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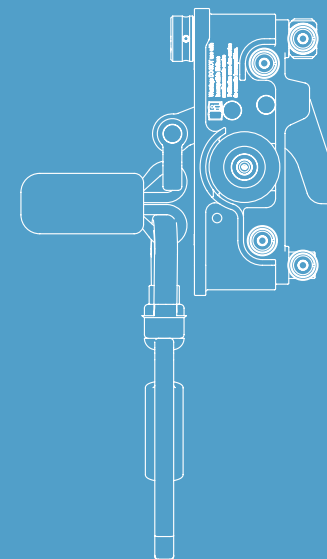
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## SL-R60S Fall Arrester Operation And Maintenance Manual

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## Limited Warranty

**3S Lift warrants that commencing from the date of shipment to the Customer and continuing for a period of the longer of 365 days thereafter, or the period set forth in the standard 3S Lift warranty, the Product described in this Manual will be free from defects in material and workmanship under normal use and service when installed and operated in accordance with the provisions of this Manual.**

This warranty is made only to the original user of the Product. The sole and exclusive remedy and the entire liability of 3S Lift under this limited warranty, shall be, at the option of 3S Lift, a replacement of the Product (including incidental and freight charges paid by the Customer) with a similar new or reconditioned Product of equivalent value, or a refund of the purchase price if the Product is returned to 3S Lift, freight and insurance prepaid. The obligations of 3S Lift are expressly conditioned upon return of the Product in strict accordance with the return procedures of 3S Lift.(i) has been altered without the authorization of 3S Lift or its authorized representative;

This warranty does not apply if the product:

- (ii) has not been installed, operated, repaired, or maintained in accordance with this Manual or other instructions from 3S Lift;
- (iii) has been subjected to abuse, neglect, casualty, or negligence;
- (iv) has been furnished by 3S Lift to Customer without charge; or
- (v) has been sold on an "AS-IS" basis.

Except as specifically set forth in this Limited Warranty, All express or implied conditions, representations and warranties, including, but not limited to, any implied warranty or

condition of merchantability, fitness for a particular purpose, non-infringement, satisfactory quality, course of dealing, law, usage or trade practice are hereby excluded to the maximum extent permitted by applicable law and are expressly disclaimed by 3s lift. If, pursuant to any applicable law, to the extent an implied warranty cannot be excluded as provided in this limited warranty, any implied warranty is limited in time to the same duration as the express warranty period set forth above. Because some states do not permit limitations on the duration of implied warranties, this may not apply to a given customer. This limited warranty gives customer specific legal rights, and customer may have other legal rights under applicable laws.

- ⚡ This disclaimer shall apply even if the express warranty fails of its essential purpose.
- ⚡ In any cases of dispute, the Chinese original shall be taken as authoritative.

# 1 Precautions

The Manual is supplied in the language of the designated country where the product is used. The translations in various languages must be authorized by 3S Lift. The operator must read, understand and follow these complete product instructions. Failure to do so may cause severe injury or death. Keep the product instructions for future references.

- 1.1 The fall arrester is an integral component of fall protection system which falls into category of personal protection equipment (PPE). Both the fall arrester and fall protection system we offer conform to EN353-1:2014+A1: 2017, ANSI/ASSE Z359.16-2016 and CSA Z259.2.4. The fall arrester shall be used in conjunction with a full body harness that is fitted with a sternal attachment point in accordance with EN361 and ANSI Z359.11.
- 1.2 The ladder on which the fall protection system is mounted should conform to EN131-2, EN 14122-4, ANSI A14.3 and

withstand the loads specified in the standards.

- 1.3 The operator must have obtained a proper professional training, be familiar with the operation and installation of product, and have the ability to attach, detach and use the product. The operator must always wear personal protective equipment, such as safety helmet, safety shoes and safety gloves, etc.
- 1.4 Maximum of 2 operators are allowed on the same ladder and to attach to the fall protection system at a time, in which case a minimum distance of 6 m must be maintained between them.
- 1.5 The operator may not be protected against hitting the ground or the starting platform within the first 2 m climbing. Therefore, particular caution must be taken when operator starts climbing.

- 1.6 When attaching or detaching the fall arrester to/from fall protection lifeline, ensure that the operator is at a safe position and protected by a separate personal protection equipment.
- 1.7 To achieve the optimal operation and improve safety, keep a minimum distance of 100mm between torso and ladder during normal climbing, and keep correct climbing postures.
- 1.8 The weight of the operator (including tools and equipment) shall not exceed the rated load of 140 kg (310 lbs).
- 1.9 The weight of the operator (excluding tools and equipment) shall not be less than 30 kg (66 lbs).
- 1.10 The fall arrester shall never be used for work positioning or for securing equipment. If work positioning at the ladder is required, a separate dedicated and approved work positioning equipment shall be used.
- 1.11 A fall arrester can only be used by one operator at a time.

- 1.12 Service temperature of fall arrester is -40°C to +60°C. Ensure that the system is free of grease oil and ice.
- 1.13 According to OSHA 1926.1053, the connection between the fall arrester and the attachment point of the full body harness shall not exceed 23 cm (9 inches) in length! The length of the connection shall not be extended or shortened, e.g. by adding or subtracting a connector.
- 1.14 Always wear a full body harness that perfectly fits. If it becomes loose during ascent or descent, adjust it to a snug fit in time at a safe position.
- 1.15 The operator must be in good health without acrophobia, hypertension, or heart disease, and not be under influence of alcohol or drugs during operation.
- 1.16 If the equipment is found abnormal during operation, the operator must immediately stop using it and notify the equipment administrator.

- 1.17 No modification or extension of the fall protection system shall be allowed without prior written consent of 3S Lift. Otherwise for any consequences affecting the product performance and safety, 3S Lift will not assume any liabilities.
- 1.18 DO NOT carry tools or materials by hands while climbing up or down the ladder, during which a fall of tools or materials may occur resulting in damage to equipment or injury to personnel below.
- 1.19 Before each use, perform a routine inspection to ensure that the fall arrester functions properly. The annual inspection shall be performed by a competent person
- 1.20 A copy of the user's manual must be handed out to the operator and must be available for reference.
- 1.21 Before and during use of the fall protection system, a rescue plan which copes with all kinds of possible emergencies should be in place.
- 1.22 The fall arrester can only be used in conjunction with 3S Lift rail guided fall protection system, or a written consent by 3S Lift shall be obtained if it is intended to be used with other systems other than described herein. Otherwise, for any consequences affecting the product performance and safety, 3S Lift will not assume any liabilities.
- 1.23 The installation, maintenance and inspection of the fall protection system can only be performed by qualified personnel trained by 3S Lift, or under the guidance of related professionals.
- 1.24 Follow site emergency protocol. Do not use the fall arrester as an assisted rescue device.
- 1.25 DO NOT use the fall protection system in environments where the user is exposed to hazards such as high heat, chemicals or falling risks that could result in injury to the user.
- 1.26 Long distance climbing may require several movable rest standings mounted in the climbing passage to avoid fatigue.

Use proper work positioning equipment for rest breaks. Do not climb in strong winds or adverse weather.

- 1.27 Always maintain three points of contact (hands and feet) with the ladder while climbing. Should a mis-locking of the fall arrester occur, the operator shall climb up a bit to unlock the fall arrester.

**Note:** Should the fall arrester lock on the guide rail, never unlock it by means of detaching it off the guide rail.

- 1.28 If the fall arrester has been subjected to a fall which leads to deformation, it must be removed out of service immediately and scrapped.

- 1.29 The ladder onto which the fall protection system is mounted can be installed on the tower wall in accordance with the information supplied by the manufacturers (see Fig. 1.1 and Fig. 1.2). For example: weld a base plate with embedded bolt onto the wall of wind turbine tower, mount a supporting bracket onto base plate, and fix the supporting bracket to the ladder stile

with a clamp. The ladder should have a capacity of supporting static load of 16 kN (3600 lbs).



Fig. 1.1

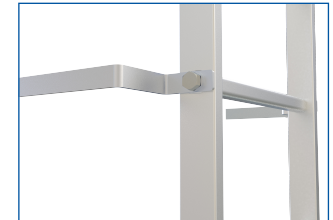


Fig. 1.2

## 2 Product Description & Components

Fall arrester (SL-R60S) is used on the rigid guide rail lifeline. When using the fall arrester, connect the carabiner of fall arrester onto the sternal attachment point of operator's full body harness. When a fall occurs, the fall arrester will lock on the guide rail automatically.

2.1 The fall arrester is shown in Fig. 2.1 .

2.2 Rigid guide rail lifeline is shown in Fig. 2.2 and Fig. 2.3.

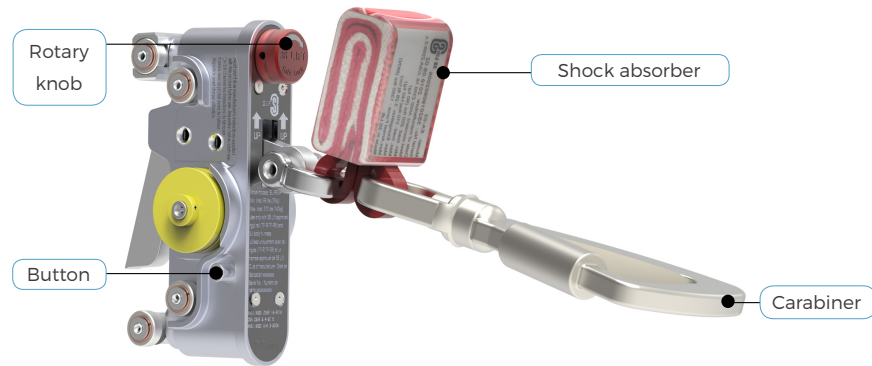


Fig. 2.1

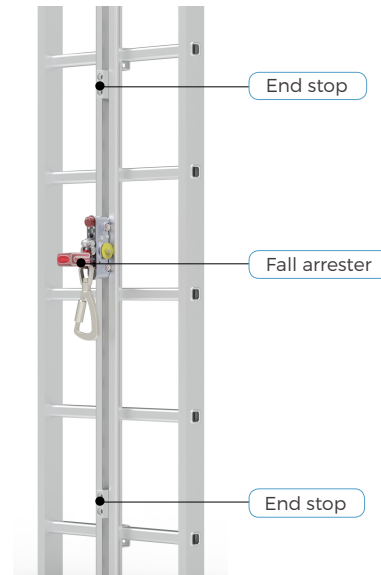


Fig. 2.2

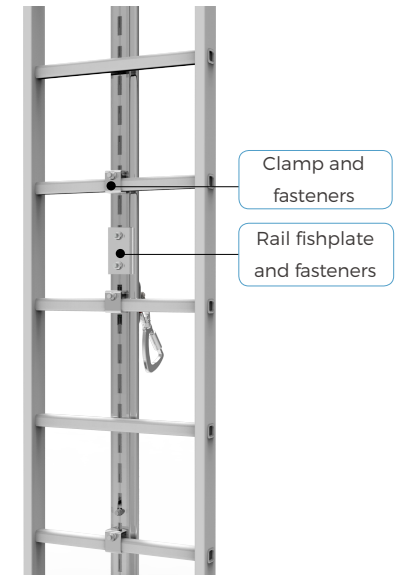


Fig. 2.3

## 3 Specifications

Model	SL-R60S	Self Weight	1.75 kg (3.9 lbs)
Static strength	16 kN (3600 lbs)	Rated Load	140 kg (310 lbs)
Dimensions	280 mm× 160 mm× 61 mm	Guide Rail Model	TF-R/ TF-R5

## 4 Marking

The markings shall be legible and clear. During maintenance, check the engraved markings. If they are not clearly legible, return the fall arrester to 3S Lift for repair. The marking details are shown in the following figures (See Fig.4.1, Fig.4.2 and Fig.4.3)

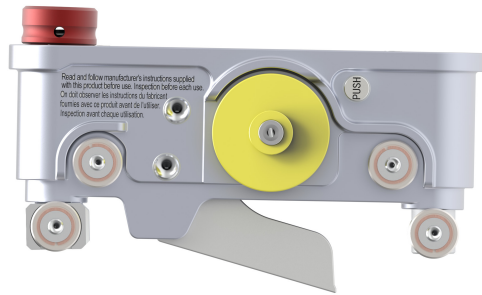


Fig. 4.1

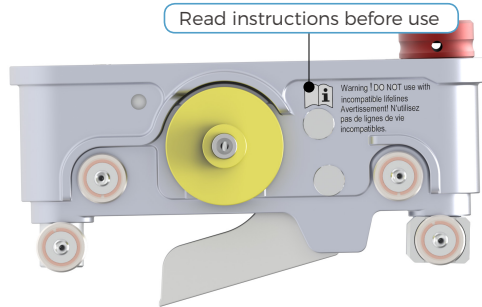


Fig. 4.2

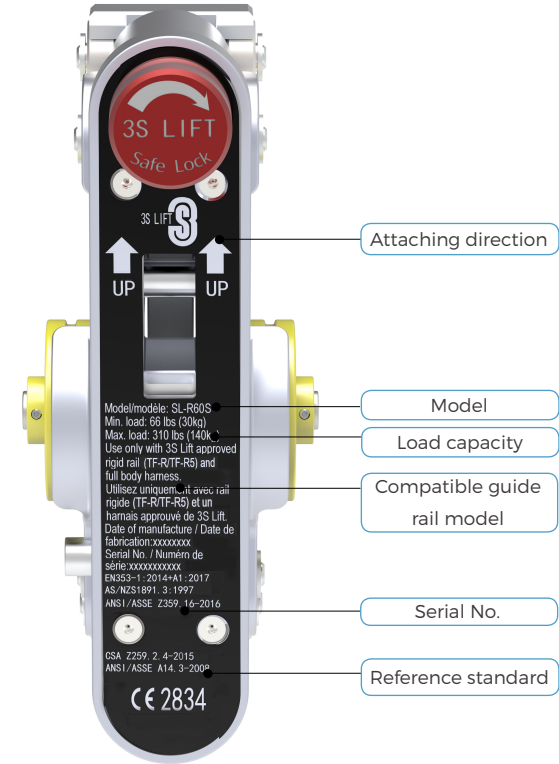


Fig. 4.3

## 5 Operation



### Attention!

Ensure that the safety carabiner is fully closed and locked.

- 5.1 Attach the fall arrester to the guide rail at any position. The guide rail should have been installed along the central line of the ladder. (As in Fig. 5.1)
- 5.2 Press down the button and turn the rotary knob clockwise to its limit, hold the button and knob, and put the rollers into the slot of the guide rail. (See Fig. 5.2, Fig. 5.3 and Fig. 5.4.)
- 5.3 Release the button and the rotary knob to let them return to their original positions. (See Fig. 5.5)
- 5.4 The fall arrester is ready for use. (See Fig. 5.6)
- 5.5 Connect the carabiner to the sternal attachment point of the full body

harness, and ensure the gate of the carabiner is closed and locked. The fall protection system is well established for fall protection at the time. (See Fig. 5.7)

- 5.6 To detach the fall arrester, press down the button and turn the rotary knob clockwise, hold the button and knob, and detach the fall arrester off the rail. (See Fig. 5.8)
- 5.7 Release the button and rotary knob to let them return to their original positions. (As in Fig. 5.9)
- 5.8 Open the the gate of the carabiner to disconnect it from the full body harness of the operator.
- 5.9 The fall arrester is integrated with anti-reverse mechanism, which disenables the user to turn the rotary knob if he attempts to attach the fall arrester upside-down, therefore making reverse attaching impossible. (See Fig. 5.10)



Fig. 5.1

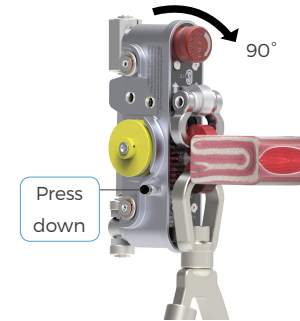


Fig. 5.2

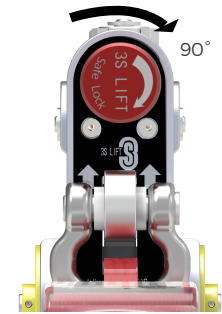


Fig. 5.3

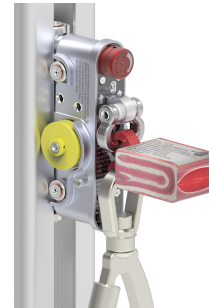


Fig. 5.4

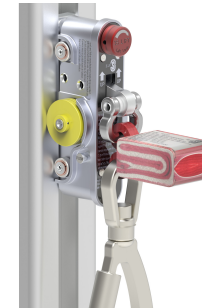


Fig. 5.5

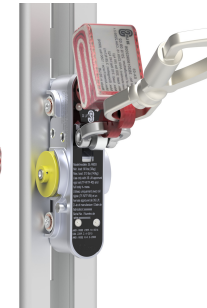


Fig. 5.6



Fig. 5.7



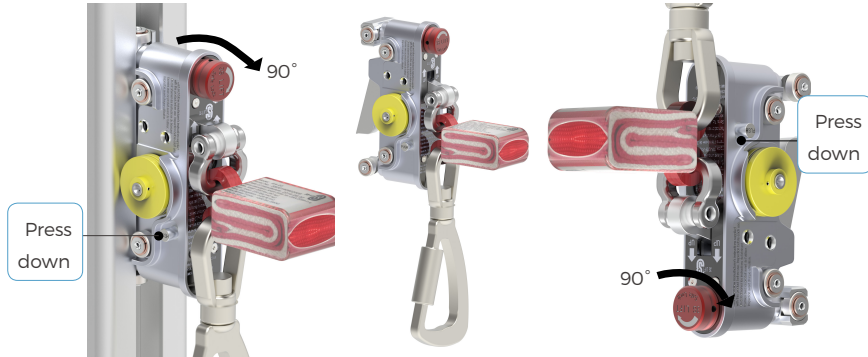


Fig. 5.8

Fig. 5.9

Fig. 5.10

## 6 Inspection

The fall protection system shall be inspected at least once a year by a certified technician, and can be used only if the inspection reveals no problem. If a fall occurs, inspection and maintenance of the fall protection system including fall arrester, guide rail and ladder, etc. must be performed by competent personnel other than the operator.

**Note:** Use a separate fall protection system while inspecting and maintaining the fall protection system.

If any fault or defect of the fall protection system is found during routine inspection or annual inspection, the fall protection system shall not be used until troubleshooting is conducted. The fault or defect shall be reported to the equipment administrator, and the system including the fall arrester shall be inspected by competent personnel who should record the fault or defect and decide on repair or scrapping. Before each use, conduct routine inspection of the system in accordance with Section 6.1 and Section 6.2.

### 6.1 Visual check

**6.1.1** Check the guide rail: During upward climbing, visually check the guide rail and its joints for any damage or deformation. Ensure that all fasteners are secured well, and guide rail sections have been correctly installed in accordance with instructions.

**6.1.2** Check the fall arrester: check the locking lever and swing lever for any damage or deformation. Ensure that the shock absorber is complete and has not extended, and that the carabiner is complete without break or crack.

### 6.2 Function check

**6.2.1** Check whether the fall arrester functions normally by following the instructions below. Stop using if any damage or defect is found.

**6.2.2** Press down the button on fall arrester and turn the rotary knob clockwise (to its limit) simultaneously, hold and then

release both the button and rotary knob and see whether they automatically return to their original positions.

**6.2.2** Press down the button on fall arrester and turn the rotary knob clockwise (to its limit) simultaneously, hold and then release both the button and rotary knob and see whether they automatically return to their original positions.

**6.2.3** Pull the fall arrester up and down the rail, then release it and see whether it locks on the guide rail immediately.

### 6.3 Annual Inspection

**6.3.1** Perform the visual check and function check following clause 6.1 and clause 6.2 during annual inspection.

**6.3.2** Ensure that the locking lever and swing lever rotate without clamp stagnation when the carabiner of fall arrester is pulled up, and automatically return to their original positions when the carabiner is released.

**6.3.3** Ensure that the fall arrester is free of oil, grease, dust and the like. Clean the fall arrester if necessary with steel wire or brush in such manner as not to cause component damage. If the fall arrester does not function normally due to oil or dirt, return it to 3S lift for repair.

**6.3.4** Ensure that all shafts and other components are secured well and all rollers rotate freely.

**6.3.5** If any malfunction or defect is found before or during inspection, the fall arrester shall not be used further and shall be returned to 3S Lift for repair. An annual inspection of the fall protection system shall be performed by competent personnel, during which any abnormality should be recorded and maintained.

**6.3.6** Inspect the connection between the ladder and the fall protection system to verify that the ladder equipped with fall protection system is in good working condition. In case of damage, deformation or other defects, notify the relevant person.

**Note:** Parts which are not provided or approved in written by 3S Lift shall not be used.

**6.3.7** Ensure that the guide rail is in good condition without deformation, cracks or other defects, and its joints (between its sections) are aligned with a clearance less than 2 mm.

**6.3.8** Check all labels of the fall protection system for damage or loss, and replace with or affix new labels as needed.

**6.3.9** Ensure that all end stops, fish plates and fasteners of the fall protection system are secured well.

**6.3.10** Ensure that the metal parts of fall arrester show no signs of corrosion and oxidation. If any, consult competent personnel of 3S lift who will determine between replacement or scraping.

### 6.4 Criteria of disposing the fall arrester

**6.4.1** The fall arrester is designed with service life of 5 years. However, the actual service life is dependent on use

environment, temperature, storage and frequency of use. Extreme temperature, fall, or contamination by harmful substances will adversely affect the service life.

**6.4.2** If the routine inspection or annual inspection reveals that the fall arrester fails to meet prescribed criteria and cannot be repaired, the fall arrester shall be scrapped.

**6.4.3** A fall arrester which has blocked a fall shall not be used any more. (As in Fig. 6.1 and Fig. 6.2)



Fig.6.1

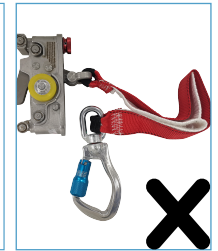


Fig.6.2

## 1 Routine Inspection

Inspection record		
Date of inspection:	Model/Standard:	
Inspected by:	Serial number:	
Date of initial use:		
Inspection items	Remarks	
	Yes	No
1. Check and ensure no damage, oil, dust, or dirt on the surface of the fall arrester.		
2. Check and ensure no deformation or fracture of the carabiner. Check and ensure that the gate of the carabiner can be closed and locked automatically.		
3. Check and ensure all rollers rotate flexibly.		
4. Check and ensure no deformation and damage on the fall arrester, and that the locking lever and swing lever rotate flexibly without clamping stagnation when the carabiner is lifted, and return to original position automatically after the carabiner is released.		
5. Check and ensure that the push button and rotary knob return to their original positions after they are released.		
6. Check and ensure the shock absorber is intact without being extended.		
7. Check and ensure all fasteners are firmly riveted and no obvious tear or deformation.		

This table can only be filled in by competent person, and can be duplicated for further use.

## 7 Storage

- 7.1** Personal protective equipment should be stored in a cool, dry, clean environment, and out of direct sunlight.
- 7.2** Do not expose the fall arrester and full body harness to the corrosive substances including oil, grease, paint or other chemicals. Otherwise the service life of the product might be shortened.
- 7.3** The reconstruction or modification of fall arrester is not allowed. 3S Lift will not assume any responsibility of any injury or death caused by reconstruction or modification of the fall arrester.
- 7.4** The fall arrester and full body harness should be stored and carried in tool kit or packing box.

## 8 Repair and maintenance

- 8.1** When the guide rails and the fall arrester are found to be contaminated by corrosive substances such as oil, grease, paint or other substances during the inspection following clause 8, please clean them with warm water and a little soft detergent. Do not use other cleaning agents.
- 8.2** Wipe it off with a clean cloth and then dry them in air. Do not dry with an artificial heat source.
- 8.3** If necessary, a small amount of oil can be added at the contacts between the rollers and the shafts, to ensure that the rollers smoothly rotate without abnormal noise.
- 8.4** Repair and maintenance must be carried out by a qualified person who must be familiar with and fully understand the instructions.

## 2 Annual Inspection

Inspection record		
Date of annual inspection:	Model/Standard:	
Inspected by:	Serial number:	
Date of initial use:		
Inspection requirements	Remarks	
	Yes	No
1. Check and ensure no damage, oil, dust, or dirt on the surface of the fall arrester.		
2. Check and ensure no deformation or fracture of the carabiner. Check and ensure the gate lock of carabiner can be automatically closed.		
3. Check and ensure all rollers rotate flexibly.		
4. Check and ensure no deformation and damage on the fall arrester, and that the locking lever and swing lever rotate flexibly without clamping stagnation when the carabiner is lifted, and return to original position automatically after the carabiner is released.		
5. Check and ensure that the push button and rotary knob return to their original positions after they are released.		
6. Check and ensure the shock absorber is intact without being extended.		
7. Check and ensure the joint gap is less than 2mm.		
8. Check and ensure that when the fall arrester moves along the guide rail, no abnormal noise is heard.		
9. Check and ensure all connections by riveting are secure without obvious wear, deformation or dislocation of torque marks.		

Inspection requirements	Remarks	
	Yes	No
10. Ensure no deformation, cracks or looseness on the ladder and guide rail.		
11. Ensure that the end stops on the rail type fall protection system are mounted properly.		
12. Ensure that all mounting brackets and fasteners are well secured.		
13. Ensure completeness and legibility of the markings on the fall arrester.		

This table can only be filled in by competent person, and can be duplicated for further use.