

MM 雙色成型注塑機系列

MULTI-MOULD MASTER PLASTIC
INJECTION MOULDING MACHINE SERIES





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轉盤式清雙（多）物料注塑功能
Turntable Transfer Mechanism Function

轉軸式清雙（多）物料注塑功能
Rotation of Core Function

雙（多）物料混色注塑功能
Two Colour Mixing Device Function



■ 機器型號(Model): MM130、MM200、MM300、MM400

MM雙色成型注塑機系列

MM系列多物料注塑機帶領進入多物料注塑技術新領域。它不但容許生產包含兩種不同塑料/顏色的制品，還可配合客戶要求增加注射裝置，達到注塑更多物料/顏色制品的要求。其獨有的模具轉盤設計由專用伺服電機驅動，可準確控制模具轉向位置。

Multi-Mould Master Plastic Injection Moulding Machine Series

MM Series Multi-mould machine leads you to the new era of multi-component moulding technology. It is designed to mould a product consisting of two different materials/ colour by rotating the mould halves by rotary table mounted on the movable platen. The enlarged rotary table driven by servo motor can accurately index the designated position. MM Series machine can also be promoted with additional injection units for multi-materials / colour injection.

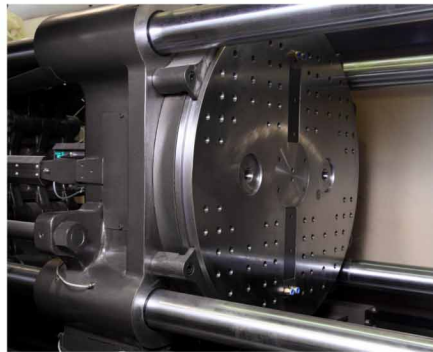
轉盤式清雙（多）物料注塑功能

利用轉盤轉換模腔實現雙（多）物料注塑是本系列標準配置的功能，無需增加其他裝置就可以直接在模具上注射成型。本系列包括兩套水平且平行布置的獨立控制注射系統，活動模板上裝有由伺服馬達驅動的

的轉盤，轉盤可以按預高的指令在0度和180度之間反復轉動，且可在其中任何一個位置停固面進行注塑。

在進行第一次塑料注射後開模，轉盤帶動模具及塑件轉至180度位置，經過電器及機械定位後已初塑的工件再合模進行第二次塑料注射成型。由于兩組平行的注射系統同步進行，因些，每一次開模後（一個周期完成），就獲得一件由兩種特料/顏色注塑成型的產品。

本機操作簡單容易，祇需在電腦屏幕上設置“轉盤使用方式”為“使用轉盤”即可。



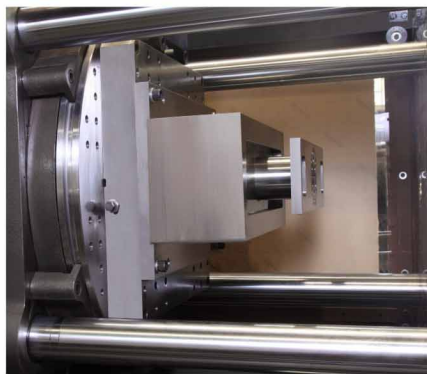
Turntable Transfer Mechanism

The turntable device is a built-in component in the machine, which can be used directly without any installation. The series consists of two independent injection systems. A servo motor is implemented on the moving platen to drive the turntable device. The turntable can be rotated by 0° and 180° reciprocally.

After the first component is initially injected in one mould, the generated first part is then transferred to another blank mould with a rotation of 180°, in which the injection of the second component is occurred. With the use of the turntable, parts with multi-component are manufactured in a single step, which can reduce the cycle time.

This transfer mechanism set up is simple. Users can select this mode directly on the LCD screen and input the required parameters.

轉軸式雙（多）物料注塑功能于轉盤式注塑機的基礎上，在活動模板內增加一套轉軸及頂出機構，轉軸會自動執行電腦指令，在0度和180度範圍內往覆轉動及指定的行程內伸出及縮回。在進行第一次塑料注射後開模，轉軸會自動把連帶已初塑制品的模芯頂出。伺服馬達帶動轉軸從0度旋轉180度之後模芯縮回，然後再合模，下一周期對已初塑的半成品進行第二次塑料注射成型。由于兩組平行的注射系統同步進行，因此，每一次開模後（一個周期），就可以獲得一件由兩種物料注塑成型的產品。這種轉軸注塑方式，適合于第一種被第二種塑料全包或注塑穿透類的產品，例如有通透塑字的牙刷柄等。此工



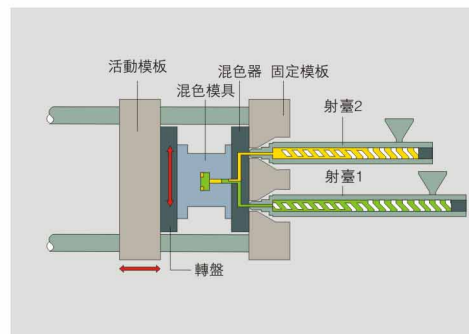
藝還較機械手更準、更快、亦比人手放置更安全。

本機操作簡單容易，祇需在電腦屏幕上設置“轉盤使用方式”為“使用轉芯”即可，轉芯旋轉、頂出及縮回等參數可隨意設置。

Rotation of Core

In this transfer mechanism, over moulding of two materials can be performed in a single plastic injection moulding machine with one multi-cavity mould. This mould consists of two symmetric mould bases with a central rotary core. The core is driven by a servo motor, which can be rotated by 0° and 180°. It can extend and contract at a predefined distance before rotation. After the first injection, the core extends outwards and rotates by 180°, and retracts inwards, after which the first part is over moulded with another material. Parts with multi-component are manufactured in a single step. This type of mechanism is most suitable in the manufacturing of over moulding products, such as toothbrushes. The rotation of core transfer mechanism is more accurate and effective than robotic arm transfer mechanism and is safer than done manually. This transfer mechanism set up is simple. Users can select this mode directly on the LCD screen and input the required parameters.

雙（多）物料混色注塑功能



本機在原有配置下，可以注塑成雲彩或多層次色彩的產品。祇需在固定模板上疊裝一件由電腦控制的混色器，在裝模時，再與模具連接，便可具備混色注塑的功能。

從電腦設置指令控制每組注射系統的注射次序、次數、膠量、溫度、壓力等、再經過預先電腦輸入混色程序的混色器注射入模腔內。由于混色器與模具水口極近，在注射混合過程容易獲得預期的效果。

使用本功能時無須轉盤旋轉，祇須在電腦屏幕上設置“轉盤使用方式”為“使用混色”，再配備可調混色程式的混色器即可。

Two Colour Mixing Device

By incorporating two injection units together with a colour mixing device into a plastic injection moulding machine, plastic products with two colours can be mixed in a single injection process. In this design, two injection units are connected to the device with a common nozzle. The injection parameters such as sequence, quantity, volume, temperature and pressure of each colour are controlled. As the distance between the colour mixer device and mould entrance is small, the colour mixing effect is predictable.

No rotation movement is involved in this colour mixing mechanism. Users can select this mode directly on the LCD screen and input the required parameters.

The "MM Series Multi-mould Master" Plastics Injections Moulding Machine is the result of the combination of manufacturing techniques and experiences. It comprises a computer-optimized modular structural design, closed loop control servo motor drive and high responsive energy saving pump. Users can satisfy different needs of multi-material injection moulding craft, such as coating with turntable positioning system, over moulding with core rotation system, marble effect moulding with colour mixer and simultaneous moulding with two moulds. The MM Series is a multi-craft machine.

一、動力系統

- 1、帶比例壓力及比例流量的變量泵搭配注塑機專用的低噪音電馬達組成的動力系統為本機提供了準確、快捷、高壓、高節能及低噪音的動力。
- 2、模塊式設計的注射系統提供相適應功率的多組動力源。
- 3、多組獨立油路分別控制每一組注射系統及兩組頂出機構，為多種工藝的實現奠定了基礎

Drive System

1. The machine is equipped with a highly accurate, responsive, dynamic, energy saving, and low-noise drive system as a result of the collocation of proportional variable displacement pump and low noise electric motor.
2. The design of modular injection system provides the source of multi-adaptive power drive.
3. Independent hydraulic circuit for the control of individual injection and ejection units establishes the foundation of multi-mould technology.



二、開合模系統

- 1、採用了電腦優化設計的五點式垂直機紋及箱式結構的模板，與高拉力合金鋼哥林柱組成高强度、高剛性、活動穩定快捷兼容的鎖模機構。
- 2、特別寬闊的模板方便安裝多工位模具。
- 3、活動模板裝在特別設計的滑行機構，確保在負載重型模具仍能穩定地滑行。
- 4、兩工位雙向180度及特大直徑的裝模轉盤已預留裝大模的空間，由優質進口開環控制伺服馬達驅動實現了快捷輕盈的轉動，合模達到準確定位的效果。
- 5、配置獨立的電器，液壓及機械三級安全門設計，為安全合模操作提供了保障。
- 6、轉盤上提供兩組冷却水源接頭，可直接供冷却模具用。
- 7、兩套獨立的頂針和一套智慧型的轉盤定位機構為選擇不同工藝時搭配使用，既可防止錯誤動作亦可休護模具。
- 8、提供自動調模功能可縮短裝模高置時間。

Mould System

1. Five-point vertical toggles, box platens, chrome-plated high tensile tie-bars through CAD and CAE finite element analysis ensure strong, rigid, steady and efficient clamping.
2. Broad platen dimensions increase the ease for multi-station mould installation.
3. Movable platen is seated on the specially designed sliders which gives stable movement of heavy mould.
4. Large diameter turntable allows more room for the multi work station moulds. The use of high quality servo-control motor ensures smooth rotary motion and precise positioning.
5. The three independent electrical, hydraulic and mechanical safety devices guarantee safe operation.
6. Two sets of cooling water supply are provided directly on the turntable for mould cooling.
7. The function of two independent ejection systems and turntable positioning lock mechanism accomplishes different craft processes. Proper sequence of operations is ensured in order to protect the mould from being damaged.
8. Automated mould thickness adjustment shortens the mould set-up time.

三、注射系統

- 1、模塊式設計的注射系統可按工藝要求搭配兩組或以上的射膠模塊，本系列亦有多款的射膠模塊供選擇。
- 2、注射機構採用單油缸設計，較傳統的雙油缸更穩定且控制更準確。
- 3、每組注射系統的熔膠背壓數據，在電腦屏幕上直接輸入，亦配有背壓表顯示實際的熔膠背壓值，為精密注塑提供必要的條件。

Injection System

1. Two or more modular injection units with various specifications can be selected to execute the multi-mould operation according to craft requirements.
2. The design of single injection cylinder provides a more stable and precise performance than the commonly used double injection cylinder.
3. The plasticizing pressure settings for each injection unit can be individually set on LCD monitor and the readings are displayed by pressure gauges.



四、控制系統配置了T88專業型電腦

- 1、該系統提供126套數據記憶及顯示操作參數，且具備錯誤操作提示功能。
- 2、超大的26厘米LCD彩色屏幕顯示，清晰顯示參數及方便輸入數據。
- 3、可直接在電腦鍵盤上輸入壓力、速度、位置、時間及熔膠溫度等參數。每組注射機構可預設六段射膠壓力，射膠速度和射膠位置、四段保壓壓力的時間、三段螺旋對應軸向位置轉動的壓力及轉速、六段預高熔膠溫度等。
- 4、開合模行程、射膠行程及頂出行程均採用高精度電子尺以準確地測量及顯示行程位置。
- 5、該系統具有射膠量檢測功能及螺杆防冷啓動裝置，方便工藝管理及保護螺杆。
- 6、本系統採用PID溫度控制配合半導體繼電器，可準確控制溫度及減少接觸點損耗從而延長電器件工作壽命。
- 7、該系統已內置了蓄能器、兩組獨立抽芯、兩組專賣店膠針、螺旋脫牙、吹風、轉盤、轉芯、混色及機械臂驅動程式
- 8、注塑參數、射膠量、熔膠溫度、生產統計圖表等均可于屏幕顯示及儲存。

T88 Professional Micro-computer equipped Control System

1. The system allows memory storage of 126 moulding data sets and shows all operation parameters. It also gives warning messages in case of malfunction.
2. 26cm LCD color monitor for displaying parameters and inputting figures.
3. Direct input of pressure, speed, position, time, plasticizing temperature settings. Each injection unit can operate at 6-stage setting of injection pressure, speed and position; 4-stage setting of injection holding pressure and time; 3-stage setting of screw axis rotational pressure and speed; and 6-stage barrel temperature setting.
4. The mould, injection and ejection operations are monitored by potentiometers for accurate measure of transition.
5. The system has injection cushion detection and screw cold-start prevention for quality control management and screw protection.
6. Built-in PID temperature control program and semiconductor relays in heater circuit give high accuracy of moulding temperature and durability of contact points.
7. Built-in operation program for accumulator device, two independent core operations, two independent anti-drooling devices, unscrewing function, air ejection, rotary table, core ejecting rotating shaft, colour mixing and product transfer mechanism.
8. Injection parameters such as shot volume, plasticizing temperature, production statistics, etc. can be displayed and stored.



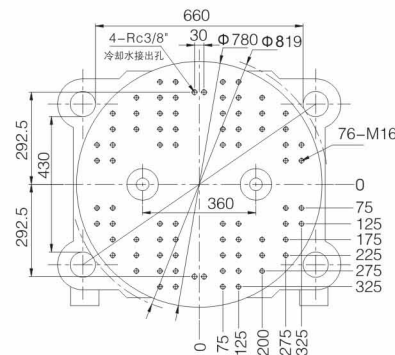
五、超强的特别功能

在多物料注塑的工藝裏，大概分轉盤式、轉軸式、共射式、混合式等等，每一種工藝都需要專用的注塑機來實現。而MM系列全自動注塑機在一機基礎上添加相關構件之後，便可以實現上棕的三種功能，特別適用於一些不時轉換多物料注塑工藝的情況，例如注塑包膠類，穿透注射類或雲彩效果類的工藝，省去再多購其他機種的費用，實現一機多能！

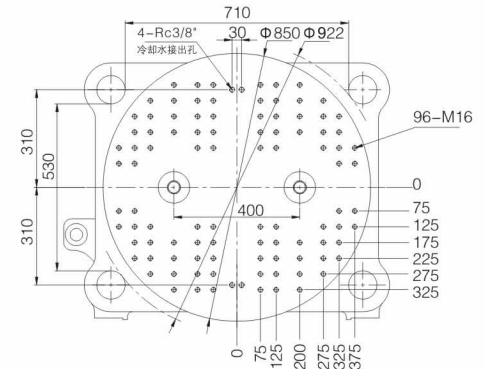
Special Features (Multi Features in One Machine)

Multi-Mould Function can be achieved by using rotary table, ejected and rotated core shaft and colour mixing. Each of these features is manufactured by specialize plastic injection moulding machines. With one MM Series machine and the installation of necessary auxiliary devices, one can produce a multi-material product with any one of the three features mentioned above. This is particularly efficient in cases when multi materials are used. The MM Series can save the cost to purchase different injection moulding machines. It accomplishes 'Multi Features in One Machine'!

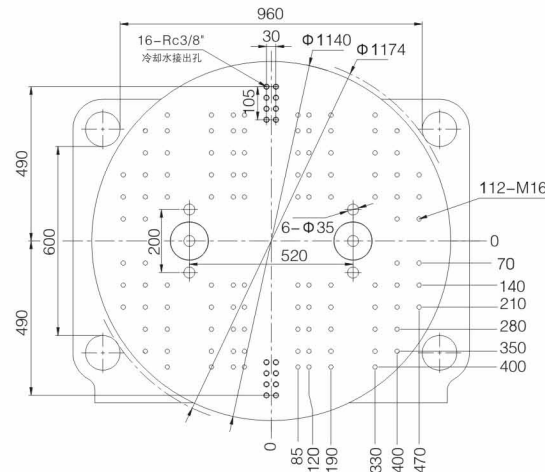
MM130 模板尺寸 (MM130 Platen Size)



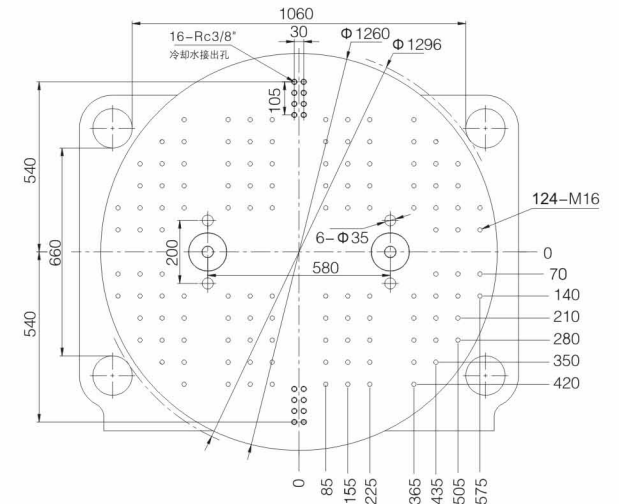
MM200 模板尺寸 (MM200 Platen Size)



MM300 模板尺寸 (MM300 Platen Size)



MM400 模板尺寸 (MM400 Platen Size)





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