ROLLING SHUTTERS

Fire Rated / Non-Fire Rated

Fire shutters are used to provide compartmentalization within a building and as such, help prevent a fire from rapidly spreading to other parts of the building. In-addition to it, these shutters offer the required security and accessibility. This way, fire shutters allow people to evacuate safely and helps to make the work of the emergency services easier. Whilst conventional static barriers are permanently fixed in one place and non-operational (e.g. fire-walls, glass partitions, etc.), a fire shutter can actually be operated (whenever required) and will close automatically in the event of a fire.

AREAS OF APPLICATIONS

- Warehouse
- Industrial Facilities
- Garages
- Shopping Malls
- Airports
- Metros and Rail Terminals

KEY FEATURES

- Fabricated and Assembled in UAE
- Up to 240* Minutes Fire Integrity
- Tested to ANSI/UL 10B (or) BS 476 Part 22 Standard
- Sizes* upto 12 m (w) x 6.5 m (h) for 2 hours and 12 m (w) x 4.6 m (h) for 4 hours
- Electrically Operated with Emergency Manual Override Chain
- With End lock and optional Wind Lock Feature
- Superior Galvanized Steel Slats
- Option of Single / Double Skin
- Incorporates Heavy Duty Guide Channels
- Fusible Link / Fire Alarm Signal / Heat (or) Smoke Detector Activation / Delay Timer
- Fire alarm signal conversion panel with battery back up
- 3-way Push Button Control
- Finished Powder Coating at factory to match desired RAL color scheme
- Option of larger sizes with special assessment

VERTICAL COILING FIRE RATED ROLLER SHUTTER

Technical Data	NAFFCO's Vertical Coiling Fire Rated Roller Shutter
Fire Resistance	120 minutes
Operation	Vertical coiling; motorized and manual operation available
Fire Activation	Gravity fail safe. Connection to fire alarm signal, thermal fusible link and smoke/heat detector
Tested to	**UL10B**
Certified By	Underwriters Laboratories
Curtain Material	Single skin Galvanized steel with end locks and optional wind locks.
Side Guide	75mm deep/3 mm thick guides as applicable
Head box	From 500mm (height) x 450mm (depth) – ceiling or wall fixed
Max Sizes	Single Skin 120 minutes: 12m (w) x 5.5m (h) *Since we perform continuous R&D, contact us to explore larger sizes for your specific application*
Finish	Natural G.I steel or powder coated to NAFFCO's standard RAL colors. Non-standard RAL colors can be done upon request at an additional charge.

Shutter Curtain and Guides

SINGLE SKIN CURTAIN SLAT

The shutter curtain is made of 75mm pitch superior single skin Galvanized steel slats, with 1.2mm thickness. These slats are manufactured by a roll forming process and constructed of reinforced interlocking slat profiles. The edges of the slats are auto cut-off to (end) lock the axial movement of the interlocked curtains, providing maximum strength and integrity.
For external applications, the shutters can withstand a 40 km/h wind speed, with wind locks as optional reinforcement.

GUIDE RAILS

For exposed and face fixing applications, 'G' shaped guides made of heavy duty 75mm wide x 100mm deep x 3 mm thick Galvanized steel is used. For concealed guide application, 75mm wide x 75mm deep x 1.5mm thick 'U' shaped Galvanized steel guides are used.

BOTTOM BAR

The leading slat is roll formed from Galvanized steel with a thickness equivalent to that of the slat. Two 50mm x 50mm x 3.7mm thick Galvanized steel angle bars are bolted to the leading slat to form the bottom bar.

Drum Assembly

SHUTTER BOX

The shutter box is made out of two heavy duty steel endplates of thickness 4mm to 7mm according to the size of the shutter; joined together using five steel hollow sections of 50mm x 25mm, primer finished in black. Two 50mm x 50mm x 4.5mm thick steel angles with slotted fixing holes are welded with the end plates to fix the shutter box to the building structure.

BARREL

The barrel is made of a heavy duty seamless steel pipe, welded with axles of dia 35mm to dia 50mm according to the size of the shutter. This barrel is fixed to the right and left endplates with heavy duty sealed roller bearings.

BOX COVER

The shutter box covers are made out of 0.8mm thick Galvanized steel sheets, with the edges folded to provide rigidity.

Shutter Operation

MOTOR OPERATION

The motor is suitably sized with a fully enclosed design. The motor has a high starting torque, built-in gear box and a built-in thermal protector. The motor gearbox has a inbuilt centrifugal type speed governor that reduces the speed of the shutter during gravity descent. An 'emergency-release lever' shall be provided for emergency closing operation, which ensures that the shutter can descend by gravity at a rate which is maintained by the in-built speed governor. In case of power failure, an endless hand chain is provided for manual operation from the ground level. Adjustable limit switches are used to set the upper and lower limit for the travel of the curtain.

PUSH BUTTON CONTROL

Push button control with 'up', 'down' and 'stop' buttons are housed in a lockable push button box. The outer cover of the push button box is made of stainless steel. Weatherproof NEMA rated push button boxes can be provided as an option.

STANDARD ACTIVATION

1. Thermal Fusible Link
   All fire shutters are equipped with fusible link mechanism. Upon sensing a temperature of 70°c, the fusible link mechanism releases the brake of the motor and allows it to descend by gravity.
2. Fire Alarm Signal
   Where fire shutters are needed to be activated by fire alarm signal, a dual fusible link (electric solenoid releaser) is used which releases the brake of the motor, upon receipt of a 24V DC, 400mA fire alarm signal. A reset pull is provided to reapply the brake on the motor. **Note that a true gravity fail safe should ensure that even in the event of a total power failure, the shutter should descend at a controlled rate by gravity notwithstanding the presence of a battery back-up.**

OPTIONAL ACTIVATION AND SAFETY MECHANISMS

1. Connection to the heat / smoke detection systems provided by the Building Management System
2. Delay Timer
   On activation of the shutter through standard mechanisms, a delay timer closes the shutter in a two stage operation with preset limits and at pre-determined time period.
3. Fire Alarm Signal Conversion Panel
   A fire alarm signal conversion panel with a battery back-up converts a voltage free (0V) signal to the required 24V DC, 400mA, normally open signal.
4. Warning audio alarm and flashing lights
5. Remote control
6. Weatherproof NEMA rated push button box

M & E REQUIREMENTS

A. 1 phase, 230V, 50Hz, 13A / 3 phase, 415V, 50Hz, 20A power supply at shutter box location.
B. 24V DC, 400mA, normally open fire alarm signal at fire shutter's shutter box location. Where a voltage free fire alarm signal is used, a fire alarm signal conversion panel will be provided as needed. See optional activation mechanisms.

Support

SHOP DRAWINGS

Our standard drawings provide the details on the requirement of headroom, side room and fixing details. We also provide customized shop drawings to customers, on their request, after taking site measurements of the clear openings and studying the site conditions.

This process takes into consideration the factors that will affect the fixing of the shutters in the opening provided and to calculate whether there is enough headroom and side room for the shutters to be fixed

WARRANTY

We provide 1 year warranty on the entire product that we supply from the date of testing and commissioning after installation. We provide 10 years warranty for the steel used.

Installation Manual

Vertical Fire Rated Roller Shutters

NAFFCO FZCO
Jebel Ali Free Zone, Dubai, U.A.E.
P.O. Box: 17014

+971 4 815 1111 +971 4 815 1222 info@naffco.com

CONTENTS

FIRE RATED ROLLER SHUTTERS

1) Introduction

- ✓ This document is intended for a qualified, trained installation engineer.
- ✓ To comply with the Construction Products Directive and the Machinery Directive the product must be installed in accordance with these instructions.
- ✓ Please read all safety advice and relevant instructions carefully.
- ✓ These installation instructions are intended for qualified and trained installation engineers. Installation, initial operation, servicing, repairs and dismantling of this product should only be carried out by a qualified and trained installation engineer.
- ✓ When installing an electrically operated product ensure the mains power supply to the product is disconnected before any electrical connections are attempted.
- ✓ Before operating a shutter you must always ensure that there are no persons or objects in the opening before and during the opening.
- ✓ The shutter should only be operated when in view.
- ✓ Upon completion of the installation the owner of the shutter must be trained how to operate the product safely paying special attention to the following points:
- ✓ The shutter should only be operated when in view
- ✓ The operator should ensure there are no objects or persons in the opening before and during operation.
- ✓ The end user must read and follow the advice given in the operating and maintenance instructions.
- ✓ In the event of a malfunction the end user should follow the advice given in the operating and maintenance instructions and if applicable contact the installer.
- ✓ During the installation of the shutter you should follow safe working practices. Further advice is available from the Health and Safety Executive (HSE).

2) Plant and Machinery

- Concrete Hammer Drill 230 v
- Chain block
- Welding machine 230 V
- Hand Drill 230 v
- Grinder 230 v
- Spanner
- Measuring Tape
- Water Level tube
- Scissor lift
- Scaffolding

3) Safety and Health Aspects

- Safety Helmet
- Safety Shoe
- Safety belt
- Clear Goggle
- Welding Head Shield
- Earplug

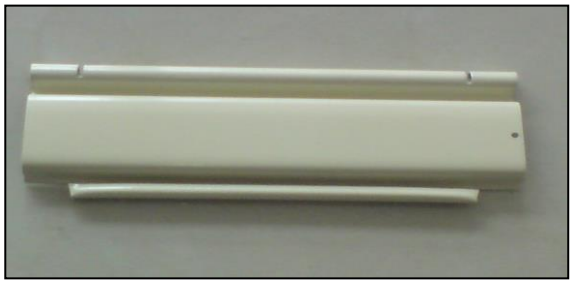
4) Part Description:

SPECIFICATIONS (MOTORISED FIRE SHUTTER)	
SLAT	GALVANISED STEEL SLAT, POWDER COATED FINISH (THICKNESS AS PER UL REPORT)
SIDE GUIDE	3mm THK GALV. STEEL 'G' TYPE GUIDE, POWDER COATED FINISH
END PLATE	6mm THK. MS PLATE, GREY PRIME COATED
BOTTOM ANGLE	10mm THK X 50mm WIDE STEEL FLAT BOTTOM BAR, POWDER COATED FINISH
SHUTTER BOX COVER	0.8mm THK. GALVANISED STEEL, POWDER COATED FINISH
MODE OF OPERATION	ELECTRICAL
POWER SUPPLY	SINGLE PHASE, 230V, 13A, 50Hz ISOLATOR
AUTO CLOSING DEVICE	1) THERMAL FUSIBLE LINK
	2) FIRE ALARM SIGNAL

Material Description: Fire Rated Roller Shutters

Curtain Slat

The shutter curtain is made of 77mm pitch by 17mm deep superior Galvanized steel slat. These slats is been manufactured by roll forming process by using special purpose rolling machine. Slats will have reinforced interlocking profile with edges cut-off for (end) locking the axial movements. Galvanized steel is used for superior corrosion résistance. Thickness of the slats shall be as per BS Standards...



GALVANIZED STEEL POWDERCOATED SLAT

Shutter Box

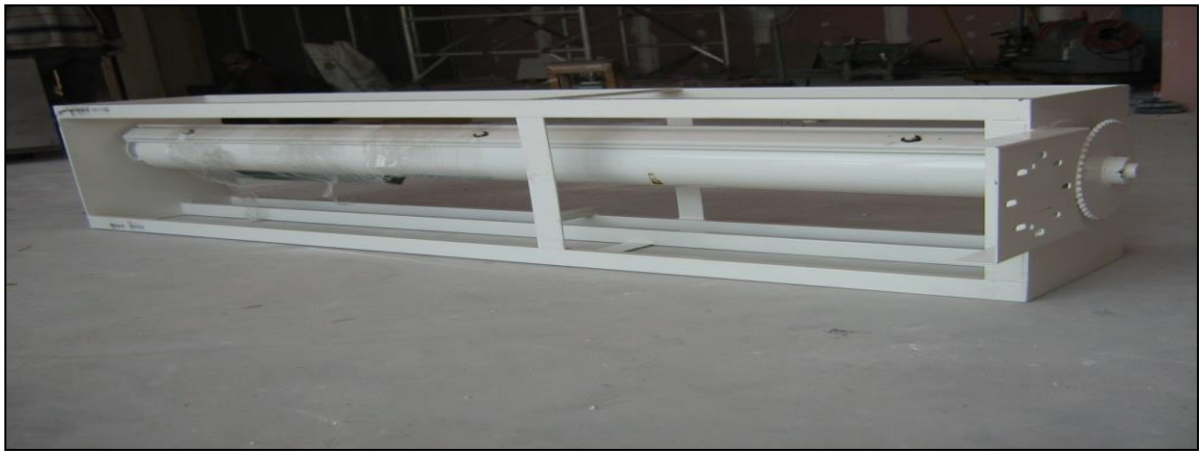
Shutter box is made out of two heavy duty steel endplates of thickness 4-7mm according to the size of the shutter; joined together by using 5 nos. of 50mm × 25mm steel hollow sections. Two nos. of 50mm × 50mm x 4.5mm thick steel angles with slotted fixing holes would be welded with end plates for fixing the shutter box to structure. Shutter box will be fitted with guide rollers to prevent the middle portion of the slats from touching the shutter box. Shutter box shall be fitted with guide rollers to prevent the middle portion of the slat from touching the shutter box.

Barrel

Barrel is made out of heavy duty seamless steel pipe of suitable diameter which conforms to BS 1387. Ends is welded with axles of sizes φ35-φ50mm according to the sizes of shutters. These barrels is fixed to the right and left endplates with heavy duty roller bearings in a bearing housing. Barrel together with the axle to be 'balanced' before assembly and the entire slat fixing holes have to be done simultaneously for straightness.

Motor Plate

The Motor Plate is made of heavy-duty steel plate of thickness of 4-7mm and is welded to the endplates of the shutterbox.The Motor plate has provisions to fix the Motor bracket and to cover the chain and sprocket of the motor.



Side Rails

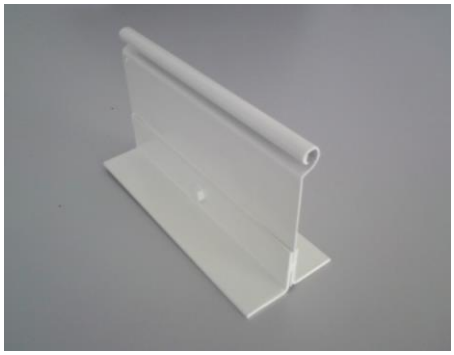
For exposed, face fixing applications, ‘G’ shaped guides shall be employed. These guides shall be made of heavy duty 75mm wide by 75mm deep by 3mm thick galvanized steel in ‘single piece’ construction. ‘Single piece’ construction of 3mm thickness makes it ideal for heavy duty applications. Side rail fixing holes to be covered with a cap. Fire Shutter guides have to be fixed to the walls using M8 Anchors.

G SHAPED SIDE GUIDE

Bottom Bar:

Leading slat shall have only one interlocking groove and flat end on the other side.

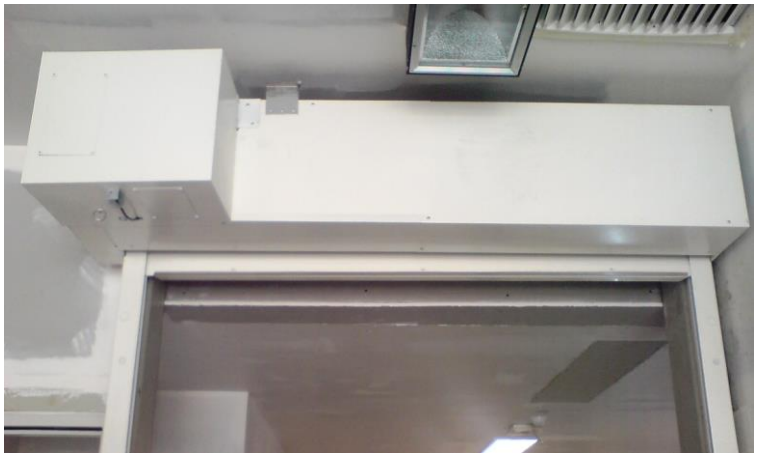
Leading slat shall be roll formed from Galvanized steel with thickness equivalent to the slat. Two 38mm x 38mm x 4.5mm thick galvanized steel flat bars are bolted to the leading slat to form the bottom bar.



T –SHAPED BOTTOM BAR

Box Cover

Shutter box covers are made out of 0.8mm thick bent galvanized steel sheets, which covers 3 sides of shutter box. Folded edges provides the required stiffness to the shutter box covers. All the covers shall be fixed with self-drilling screws (not rivets) for easier opening.



SHUTTER WITH BOX COVER AND MOTOR COVER

Shutter Operator

A suitably sized, fully enclosed designed motor with high starting torque, built-in gear box, and built-in thermal protector shall be used. Shutter operators shall be provided with endless hand chain for manual operation from ground level.

An 'emergency-release lever' shall be provided for emergency closing operation. Fire shutter operator shall have the facility to install fusible link or electric solenoid release device for auto-close operation.

MOTOR WITH PUSH BUTTON AND HOIST CHAIN FOR MANUAL OPERATION

Auto-closing Mechanism:

All fire shutter shall be equipped with fusible link mechanism. Upon sensing the heat 74 ^{0} c, the fusible link mechanism shall release the brake of the motor and allow it to descend by gravity.

Where fire shutters are needed to be activated by fire alarm signal, a dual fusible link called the ERS-400 (electric solenoid releaser) shall be employed. Upon receipt of 24V DC, 400 mA, normally open fire alarm signal, the devise would release the brake of the motor and allow the shutter to descend by gravity "**EVEN**" under complete power failure condition.

THERMAL FUSIBLE LINK

ERS-400(ELECTRIC SOLENOID RELEASER)

Push Button Control:

Push button control with ‘up’, ‘down’, ‘stop’ buttons shall be housed in a lockable push button box. Outer cover of the push button box shall be in stainless steel. Both concealed and exposed versions are available for both applications. One push button box shall be provided per shutter at a height of 1350mm from the floor level on motor side.

5) Sequence of work

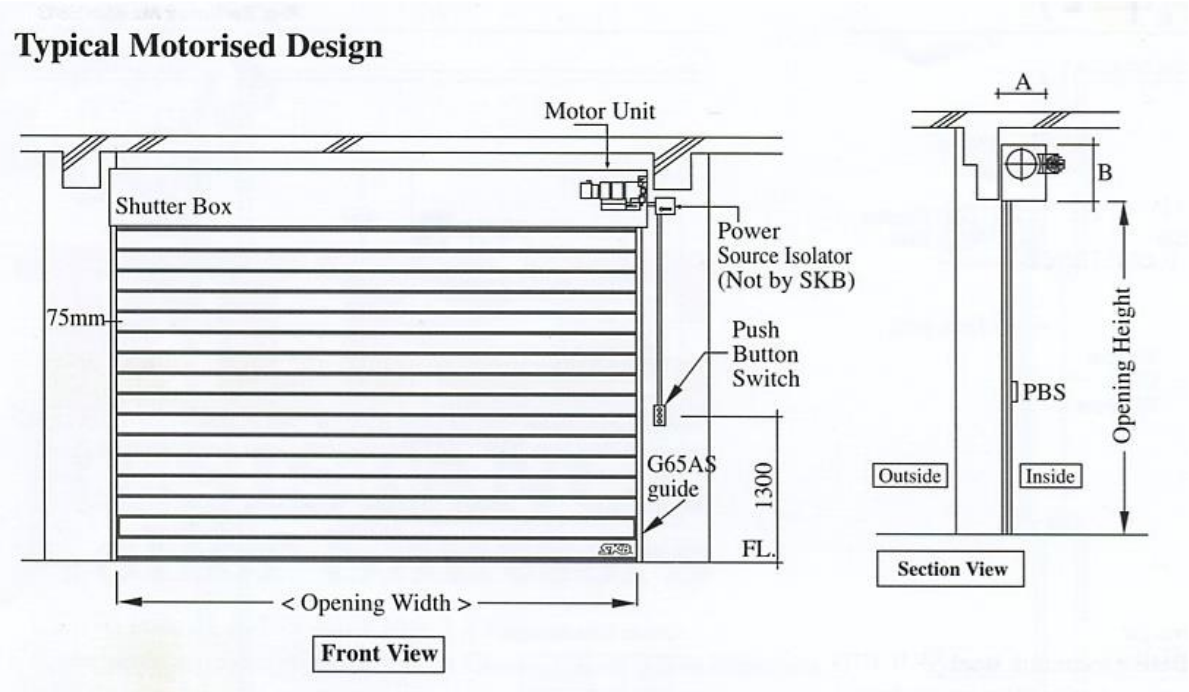
1) Check site as per drawing marking
2) Installing shutter box
3) Installing the motor
4) Installing the slat
5) Installing the side rail
6) Installing the box cover
7) Electrical connection
8) Set limit switch
9) Testing

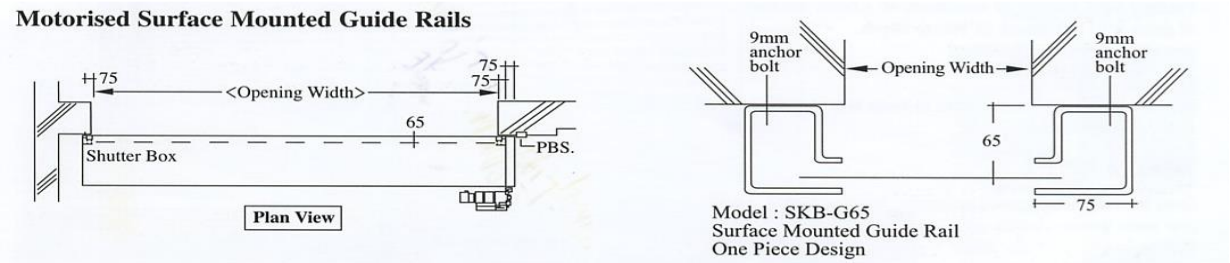
Sequence of work/ work Methodology

Setting-out

- Request for Necessary Permits for Hotwork/Welding/Electrical Works. Place Lockout Tag.
- Ensure all Personal Protection Equipments like Safety Shoes. Safety helmets, Clear Goggle, Safety Jacket, and Safety Belt are worn prior to start of work.
- The work Involves working at a height of 3.5m to 5m from Floor Level all the time so all safety precautions to be taken when working at heights. Safety Belt to be strapped at all times.
- Aluminum Mobile Platform Scaffolding or Scissors Lift to be used during the entire course of Installation.
- Check the finished opening size (width and height) as per the shop drawing.

- Check the straightness of the structure and column or wall face by using the plumb.

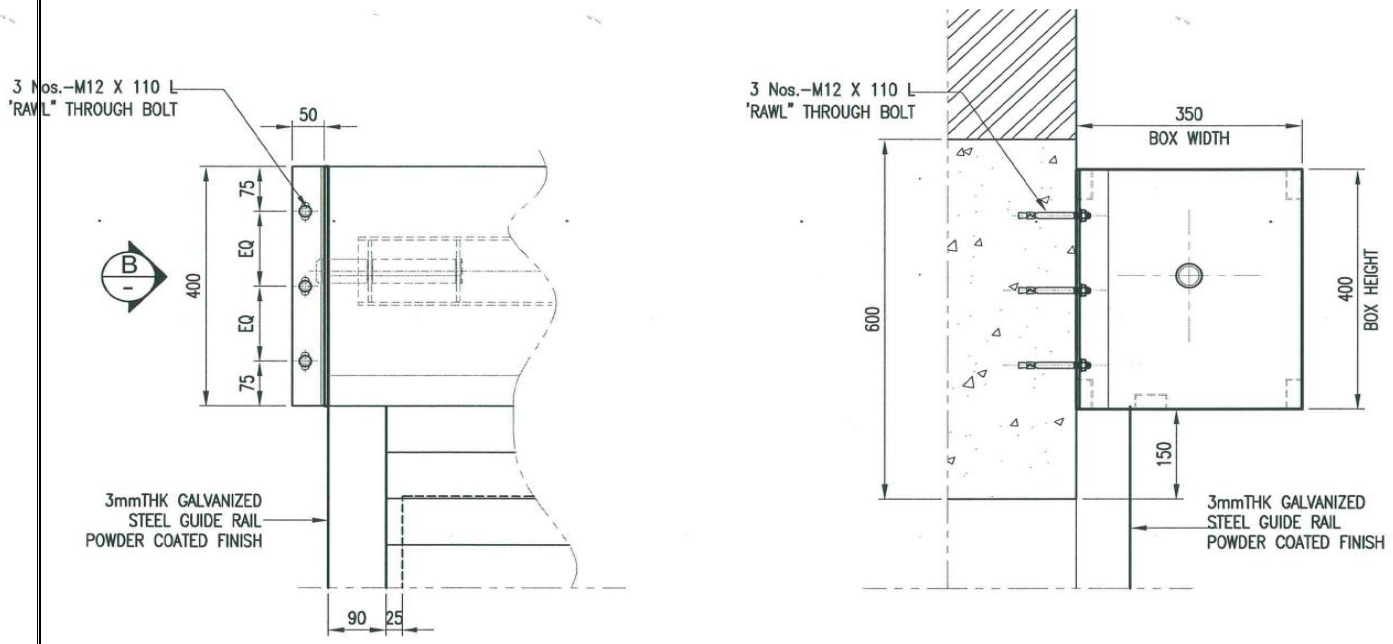




Shutter box

installation

- Get the Permit for Welding prior to Installation Valid for Full Installation Period or on Daily basis
- Install the chain pulley nearer to the shutter location on the soffit by drilling and anchoring it to the soffit. To use scissors lift or Aluminum Scaffolding to reach to the soffit. The chain pulley will then act as a lifting equipment to lift the shutter box.



- Shutter angle will be welded at factory.
- Lift the shutter box to the required height and mark the fixing holes position. The shutter box will be fixed by fixing angles and C Clamp and would be clamped to the wall. Then keeping in position we will mark the holes and drill through the fixing angles to a depth of 75-100mm.After drilling the holes, Through Anchor bolts will be anchored to the system
- Drill the holes at marked position and install anchors. (The type of Anchors will be advised later).
- Check the water level of the shutter box and tightened nut fully.

Motor installation

- Lift the motor manually to the shutter box motor location.
- Fix the motor to motor fixing bracket with bolts and nuts.
- Fix the Thermal Fuse Link Assembly to the shutter box and connect the brake cable

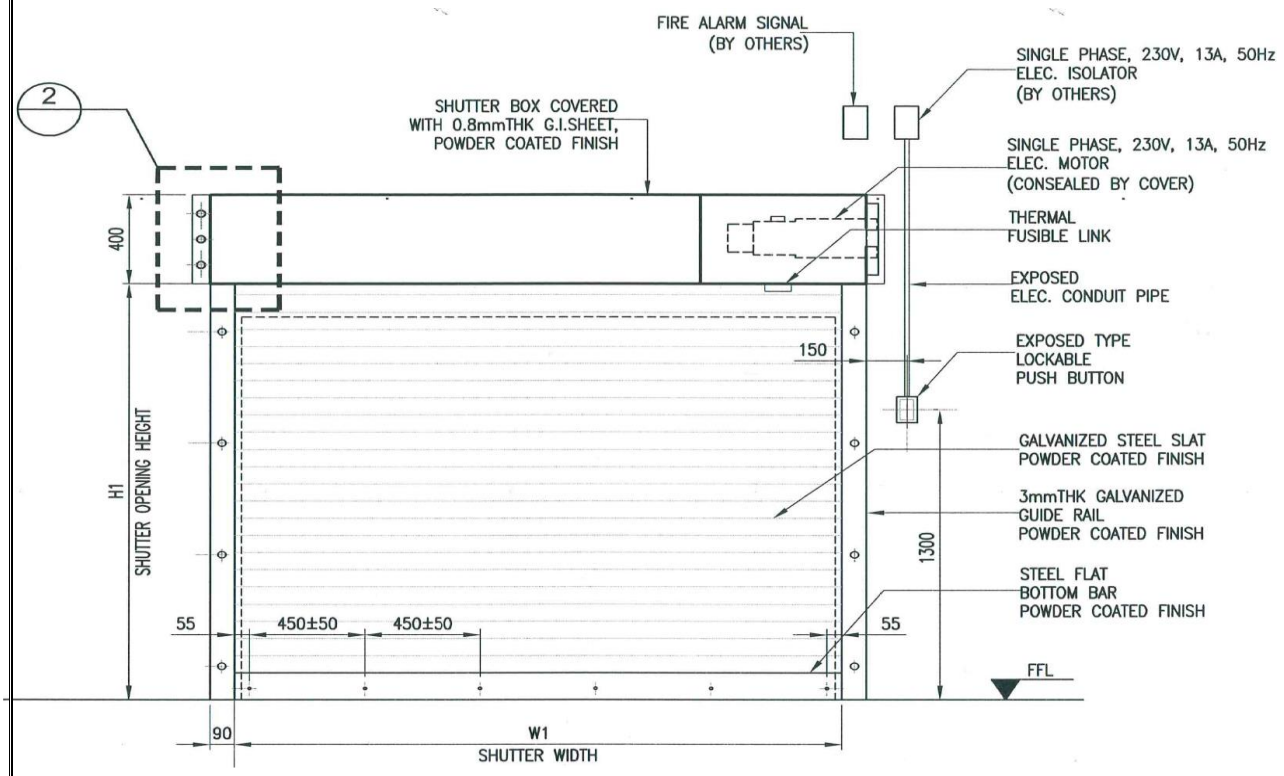
Slat assembly

- Assemble each slats together and lock them by pressing the ends.
- Fix the assembled slats (5 Nos.) to the barrel after the shutter box is installed. The height of the barrel is about 3.5m and the working platform would be same scaffolding used to fit the chain pulley but the working platform is decreased to 3.5m
- The Top slats are interlocked and secured on to the barrel at a pitch as shown in the drawings using appropriate fasteners. The remaining laths are then interlocked by sliding one into the other to form a curtain which is connected to the top slats

Rev: 0 dated: 01.03.2017

- Insert the remaining slats & bottom bar to the required height and lock them by pressing the end locks or rivet.
- Wind up the slats around the barrel completely.
- Ensure that no excess slat installed.

Side guide fixing



- Position the side guide with the help of plumb and mark the holes. The same platform mobile Aluminum Scaffolding or Scissors Lift would be used
- On marked holes Drill and install anchors and fix the side guides in position with nut and washers.
- Make sure that the inner face of the end plate must be flush with the inner face of the side Guide.

Electrical installation

- Request for Electrical Permit and Put the Lockout Tag
- Work will be carried out by certified Electrician.
- Make sure the isolator is in "OFF" position. If the Isolator is powered ON, Please contact the Electrical MEP Subcontractor and request for Isolator to be Switched OFF.

- Mark the push button box position as shown in the approved shop drawing and fix it with the wall or cladding.
- Run the electrical wiring from the isolator to push button box as per the electrical diagram.
- Connect electrically as per the circuit diagram provided.
- Do the trial and set the "UP" & "DOWN" limit switch.

Box Cover installation

- Once the Testing is done. Cover the box frame using the shutter cover front bottom and top.

6) QAQC Aspect (Testing, Inspection)

- Switch "ON" the isolator and test the operation of the shutter.
- Check the top limit switch operation and bottom limit switch operation.
- Interfacing with Fire Alarm Signal and Thermal Fusible Link
- Testing & Commissioning under Normal Conditions and power failure conditions by turning of Power source.

Safety, Health and Environmental management

Please find the Job Risk analyses according to our job risk assessment manual in the attachments.

7) Inspection and testing plan

Check List For Roller Shutter Mechanical & Electrical, Testing & Commissioning.

SHUTTER REF NO		**AREA :**
DRG NO		**GRID LINE :**
FLOOR		
BLD NO		**Date :**

Sl No	Description	Remarks
1	**Shutter Up, Down & Stop function through Push button**	
2	**Limit Switch operation (Top, Bottom), Fire Alarm Interfacing, TFL commissioning. & Testing**	

Checked By

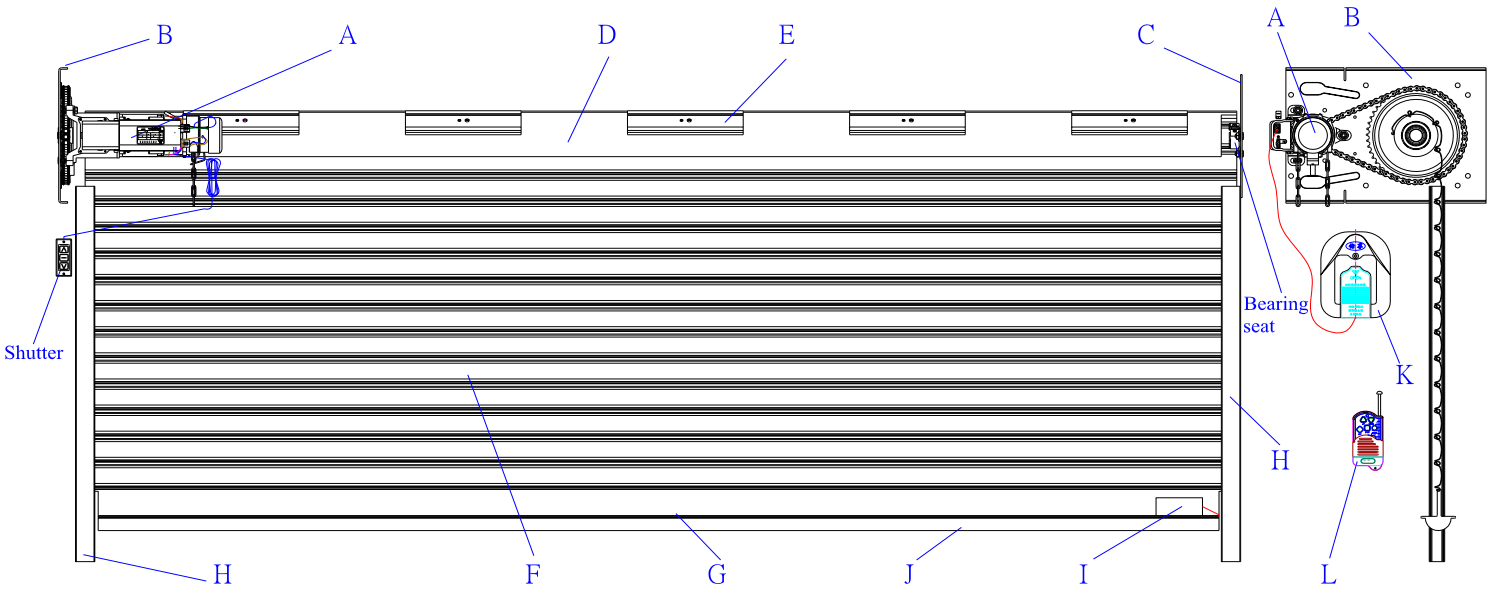
Site Engineer:	**Sign:**

NAFFCO
PASSION TO PROTECT

ELECTRIC MOTOR

[ROLLING SHUTTER]

1. Diagram of Installation of Rolling Shutter Door

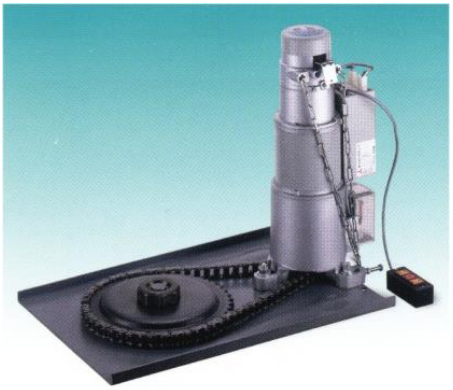


A、Shutter door operator
B、Main frame
C、Sub frame
D、Roll tube (6”~8”)
E、Connecting slat
F、Slat (type 75、100)
G、Bottom Angle
H、Guide rail (type 75、100)
I、Protector’s controller
J、Protector’s sensor bar
K、Receiver
L、Transmitter

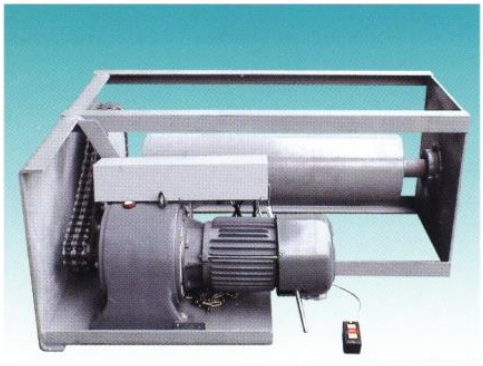
Reference for roll shutter door assembly components accessories (●essential)

Components / Model		A	B	C	D	E	F	G	H	I	J	K	L
1	Chain type shutter door (NF-YH-B)	●	●	●	●	●	●	●	●	Optional	Optional	Optional	Optional
2	Gear type shutter door (NF-YH-H)	●	●	●	●	●	●	●	●	Optional	Optional	Optional	Optional

2. Door Operator

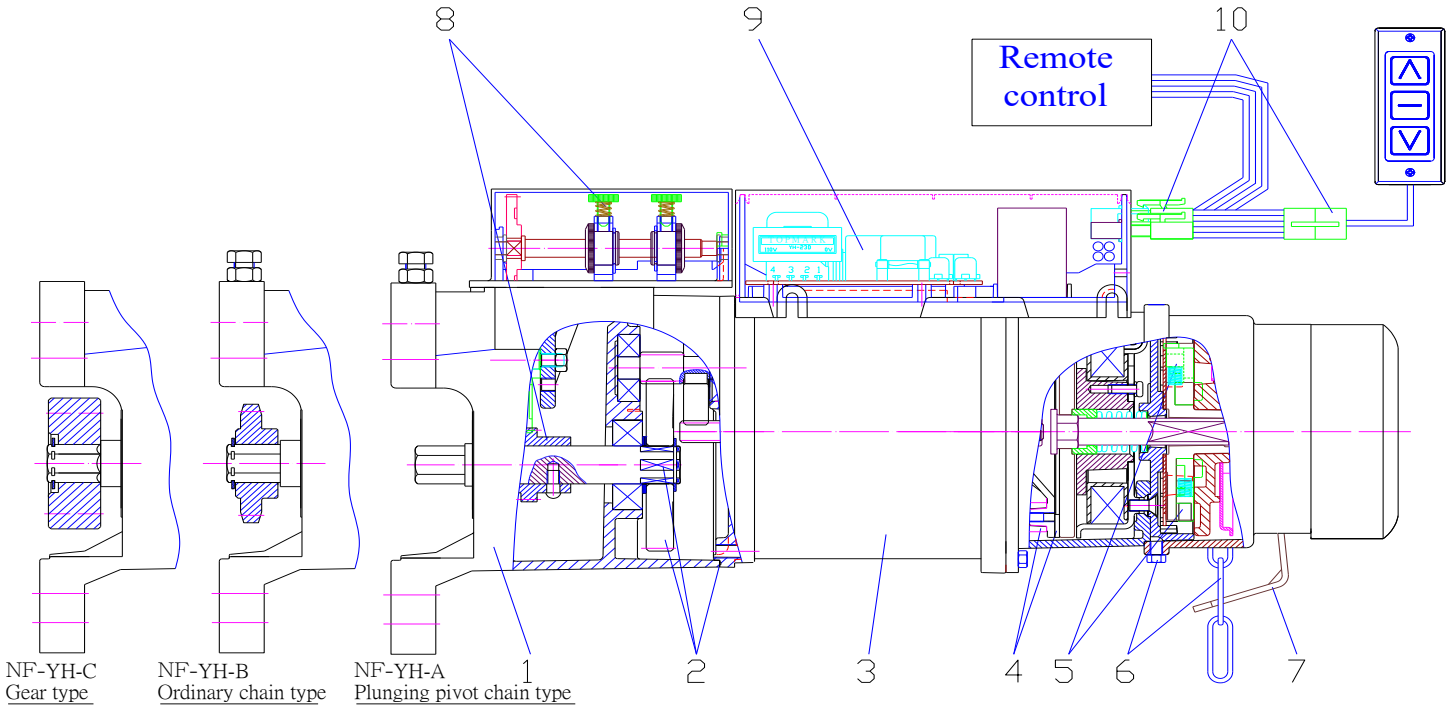


NF-YH-B
200kg~1000kg
Three-legs (insert/general type)
chain type door operator



NF-YH-H
1300kg-3000kg
lie/chain type door operator

3. Structural Analysis of Door Operator



1. Operator shell：
   - Aluminum alloy case, solid and light, surface coating, durable and wont oxidize.
   - Gear box could produce in 3 or 4 legs that both produce chain type or gear type door operator.
2. Gear：
   - Used imported alloy steel that had been ensure winding strength.
   - Main axle and gear are made of hexagonal key to ensure that the key wont break.
   - Used car engine glue to prevent oil leakage.
3. Motor：
   - Capacitor revolving motor is equipped with precision thermo control, cut off power automatically when the temperature is too high, restore power automatically when the temperature drops.
4. Brake structure：
   - Special brake structure, stop instantly when the power is turned off.
   - When power is cut, could use self downward bar, centrifugal force assist brake, shutter door close slowly.
5. Unique patent of secondary brake system：
   - Used 2 sets of butterfly brake device to ensure actual brake and long life.
   - No need to use manual zip cover, brake ensures that the chain won't deform, won't jump, and wont bounce.

6、Manual chain direction adjustment：
   - This product uses double brake structure and loosening chain disc cover screw, so that the door piece wont fall off.
   - Turn the chain disc cover easily and adjust chain direction toward the ground, then lock the chain disc cover securely.

7、Emergency manual device：
   - When power is out, pull the self downward bar, the door will descend slowly according to its dead weight.

8、Special designed limit bolt：
   - The controller of this machine, gear is conceal, wont cause gear deformation or damage due to external force.
   - Limit bolt, the cam wheel are fixed to ensure safety.
   - Limit bolt slide blocks are made of special alloy, wont break.

9、Special circuit design：
   - Used A.V. terminal wiring, easy to install.
   - Turn off the power, capacitor won't hold charge, absolutely safe.

10、Remote control installation：
   - No need to connect wire while installing the remote control, saves time, and ensure no error.

4. Specification of NF-YH insert type/B; gear type/H lie type door operator

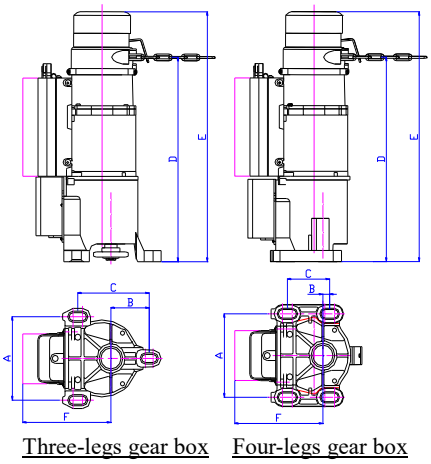
Specification model	Power (60HZ)		Motor capacity (WATTS)	Electric current (AMPER)	Main axle revolution (RPM)	Chain/driving wheel/follower	Roll dia (inch) /height(M)	Load weight (kg)	Net Weight of motor (kg)
NF-YH-B-200	1 ϕ	220V	125W 1/6HP-4P	4A/2A	36	530#/ 9 teeth/50 teeth	6"	200	10
NF-YH-B-300	1 ϕ	220V	180W 1/4HP-4P	4.5A／2.5A	36	530#/ 9 teeth /50 teeth	6"	300	11
NF-YH-B-400	1 ϕ	220V	240W 1/3HP-4P	5.5A／3A	31	530#/ 9 teeth /50 teeth	6"	400	11.5
NF-YH-B-500	3 ϕ	400V	380W 1/2HP-4P	7A／3.5A	31	530#/ 9 teeth /50 teeth	6"	500	13.5
NF-YH-B-600	3 ϕ	400V	500W 3/4HP-4P	4A	25	640#/ 9 teeth /45 teeth	6"	600	15
NF-YH-B-700	3 ϕ	400V	500W 3/4HP-4P	4.5A	19.5	640#/ 9 teeth /45 teeth	6"	700	16.5
NF-YH-B-800	3 ϕ	400V	600W 3/4HP-4P	4.5A	19.5	640#/ 9 teeth /45 teeth	6"	800	17
NF-YH-B-1000	3 ϕ	400V	700W 1HP-4P	5A	18	850#/8 teeth/40 teeth	6"	1000	21
NF-YH-B-1000	3 ϕ	400V	700W 1HP-4P	3A/1.8A	18	850#/8 teeth/40 teeth	6"	1000	21
NF-YH-H-1300	3 ϕ	400V	1 1/2HP-4P	4.5A/2.6A	16.5	850#/10 teeth/48 teeth	8"	1300	68
NF-YH-H-2000	3 ϕ	400V	2HP-4P	6A／3.5A	16.5	Single and double chain 850#/10 teeth/48 teeth	8"	2000	72
NF-YH-H-3000	3 ϕ	400V	3HP-4P	9A／5A	13	double chain 850#/11 teeth/48 teeth	8"	3000	78

Note : 1. The diagram power frequency type is 60HZ; If power frequency is 50HZ, main axle revolution is inside meter main axle revolution x 50HZ ÷ 60HZ.
2. Three-phase voltage 220V, 380V, 415V, 440V and 480V can be made to order and uses low voltage control equipped with shortage phase protector and reverse phase protector.
3. Used NF-YH-B-150S (150KG), NF-YH-B-300S (300KG) door operator for speedy shutter door.

5. NF-YH-B 200~800kg dimension of door operator

● Dimension table of three-legged type rolling door machine.

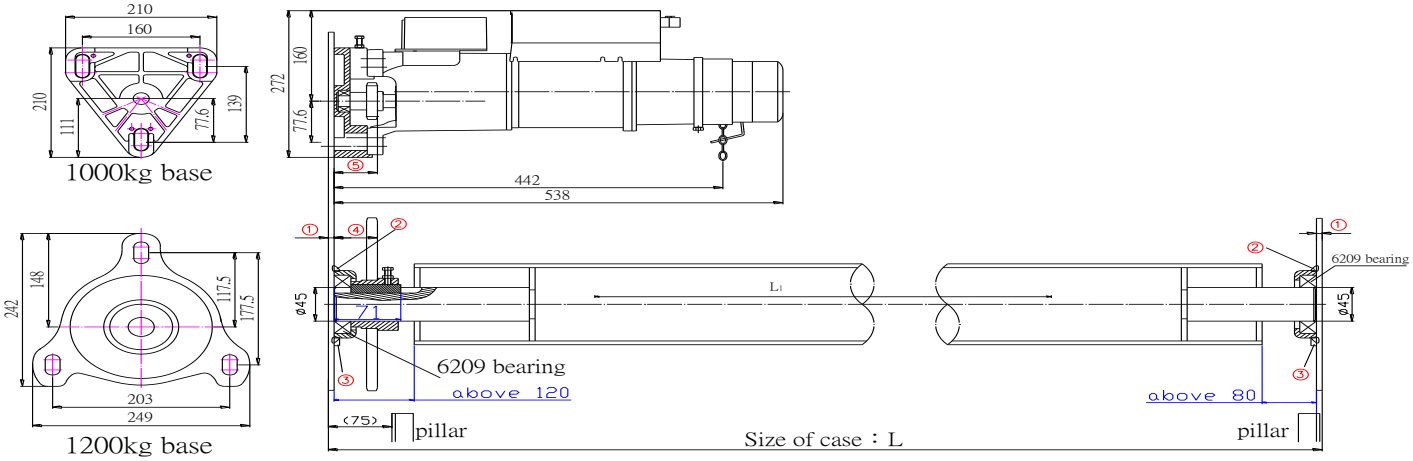
Type / Diagram	200kg 300kg	400kg	500kg	600kg	700kg 800kg
A	135	135	135	160	160
B	64	64	64	77.6	77.6
C	120.5	120.5	120.5	139	139
D	330.5	346	366	390	414
E	404	420	440	445	489
F	123	142	142	154	154



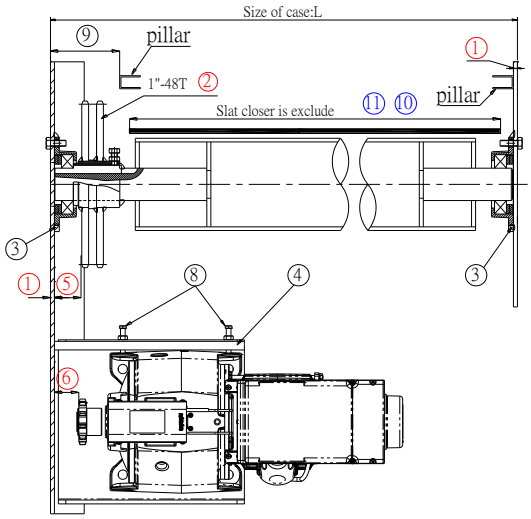
Three-legs gear box　Four-legs gear box

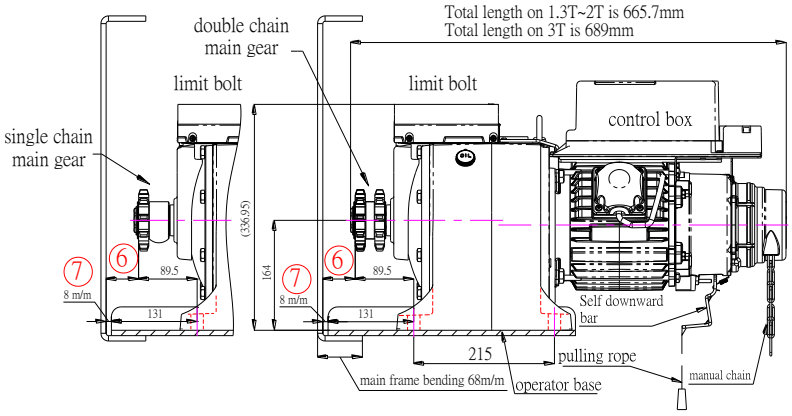
6. 1000~3000kg NF-YH-B & NF-YH-H operator dimension and frame installation

◎ 1000kg、1200kg shutter motor dimension

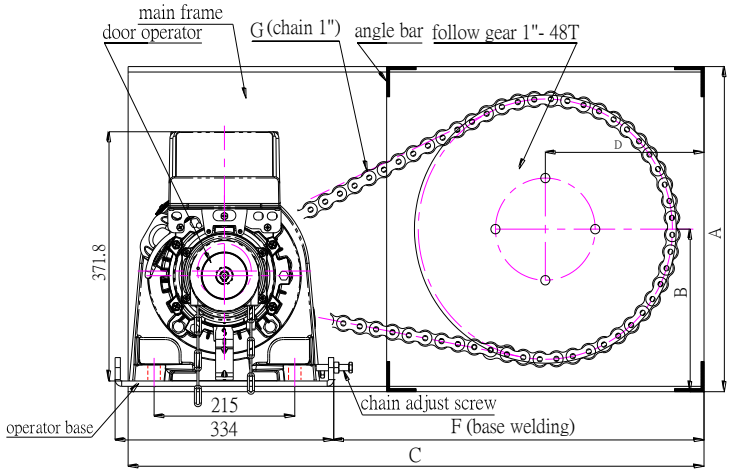


◎ 1300kg、2000kg、3000kg shutter operator dimension



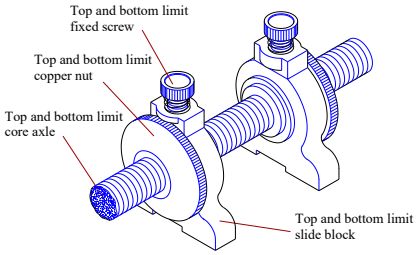


Door operator diagram



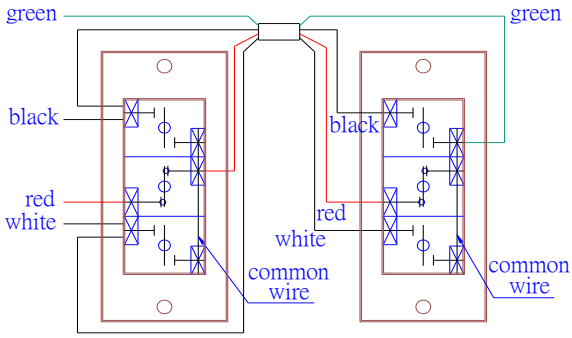
Main frame diagram

7. Description of limit swith device

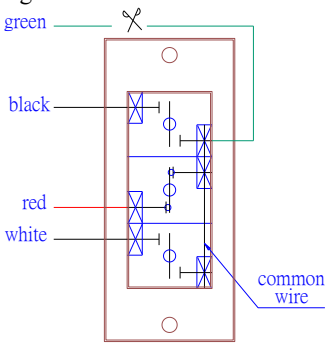


- Before adjust the top and bottom limit switch, loosed two or more fix screw first to enable the top and bottom limit copper nut to turn.
- Start the rolling door machine, ascend or descend the door piece to the desired position, then stop the rolling door machine.
- Turning limit copper nut, when you heard a “tat” sound, mean door stops position, then screw up the screw.
- After adjustment, should use a pair of pliers to turn and fix the top and bottom limit fixed screw.

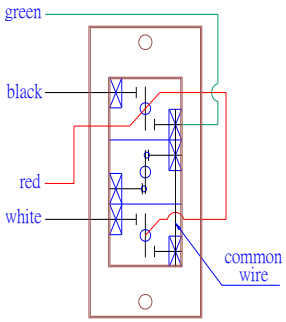
8. Push button switch diagram



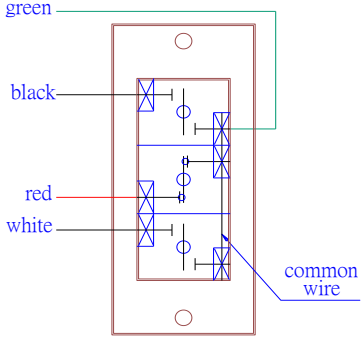
2. High V – move when touch



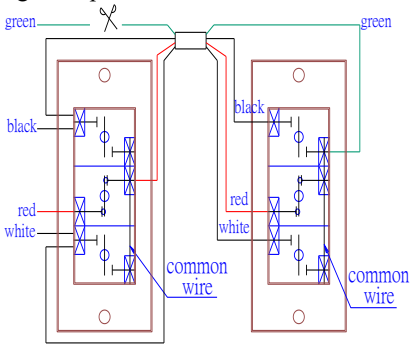
3. Low V– move when touch



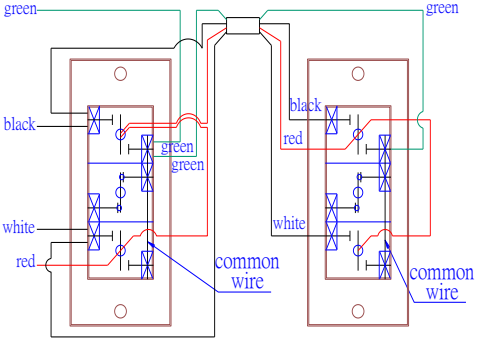
4. High V & low V push button



5. High V 2 push buttons – move when touch



6. Low V 2 push button – move when touch



Fireproof Shutter Door System

Timer

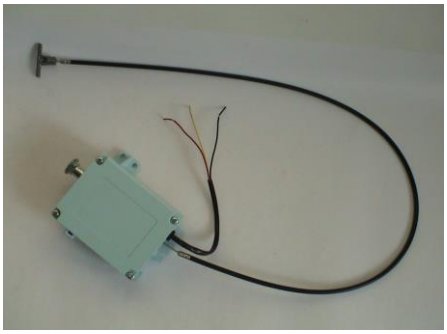
Thermo Sensor

Smoke Sensor

Fireproof operator & self descend

NF-YHFD motor from
200kg~2000kg Single phase
110V/220V
3 phase 220V/380V/415V/440V
In both 50/60 HZ

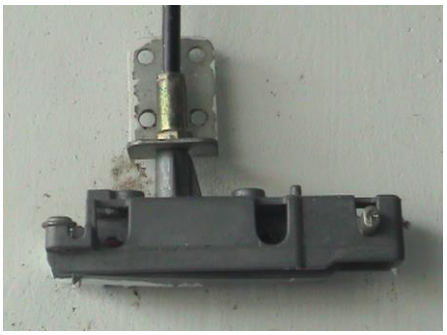
NF-YHFD fireproof operator



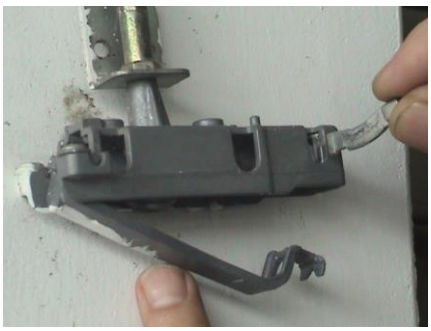
NF-SDS (Self Descend System)ERS

Optional accessory for fireproof shutter door system

Melt crystal



Melt ping



Reset Bar

Melt Pin