



INSTALLATION MANUAL

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I INSTALLATION INSTRUCTIONS FOR THE SAFERAIL FALL ARREST SYSTEM

The SafeRail fall arrest system and the SafeRail Carriage-safety carriage ensure safe ascent and descent through its built-in fall arrest feature. The system is designed to be used on vertical structures.

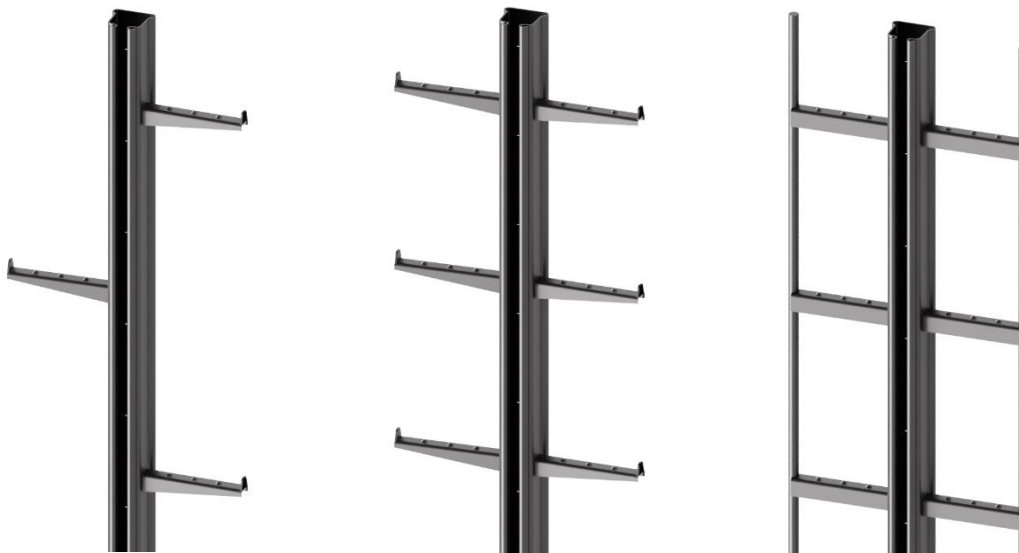
Using the system for any other purposes than those specified by the manufacturer is forbidden.

If the product is sold outside of Finland, the reseller must deliver the installation and user instructions of the SafeRail-fall arrest system in the language of the country in question.

1. BEFORE INSTALLATION

Read the installation instructions carefully and ensure that you have the appropriate tools and safety equipment required available for the installation. Also make sure that the necessary preparations and work safety measures have been carried out before you begin the installation.

2. INSTALLATION OF THE SAFERAIL LADDERS – SINGLE STEP, TWIN STEP, AND HANDRAIL LADDER MODELS



Single Step Ladder MM 111

Twin Step Ladder MM 112

Handrail Ladder MM 121

Each SafeRail ladder model is based on the Vertical SafeRail MM 101 (safety rail).

2.1 FORBIDDEN METHOD OF INSTALLATION

- It is strictly forbidden to install the SafeRail ladders at a negative angle of climb.

2.2 INSTALLATION DIRECTION

- The installation must always begin at the top, proceeding down.
- The topmost SafeRail ladder section must consist of a complete element (3000 mm or 5700 mm). Both ends of the ladder element must be equipped with factory-prepared holes.

2.3 FASTENERS USED FOR INSTALLATION

- The SafeRail ladder elements Single Step Ladder MM 111 and Twin Step Ladder MM 112 are attached to the chosen structure using fasteners that are based on the SafeRail Clamp-rail fastener MM 211. These are MM 221- MM 263. The SafeRail ladder elements with handrails, Handrail Ladder MM 121 and MM 122 are attached to the chosen structure using fasteners MM 271 – MM 273.
- When installing the fasteners follow the instructions given for installing SafeRail Clamp MM 211 on page 7 section 4.1.

2.4 FIXING DISTANCE BETWEEN FASTENERS

- The maximum fixing distance between the fasteners for SafeRail ladders MM 111, MM 112, MM 113, and MM 121 is 2,500 mm.
- However, the maximum fixing distance between the two topmost fasteners is 1000 mm.
- As the fasteners cannot be placed level with the steps of the SafeRail ladder, the fixing distance between the fasteners must be divisible by 300 mm, for example 1500, 1800, or 2100 mm.
- For the Handrail Ladder MM 122 with supporting handrails, the maximum recommended fixing distance between the fasteners is 2900 mm. This requires the Handrail Ladder MM 122 to be attached by the handrails (using Handrail Ladder Fastener MM 271–273, for example). A section of the ladder amounting to a maximum of 1500 mm may be left unsupported at the bottom of the Handrail Ladder MM 122.

2.5 JOINING OF SAFERAIL LADDER ELEMENTS

- The SafeRail Joint-extension piece MM 201 is attached using the holes at the ends of the SafeRail ladder element.

2.6 GROUND CLEARANCE

- We recommend allowing a ground clearance of 500 mm for each SafeRail ladder model, to ensure that the SafeRail Carriage-safety carriage can be easily coupled with the safety rail and removed from it.
- The maximum ground clearance allowed is 1000 mm.

2.7 INSTALLATION OF SAFERAIL CARRIAGE STOPPER-CARRIAGE BARRIERS

- At the top end of the topmost SafeRail ladder element's safety rail, install a SafeRail Carriage Stopper-carriage barrier MM 313 or the unlocking model MM 312. This prevents the safety carriage from uncoupling from the safety rail accidentally.
- At the bottom end of the lowermost SafeRail ladder element's safety rail, install an unlocking SafeRail Carriage Stopper-carriage barrier MM 311.

2.8 INSTALLATION OF SAFERAIL INSTRUCTIONAL SIGNS

- The SafeRail ladders must always be equipped with an instructional sign that informs the user of the need to use a full-body harness and a SafeRail Carriage-safety carriage when using the SafeRail fall arrest system.
- The instructional sign must be installed in such a manner that it is easy to spot and clearly visible to the user before using the system.

- The installation month and year are also to be recorded on the instructional sign. The party carrying out the installation is responsible for adding this information on to the sign.

2.9 THINGS TO BE ADHERED TO IN CONNECTION TO INSTALLATION

- If the SafeRail ladder is installed at a positive angle of climb/inclination, the Handrail ladder model MM 121 or MM 122 must be used.
- CAUTION! For safety reasons, the Single Step Ladder MM 111 or Twin Step Ladder MM 112 models cannot be used if the ladder is used inclined.
- When tensioning the SafeRail Joint-extension piece MM 201, make sure that the width of the safety rail groove remains at 15 mm. The width must be the same on both sides of the extension piece.
- CAUTION! Each section of the safety rail where the SafeRail Carriage-safety carriage used with the SafeRail ladder can come off the rail must be equipped with a stopper. As mentioned in section 2.7, the stoppers designed to be used at the top end of SafeRail ladders and/or Vertical SafeRail-safety rails include the unlocking Carriage Stopper-carriage barrier MM 312 and the fixed Carriage Stopper-carriage barrier MM 313. Carriage Stopper-carriage barrier MM 311 is designed to be used at the bottom end of SafeRail ladders and/or Vertical SafeRail-safety rails.

3. INSTALLING A VERTICAL SAFERAIL-SAFETY RAIL ON AN EXISTING LADDER

The Vertical SafeRail-safety rail MM 101 can also be installed on an existing ladder.

3.1 FORBIDDEN METHOD OF INSTALLATION

- It is strictly forbidden to install the Vertical SafeRail- safety rail at a negative angle of climb.

3.2 INSTALLATION DIRECTION

- Installation must always begin at the top, proceeding down.
- The topmost Vertical SafeRail-safety rail section must consist of a complete element (3000 mm). Both ends of the safety rail must be equipped with factory-prepared holes.

3.3 FASTENERS USED FOR INSTALLATION

- The Vertical SafeRail-safety rail is attached to the middle of the ladder and against the ladder using SafeRail-fasteners: MM 231 – MM 233 or MM 221 – MM 223. When installing the fasteners follow the instructions given for installing SafeRail Clamp MM 211 on page 7 section 4.1



Vertical SafeRail-safety rail MM 101

3.4 FIXING DISTANCES

- The maximum fixing distance is 2500 mm.
- However, the maximum fixing distance between the two topmost fasteners is 1000 mm.

3.5 JOINING OF VERTICAL SAFERAIL-SAFETY RAILS

- The SafeRail Joint-extension piece MM 201 is attached using the holes at the ends of the Vertical SafeRail-safety rails.

3.6 GROUND CLEARANCE

- We recommend allowing a ground clearance of 500 mm for the Vertical SafeRail-safety rail to ensure that the SafeRail Carriage-safety carriage can be easily coupled with the Vertical SafeRail-safety rail and removed from it. The maximum ground clearance allowed is 1000 mm.

3.7 INSTALLATION OF SAFERAIL CARRIAGE STOPPER-CARRIAGE BARRIERS

- At the top end of the topmost Vertical SafeRail-safety rail, install a SafeRail Carriage Stopper-carriage barrier MM 313 or the unlocking model MM 312. This prevents the SafeRail Carriage-safety carriage from coming off the safety rail accidentally.
- At the bottom end of the bottom Vertical SafeRail-safety rail, install an unlocking SafeRail Carriage Stopper-carriage barrier MM 311.

3.8 INSTALLATION OF SAFERAIL INSTRUCTIONAL SIGNS

- The Vertical SafeRail-safety rail must always be equipped with an instructional sign that informs the user of the need to use a full-body harness and a SafeRail Carriage-safety carriage when using the SafeRail fall arrest system.
- The instructional sign must be installed in such a manner that it is easy to spot and clearly visible to the user before using the system.
- The installation month and year are also to be recorded on the instructional sign. The party carrying out the installation is responsible for adding this information on to the sign.

3.9 THINGS TO BE ADHERED TO DURING INSTALLATION

- During the installation of the Vertical SafeRail-safety rail, you must also make sure that the ladders on to which the safety rail is installed have been fastened appropriately and securely.
- When tensioning the SafeRail Joint-extension piece MM 201, make sure that the width of the safety rail groove remains at 15 mm. The width must be the same on both sides of the extension piece.
- CAUTION! Each section of the safety rail where the SafeRail Carriage-safety carriage used with the Vertical SafeRail-safety rail can come off the rail must be equipped with a stopper. As mentioned in section 3.7, the stoppers designed to be used at the top end of SafeRail ladders and/or Vertical SafeRail-safety rails include the unlocking Carriage Stopper-carriage barrier MM 312 and the fixed Carriage Stopper-carriage barrier MM 313. Carriage Stopper-carriage barrier MM 311 is designed to be used at the bottom end of SafeRail ladders and/or Vertical SafeRail-safety rails.

4. USE AND INSTALLATION OF FASTENERS BASED ON THE SAFERAIL CLAMP-RAIL FASTENER

The SafeRail Clamp-rail fastener MM 211 is an essential fastener used with the SafeRail-fall arrest system. It provides the basis for the fasteners used with the SafeRail ladders and the Vertical SafeRail-safety rails. These fasteners include the MM 221 – MM 263 models.

4.1 INSTALLATION OF THE SAFERAIL CLAMP-RAIL FASTENER

1. Attach the SafeRail Clamp-rail fastener to your chosen fastener. Completely screw in the bolt, utilizing the entire thread.
2. Place the SafeRail ladder or the Vertical SafeRail-safety rail on to the SafeRail Clamp-rail fastener. Attach the locking screw of the SafeRail Clamp- rail fastener. When tensioning the locking screw, ensure that the groove of the safety rail remains at a width of 15 mm.

The locking screw can in the middle of the ladder or rail element be tensioned to ~20 Nm and at the end of a ladder or rail element be tensioned to ~10 Nm before it affects the groove of the safety rail



SafeRail Clamp-rail fastener MM 211

5. USE AND INSTALLATION OF HANDRAIL LADDER FASTENERS

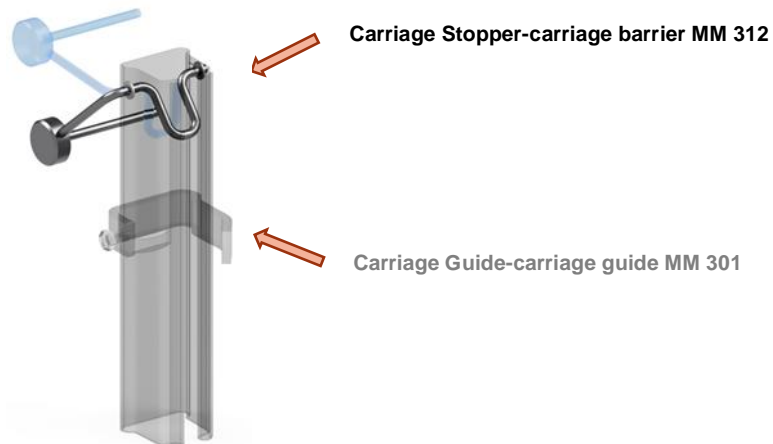
The Handrail Ladder- fasteners are used with the handrail-equipped Handrail Ladder model MM 121. These fasteners include the MM 271 – MM 273 models.

5.1 INSTALLATION OF THE HANDRAIL LADDER FASTENER

1. The Handrail Ladder- fastener is fixed to the structure by the handrail of the Handrail Ladder MM 121.
2. Fixing is to always be done to both handrails.

6. USE AND INSTALLATION OF THE UNLOCKING CARRIAGE STOPPER-CARRIAGE BARRIER MM 312

The unlocking Carriage Stopper-carriage barrier MM 312 is installed at the top end of a SafeRail ladder or a Vertical SafeRail- safety rail to prevent the SafeRail Carriage-safety carriage from coming off the safety rail accidentally.



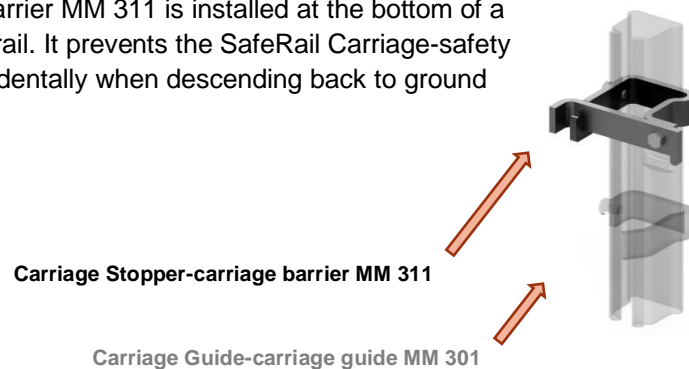
Together with the Carriage Stopper-carriage barrier MM 312, you must also always install the Carriage Guide-carriage guide MM 301, which ensures that the SafeRail Carriage-safety carriage is coupled with the safety rail in the correct position.

6.1 INSTALLATION OF THE UNLOCKING CARRIAGE STOPPER-CARRIAGE BARRIER MM 312

1. Pass the end of Carriage Stopper-carriage barrier MM 312 without a handle, through the holes at the end of the safety rail such that the handle is placed on the left side of the safety rail.
2. Install the washers and pins.

7. USE AND INSTALLATION OF UNLOCKING CARRIAGE STOPPER-CARRIAGE BARRIER MM 311

The unlocking Carriage Stopper-carriage barrier MM 311 is installed at the bottom of a SafeRail ladder or Vertical SafeRail-safety rail. It prevents the SafeRail Carriage-safety carriage from coming off the safety rail accidentally when descending back to ground level/starting plane.



7.1 INSTALLATION OF THE UNLOCKING CARRIAGE STOPPER-CARRIAGE BARRIER MM 311

1. Slide the Carriage Stopper-carriage barrier MM 311 on to the safety rail such that it is placed against the back of the safety rail and the latch of the stopper opens up on to the right side.
2. The Carriage Stopper-carriage barrier MM 311 must be installed such that the bottom screw connects with the locking notch at the bottom of the safety rail. Tension the screws: first the bottom one, then the locking screw on the left side of the safety rail. When tensioning the locking screw, ensure that the groove of the safety rail remains at a width of 15 mm. Note that the locking screw can be tensioned to ~10 Nm before it affects the width of the groove of the safety rail.

8. USE AND INSTALLATION OF THE CARRIAGE GUIDE MM 301

A Carriage Guide must always be installed at both the top and bottom ends of SafeRail ladders and safety rails. This ensures that the SafeRail Carriage-safety carriage is coupled with the safety rail in the correct position.

8.1 INSTALLATION OF THE CARRIAGE GUIDE MM 301

1. Slide the Carriage Guide-carriage guide on to the safety rail such that it is placed against the back of the safety rail and the locking screw is placed on the left side of the safety rail. Tension the screw. When tensioning the locking screw, ensure that the groove of the safety rail remains at a width of 15 mm. Note that the locking screw can be tensioned to ~10 Nm before it affects the width of the groove of the safety rail



Carriage Guide-carriage guide MM 301

2. After the installation of the Carriage Guide-carriage guide, check that the SafeRail Carriage-safety carriage cannot be coupled with the safety rail incorrectly. The pin on the SafeRail Carriage-safety carriage must remain on the left side of the carriage as the carriage is slid on to the rail, and the Up-arrow engraved on the carriage must point up.

9. USE AND INSTALLATION OF THE CARRIAGE STOPPER-CARRIAGE BARRIER MM 313

Carriage Stopper-carriage barrier MM 313 is installed at the top end of a SafeRail ladder or Vertical SafeRail-safety rail as a fixed barrier preventing passage. It prevents the SafeRail Carriage-safety carriage from coming off the safety rail accidentally.

9.1 INSTALLATION OF THE CARRIAGE STOPPER-CARRIAGE BARRIER MM 313

1. Slide the Carriage Stopper-carriage barrier MM 313 on to the end of the safety rail.
2. The Carriage Stopper-carriage barrier MM 313 must be installed such that the bottom screw connects with the locking notch at the bottom of the safety rail. Tension the screws: first the bottom one, then the locking screw on the left side of the safety rail. When tensioning the locking screw, ensure that the groove of the safety rail remains at a width of 15 mm. Note that the locking screw can be tensioned to ~10 Nm before it affects the width of the safety rail.



Carriage Stopper-carriage barrier MM 313

10. USE AND INSTALLATION OF THE SAFERAIL JOINT- EXTENSION PIECES MM 201

The SafeRail Joint-extension pieces are used to connect the SafeRail ladder elements and the Vertical SafeRail-safety rails with each other.

10.1 INSTALLATION OF THE SAFERAIL JOINT-EXTENSION PIECES MM 201

1. Check that the ends of the safety rail are properly attached and placed level with each other.
2. Install the extension pieces and tension the screws. When tensioning the screws, ensure that the groove of the safety rail remains at a width of 15 mm.



SafeRail Joint- extension pieces MM 201

II USER INSTRUCTIONS FOR THE SAFERAIL-FALL ARREST SYSTEM

The SafeRail-fall arrest system and the SafeRail Carriage-safety carriage ensure safe ascent and descent through its built-in fall arrest feature. The system is designed to be used on vertical structures.

Using the system for any other purposes than those specified by the manufacturer is forbidden.

If the product is sold outside of Finland, the reseller must deliver the installation and user instructions of the SafeRail-fall arrest system in the language of the country in question.

1. BEFORE EACH USE

The user must review the user instructions before using the SafeRail-fall arrest system as well as be familiar with the use of fall protection equipment (SafeRail Carriage-safety carriage, Vertical SafeRail-safety rail, and the safety harness).

Before each use, the user must ensure that a commissioning inspection has been carried out for the SafeRail-fall arrest system and perform the appropriate checks according to sections 1.1–1.4.

1.1 INSPECTING SAFERAIL LADDERS AND/OR VERTICAL SAFERAIL-SAFETY RAILS AND THE SAFERAIL CARRIAGE-SAFETY CARRIAGE BEFORE EACH USE

- The structures of the SafeRail ladder and/or the Vertical SafeRail-safety rail are undamaged. In order to check that the SafeRail ladder and/or the Vertical SafeRail-safety rail have been installed correctly, the user must also review the installation instructions.
- The structures to which the SafeRail ladder and/or the Vertical SafeRail-safety rail have been attached are undamaged.
- The screws, bolts, and nuts of the fasteners and the extension pieces used to secure the SafeRail ladder and/or the Vertical SafeRail-safety rail are safely and securely attached.
- The spring of the SafeRail Carriage-safety carriage is properly in place and functional. The condition of the spring must be verified by coupling the carriage with and moving the carriage along the Vertical SafeRail-safety rail and letting go. After falling, the SafeRail Carriage-safety carriage will lock automatically on to the locking notches if the spring is working as expected. The Vertical SafeRail-safety rail is equipped with locking notches every 150 mm.
- The SafeRail Carriage-safety carriage has not been deformed.
- The markings on the SafeRail ladder and/or the Vertical SafeRail-safety rail as well as on the SafeRail Carriage-safety carriage are clearly legible.
- Please note that incorrect installation of the SafeRail ladder and/or the Vertical SafeRail-safety rail and/or incorrect assembly of components may lead to the following hazardous situations, for example:
 - If the recommended fixing distances have not been followed, the SafeRail ladder and/or the Vertical SafeRail-safety rail may become detached causing the user to fall down with the detached components or be seriously injured as detached components fall on the user, or seriously injuring or subjecting to mortal danger other people further below or at ground level. In the worst case, the SafeRail ladder and/or the Vertical SafeRail-safety rail becoming detached may also subject the user to mortal danger.
 - If, contrary to the prohibition in the installation instructions, the SafeRail ladder and/or the Vertical SafeRail-safety rail have been installed at a negative angle of climb, the SafeRail

Carriage-safety carriage will not lock on to the locking notches on the Vertical SafeRail-safety rail and thus won't stop the user from falling, subjecting them to mortal danger.

- If a Carriage Guide-carriage guide MM 301 has not been installed at both the top and bottom end of the SafeRail ladder and/or the Vertical SafeRail-safety rail, it is possible for the user to accidentally couple the SafeRail Carriage-safety carriage with the safety rail the wrong way round, in which case the carriage will not lock on to the locking notches on the Vertical SafeRail-safety rail and thus will not stop the fall. This will subject the user to mortal danger.
- If the Carriage Guide-carriage guide MM 301 has been installed incorrectly such that the locking screw is placed on the right side of the safety rail instead of the left, it is possible for the user to accidentally couple the SafeRail Carriage-safety carriage with the safety rail the wrong way round, in which case the carriage will not lock on to the locking notches on the Vertical SafeRail-safety rail and thus will not stop the fall. This will subject the user to mortal danger.
- If Carriage Stopper-carriage barriers have not been installed to both the top and bottom ends of the SafeRail ladder and/or the Vertical SafeRail-safety rail, the SafeRail Carriage-safety carriage may come off the safety rail accidentally, thus subjecting the user to mortal danger. In this case, mortal danger is particularly present at the top end of the safety rail, where the risk of falling from a height is significant.
- If an unlocking Carriage Stopper-carriage barrier MM 312 has been installed incorrectly at the bottom of the SafeRail ladder and/or the Vertical SafeRail-safety rail instead of the top end, there is a risk that the SafeRail Carriage-safety carriage may come off the safety rail accidentally, in which case the user may fall. At the bottom end of the safety rail, the fall is unlikely to be at height, if the installation is compliant with the ground clearance specification of the installation instructions for the SafeRail ladder and/or the Vertical SafeRail-safety rail, which allows for a maximum ground clearance of 1000 mm.
- If an unlocking Carriage Stopper-carriage barrier MM 311 has been installed incorrectly at the top end of the SafeRail ladder and/or the Vertical SafeRail-safety rail instead of the bottom, there is a risk that the SafeRail Carriage-safety carriage may come off the safety rail accidentally, thus subjecting the user to mortal danger. In this case there is a risk of falling from significant height.
- If SafeRail ladders and/or Vertical SafeRail-safety rails have been connected to each other using some other components than the SafeRail Joint-extension pieces or the SafeRail Joint-extension pieces have not been appropriately tensioned, there is a danger that the joints fail and the SafeRail Carriage-safety carriage comes off the safety rail. This may subject the user to mortal danger.

1.2 INSPECTING THE SAFETY HARNESS AND THE SUPPORT ROPE BEFORE EACH USE

- The harness used must be a full-body harness conformant with the EN 361 standard, which is in the condition required by the relevant regulations. The front of the harness must have a D-ring, or another approved attachment point for attachment to the SafeRail Carriage-safety carriage.
- The attachment point on the safety harness is attached directly to the carabiner on the SafeRail Carriage-safety carriage, which conforms to the requirements of the EN 362 standard. Check that the locking screw-gate on the carabiner closes securely.
- The safety harness must be adjusted to fit the user sufficiently tightly.

- In addition to the safety harness, the user must have two undamaged support ropes for climbing. (The support ropes provide additional security while resting and working.)

1.3 CHECKING THE MAXIMUM AND MINIMUM WEIGHT OF THE USER, THE NUMBER OF USERS, THE DISTANCE BETWEEN USERS, AND THE MINIMUM OPERATING TEMPERATURE BEFORE EACH USE

- The maximum weight of a user including gear (tools and other equipment) is **160 KG**.
- The minimum weight of a user excluding gear (tools and other equipment) is **60 KG**.
- The minimum operating temperature is **-25 °C**.
- The number of concurrent users per each SafeRail Carriage-safety carriage is **MAX. 1 PERSON**.
- The distance between users during climbing must be **> 6 M**.
- Multiple users may use a SafeRail ladder element and/or a Vertical SafeRail-safety rail element at the same time, but then it must be ensured that the number of users on each section between fasteners is **MAX. 1 PERSON**.

1.4 ENSURING OTHER KEY FACTORS OF WORK SAFETY BEFORE EACH USE

- The working ability and state of health of the user must be verified to be suitable for using the SafeRail-fall arrest system.
- Working alone is not recommended with the SafeRail-fall arrest system.
- Make sure that you are equipped with workwear that is suitable for climbing, working, and the prevailing conditions, as well as a helmet and safety shoes.
- Before using the system, prepare for potential accidents and plan how to act in a hazardous situation. The relevant rescue procedure must be immediately available and realizable in the event of an accident during use.
- Please note that the SafeRail Carriage-safety carriage cannot be used to prevent falling. It is instead designed to arrest a user's fall. When falling down, the SafeRail Carriage will automatically lock on to the locking notches placed at 150 mm intervals on the Vertical SafeRail-safety rail. If fall prevention is required, personal protective equipment designed specifically for the purpose must be used.
- You may not adjust the length of the attachment element on the SafeRail Carriage-safety carriage (the carabiner) by, for example, adding or removing connecting equipment.
- Before each use, you must check that there is enough space below the working area to prevent bumping against structures or the ground, for example.

IF ANY DEFICIENCIES/DEFECTS ARE NOTICED DURING THE INSPECTIONS CARRIED OUT BEFORE USE OR THERE ARE DOUBTS CONCERNING THE CONDITION OF THE SYSTEM, A WRITTEN NOTIFICATION MUST IMMEDIATELY BE SUBMITTED TO THE PARTY RESPONSIBLE FOR THE MAINTENANCE OF THE SYSTEM. BEFORE USING THE SYSTEM, EACH DEFICIENCY/DEFECT NOTICED DURING INSPECTION MUST BE REMEDIATED. THE SAFERAIL-FALL ARREST SYSTEM CANNOT BE MODIFIED IN ANY WAY AND ITS COMPONENTS CANNOT BE REPLACED WITH ANY OTHER COMPONENTS THAN THOSE APPROVED BY THE MANUFACTURER OF THE SYSTEM.

2. USER INSTRUCTIONS FOR THE SAFETY HARNESS AND THE SAFERAIL CARRIAGE-SAFETY CARRIAGE

- Attach the locking carabiner of the SafeRail Carriage-safety carriage to the attachment point (D-ring) on the front of your safety harness conformant with the EN 361 standard or another approved attachment point. The attachment points are indicated with the letter “A” on the harness. The safety harness must have two fixed support ropes. The length of one of the support ropes must be adjustable with a sliding adjuster.
- If the full-body harness loosens during use, it must be immediately tightened to fit. The full-body harness may not be used when loose, it must be properly tightened to fit.
- Check that the safety carriage is compatible with the Vertical SafeRail-safety rail.
- Only a single user may be attached to a SafeRail Carriage-safety carriage at any one time. The pin on the SafeRail Carriage-safety carriage must remain on the left side of the carriage as the carriage is coupled with the rail, and the Up arrow engraved on the carriage must point up.
- The attachment to and detachment from the safety rail must take place in a safe location, or it must be done while using separate fall protection equipment.
- When climbing, the distance between the safety harness and the SafeRail Carriage-safety carriage must be adjusted so that the angle of lean is minimized, thus reducing the strain on the safety harness to a minimum. However, the user’s knees may not bump into the steps of the ladder while climbing. Please note that even small changes in the tension of the safety harness have a significant effect on the optimal functionality of the SafeRail Carriage-safety carriage and the safety harness.
- The fastening must always be secured by a support rope when working or resting. In addition, the positioning of the anchorage points and the performance of the work must be planned out such that the potential for a fall and the potential falling height are minimized.
- During climbing, the user must lean back to allow the SafeRail Carriage-safety carriage to move smoothly along the Vertical SafeRail-safety rail and the climbing to remain effortless. While climbing, the SafeRail Carriage-safety carriage automatically follows the user.
- In case the user falls, or another similar situation occurs, where the external pulling force that the safety carriage is subjected to disappears, the carriage will slide down the rail and lock into place by the locking notches on the Vertical SafeRail-safety rail. The Vertical SafeRail-safety rail is equipped with locking notches every 150 mm.
- If the SafeRail-fall arrest system has been installed such that the SafeRail Carriage-safety carriage must be disconnected from the safety rail to allow the user to transfer to the next safety rail, the transfer must be performed while attached to a secondary anchorage point, e.g. by one of the support ropes carried by the user.
- More than one user may be supported by a Vertical SafeRail-safety rail, but in this case, it must be ensured that each section between the fasteners only has a single user at any one time.
- Use of the SafeRail Carriage-safety carriage for any other purposes other than climbing is forbidden.
- Use of the SafeRail Carriage-safety carriage and the fall arrest system while under the influence of alcohol, drugs, performance decreasing medication, or any other substances that may impede performance is strictly forbidden.
- Before using the system, it must be ensured that the user's working ability and state of health are suitable for using the SafeRail Carriage-safety carriage and the fall arrest system. If the user is in a poor physical condition or suffers from, for example, repeated dizziness, epilepsy, heart disease, serious lung disease, mental health disorder (including fear of heights), or significant reduction in

joint function the user may not be suited for using the SafeRail Carriage-safety carriage and the fall arrest system. If there are any doubts related to state of health or working ability of the user, it should be checked by a doctor before using the system.

- Please note that the SafeRail Carriage-safety carriage may not be taken outside in freezing temperatures while wet.
- Also note that SafeRail Carriage-safety carriages designed for horizontal use can never be used for vertical climbing.
- If atypical wear is noticed on a SafeRail Carriage-safety carriage, the carriage's claw does not automatically extend outside the body of the carriage, or the plastic sleeves have worn through, the carriage must immediately be removed from use and replaced with a new SafeRail Carriage-safety carriage.
- When a SafeRail Carriage-safety carriage has stopped a falling user, it must be removed from use and replaced with a new one.

3. MAINTENANCE INSTRUCTIONS AND STORAGE

Any broken components of SafeRail ladders and Vertical SafeRail-safety rails must be replaced with new ones. No modifications or additions may be made to the SafeRail-fall arrest system, and its components may not be replaced with any other parts than those approved by the manufacturer.

3.1 SAFERAIL CARRIAGE-SAFETY CARRIAGE

- The SafeRail Carriage-safety carriage is made from stainless steel and plastic, and it is almost maintenance-free. The SafeRail Carriage-safety carriage is not susceptible to weather conditions or corrosion.
- The SafeRail Carriage-safety carriage does not require lubrication or oil. It is advisable to dry off the SafeRail Carriage-safety carriage after use if it has become wet. While drying, avoid subjecting the SafeRail Carriage-safety carriage to direct heat. It is also advisable to clean the SafeRail Carriage-safety carriage as necessary to ensure that it is comfortable to use, and the safety markings remain clearly legible. Where necessary, cleaning agents suitable for stainless steel may be used to clean the carriage. When cleaning the carriage, follow the cleaning methods specified above closely.
- The SafeRail Carriage-safety carriage must be stored such that it is protected from weather conditions and dirt.
- It is forbidden to do any changes, additions or repairs to the SafeRail Carriage-safety carriage.


3.2 SAFERAIL LADDERS AND VERTICAL SAFERAIL-SAFETY RAILS

SafeRail ladders and Vertical SafeRail-safety rails retain their functionality without any special maintenance or cleaning. Neither do special requirements exist for their storage.

If SafeRail ladders and Vertical SafeRail-safety rails are installed in a location that is highly susceptible to corrosion (such as above a swimming pool), specific monitoring measurements must be carried out.

4. TYPE APPROVAL AND QUALITY ASSURANCE

The SafeRail-fall arrest system (Vertical SafeRail-safety rail MM 101, SafeRail Carriage-safety carriage MM 401, SafeRail Joint-extension piece MM 201, Unlocking Carriage Stopper-carriage barrier MM 312, Unlocking Carriage Stopper-carriage barrier MM 311, and Carriage Stopper-carriage barrier MM 313) has been tested in accordance with the EN 353-1:2014 + A1:2017 standard, and it meets the requirements of Regulation (EU) 2016/425 of the European Parliament and of the Council on personal protective equipment.

Finnish Institute of Occupational Health, Topeliuksenkatu 41 B, FI-00250 Helsinki, notified body no. 0403, has issued a type approval certificate.  0403

Finnish Institute of Occupational Health (TTL) monitors that the quality of production is uniform.

5. SIGNS AND MARKINGS

Each SafeRail Carriage-safety carriage, as well as the SafeRail ladders and/or the Vertical SafeRail-safety rails, are equipped with markings that inform about the safe use of the fall arrest system and the safety carriage and provide essential information regarding the products.

5.1 SAFERAIL LADDER AND VERTICAL SAFERAIL-SAFETY RAIL MARKINGS

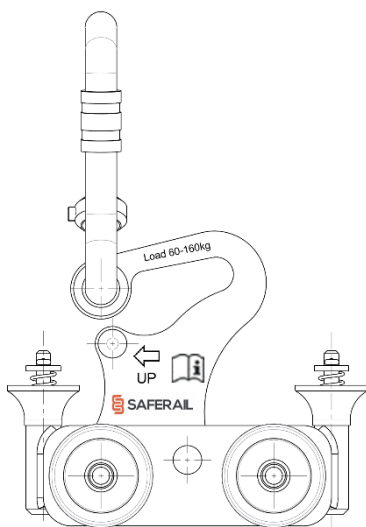
The SafeRail Ladders and the Vertical SafeRail-safety rails are marked with the following permanent identification information:

- SafeRail trademark  SAFERAIL®
- CE body identification number (CE-0403)  0403
- Vertical SafeRail-safety rail manufacturing lot, for example 001

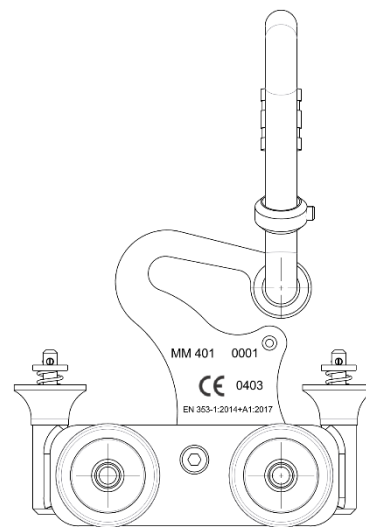
5.2 SAFERAIL CARRIAGE-SAFETY CARRIAGE MARKINGS

The SafeRail Carriage-safety carriage is marked with the following permanent identification information:

- Minimum and maximum permissible load (LOAD 60–160 kg); the marking can be found on the front side of the carriage
- Direction of coupling of the carriage (UP); the marking can be found on the front side of the carriage
- A marking advising the user to read the user instructions; the marking can be found on the front side of the carriage
- SafeRail trademark; the marking can be found on the front side of the carriage
- SafeRail Carriage product number (MM 401); the marking can be found on the back side of the carriage
- SafeRail Carriage manufacturing lot, for example 001; the marking can be found on the back side of the carriage
- CE body identification number (CE 0403); the marking can be found on the back side of the carriage
- Standard number (EN 353-1:2014 + A1:2017); the marking can be found on the back side of the carriage



Front side of the SafeRail Carriage-safety carriage







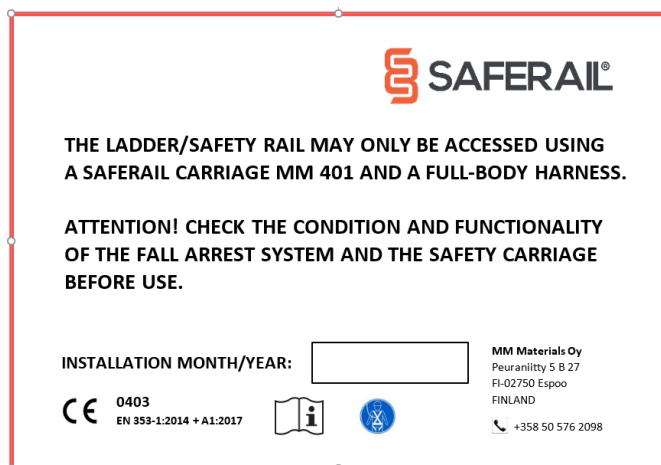
Back side of the SafeRail Carriage-safety carriage

5.3 INSTRUCTIONAL SIGN AND ITS MARKINGS

Each SafeRail ladder and Vertical SafeRail-safety rail is also equipped with a separate instructional sign. The instructional sign must be installed in such a manner that it is easy to spot and clearly visible to the user before using the system.

The instructional sign includes the following markings:

- Installation month and year. The installing party is responsible for adding this information on to the sign
- Reminder to check the condition and functionality of the SafeRail-fall arrest system and the SafeRail Carriage-safety carriage before use
- Instructions for the user having to use a full-body harness and a SafeRail Carriage-safety carriage (MM 401) while using the SafeRail-fall arrest system
- Symbol urging the use a full-body harness 
- Reminder to read the user instructions 
- Standard number (EN 353-1:2014 + A1:2017)
- CE body identification number (CE-0403)  0403
- SafeRail trademark 
- Name and address of the manufacturer (MM Materials Oy, Peuraniitty 5 B 27, FI-02750 Espoo, Finland)



6. COMMISSIONING AND PERIODIC INSPECTIONS

The commissioning and period inspections may only be carried out by the manufacturer, or another person or body authorized by the manufacturer. An inspection report must be produced for each inspection, in which the type of inspection, any observations made during the inspection as well as potential further measures, and the date of the next planned inspection are recorded. A template for the inspection report can be found on pages 21–22.

If any deviation, unusual wear, or reduction of spring force of the SafeRail Carriage-safety carriage is observed during inspection or use, the system must immediately be decommissioned. If the observed

deviation concerns the SafeRail Carriage-safety carriage, the carriage must be replaced, and the old carriage removed from use. If the deviation affects any other parts of the system, they must be repaired or replaced depending on the type of deviation.

6.1 COMMISSIONING INSPECTION

Before the SafeRail-fall arrest system is taken into use or after repairs have been performed to the system, a commissioning inspection must be carried out, during which the entire system and its individual components are inspected.

Commissioning inspections must be documented.

During the commissioning inspection, the inspector examines whether the installation has been carried out according to the instructions, whether each fixing and tensioning has been performed carefully, and whether the system and its components are undamaged. As part of the commissioning inspection, the system must be tested by ascending and descending the entire length of the Vertical SafeRail-safety rail using a SafeRail Carriage-safety carriage.

6.1.1 COMMISSIONING INSPECTION – SAFERAIL CARRIAGE-SAFETY CARRIAGE AND ITS FUNCTIONALITY

- The spring of the SafeRail Carriage-safety carriage is undamaged and springy.
- The spring of the SafeRail Carriage-safety carriage is properly in place and functional. The condition of the spring must be verified by coupling the carriage with and moving the carriage along the Vertical SafeRail-safety rail and letting go. After falling, the SafeRail Carriage-safety carriage will lock automatically on to the locking notches if the spring is working as expected. The Vertical SafeRail-safety rail is equipped with locking notches every 150 mm.
- The SafeRail Carriage-safety carriage has not been deformed in any way.
- The wheels of the SafeRail Carriage-safety carriage are tightly attached to the axels, and it glides effortlessly along the Vertical SafeRail-safety rail.
- The permanent markings on the SafeRail Carriage-safety carriage are clearly legible.

6.1.2 COMMISSIONING INSPECTION – SAFERAIL LADDERS AND VERTICAL SAFERAIL-SAFETY RAIL

- The structures of the SafeRail ladder and/or the Vertical SafeRail-safety rail are undamaged. In order to check that the SafeRail ladder and/or the Vertical SafeRail-safety rail have been installed correctly, the user must also review the installation instructions.
- The structures to which the SafeRail ladder and/or the Vertical SafeRail-safety rail have been attached are undamaged.
- No mechanical or corrosion/rust damage can be observed on the Vertical SafeRail-safety rail.
- The groove on the Vertical SafeRail-safety rail profile has the correct width, i.e. 15 mm.
- The screws, bolts, and nuts of the fasteners and the extension pieces used to secure the SafeRail ladder and/or the Vertical SafeRail-safety rail are safely and securely attached.
- The markings on the instructional sign of the SafeRail-fall arrest system are up to date and clearly legible. Order a new sign if necessary.
- The commissioning inspection must also always include a test climb with a SafeRail Carriage-safety carriage.

6.2 PERIODIC INSPECTIONS

The SafeRail-fall arrest system must be inspected annually, once every 12 months. Regular inspections are used to ensure user safety and the reliability of the system. The periodic inspections may only be carried out by the manufacturer, or another person or body authorized by the manufacturer. The end customer is responsible for the performance of the periodic inspections. In terms of its content, the periodic inspection is identical to the commissioning inspection. The periodic inspection is carried out in accordance with sections 6.1.1.–6.1.2.

In addition, the SafeRail-fall arrest system must, as stated in section 1 of the user instructions, be inspected by the user before each use.

A periodic inspection must also be carried out immediately each time a user has reported an observed deficiency or defect before the system is used again. SafeRail ladders and Vertical SafeRail-safety rails must also be inspected after each falling incident, before the next use. Please note that in case of a fall, the SafeRail Carriage-safety carriage must immediately be removed from use and replaced with a new one if it has stopped a falling user.

A periodic inspection of the SafeRail Carriage-safety carriage is carried out during the annual inspection of other personal protective equipment (incl. safety harness, ropes, and helmet).

The periodic inspections must be documented.

6.3 INSPECTION REPORT

As mentioned above in section 6, the commissioning and periodic inspections for the SafeRail-fall arrest system may only be carried out by a party authorized by the manufacturer. An inspection report must be produced for each inspection, in which are recorded the type of inspection, any observations made during the inspection as well as potential further measures, and the date of the next planned inspection. A template for the inspection report can be found on the next page.