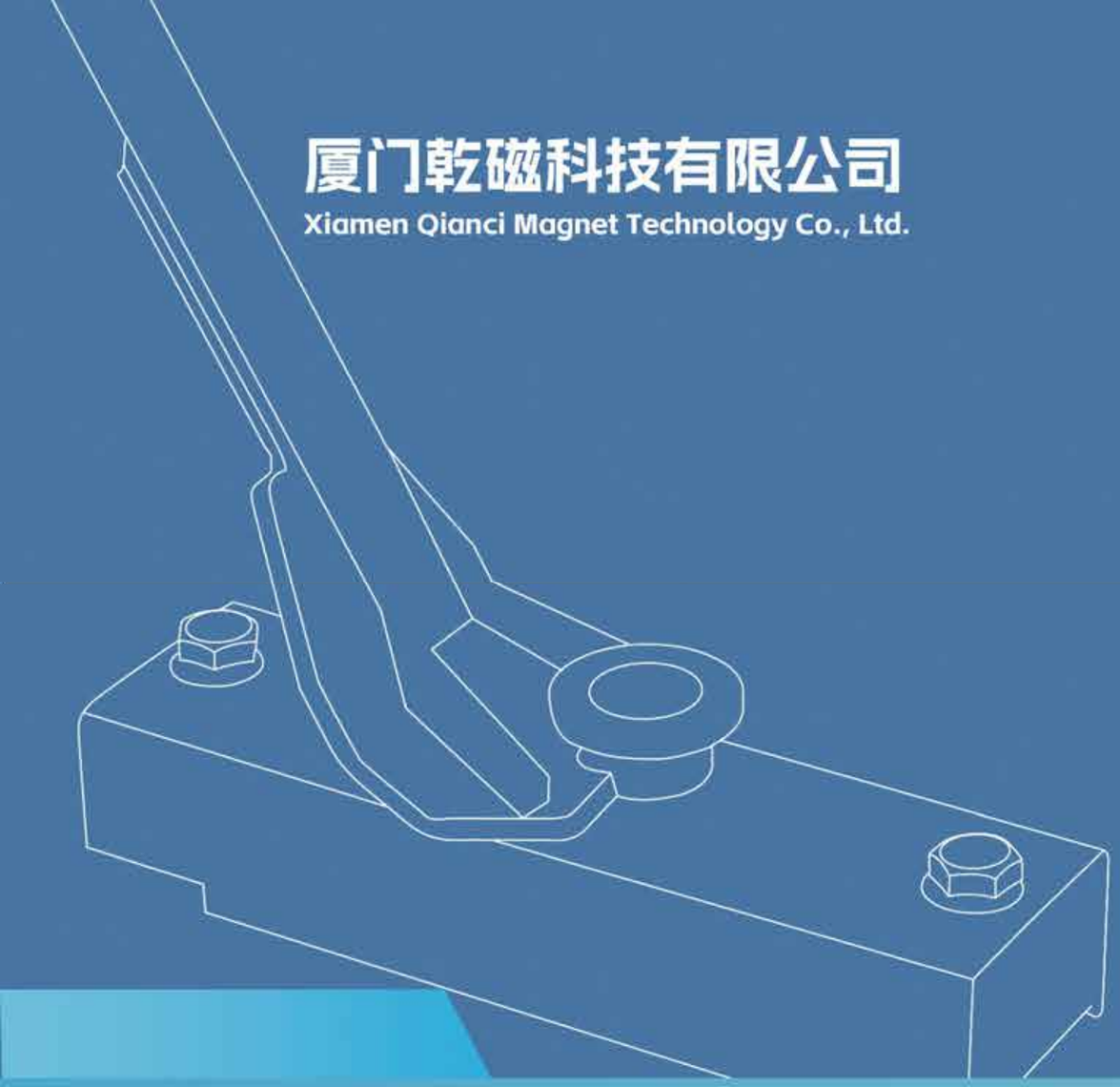
厦门乾磁科技有限公司

Xiamen Qianci Magnet Technology Co., Ltd.



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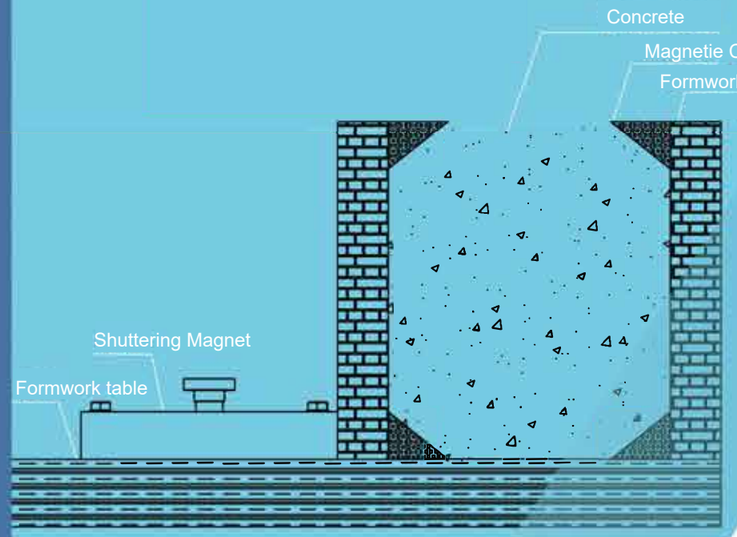
Xiamen, China

QCM

Focus on providing comprehensive magnetic fixing solutions for precast concrete component production



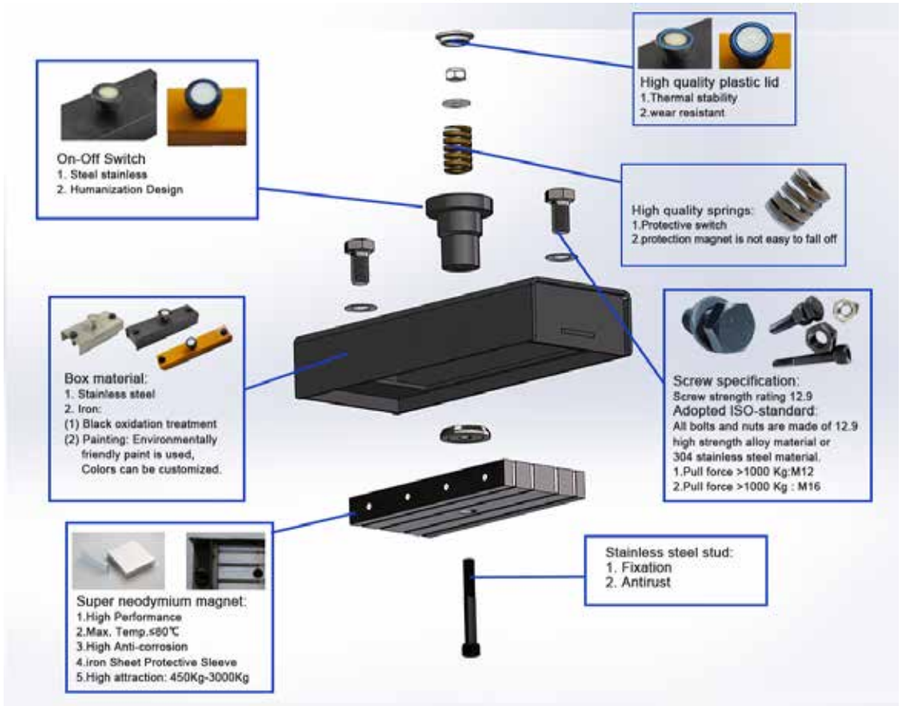
厦门乾磁科技有限公司

Xiamen Qianci Magnet Technology Co., Ltd.

公司简介
COMPANY PROFILE

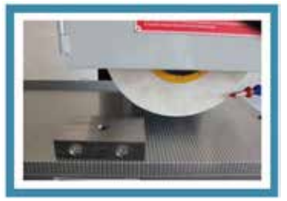
QCM Magnet specializes in providing comprehensive magnetic fixing solutions for the production of precast concrete components. Our primary products include precast concrete magnets and their connecting accessories, Formwork Magnet, Magnetic Concrete Chamfer and insert magnets. The use of magnetic fixing in the production of precast concrete components helps prevent damage to the platform, enhances operational efficiency, reduces labor costs, and allows for the reuse of magnetic fixing devices, resulting in significant economic benefits. Leveraging our expertise in magnetic components and precast concrete production, we have developed a range of innovative and practical magnetic fixing products. Our product specifications are extensive, ensuring high quality, ease of operation, and a long service life. Additionally, we offer rapid customization of various magnetic fixtures to meet the unique needs of our customers. We are committed to providing tailored solutions that align with the specific requirements of our clients.

We are eager to share our expertise with you to assist in addressing your specific application needs for magnetic components!



生产设备
PRODUCTION EQUIPMENT



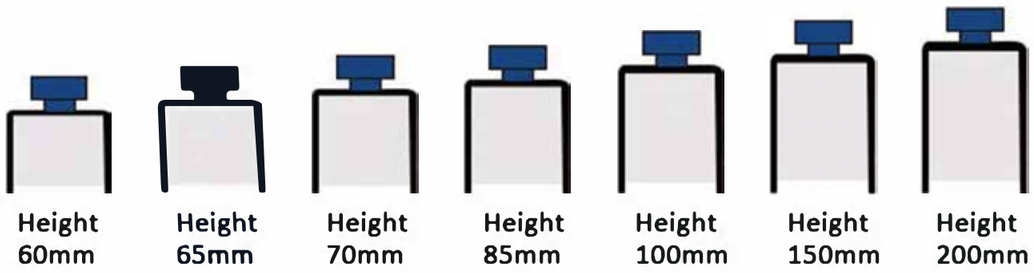



测试设备
TEST EQUIPMENT

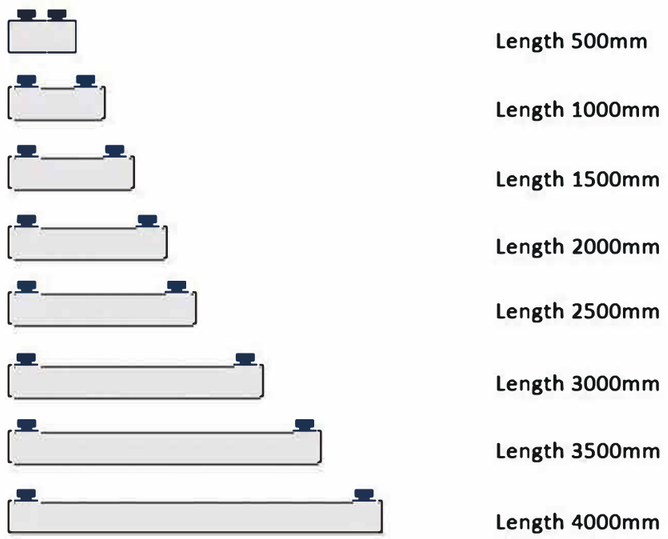

MAGNETIC FORMWORK

The precast concrete formwork magnet consists of steel bars and an embedded magnetic suction cup system. The magnetic side molds are available in widths of 60 mm and heights of 60 mm, 65 mm, 70 mm, 85 mm, and 100 mm, with lengths of 1 m, 1.5 m, 2 m, 3 m, 3.5 m, and 4 m. Additionally, custom heights can be tailored to meet specific production requirements for various concrete components. The suction cups create a strong adhesive effect, ensuring that the side molds are securely in contact with the platform, thereby stabilizing the formwork system for the components being molded.

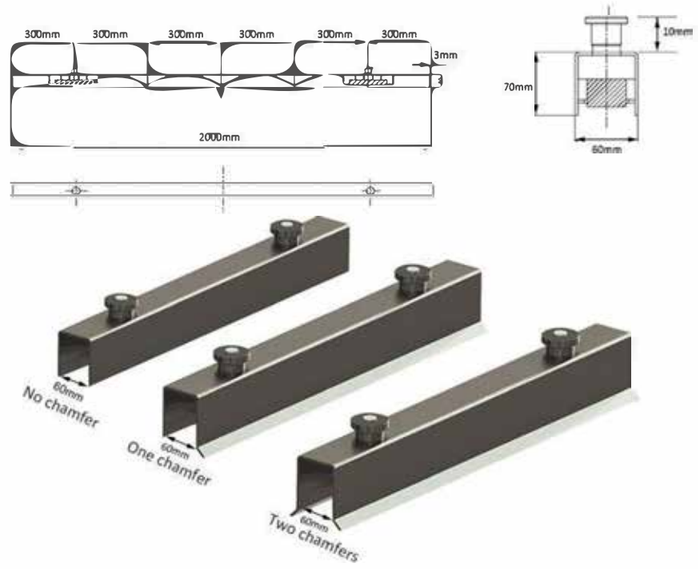
Height of Ma**g**n**eti**c For**m**work:



L**e**n**gth** of Ma**g**n**eti**c For**m**work:



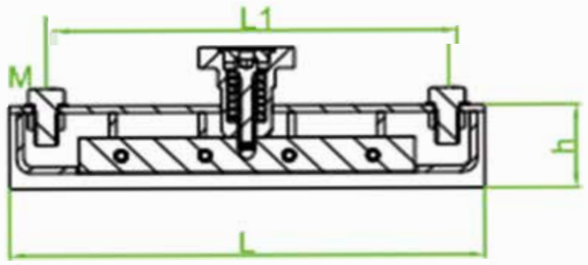
Since the steel formwork and the suction cup are a whole, there will be no positional movement, ensuring that the formwork system does not deform. At the same time, the simple and quick operation of the suction cup makes the entire work safer and more stable. Using the matching crowbar, the suction cup can be pried up and the steel formwork can be easily removed from the formwork platform. Since the suction cup system is located inside the steel formwork groove, concrete residues or other dirt will not damage the entire formwork system. It has a built-in chamfering function, and the chamfer can be customized according to needs. There are 3 options: without chamfer, with one chamfer, and with two chamfers.

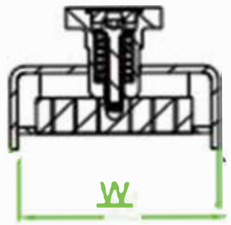


At the same time, we are equipped with high-precision laser cutting machines, bending machines and CNC lathes, which can customize Magnetic Formwork of various specifications and lengths according to customer needs.

碳钢磁盒 CARBON STEEL SHUTTERING MAGNET

This series of Shutter Magnets has been specifically designed for securing wooden or iron templates. Through the innovative design of a rare earth permanent magnet structure, it generates a pull force that significantly exceeds that of the magnet itself. Additionally, the cost-effective and practical carbon steel shell effectively shields and protects the internal magnetic core. All bolts and nuts are constructed from 12.9 grade high-strength alloy and 304 stainless steel, allowing for easy connection to external adapters of various shapes to enhance template stability.

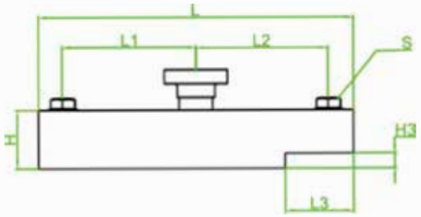


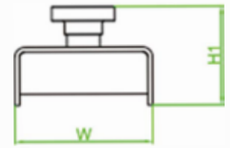


型号 Model	L(mm)	L1(mm)	W(mm)	h(mm)	M	自重(g) Weight	拉脱力(kg) Breakaway
QCM450	170	135	60	43	M12*30	**1800**	450
QCM600	170	142	60	43	M12*30	**2500**	600
QCM900	280	244	60	43	M12*30	**2800**	900
QCM1600	290	240	120	60	M16*30	**6500**	1600
QCM1800	320	270	120	60	M16*30	**7200**	1800
QCM2100	320	270	120	60	M16*30	**7600**	2100
QCM2400	320	270	120	60	M16*30	**7600**	2400
QCM3000	320	270	140	60	M16*30	**7800**	3000

不锈钢磁盒 STAINLESS STEEL SHUTTERING MAGNET

Considering the corrosion resistance of carbon steel and the harsh conditions at the component production site, our company has specifically designed this stainless steel precast concrete magnet to maximize the service life of the Shutter Magnet. All bolts and nuts are constructed from 12.9 grade high-strength alloy or 304 stainless steel, allowing for easy connection to adapters of various shapes to ensure a more secure attachment of the template.





型号 Model	L(mm)	L1(mm)	L2(mm)	L3(mm)	W(mm)	H(mm)	H3(mm)	S	自重(g) Weight	拉脱力(kg) Breakaway
QCM450B	190				60	40	10	M12*40	**1800**	450
QCM600B	200	72.5	95.5	42	60	43	10	M12*40	**1900**	600
QCM 1000B	200	65	100	50	95	60	10	M12*40	**3000**	1000
QCM 1350B	320	113	161	47	90	60	10	M16*60	**5700**	1350

磁盒夹具 SHUTTERING MAGNETS ADAPTOR

In the design and production of formwork systems, the QCM Shutter Magnet is an essential standard tool. In practice, the varying bottom widths of angle steel or channel steel molds may render the step length of our Shutter Magnet unsuitable for all molds. To enhance the adaptability of the Shutter Magnet to different mold platforms and achieve optimal fixing effectiveness, we design a range of adapters tailored to customer specifications. With these customized adapters and various tooling options, the Shutter Magnet can securely fix a wide array of molds, including wooden formwork.

撬棍 SHUTTERING MAGNET LEVER

There is a magnetic control switch on the Shutter Magnet. To activate it, place the Shutter Magnet on the platform and press the switch. The Shutter Magnet will securely adhere to the platform and enter an operational state. To deactivate, use a crowbar to pry up the switch. This action significantly reduces the pull force between the Shutter Magnet and the platform, allowing the Shutter Magnet to enter a closed state and be moved easily.

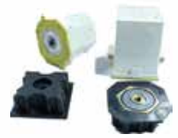
型号 Model	L(cm)	自重(kg) Weight	承重(kg)
QCM-1000	100	2	1000以下
QCM-1350	130	3.5	1350以上

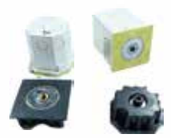
预埋固定磁座 INSERT THREADED SOCKET FIXING MAGNET

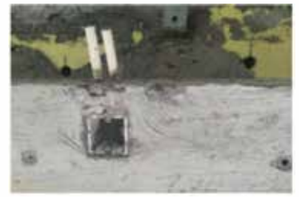
In the production process of prefabricated components, various connections and lifting devices must be embedded. Based on customer requirements, our company manufactures insert magnets with a range of specifications, styles, and suction powers to connect and secure various embedded parts. Additionally, we offer a selection of screws, including M10, M12, M14, M16, M18, M20, M24, and more for customers to choose from.

型号 Model	D(mm)	H(mm)	拉脱力(kg) Breakaway	M
D50*8	50	8	60	M10M12M14M16
D54*10	54	10	65	M18M20M24
D64*12	64	12	100	M16

线盒磁性固定器 ELECTRIC BOX INSERT MAGNET





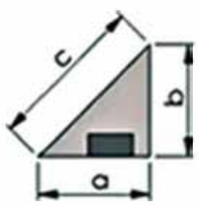


型号 Model	D(mm)	L(mm)	W(mm)	H(mm)	拉脱力(kg) Breakaway
D90*30	90	0	0	30	100
71*71*30	0	71	71	30	100

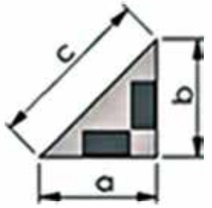
磁性倒角条 MAGNETIC STEEL CHAMFER STRIPS

Magnetic chamfer strips are utilized to secure formwork during the production of prefabricated components that require chamfering. Depending on the material, options include rubber magnetic strips, PVC strips, and triangular chamfer strips made from A3 steel. The length and performance of the products can be customized to meet specific requirements.

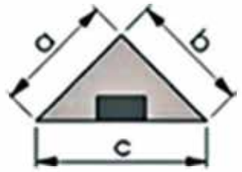
Typ A



Typ B



Typ C

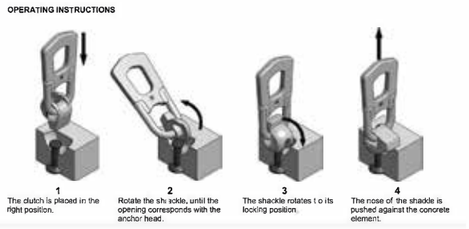


Product Name	M(mm)
Rubber chamfer strip	10*10
Rubber chamfer strip	15*15
Rubber chamfer strip	20*20
A3 Steel Chamfer Strip	10*10
A3 Steel Chamfer Strip	15*15
A3 Steel Chamfer Strip	20*20
A3 steel trapezoidal chamfer strip	12*16*10

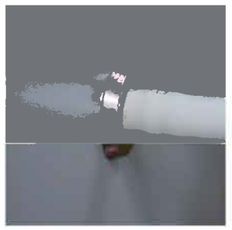
圆头吊钉和固定磁座

LIFTING BALL-HEAD ANCHORS MAGNET

型号 Model	L(mm)	承重(T)
1.3	120	1.3
2.5	170	2.5
5	240	5
10	340	10



线管固定磁座 FIXING MAGNETS INSERT MAGNET



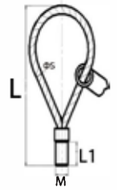
Product Name	Specifications and dimensions (mm)	Pull Force (kg)	Available polished rod diameter (mm)
Insert Magnet	D40*6	30	16.8、18.1、19.3

止水节固定器 PVC WATERPROOF EMBEDDED CASING SLEEVE EMBEDDED

The primary function of the PVC Waterproof Embedded Casing Sleeve is to address the leakage issues caused by the reserved holes during the installation of vertical pipes that pass through the floor slab. In construction projects, the PVC Waterproof Embedded Casing Sleeve is integrated into the structural concrete of the floor slab in a single pour. Featuring a built-in water stop wing ring, it forms a tight bond with the concrete, effectively mitigating leakage problems associated with the reserved holes for vertical pipe installation.

Our Pvc Waterproof Embedded Casing Sleeve Embedded fixing magnets are designed for long-term, repeated use, providing cost savings and ease of operation. Once the fixing device is positioned, it effectively prevents slipping and loosening due to its exceptionally strong magnetic adhesion. The sizes can be customized to meet customer requirements, including D50mm, D75mm, D110mm, D150mm, and more.

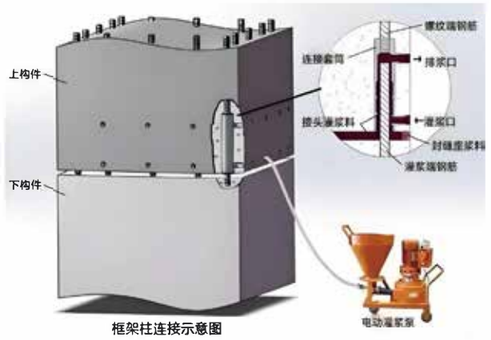
钢丝索具和螺纹钢套筒 WIRE ROPE LOOP LIFTING DEVICE AND PC LIFTING EMBEDDED THREADED STEEL SLEEVE



型号 Model	M	L(mm)	L1(mm)	ΦS(mm)	Safe Working Load (kg)
QCM-12	12	155	20	6	500
QCM-14	14	155	22	7	800
QCM-16	16	155	23	8	1200
QCM-18	18	190	28	9	1600
QCM-20	20	215	31	10	2000
QCM-24	24	255	38	12	2500
QCM-30	30	300	50	16	4000

型号 Model	M	L(mm)
QCM-12	12	80
QCM-14	14	50/80/100/120
QCM-16	16	50/80/100/120/150
QCM-18	18	70/80/150
QCM-20	20	60/80/100/120/150/180/200
QCM-24	24	120/150

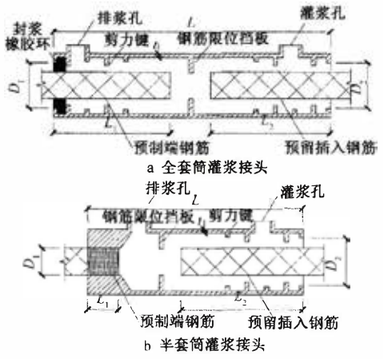
灌浆套筒 DUCTILE LRON GROUT SLEEVE



框架柱连接示意图

The grouting sleeve is an innovative method for connecting steel bars, applicable in reinforced concrete structures, steel structures, bridge engineering, and various other fields. Its working principle involves using a specially processed sleeve that combines grouting material with the steel bar. During the connection process, a fast-hardening, non-shrink grouting material is injected, allowing the steel bar and sleeve to bond through the adhesive and mechanical interlocking properties of the materials. This connection method offers several advantages, including reliable performance, broad applicability, and ease of installation.

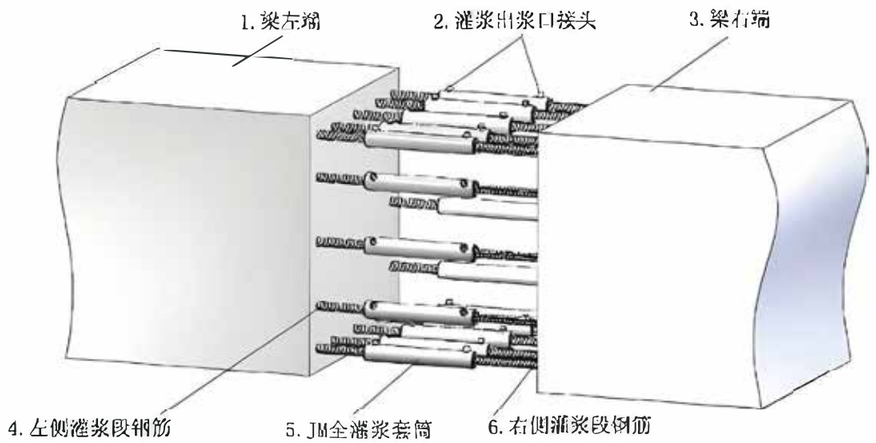
The principle of grouting sleeve connections primarily relies on high-strength, micro-expansion structural mortar that is filled between the steel bar and the sleeve. The confinement effect of the sleeve on the mortar, combined with the mortar's micro-expansion characteristics, enhances the bond between the steel bar and the sleeve, effectively transmitting the stress from the steel bar. This connection method does not require overlap or fusion; instead, the steel bar is inserted into the sleeve through openings at both ends to complete the connection. Grouting sleeve connections are categorized into two types based on different grouting methods: full grouting joints and semi-grouting joints.




Full grouting sleeve

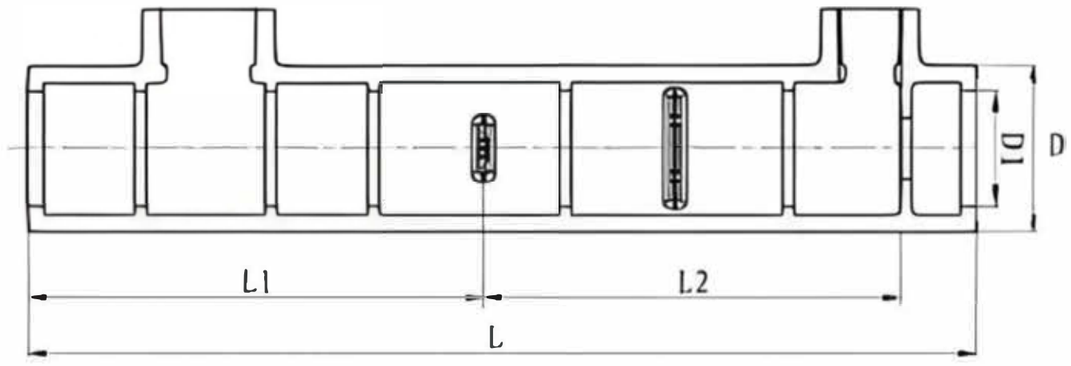

Half grouting sleeve

The full grouting sleeve is connected to the steel bar through grouting at both ends, while the semi-grouting sleeve is connected to the steel bar via grouting at one end and a mechanical connection at the other end. This connection method is appropriate for the longitudinal reinforcement of vertical structural members, such as prefabricated shear wall components and prefabricated frame columns.



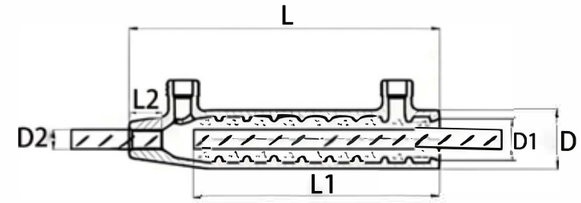
The development and application of grouting sleeve connection technology has made up for the shortcomings of traditional steel structure connection methods, such as welding and bolt connections, and provided more choices and conveniences for engineering practice.

The fully grouting joint can match the steel bar diameters: Φ12mm, Φ14mm, Φ16mm, Φ18mm, Φ20mm, Φ22mm, Φ25mm, Φ28mm, Φ32mm, Φ36mm, Φ40mm.



Model	D(mm)	D1(mm)	L(mm)	Insertion depth of reinforcement at assembly end L1(mm)	Factory steel bar insertion depth L2(mm)
QCMΦ 12F	44	36	250	96 ~ 5120	116 ~ 5130
QCMΦ 14F	46	37.8	280	112 ~ 5135	132 ~ 5145
QCMΦ 16F	48	39.6	310	128 ~ 5150	148 ~ 5160
QCMΦ 18F	50	41.6	350	144 ~ 5170	164 ~ 5180
QCMΦ 20F	52	43.2	370	160 ~ 5180	180 ~ 5190
QCMΦ 22F	54	44	410	176 ~ 5200	196 ~ 5210
QCMΦ 25F	58	46	450	200 ~ 5220	220 ~ 5230
QCMΦ 28F	62	48 ~ 53.4	505	224 ~ 5250	248 ~ 5255
QCMΦ 32F	66	50 ~ 556	570	256 ~ 5280	276 ~ 5290
QCMΦ 36F	75	63	650	320	330
QCMΦ 40F	95	81	810	400	400

Semi-grouted joints can match the diameter of the steel bars Φ12mm、Φ14mm、Φ16mm、Φ18mm、Φ20mm、Φ22mm、Φ25mm、Φ28mm、Φ32mm。



Model	D(mm)	D1(mm)	L(mm)	Rebar insertion depth L1(mm)	Rebar connection thread length L2(mm)
QCMΦ 12H	35.6	28	144	96 ~ 116	19.5
QCMΦ 14H	38	30	161	112 ~ 132	20
QCMΦ 16H	39.8	31.4	177	128 ~ 148	22
QCMΦ 18H	41.8	33.4	196	144 ~ 164	25
QCMΦ 20H	43.6	35.2	215	160 ~ 174	27
QCMΦ 22H	47.5	37.5	235	176 ~ 196	30
QCMΦ 25H	52.4	40.4	265	200 ~ 220	35
QCMΦ 28H	60.5	48.5	293	224 ~ 244	39.5
QCMΦ 32H	63	48 ~ 53	331	256 ~ 276	45.5

Application

磁盒的使用方法和放置

USAGE AND PLACEMENT OF THE SHUTTERING MAGNET

Since the high-performance permanent magnet material used in the Shutter Magnet is sintered from rare earth elements, its texture resembles that of ceramics—hard and brittle, making it prone to breakage. It is essential to handle the magnet with care to prevent damage to its internal components. Therefore, during the use of the Shutter Magnet, avoid dropping or striking it. When removing the mold, do not throw it from a distance. Additionally,refrain from using hard tools, such as metal hammers, to knock or bump the magnet, as this may lead to deformation. Please refer to the illustration below:

There is an on/off switch located on the Shutter Magnet. To operate, place the Shutter Magnet on the platform and press the switch. The Shutter Magnet will adhere firmly to the platform and enter an active state. To deactivate, use a crowbar to pry up the switch. This action significantly reduces the holding force between the Shutter Magnet and the platform, placing the Shutter Magnet in a released state, allowing the magnetic box to be moved. Refer to the figure below for clarification.

When activating the Shutter Magnet switch, do not use a metal hammer to strike it directly. Instead, it is advisable to press it down with the sole of your foot, applying your body weight. However, avoid lifting your foot and stomping down forcefully to prevent slipping and potential injury while stepping on it.

If you need to use tools, it is advisable to use a rubber mallet to tap gently.

After using the shutter magnet, it should be cleaned and stored on a stainless steel cart to maintain its cleanliness and ensure convenience for future use. The shutter magnet must not be placed on an iron cart, as it may become magnetically attracted and difficult to remove. If the magnet will not be used for an extended period, it is advisable to apply anti-rust oil to the lower surface of the shutter magnet that contacts the mold table after cleaning. This will help prevent rusting, which could compromise the magnet's suction and holding strength.

磁盒使用后发生退磁现象的原因分析

ANALYSIS OF THE CAUSES OF DEMAGNETIZATION AFTER USE OF THE SHUTTERING MAGNET

With the rapid advancement of building industrialization, an increasing number of precast concrete component factories have begun utilizing shuttering magnets to secure side molds. However, many of these factories have reported that after a period of use, the magnetic boxes exhibit significant demagnetization, leading to insufficient suction and inadequate mold fixation. This results in substandard component quality, causing many customers to question the effectiveness of shuttering magnets. Additionally, the substantial loss associated with shuttering magnets, coupled with their higher costs compared to traditional screw fixation and labor, adversely impacts their application prospects.

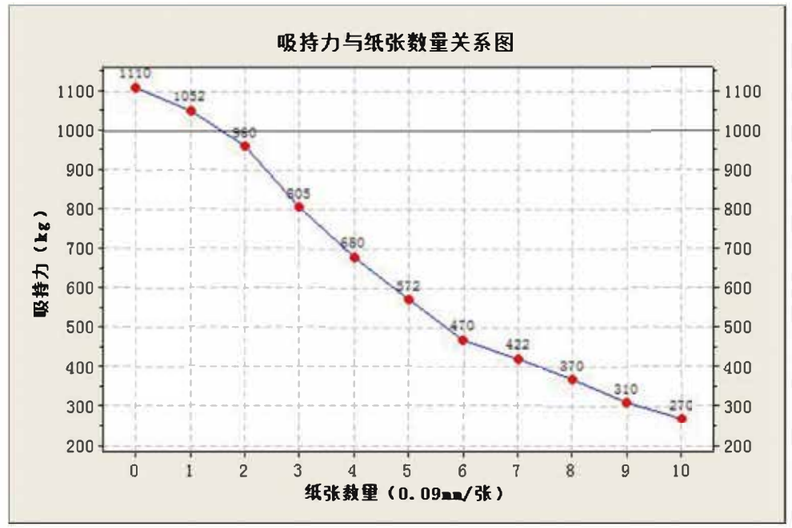
Based on our visits to numerous component factories and our expertise in magnetic materials and components, we have conducted an analysis of the potential causes of the demagnetization phenomenon that occurs after the use of shuttering magnets.

1. Operating temperature

Shuttering Magnet is primarily composed of sintered NdFeB permanent magnet material. Sintered NdFeB is widely utilized in various applications, ranging from standard suction components to permanent magnet motors, voice coil motors, high-end audio speakers, and mobile phone vibration motors, among others. Depending on the specific application, different performance grades of NdFeB materials are selected. When considering operating temperatures, high-performance sintered NdFeB materials can withstand maximum temperatures of up to 230 degrees Celsius, while the lowest performance materials can tolerate temperatures up to 80 degrees Celsius. If the temperature during the production and maintenance of our PC components remains below 80 degrees Celsius, it will not affect the magnetism of the magnetic box. However, if the magnetic box is required to operate at temperatures of 80 degrees Celsius or higher, a higher grade of NdFeB material should be employed.

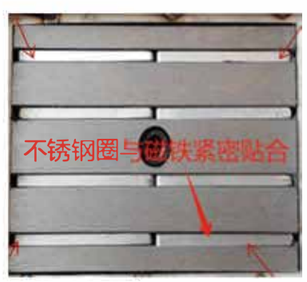
2. The magnetic surface is uneven and does not fit securely against the mold table.

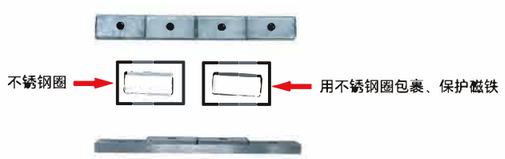
When using the Shuttering Magnet, it is essential to ensure that there is no debris at the bottom, as this can adversely affect its adsorption force with the mold platform. In its operational state, the adsorption surface at the bottom of the magnetic block fits tightly against the steel mold platform, ensuring a strong hold. However, the presence of foreign objects—such as concrete, grease, or film—between the magnetic block and the platform can prevent a secure fit, significantly reducing the adsorption force. To illustrate this, we used our company's QCM-1000B model magnetic box to investigate the relationship between adsorption force and the gap between the bottom of the magnetic block and the platform. We placed between 0 to 10 A4 sheets of paper (each with a thickness of 0.09 mm) between the bottom of the magnetic block and the platform to measure the adsorption force of the Shuttering Magnet at various gap sizes. The test data is as follows:



As illustrated in the figure above, the gap between the bottom of the magnet block and the platform significantly influences the pull force of the shuttering magnet. Therefore, we recommend that customers conduct daily maintenance on the shuttering magnet.

On the other hand, the structure of the magnetic block itself can lead to uneven magnetic surfaces if the production process is not meticulously controlled. The magnetic block is assembled using NdFeB magnets and iron bars connected by bolts. If the size and positioning of the screw holes are not accurately managed, the overall surface of the iron bars may become uneven after assembly, necessitating smoothing with a grinder. During operation, the screw rod that passes longitudinally through the middle iron bar exerts a pulling force on the entire magnetic block. If the size tolerance of the hole is excessively large, a gap may form between the screw rod and the horizontally positioned iron bar, resulting in misalignment of the iron bars. This misalignment can lead to an uneven overall magnetic surface, significantly affecting the pull force of the magnetic block. To ensure optimal assembly of the magnet and iron bar into a magnetic block, it is crucial that the magnet surface is positioned as low as possible relative to the plane of the iron bar. This positioning helps to prevent collisions. Additionally, the magnet requires a protective layer to guard against damage and corrosion. To protect the magnet, our company employs advanced technology to affix a stainless steel ring to each magnet, ensuring a tight fit through welding and mechanical fastening.





磁盒维护保养及安全须知
SHUTTERING MAGNET MAINTENANCE AND SAFETY INSTRUCTIONS

As illustrated in the figure above, the gap between the bottom of the magnet and the platform significantly impacts the pull force of the shuttering magnet. Therefore, we recommend that customers maintain the shuttering magnet by following these guidelines. Before using the precast concrete magnet, ensure that the bottom of the magnet and the platform are clean and level. If there is any debris on the bottom of the shuttering magnet, it can be removed using a stainless steel scraper (note that iron scrapers will be attracted to the magnet and cannot be used). For more stubborn substances, such as concrete, a polisher can be employed. Attach the wire polishing disc to the polisher, as demonstrated in the figure below, to effectively polish the bottom of the shuttering magnet.

It is not difficult to thoroughly clean the magnetic surface of a shuttering magnet. In most cases, we recommend using a stainless steel knife to scrape off the concrete residue. The stainless steel knife is not attracted to the magnet, which allows for easy removal of debris from the magnetic surface. Alternatively, you can purchase a popular shuttering magnet cleaning machine available on the market. Simply place the precast concrete magnet in the groove of the cleaning machine, cover it with the lid, and perform a few push-and-pull movements to clean the magnet effectively. When scraping off concrete residue, it is advisable to wear protective gloves to safeguard your fingers.

The magnetic block is constructed by stacking metal strips and magnets; however, rust may develop after prolonged use. While physical polishing and grinding can effectively remove rust, using a rust remover is a more scientific approach that offers better protection for the magnetic block. It is recommended to use WD-40 rust remover for this purpose. To apply, submerge the magnetic block in a container filled with WD-40 rust remover, wait for 2 minutes, and then retrieve the magnetic block. You will notice that the rust has been largely eliminated. Alternatively, you can purchase bottled rust remover. Simply aim the spray nozzle at the rusted area and spray. After allowing it to sit for a few minutes, wipe the rusted area with a towel to remove the rust. During this process, please exercise caution to avoid splashes of rust remover into your eyes or nose, and maintain a safe distance from the nozzle.