

SE-SM 1100
Rolling door opener



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Thank you for your purchasing SE-SM 1100 series industrial rolling-door opener.

▲ To ensure the user's personal and property safety and the product's normal service life, please read the Instruction carefully before installing and using the product, and comply with the safety rules and tips for installation and operation.

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1 Precautions for safety

- ⚠** Since incorrect installation will raise risk, the installation, commissioning and repair & maintenance of door opener must be performed by trained professionals;
- ⚠** All operations must comply with related national or regional laws and regulations and relevant security regulations, and any operation in violation of related national security provisions or the specification in this Instruction is not allowed;
- ⚠** It is strictly prohibited to install the door opener in the environment with flammable and explosive medium;
- ⚠** Only the qualified supporting device can be selected, the installation of electrical wiring must be conducted in strict line with construction standards and electrical standards;
- ⚠** Please select the door opener according to the product specification and technical parameters, and the applications beyond defined range will raise risks;
- ⚠** Door installation structure shall meet corresponding standards in strength and stability and ensure the flexible parts can move freely, the door operation should not be blocked before the actual installation;
- ⚠** It is strongly recommended to install safety protection device (including pressure-sensitive and photoelectric-sensor clamp-proof protection device, door falling protection device) ;
- ⚠** Make sure it is intact before the installation;
- ⚠** Voltage and frequency of power supply should meet the parameters of door opener, to make sure the drive and control box can be reliably earthed;
- ⚠** No person or object is allowed to pass under the running door body;
- ⚠** Never pull the manual-operating zipper when the door opener is electrically running, otherwise, it will damage the parts and cause injuries;
- ⚠** Controller (including the operating buttons and switches) must be fixed on dry wall 1.5 meters above the ground where door body operation is visible, the door opener operators should observe the door's and door opener's running in sight, preventing accidents;
- ⚠** Remote control transmitter, manual chain must be hung on the wall 1.5 meters above the ground; the remote control transmitter and manual operation devices should keep away from children, preventing children's mis-operation; never operate the remote control transmitter to run the door in invisible range;
- ⚠** In case of any failure, press the red emergency button on the controller, and invite professional for treatment ASAP;
- ⚠** The warning signs on the door opener shall be maintained;
- ⚠** Please properly keep this manual, for reference in installation, use, repair and maintenance.

2 Introduction of product

2.1 Usage and main function features

2.1.1 door opener can serve as industrial rolling door's drive. It can be widely installed on rolling doors and windows in buildings, factories, warehouses, shops, houses, garage and other industrial, commercial and residential places;

2.1.2 door opener with large output torque, safety and reliability(The door opener's power performance are shown in table 1), the continuous turns of output axis limit: 22 rpm, generally,the lifted height of door: > 8m.

2.1.3 The intelligent control with remote control function (see details in 3.2.2) easy to debugging and operation .

2.1.4 Adjustable mechanical limit is advantageous in reliability and anti-disturbance; it is equipped with 4 rotary limit switches to define the running space and allow dual limit protection. Additional 2 limit switches can be installed, for special function control.

2.1.5 The door opener has manual chain (SL3) mode; interlock protection is allowed when electric and manual operation modes are switched, and the door can be opened and closed manually in case of power failure.

2.1.6 The door opener's controller is provided with a group of jacks connected with safety protection device, for users to install safety devices such as photocell (infrared) protector, pressure-sensitive protective switch or door-in-door protective switch.

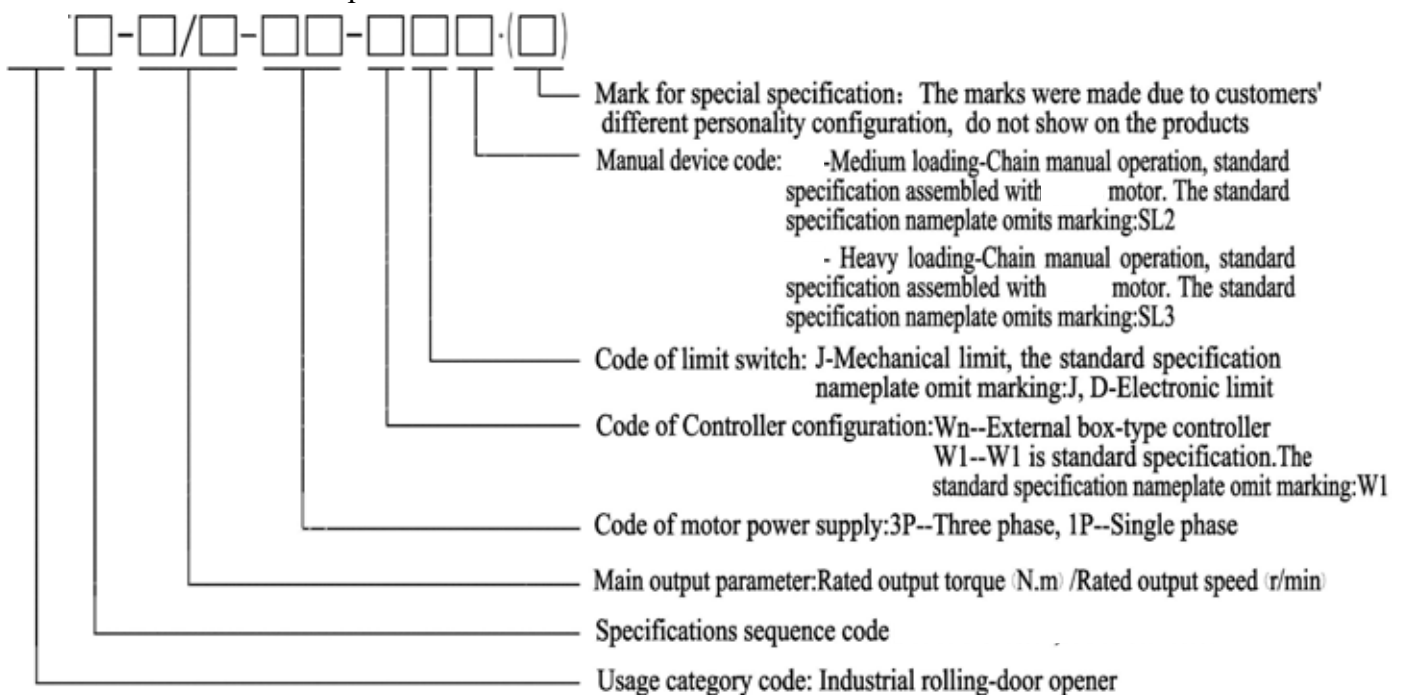
2.1.7 The overheating protection device in the motor which can cut off the motor's power supply and start automatic protection when the motor's temperature rises to predetermined 130 °C.

2.1.8 The door opener's speed reducer holds worm-and-gear drive with high-quality lubricating oil, thus the opener is featured in reliable brake, stable transmission, small vibration, low noise, long service life and maintenance free.

2.1.9 The door opener can be installed in the left or right, allowing compact structure and convenient installation.

2.2 Product specifications and technical parameters

2.2.1 Identification of product model:



Example: industrial rolling-door opener, with 400 (380) V/50Hz three-phase power supply, output torque at 400N.m, output speed at 11 rpm, mechanical limit, external controller (first control function), and manual chain. It is a basic type machine.

Rated output torque	N.m	400
Static keeping torque	N.m	1400
Rated output speed	r/min	11
Rated operating voltage and frequency	V/Hz	400 /50
Motor output power	Kw	1.1
Rated current	A	3.2
Control voltage	VDC	12/24
S3 system: load cycle	%	40
S2 system: continuous running time	min	20
Allowed continuous rounds of output shaft	n	22
Insulation class		F
Protection grade	IP	54
Continuous sound pressure level	dB	<68
Environment temperature range	°C	-20~+55
Sleeve shaft's diameter	mm	φ 40
Individual weight	Kg	33

2.2.3 The drive's appearance and the installation dimension

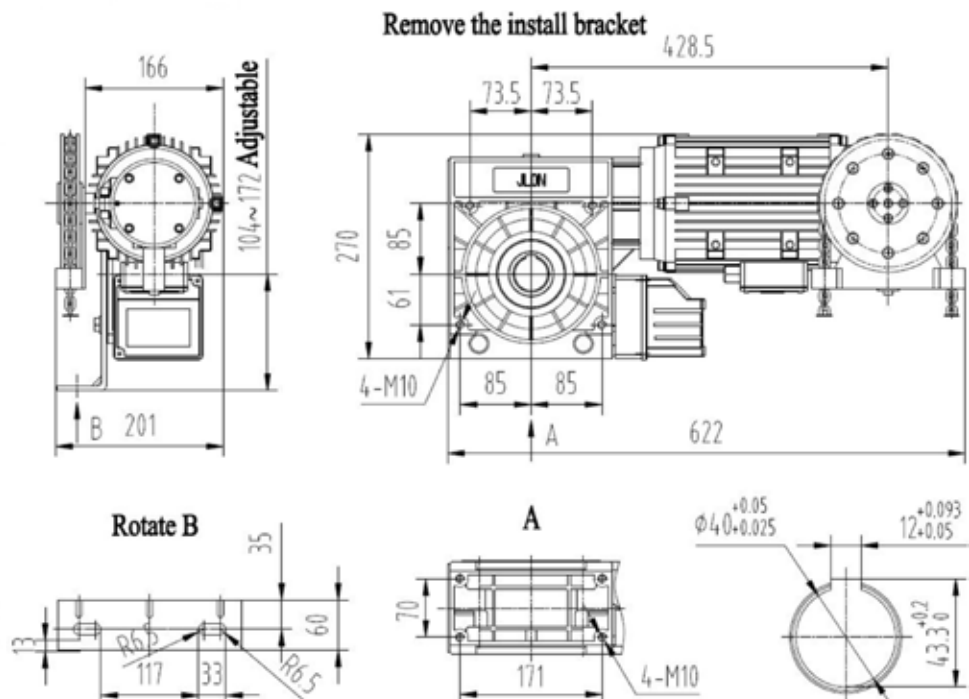


Fig. 1 The drive's appearance and the installation dimension of SE-SM 1100

2.2.4 The drive's structure

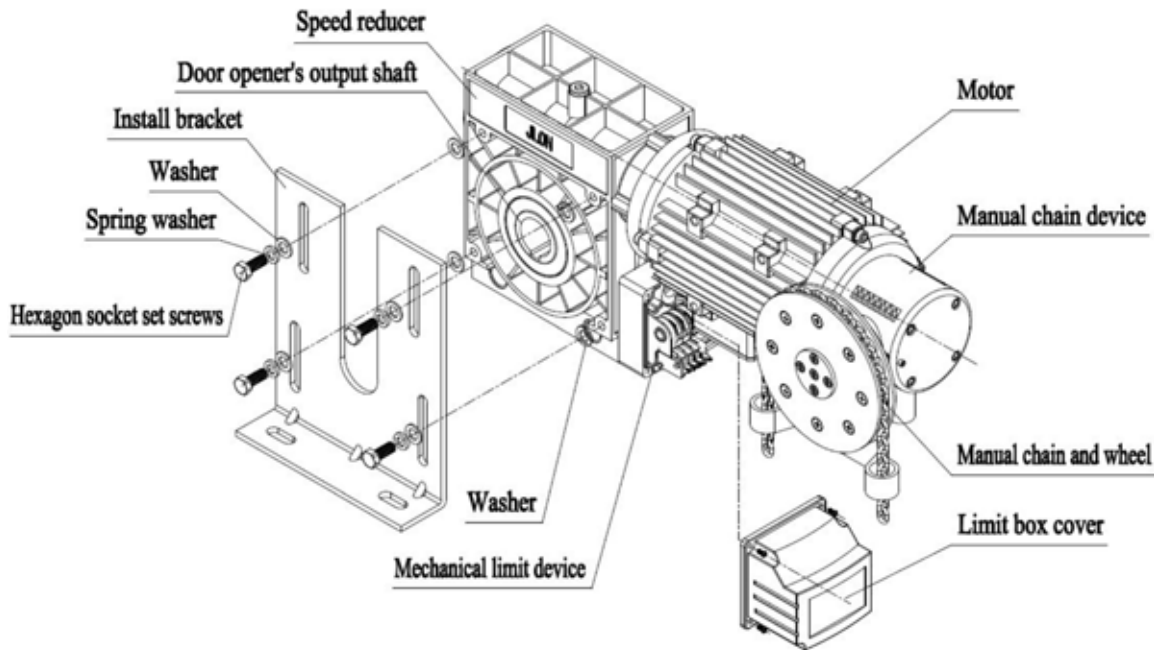


Fig. 2 Schematic diagram drive structure

3 Installation of product

3.1 Installation and connection of the drive:

⚠ Incorrect installation can cause hidden safety problems for door opener and shorten its service life.

Different installation technologies, materials, structures and environment conditions will lead to door systems' different balance, rigid and friction efficiency, followed by different operation qualities, and the original performance index and technical data such as the drive's temperature rise, continuous working time and service life will be affected to different extent. Therefore, the workers should realize adequate safety factor in each installation of door system.

3.1.1 Requirements for door installation:

3.1.1.1 The door slats and rolling drum should be concentric and horizontal, with deflection $\leq 1/400$; The slats should be flexible without blocking.

3.1.1.2 The door can run smoothly and flexibly in the guide rail, with good balance and stability.

3.1.1.3 The door, accessories and connecting parts should be intact, with reliable strength and stability but no deformation or damage.

3.1.1.4 Safety protection facilities should be installed according to practical requirement.

3.1.2 Calculation of rolling door weight:

Normally, the door weight allowed be calculated according to the following formula:

For the direct-driven allowed rolling door weight ----- $G \leq T \div R \times \eta$

For the chain-wheel indirect-driven allowed rolling door weight ----- $G \leq T \times i \div R \times \eta$

Remark:

G – allowed rolling door weight, unit: N;

T – drive's rated output torque, unit: N.m;

i – chain-wheel speed ratio in indirect driven system, $i = Z_2 \div Z_1$ (Z_2 : the teeth number of passive chain wheel; Z_1 : the teeth number of active chain wheel).

R – Radius of drum, unit: m;

η - the door operation efficiency; in good installation, generally $\eta = 0.9$

3.1.3 When this opener is used in industrial sectional door, spring balance door's maximum unbalance torque during operation should be $< 0.8 T$ (T - rated output torque) is advisable.

3.1.4 Side installation and connection of "direct-drive":

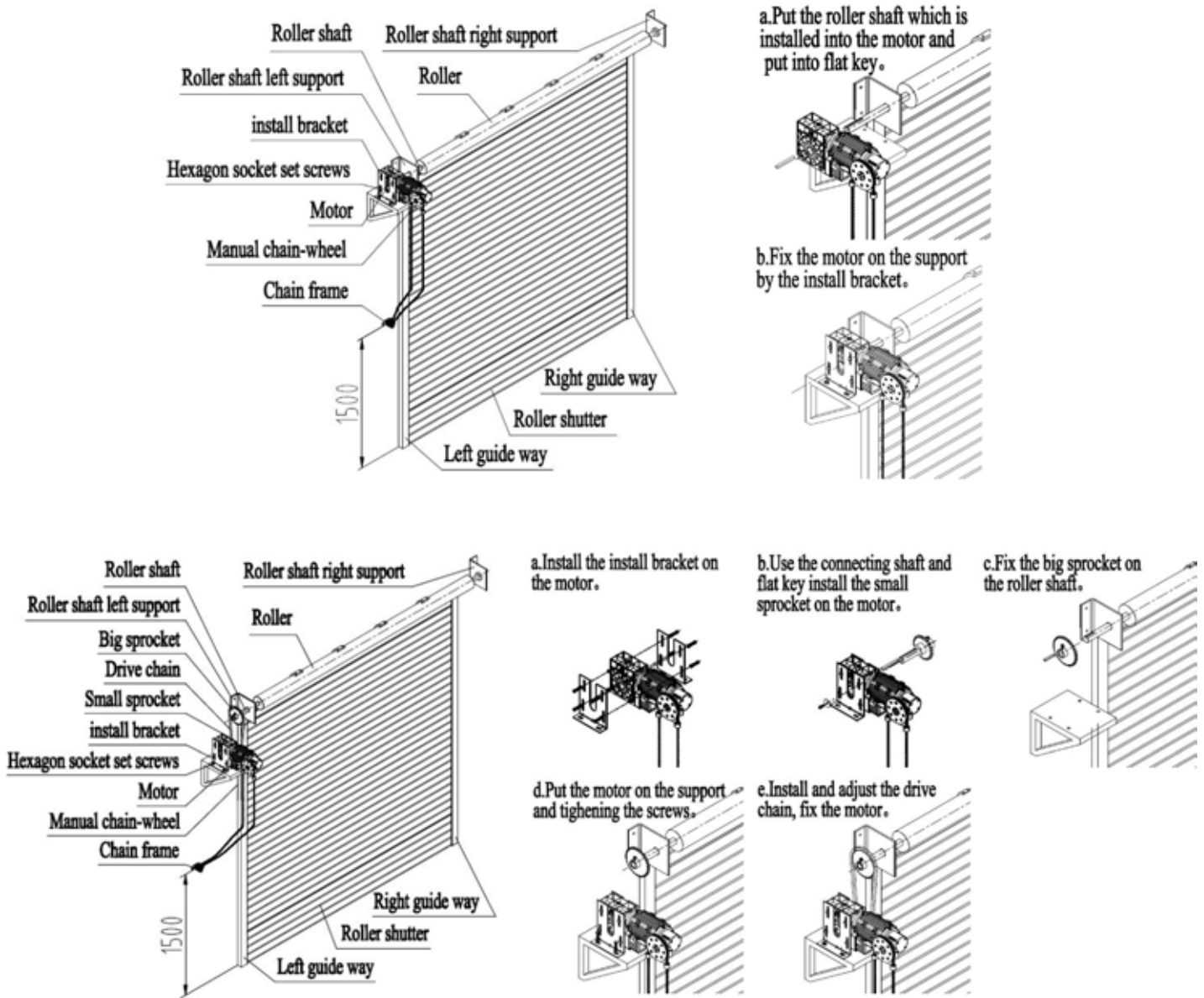


Fig. 4 Installation diagram drive's "indirect-chain-drive"

Our series sectional door opener, our factory standard is "direct drive transmission" type; If users would like to expand lifting force, can be changed to increase the speed ratio of "indirect chain drive transmission" type, so that the lifting force increase and the decline of lead limit and rotate speed is inversely proportional.

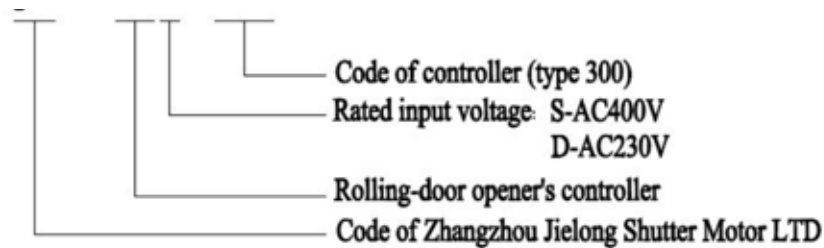
The parts and accessories of "The chain indirect drive transmission", users can design and make by themselves, and our company also can design and make them for you.

3.2 Functions, installation and wiring of controller

- ⚠ Check and confirm the power supply is qualified for door opener;
- ⚠ The electrical device of upper reaches should be equipped with electric leakage breaker and over-current circuit breaker;
- ⚠ Make sure that the drive and the control box can be reliably grounded;
- ⚠ Cut off all of the power supply circuits when getting close to terminals;

- ⚠ **Never pull up the motor's wire;**
- ⚠ **Ensure no sharp edges that can damage cables;**
- ⚠ **Controller (including the operating buttons and switches) must be fixed on dry wall 1.5 meters above the ground where door operation is visible (Fig. 8), to prevent children's mis-operation.**

3.2.1 drive's controller model:



3.2.2 JL-WKS 300 controller's functions:

3.2.2.1 The "upward", "stop", "downward" and "emergency stop" buttons on control panel control the drive for corresponding operation status; control logic is set according to the principle of "emergency stop" action priority, after "emergency stop" is started, the state is self locked, while other buttons fail to work; the "emergency stop" state can be lifted when the button is switched according to the "emergency stop" button's arrow direction (as is shown in Fig. 6).

3.2.2.2 The "upward", "stop", "downward" and "emergency stop" buttons on control circuit board to control the drive's operation; the "button short-circuit jumper" and control panel's buttons can be switched, for installation and debugging (Fig. 7 and Fig. 9).

3.2.2.3 Control circuit board can define the drive's operation status of " Deadman", "linkage" "half-linkage (between upper and lower limit, the same below)", "full-linkage" at "upward" or "downward" mode (Fig. 7 and Fig. 12).

3.2.2.4 "Delayed automatic closing" function allows 9 grades, respectively 5, 10, 20, 25, 50, 100, 120, 180, 240 sec. Upon the termination of due delay time, the drive will automatically run to lower limit and stop; when "Delayed automatic closing" function is turned off, the "door closing" action will be manually implemented via "downstream" button (Fig. 7 and Fig. 13).

3.2.2.5 When receiving the drive's running limit on/off signals, control the drive and stop the running respectively, in the upper and lower limit switches' action (Fig. 7 and Fig. 8).

3.2.2.6 When receiving the drive's manual and electric interlocking protection on/off signals, manually operating the drive for "upward" and "downward" movement, manual and electric interlocking protection switch in the loop falls into short-circuit, and the drive can not be electrically operated; the circuit can be controlled in no manual operation state, and the drive can be electrically operated (Fig. 7 and Fig. 8).

3.2.2.7 When the drive is electrically controlled, direct-acting tubular electromagnet controlling manual and electric interlocking, shielding manual operation; when electrical operation stops, tubular electromagnet is power off, and the drive can be manually operated (Fig. 7 and Fig. 8).

3.2.2.8 When receiving the motor's thermal protection switch signals, and the thermal protection switch falls into short-circuit, electrical operation stops; when thermal protection is restored, electrical operation can recover by pressing switches (Fig. 7 and Fig. 8).

3.2.2.9 Can connect and respectively receive the external plug-in normally closed type switch(including anti crushing protection, door edge punching bottom protection, door-in-door protection, wire rope breaking protection, torsion spring break protection, etc.)signals, control drive switching circuit state to stop running(Fig.7, Fig.8 and Fig.10).

3.2.2.10 Can connect and respectively receive the external 12VDC or 24VDC normally open type photoelectric sensor (such as infrared) safety protection switch signals, the drive running should be stopped, then immediately ascend to “upper limit” or preset “half-linkage” position and then stop(Fig.7, Fig.18 and Fig.11).

3.2.2.11 Circuit board is provided with remote control function, to receive remote control transmitter signals and accordingly control the drive for "upward", "stop", "downward" status, with necessary principle of panel switch’s priority in remote control (Fig. 7 and Fig. 14).

3.2.2.12 Three-phase power supply’s phase protection and alarm functions are provided.

3.2.2.13 Running state indicator lamp is provided (Fig. 7 and 3.2.5).

3.2.3 Installation of control box

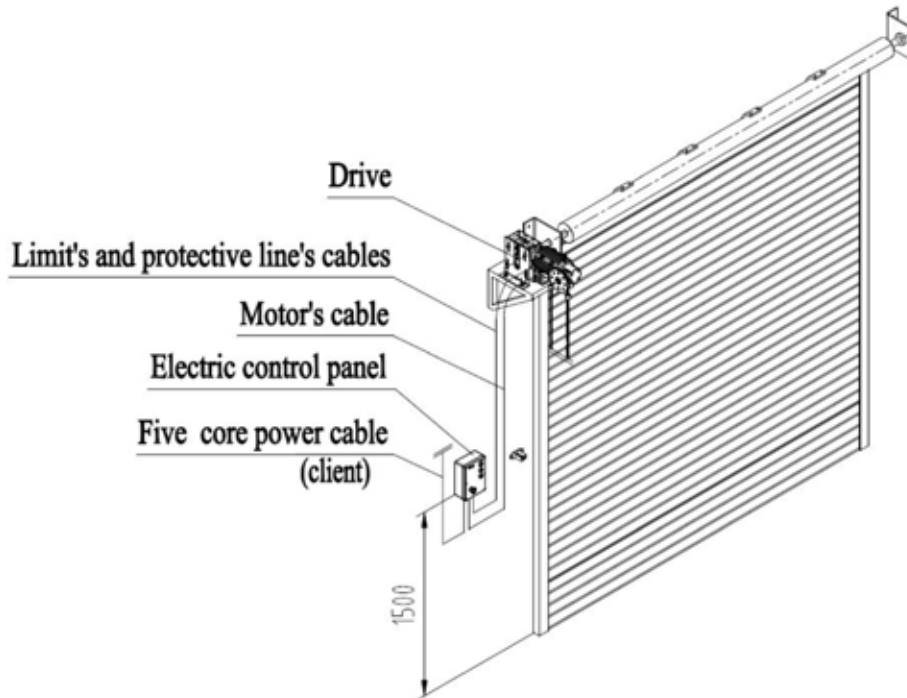


Fig. 5 Schematic diagram for installation control box

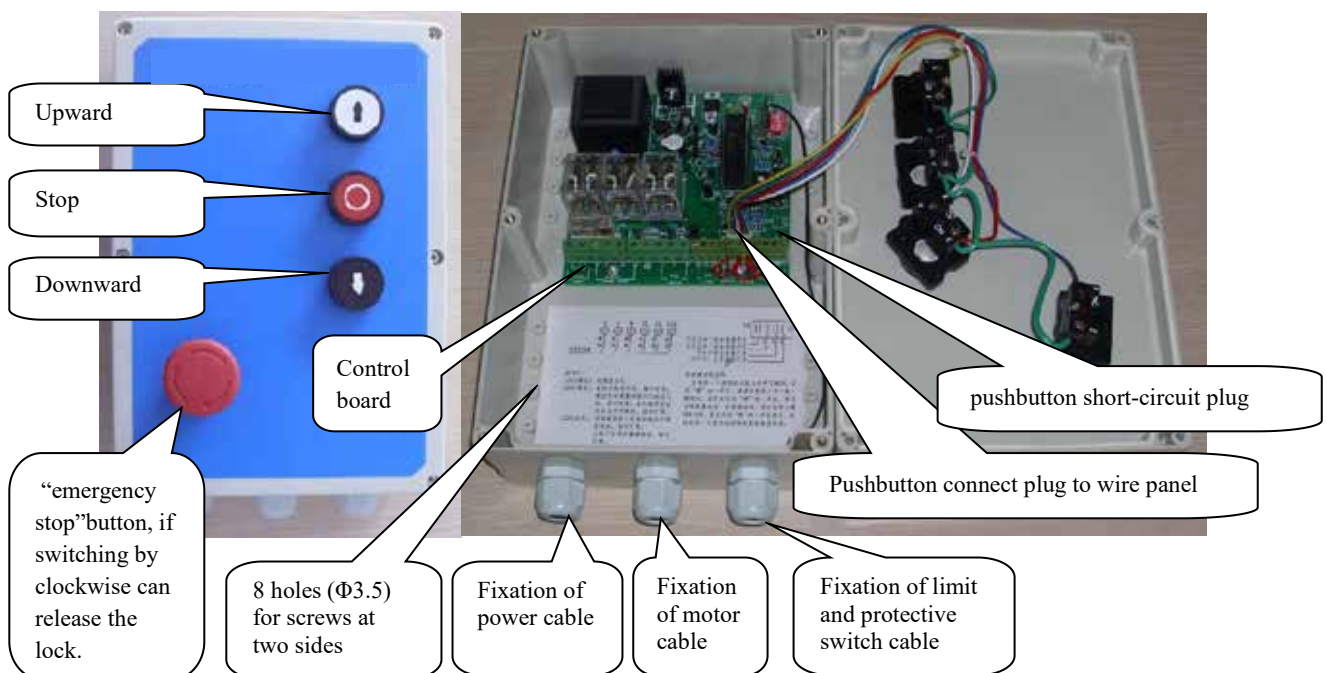


Fig. 6 Schematic diagram for control box structure 's

3.2.4 Electrical wires on control box circuit board and setting related functions

3.2.4.1 Main function components on three-phase electrical controller circuit board:

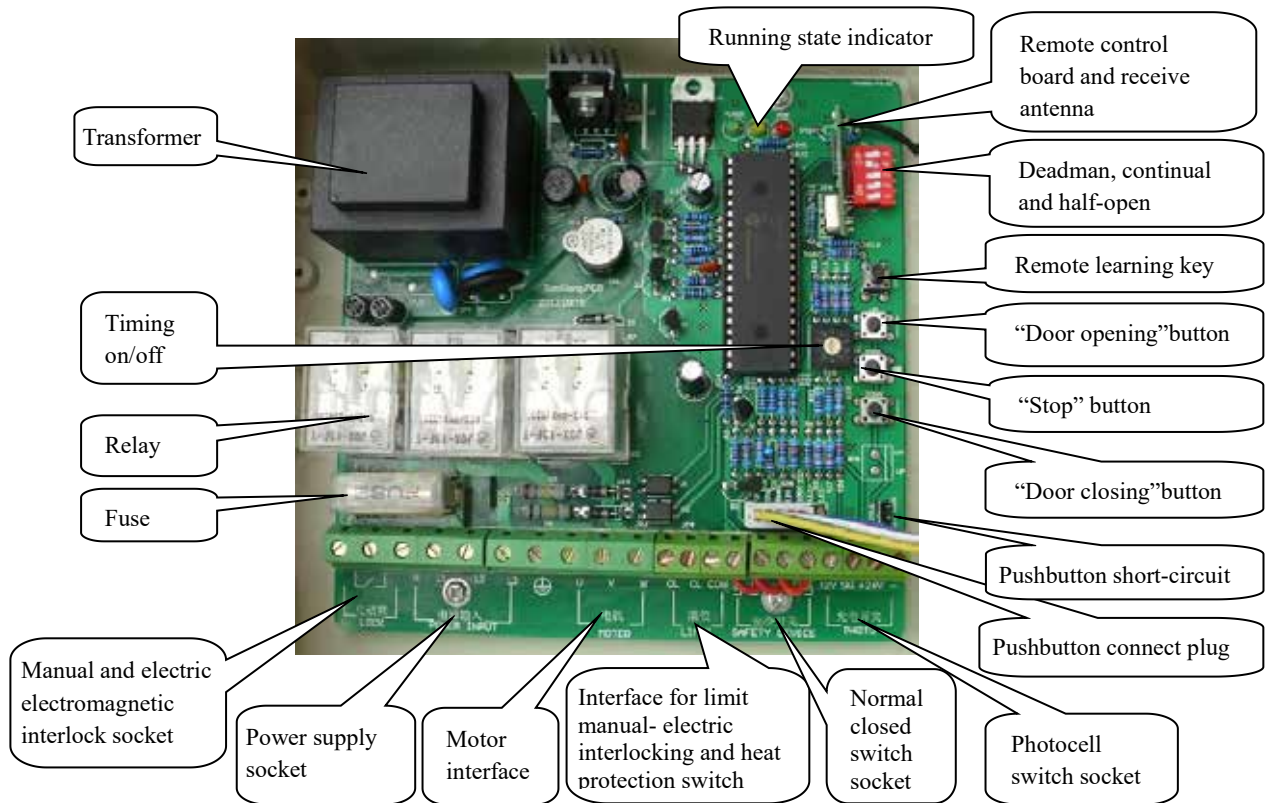


Fig. 7 Map of layout of main function components on three-phase electrical controller's circuit board

3.2.4.2 Wiring of three-phase electrical controllers circuit board:

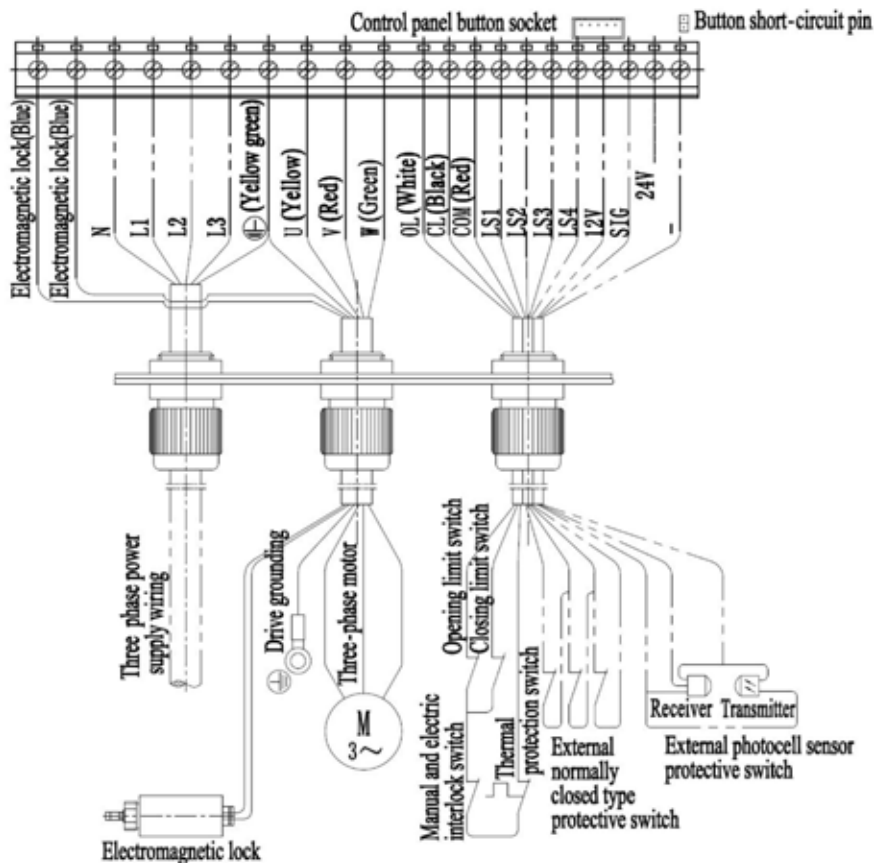
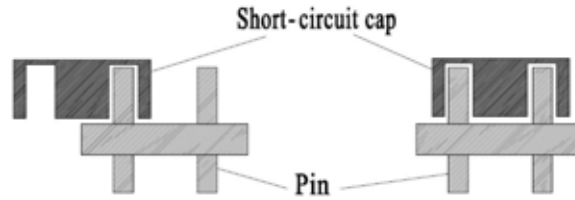


Fig. 8 Diagram of wiring of three-phase electrical controller's circuit board

Instruction of wiring on controller circuit board:

①. Button short-circuit pin (JP10): when the controller is debugged by the panel’s buttons, the wiring should be conducted according to the way shown in Fig. 9a; when controller panel is removed, and the controller is debugged by the circuit board’s buttons, the wiring should be conducted according to the way shown in Fig. 9b.



a: Wiring by controller panel’s buttons b: Wiring by circuit board’s buttons

Fig. 9 Diagram of short-circuit wiring on emergency stop button on three-phase electrical controller circuit board

②. in parallel The open limit switch (for door opening), and close limit switch (for door closing) was in parallel, they in series with the electric / manual interlock switch and over heat protection switch, which have been wired before the door opener is delivered from the factory, When connect the wire, please plug the 3 outgoing line’s termina into the terminal shown in Fig. 7 and Fig. 8.

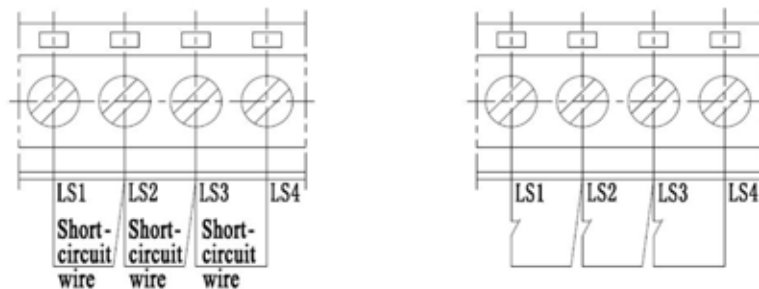
Electric / manual interlock switch is located in the manual device’s cover, when manual operation state is started, the interlock switch is touched, LED 2 (yellow) lights, and electric operation buttons become invalid;

When the motor is overheated, thermal protection switch is off, LED2 (yellow) lights, the motor stops working, and it will automatically recover after it is cool.

③. When the door opener delivered out from factory, the motor, ground connection and electric/ manual interlock total 3 group connecting line’s main motor terminal has been connected; when the customer installation & wiring in the control box, should separately connecting the motor, ground connection and electric/ manual interlock connection’s outgoing line’s terminal into the terminal shown in Fig.7 and Fig.8.

④. Only when the normally closed type safety switch interface LS1 ~ LS4 terminals are on, can the controller work; when door openers are delivered from factory, LS1 ~ LS4 terminals remain in short-circuit state (Fig. 10a).

When the door needs security switch device (such as pressure sensor and door-in-door protection switch), please remove the wiring on corresponding terminals and connect security switch line (Fig. 10b).



a: Short-circuit state when door opener is delivered from factory

b: Connection way of external safety switch

Fig. 10 Diagram for safety switch wiring on three-phase electrical controller circuit board

⑤. Wiring of photoelectric safety protection switch: circuit board provides two power supply interfaces (DC12V and DC24V) which can be selected by users according to the working voltage of photoelectric switch (such as the wiring at DC12V shown in Fig. 11); the SIG terminal is photoelectric switch's signal entrance, when the door body is falling, if the interface receives DC voltage signal (12V or 24V), the door body immediately stops falling, then immediately lifts upward to the upper limit.

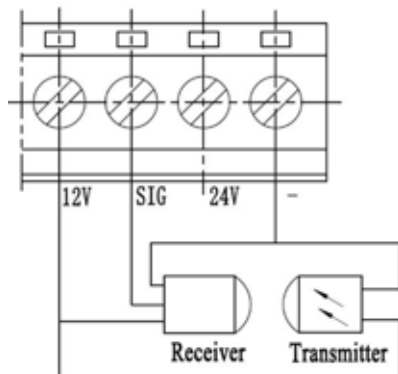


Fig. 11 Diagram for wiring of photoelectric switch on three-phase electrical controller's circuit board

3.2.4.3 Setting of Deadman, linkage and half-open functions:

Function selection (Fig. 12):

- 1) Dial switch SW1 and SW2 respectively control the door fall and rise in Deadman or linkage manner, when the dial locates in 1 or 2, linkage program starts; when dials is "ON", Deadman program starts.
- 2) Dial switch SW3 can set any height of half-opened door: when the doors needs setting, firstly close the door to the lower limit, then dial to "ON", then press "upward" button, and press "stop" button when the door rises to the required height, and finally dial back to "3" position, so that the door's half-opened height is well set.
- 3) Dial switch SW4 controls the door's half-open or fully-open state. When it is dialed to "4" position, fully-open program starts; when it is dialed to "ON" position, half-open program starts (following the preset program).

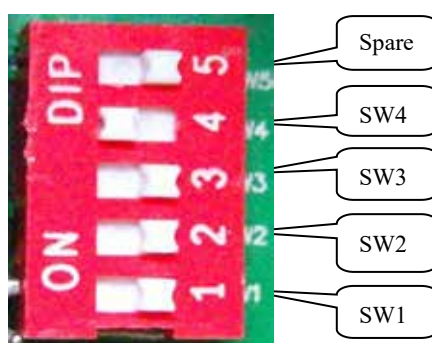


Fig. 12 Diagram of switches for three-phase electrical controller circuit board's Deadman, linkage and half-open functions

3.2.4.4 Setting of timing closing

Function selection (Fig. 13):

When the arrow on timing closing switch points at "0", timing closing function is disabled; when the arrow points at any figure in 1 ~ 9, timing closing function starts. "1 - 9" respectively

represent the timing for 5, 10, 20, 25, 50, 100, 120, 180, 240 seconds.



Fig. 13 Diagram of switch for timing closing function on three-phase electrical controller circuit board

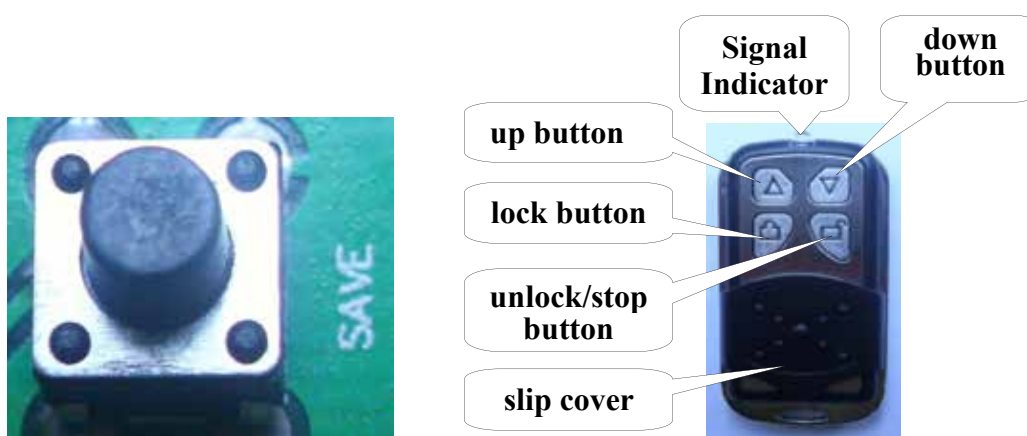
3.2.4.5 Setting of remote control function:

Function selection (Fig. 14):

1. Remote control code learning: Match the codes on remote control transmitter with those on remote learning key of the drive's control circuit board. Firstly, press the control circuit board's learning key, after the tick sound, press any key on the transmitter twice, then after the tick sound, the code is successfully matched. This remote controller can be equipped with up to 20 transmitters.

2. Remote password clear: long press the learning key about 9 seconds, when you hear "di di..." Release the button after a loud sirens, all the emitters which code success with the host control system prior, are losing control function of the host now .

We suggest user before the formal use, remove the original password first, and set a new password , it is safer.



a: Circuit board's remote learning key b: remote control transmitter

Fig. 14 Diagram for setting of three-phase electrical controller circuit board's remote control functions

3.2.5 Indicator's functions:

The indicator is installed on the control box's circuit board (as is shown in Fig. 7):

LED1 (green): power supply indicator lights;

LED2 (yellow): When power supply is available, and the door body is manually operated, the indicator lights;

When the external safety switch is open, the indicator lights;

When the motor's overheating protection device operates, the indicator lights.

LED3 (red): When control panel's emergency stop button is locked, the indicator lights;

If photoelectric switch's light is blocked, the indicator lights.

4 Debugging

4.1 Manual operation

⚠ When the door body normally runs at power-on state, never start manual device such as manual chain, otherwise the machine parts will be damaged and personal injury may occur.

Operation of heavy loading-chain (SL3) manual device:

4.1.1 In normal condition, sprocket and power shaft separate from each other, and the door opener runs according to electric operation keys' instruction.

4.1.2 In case of power outage or other faults, the manual device including manual chain can control the door opening and closing. Pull the manual chain directly, sprocket rotation will initially complete engagement of clutch mechanism between chain-wheel shaft and drive shaft, and then drive the rotation of drive shaft for door opening and closing; clutch mechanism will activate the electric / manual interlocking protection system in the engagement process, and the electric operation keys become invalid. When the chain is released (for weak tension), clutch mechanism automatically separates, the electric operation mode recovers.

4.2 Electric test-run

⚠ After the door opener is well installed, the door must be opened and closed by manually operating with the crank and chain, check and confirm no error before the door opener is powered on.

4.2.1 Confirmation of motor's turning direction

After installation of door opener, the motor's turning direction should be confirmed before commissioning of electric operation, according to the following procedures:

- A. Set the up and down switch on Deadman mode (Switch the SW1 and SW2 of Deadman and Continual and Half-open switch on the PCB board on the "ON" position);
- B. Loosen all of the fastening screws on rotary cam shown in Fig. 15a;
- C. Press the control box's "ON" button or switch on the open button of PCB board, then observe and check if the motor's running direction is consistent with the instruction for upward. If they are consistent with each other, the confirmation is completed.

4.2.2 If their directions are opposite, exchange the U and V wires in X2 terminal of PCB board, and then reconfirm it.

Note: Firstly cut off the power supply before the operation of phase exchange.

4.2.3 After confirmation of motor turning direction, electric debugging can be conducted.

4.3 Limit adjustment

4.3.1 When adjust the limit, Set the opening (door up) and closing (door down) switch as Deadman mode.

4.3.2 Before the adjustment, firstly loosen all of the fastening screws on the rotating cam on limit shown in Figure 15b.

The limit switch mechanism for door opening and closing is installed in limiter box below of door opener's motor (Figure 15a): the two yellow rotating cams on the left are limit device to control door opening, and the two white rotating cams on the right are limit device to control door closing; Fig. 15b shows the position of fastening screws and adjusting screws at the rotating cam.

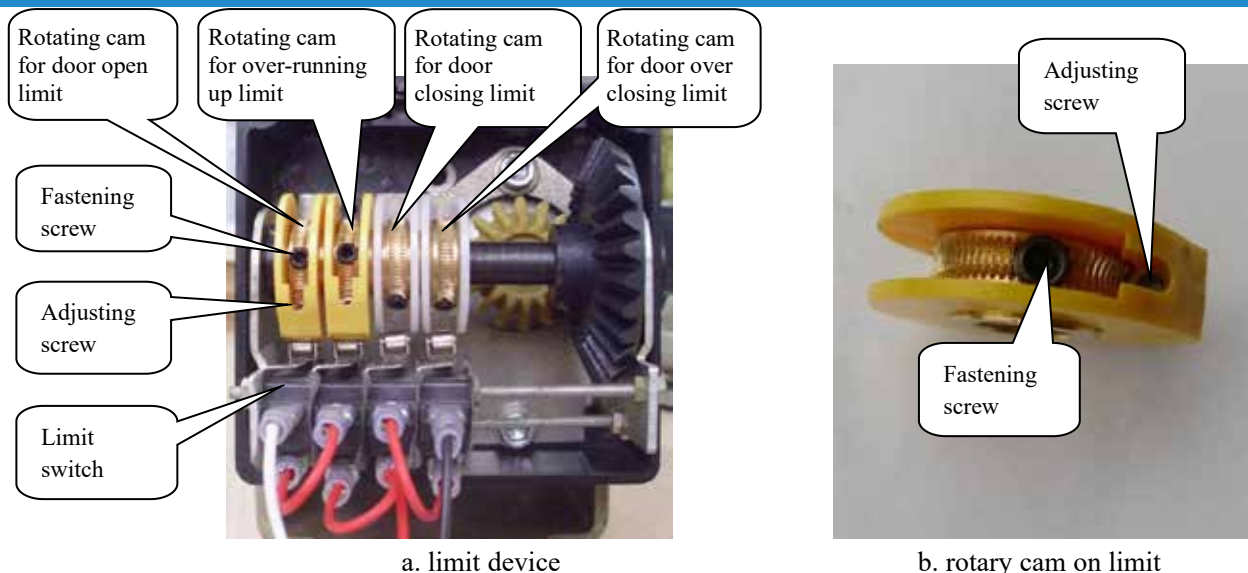


Fig. 15 Schema of drive limit system

4.3.3 Adjustment of door closing limit:

4.3.3.1 Close the door by Deadman mode until the door closing position of target.

4.3.3.2 According to the direction of door down, rotate the two white door closing limit's rotating cams shown in right of Fig. 15a to get close to micro-switch contact, then tighten the fastening screws to fix the rotating cams by hexagonal L-shaped wrench ($\leq 2.5\text{mm}$) (Fig. 15b). (Note: before tightening the fastening screws, adjust the fastening screws to the best locking position by adjusting screw shown in 15b);

4.3.3.3 Turning the adjusting screw shown in Fig. 15b by inner hexagonal L-shaped wrench (2.5mm) to enable the rotating cam on door closing limit to press corresponding limit switch, until the microswitch make a "Tick" sound;

4.3.3.4 With Deadman manner, lift the door for some distance, and then close the door in the same manner, for check of "door closing limit";

4.3.3.5 Repeat steps 4.3.1.3 and 4.3.1.4, and repeatedly adjust" rotating cams on door closing limit" by adjusting screws to the best position for door closing;

4.3.3.6 The adjustment method and position setting of door closing limit for bottom crush prevention are the same as those of "door closing limit".

4.3.4 Adjustment of door opening limit

Open the door by deadman mode until the door opening position of target. the "door opening limit" is set by adjusting the above two yellow rotating cams on door opening limit shown in left of Fig. 15a, in the same method as that for setting door closing limit (at opposite direction); "the door opening limit" and "door opening limit for over running prevention" are adjusted to the same position.

4.4 Inspection

Please carefully check the product after installation before the operator running:

4.4.1 Check to find if the installation is complete;

4.4.2 Check to find whether the fastening part is fixed;

4.4.3 Check to ensure no block in any flexible part;

4.4.4 Check to find whether the switch's logic function is right;

4.4.5 Check to ensure the emergency stop button and unlock function is right;

4.4.6 Check to find whether all of the security devices meet corresponding requirements;

5 Operation and notice

5.1 Notice

5.1.1 When closing the door by door opener, make sure there is no obstacle under the door; when door opener is opening or closing the door, no one can pass through the door.

5.1.2 Never operate remote control transmitter for door operation when door is invisible.

5.1.3 The remote control transmitter and manual chain must be hung on the wall 1.5 meters above the ground, ensure that the remote control transmitter and manual operation device remain away from children, to prevent children's mis-operation.

5.1.4 Never pull the manual chain when the door opener runs at power-on state, otherwise, the parts will be damaged and personal injuries may occur;

5.1.5 When open the door by the manual chain etc., never exceed the limit height, to avoid the over-running by electric operation.

5.1.6 If the power leads damaged, should be replaced by professionals to avoid danger.

5.1.7 For the door opener used in the environment with temperature below -20 °C or above +55 °C, special lubricating oil that can meet the environment should be utilized.

5.2 Treatment of emergency

▲ When door opener failure and abnormal operation occur, press the red emergency stop button on the button box to immediately stop the door opener, then cut off the power supply and invite professional for troubleshooting.

6 Analysis and troubleshooting of common faults

Table 2 Phenomenon of common troubleshooting

No	Phenomenon	Causes	Method for troubleshooting	Reference
1	The door opener fails to work at power-on state.	No power supply. Fuse is melted. The connecting cable may be broken, loose or fallen-off. Manual protection micro-switch contact does not return. Heat protection device acts.	Connecting the power supply. Replacing the fuse. Check and connect the connecting line. Positively and reversely pulling the manual chain slightly to reset micro-switch's contact. Waiting for 20 minutes to restart the door opener when the heat protection switch is reset;	
2	The limit can not work.	Limit cam is not fastened. Limit switch is broken.	Well fastening the limit cam. Replacing the limit switch	
3	Door opening and door closing end at wrong positions.	Limit system is wrongly set.	Readjusting the limit	
4	Door operation is against with operation button's command.	Motor wiring phase sequence is wrong.	Exchanging the U and L connecting lines at motor terminals on circuit board	
5	The door opener can not stop at upper and lower limits.	Phase sequence is contrary to the right sequence.	Adjusting and changing the sequence	
6	Abnormal sound occurs in door opener's operation process.	Over loading or improperly installation of rolling drum and door, or over power dissipation	Reducing the load or adjust the installation of rolling drum and to reduce the door weight.	

7 Repair & maintenance

⚠ Without regular inspection, repair and maintenance, the door opener will have hidden safety problems and shorter service life.

7.1 In normal use, the door opener should be checked once every 6 months.

7.2 Check to find if the driven door and all of its components are balance, flexible, loose or blocked, and remove any abnormality.

7.3 Check to ensure the fastening parts are reliably fastened.

7.4 Check and replace the damaged stressing components if there is any.

7.5 Check the operating states of flexible parts and add lubricating oil.

7.6 Check and replace the worn wire and cable if there is any. .

7.7 Check and ensure the controller's effective functions (especially the safety protection functions) and reliable action.

7.8 In the process of repair & maintenance, the door should be generally stopped at the close limit, without power supply in door opener.

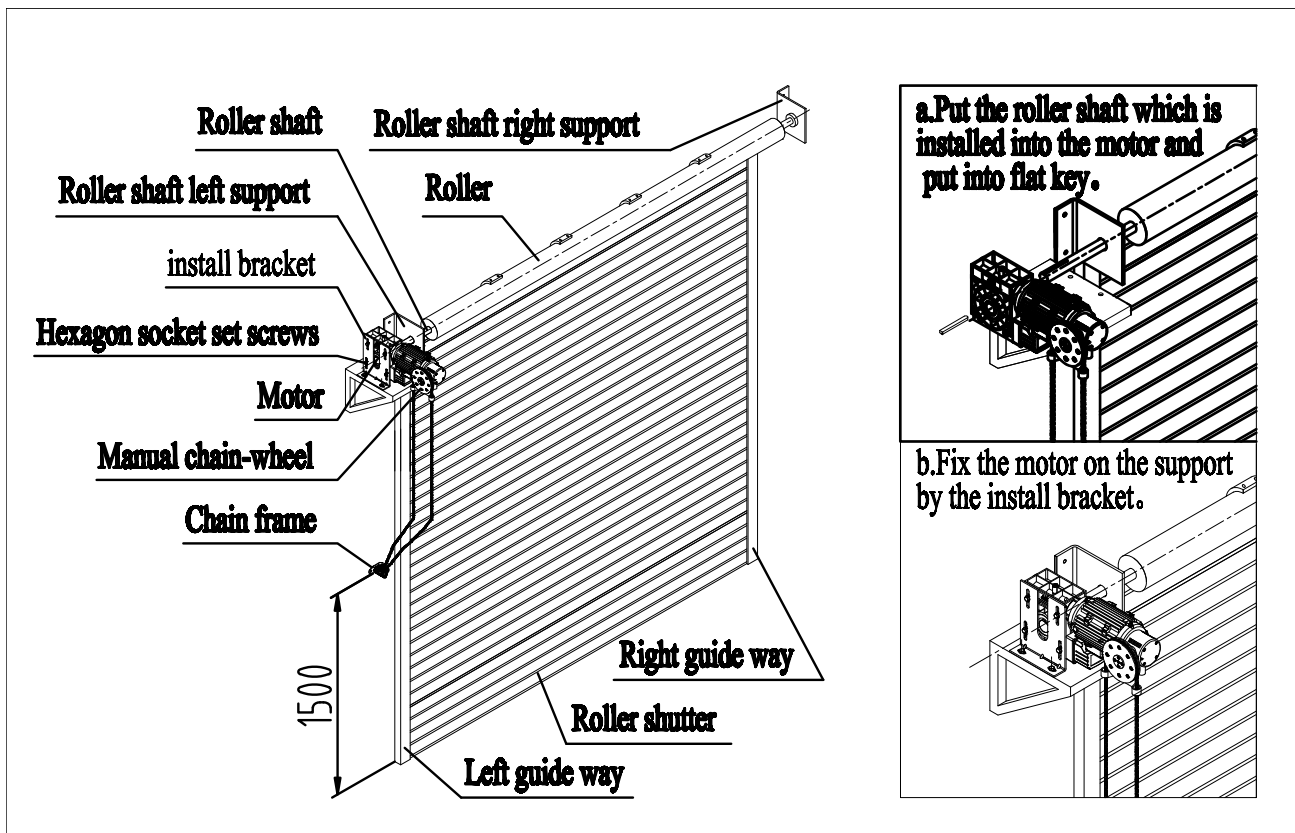
The company reserves the right of design, change or modification, without prior notice.

Lifting Capacity & Installation

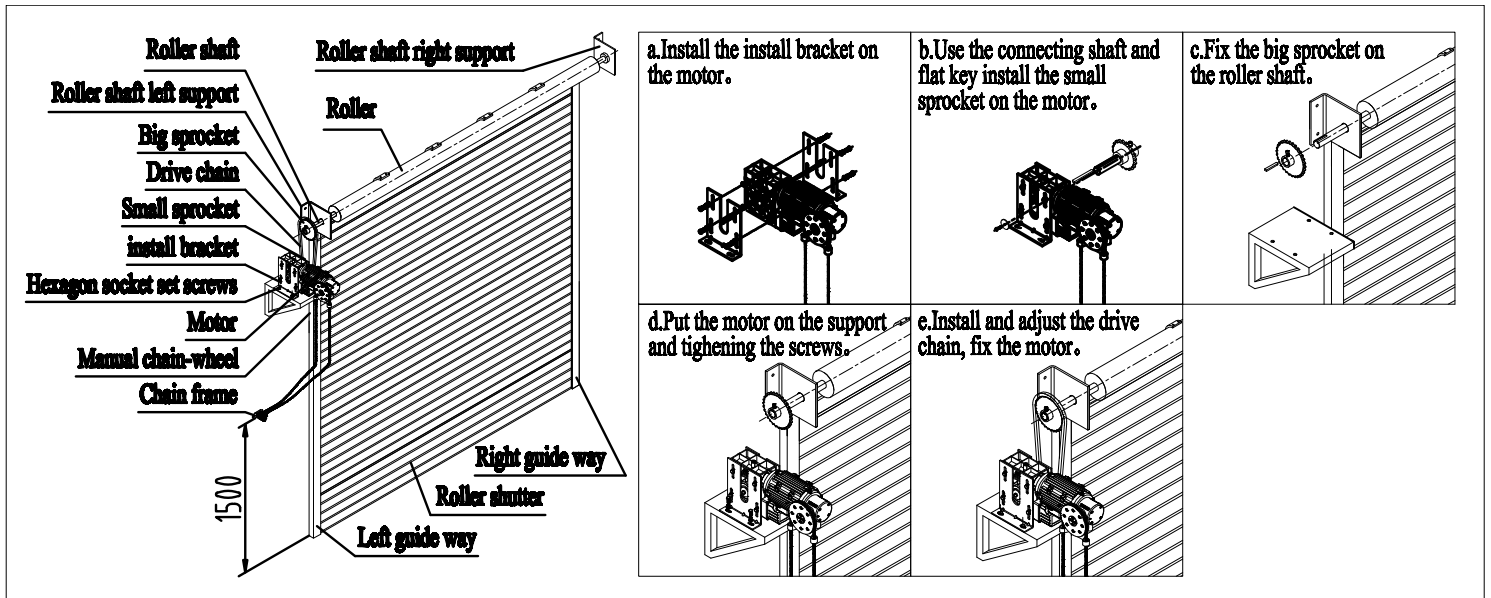
LIFTING CAPACITY For rolling shutter doors

Item No.	Driving type	Sprocket speed ratio	Output torque Nm	Output speed rpm	Speed of range limit	Tube Dia (mm)															
						φ 101.6		φ 114		φ 127		φ 140		φ 165		φ 193.7		φ 219		φ 245	
						Lifting weight kgf	Max. Lifting height (m)	Lifting weight kgf	Max. Lifting height (m)	Lifting weight kgf	Max. Lifting height (m)	Lifting weight kgf	Max. Lifting height (m)	Lifting weight kgf	Max. Lifting height (m)	Lifting weight kgf	Max. Lifting height (m)	Lifting weight kgf	Max. Lifting height (m)	Lifting weight kgf	Max. Lifting height (m)
SE-SM 1100	Direct drive		400	11	22	723.12	27.3	644.47	28	578.50	29	524.78	29.8	445.27	31.5	379.29	33.3	335.48	35	299.88	36.7
SE-SM 1100 +non-direct drive 1.5	non-direct drive	1.5:1	600	7.33	14.66	1084.69	13.3	966.70	13.9	867.75	14.4	787.17	15	667.90	16.1	568.94	17.3	503.21	18.5	449.81	19.6
SE-SM 1100 non-direct drive 2	non-direct drive	2:1	800	5.5	11	1446.25	8.2	1288.94	8.6	1157	9	1049.56	9.5	890.54	10.3	758.59	11.2	670.95	12.1	599.75	12.9
SE-SM 1100 +non-direct drive 2.5	non-direct drive	2.5:1	1000	4.4	8.8	1807.81	5.6	1611.17	6	1446.25	6.3	1311.95	6.6	1113.17	7.3	948.24	8	838.69	8.7	749.69	9.4

Installation Drive



Installation Non-Direct Drive





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