

# **Installation, Use and Maintenance**

## **Manual**

### **Fall Protection Anchorage Device**

**Standard 31 - Aluminium Guide Rail (anodised)**

**Standard 32 – Steel Guide Rail (galvanised)**

Stand: 15.08.2006  
SE 39



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# A General

- A 1. Anyone working with or on SÖLL fall protection systems, which comply with EN 353-part 1, must be familiar with these instructions prior to using the system. Not complying with these instructions may constitute a risk to human life!
- A 2. The operator of the fall protection system must ensure that these instructions are either
- retained in dry and secure conditions at the installation or
  - retained by the operator, whereby he or she must ensure that the user is aware of the storage location of these instructions and that the documents are accessible at all times.
- A 3. If requested, the plant operator must present these instructions to the manufacturer of the fall protection system (Christian Dalloz Holding Deutschland GmbH & Co. KG or a dealer authorized by the same).
- A 4. The corresponding instructions regarding the installation and use of Söll accessories on this Söll fall protection system must also be followed.
- A 5. Instructions relevant to the use of other personal protective equipment must also be followed.
- A 6. National regulations for health and safety and use of safety equipment must be complied with.
- A 7. The Söll fall protection systems should be installed and operated using original Söll parts/components only. **Use of parts/components produced by other manufacturers may effect the safety of the Söll anchorage device. Christian Dalloz Holding Deutschland GmbH & Co. KG and its authorised dealers shall not be liable in such cases.** Moreover, we shall not grant any approval in such cases since Söll anchorage devices are tested and approved as an entire system. Entire liability shall then devolve to the operator.
- A 8. The check list (see Section F) must be fully and correctly compiled by the chief engineer of the installing company using of an indelible pen.
- A 9. Functional capability of the system must be checked visually before and during every use of the fall protection system.
- A 10. The Söll fall protection system should only be used in combination with the Söll fall arrester Typ Standard and a 2 m lanyard with an EN 355 compliant shock absorber.
- A 11. The Söll anchorage device, Standard 32, steel guide rail has been designed for the simultaneous use by a maximum of 3 persons.
- A 12. The Söll anchorage device, Standard 31, aluminium guide rail has been designed for the simultaneous use by a maximum of 2 persons.

## B Installation

- B 1.** The installation components consist of
- multiple lengths of inter-connectable vertical guide rails depending on the requirement.
  - an adequate number of mounting brackets that must be fixed at a maximum distance of 560 mm apart.
  - a profile connecting piece fixed onto every guide rail part with 2 No. M12 x 30 special screws with nut and a tooth washer.

**Minimum requirement for every rail route:**

2 end stops for the fall protection system with an index bolt (order no. 16571).

Bolt connections must be secured against loosening. Refer to section D „Bolt connections/ securing of bolts“.

**B 2. Equipment required for easy mounting:**

2 No. 19mm open wrenches

1 No. 17mm open wrench

1 open wrench for wall bolts, according to requirements

2 full body harnesses compliant with EN 361,

1 toolbox,

**Min. 1 additional fall arrest lanyard compliant with EN 354/355 with energy absorber for each person, to protect the climbing person against falls from height during the installation.**

**B 3. Personnel required for installation:**

minimum two persons

**B 4.** Guide rail sections and components must be handled carefully.

**B 5.** Before installation, guide rail sections must be cleaned from dirt - in particular on connecting surfaces. They should not come into contact with cement, mortar or similar substances. Remnants of mortar must be wiped off immediately. The sliding surfaces for the fall arrester, on the inside and outside of the guide-rail, especially must be free of dirt.

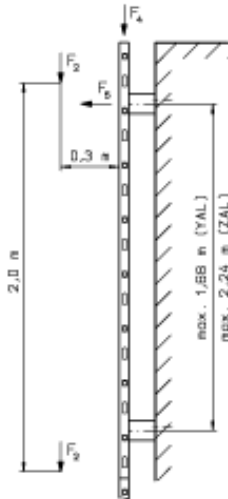
**B 6.** Damaged parts may neither be used nor repaired but must be replaced by new ones.

**B 7. The minimum bolt size for the installation of Söll fall protection rails is M12.**

**B 8.** We specifically stress that only structural fixings that are permitted by site inspection engineers may be used.

- B 9. For installation in concrete structures we recommend the use of chemical fixings or undercut fixings (such as Hilti, Fischer, UPAT or Liebig); follow technical instructions given by the manufacturer.

For installation masonry we recommend that the approval of a qualified design engineer is given for each specific case.



Use the following instructions to calculate the anchoring forces. Always select the least favourable loading result.

- Extreme load case (fall arrest event)  
Assume a load of 6kN ( $F_4$  in fig 1) acts along the centre of the rail. This load is distributed equally over four fixing points (if present).
- Service load case (during normal operation)  
Assume loads of 1.5kN ( $F_2$  in fig 1) are applied at points 30cm in front of the rail at 2m centres. Also, consider a horizontal load of 0.3kN ( $F_5$  in fig 1) applied at the least favourable position.

**Fig. 1****B 10. Requirements for the structure:**

The **fall protection system, Standard 32**, hot-dip galvanised steel guide rail has been tested as per EN 795 and has been designed for a static force of 10 kN for the first person and 1 kN for every additional person (max 3 persons = 12 kN) with the help of a prototype test.

The **fall protection system, Standard 31**, anodised aluminium guide rail has been tested as per EN 795 and has been designed for a static force of 10 kN for the first person and 1 kN for every additional person (max 2 persons = 11 kN) with the help of a prototype test. Requirements for the structure must be specified accordingly.

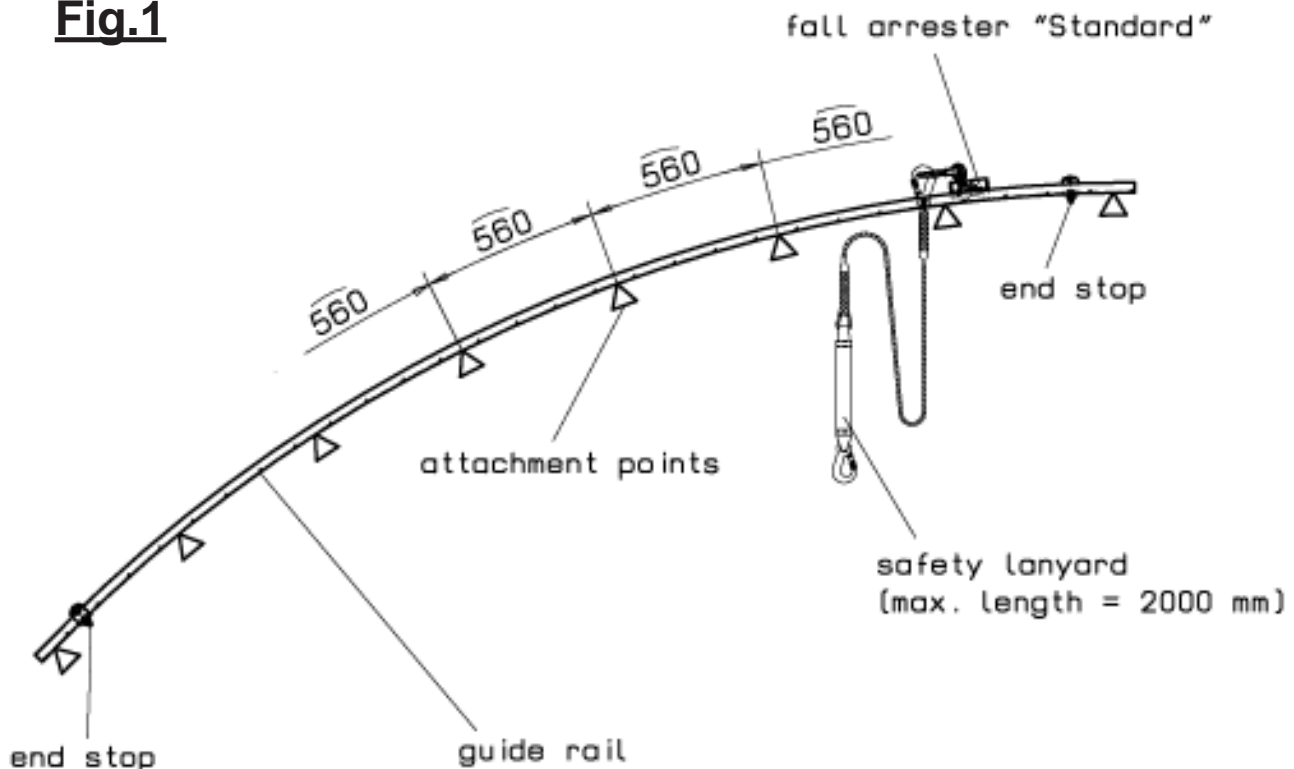
**The following installation recommendations are applicable as per EN 795:**

For fixing in steel or wooden material, the calculation must prove that the design and the installation withstand the force exerted during the prototype test.

For fixing in other materials, the suitability must be ensured by testing the material specimen. The specimen must fulfil the requirements of the prototype test in accordance with EN 795 Point 4.3.4.

After installing in this material, every anchor should be subjected to an axial tensile force of 5 kN in order to test the strength of the attachment. The anchor should withstand the force for at least 15 seconds.

It must be ensured that the clearance required for arresting a worker's fall should not be greater than the one available on-site. A clearance of 5.50 m is required for a standard fall protection system with 2m fall arrester lanyard!

**Fig.1**

**B 11. Torque ranges:**

When tightening mounting screws in **steel grade 8.8** used in combination with tooth lock washers the following tightening torque range is recommended:

Screw size:	M 10	M 12	M 16	M 20
	20 Nm	25 Nm	60 Nm	120 Nm

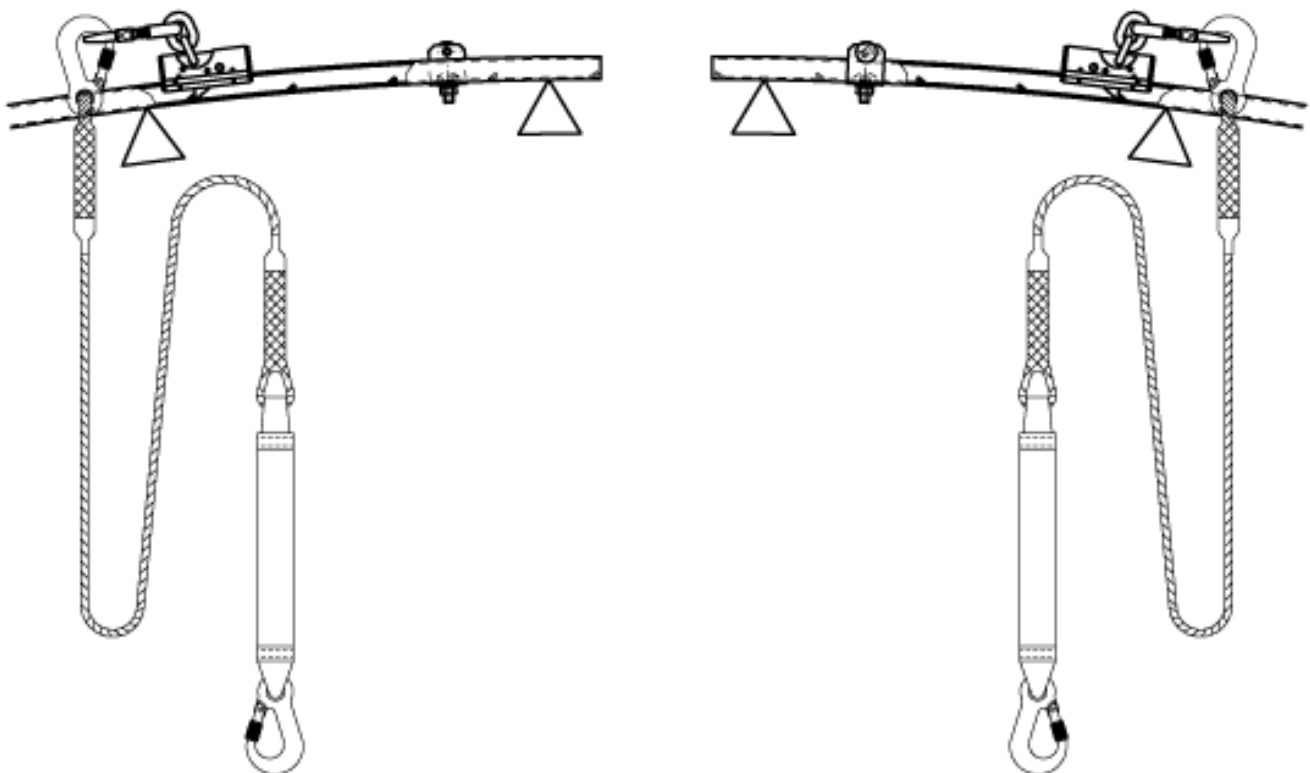
When tightening mounting screws in **stainless steel grade 1.4571** in combination with Söll supplied auto-locking nuts (DIN 985) the following torque range is recommended:

Screw size:	M 10	M 12	M 16	M 20
	40 Nm	45 Nm	85 Nm	150 Nm

**Fig. 2**
**B 12. Danger!**

It must be ensured that an end stop (order no. 16571) is mounted before and after every apex to ensure that the fall arrester always runs in the working direction of the guide rail. The fall arrester can be rotated at the apex by way of:

- a) removing and resetting
- b) recess
- c) exit section
- d) Ho-Ver Turn Table

**Fig. 2**


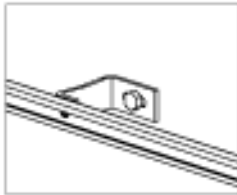
**Fig. 3**  
 B 13. **Mounting bracket**

**Fig. 3**

Fixing bracket

Order No. BB-SSTR (Hot dip galvanised steel)

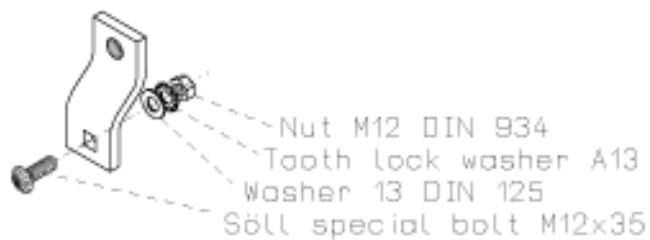
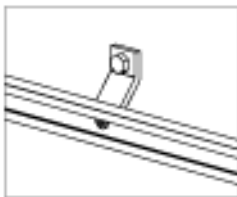
Order No. BB-SA4R (Pickled stainless steel)



Mount

Order No. 11102 (Hot dip galvanised steel)

Order No. 16838 (Pickled stainless steel)



B 14. Minimum Gap Width:  
 Mounting recommendations:

- Under positive ambient temperature, gap width 2 mm
- Under negative ambient temperature, gap width 3 mm
- During re-examination, make sure that the maximum gap width of 5 mm is not exceeded (independently from the ambient temperature)

## C Inspection and approval

While approving, ensure that the arrester plugs of the guide rail face upwards. All bolt connections at the mounting brackets, butt joints and at the climbing locks must be checked. They must be firm and secured against loosening (refer to section D). The index bolt of climbing locks must go to the initial position automatically due to the spring force.

## D Bolt connections/securing of bolts

For hot dip galvanised screws use tooth washer to ensure satisfactory securing of the screw/nut connection.

For stainless steel screws use self-locking nuts (nylocs) to ensure a satisfactory connection.

# E Maintenance

**Caution:**

Due to the reasons pertaining to safety, independent repairs of guide rails are warned against. Guide rails, which are mechanically damaged after arresting a fall, **must** be replaced.

An anchorage device that is affected after arresting a fall must be put out of operation immediately. It should not be operated till a competent person assures the flawless condition of the fall protection system or replaces parts that are damaged due to arresting a fall.

- E 1. If required, ask a competent person to check the flawless condition of the guide rails of the anchorage device.

**Competent person is a:**

person who has been trained and is experienced in the field of personal protective equipment against falls from height, has sufficient knowledge about applicable state and local safety regulations, applicable standards (e.g. EN-standards) and is thus capable and thus authorized by Söll of judging the correct status and use of systems and products against falls from height.

- E 2. Fall arresters must be examined by a competent person at least once a year and after every fall incident. In such cases refer to the relevant instructions for the fall arrester.
- E 3. Check the proper condition and function of all elements of the anchorage device before and during use.
- E 4. End locks (order no. 16571) must be provided at the ends of the anchorage device as well as before and after every apex. The index bolt of the end stop must go to the initial position automatically and must prevent the sliding contact from slipping.
- E 5. Guide-rails must always be free of dirt.
- E 6. All bolt connections must be tightly fastened and secured, see section D.
- E 7. At every location of a fall arrest system where a fall arrester may be connected or disconnected to the system a permanent sign board with the following information shall be displayed:
- Year of manufacture
  - System manufacturer's or importer's name
  - Type of fall system e.g. EN 353-1
  - „Anyone using the system shall use a full body harness and an appropriate fall arrester“

**Note:** Sign Boards may consist of stamped aluminium plates.

# F Check list for the inspection and approval of Söll-anchorage device

Standard 31 - Aluminium Guide Rail (anodised)  
 Standard 32 – Steel Guide Rail (galvanised)

The check list on pages 11-12 must be fully and correctly completed by the chief engineer of the installing company by means of an indelible pen. He is responsible for the correctness of all the information provided therein. Any checkpoint with a „No“ remark must be explained under the defects, irregularities on page 12.

<b>Control Activity</b>	<b>Remarks</b> (please cross) i.O.
• The maximum fixing distance is 560 mm B 10.	<input type="checkbox"/>
• The gaps at the guide-rail joints comply with section B 14.	<input type="checkbox"/>
• The bolt connections between structure and mounting elements comply with section B 7.	<input type="checkbox"/>
• The mounting elements are correctly installed and all bolt connections are tightly fastened.	<input type="checkbox"/>
• All bolt connections are secured against loosening in accordance with section D.	<input type="checkbox"/>
• „End stops with index bolt“ have been fixed at the beginning and end of the guide rails as well as before and after every apex as	<input type="checkbox"/>
• The index bolt of the end stop (order no. 16571) can move freely and goes to the initial position automatically.	<input type="checkbox"/>
• A Söll-system sign is posted.	<input type="checkbox"/>
• The guide-rails are free of dirt.	<input type="checkbox"/>
• Only anticorrosive, or hot dip galvanized mounting elements and bolt connections have been used.	<input type="checkbox"/>
• The SÖLL fall arrester can only be inserted into the guide-rail in the direction in which it travels	<input type="checkbox"/>
• Söll fall arresters have been handed over to the operator.	<input type="checkbox"/>
• Test climbing has taken place.	<input type="checkbox"/>
• No defects were identified.	<input type="checkbox"/>
• This manual was handed over to the operator.	<input type="checkbox"/>
• Only original components from Christian Dalloz Holding Deutschland GmbH & Co. KG were used.	no <input type="checkbox"/> yes <input type="checkbox"/>

