電式注塑機／全電式轉盤雙色機

All-Electric Injection Molding Machine
All-Electric Multi-Component Injection Molding Machine

CT-e / CT-R SERIES

CT-e/CT-R Series

低耗能 - 單位能耗0.37kWh/kg以下

高射速 - 射出速度高達300mm/s

高精準 - 位置控制重複精度達±0.01mm

高產能 - 可多軸同動提高生產效率

Energy Saving - Energy consumption below 0.37kWh/kg

High Injection Speed - Injection speed up to 300mm/s

High Precision - Repeated accuracy of ±0.01mm

High Efficiency - Simultaneous actions deliver shorter cycle times

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。CT-e/CT-R系列為FCS全新發表之全電機/全電式轉盤雙色機，除了模盤結構優化設計，採用歐洲高階控制系統，全伺服馬達設計整合，完美體現媲美日本全電式運動控制性能的水準。本設備可提供精準、省能、潔淨、智能與高產能的需求，適用於醫療、光學、食品包裝、3C電子、化妝品等產業，結合FCS工業4.0解決方案，讓機器智能化的能力更上一層。

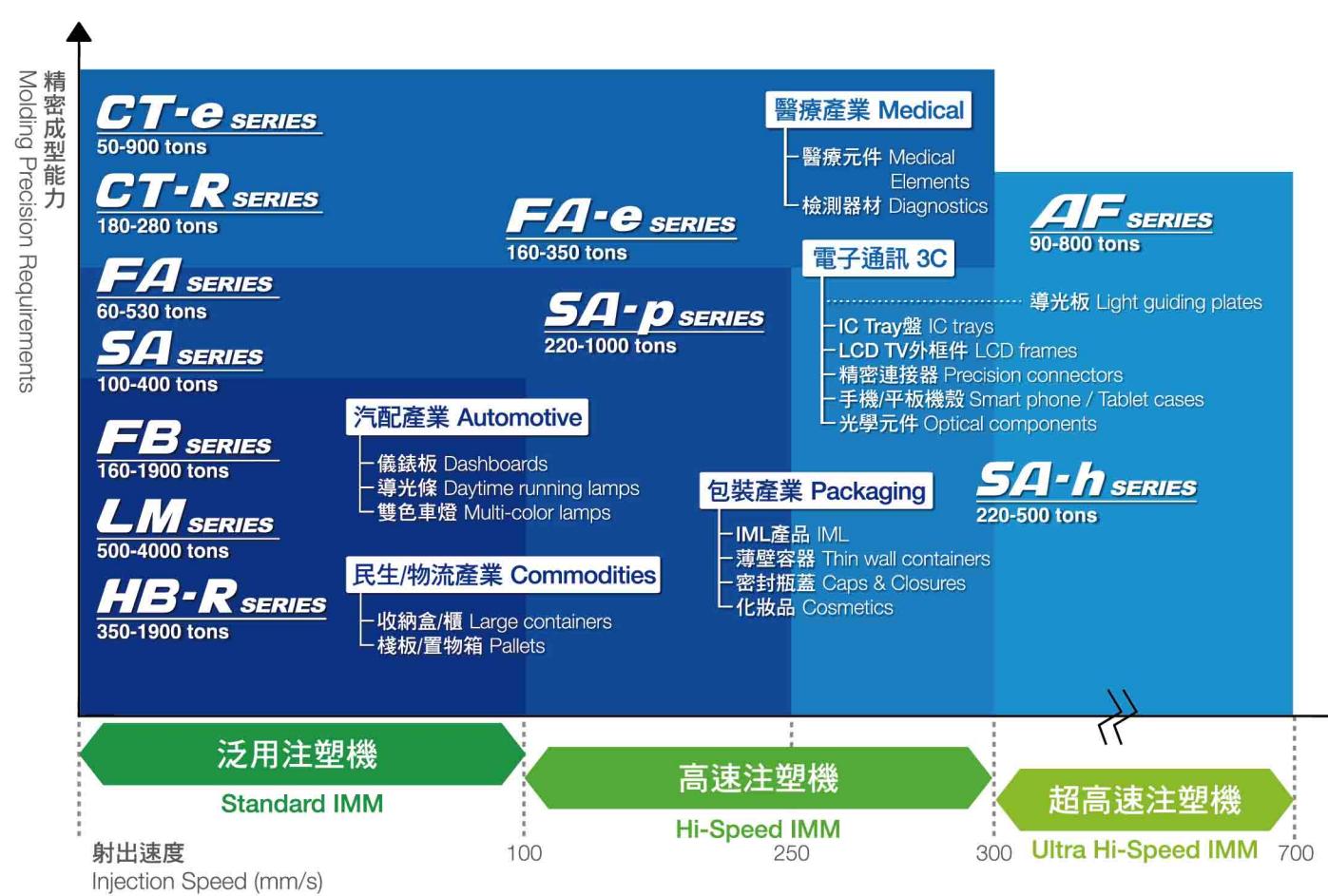
FCS has created various products with steady performance by utilizing its 45 years expertise in technological developments and innovations; also providing customized integration and service for different product characteristics for many industries.

The CT-e/CT-R is our newly released fully electric machine. Besides the optimized mold platen structure, it adopts European high-level control system and high integration from the servo motors, which reflects a performance level comparable to the Japanese all-electric machine's motion control.

It can provide precision, energy-saving, clean, intelligent and high-capacity requirements which are suitable for medical, optical, food packaging, electronics, cosmetics, among other industries. Combined with the FCS Industry 4.0 solution, it upgrades the machine to be intelligent.

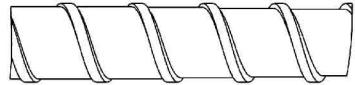
躍
然拔群
風馳電掣

Agility
is more than speed.

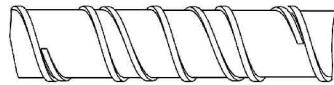


精準的射出單元 Accurate Injection Unit

一般螺桿
Normal screw



高混煉螺桿
High mixing screw

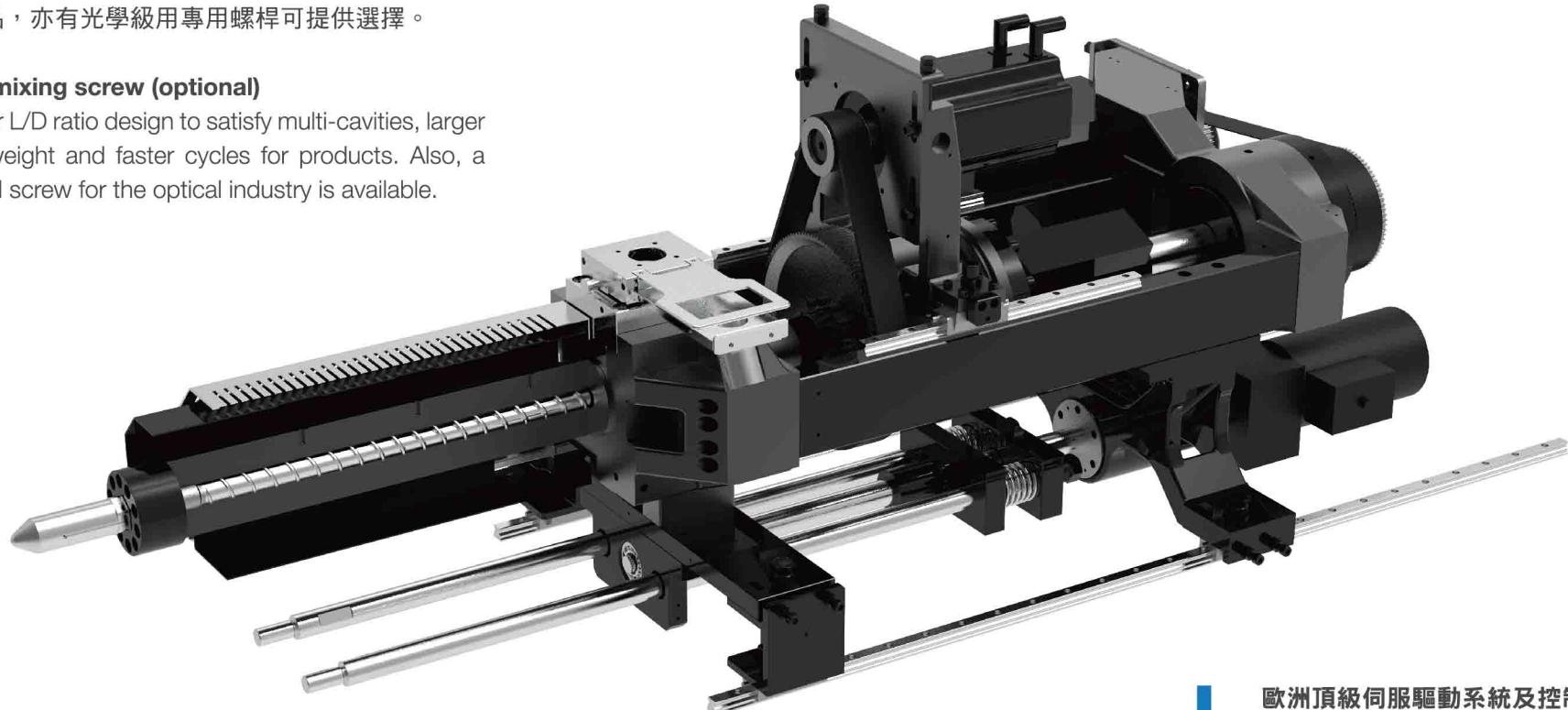


高混煉螺桿 (選配)

提供L/D比加長設計，滿足多穴、高射量及快循環等產品，亦有光學級用專用螺桿可提供選擇。

High mixing screw (optional)

Longer L/D ratio design to satisfy multi-cavities, larger shot weight and faster cycles for products. Also, a special screw for the optical industry is available.



射出 / 射座皆採線性滑軌

- 負荷輕、減少磨耗，射出控制精準穩定。
- 儲料背壓阻力低，減少熔膠溢流。

Linear guide for the injection carriage

- Lighter load and less abrasion which ensures precise and stable injection.
- Basic charging back pressure to reduce the melt overflow.

高精密壓力感測器

採用進口高精密壓力感測器(LoadCell)與高響應射出單元，具優越壓力閉迴路運算控制。

A precise pressure sensor (LoadCell)

Ensures a highly responsive injection unit which offers an optimized pressure closed-loop algorithm.

射出 / 儲料採伺服馬達

- 全伺服系統設計，高效穩定，符合GB一級節能產品。
- 運行平穩且噪音小、易於維護。



歐洲頂級伺服驅動系統及控制器

具備卓越的運動控制技術，射出精度可達0.01mm。

European cutting-edge control and driver systems

Excellent motion control which ensures accuracy to 0.01mm.

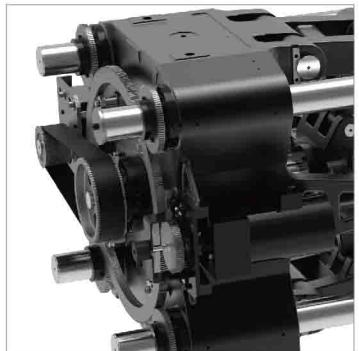
彈性射出單元模組化設計

與多種系列相容，能滿足更多產業需求。

Flexible injection unit with a modular design

Compatible with many series to meet demanding tasks rapidly.

優化的夾模單元 Optimized Clamping Unit

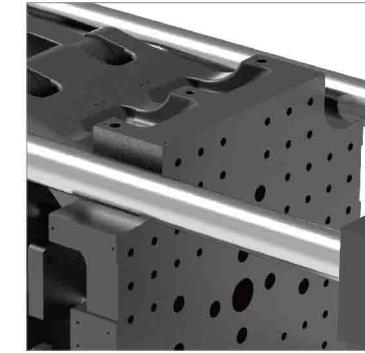


精準閉模力

電動調模且閉迴路控制，閉模力控制更為精準。

Precise clamping force

Clamping force was tuned by using a closed-loop electric mold height adjustment motor.

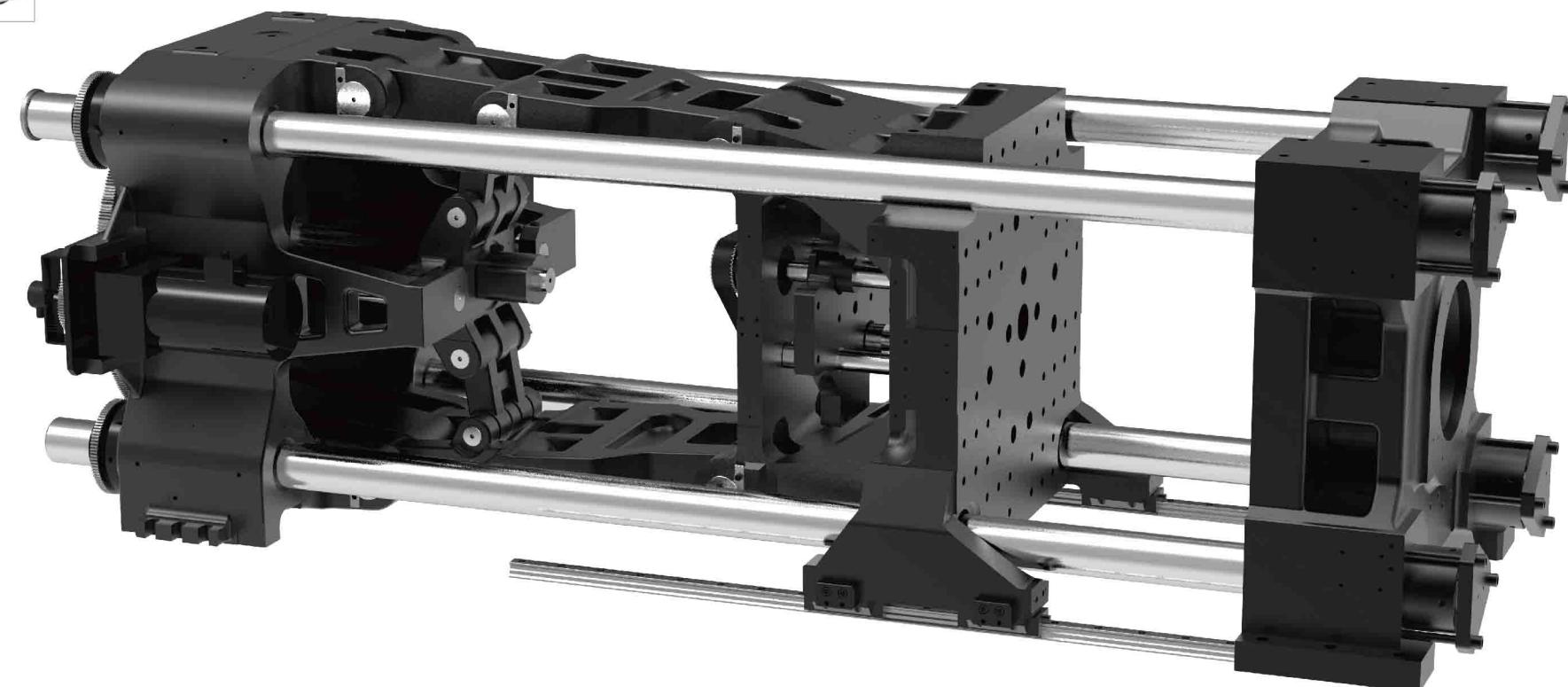


低磨耗設計

- 不抱持大柱設計，無汙染且低磨損，伺服驅動更低能耗，適合醫療產品。
- 採用日本知名品牌滾珠導螺桿，具重負荷與高剛性，使用壽命長。

Low abrasion design

- The tie bars are not held by the platens to reduce pollution, abrasion and power consumption, which is suitable for medical products.
- Japanese famous brand ball screw, with heavy load and high rigidity, provides a longer lifespan.

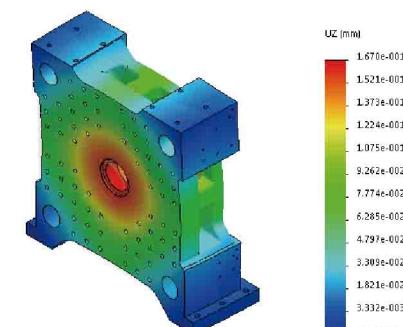


模盤設計優化

- 採用線性滑軌，模盤平行度高。
- 力流線朝模盤中心集中，可減少模具變形。

Platen design optimization

- Linear guide for clamping unit used to enhance the platen parallelism.
- The clamping force flows through the center of the movable platen to help reduce mold wear.



模具保護

智能模具低壓保護功能，降低壓模危險。

Mold protection

Intelligent mold clamp low-pressure protection, reduces the risk of mold crush.

週期優化

標準配置開模中頂出等同步功能，可縮短成型週期。

Molding cycle optimization

Parallel movement of ejectors on fly is standard which effectively shortens the cycle time.

智能的電控單元 Intelligent Control Unit

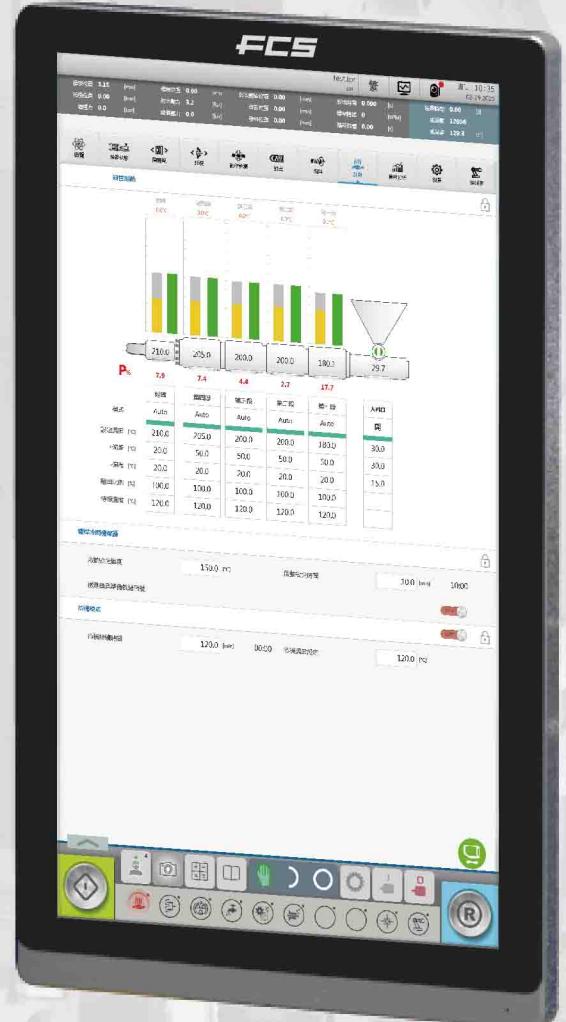
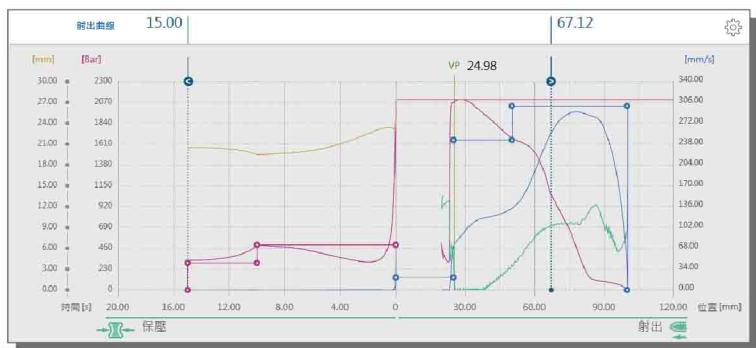
直覺式操作介面

- 採用21.5"全觸控螢幕，加上全新設計操作介面與圖示，操作更為便利。
- 動作波形圖顯示，可隨時掌握機台狀況與耗電狀態。
- 畫面擷取及記錄功能，可隨時瀏覽擷取畫面。
- UPS(不斷電系統)、相序偵測，提升機台保護與安全。
- 多軸扭力即時監控，防止馬達損壞。
- 支援多國語言(中、英、德、義、葡、西)。

Intuitive HMI

- 21.5" full touch screen with newly designed interface and icons, extremely user friendly.
- The waveform chart can monitor the status of the machine and the power consumption at any time.
- Screen capture and recording function can browse the captured screens at any time.
- UPS protects the machines operational safety.
- Instant axis torque monitoring which prevents the motors from damaging.
- Multiple languages are available.

(Mandarin、English、German、Italian、Portuguese、Spanish)



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0.01mm，可準確控制動作行程。

Control Precision

- Barrel heating zones are accurate to 0.1 degrees °C to ensure stable material plasticizing.
- Screw position is controlled within 0.01mm to precisely control the shot size and cushion position.

特殊應用

- 具備二次關模射出壓縮功能，優化產品應力需求使用。
- 具備四種VP切換功能，包括射出時間、位置、壓力或模具壓力訊號。

Special Application

- Injection compression is applicable to avoid the injection residual stress.
- Four different V-P switch models, including injection time/position/pressure and the signal from mold pressure sensor.

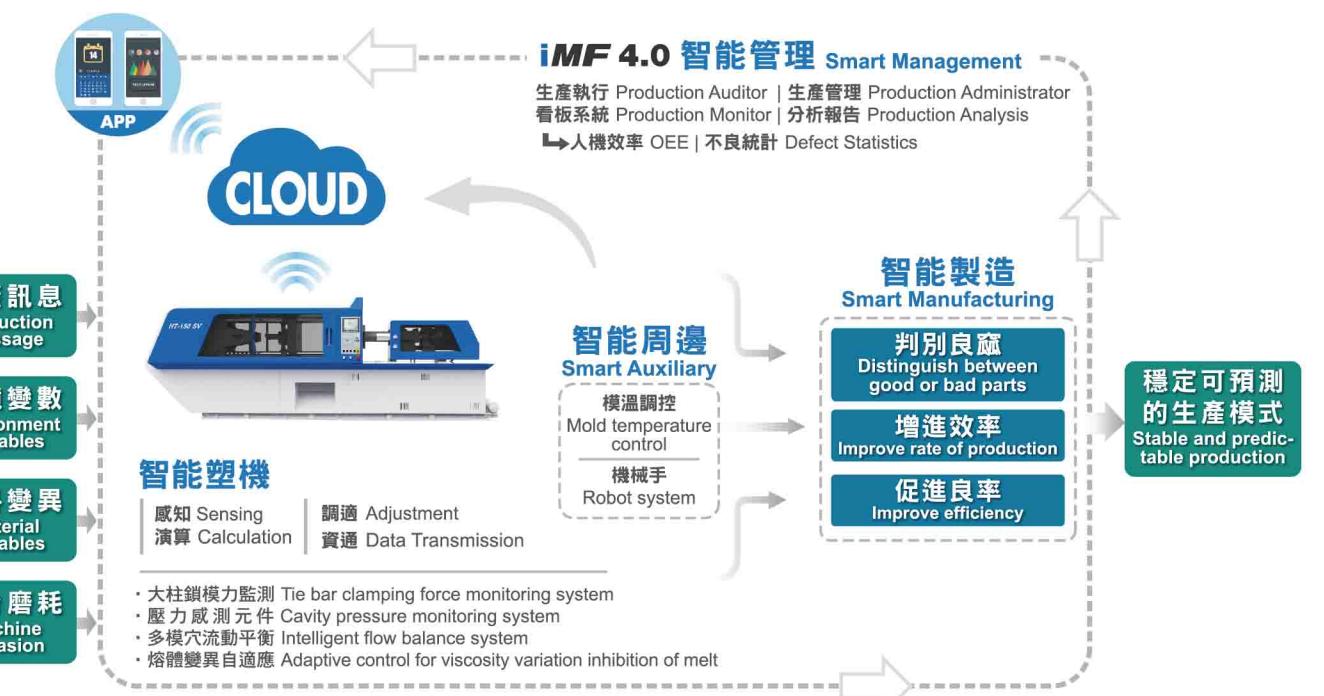
遠端監控 & 工業4.0

- 支援OPCUA協定，可將資訊匯出以進行看板管理。
- 多重通訊界面且無上限的模具參數儲存(USB/CAN/VARAN/Ethernet)，提供更穩定、安全快速的即時通訊與資訊蒐集。
- 圖表顯示的SPC(統計製程控制)，提供每模生產詳細資訊並監看每模次整體週期的每個階段時間。
- 生產週期即時分析，參數調校更有效率。
- 機台稼動率、產能統計及停機狀態顯示及記錄。(選配)

Remote Control & Industry 4.0

- Compatible with OPCUA protocol to allow data to be extracted for visual management.
- Multiple communication interfaces (USB, CAN, VARAN, Ethernet) with extensive mold parameter storage to provide stable, safe and instant communication and data collection.
- Graphic-based SPC (Statistical Process Control) records all with detailed information on every cycle and monitoring of all processing sequences.
- Real-time analysis of production cycle; parameter adjustment is more efficient.
- Machine utilization rate, production capacity and down time statistics and recording. (Optional)

週期分布	關模	7.8%	成型工藝	76.3%	開啟取出	15.8%	保存為基準		
週期時間	生產計時	0:54:56	關模						
14.52 s	0.93 s		開始	持續時間	結束	0.00			
關模	0.00	0.92	0.93	0.92					
7.8 %	0.00	0.00	0.00	0.00					
射出	1.14	0.37	1.51	0.37					
2.6 %	0.00	0.00	0.00	0.00					
開澆口1	1.14	2.08	3.21	2.08					
14.3 %	0.00	0.00	0.00	0.00					
開澆口2	1.14	2.08	3.21	2.08					
14.3 %	0.00	0.00	0.00	0.00					
保壓	1.51	1.70	3.21	1.70					
11.7 %	0.00	0.00	0.00	0.00					
冷卻	3.22	9.00	12.22	9.00					
62.0 %	0.00	0.00	0.00	0.00					
儲料	4.22	5.25	9.47	5.25					
36.1 %	0.00	0.00	0.00	0.00					
後鬆退	9.47	0.16	9.63	0.16					
1.1 %	0.00	0.00	0.00	0.00					
關模	12.22	1.02	13.24	1.02					
7.0 %	0.00	0.00	0.00	0.00					



智能製造工廠

- 智能塑機 – 運用外加感測器，掌握因環境、塑料、設備磨耗的微量變異，提升射出機自適應調控能力。
- 智能周邊 – 透過標準通訊協定，達到設備運轉、互聯及調控之目的。
- 智能製造 – 由熔體變異或模穴壓力感測，即時線上監控品質，並搭配機械手臂檢出不良品，有效降低品檢人力。
- 智能管理 – 透過智能管理系統收集關鍵熔體變異數據。

Intelligent ManuFactory

- Smart Machine -**
Applying additional sensors to monitor and meet the slight fluctuations caused by the environment, material, or machine abrasion, and to improve the adaptive control of injection molding machines.
- Smart Auxiliary -**
The IMM and auxiliaries could operate, communicate with each other through the standard communication protocol, to be adjusted and controlled.
- Smart Manufacturing -**
Real-time online quality monitoring through the sensors of viscosity variation of melt, or cavity pressure, and detecting the defectives with automations, to effectively reduce the inspection manpower.
- Smart Management -**
Using intelligent managing system to collect the key data of viscosity variation of melt.

CT-e 規格表 Specifications

射出單元 Injection unit	夾模單元 Mold clamping unit										
	CT-50e	CT-80e	CT-120e	CT-150e	CT-180e	CT-220e	CT-280e	CT-350e	CT-450e	CT-550e	CT-700e
160H	★										
290H		★	★								
490H				★							
630H					★	★					
1000H							★				
1400H								★			
2250									★	★	
3350										★	
5200											★
6900											

(1) 射出單元規格可依產品需求選配(參閱左表)。

(2) ★星號為標準組合。

(1) Injection units can be selected according to product requirements.

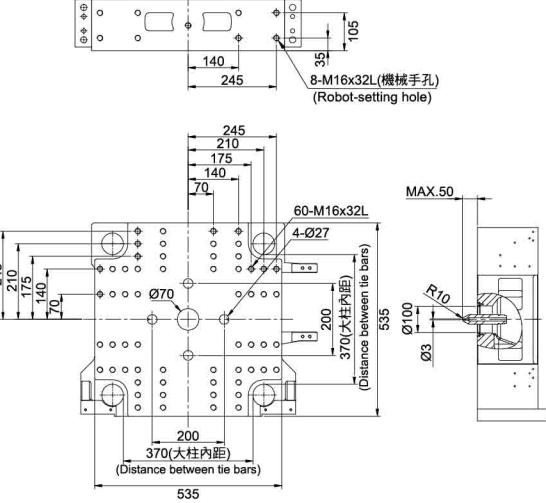
(2) ★ Star area means standard type.

ITEMS	UNIT	CT-50e			CT-80e			CT-120e			CT-150e			CT-180e			CT-220e				
射出單元 Injection unit	類型	Type	-	160H		290H		290H		490H		630H		630H		630H		630H			
	螺桿直徑	Screw diameter	mm	18	25	30	30	35	40	30	35	40	45	40	45	50	40	45	50		
	射出行程	Screw stroke	mm		130		165		165		190		210		210		210		210		
	理論射出容積	Theoretical shot volume	cm³	33	64	92	117	159	207	117	159	207	183	239	302	264	334	412	334	412	
	理論射出量	Shot weight of injection (PS)	gram	30	58	84	106	144	189	106	144	189	166	217	275	240	304	375	240	304	375
	射出壓力	Injection pressure	kgf/cm²	3000	2700	1900	2500	2000	1600	2500	2000	1600	2500	2000	1650	2450	1950	1600	2450	1950	1600
	射出速度	Injection speed	mm/sec		300		300		300		300		300		300		300		300		300
	射出率	Injection rate	cm³/sec	76	147	212	212	289	377	212	289	377	289	377	477	377	477	589	377	477	589
夾模單元 Mold clamping unit	最大螺桿轉速	Max. screw rotation speed	rpm		350		350		350		300		300		300		300		300		300
	閉模力	Mold clamping force	tonf		50		80		120		150		180		180		220		220		220
	夾模行程	Mold clamping stroke	mm		250		290		335		430		440		440		490		490		490
	模厚	Mold thickness	mm		160~430		180~515		180~515		200~620		200~620		200~620		250~680		250~680		250~680
	建議最小模具尺寸	Suggested min. mold dim.(HxV)	mm		240x240		275x275		310x310		340x340		365x365		365x365		405x405		405x405		405x405
	大柱內距	Tie bar spacing (HxV)	mm		370x370		420x420		470x470		520x520		560x560		560x560		620x620		620x620		620x620
	模盤尺寸	Mold platen (HxV)	mm		535x535		595x595		680x680		755x720		785x800		785x800		880x840		880x840		880x840
	頂出行程	Ejector stroke	mm		100		100		125		140		150		150		140		140		140
電氣單元 Electrical equipment	頂出力	Ejector force	tonf		2.0		2.0		2.5		3.0		3.0		3.0		4.0		4.0		4.0
	電源功率	Main power	kW	11.8	13	15	24	25.5	25.5	26.5	28	28	31.5	33	33	33	34	34	33	34	34
	溫度控制器	Temperature controller	set	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
其他 Others	電熱容量	Heater capacity	kW	4.0	4.0	6.1	7.8	7.8	10.2	7.8	7.8	10.2	11.3	11.3	14.3	14.0	14.0	18.3	14.0	14.0	18.3
	機械尺寸	Machine dimensions (LxWxH)	mm	4200x1400x1750			4600x1400x1800			4800x1500x1900			5700x1600x1900			5900x1700x2000			6100x1800x2100		
	機械重量	Machine weight	ton		4		4.6		5.2		7.5		8.8		8.8		10.5		10.5		10.5

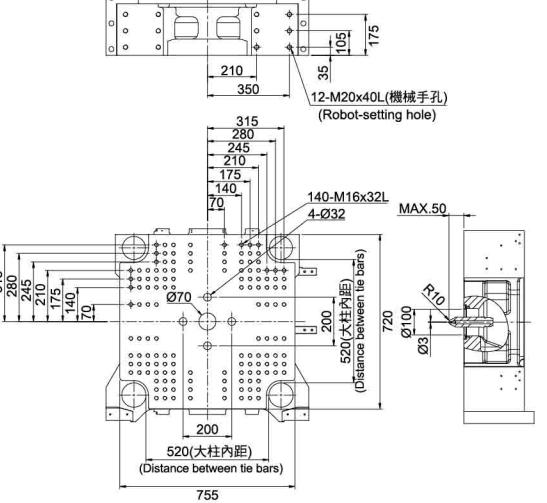
ITEMS	UNIT	CT-280e			CT-350e			CT-450e			CT-550e			CT-700e			CT-900e							
射出單元 Injection unit	類型	Type	-	1000H		1400H		2250		2250		3350		5200		6900 (OP)		6900 (OP)		6900 (OP)				
	螺桿直徑	Screw diameter	mm	45	50	55	50	55	60	60	65	70	60	70	75	80	75	80	90	80	90			
	射出行程	Screw stroke	mm		245		285		325		325		370		450		470		470		470			
	理論射出容積	Theoretical shot volume	cm³	390	481	582	560	677	806	919	1078	1251	919	1078	1251	1424	1635	1860	1988	2262	2863	2362	2990	3691
	理論射出量	Shot weight of injection (PS)	gram	355	438	530	509	616	733	836	981	1138	836	981	1138	1296	1487	1692	1809	2058	2605	2150	2721	3359
	射出壓力	Injection pressure	kgf/cm²	2600	2100	1738	2450	2321	1974	2450	2088	1800	2450	2088	1800	2400	2090	1900	2583	2268	1790	3038	2400	1982
	射出速度	Injection speed	mm/sec		300		300		160		160		160		160		160		160		160			
	射出率	Injection rate	cm³/sec	477	589	713	589	713	848	452	531	616	452	531	616	616	707	804	70					

CT-e 模壁尺寸圖 Mold Platen Dimension

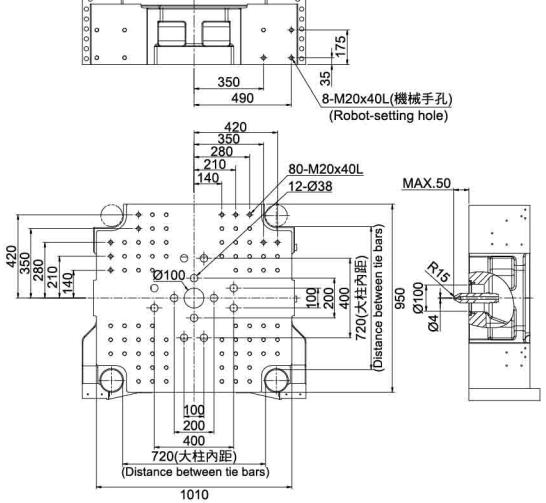
■ CT-50e



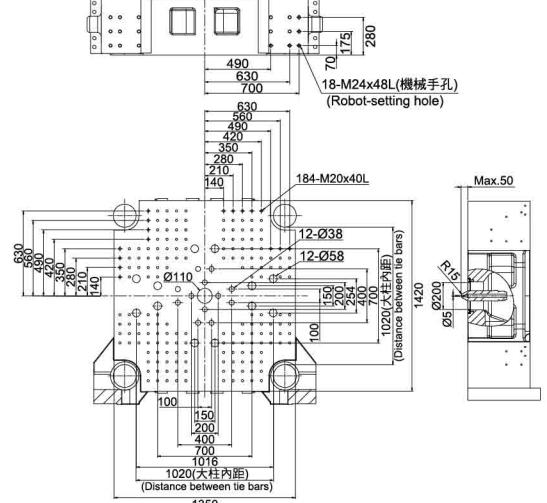
■ CT-150e



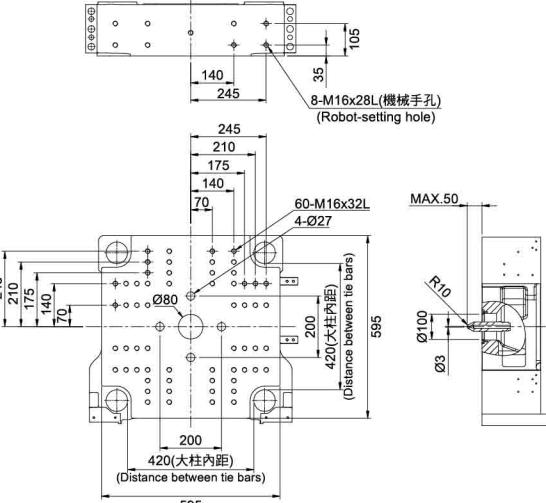
■ CT-280e



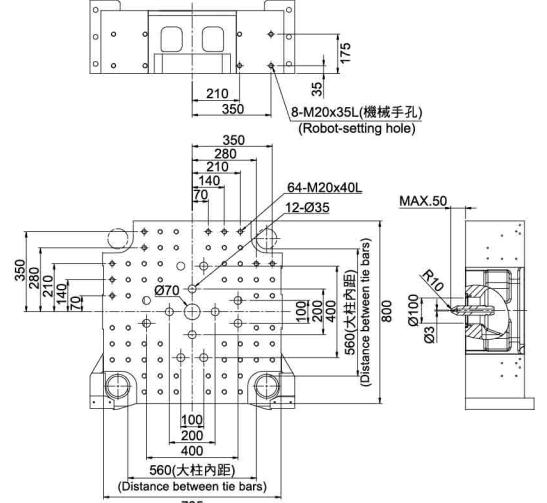
■ CT-550e



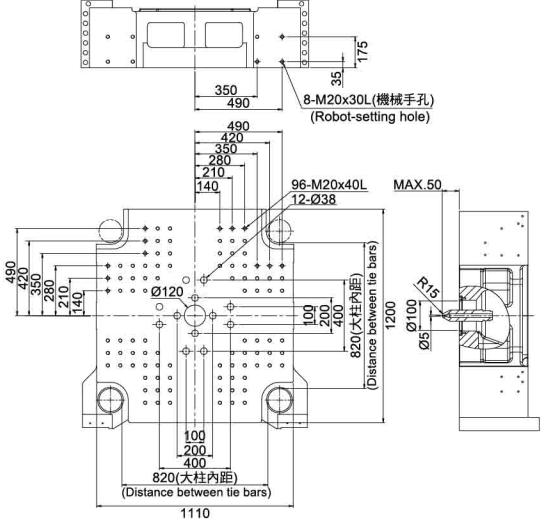
■ CT-80e



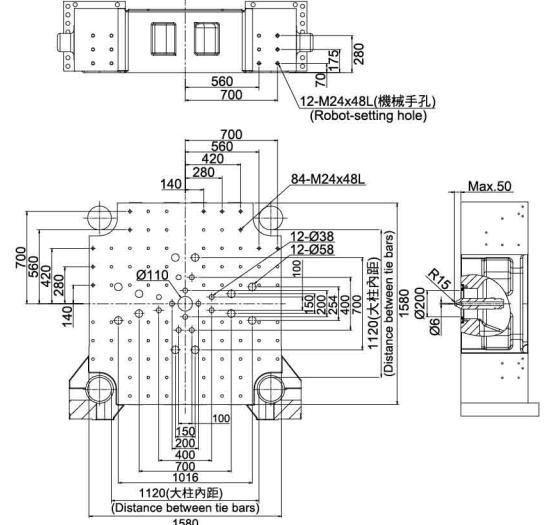
■ CT-180e



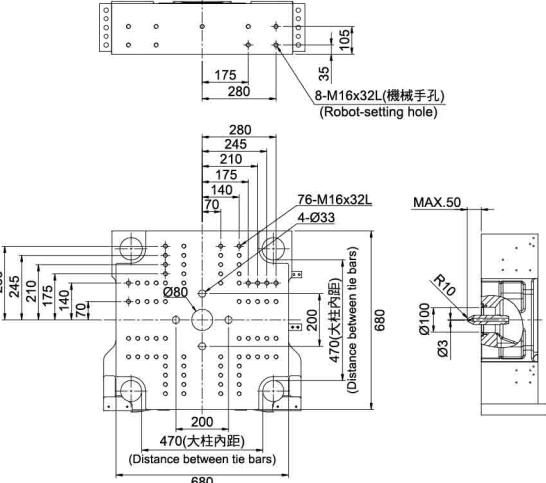
■ CT-350e



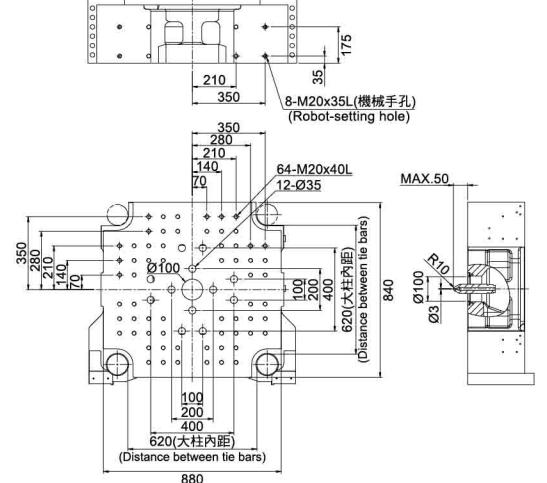
■ CT-700e



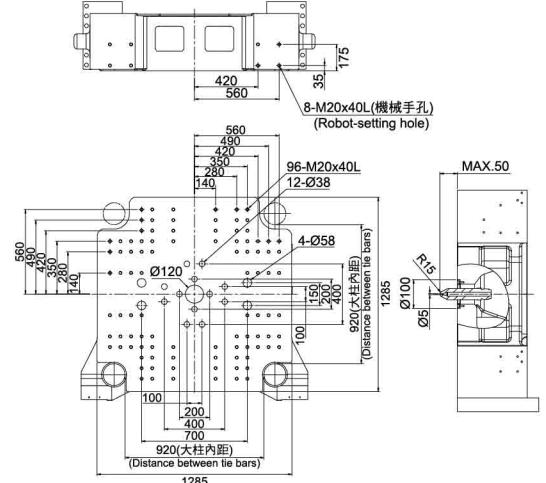
■ CT-120e



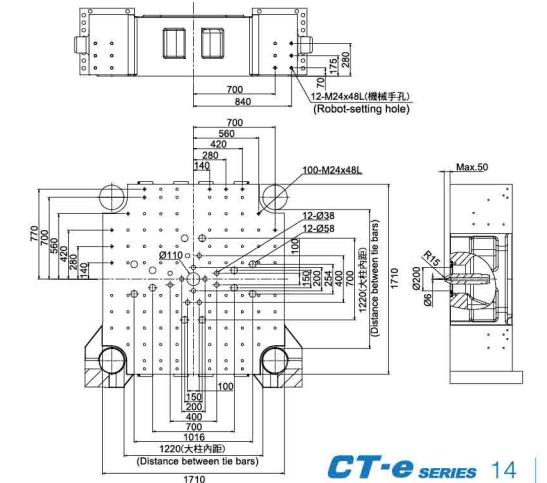
■ CT-220e



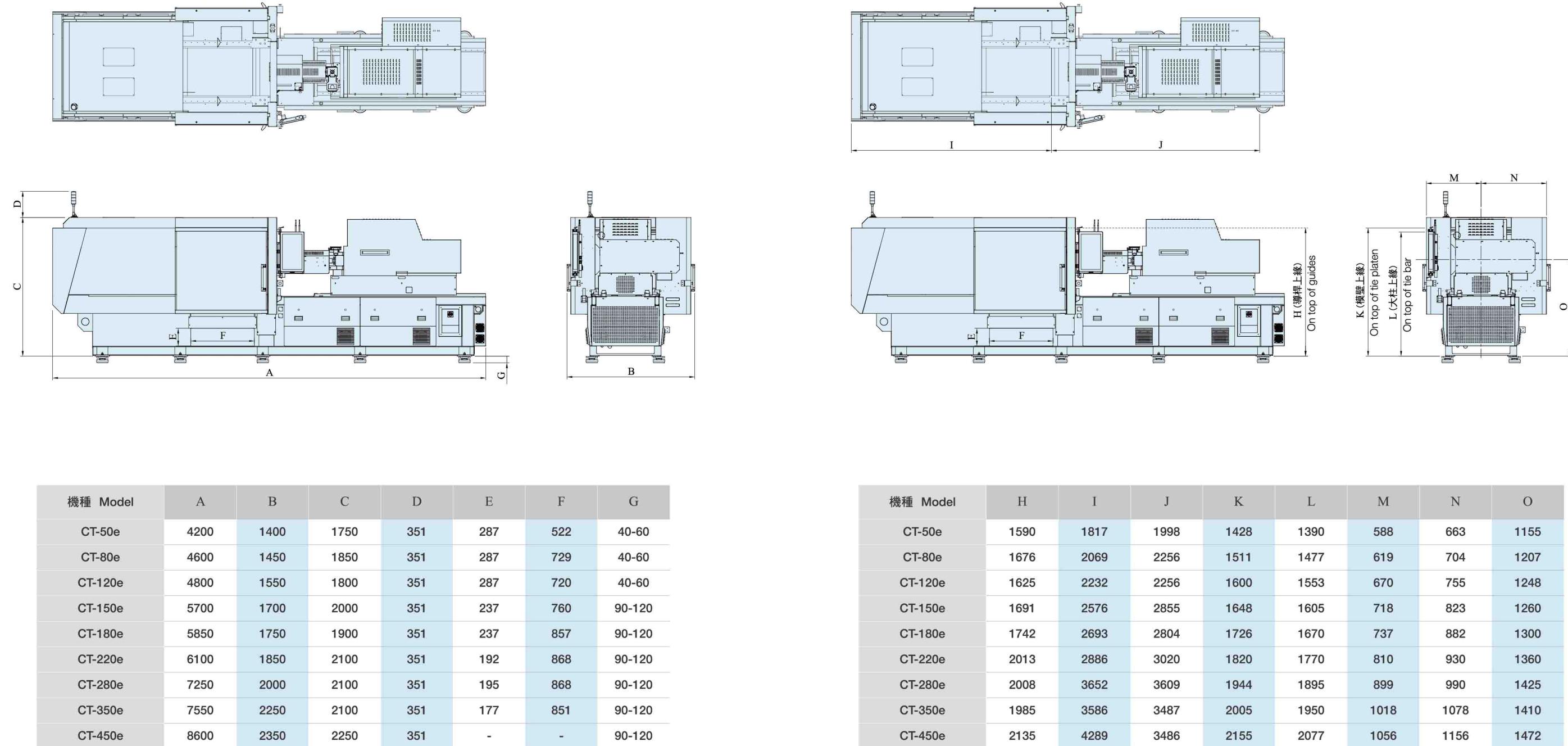
■ CT-450e



■ CT-900e



CT-e 外觀尺寸圖 Machine Dimension



CT-e 標準與選購配備 Standard & Optional Accessories

配備項目	ITEM	CT-50e	CT-80e	CT-120e	CT-150e	CT-180e	CT-220e	CT-280e	CT-350e	CT-450e	CT-550e	CT-700e	CT-900e
6段開合模速度可調	6 adjustable open and close speeds	●	●	●	●	●	●	●	●	●	●	●	●
高精度位置、扭力控制	Precise positioning, speed and force control	●	●	●	●	●	●	●	●	●	●	●	●
高靈敏2段模具保護	High sensitivity mold protection with two stages	●	●	●	●	●	●	●	●	●	●	●	●
自動潤滑	Automatic lubrication	●	●	●	●	●	●	●	●	●	●	●	●
即時鎖模力顯示	Actual tonnage display on HMI	●	●	●	●	●	●	●	●	●	●	●	●
動模板使用線性導軌	Linear guide for moving platen	●	●	●	●	●	●	●	●	●	●	●	●
雙中子(一公一母)	Double core pull device (1 in moving platen, 1 in fixed platen)	○	○	○	○	○	○	○	○	○	○	○	○
3組風托(二公一母)	Air ejector sets (2 in moving platen, 1 in fixed platen)	●	●	●	●	●	●	●	●	●	●	●	●
大柱鎖模力監視(閉環控制)	Tie-bar Clamping force monitor(Close-loop)	○	○	○	○	○	○	○	○	○	○	○	○
雙迴路(開模與加料同動)	Double loops system (mould open - screw charge start)	●	●	●	●	●	●	●	●	●	●	●	●
電眼檢出	Photo cell drop-out checking device	○	○	○	○	○	○	○	○	○	○	○	○
模壁T型槽	T-slot platen	—	—	—	—	—	—	—	—	—	—	—	—
模壁T型墊板	T-slot board	○	○	○	○	○	○	○	○	○	○	○	○
活動式模定位圈	Check ring of mold (Replaceable)	●	●	●	●	●	●	●	●	●	●	●	●
頂桿回退確認	Ejector back end sensor	●	●	●	●	●	●	●	●	●	●	●	●
頂桿壓力保護	Ejector force protection	●	●	●	●	●	●	●	●	●	●	●	●
頂出保持功能	Ejector holding	●	●	●	●	●	●	●	●	●	●	●	●
開模中頂出功能	Ejector during mold opening	●	●	●	●	●	●	●	●	●	●	●	●
鎖模時頂出功能(模內切斷)	Ejector when mold closed (cut cold runner)	●	●	●	●	●	●	●	●	●	●	●	●
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	○	○	○	○	○	○	○	○	○	○	○	○
不鏽鋼料管護罩	Barrel cover with perforated metal	●	●	●	●	●	●	●	●	●	●	●	●
多段射出與保壓可調	Multi Stages pressure holding adjustable	●	●	●	●	●	●	●	●	●	●	●	●
多段背壓可調	Multi Stages rotate speed and Back pressure adjustable in platicizing	●	●	●	●	●	●	●	●	●	●	●	●
預壓縮功能	Pre-compression function	○	○	○	○	○	○	○	○	○	○	○	○
止逆射嘴	Shut-off nozzle	○	○	○	○	○	○	○	○	○	○	○	○
落料口溫度顯示及控制	Temperature display and control of material feeding section	●	●	●	●	●	●	●	●	●	●	●	●
不銹鋼漏斗	Stainless hopper	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	—	—
托拉式落料裝置	Sliding material feeding device	●	●	●	●	●	●	●	●	●	●	●	●
射出安全護罩	Safety cover for injection	●	●	●	●	●	●	●	●	●	●	●	●
4種VP切換模式	4 VP transfer mode selection	●	●	●	●	●	●	●	●	●	●	●	●
陶瓷料管加熱圈	Ceramic barrel heater	○	○	○	○	○	○	○	○	○	○	○	○
24H料管自動定時預熱	24 hours Auto-preheat	●	●	●	●	●	●	●	●	●	●	●	●
熱電偶異常檢測	Heating zone and thermocouple failure detection	●	●	●	●	●	●	●	●	●	●	●	●
料管同步加溫	Zones heating up synchronous	●	●	●	●	●	●	●	●	●	●	●	●
射嘴獨立溫控	Temperature control of injection nozzle	●	●	●	●	●	●	●	●	●	●	●	●
21.5吋顯示器配備電容式觸控屏(FCS7000)	21.5 inch full color LCD with capacitive touch (FCS7000)	●	●	●	●	●	●	●	●	●	●	●	●
屏幕擷取	Print screen and save	●	●	●	●	●	●	●	●	●	●	●	●
運行流程分析	Breakdown analyzer	●	●	●	●	●	●	●	●	●	●	●	●
多種國際單位切換	Multi unit	●	●	●	●	●	●	●	●	●	●	●	●
電能計量(瓦時計)	Energy meter	○	○	○	○	○	○	○	○	○	○	○	○
熱流道溫度控制器(整合PLC監控)	Hot runner controller	○	○	○	○	○	○	○	○	○	○	○	○
品質判別和統計以及品質曲線	Quality criteria and statistics, the quality curve	●	●	●	●	●	●	●	●	●	●	●	●
品質異常紀錄功能	Quality exception record	●	●	●	●	●	●	●	●	●	●	●	●
生產管理功能	Production management	●	●	●	●	●	●	●	●	●	●	●	●
歐規12接口	Euromap 12 interface	●	●	●	●	●	●	●	●	●	●	●	●
歐規67接口	Euromap 67 interface	○	○	○	○	○	○	○	○	○	○	○	○
水流分佈器4入4出(銅製)	Water manifold - 4 in & 4out (copper)	●	●	●	●	●	●	●	●	●	●	●	●
後安全門操作	Part remove from rear safety door	○	○	○	○	○	○	○	○	○	○	○	○
CE安全插座3組	CE safty socket	●	●	●	●	●	●	●	●	●	●	●	●
電源插座2組 (220V)	Power socket (220V)	●	●	●	●	●	●	●	●	●	●	●	●
三色警示燈	Three colors alam light	●	●	●	●	●	●	●	●	●	●	●	●
避震器	Anti-vibration mounting pad	●	●	●	●	●	●	●	●	●	●	●	●
工具箱組	Tool box set	●	●	●	●	●	●	●	●	●	●	●	●

● 標準配備 Standard

○ 選購配備 Option

▲ 選附配備 Free Option

— 無 N/A