

# GS-705 Shear Lock



## Features

- ✓ Powerful shear force provides highly security.
- ✓ Compatible with double swing doors.
- ✓ Suitable for narrow door width installation.
- ✓ Optional SMB-001 brackets for surface mount installation.
- ✓ Horizontal or vertical installation.
- ✓ Anti-Residual magnetism designed.
- ✓ Power input 12~ 24 VDC (self-regulating).

## Statement

GEM Shear Locks provide up to maximum 2700 pounds shearing force and fully concealed flush mounting in aluminum, wood and steel doors, combine the best in failsafe performance with the most advanced features in shear lock design. Concealed lock mounting is an important feature, enhancing aesthetic appearance. Standard built-in field adjustable automatic relock switch with 1 to 6 second relock time delay.

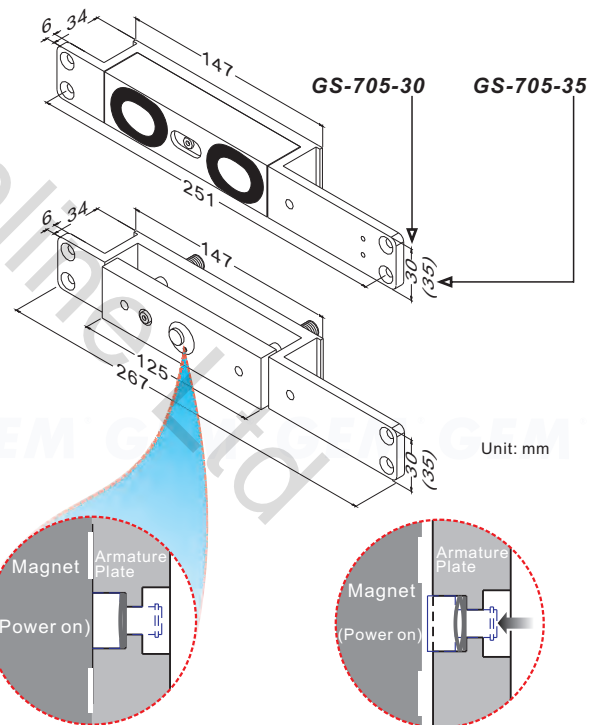
The GS-705 series are available in two models, GS-705-30 and GS-705-35, can be fitted in either aluminum, wooden, steel or exit doors with the assistance of SMB-001 bracket. This manual gives a guide to all of the above applications and other useful installation information.

## Patent:

- 113640
- ZL96-2-15062.2

## Specifications

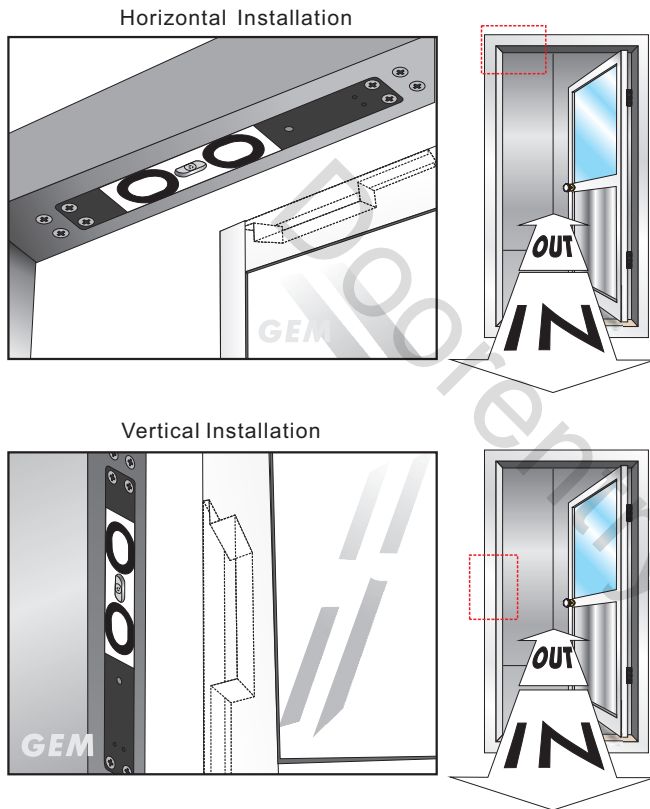
- Operating Voltage: 12~24VDC
- Current Draw:
  - GS-705-35: Pull in: 1.9A, Holding: 0.55A/12VDC  
Pull in: 1.2A, Holding: 0.35A/24VDC
  - GS-705-30: Pull in: 1.7A, Holding: 0.5A/12VDC  
Pull in: 1.1A, Holding: 0.32A/24VDC(at 20°C)
- Magnetic bond sensor monitor output (SPDT rated 1A/30VDC), indicates the door locked or unlocked.
- Locking time delay: 1~6 seconds adjustable
- Operating Temperature: -30°C~+55°C
- Humidity: 0~95% non-condensing.
- Shear force as 2,200lbs ~Max. 2,700lbs.
- Special Finishes for magnet and armature plate: Zinc plated
- Epoxy Potting Compound: E87252(S), UL94V-0
- Door Gap (Between the lock and armature plate): 3mm (1/8") maximum.
- Net Weight: GS-705-35: 2.2Kg, GS-705-30: 1.8Kg



### Anti-Residual Magnetism design

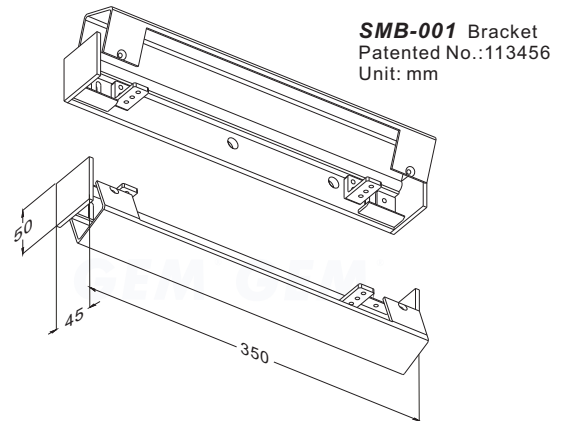
Our electromagnet locks feature Anti-Residual Magnetism (ARM) which ensures the door can be opened without any resistance from left over magnetism imparted to the armature plate.

## Application

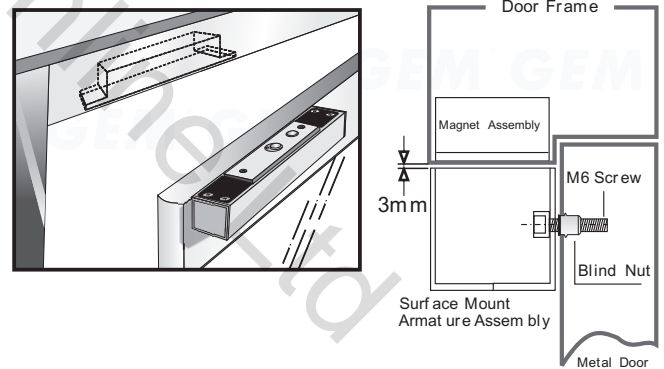


## Optional Bracket

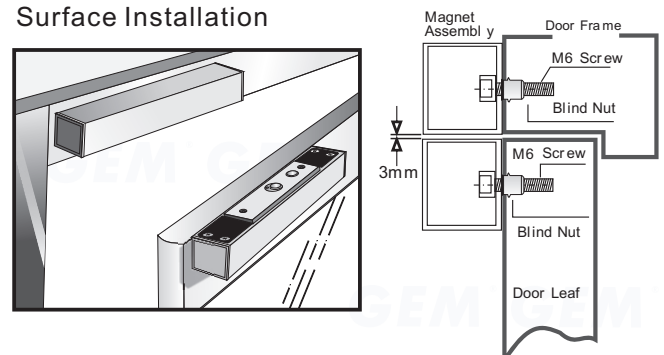
The GS-705-35 may also be fitted semi-flush or surface installation with the use of the SMB-001 brackets. The magnet should be fitted to the door transom and the housing holding the armature on to the door. It is vital that a minimum gap of 3mm exists between the magnet and the armature, to allow correct operation.



## Semi-Flush Installation



## Surface Installation



## Warranty

The product is warranted against defects in material and workmanship while used in normal service for a period of 5 years from the date of sale to the original customer. The GEM policy is one of continual development and improvement; therefore GEM reserves the right to change specifications without notice.

# GS-705 Shear Lock Installation Instruction

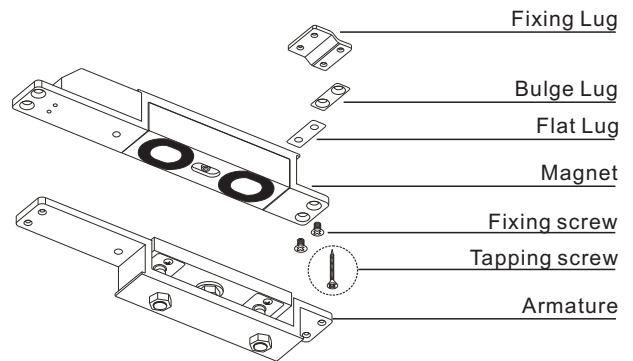
## Important Notes

Install the magnet assembly into the door frame before installation the armature assembly into the door leaf. The magnet assembly requires space to run wires, as well as space for the recesses portion of the unit. However, make sure that the position selected for the magnet assembly leaves enough room on the door to install the armature assembly.

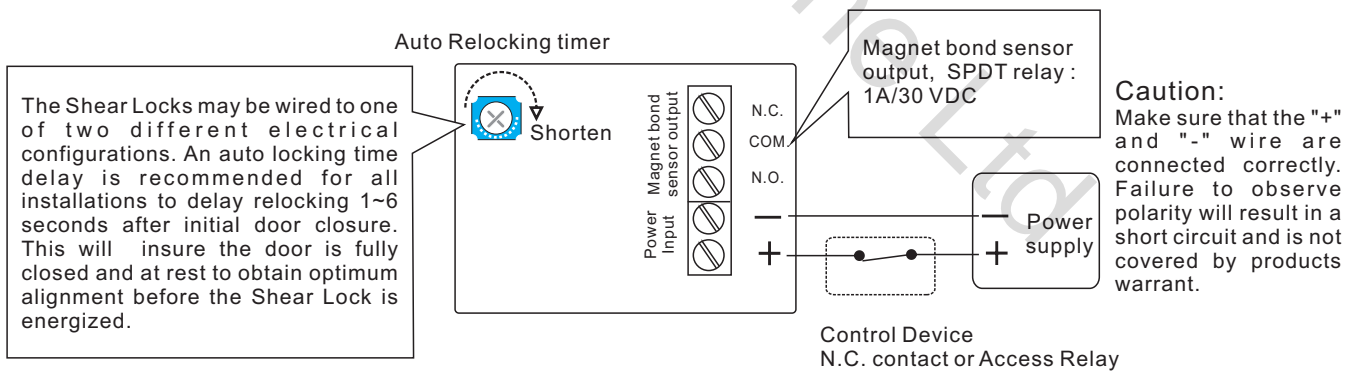
Unbalanced air conditioning (stack pressure) can hinder door alignment and must be corrected to help insure positive locking. It is important to note that the Shear Locks need a regulated 12VDC (or 24VDC) at the lock, and use the highest quality door closer only. Positive centering door closers are required for all double acting door applicators to help attain consistent dead center alignment. Also the door latching problems must be corrected prior to installation.

## Specifications

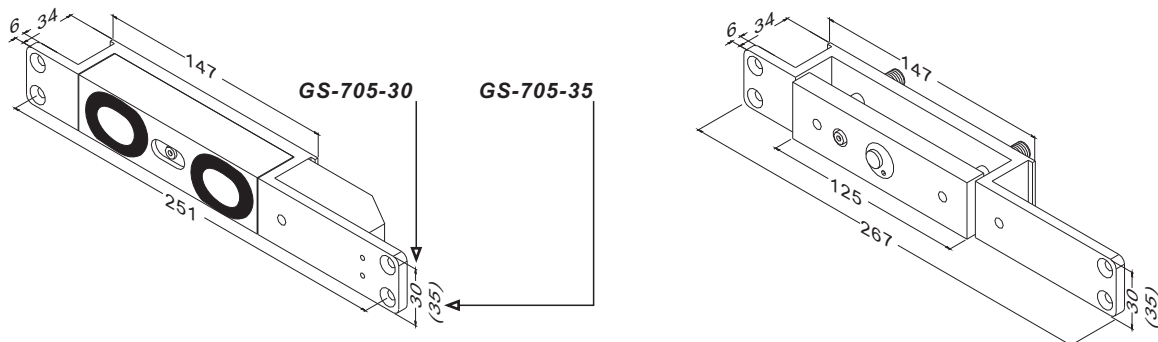
Holding Force	2,200lbs~Max. 2,700lbs
Power Input	12~24VDC (self-regulating)
GS-705-35 Current Draw	Pull in: 1.85A ,Holding: 0.45AMP/12VDC Pull in: 1.1A ,Holding: 0.25AMP/24VDC
GS-705-30 Current Draw	Pull in: 1.8A ,Holding: 0.45AMP/12VDC Pull in: 1.1A ,Holding: 0.25AMP/24VDC (At temperature 20°C)
	NOTE: The unit does not require initial voltage increase to operate.
Finish	Magnet and Armature: Zinc plated, Housing: Black powder coated
Monitoring Output	Magnet bond sensor output, SPDT rating 1AMP/30VDC dry contact
Door Gap	3mm (1/8") maximum
Operating Temp	-30°C to +50°C
Auto Relocking timer	1~6 seconds adjustable (Default: 3 sec)



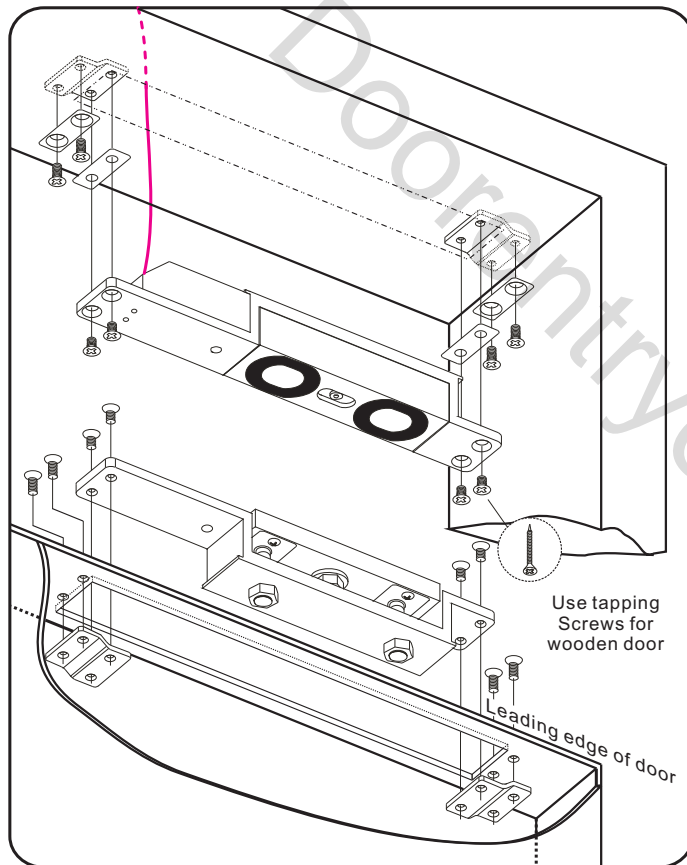
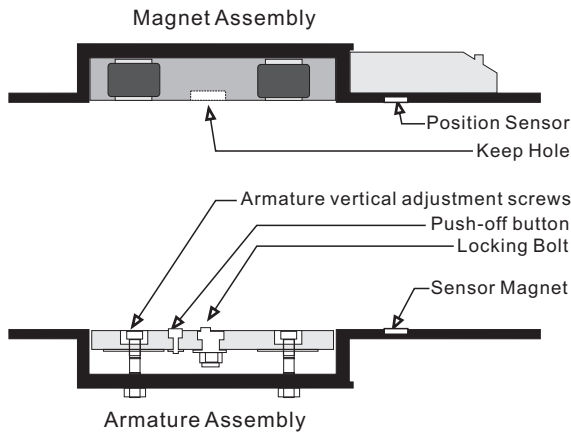
## Connecting Diagram



## Dimensions



## Flush Installation



1. Make sure the gap between the door top rail and frame header is within 3mm. adjust the gap as required.

2. Adjust single acting door and door closer to insure the door settles immediately and is fully closed . (Adjust double acting door and POSITIVE CENTERING DOOR CLOSER to insure the door settles immediately and is fully closed and rest in the dead center of the frame.)

3. Locate the vertical centerline of the magnet and armature as possible to the leading door edge.

4. Determine the horizontal centerline of the door top rail thickness. The Armature centerline will be the same. Mark the door per template.

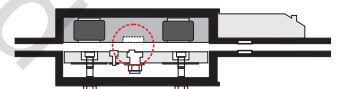
5. Before determining the frame header centerline single acting door must be fully closed. Double acting doors must be fully closed and rest in the dead center of the frame. Mark the frame header per the template. Prepare the door and frame per the template.

6. When installing GS-705, mark the timer adjustment as required and test the locking time delay prior to mounting in the frame. The locking time delay is field adjustable for 1~6 seconds and is factory set at approximately 3 seconds.

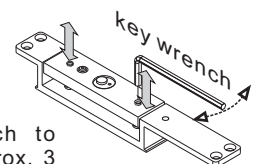
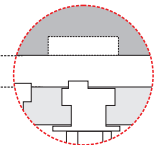
7. Install the Shear lock and armature with the auto relock switch assembly towards the leading edge of the door. For proper operation the armature must be adjusted upward as close as possible and parallel to the Shear Lock without interfering with opening and closing of the door. Proper operation cannot be expected with more than 3 mm gap between the armature and the magnet. Use the key wrench provided to adjust the armature vertical adjustment screws.

8. With the door closed turn the lock power on, check the lateral alignment. The armature locking bolt should be centered to magnet keep hole. Adjust the locking time delay(GS-705) to avoid early activation and help insure positive locking on door closure. Adjust inward to delay Shear Lock activation. Don't adjust higher than the armature rest position.

9. Repeat steps 7,8 as necessary following shear lock replacement. Cycle the door and Shear Lock several times after the completion of the installation.



The Maximum Gap between the Lock and Armature plate is 3 mm



Using supplied key wrench to adjust armature plate to approx. 3 mm of gap between magnet and armature.



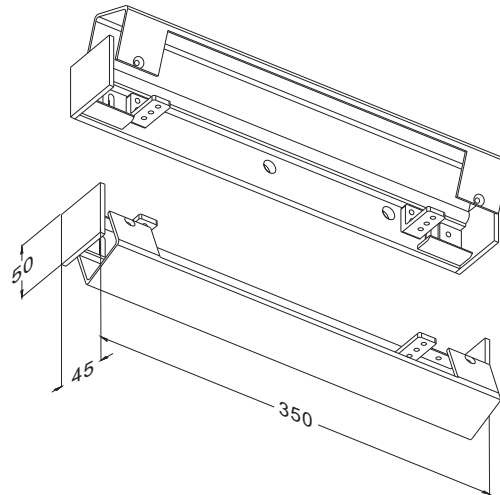
Bulge Lugs is used when fixing screws cannot fix Fixing Lugs on the door frame due to the shallow door frame. When the situation happens, use the Bulge Lugs to increase the thickness of the frame.



Flat Lugs is used when the door frame is deep, and to prevent the Electromagnetic Lock or the Armature Plate caved in, add flat lugs to raise the plane (level) of the Electromagnetic Lock face or the Armature Plate face to the door frame surface.

## Optional Bracket

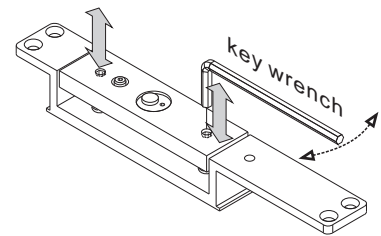
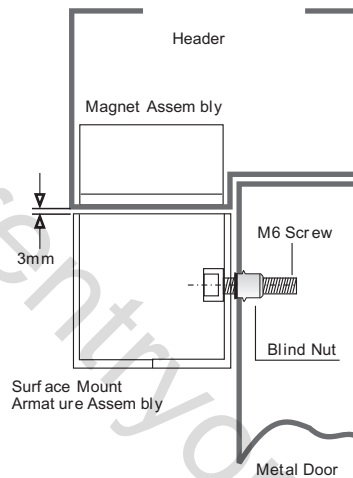
SMB-001 Bracket For **GS-705-35**  
 Surface mount installation Identify the insufficient thickness / width of the door leaf or frame header and inspect to determine if SMB-001 bracket is required.



Unit: mm

## Semi-Surface Installation

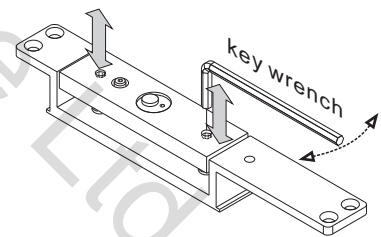
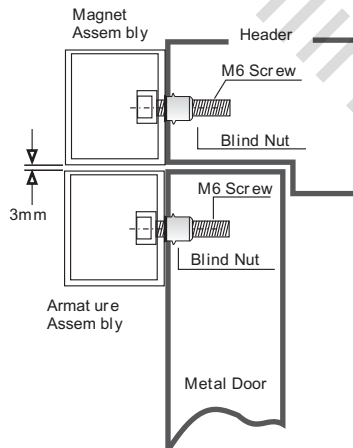
The **GS-705-35** may also be fitted semi-surface with the use of the SMB-001 Bracket. The magnet should be fitted to the door transom and the housing holding the armature on to the door. It is vital that a maximum gap of 3mm exists between the magnet and the armature, to allow correct operation.



Using supplied key wrench to adjust armature plate to approx. 3 mm of gap between magnet and armature.

## Surface Installation

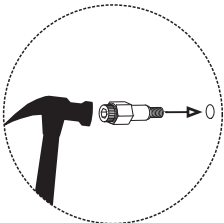
The **GS-705-35** may also be fitted surface mounted using 2pcs of the SMB-001 Bracket. The housing holding the magnet should be fitted above the door and the housing holding the armature on to the door. It is vital that a maximum gap of 3mm exists between the magnet and the armature, to allow correct operation.



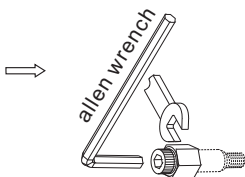
Using supplied key wrench to adjust armature plate to approx. 3 mm of gap between magnet and armature.

## Blind Nut Installation

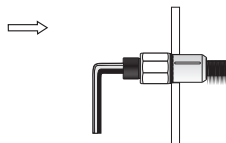
Drill 9.4mm holes for M6 Blind Nuts.



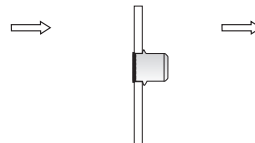
Insert two Blind Nuts into separate holes, one for each fixing screw.



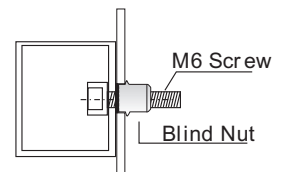
Use the allen wrench. To slowly tighten the Blind Nut. (Don't turning over)



This compress the Blind Nut so that it remains permanently fixed in the frame.



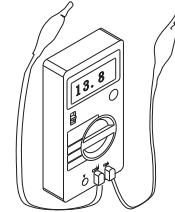
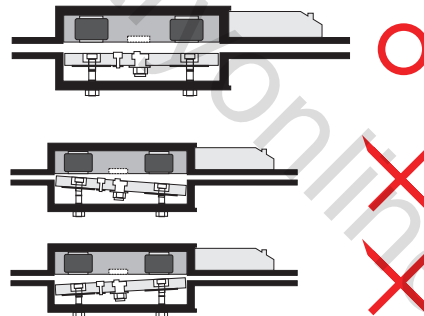
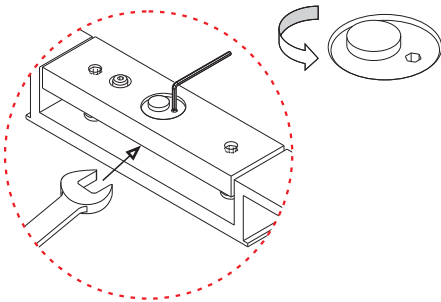
Remove the tool.



Use M6 Screws fixing SMB-001 brackets.

## Trouble Shooting

Problems	Possible Cause	Solution
Door does not lock	The gap between the Armature Plate and the Shear Lock is exceeding 3mm.	Adjust the Armature Plate and arrange the gap between the Armature Plate and the Shear lock within 3mm.
	No power.	Electrically Checked with an Ammeter, it must be powered with the correct input voltage and checked to see if it draws the specified current.
	The door leaf does not return back at the correct position.	Positive centering door closers are required for all double acting door applicators to help attain consistent dead center alignment.
The Armature Plate keep repeating the magnetic attracting motion.	The gap between the Armature Plate and the Shear Lock is exceeding 3mm.	Adjust the Armature Plate and arrange the gap between the Armature Plate and the Shear lock within 3mm.
	Voltage and / or current is too low.	Electrically Checked with an Ammeter, it must be powered with the correct input voltage and checked to see if it draws the specified current.
	The gap between the Armature Plate and the Shear Lock is unequal.	Adjust the Armature Plate and make sure the gap between the Armature Plate and the Shear Lock is equal.
	The locking bolt does not correctly seat inside the keep hole of the Shear Lock.	Adjust the locking bolt of the Armature Plate and make sure it correctly seats inside the keep hole of the Shear Lock.
The Armature Plate is not at the right position and the locking bolt cannot seat correctly into the keep hole of the Shear Lock.	The position of the locking bolt is not correct.	Adjust the locking bolt of the Armature Plate and make sure it correctly seats inside the keep hole of the Shear Lock.
	The gap between the Armature Plate and the Shear Lock is unequal.	Adjust the Armature Plate and make sure the gap between the Armature Plate and the Shear Lock is equal.
	The setting of 'Auto Relocking time delay' is too short.	Adjust the setting of 'Locking time delay to appropriate.



Use spanner and allen wrench to release the Locking Bolt on the Armature Plate. Rotate the position of the Locking Bolt in order to correctly seat inside the keep hole of the Shear Lock.

Make sure the gap between the Shear Lock and the Armature Plate are the same while adjusting the gap.

Since the current draw, which operates the Shear Lock, is large (1.8A/12VDC; 1A/24VDC), it is necessary to make sure the condition of the wire is capable for long distance usage. It is also necessary to make sure the output current of the Shear Lock is sufficient for the power that the manufacturer listed.

### Distance in feet from power source to farthest locking device

	AMPS	25f	50f	75f	100f	150f	200f	250f	300f	400f	500f	1000f
Minimum Wire Gauge for 12 VDC	0.25	18	18	18	18	18	16	16	14	14	12	
	0.50	18	18	18	16	16	14	12				
	0.75	18	18	16	14	12	12					
	1.00	18	16	14	14	12						
	1.50	18	14	12	12							
	2.00	16	14	12								
Minimum Wire Gauge for 24 VDC	AMPS	25f	50f	75f	100f	150f	200f	250f	300f	400f	500f	1000f
	0.25	18	18	18	18	18	18	18	18	16	16	16
	0.50	18	18	18	18	18	16	16	14	14	12	
	0.75	18	18	18	18	16	14	14	12	12		
	1.00	18	18	16	16	14	14	12	12			
	1.50	18	18	16	14	14	12					
2.00	16	16	14	14	12							