SANDSUN
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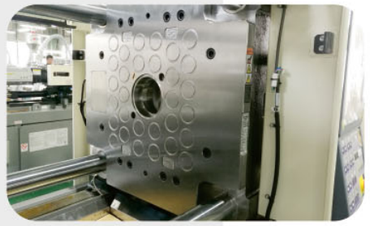
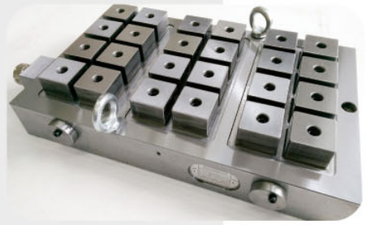
電永磁運用領域
Application of Magnetic System



射出機、沖床快速換模系統
Quick Mold Change System for Injection Molding & Press Machine

起重電永磁系統
Electro-Permanent Magnetic Lifting Equipment



各式加工機磁盤夾治具
Electro-Permanent Chuck for Tooling Machine

客製自動化設備夾治具
Customized Automation with Magnetic Chuck

SANDSUN ISO 9001 CE

MANAGING PHILOSOPHY
Moderate & Reliable Aggressive & Creative
Demanding for Perfection Constant Operation

QUALITY POLICY
Quality Stability Customer Satisfaction

經營理念
穩健踏實 精進創新 止於至善 永續經營

品質政策
品質穩定 客戶肯定

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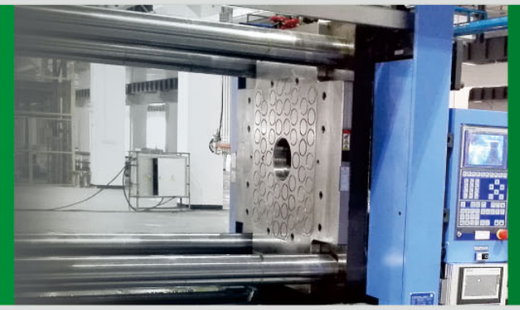
SANDSUN
Powered By HVR MAG

- 全鋼面，防油防水，更耐久
- 超薄35mm高強度磁盤結構設計
- 磁吸力較傳統磁盤增加20%
- 模具錯動檢測設計

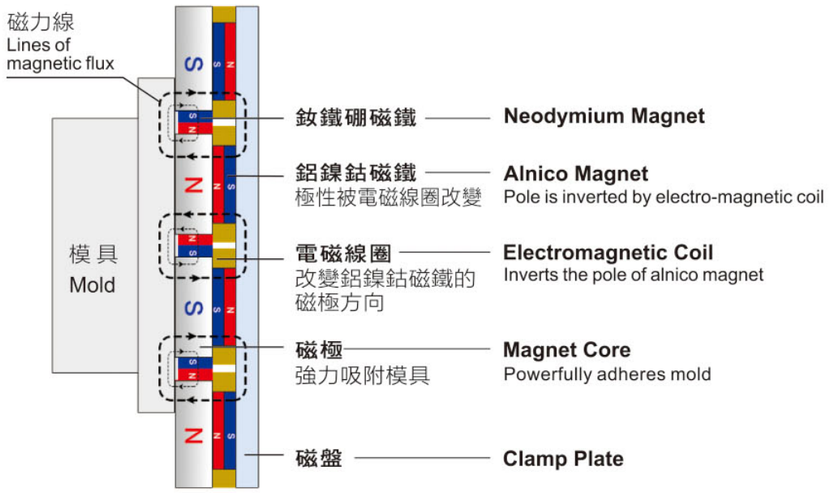
- All steel surface, oil & water proof, and more durable
- 35mm super thin and high-strength magnetic design
- Magnetic force 20% more than traditional magnetic plate
- Mold dislocation detection design

磁力快速換模系統
Electro-Permanent Magnetic Quick Mold Change System

工作原理
Working Principle

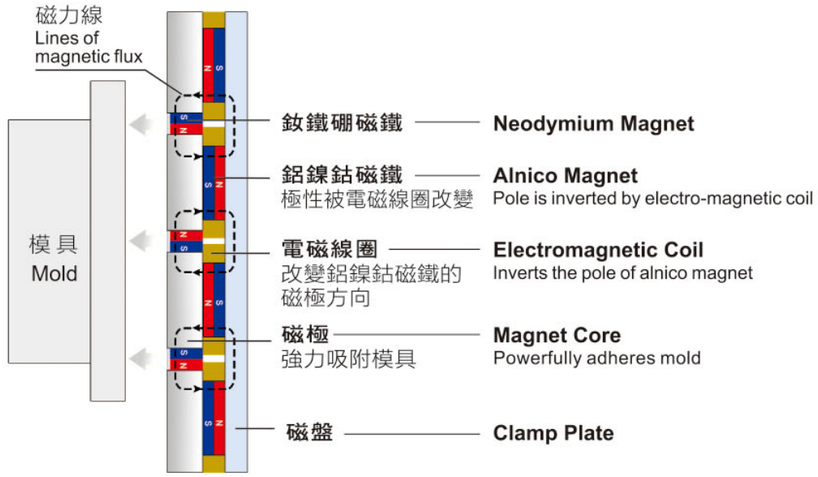


夾緊 / 充磁狀態
Clamp / Magnetized



01	電磁線圈內通過瞬間激磁電流 (0.1-0.5秒)；	Electromagnetic coil energized for 0.5 sec.
02	鋁鎳鈷磁鐵的磁極方向改變；	Pole of Alnico magnet is inverted.
03	釹鐵硼磁鐵和鋁鎳鈷磁鐵的磁極極性相同；	Neodymium magnet and Alnico magnet become unipolar.
04	磁力線集中於磁極表面，與模具形成磁迴路，夾緊模具；	Magnetic Flux of magnets is emitted on the surface of the magnet core. The mold is clamping.

鬆開 / 退磁狀態
Unclamp / Demagnetized



01	電磁線圈內通過瞬間激磁電流 (0.1-0.5秒)；	Electromagnetic coil energized for 0.5 sec.
02	鋁鎳鈷磁鐵的磁極方向改變；	Pole of Alnico magnet is inverted.
03	磁極表面磁力線消失（釹鐵硼磁鐵與鋁鎳鈷磁鐵在 磁盤內部形成磁場）松開模具；	Magnetic Flux of Neodymium magnet and Alnico magnet is not emitted from the surface of the magnet core. The mold is unclamping.

磁力換模特性
Feature of Magnetic Quick Mold Change System

安全
斷電永不失磁

Safety
Magnetic force remain permanently after magnetization

節能
節約電能95%

Energy Saving
Over 95% power saving

更省時
節約換模時間90%

More Time Saving
More than 90% time is saved

耐久
IP67等級防水

Durable
IP67 water proof

良率高
模具受力平均不變形

Higher Yield
The mold won't be deformed because of same force on back plate

易保養
無耗材

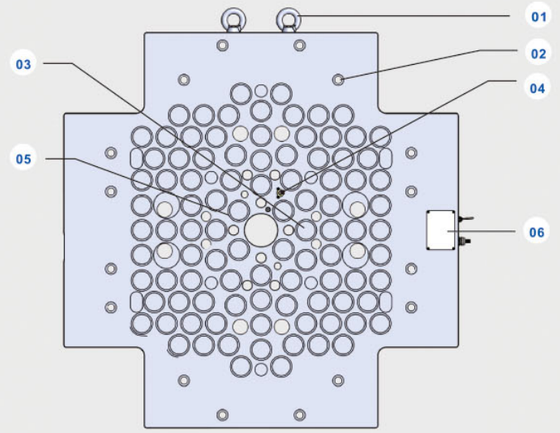
Maintenance friendly
none spare parts reuired

- 電永磁快速換模系統適用於50噸-4000噸射出機使用，新型圓形磁力結構，內部特殊磁路設計，比傳統磁力模板吸力大20%。
- 電永磁快速換模系統可大大提高換模效率，一般射出機換模操作僅需3分鐘即可完成，大型機台的換模時間更可從2小時以上縮短到10分鐘以內。
- 僅需一位操作人員，無需任何工具，就可以在機器的安全距離以外對磁盤系統做出任何操作，大大降低人工成本和勞力消耗。8大安全保護措施，實時保護系統的安全運行。

- Electro-permanent magnetic quick mold change system is perfectly for 50~4000 Tons injection molding machines. The latest magnetic structure and outstanding design of magnetic circuit achieves a 20% and more of the magnetic force than traditional magnetic temperate design.
- Electro-permanent magnetic quick mold change system provides much greater improvement on mold change efficiency. It performs less than 3 mintues for mold changing of general injection molding machine. For large size machine, it will shorten the mold changing time from 2 hours down to 10 minutes.
- The system requires just single operator for mold changing job. Without any tool, operator can easily handle this system beyond the safety distance of the machine. The system can reduce labor cost and man power waste greatly. 8 special safety function designs can fully protect machine operation safety.

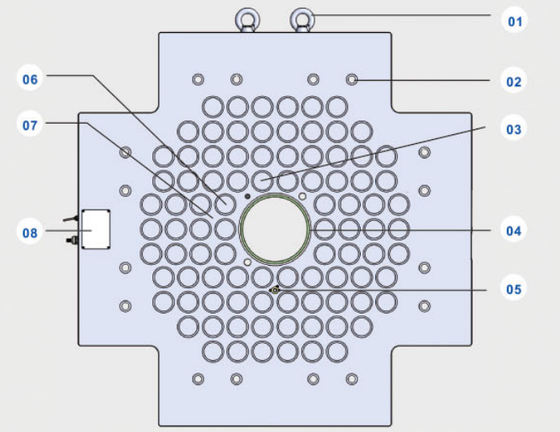
磁力模板各部名稱
Description of Magnetic Template

磁力模板(活動台盤)
Movable Magnetic Template



01 吊環 Eyebolt
02 安裝螺絲孔 Mounting screw hole
03 模具錯動檢測 Mold dislocation detection
04 間隙檢測 Gap detection
05 磁通量檢測 Magnetic flux detection
06 接線盒 Junction box

磁力模板(固定台盤)
Fixed Magnetic Template



01 吊環 Eyebolt
02 安裝螺絲孔 Mounting screw hole
03 模具錯動檢測 Mold dislocation detection
04 定位環 Locating ring
05 間隙檢測 Gap detection
06 磁通量檢測 Magnetic flux detection
07 溫度檢測 Temperature detection
08 接線盒 Junction box

兼具完整功能和耐久性的操作界面
Control Operation Panel

人機界面
Human-Machine Interface

型號: SQMC-11A 長: 159mm 寬: 122mm 高: 39mm (不含安裝座)
Type: SQMC-11A Length:159mm Width:122mm Height:39mm

1. 全金屬外殼，機械強度高。
2. 全金屬按鈕開關，操控性好，安全穩定，更適應於工業環境。
3. 直覺式操作燈號顯示，操作更簡單
4. 裝有鑰匙開關，避免人為誤操作
5. 異常燈號分類顯示，方便異常排除

1. Full metallic surface. High mechanical strength.
2. Full-metal push button switch, good controllability, safe and stable, more suitable for industrial environment.
3. Simple-clear operation light display, easier to operate.
4. It's equipped key switch to avoid operational errors.
5. Differnet error indicator lights display, easier for troubleshooting.

型號: SQMC-12A 長: 275mm 寬: 255mm 高: 51mm (不含安裝座)
Type: SQMC-12A Length:275mm Width:255mm Height:51mm

1. 全金屬外殼，機械強度高。
2. 換模的基本操作均通過外置全金屬按鈕進行，操控性好，安全穩定，更適應於工業環境。
3. 操作權限管控: 分為作業員、管理者、開發維修者權限
4. 所有檢知狀態、生產情況、錯誤訊息、參數設定...等，皆透過觸控式螢幕圖像顯示及設定，更方便操作及故障排除
5. 所有外控按鈕採單獨I/O信號和主控箱連結，即使觸控螢幕或通訊出現故障，系統仍可以正常操作換模動作

1. Full metallic surface. High mechanical strength.
2. Full-metal push button switch, good controllability, safe and stable, more suitable for industrial environment.
3. Operation authority control: operator, supervisor, maintenance authority
4. All detection status, production status, error message, parameter setting...etc. are displayed and set through touch screen panel, which is more convenient for operation and troubleshooting.
5. All external control buttons are connected with separate I/O signals and the main control box. Even if the touch screen or communication fails, the system can still operate the mold change operation normally.

各部份安裝位置示意圖
Installation diagram

八大安全功能設計
8 Special Safety Function Designs

1 模具合模檢測
換模狀態下，模具必須在合模狀態，才能進行充磁操作，此項互鎖控制為了避免模具與磁盤之間因存在異物或是間隙造成充磁強度不足，而影響機台安全操作。

2 磁通量檢測
快速換模系統充磁時，控制器對充磁強度進行時檢測，只有充磁強度達到安全值時，控制系統才顯示充磁成功信號，否則顯示故障信號。充磁成功後和注塑過程中，磁通量檢測傳感器實時對磁吸盤與模具之間的磁通量進行檢測，只要磁通量出現微量的降低，快速換模系統即能迅速發出故障報警信號，並停止注塑機的自動運行。磁通量檢測傳感器分布於電永磁吸盤的多個區域。

3 溫度檢測
溫度檢測用於防止電永磁吸盤因溫度過高而退磁，造成磁吸盤吸力下降。當電永磁吸盤溫度超過了設定的溫度時，控制系統自動發出報警信號並停止注塑機的自動運行。

4 充磁電流強度檢測
電永磁吸盤進行充退磁動作時，控制系統對充退磁 的脈衝電流進行檢測，只有達到要求值後，才顯示充退磁成功信號。

5 模具錯動檢測
模具錯動檢知，在機台生產狀態下，確實檢側模具的位置，當模具有些微滑動，系統立即發出警報訊號，並通知機台立即停機。

6 間隙檢測
間隙檢側檢知用來檢測模具與磁吸盤的距離，只有當模具與磁吸盤的距離小於0.2mm時，控制器才能進行充退磁操作。否則即報故障信號。注塑過程中，當模具與磁吸盤的距離超0.2mm時，快速換模系統即報出故障信號，並停止注塑機的自動運行。

7 快速換模系統與射出機系統互鎖控制
採用互鎖控制，快速換模系統只有在各檢測信號均正常，動靜模均充磁成功後，並將鑰匙開關旋轉至注塑狀態下，才允許射出機的自動運行，任意一個故障信號出現或是切換至換模狀態，都會及時停止射出機的自動運行。

8 鑰匙開關控制
換模狀態與注塑狀態使用鑰匙開關切換，退磁時須同時按下"退磁+鎖定"雙按鈕，才能有效退磁。為防止誤操作，注塑狀態下，無法操作充退磁。

1 Mold close detection
During the mold change cycle, each piece of mold should be in close position, only can doing MAG operation in mold close condition, this interconnected control operation avoid fake operation due to external matter and gap existed between magnetic template and mold.

2 Magnetic flux detection
During operating the magnetic quick mold change system, Magnetizing force detection function is available in the controller, only when the Magnetization intensity achieve safety standard, the MAG success signal will bepresent.
otherwise, fault signal will be flash. In the meantime, Magnetic flux detection sensor existed in the entire magnet contact area, if magnetic flux senor detected minor decrease of flux, controller will report warning signal and stop injection mold machine automatically.

3 Temperature detection
In order to prevent Magnetic Template contact area high temperature cause the Magnetic force losing and whole magnet system clamping decrease, Temperature detection sensor will announce warning signal to stop injection molding machine operation automatically, while the temperature is over the limit.

4 Magnetizing current intensity detection
During MAG and DEMAG operation, current detection sensor monitoring MAG and DEMAG pulse current.MAG or DEMAG success signal will be reported only when reaching the request value.

5 Mold dislocation detection
Dislocation detection sensor detect mold position in real time, When mold position has a slight slip, the control system will report fault signal and the inlection molding machine will stop running automatically.

6 Gap detection
Gap detection sensor use to detect the distance between magnet plate and mold,controller only can do DEMAG operation when the distance less than 0.2mm. System will report warning signal if distance over this standard, injection mold machine will automatic stop working in this circumstance.

7 Interlock Control System
Only when all detection sensor in normal working condition and Magnetic template from fixed side and movable side magnetization successfully,with key switch turn into injection condition, injection machine automatic working is allowed.Otherwise, injection machine will stop working due to safety consideration.

8 Key switch control
Using key switch to transform mold change condition and injection condition. When operate DEMAG process, only press "LOCK" and "DEMAG" two buttons at the same time to operating successfully. Under injection condition, MAG and DEMAG operation is invalid.

技術參數及系統配置
Specifications & Configurations

磁極尺寸（mm）	ø44	ø66
每個磁極吸力（kg）	350	900
磁力模板厚度（mm）	35	46
工作溫度（℃）	120/150/180	
磁力線穿透深度（mm）	20	
接近傳感器極限感應值（mm）	0.2	
電源輸入	AC220V/380V/415V/440V, 50/60Hz	
適用射出機噸數 (Tons)	50-4000	

序號	項　目	配置情況	數　量
1	電永磁版 (固定側)	☑	1
2	電永磁版 (活動側)	☑	1
3	固定側定位環	☑	1
4	主電控箱	☑	1
5	操控盒	☑	1
6	IPC 互動式觸控螢幕操作系統	☐	1
7	模具錯動檢知	☑	安裝於固定/活動台盤，各1只
8	磁通量檢測裝置	☑	安裝於固定/活動台盤，各1只
9	間隙檢知	☑	安裝於固定/活動台盤，各1只
10	溫度傳感器	☑	安裝於固定台盤
11	安裝螺栓	☑	根據機型定
12	連接電纜	☑	1
13	說明書與保養手冊	☑	1

注 ：☑ 標配　☐ 選配

Dimension (mm)	ø44	ø66
Magnetic force/ Pole (kg)	350	900
Template Thickness (mm)	35	46
Max. operating temperature (℃)	120/150/180	
Magnetic flux depth(mm)	20	
Mold proximity sensor range(mm)	0.2	
Standard voltage	AC220V/380V/415V/440V, 50/60Hz	
Apply for machine clamping force (Tons)	50-4000	

No.	Item	Configuration	Q'ty
1	Magnetic Template(Fixed side)	☑	1
2	Magnetic Template(movable side)	☑	1
3	locating ring	☑	1
4	Main control cabinet	☑	1
5	Control operation panel	☑	1
6	IPC interactive touch screen	☐	1
7	Mold dislocation detection sensor	☑	Installed on movable and fixed platen side,Each side one unit
8	Magnetic flux detection device	☑	Installed on movable and fixed platen side,Each side one unit
9	Gap detection sensor	☑	Installed on movable and fixed platen side,Each side one unit
10	Temperature sensor	☑	Installed on fixed platen side
11	Mounting bolt	☑	According to the technical specification
12	Connecting cable	☑	1
13	Operation and maintenance Manual	☑	1

NOTE: ☑ Standard configuration　☐ Optional configuration

磁力快速換模優勢
Strength of Magnetic Quick Mold Change System

傳統壓板夾持的缺點 / Disadvantages of conventional clamping / 01 02 03

01

傳統壓板夾持
conventional clamping

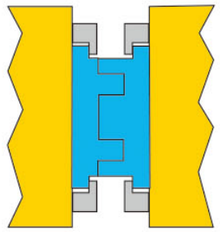


圖1：使用傳統壓板夾持時，需一定空間做為壓板固定施力點，大幅壓縮模具夾持空間。

fig. 1: the maximum size of mold is limited due to clamp blocks utilized.

02

模具夾板較薄
a thinner mold base

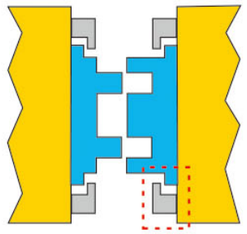


圖2：傳統模具夾板較薄，使用時會出現壓板假夾持，常讓操作人員浪費過多時間挑選合適壓板。

fig. 2: it costs much time on select proper clamp blocks if base board is thinner.

03

傳統鎖模壓板固定方式
conventional clamping structure

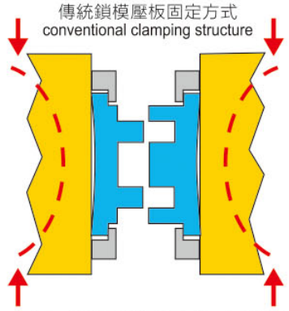


圖3：傳統鎖模壓板固定方式受力不平均，成品易毛邊，模具易受損，維修費用高，開模時模具易變形。

fig. 3: it causes flash and damage of molds because of uneven clamping force. a frequent maintenance of molds may occur & deformation when mold opening.

磁力鎖模系統的優勢 / Strength of magnetic clamping / 04 05 06

04

磁力鎖模系統夾持
magnetic clamping

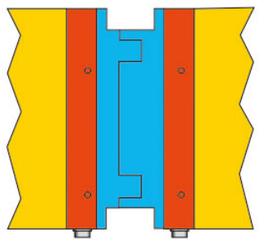


圖4：磁力鎖模系統則在機台最大與最小模具容模範圍內尺寸，皆能夾持無須變更任何結構，徹底發揮射出機夾具最大極限效果。

fig. 4: no extra space is required for magnetic clamping system, no interfac of injection molding machine platen, making injection machine running in maximum efficiency way.

05

模具夾板較薄
a thinner mold base

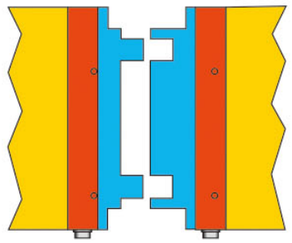


圖5：磁力鎖模系統因採取全模具接觸面夾持方式，所以無模具夾板厚度問題，且避免造成「假夾持」潛在危險情形發生，充分達到全面夾持應用效果。

fig. 5: owing to magnetic clamping , a fully contact phase of mold provides a perfect clamping.thickness of base board of mold never be an issue for clamping anymore.

06

磁力鎖模固定方式
magnetic clamping

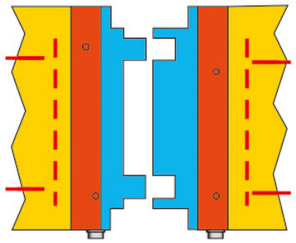
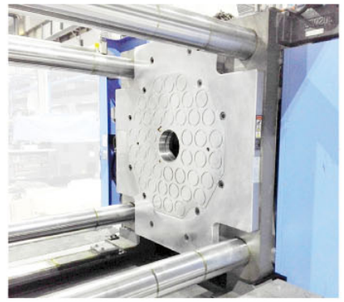


圖6：磁力鎖模固定方式磁盤完全吸附模具，不變形，增強模板厚度，且受力更平均，開模時模具不變形。

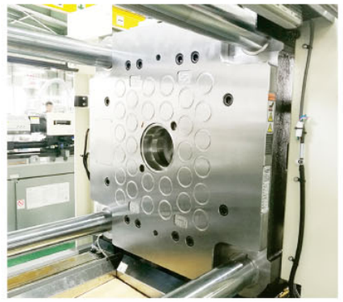
fig. 6: uniform clamping molds, no deformation , enhances the strength of platen, no mold deformation during the mold opening.

SANDSUN Powered By HVR MAG

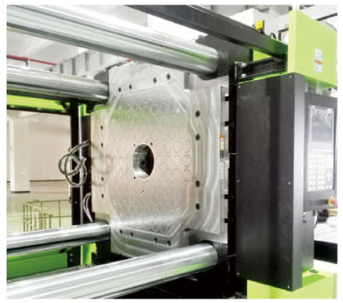
客戶使用實例
Application Cases



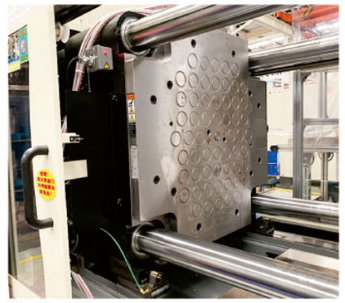
01 海天200T
Haitian 200T



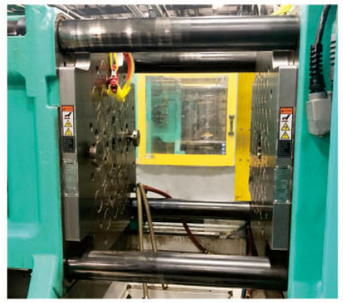
02 日精200T
NISSEI 200T



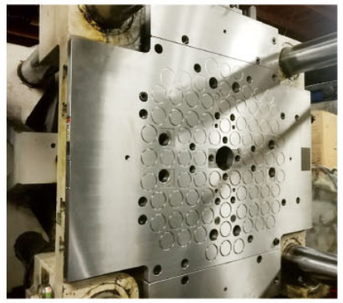
03 伊之密360T
YIZUMI 360T



04 日精460T
NISSEI 460T

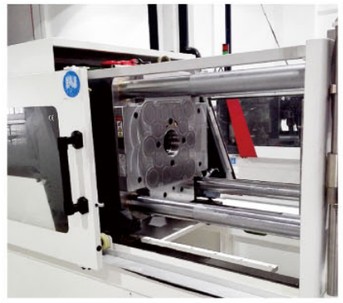


05 阿博格180T
Arburg 180T



06 泰瑞800T
TEDERIC 800T

07 海天650T
Haitian 650T

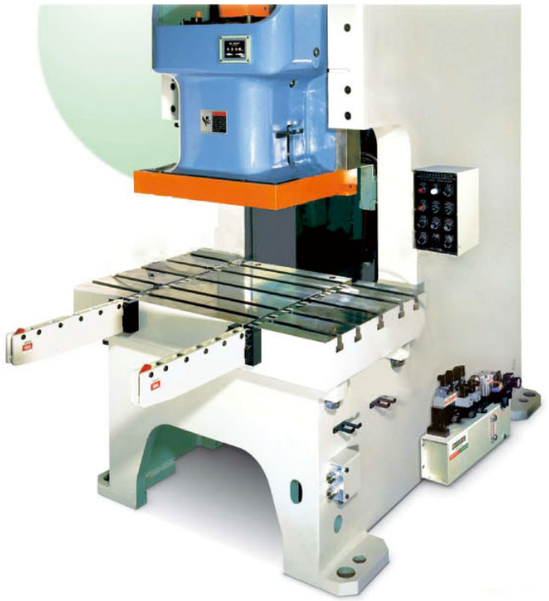


08 米拉克龍110T
MILACRON 110T

09 日精180T
NISSEI 180T

電永磁快速換模系統—沖床專用
Electro-Permanent Magnetic Quick Die Change System for Press Machine

沖床在更換模具時，常耗費大量的人力及時間，造成企業生產成本提高，也降低生產製造的效率，直接影響到整體企業產能。使用電永磁快速換模系統後，實現沖床快速更換模具，降低換模時間，提升良品率，並且大大的促進產量提升，增強企業競爭力。



沖床用電永磁快速換模系統適合任何形狀和尺寸的模具，已有的模具無需修改就可以用在配有磁力模板的沖床上，不需要制定特殊的模具標準，節省設計和製作時間，降低成本，同時可以在磁盤上增加各種您所需要的設備：定位裝置、沈孔、下模延伸板等都可以客製化增加。

對於裝備有長條形模架的模具，磁盤上的磁極可設計為相應的長條形，從而提供最佳的效果。下模可增加T型槽，適用於絕大多數的舉模滑軌。

A lot of manpower and time are wasted when changing the mold on Press machine, which causes the production cost of the factory to increase and also reduces the production efficiency. After using magnetic system, it reduces mold change time, and increases production efficiency and product yield.

Magnetic system can be applied for any dimension and shape of die. No need to modify existing die, which can save cost on design and modification dies. In addition, the magetic template can be customized to apply special equipment for dies.

The magnet pole could be designed in long strip shpae for lone strip die base, in order to perform better function. The magnetic template also can add T-slot or U-slot to apply for different type of die lifter.

安裝方便
安裝磁盤到機台上，僅需幾根固定螺絲，並可使用現有T形槽或式螺絲孔位座固定，無須修改機台。新型磁盤厚度更薄，開模行程影響更小。

操作簡單
僅需一位操作人員，無需任何工具，就可以在沖床操作的安全距離以外對磁盤系統做出任何操作，確保人員安全。放置模具 — 閉合沖床 — 按下上模充磁按鈕 — 按下下模充磁按鈕開始沖壓操作，流程簡單且高效。

安全穩定
磁盤採用電永磁技術，即使停電，磁盤對模具的吸力依然不減，穩定且均質的吸力，確保沖壓成品的品質，不再因為傳統夾持方式造成模具受力不均彎曲變形。

Easy installation
Only needs several screws to install magnet system on your machine, Full range of systems are customizing design and manufacture according to your technical specification. With advancing design and innovation, the thickness of magnet plate is become thinner, saving available opening stroke.

Easy operation
Single operator, no extra tool required. Worker can operate the system and press beyond the safety distance, guarantee the safety of operators. Simple operation process as below: place the die on the machine-->press the "MAG" button for bolster magnetic plate-->press the "MAG" button for slide magnetic plate-->Start production

Security and stability
The magnetic system adopts Electro-permanent magnetic technology. Even if the power is cut off, the magnetic force of the system is still not reduced, and the stable and uniform magnetic force ensures the quality of the stamping product. The deformation of the die is no longer caused by the conventional clamping method.

常見問題
FAQ (Frequently-Asked Question)

Q 磁力模板的吸附力大小是按照什麼依據來設計的？

A 要回答這個問題需要先瞭解磁力模板的吸附力的作用，磁力模板是用吸附模具背板的吸附　力產生的摩擦力對抗模具自身重力，從而保持模具不從磁板上下落。
設計依據之一， 模具的重量。
按照摩擦系數 0.2-0.3 來計算，通常情況下磁力模板的吸附力都要是模具自身重量的 5 倍 以上才算是足夠的安全。
設計依據之二，射出機的最大開模力
吸附力越大當然是越安全，那麼上限應該設定多少才合適呢？ 不能超過射出機的最大開 模力。因為考慮到磁力模板萬一出現故障而不能退磁的情況下，這時模具被吸附在磁力模板 上沒有辦法取下，而磁力模板和射出機模板的連接螺栓孔這時又都被模具背板覆蓋住了，也 沒有辦法拆卸磁力模板。此時唯一的取下模具的方法就是，固定連接模具左右兩半，通過射出機強行開模將模具從磁力模板上拉下，之後拆卸掉單邊磁板，用機械夾具固定好單邊模具 後再開模一次，拉下另外一邊模具。從整個過程可以看到，磁力模板的吸附力是一定不能大 於射出機的最大開模力的。否則，剛才的操作將無法進行。我司磁力模板現設計成多單元結構,當磁力模板某一部分出現問題時,可對磁力模板未出現故障的單元進行退磁，所以磁力模板的吸附力一定不能大於射出機的最大開模力不成立。
設計依據之三，動模吸附力大於定模吸附力。
因為動模的重量通常都是大於定模的重量，根據設計依據一可以得出，需要更大的吸附力 在動模，同時在射出機上的定模側通常都是有 2cm 厚的定位圈，在開模之初，一旦模具被　從定模側拉脫，磁力模板的接近傳感器以及磁通檢測傳感器立刻就能感應到模具被拉脫，從而急停開模的動作。 保證模具在定位環的支撐作用下不掉落。

Q 突然停電，模具會不會跌落？

A 不會，磁力模板是按電永磁原理設計製造，僅在充磁/退磁的瞬間使用電能，其餘時間是不用電的，其工作磁力來源於內部的稀土永磁材料，而非電磁場，停電可以永久保磁。

Q 磁場輻射對人體有害嗎？

A 無害。磁力模板充磁後，磁力線通過模具在磁盤表面形成閉合磁場，磁力線有效作用範圍在距離磁盤表面 20mm 內，超過20mm 範圍後，磁場變得很稀薄，和空氣中的磁場強度相差不大，故帶有內臟金屬支架的人請勿靠近，另外磁卡，手錶，手機等物品也不要靠近離吸盤表面小於 20mm 的範圍內。

Q 磁力模板耐水，耐油，耐腐蝕嗎？

A 完全可以，磁力模板採用多層防水、防油、耐腐蝕結構，允許在有水及油、氣的環境下使用。

Q 磁力模板怕不怕高溫？

A 磁力模板允許的工作溫度範圍為 T1：0-120 度，T2：0-150度，T3:0-180度，
不同耐溫等級的價格不同，超過 180 度的高溫暫不建議使用。

Q 磁力模板對機械手或是注塑機有干擾嗎？

A 沒有干擾，磁力模板只在更換模具的瞬間使用電能，其他時間磁吸盤處於完全斷電狀態，磁力作用的範圍僅在磁盤吸合面 20mm 範圍內，其他區域無磁場，所以不會干擾注塑機及機械手的運行。

Q 模具背板不平整，怎麼解決？

A 若模具背板不平整須做調整，以使背板與磁力模板充分接觸。去除模板的凸點，（如凹痕的邊緣，背板落地角擠壓的凸點 ）鎖緊背板上的螺絲及導柱等，去除背板上較厚的污垢。

Q 有隔熱板的模具能直接用嗎？

A 隔熱板加在模具背板外側，不能用；隔熱板加在模具背板內側，可以用。

Q 磁力模板選型需要確認的參數包括哪些?

A a、合模力
b、動靜模板安裝外形尺寸，固定孔位尺寸，定位環直徑大小及高度，頂桿直徑及長度。
c、射出機品牌，型號。
d、模具溫度。

Q 活動側射出機頂桿行程設定長於模具內頂桿行程的情況

A 在此種情況下射出的頂桿還沒有頂到位就已經將模具的頂桿完全頂出，如果設定的頂桿移動速度較大，就會通過頂桿動模造成相反與吸附力的衝擊力，可能造成模具被頂桿從機器上 撞下來的情況。
解決方法：嚴格控制頂出行程，不能大於模具實際頂出行程。並適當降低頂出末端的速度。

Q 模具背部空洞面積過大，導致吸附力不足的情況

A 當模具背板存在不平或空洞的情況，磁力模板的吸附力會因為接觸面積的下降而導致下降。磁力模板在設計的過程中通常都考慮了接近30%的安全餘量 ,也就是說當模具背板的空洞面積不超過 20%的情況下，使用磁力模板還是安全的。但是考慮到實際工況總是幾種因素綜合影響著磁力模板的吸附力，如果模具背板本身的平整度未到達 0.2mm/M的安裝磁力模板的技術 要求，再加上背板上存在較多的空洞，這就會導致模具由於吸附力不足而下滑 甚至掉落的情況。
解決方法：嚴格控制模具背板的實際空洞面積不超標，嚴格控制模具背板的尺寸平整度在 要求範圍內。

Q 模具溫度過高的情況

A 模具背板溫度過高，超過所選用磁力模板最高工作溫度會導致磁力模板對模具的吸附力下降，磁力模板上安裝有溫度高溫報警值，當出現溫度報警時，需要對模具背板進行隔熱處理避免吸附力下降。

Q 中小噸位射出塑機上開模速度的情況

A 磁力模板被應用到射出機上時，其主要的使用目的是幫助客戶減少換模時間提高設備的 生產效率和傳統機械夾具相 比， 磁力模板在安全性上做了很多的改良。但是如上文分析， 設計磁力的大小是不能超過注塑機的最大開模力的，因此這裡需要提醒所有使用磁力模板產品的客戶，在使用磁力模板時的第一段開模速度設定應調整到合理的範圍，避免用高速開模。 速度過快，會導致模腔中的真空不能在短時間內得到空氣補充，從而因真空力將模具從磁 力模板拔了下來。
解決方法：控制第一段開模的速度在合理的範圍內。因為 $V=\frac{1}{2}at^2$， $mv=Ft$，所以 $F=\frac{1}{2}atm$ (V:開模速度，a:加速度，t:開模時間，m:模具重量，F:開模力) 開模速 度快，也就意味著加速度大，當其最大 F 的最大值超過磁力模板的吸附力時，就會出現拉脫 的現象，當然此時磁力模板的報警單元將會立即顯示報警並停止設備動作。

Q 模具不開模的情況

A 若高壓鎖模後停機時間過長，模具的相關金屬結構件彈性變形導致不能開模，或者由於模具本身的缺陷，導致模具不能開模的現象。此時如果採用強行拉開模具的處理方法，會出現射出機的開模力大於磁力模板吸附力的情況，造成模具滑動或是掉落，快速換模系統發出錯動報警並緊急停機。因此，發生類似情況時，一定要做好模具的安全保護措施，防止模具掉落（採用安全鏈等方式）。同時，也須對不能開模的模具進行及時修理，防止類似事故的發生。

常見問題
FAQ (Frequently-Asked Question)

Q In accordance with the value of the magnetic plate clamping force , what basis is design with?

A To answer this, you need to understand the clamping force effect of the magnetic system. This product is using for overcome friction force from mold itself gravity by clamping mold back base, achieving mold does not fall from magnetic plate. design basis (1): the weight of mold.design basis; (2): The maximum injection molding machine open clamping force design basis; (3): movable mold clamping force is larger than fixed side.

Q If Sudden power failure the mold will fall?

A No, the magnetic plate with electric permanent magnetic principle to design & manufacture. It only needs electrical energy at the moment of magnetization and demagnetization, the rest time no need electricity. the working magnetic is from its inside rare earth permanent magnet materials, rather than electromagnetic, power outages can guarantee permanent magnet.

Q Magnetic radiation is harmful to human ?

A No, harmless. The magnetic plate after magnetization, forming a closed magnetic field on the surface of the magnetic chuck. The effective distance range of magnetic line is 20mm from the magnetic chuck, more than 20mm, the magnetic field becomes very thin, it is similar to the magnetic field strength in the air, so people with pacemakers do not close, bank cards, watches , mobile phones and other items do not close the range from less than 20mm chuck surface.

Q Magnetic plate water resistance, oil resistance, corrosion resistance ?

A Absolutely no problem. By using multi layer, waterproof, anti - oil, corrosion - resistant structure, allowing to work in water, oil and gas environment.

Q Magnetic plate is afraid of high temperature?

A This system allow operating temperature range: T1: 0-120 degrees, T2: 0-150 degrees, T3: 0-180 degrees, different temperature levels with different price, more than 180-degree heat, we not recommend to use.

Q Magnetic platen has any interference to the mechanical hand or injection molding machine ?

A No, there is no interference. Magnetic plate only use electrical in a moment for replace mold, other times magnetic plate is completely powered off , magnetic working range is only within 20mm range of the magnetic chuck, other areas without magnetic, so it will not interfere the injection molding machine and mechanical hand work.

Q Mold back base is not flat, how to solve ?

A Need be adjusted to let the back base making full contact with magnetic system. Remove the bulgy part, such as the edgeof the dent, back plane landing angle extrusion highs, tighten the back plane screw and the guide column, remove the thick dirt on the back plane.

Q Which parameters needs to be confirm before system selection?

A
A. mold clamping force
B. movable and fixed mold outside dimension, fixed hole size, fixing ring diameter and height, diameter and length of the mandrel.
C. injection molding machine brands, models.
D. mold contact temperature.

Q Mold with heat insulation plate can be used directly ?

A Insulation panels applied to the outside of the mold back plane, can not be used; insulation panels applied to the inside of the mold back plane, can be used.

Q Movable mold side injection molding machine top rod longer than the top rod of mold inside circumstance

A In this case, the injection machine rod is not top in the place has push the mold top rod completely out of the top, if the speed of movement setting too high, it will cause a opposite impact force to attraction force through the top rod movable mold and can cause the mold be knocked down from the machine.
Solution way:Strictly control ejection stroke, do not allow larger than actual ejection stroke, properly lowering rod bar end side speed.

Q The mold back cavity area is too large, clamping force will not enough

A when the mold back plate uneven or cavity, the clamping force of magnetic system will decrease because contact area decrease. HQMC magnetic system in the design process are usually considered nearly 30% safety margin, it means that when the mold back plate cavity area does not exceed 20%, the magnetic system is safe. However, taking into account the actual operating conditions are always several factors affecting the attraction force of the magnetic platen, If the flatness of the mold back plate itself does not reach magnetic platen technical requirements of 0.2mm / M, If the flatness of the mold back plate itself does not reach magnetic platen technical requirements of 0.2mm / M, the back plate also have too much cavities, the mold will glide or fall due to lack of clamping force.
Solution way: strictly control the actual area of mold back plate in safety standard also of take care size of the flatness of the mold back plate.

Q The mold temperature is too high

A If mold back plate temperature is too high, exceeding the allowed maximum operating temperature will lead to the magnetic clamping force decline in the mold base. There is a temperature detect senor setting on the HQMC magnetic plate, when temperature alarm activate, mold back plate need to be insulated to prevent suction force decreases.

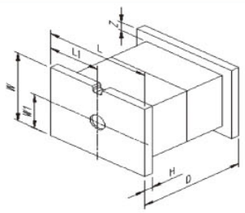
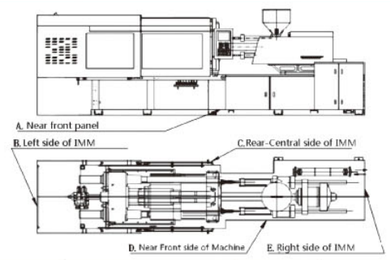
Q The mold opening speed applied in the small and medium toggle injection molding machine

A When the magnetic platen is applied to the injection molding machine, its main purpose is to help customers to reduce changeover times improve equipment. Compare to traditional mechanical clamps for production efficiency, magnetic platen has made a lot of improvements on security. But as the above analysis, the size of the magnetic design can not exceed the maximum clamping force of the injection molding machine. So here we need to remind all customers, when using a magnetic platen, the mold speed setting should be adjusted to a reasonable extent in the first paragraph to avoid the high-speed mold. Too fast, it will cause the vacuum in a mold cavity can not be added in a short time, so that the mold will be pulled down from the magnetic platen by vacuum force.
Solution: control the speed of the first paragraph of mold within a reasonable range. Since $V=\frac{1}{2}at^2$, $mv=Ft$, so $F=\frac{1}{2}atm$ (V: mold speed, a: acceleration, t: mold time, m: weight of the mold, F: Opening Force) mold speed, It means big acceleration, when the maximum value of the maximum F exceeds the magnetic attraction force of the platen, there will be pulled off the phenomenon, of course, at this time the magnetic platen alarm unit will immediately display alarm and stop operation of the device.

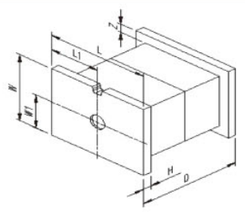
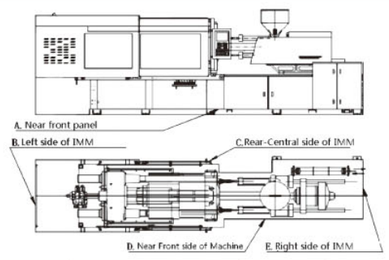
Q Mold cannot doing open mold operation

A If the down time is too long after high-pressure clamping,related metal structure leads to an elastic deformation of the mold cannot mold, or because of the mold itself defect can not mold. At this moment, force open the mold, the injection mold opening force will be larger than the magnetic clamping force , mold will slide or fall, quick change system will send alarm and emergency signal letting machine shut down. So, When a similar situation occurs, Safety protection measures for mold must be well done to prevent mold drop (use safety chain, etc.) At the same time, for the mold which can not mold, we need to make timely repairs to prevent similar accidents.

磁力換模訂購明細表

基本資訊	公司名稱				地址			
	聯絡人		電話		E-mail			
	公司型態	☐ 模具製造商		☐ 使用者		☐ 其他		
機台資訊	☐ 沖床 ☐ 射出機 ☐ 多色射出機	機台型式	☐ 全電機 ☐ 油壓機	立/臥式	☐ 立式 ☐ 臥式	入模方向	☐ 側向 ☐ 上方 ☐ 側向及上方	
	品牌		新/舊機	☐ 新機 ☐ 舊機	台盤螺絲孔狀況	☐ 良好 ☐ 些微受損	頂料孔數量	
	機台型號							
	機台噸數		機台開模力		頂料桿力量		射嘴力量	
	註: 務必提供完整台盤圖面 (包含所有螺絲孔位、頂料孔位、射嘴孔位...等的位置及大小尺寸)							
模具資訊	2板/3板模	☐ 2板 ☐ 3板	模具方向	☐ 橫向 ☐ 直向	模具背板材質			
	是否有隔熱板	☐ 是 ☐ 否	模具背板最高溫度 (℃)			是否為偏心模?	☐ 是 ☐ 否	
	高頻率開關模	☐ 是 ☐ 否	固定側定位環尺寸	直徑 mm		脫螺紋機構	☐ 是 ☐ 否	
	活動側有無定位環: 若有尺寸為何	☐ 有 ☐ 無	直徑 mm	定位環厚度	mm			
模具尺寸	尺寸(mm)	L	W	W1	D	H		
	最大模具							
	最小模具							
相關要求資料	電壓(V)		赫茲Hz		主電控箱安裝位置 ☐A ☐B ☐C ☐D ☐E			
	射出機是否提供安全門關閉I/O訊號點	☐ 是 ☐ 否	射出機是否提供合模完成I/O訊號點	☐ 是 ☐ 否				
	Euromap 需求?	☐ 70.0 ☐ 70.1 ☐ 否	機台是否為試模目的機種	☐ 是 ☐ 否				
	管線長度 (米)	活動測		電源線		人機介面傳輸線		
		固定側		Euromap 傳輸線(選購)				
其他要求								
聯絡人		電話		日期				

Data Required Form for Magnetic QMC

Basic Information	Company				Address			
	Contact		Tel.		E-mail			
	Company Type	☐ Mold Maker		☐ Injection molder /Press		☐ Others		
Machine's Information	☐ Press ☐ Single IMM ☐ Multi-Color IMM	Drives	☐ Electric ☐ Hydraulic	Type	☐ Vertica ☐ Horizontal	Direction of mold move In/out	☐ Slide in/out ☐ Up & Down ☐ Both	
	Model		Status of IMM	☐ New ☐ Used	Condition of screw holes	☐ Normal ☐ Partial damaged	Nos. of ejector	
	Brand							
	Mold Clamp Force		Mold Open Force		Ejector Force		Nozzle Force	
	PS. : The complete drawing of platens is required. (location & dimension of all screw holes ,ejector holes, nozzleholes, etc.)							
Mold's information	Two plate /three plate mold	☐ two ☐ three	Mold direction	☐ Horizen ☐ Vertica	Material of mold base			
	With Isolation board?	☐ Yes ☐ No	Max. Temp. of mold base (°C)		Eccentric mold ?	☐ Yes ☐ No		
	High inertia opening?	☐ Yes ☐ No	Dia. of location ring on fixed side	mm	Un-screw device?	☐ Yes ☐ No		
	Dia. of location ring on fixed side	☐ No ☐ Dia	mm	Thickness of location ring	mm			
Mold's information	Dimension(mm)	L	W	W1	D	H		
	Max. of molds							
	Min. of molds							
Information of requirement of Magnetic QMC system	Power(V)		Hz		Main Electric Control Cabinet Location ☐A ☐B ☐C ☐D ☐E			
	I/O signal of safty door from IMM?	☐ No ☐ Yes	I/O signal of mold closing end from IMM?	☐ No ☐ Yes				
	Euromap required?	☐ 70.0 ☐ 70.1 ☐ No	Is HQMC for mold trial purpose?	☐ No ☐ Yes				
	Length of Cable(M)	Moving platen		Power cable		HMI cable		
		Fixed platen		Euromap cable(optional)				
Other requirements								
Sales Rep.		Tel.		Date				