

MAGNETIC FALL ARREST DEVICE ACCORDING TO EN795: 2012 TYPE B TEMPORARY ANCHOR POINT

User Manual and Safety Instructions

Version: 1.4

Version control

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Prepared: B. Gravendeel	Verified: W. van der Graaf	Released: W. van der Graaf

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1. Introduction

Thank you for purchasing our product.

This manual describes the safe use of the Magnetic Fall Arrest Device (MFAD). The MFAD uses magnetic scaffold anchor points SAV 551.01-1400 (Magnetic Inc.) (MSAP) and coupling elements.



WARNING

Always **read** the manual of the MSAP fully before using the equipment.
If there is something **UNCLEAR** or the manuals are **MISSING** then **STOP** the installation process and get the missing manuals.

When the installation procedure as described is followed the product fulfills the demands of EN795: 2012, type B anchor.



WARNING

The device is for single person use only!

During the installation process the static test as described in section 5.4.4.1 of EN 795: 2012, type B has to be followed by each and every installation of the anchor. The static test force described there is 12 kN. The MFAD reaches this value by coupling four MSAP's by three beams.

This manual contains all information that is necessary for optimum and safe operation of the MFAD. Always store this manual safely together with the MFAD, the MSAP's with its measuring tools, its operating wrench and manual thereof. You can make a copy of the manuals for your archive.



WARNING

Always **read** this manual before using the equipment
Use the MFAD only after fully understanding the manual.

Upon delivery, check that the product is complete and undamaged. Immediately contact the manufacturer if the product is damaged or incomplete.



WARNING

Never use a damaged, incomplete or defective product!



WARNING

Do not make any alterations or additions to the equipment without prior written consent of the manufacturer. Repair shall only be carried out in accordance with the manufacturer's procedures.

The user of the equipment is responsible for the equipment and treat it as if it his/her own.

The MFAD is a safety related product. It should always be treated that way: carefully and professionally.

It is advised to keep a record for the MFAD system as a whole and for each part of the MFAD: the four MSAP's, the three beams and the shackles. See the annex for an example for the issues to be recorded.

2. Basic working principle

The force necessary to hold a person during a fall is created by the magnetic forces of the MFAD. These forces are transferred to the surface whereon the magnets are placed. Due to the beam connection the force created by a falling person is equally divided over the magnetic scaffold anchors (MSAP) used. The magnets carry the force without moving along the surface. On a clean and thick steel surface each MSAP is able to carry a perpendicular force of app 22 kN, leading to a shear force of app. 6 kN.

In practice the surfaces are covered with paint or rust or water. They are not the ideal surface for the MSAP. The material of the surface is not the most ideal material nor the ideal thickness. Therefore the forces have to be **measured each time** the MSAP are placed on a location. After measuring the four individual forces of the MSAP the force of the MFAD is guaranteed. But when for any reason one of the MSAP's is loosened and activated again the force has to be measured again. This is very important. So activating a magnet is always followed by measuring the shear force.



WARNING

So activating a magnet has always to be followed by measuring the shear force.

Once the magnetic force of an MSAP has a certain value after placing it on a surface it will not change anymore. But every time when a MSAP has been taken away and put back again for use in the MFAD, the measurement of the force has to be carried out again.

From literature it has been investigated that the force of the type of magnets used in the MSAP reduces 0,8% maximum over a period of 400 days under the condition that the magnets are not exposed to temperatures higher than 80°C.

The MFAD consists of metallic (steel) parts only.

The overall necessary area for a full installation of the MFAD is app. 1,6 m x 0,5 m area.

Since the MFAD is based on magnetic fields the MFAD can only be used on magnetizable surfaces like steel.



WARNING

Never use the system outside its limitations.

Never use the MSAP for any other purpose than described in this manual.

In case of a fall the falling force is distributed over the four MSAP's. So the surface has to be able to withstand these forces. The MFAD is able to carry the 12 kN according to EN795: 2012, section B temporary anchors. So the surface has to be able to carry this same force.

The system may be installed by trained staff only. The training may be followed by STE, Barendrecht, Netherlands. Please contact the manufacturer for further details.

3. Safety

The MFAD contains switchable magnets, the MSAP's. During installation these MSAP's are coupled with beams. Each MSAP has to be tested before use. The shear force is tested using another MSAP and the shear force tester that internally uses a loadcell.



WARNING

People having a pace maker or other medical implants sensitive to magnetic fields may only use the MFAD after determination that there are no medical risks for them. Also people other than the user have to make sure they don't have implants sensitive to magnetic fields before coming in the vicinity of the magnets (MSAP). If people are not sure about their health in relation to static magnetic fields a safe distance for them is 1 meter away from the MSAP.



WARNING

ALWAYS test the anchors (MASP) before use.

Since it is a safety application one should never work alone.

Always wear the standard PPE like safety shoes, safety helmet and gloves.

The user has to use a certified full body harness according to EN361: 2002 and a safety line with shock absorber according to EN354: 2010 /EN 355: 2002 or a guided fall arrester according to EN353-2: 2002 with a shock absorbing element that limits the force in case of a fall to 6 kN.

The equipment shall only be used by trained and competent people.

A rescue plan shall be made and be in place to deal with any emergencies that could arise during the work.

4. Usage

With the system an anchor point according to EN795: 2012 section B, temporary anchors, is created when the instructions are fully followed. For safe working the user has to use a certified full body harness according to EN361: 2002 and a safety line with shock absorber according to EN354: 2010 /EN 355: 2002 or a guided fall arrester according to EN353-2: 2002 with a shock absorbing element that limits the force in case of a fall to 6 kN to be safe when falling together with other PPE for working on height.

The system is intended for use on a horizontal plane. The usage is limited to the use for one person. After following the instructions for placing and testing the device the system fulfills the demands of EN795: 2012, section B, temporary anchors.

In case the system has been exposed to a fall, STOP working with the system and send the complete system back to the manufacturer for inspection.

Never use the system for anything else than creating an MFAD.

The MFAD may be intended for use in a horizontal plane. In that case the MFAD only delivers shear forces.



WARNING

When using the MFAD choose the position of the MFAD in such a way that both the risk of falling and the potential fall distance are minimized.

The MFAD may be used with the line of the harness up to 15° from the center line of the MFAD:

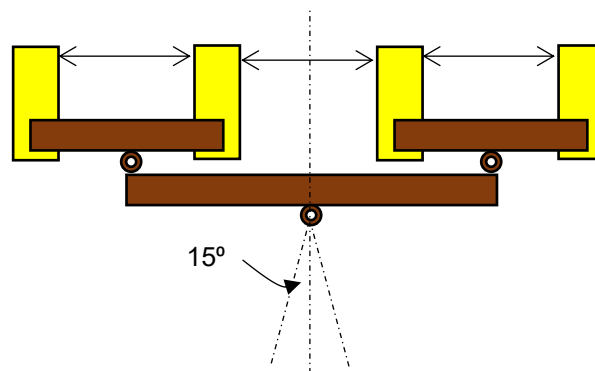


Figure 1. Allowable load angles for MFAD.



WARNING

Never use other combinations of MSAP's and beams than described in this manual. Do not use other beams or MSAP's or other magnets than the ones delivered.



WARNING

If there is any doubt about the quality of the delivery or any doubt about the completeness of the delivery do not use the MFAD and contact the manufacturer and wait for his advice.

**WARNING**

Always check the free space in case of falling to prevent the user from a collision with the ground. The MFAD will stay on it's place when it is exposed to a fall.

The MFAD may not be exposed to temperatures higher than 80°C. Avoid materials that influence the quality of the lanyard, the quality of the beams or the quality of the nickel plated MSAP's.

Use proper means in case the lanyard loops over sharp edges. Use adequate means to avoid wear on the MFAD or on the lanyards.

DO NOT USE the equipment if one of the below check points is not o.k.

1. The MSAP's are all clean with no mechanical damage and not rusty. The ON torque on a steel plate of 10 mm must not exceed 20 Nm
2. The beams are clean, not damaged and not rusty
3. The shackles are clean, not damaged or twisted, not rusty. They are all secured.
4. The tester is clean and not rusty
5. The thread of the tester is lightly greased. With no load the thread can easily be turned by hand
6. The 3-pin key is clean and not rusty. The key has three not damaged pins.

5. Content of the delivery

The delivery consists of the following:

- At least five (four plus one) complete scaffold anchors SAV 551.01-1400 (MSAP) with apparatus (test set for shear and pull force). Four of these anchors are equipped with an interconnection ending in a closed shackle. The fifth anchor is used during the testing of the shear force.

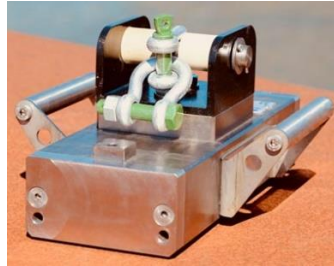


Figure 2. MSA with mounted interconnection ending in a shackle

- Manual for installing and testing the scaffold anchors.
- Two short beams of 510 mm length with three shackles mounted onto it, two on top and one beneath.



Figure 3. Short beam

- One long beam of 980 mm length with three shackles mounted onto it, two on top and one beneath.

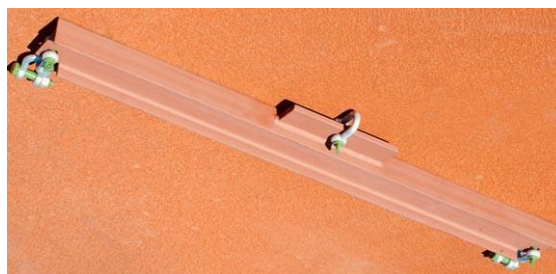


Figure 4. Long beam

- 6 shackles, already mounted on the beams
- Transporting boxes
- Manual

6. Operation

The MFAD consists of four MSAP's that are interconnected with beams, thus creating a safe anchor point for the worker.

Before use check the parts of the MFAD on any irregularities:

- The MSAP's must be clean with no mechanical damage and not rusty. The ON torque on a steel plate of 10 mm must not exceed 20 Nm
- The beams have to be clean, not damaged and not rusty
- The shackles have to be clean, not damaged or twisted, not rusty. They have to be secured.
- The tester has to be clean and not rusty
- The thread of the tester has to be lightly greased. With no load the thread can easily be turned by hand
- The 3-pin key has to clean and not rusty. The key has to have three not damaged pins.

The direction of use for the MFAD is in parallel with the active face of the MSAP.

Testing of an MSAP is described in the manual of the MSAP. Please follow the manual of the MSAP strictly.



Read the manual of the MSAP (magnetic scaffolding anchor point) carefully. Follow the safety instructions as described in that manual.



Do not open the secured shackles that are already mounted onto the beams and the anchors.

Place the first MSAP and test the **shear** force with the **shear force tester**. Write down the number of the MSAP and the shear force tester used.

- a. Place two MSAP's next to each other at app **350 mm** distance following the manual that comes with the MSAP 'BAL-3625896-McNetiq_scaffold-anchor-point-v1.4 EN'. Test the shear force of these MSAP's according to the manual of the MSAP and write down the serial numbers of the MSAP and the tester used. Write down the measured force for each MSAP. Each of the two MSAP's must have a tested force higher than 3 kN.
- b. Now place the third and fourth MSAP in line with the other two MSAP's. Each MSAP at a distance of app 350 mm next to each other:

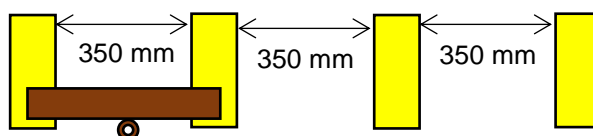


Figure 5. four MSAP's: two already interconnected and the third and fourth MSAP placed next to the first two MSAP's.

- c. Test the shear force of the third and fourth MSAP and write down the serial numbers and the measured values.
Each of the two MSAP's must have a tested force higher than 3 kN.
- d. Connect the third and fourth MSAP with a short beam using the shackles. Write down the number of the beams used.

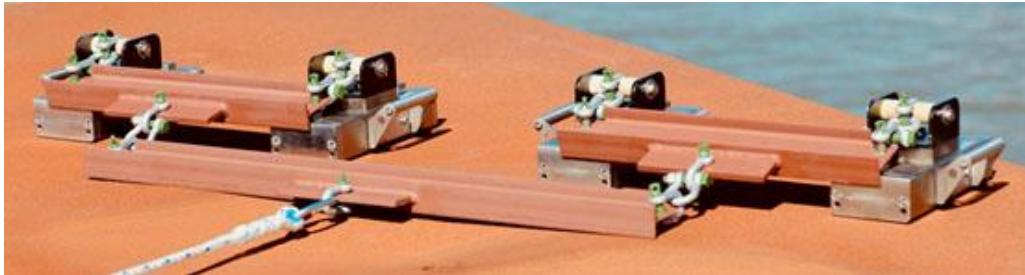


Figure 6. four MSAP's interconnected with the two short beams and one long beam.

- e. Interconnect the eyes of the two short beams with the long beam with the shackles. Write down the number of the long beam. See figure 6.
- f. Now the eye of the long beam is the safe anchoring point (where the PPE of the user is attached).

Attention:

If one of the four MSAP's has a tested force lower than 3 kN no safety anchor can be built with the four MSAP's. Find another solution for a safe working environment.

7. In case of a fall

If the system has been exposed to a fall do not use the MFAD any further. Dismount the full MFAD. Make a description of what has happened to the MFAD including all serial numbers, tested forces, date and location of the incident, name of the person who mounted and tested the MFAD, the persons certificate, numbers and all other issues that might be of importance.

Sent the full MFAD including the description of what has happened back to the manufacturer.

8. Markings

The MFAD consists of four MSAP's and three beams. The MSAP's are marked at the front end with a unique serial number. The beams are also marked with a unique serial number.

The shackles are all certified and provided with a serial number. The MFAD comes with the shackles bond to the MSAP's and beams.

The individual parts are all provided with a sticker:



9. Maintenance

The MFAD should be checked at least every year by the manufacturer or a delegated party according to manufacturer's procedures.

After each usage:

- Clean the MFAD with a dry cloth.
- Check the MSAP's and test unit for any irregularities.
- Check the beams and shackles for any deformation.
- Check for the identification stickers all being present and legible on all parts.
- Check for the completeness of the product: 4 MSAP's, three beams and all shackles as delivered the first time.
- Store the MFAD in a dry and clean place with temperatures below 80° C.

If any irregularities are found please contact the manufacturer for advice.

In case of doubt check the manufacturer.

10. Warranty

The warranty term for these products is 1 year after delivery. Warranty is void:

- a. if the operation and maintenance instructions are not observed or if the product is used in an abnormal manner;
- b. in case of normal wear and tear;
- c. in case of changes or repairs not performed by the manufacturer or an authorized workshop and/or performed without prior written permission of the manufacturer.

For further information, please refer to the general delivery conditions. Always include the data found on the product's type plate in any communication.

It is not permitted to sell the product to others than the original manufacturer.

11. Manufacturer Contact Details

McNetiq BV

Klinknagelstraat 2

3089 JP Rotterdam

The Netherlands

Phone: +316 4940 4750

Email: Willem@mcnetiq.nl

www.mcnetiq.com

12. Measuring table

Please find below the table where the measured shear forces for the MSAP's can be written.

Persons' name who mounted the MFAD:

Location of usage:

Serial number of the shear force tester used:


Beam numbers used:

Short beam	Short beam	Long beam

Force measurements:

MSAP serial number	Force in kgf	date	Name	Approved

Sketch or photo of the situation after installation:



Inspection of the MFAD (each usage and a minimum interval of one year:

Inspection date	Name	Remarks

13. ANNEX

Table for keeping a record for your product and its parts. If there is not enough space for the findings please refer to a document with a unique and traceable identification.

Product name:	MFAD – magnetic Fall Arrest Device
Manufacturer	McNetiq BV Klinknagelstraat 2 3089 JP Rotterdam The Netherlands Phone: +316 4940 4750 Email: Willem@mcnetiq.nl www.mcnetiq.com
Serial numbers	
Year of manufacture	
Date of purchase;	
Periodic examinations and repairs, to include: the dates and details of each periodic examination and repair, and the name and signature of the competent person who carried out the periodic examination or repair.	Use a separate traceable document in which the details are written. Link the document at this table.

Periodic examinations and repairs: from the date purchase.

Date	Reason	Damages	Name and signature	Date of next inspection