



SELF - BRAKING MAGNETIC TROLLEY

NEODYMIUS Z3

OPERATION AND MAINTENANCE MANUAL



DESIGNER AND MANUFACTURER

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INTRODUCTION

The purpose of this operation and maintenance manual is to outline the criteria for the correct use of Neodymius Trolley and instructions for its maintenance.

It is highly important that the information contained in this manual is available to all adrenalin park operators.

The manual is extremely vital and must be carefully kept in such a place that it is available to the maintenance personnel and all other persons that are responsible for safety in the company.

APPLICATIONS

Trolley is a device intended for the steep descent of individuals along a steel cable, where constant braking and deceleration is required.

Always use this device in combination with zipSTOP Zip Line Brake device, which is located at the end of the zipline!

It may not be used for other purposes other than those indicated herein nor in any situations that fall outside its scope of use.

The company Anže Šavs s.p. shall not be held liable for any injuries of persons or damage incurred to the property due to incorrect use the equipment, or for any other use that is not in line with the descriptions explicitly indicated in this manual and/or for inappropriate actions attempted by suitably qualified persons.

SAFETY RULES

Device is under standard EN 17109: 2020 a MCD (mobile connecting device), category B (self-locking device) part of the ISS (individual safety system) which is used to connect it to the safety line and allows the user to move along the safety line.

Neodymius Trolley was manufactured in accordance with European standard EN 17109:2020. In addition, the requirements of regulation (EU) 2016/425 on personal protective equipment have been considered as well. Neodymius Trolley may not be used by non-qualified personnel. Any kind of use that is not in conformity with the descriptions contained in this manual, and which does not respect the applicable rules on the prevention of accidents, and any other use that is not in line with the intended purpose of the trolley, is strictly prohibited. Using the trolley could be dangerous and the operator takes full responsibility for it.

Warning: Incorrect use of the device can cause a height fall, which is why it is obligatory for the operator to do the following before use:

- Carefully read all safety instructions contained in this manual.
- All trolley users must be familiar with how the equipment works and know how to use it correctly.
- Operators must be acquainted with its use and restrictions.
- Operators must fully understand the related risks.
- Operators must wear protective clothing and safety equipment that is appropriate for work and in accordance with the regulations.

TECHNICAL SPECIFICATIONS

Each trolley is marked with visible markings indicating the product name, model type, serial number, use cable, maximum load, EN standard, the designation for which group according to weight it is intended, country of made, instruction symbol, CE marking, manufacturing date and manufacturer address. (*Annex 1*)

The maximum operational speed is 120 km/h (75 mph), and the weight range of the user is 40-130 kg (88-286 lbs).

Three different Neodymuis trolleys are required to cover the full weight range and for each weight range there is a different adjustment of the Neodymuis brake function.

S – user weight from 40 to 70 kg

M – user weight from 70 to 90 kg

L – user weight from 90 to 130 kg

The weight range marked on the devices is only valid for the specific site for which they were adjusted. Use on other sites is not authorised, can be dangerous and is therefore not allowed.

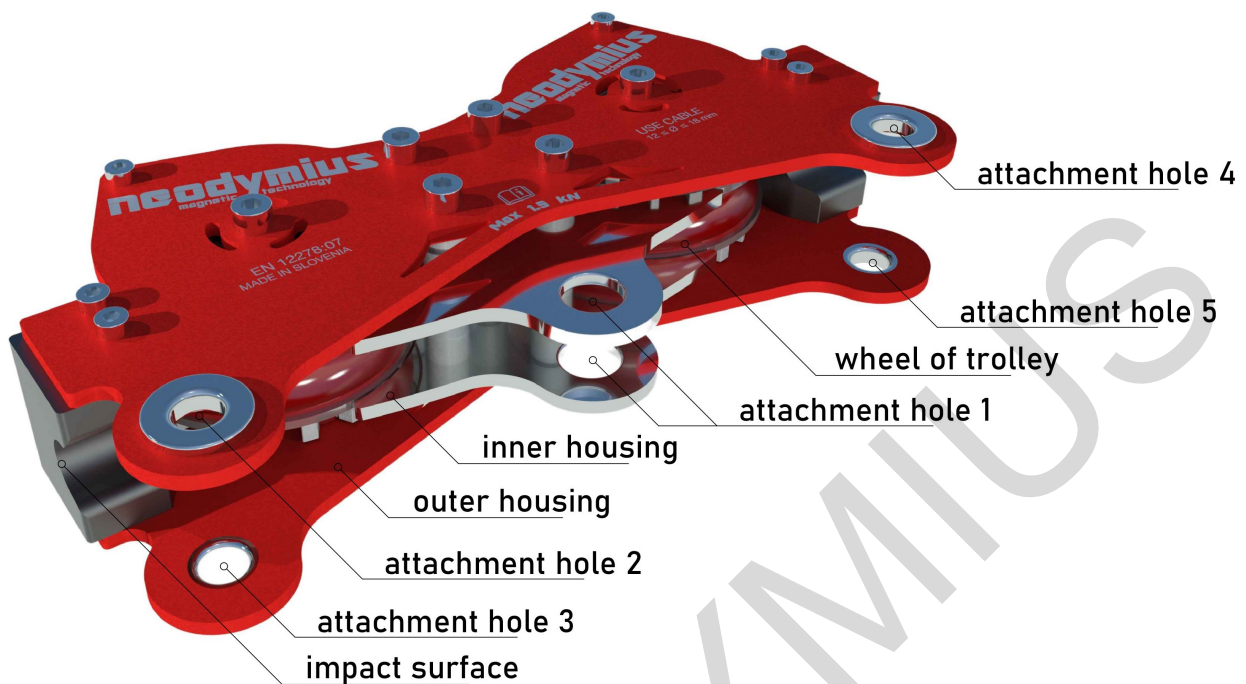
Temperature range of use: -25°C up to 40°C

Compatible cable diameter: 12mm – 18mm (22 mm)

Appropriate slope to use: up to -30%

Always use this device in combination with zipSTOP Zip Line Brake device, which is located at the end of the zipline!

DESCRIPTION OF THE DEVICE



This device is a self-braking magnetic trolley that works with magnetic induction and can be used in adrenaline or adventure parks. The trolley may only be used on a steel cable that meets the required strengths as written in ACCT, EN 15567-1 and other applicable standards.

The trolley consists of two outer housing plates in which eddy currents are induced. Two wheels are placed between the plates of the outer housing. Rubber is placed on the middle part of the wheels. The central part and the rubber are surrounded on both sides by steel plates (magnet holder) and wheel housings. Bearings and magnets are inserted into the wheel housings, all together is connected by stainless steel screws.

An inner housing is inserted between the outer plates. The required distance between the individual components is ensured by construction spacers. All components are interconnected by steel bolts and nuts. On the front and back of the trolley are plastic shock-pads that acts as an anti-impact frame when arriving to the land station.

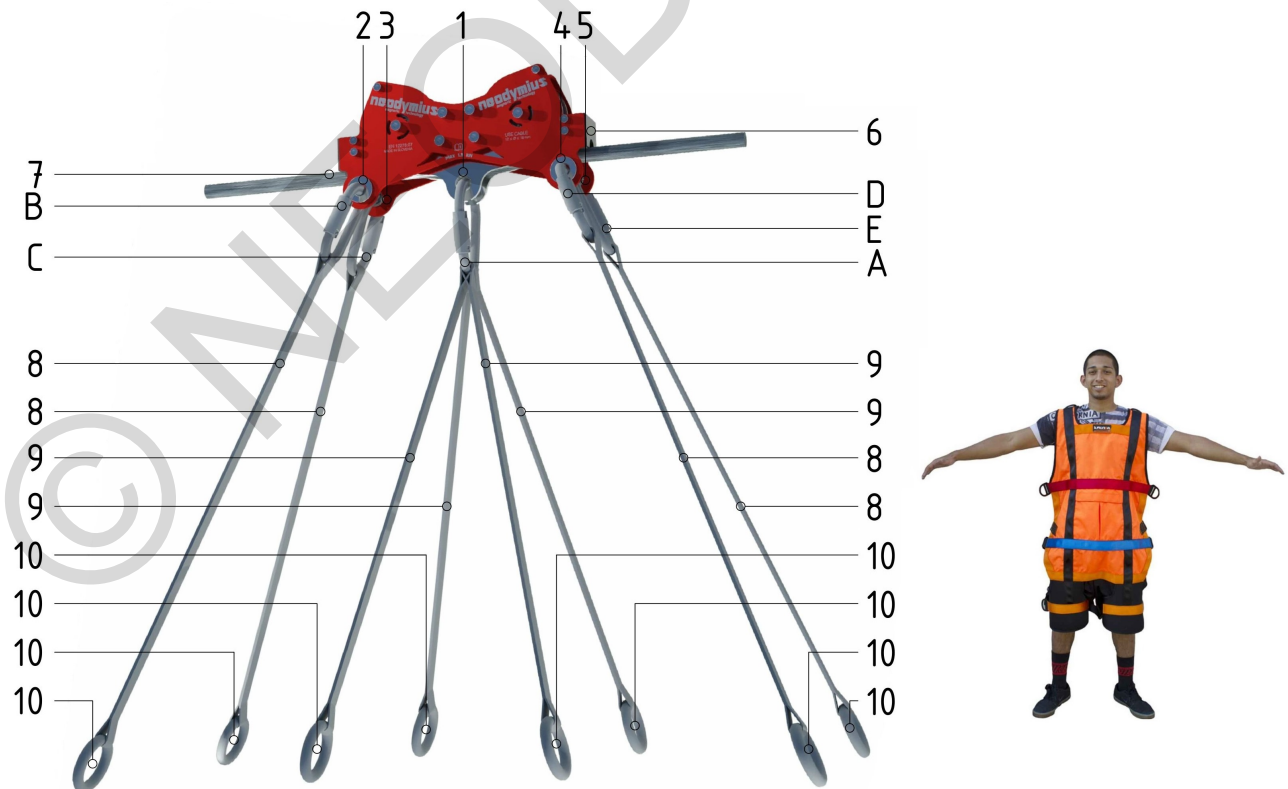
Trolleys are pre-set and marked according to three weight groups. Before each ride, the responsible person / instructor must weigh the user and determine the appropriate trolley according to his weight.

USE OF THE DEVICE

USAGE VARIANT „A“

The device is used in combination with a **SUPERMAN ZIPLINE HARNESS**.

1. Put the trolley on the steel cable (7). It is not important how you position the trolley because the impact surface is on both sides of the trolley.
2. Attach the carabiner (A) to the primary clamp hole (1). Put the carabiner through both openings and make sure that the top of the carabiner does not touch the wire rope. The shape of the carabiner must be symmetrical. Always use Triact-lock carabiners.
3. Attach the carabiners (B and C) to the clamp holes (2 and 3). Always use Triact-lock carabiners.
4. Attach the carabiners (D and E) to the clamp holes (4 and 5). Always use Triact-lock carabiners.



8. Nylon Slings 80-120cm, 9. Nylon Sling 80-120cm, 10. Attachment to the harness



CORRECT CHOICE OF THE TROLLEY BASED ON THE USER'S WEIGHT

Prior to each use, you have to determine the weight of the user and assign the right trolley for them. Trolleys are classified in three groups based on the user's weight, and are appropriately marked. The assignment of an inappropriate trolley can be dangerous and can lead to injuries of the user.

ALWAYS USE CARABINERS WITH SAFETY MECHANISMS

Use Triact-lock carabiners with a minimum load capacity of 20 kN at all securing points.

USE NEODYMIUS TROLLEY ON STEEL CABLES ONLY

Only use the Neodymium trolley on steel cables that are suitable for zipline descents. Neodymium trolleys shall not be used on textile ropes.

USE THE TROLLEY ONLY IF THE USER IS SECURED AT ALL ATTACHMENT POINTS ACCORDING TO THE VARIANT OF USE

At all times, it is necessary to use all safety attachment point.

THE TROLLEY SHALL NOT COME CLOSE TO ELECTRONIC DEVICES

Magnets inside the trolley produce a far-reaching, powerful magnetic field. This may damage the cell phone, laptops, hearing aids and other electronic devices. Keep these items away from the magnetic Neodymium trolley. Magnets can also interfere with the proper functioning of the pacemaker.

THE TROLLEY SHALL NOT COME CLOSE TO METAL OBJECTS

Magnets inside the trolley have a very powerful force of attraction. Metal objects that come close to the trolley can be pulled on the trolley, which may result in injuries, cuts and abrasions to users fingers or hands.

USING WEIGHTS ONLY FOR THE DESCENT DOWN THE ZIPLINE IS NOT RECOMMENDED

Due to small surface area of the weights and large own weight, the speed achieved is higher. This can damage the trolley and zipSTOP at the end of the zipline.

SPECIFICATIONS FOR STRIPES / ENDLESS ROUND SLINGS

The company Anže Šavs s.p. will authorize the use of any stripes – endless round slings (hereinafter referred to as: stripes) provided that they meet the ACCT standard, EN 15567-1 and EN 17109 standard as well.

Always test whether the stripes are of adequate length. The stripes must be long enough to prevent bumps in the head, face or hands even in the worst case scenario, and prevent the user from reaching the steel cable. The installer and/or the operator is responsible for ensuring adequate lengths of stripes.

The company Anže Šavs s.p. will not assume any liability for inappropriate positioning or use of the impact trolley and/or of the stripe used together with the impact trolley.

COMPATIBLE CARABINERS AND CONNECTORS

For a correct functioning and long service life of the Neodymius Trolley, use only compatible carabiners and/or connectors. The use of non-compatible carabiners or connectors can result in faster wear of attachment points or carabiners, contact with or excessive wear of the steel cable or increased breaking. The carabiner or the connector is compatible if it meets the following criteria:

- FORCE: min. 20 kN
- MATERIAL
- The carabiner (A) can be made of aluminum but must be symmetrical in shape. It must also have a Triact-lock safety mechanism.
- Other carabiners (B,C,D,E) can be made of steel or aluminium. It must also have a Triact-lock safety mechanism.

Plastics, textile materials or bands are not permitted.

- DESIGN: The carabiner A must pass through both slider openings so that the trolley cannot be removed from the steel cable without removing the carabiner. The other carabiners (B,C,D,E) must be attached as shown on page 6.
- ORIENTATION: Use only carabiners that preserve the Neodymius trolley and the burden underneath the steel cable in the upright position. Connectors in the form of the letter 'D', pear-shaped and similar may not be compatible.

ALWAYS USE CARABINERS WITH SAFETY MECHANISMS (Triact-lock)

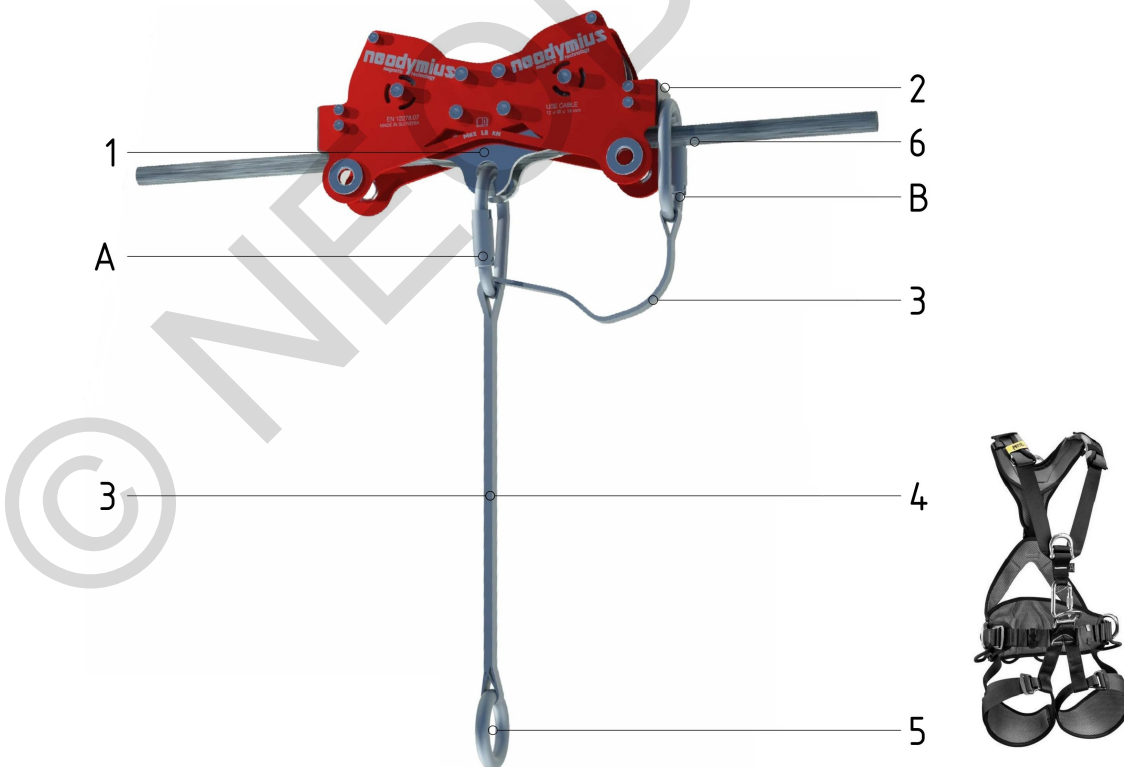
Always use safety carabiners or other connectors with the Triact-lock safety mechanism at all attachment points to prevent users from unbuckling.

USE OF THE DEVICE

USAGE VARIANT „B“

The device is used in combination with a **ZIPLINE HARNESS**.

1. Put the trolley on the steel cable (6). It is not important how you position the trolley because the impact surface is on both sides of the trolley.
2. Attach the main carabiner (A) to the primary clamp hole (1). Put the carabiner through both openings and make sure that the top of the carabiner does not touch the wire rope. Always use Triact-lock carabiners.
3. To secure the user always apply a safety carabiner (B). Put the safety carabiner over the steel cable (6) and attach it to the impact surface (2). Both impact surfaces are equipped with magnets to secure the safety carabiner. Make sure that the safety carabiner is located on the back side of the trolley depending on the direction of the ride. Always use Triact-lock steel carabiners Petzl OXAN.



3. Nylon Sling 100cm, 4. Nylon Sling 60cm, 5. Attachment to the harness in the center



CORRECT CHOICE OF THE TROLLEY BASED ON THE USER'S WEIGHT

Prior to each use, you have to determine the weight of the user and assign the right trolley for them. Trolleys are classified in three groups based on the user's weight, and are appropriately marked. The assignment of an inappropriate trolley can be dangerous and can lead to injuries of the user.

ALWAYS USE CARABINERS WITH SAFETY MECHANISMS

Use Triact-lock steel carabiners with a minimum load capacity of 20 kN at both, the main and the securing point.

USE NEODYMIUS TROLLEY ON STEEL CABLES ONLY

Only use the Neodymium trolley on steel cables that are suitable for zipline descents. Neodymium trolleys shall not be used on textile ropes.

USE THE TROLLEY ONLY IF THE USER IS SECURED AT BOTH ATTACHMENT POINTS

At all times, it is necessary to use both, the primary and the safety attachment point.

PUT BURDEN ONLY ON THE PRIMARY ATTACHMENT POINT

During normal use, burden shall only be put on the primary attachment point. Keep the safety sling loose, it shall serve as a backup to the primary attachment point.

THE PRIMARY ATTACHMENT POINT CARRIES ALL THE WEIGHT; ONLY A MINIMAL ADDITIONAL WEIGHT IS PUT ON THE TRAPEZOIDAL HANDLE.

THE TROLLEY SHALL NOT COME CLOSE TO ELECTRONIC DEVICES

Magnets inside the trolley produce a far-reaching, powerful magnetic field. This may damage the cell phone, laptops, hearing aids and other electronic devices. Keep these items away from the magnetic Neodymium trolley. Magnets can also interfere with the proper functioning of the pacemaker.

THE TROLLEY SHALL NOT COME CLOSE TO METAL OBJECTS

Magnets inside the trolley have a very powerful force of attraction. Metal objects that come close to the trolley can be pulled on the trolley, which may result in injuries, cuts and abrasions to users fingers or hands.

USING WEIGHTS ONLY FOR THE DESCENT DOWN THE ZIPLINE IS NOT RECOMMENDED

Due to small surface area of the weights and large own weight, the speed achieved is higher. This can damage the trolley and zipSTOP at the end of the zipline.

SPECIFICATIONS FOR STRIPES / ENDLESS ROUND SLINGS

The company Anže Šavs s.p. will authorize the use of any stripes – endless round slings (hereinafter referred to as: stripes) provided that they meet the ACCT standard, EN 15567-1 and EN 17109 standard as well.

Always test whether the stripes are of adequate length. The stripes must be long enough to prevent bumps in the head, face or hands even in the worst case scenario, and prevent the user from reaching the steel cable. The installer and/or the operator is responsible for ensuring adequate lengths of stripes.

The company Anže Šavs s.p. will not assume any liability for inappropriate positioning or use of the impact trolley and/or of the stripe used together with the impact trolley.

A guard always has to be applied. During normal use and impact braking, the safety stripe is loose, while the burden is placed on the primary stripe.

While braking, the user usually swings forward and in the upwards direction. This swing increases the distance between the fixing point on the belt and the safety attachment point on the Neodymius Trolley. If the safety stripe is too short while impact braking takes place, additional pressure is put on the safety attachments point, which will cause excessive wear of the trolley and of the steel cable as well.

COMPATIBLE CARABINERS AND CONNECTORS

For a correct functioning and long service life of the Neodymius Trolley, use only compatible carabiners and/or connectors. The use of non-compatible carabiners or connectors can result in faster wear of attachment points or carabiners, contact with or excessive wear of the steel cable or increased breaking. The carabiner or the connector is compatible if it meets the following criteria:

- FORCE: min. 20 kN
- MATERIAL: The main carabiner (A) can be made of aluminum but must be symmetrical in shape. It must also have a Triact-lock safety mechanism.
- Safety carabiner (B) must be Triact-lock steel carabiner Petzl OXAN!

Plastics, textile materials or bands are not permitted.

- DESIGN: The main carabiner must pass through both slider openings so that the trolley cannot be removed from the steel cable without removing the carabiner. The safety carabiner must not touch the steel cable.

- ORIENTATION: Use only carabiners that preserve the Neodymius trolley and the burden underneath the steel cable in the upright position. Connectors in the form of the letter 'D', pear-shaped and similar may not be compatible.

ALWAYS USE CARABINERS WITH SAFETY MECHANISMS (Triact-lock)

Always use safety carabiners or other connectors with the Triact-lock safety mechanism at both, the primary and the safety attachment point to prevent users from unbuckling.

RISKS

Falls from height

Excessive speed at the end of the descent

Hot surfaces, risk of burns on the surface of the outer housing where magnetic fluxes are induced

Crushing or injury to fingers while driving

Surface damage, rubber and trolley stopping

Damage to the magnets if the trolley falls to the ground. Reduction of braking power and increased possibility of injuries

Collision with an obstacle

PREVENTIVE MEASURES

Follow the instructions in this guide strictly.
Use proper and undamaged PPE.
Safety should only be provided by appropriately qualified personnel / instructors.

An authorized person / instructor should select the appropriate trolley according to the weight of the user.
Contact the manufacturer if braking performance adjustment is required.

Use of appropriate PPE (gloves) is necessary.
The trolley should be removed from the cable by a qualified person or instructor.

Use the appropriate length of Nylon Sling that prevents the user to touch the steel cable or trolley while sitting or lying in the harness.

Daily visual inspection of rubber is required to ensure that the rubber is not damaged.
Thickness of the rubber must be measured daily. The minimum required rubber thickness is 70 mm.

Any damaged trolley must be removed from use and sent for service.
A daily visual inspection of the trolley is required to ensure that the trolley is not damaged.

Make sure the cable is free and that there are no other users on it. Remove any obstacles (branches) that the user can hit.
Ensure a minimum height above the ground of 1m.

MAINTENANCE

All trolleys must be inspected daily which includes:

- checking that the wheels of the trolley rotate freely and checking bearing wear
- checking the rubber thickness with the supplied accessory or vernier gauge.
Minimal rubber thickness is 70mm.
- checking all bolts if they are tightened
- checking both impact surfaces
- checking the magnetic field of magnets by approaching a metal object

All trolleys must be inspected prior to each use:

- visual inspection of the trolley and magnets so that there are no metal foreign objects on/in them
- ensure that the trolley is as cold as possible

If any of the above is not in conformity with this manual, you should immediately stop using the trolley and notify the manufacturer or service center.

LIFETIME

The lifetime of the product is unlimited.

WARNING: an extraordinary event (a strong impact or fall, intensity of use...) or unsuitable storage conditions (extreme temperatures, exposure to chemicals...) may compromise the proper operation of the device.

Consequently, devices shall be disposed of if:

- if they suffered a strong impact
- if the result of the integrity inspection is unacceptable
- if the device history is not known

ACCESSORIES PPE (Personal Protection Equipment) USAGE VARIANT „A“

Superman Harness FUSION... - **Carabiner (A)** KONG Carabiner H.M.S. Classic Auto Block - **Carabiners (B,C,D,E)** PETZL OXAN Carabiner- TRIACT LOCK... - **Slings** Petzl Anneau 80cm - 120cm - **Helmet**.

ACCESSORIES PPE (Personal Protection Equipment) USAGE VARIANT „B“

Harness PETZL AVAO BOD FAST and CLIMBING TECHNOLOGY - Jungle - Full-body harness for children - **Carabiner (A)** KONG Carabiner H.M.S. Classic Auto Block - **Carabiners (B)** PETZL OXAN Steel Carabiner- TRIACT LOCK - **Sling** Petzl Anneau 60cm - **Sling** Petzl Anneau 120cm - **Helmet**.

STORAGE AND TRANSPORT OF THE NEODYMIUS TROLLEY

The trolley must be stored in closed, dry and cool areas to avoid direct sun exposure and high temperatures. Always make sure that it is appropriately cooled down before each use. Any exposure to direct sun can cause the housing or magnets to overheat and thus reduces the magnetic braking force.

WARNING: The device shall not be exposed to temperatures above 80°C. If that happens, the device has to be inspected by the company Anže Šavs s.p.!

It is also necessary to place the trolley on a clean surface, without the immediate vicinity of metal objects (metal dust).

The device can be transported in a clean backpack, suitcase or box.

CLEANING AND DISINFECTION

This device can be cleaned with a damp cloth using water or a non-aggressive glass cleaner. Cleaning with a pressure cleaner is not recommended.

Clean small metal particles or metal dust that stick to magnets with an air compressor. Use safety goggles.

If disinfection of the device is required use alcohol or ethanol.

INSTRUCTIONS FOR DRYING

If the device gets wet, wipe it with a cloth or dry it with an air compressor.

WARNING: Never dry it with hair dryer or to expose to high temperatures!

ADVICE ON THE EFFECTS OF DAMP AND ICY CONDITIONS

Wet and icy conditions can change the efficiency of the trolley.

OBLIGATORY SERVICE AND MAINTENANCE OF THE TROLLEY

Once a year or every 12 months, the trolley must undergo regular maintenance and servicing by the company Anže Šavs s.p. or by a person authorized by the company Anže Šavs s.p.. Without completed obligatory servicing, the trolley is not suitable for use respectively you use it at your own risk.

TROLLEY CALIBRATION

Calibration of the trolley for all three weight groups should be performed before the first operation of the zipline. Calibration is performed by the method of gradual removal of magnets until is reached the desired speed.

If changes in driving speed occur later during operation, the manufacturer must be notified.

The calibration procedure must be performed by company Anže Šavs s.p. or by a person authorized by the company Anže Šavs s.p..

WARRANTY

The two-year product warranty applies only to factory faults or defective raw materials; normal wear, inappropriate use and storage or contrary to the indications in this manual are excluded.

Service or disassembly of the magnetic trolley by an unauthorized person or company is not permitted. This can only be done by the company Anže Šavs s.p. or by a person qualified and authorized by company Anže Šavs s.p.!

If it is established that the trolley has been serviced or opened by an unauthorized person, any warranty is terminated!

NOTIFIED BODY WHICH DID EU TYPE EXAMINATION:

TÜV SÜD Product Service GmbH Zertifizierstellen
Ridlerstraße 65
80339 MÜNCHEN
Germany

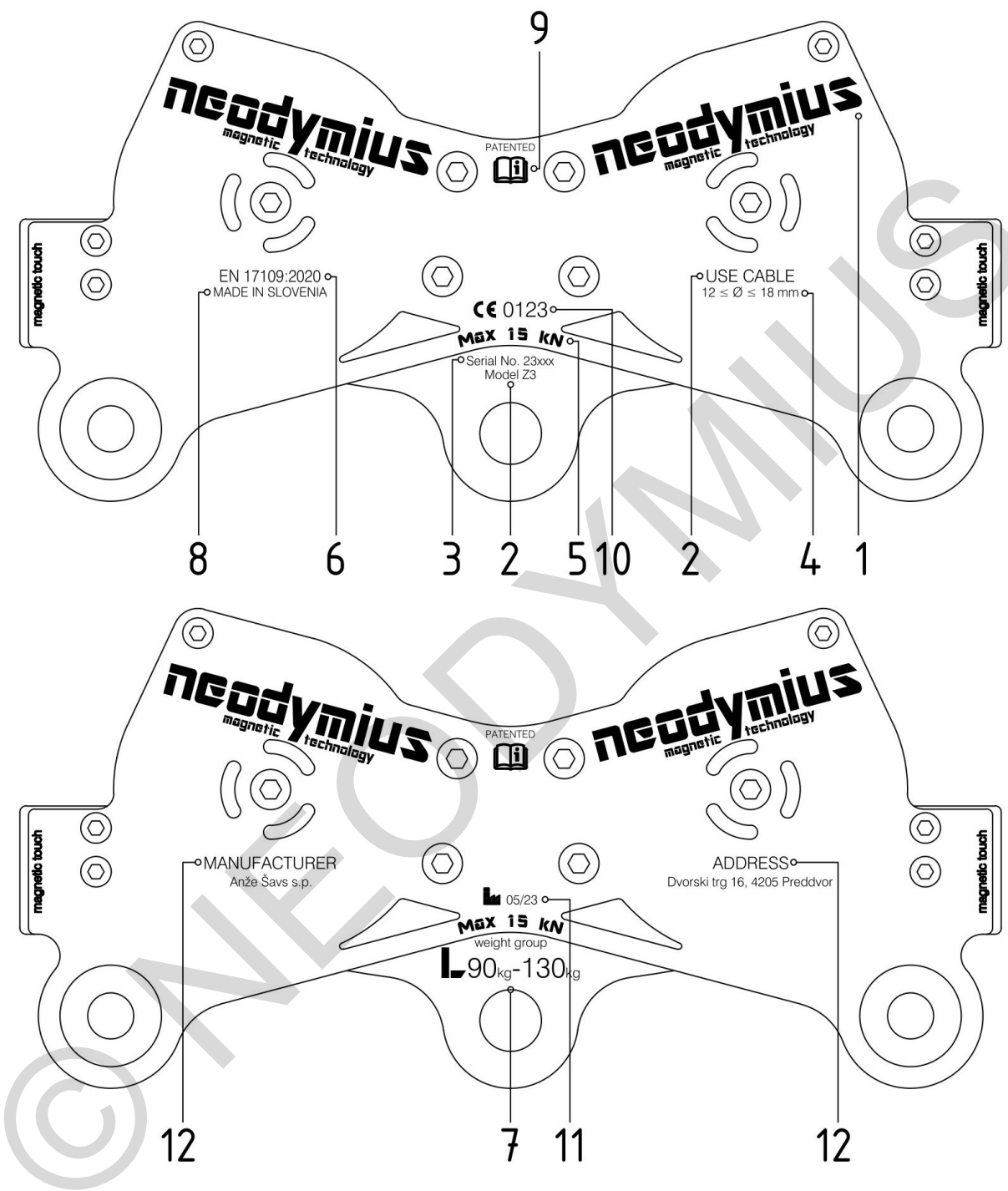
Notified Body number : **0123**

NOTIFIED BODY WHICH DOES THE MODULE C2 CONTROL:

TÜV SÜD Product Service GmbH Zertifizierstellen
Ridlerstraße 65
80339 MÜNCHEN
Germany

Notified Body number : **0123**

Annex 1 - DESCRIPTION OF MARKS



1. Product name, 2. Model type, 3. Serial number, 4. Use cable, 5. Maximum load, 6. EN Standard, 7. Weight group and range of use in kilograms, 8. Country of made, 9. Instruction symbol, 10. CE marking, 11. Manufacturing date (month and year), 12. Manufacturer address



DECLARATION OF CE COMPLIANCE

The manufacturer Anže Šavs s.p., based in Medvedova ulica 3,
2000 Maribor, Slovenia

DECLARES

that the trolley device named **NEODYMIUS Z3** was manufactured in
compliance with the EN 17109:2020 standard

and

requirements of regulation (EU) 2016/425 on personal protective equipment.

SERIAL NO. 26xxx

MANUFACTURING DATE: 01/26

The manufacturer
Anže Šavs s.p.