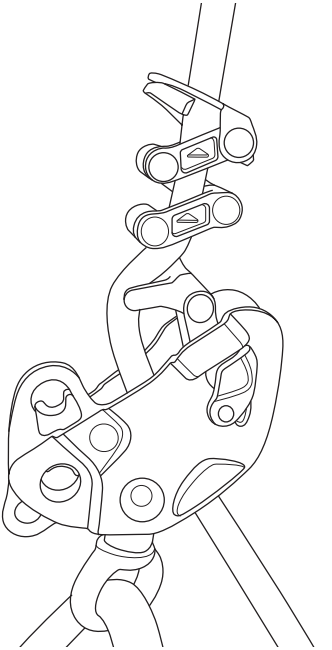
ISC
Solutions in Metal

MH285 REFLEX Mechanical Hitch



CE 0598

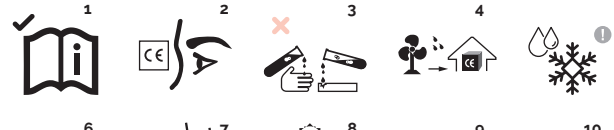
climb. work. rescue.

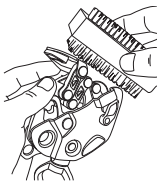
REFLEX MECHANICAL HITCH

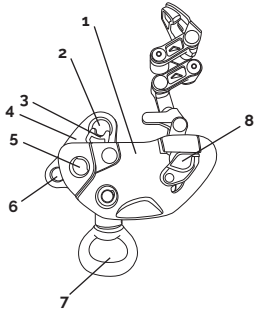
MH285

REFLEX Mechanical Hitch
EN 12841:2024-C
Ø 11—13mm EN 1891:1998/A Type Rope
WLL 50-200kg (110-440lbs)
IMPORTANT: See section F for further information

A Care & Maintenance



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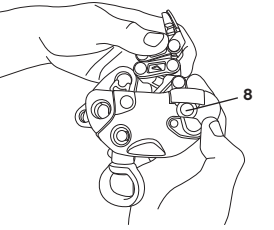
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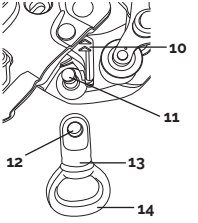
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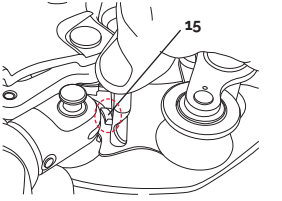
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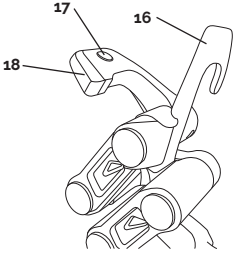
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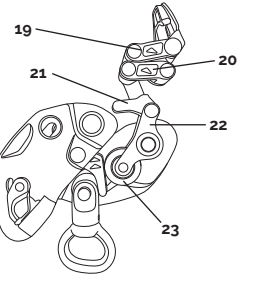
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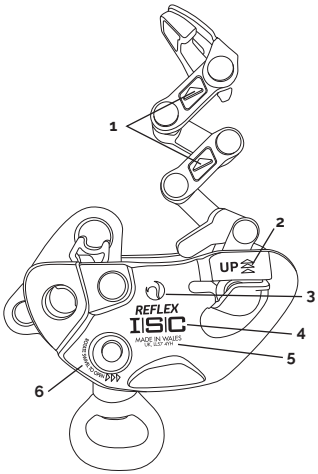
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UP
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REFLEX
ISIC
MADE IN WALES
UK 227 ATH
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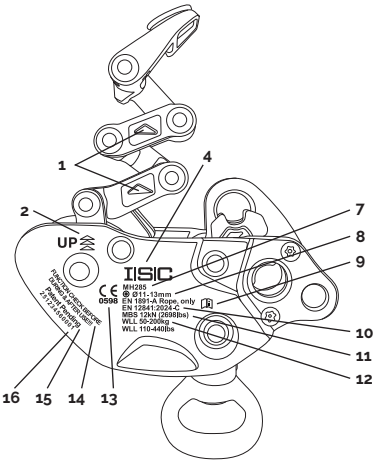
1
4
2
UP
ISIC
MH285
Ø11-13mm
EN 1891-A Rope, only
EN 12841:2024-C
MBS 12kN (2698lbs)
WLL 55-200kg
WLL 110-440lbs
0598
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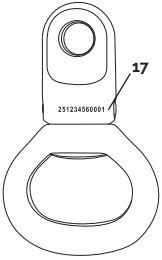
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D Inspection

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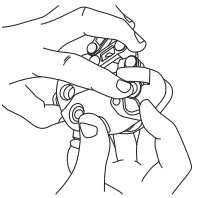

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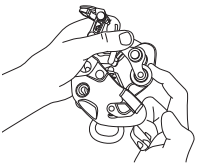

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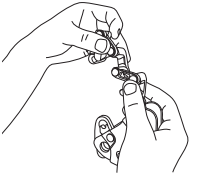

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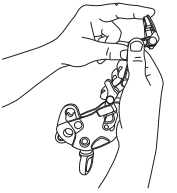

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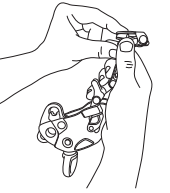

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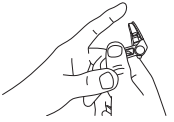

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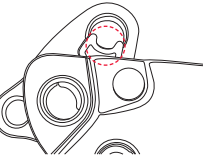


E Installing the REFLEX onto the Rope

Figure 1

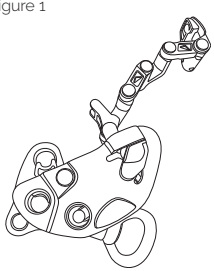
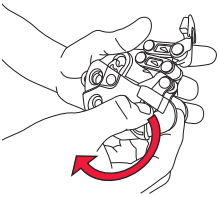


Figure 2



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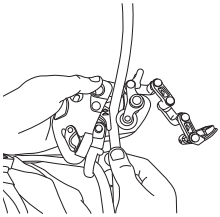

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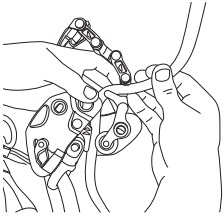

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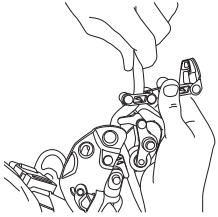

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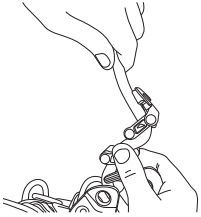

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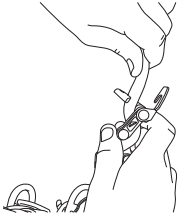

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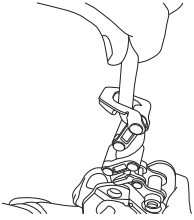

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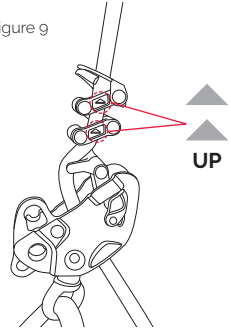


Doubled-rope Technique (DRT)/Moving Rope System (MRS) Set-up

Figure 1A

OPTIMAL

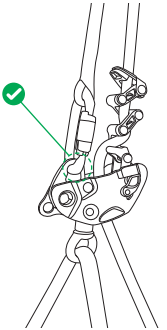
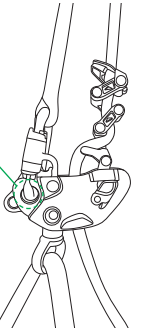


Figure 1B

OK



Single-rope Technique (SRT)/ Stationary Rope System (SRS) Set-up

Option B1 No Friction Device/ Tether

Figure 2A

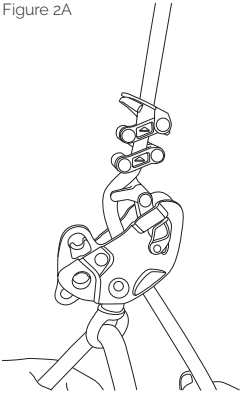
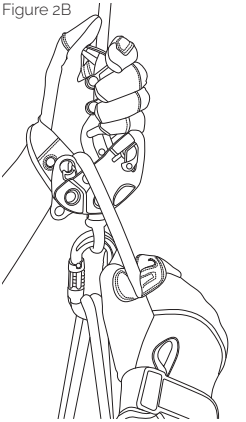
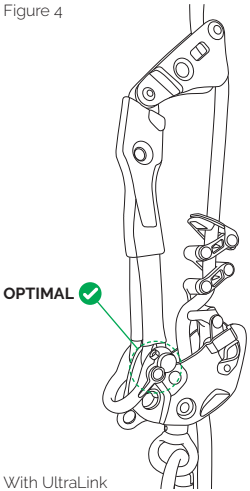


Figure 2B



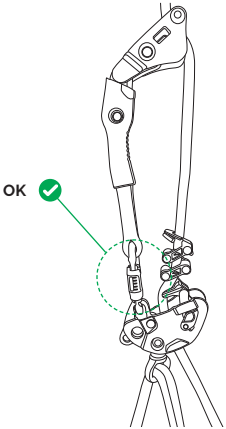
Option B2: With APEX Friction Device & Chipmunk FLEX Tether

Figure 4



With UltraLink

Figure 5



With KL120 Compact Oval Karabiner

Figure 2C

Load	øRope (mm)	SRT/SRS– no additional Friction	SRT/SRS– with additional friction	MRT/MRS
50-140kg (110-308lbs)	11.0-13.0mm	✓	✓	✓
141-200kg (310-440lbs)	11.0-11.4mm	✗	✓	✓
50-200kg (110-440lbs)	11.5-13.0mm	✓	✓	✓

G Attaching/Removing the Swivel Eye

Figure 1

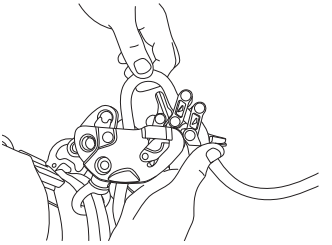
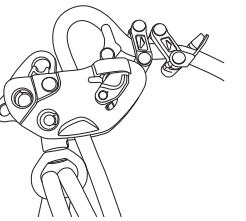


Figure 2



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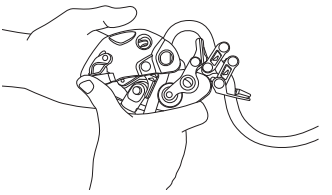
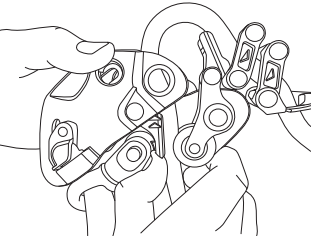


Figure 4



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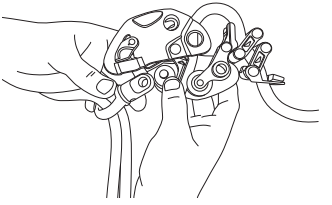

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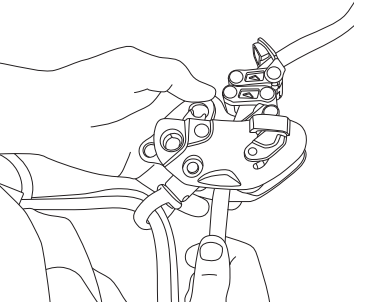


Figure 1

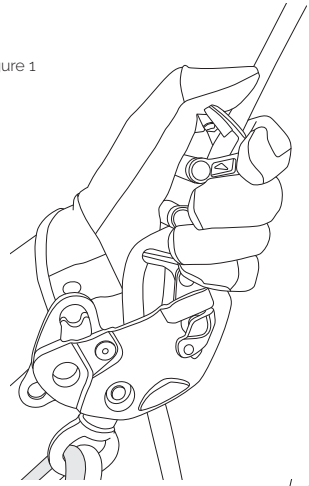


Figure 2

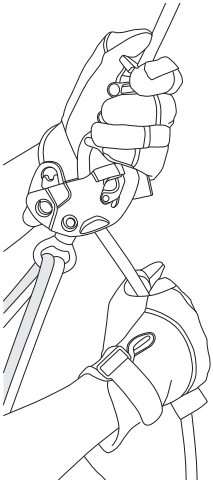
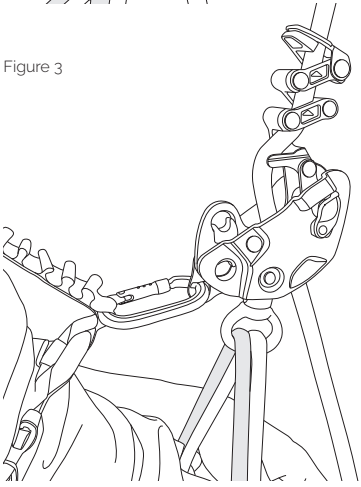
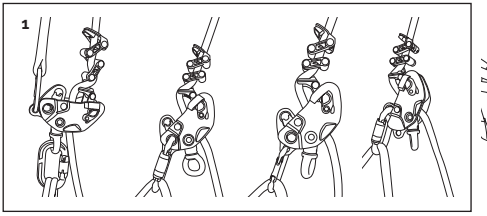


Figure 3

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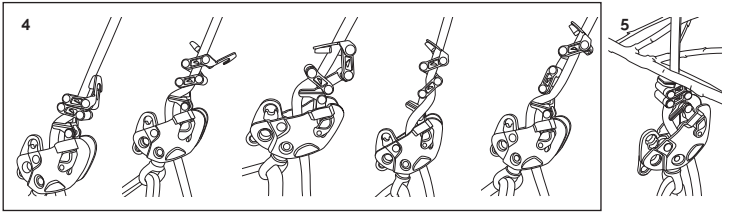
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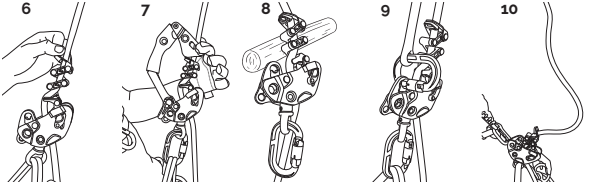
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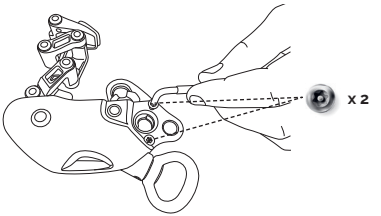
J Replacing the Karabiner Insert

Part Code: KT311A **T20 SECURITY TORX**

1



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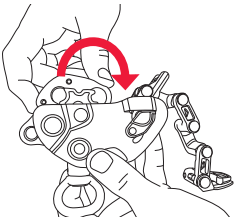

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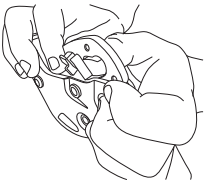

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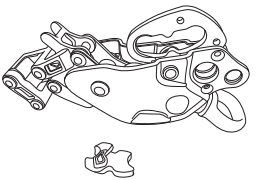

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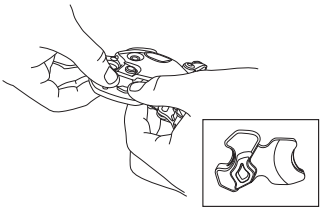

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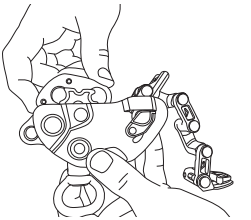

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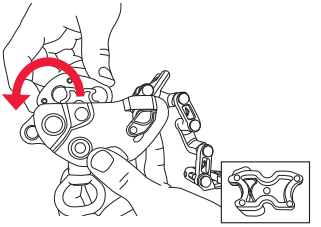

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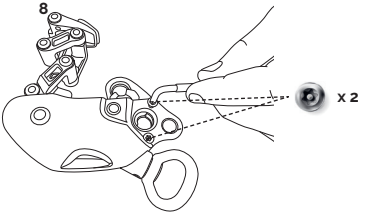

MH285 REFLEX Mechanical Hitch

Do not use this product without having read carefully and understood these general instructions for use.

The intended use of a Type C rope adjustment device, is progression along the working line, and they shall be used with a type A rope adjustment device and a safety line, unless a risk assessment has demonstrated that an alternative configuration would entail less risk to persons.

WARNING! Activities involving the use of this type of equipment are inherently dangerous. Improper use of climbing equipment may result in serious injury or death. The diagrams illustrate only some of the possible correct and incorrect methods of use. It is impossible to cover every eventuality relating to the use of this equipment. This equipment should not be used by persons with medical condition(s) that may affect the safety of the user. This equipment should only be used by a competent person, or a person specifically trained in its use, whilst under the direct supervision of a competent person. If unsure, seek professional training from a fully qualified and competent instructor prior to engaging in any activity. You are responsible for your own actions. These instructions do not replace the need for professional training.

CAUTION: Practice using the device 'low and slow' before using at height, regardless of user experience or skill level. The use of a secondary system or back-up is advisable, especially while becoming accustomed to the performance characteristics of the device.

It is the user's responsibility to ensure understanding of the correct safe use of this equipment, to use it only for the purposes for which it is designed, and to practice all proper safety procedures, including wearing the required PPE – e.g. helmet, gloves, glasses, boots and harness. Extreme care should be taken when using this product near harmful chemicals, moving machinery, electrical hazards or near sharp edges and abrasive surfaces. Wet and icy conditions may cause rope to become slippery. The manufacturer or distributor will not be held responsible for the eventual damages, injuries or death resulting from improper use of this equipment.

It is mandatory that a Risk Assessment be carried out prior to any use, and that a rescue plan is in place for any work at height activity. Always ensure that all components within a safety system are compatible and allow the system to function safely. It is recommended that the viability of any installation should be verified by a suitably qualified person. If there is any doubt about the compatibility of the products you have chosen please consult the manufacturer. Do not exceed loads either specified by the manufacturer or loads derived from the specified MBS using a recognised factor of safety.

ISC equipment and components for prevention of falls from height meet or exceed recognised European, American or other International standards. If this product is sold outside of the original country of sale, it is the reseller's responsibility to supply this document in the language of re-sale.

Do not modify or alter this device in any way.

Lifespan
Please be aware that exposure to chemicals, extreme temperatures, sharp edges, major fall or load, etc. can significantly reduce the lifetime of a product, to as little as a single use (or less). The potential lifetime of ISC products is up to 10 years for plastic or textile products, and indefinite for metal products. The actual lifetime of a product depends on a variety of factors such as; the intensity of use, the frequency of use, the environment in which it has been used (humidity, salt, sand, moisture, etc.), the competency of the user, and how well it has been maintained and stored, etc.

Storage & Transportation
Care should be taken to protect the product against damage during transportation.

Markings
All markings should be checked for legibility. If the information is not legible, the unit should be removed from service. The Manufacturer name and device Serial number must be identifiable.

Compatibility

The MH285 REFLEX may be used with:

APEX Friction Device (SRT/SRS systems):
In some cases, it is necessary to use an APEX Device and Tether. **IMPORTANT:** Please see information regarding loads and rope diameter (Section F, Figure 2C). The APEX (used together with the Chipmunk FLEX Tether) can be used with the REFLEX to provide a greater degree of friction management, and therefore refinement of control. Perform pre-use checks to assess the level of friction that is achieved on the intended rope.

Tether:
The REFLEX is designed for use with the Chipmunk FLEX Tether. The Chipmunk FLEX tether provides a minimum of 8cm (~3") of clearance between the hitch and the APEX, when in an engaged and fully equalised set up. Alternatively, the longer Squirrel FLEX Tether maybe used.
The REFLEX may also be used in SRT without a Tether, ONLY when used on ropes ≥ø11.5mm (see notes in APEX section, above).

Connectors:
The REFLEX is designed for optimal use with the KL120SS Compact Oval, or KL121SS Standard Oval Karabiners. Karabiners used with this device must be suitably-shaped (for load-bearing) EN362 type Aluminium connectors, with triple-lock, auto-locking barrels. The towing aperture is compatible with the KL100 Accessory Karabiner (NOT for PPE) and may ONLY be used for connection with a Chest Harness, for the purpose of towing the REFLEX Device, during Ascent.

Climbing Rope:
The REFLEX must be used with EN 1891 Type A rope of diameter ranging from 11mm to 13mm. EN 1891-A ropes vary in construction and so the user must perform pre-use function/performance tests prior to the first, and each subsequent use in order to ensure the initial **AND the ongoing** compatibility of the device and rope, throughout the life of the rope AND of the REFLEX device. Rope/device compatibility may vary greatly, as the rope and device each become worn.

Compatibility (continued)

WARNING:
Excessive slip and/or extended stopping times are an indication of either:

- The use of an incompatible rope (incorrect diameter, or a type/construction that is incompatible with the REFLEX device).
- Excessive wear of the REFLEX device and/or worn /compromised rope condition. Check ropes for flattening, as flattened ropes may affect the friction performance between the rope and the REFLEX.

It is recommended that EN 1891-A rope, made of Nylon, Polyester and with Kernmantle construction, is used. Ropes should be of a type that is approved for use in Arboriculture Climbing applications. Ultrastatic climbing rope is NOT recommended. Rope should have just enough 'give' or 'bounce', to be comfortable. Always use the correct diameter rope.
The above recommendations for the selection of ropes are general guidelines only. There are many factors that go into selecting suitable ropes for climbing. A professional Arborist should carefully consider all the factors present before making a decision regarding the ropes to be used.

A Care & Maintenance

1. Always read the user instruction manual(s).
2. Refer to the CE EN numbers for each piece of equipment.
3. Take measures to avoid equipment coming into contact with abrasive chemicals.
4. Allow equipment to dry naturally, away from direct heat.
5. Equipment may behave differently in wet or icy conditions.
6. The hardware may be cleaned regularly (or after every use in a marine environment) in warm water, using a mild detergent. **IMPORTANT:** Use a scrubbing brush to clean the links, taking care to ensure that all sap/debris is removed. Pay particular attention to the top link.
7. Moving parts should be lubricated regularly with a light oil. Make sure that lubricants do not come into contact with parts that rely on friction with rope and/or with textile components.
8. Store equipment in a secure location that it is protected from environmental elements (moisture, UV, etc.) and is free from vibration.
9. Tools may be used to change components ONLY as explicitly shown in this manual. Do not alter other components of this device, in any way.
10. Take care to keep this equipment away from fire/sources of ignition.

B Nomenclature

1. Swing-frame
2. Primary SRT/MRT Attachment Aperture
3. Karabiner Alignment Insert
4. Central Frame
5. Secondary SRT/MRT Attachment Aperture
6. Towing Aperture
7. Swivel-eye (bridge attachment aperture)
8. Button Guard Lever
9. Swing-frame Release Button
10. Rope Block
11. Swivel Mount Axle
12. Swivel Mount Aperture
13. Swivel Upper Bollard
14. Swivel Lower Eye
15. Swivel Retention Fin
16. Rope Retention Clip
17. Magnet
18. Top Link
19. Link 2
20. Link 3
21. Rope Block
22. Rope Link Arm
23. Pulley Sheave

C Markings

1. 'UP' Anchor Direction (Orientation of Links)
2. 'UP' Anchor Direction (Device Body)
3. Product Logo/Name
4. Manufacturer Logo
5. Manufacturer Location
6. Instruction as part of swing-frame opening procedure
7. Part Code
8. Rope Diameter & Type
9. Read User Instruction Manual
10. European Standard
11. MBS Minimum Breaking Strength
12. WLL Working Load Limit
13. CE Mark & Notified Body Number
14. WARNING to function check device before, during & after use
15. Patent Pending
16. Device Serial Number
17. Swivel Eye Serial Number

D Inspection

ISC recommends that all climbing equipment be subjected to a thorough inspection, by a competent person, at maximum intervals of 12 months, or more frequently if the equipment is subjected to exceptionally high intensity usage, or if local legislation mandates more frequent inspection.

It is essential that equipment is inspected immediately prior to, throughout, and after each use. During use, equipment must be closely monitored in order to assess its suitability for continued use.

Inspect the REFLEX:

1. Inspect the entire device (including links, frames, sheave and swivel-eye assembly, etc.) for deformation, cracks, burrs or sharp edges. Check for signs of corrosion, or excessive wear and build-up of SAP/debris.
2. Check that the rivet heads are in tact and that there is no play in the rivets.
3. Check the spring-action of the Spring-loaded Button Guard Lever [Figure 1], which should immediately return to guard the button, upon release.
4. Check the spring-action of the Swing-frame Release Button [Figure 1] by fully depressing and then releasing the button. Upon release, the button should pop-out immediately to prevent the swing-frame from opening.
5. Ensure that the device closure mechanism engages positively to securely lock the device.
6. Inspect the rope block and links for signs of excessive wear [Figure 4].
7. Check that the sheave turns freely and that there is no play in its axle. [Figure 2]
8. Check that the swivel turns freely and smoothly [Figure 3].
9. Check that all links pivot freely on their axles and that the chain of links is able to fully compress and extend, in a free and fluid motion. [Figure 4]
10. **IMPORTANT:** Check the function of the spring on the top link. When depressed and then released suddenly, the top link should freely and promptly spring back to its original position, in a positive action [Figures 5, 6, 7].
11. Check that the magnetic top retention clip remains securely closed. [Figure 8]
12. Check that the material of the Karabiner Alignment Insert is not worn [Figure 9]. This is a replaceable part (see section J).

Inspect the climbing rope:
Carry out visual and tactile inspections regularly, in accordance with the rope manufacturer's instructions. Heat, abrasion, environmental exposure and other physical damage is likely to affect the performance of the outer sheath of the rope.

Documenting Inspections
All inspection observations should be noted in the Product Record Card, which can be found in the back pages of this User Manual.

Should any doubt arise as to the useable condition of equipment, or if the equipment has been used to arrest a fall, the item should be withdrawn from use, immediately. Measures should be taken to ensure that it is not used again, until a competent person has provided written acknowledgement that it is safe to resume use of the item.

The REFLEX Mechanical Hitch is designed for use on 11mm-13mm EN1891:1998/A Rope, only.

Selecting a Suitable Anchor

A suitable Personal Fall Protection (Load Bearing) type anchor should be selected by a trained and competent climber. Anchor selection should take into consideration the diameter and health of a limb, the species of the tree, the location of the anchor in relation to the work that is to be carried out, as well as other environmental factors (such as wind) that may exert additional forces on anchors. This is not an exhaustive list– please seek training if you are unsure.

E Installing the Device onto the Rope

1. Where there is the possibility that the climber may inadvertently run the device off the end of the working line, a stopper knot should be installed at an appropriate location on the rope. The stopper knot should be at least 500mm from the non-terminated end. The knot ensures that the REFLEX cannot run off the end of the climbing rope.
2. Install the climbing rope over a suitable anchorage point within the tree.
   Before opening the swing-frame, orientate the lower swivel-eye into the correct position, and swing the entire swivel-eye assembly over to the right [see Figure 1]
3. Open the REFLEX swing frame. This can be done using the thumb to rotate the button guard lever and depress the release button, and swing the frame open [Figure 2]. (It may be necessary to re-orientate the swivel eye, in order to allow the swing frame to swing to its open position).
4. Hold the device in the correct orientation and insert the rope into the device, between the sheave and the rope block [Figure 3].
5. Place the rope inside the rope link [Figure 4]
6. Continue to wind the rope upwards around the links in a counter-clockwise helical motion [Figures 5, 6, 7].
7. Close the top retention clip [Figure 8]. The clip will be held in place by the magnet.
8. Close the swing frame of the device. **CAUTION:** Check that the swivel-eye is pushed all the way onto the axle mount, before closing the device.
9. Check that the device is correctly roped, by checking that the two 'UP' arrows (located on the sides of the links) are both pointing upwards, towards the anchor [Figure 9].

See separate instructions below for installing/removing the bridge swivel-eye to/from the REFLEX device [see section G].

F MRT/SRT Configurations

Setting up the climbing system:

A. For Set-up on a doubled/moving rope system- (MRT/MRS):

1. Insert a karabiner into the terminated end of the rope and then clip the karabiner to the Primary Attachment Aperture [Figure 1A, or into the Secondary Attachment Aperture [Figure 1B].

B. For set-up on a single/stationary rope system- (SRT/SRS):

Option B1: Without additional friction

The REFLEX may be used without additional friction [Figure 2A]. **IMPORTANT**: Please see information regarding loads and rope diameter [Section F, Figure 2C].

If desired, additional friction may be easily introduced by running the tail of the rope up over the body of the device [Figure 2B] (for minimal use as this can cause premature wear to side frames and rope), or by running the tail of the rope through a Figure 8.

Harness Attachment:

Attach the swivel-eye harness aperture to the bridge or central attachment point of an EN 813 harness. One or two bridge cords may be threaded directly through the aperture of the swivel. Alternatively, for increased lifespan of the swivel eye, and increased versatility during the climb, the harness bridge(s) may be connected to the swivel-eye aperture, using up to two Oval karabiner(s) (KL120SS is recommended). If using two karabiners, it is recommended that the karabiners should be arranged such that their gates are on opposing sides, in order to reduce the risk of accidental opening of both gates, simultaneously.

See separate instructions for installing/removing the bridge swivel-eye to/from the REFLEX device [see section G].

NOTE: The Primary and Secondary Attachment Apertures can be used for SRS, or MRS. The Primary aperture is optimal for use when self-tending of the rope is desired (MRS).

G Attaching/Removing the Swivel-eye

WARNING: The following procedure to remove the swivel-eye, will disconnect the climber from the REFLEX Mechanical Hitch, entirely. This should ONLY be attempted when the climber is safely on the ground, or when the climber is safely supported by an alternative PPE system (secondary climbing system, and/or work positioning lanyard).

Removing the Swivel-eye:

1. Push the trailing end of the rope upwards through the device, to create a very small loop of slack rope above the body of the device, but beneath the links. This action will cause the links to lean over to the right-hand side. [Figure 1].
   Rotate the lower portion of the swivel-eye, and swing the entire swivel-eye assembly to the right [see Figure 2].
2. Open the swing-frame mechanism and rotate so that the swivel mount bollard is exposed [Figure 3].
3. Push the rope and the sheave, over to the right, to create a space between the rope and the rope block. Use the tip of finger/thumb to pull the rope block across to the right [Figure 4]. This action releases the locking fin (located on the underside of the rope block) from the groove within the swivel-eye bollard. **This action will enable the release of the swivel-eye from the device**.
4. Firmly pull the swivel-eye, to remove it from the mounting axle [Figure 5]. It is normal to feel friction (from an internal o-ring), as the bollard is pulled off the axle. This friction is intentional, in order to reduce the risk of accidental release of the bollard.

To reinstall the Swivel-eye:

1. Repeat steps 1-3 above and hold the rope block in the open position
2. Align the Swivel bollard aperture with the Swivel mount axle and push the swivel bollard fully until it clicks into position. Check that the swivel bollard is fully pushed home, on the swivel mount axle.
3. Release the rope block. This action engages the locking fin (located on the underside of the rope block) into the groove within the swivel-eye bollard, retaining the swivel assembly in position.
4. Close the swing-frame of the device and check that it is securely locked. Pull down on the trailing end of the rope (beneath the REFLEX), to tend the slack out of the system and re-engage the device on the working line, by sitting back into the device [Figure 6]. **IMPORTANT:** If re-attaching the swivel whilst at height, always check that the REFLEX is correctly re-engaged and functioning correctly, before releasing the secondary system/work positioning lanyard.
   The swivel-eye assembly is available as a user-replacement spare part. Part code KT310A.

H Use

The following instructions for descent apply whether the device is used in SRT or MRT system. The device may be operated using the left or right hand.

Descent

1. When preparing to descend, the hand and fingers should be placed around **all of the links**, with a finger or thumb positioned at the top links, to operate the top link lever [Figure 1].
2. It is advisable for the user to hold the control rope with their other hand, for increased control and to guide the trailing rope [Figure 2].
3. To descend, the user's hand should lightly squeeze the links, while the top lever is lightly pressed in order to begin descent/payout of rope. To increase the speed of descent/rope payout, the user can press more firmly on the lever.

WARNING: The top link lever should NOT be operated in isolation. With the top lever fully depressed, the device will descend in a very quick, uncontrolled manner. Operating all of the links simultaneously, enables a greater degree of control.

WARNING: During longer descents the device may become very hot, and this may cause damage to the rope. For longer descents, the climber should wear gloves which are purpose-designed for climbing. Do not use work gloves of a rubber construction.

Stopping

1. To stop the descent, release all links. The chain of links will elongate, as they (and the rope block) engage to apply friction to the rope, to halt the descent.

IMPORTANT: It is essential that the user carries out pre-use performance/function, immediately prior to the climb, to check for correct set-up, rope compatibility and proper function of the device. Pre-use checks should be carried out at low height. It is advisable to practice 'low and slow' with the device and it is recommended that users utilise a secondary back-up, while becoming familiar with the operation of the device.

Ascent

During Ascent, a Chest Harness may be attached to the Towing, Primary, or Secondary Aperture of the REFLEX. This enables the user to tow the REFLEX device up the rope, during ascent. The REFLEX device will re-engage to lock onto the rope, as the user sits-back into the harness.

Pre-Use Performance/Function Test

IMPORTANT: It is essential that the user carries out pre-use performance/function, immediately prior to the climb. Pre-use checks should be carried out at low height.

The REFLEX is designed to slide up/along the rope in one direction (towards the anchor), providing minimal friction during ascent and when advancing in lateral movement. When pulled in the opposite direction (away from the anchor) the friction link chain extends and engages other friction forces within the body of the device, in order to stop the rope from moving through the device.

Begin by verifying that the REFLEX device is installed correctly AND in the correct orientation on the rope, and that it stops in the desired direction (relative to the anchor). Pressing on the release link enables variable control of movement of rope through the device.

Pre-use tests should replicate anticipated movements during ascent, descent and lateral movement within the canopy, using the climbing techniques/system set-ups (SRS/MRS, Dragging Tail) that may be used during the climb . During testing, the user should ensure the proper function of the hitch and its interaction with the rope. Check for the desired friction characteristics and the ability to stop.

Function checks performed before, after and throughout use, should include a check that the device does not slip under bodyweight. This is important in order to verify the condition of the device, as well as the condition of the rope, which may have become/worn/damaged/flattened.

Check the system as a whole, ensuring good compatibility and functionality of all system components. Check that all components (rope/hardware) are free of interference from other components, and that there is no detrimental engagement with branches, etc.

WARNING:

Excessive slip and/or extended stopping times are an indication of either:

- The use of an incompatible rope (incorrect diameter, or a type that is incompatible with the REFLEX device).
- Excessive wear of the REFLEX device and/or worn or compromised rope condition

Throughout use, continue to monitor the locking effectiveness of the REFLEX/rope combination. Excessive slippage (beyond usual levels) may indicate that the components of the device have become worn, and may need to be retired. In this case, remove the device from service immediately.

General Use of the REFLEX- Climbing Precautions

The MH285 REFLEX is Personal Protective Equipment (PPE) which is used for protection against falls from height. The REFLEX is a Mechanical Hitch device, designed as a mechanical alternative to a cord-based friction hitch, for use in Stationary Rope System (SRS) and/or Moving Rope System (MRS) in Tree Climbing applications. This product must not be used outside the described limits, nor be used for any purpose other than that for which it is designed.

CAUTION:

WARNING DO NOT DESCEND TOO QUICKLY During descent the climber should not descend too quickly as doing so can damage the rope, especially on long descents. It is advisable for the user to

wear climbing gloves to operate the device on long descents, as the device may become hot. Using an APEX and FLEX Tether for SRS descents, can be advantageous in order to manage friction and resulting heat, on longer descents.

WARNING AVOID DYNAMIC FALLS & UNCONTROLLED SWINGS: The climbing rope must be tied to a secure anchor point. From this Tie in Point (TIP), the rope may pass through redirects as the climber works the tree. Redirects help the climber to prevent dangerous swings or bad rope angles. It is crucial that the climber never climbs above their last redirect or be exposed to an uncontrolled swing. Dynamic falls and uncontrolled swings can cause serious injury or death. It is important to not allow slack in the system at any time and always be aware of tripping hazards and stubs that can impale during the course of a fall or swing. To limit the exposure to dangerous swings, take advantage of natural redirects in the tree. Select redirects with caution and care. Being able to judge the health and strength of trees as well as understanding the physics of fundamental tree rigging are imperative to being a safe climber.

Understand that forces can be multiplied on redirects depending on the angle of the rope. Understand that a redirect that is strong in one direction may be weak when pulled from another angle. Constantly inspect the tree for spots of decay and test the redirect before trusting your full weight to it. TREES ARE NOT RATED. Only good judgment can prevent a climber from over stressing a limb or tree. If the climber clips the tail of their climbing line through a pulley fixed to the working part of the line, the system can be converted from an SRT/SRS 1:1 climbing system to a 3:1 climbing system.

I Mis-use

WARNING: The mis-use described below may lead to **INJURY/DEATH.**

1. **USE OF INCORRECT APETURES** [Figure 1]
   When configuring life-support systems, use **ONLY** the apertures which are identified as suitable for life-support systems. Use only EN 362/ANSI Rated Karabiners.

2. **INCORRECT DEVICE ORIENTATION ON ROPE** [Figure 2]
   Immediate free-fall

3. **ROPE INTERFERING WITH LINKS (particularly the top link)** [Figure 3]
   Can cause rapid/uncontrolled descent

4. **ROPE INCORRECTLY THREADED THROUGH LINKS** [Figure 4]
   Can cause immediate free-fall

5. **BRANCHES/EQUIPMENT INTERFERING WITH LINKS (particularly the top link)** [Figure 5]
   Can cause rapid/uncontrolled descent

6. **OPERATION OF THE TOP LINK IN ISOLATION, TO ACTIVATE DESCENT** [Figure 6]
   Can cause rapid uncontrolled descent

7. **MANIPULATION OF THE APEX WRENCH, TO RELEASE THE LEVER OF THE REFLEX MECHANICAL HITCH** [Figure 7]
   Can cause rapid uncontrolled descent.
   As soon as the Release Link is pressed, there is potential for rapid descent. Do not manipulate the APEX/Rope Wrench into a position where it can release the grip of the REFLEX friction hitch.

8. **SIDE LOADING OF THE REFLEX DEVICE** [Figure 8]
   May cause damage to the links and may affect the ability of the device to provide life Support.

9. **MIS-LOADING OF KARABINERS** [Figure 9]
   Mis-loading Karabiners will significantly reduce their strength.

10. **FAILURE TO TEND SLACK** [Figure 10]
    The climber must not allow slack in the climbing rope, to build up between the harness and the anchor point. Failure to tend slack may result in increased fall-distance, pendulum, and and/or shock-loading of the system.

11. **DO NOT USE AS AN ASCENDER**
    Do not attempt to hang on the REFLEX as you would an ascender as this may inadvertently release the friction hitch and cause rapid, uncontrolled descent. The REFLEX is NOT an ascender and plays no part in ascending. It must, however, be pulled up along with the rest of the system as the climber ascends, in order to tend slack and maintain progress capture. This can be facilitated by attaching a harness with a chest attachment point to one of the Tether Attachment Points of the REFLEX, or to the tether itself (if using SRT/SRS). This will help keep slack out of the system as the climber ascends. Ascend using any desired method. Hand ascenders, foot ascenders, foot loops, and the foot-locking method are all acceptable means of engaging the rope. The sit-stand method helps keep slack out of the system.

12. **DO NOT** use SRT/SRS configuration without additional friction, for high loads on smaller diameter ropes. **IMPORTANT:** Please see information regarding loads and rope diameter, [Section F, Figure 2C].

13. **DO NOT** use SRT/SRS configuration without additional friction, without first performing function checks to ensure rope/device compatibility, factoring in environmental conditions (hot/humid/wet, etc).

J Replacing the Karabiner Alignment Insert

1. Use a T20 Security Torx Screwdriver to un-screw the two screws, on the back side for the device. [Figure 1]
2. Turn the device over, so the front frame is visible. Rotate the Central Attachment Frame 90° Right, so that Karabiner Alignment Insert is fully visible. [Figure 2]
3. Use fingers to push the insert from the front side of the device, until it falls out of the back of the device [Figures 3 & 4].
4. Align the new insert (KT311A) up with the hole in the central frame and use fingers to firmly push the insert into position. Note that the insert must be pushed in from the rear side of the device [Figure 5].
5. From the front side of the device, check that the insert is correctly located [Figure 6].
6. Rotate the Central Attachment Frame 90° left [Figure 7].
7. Turn the device over, so that the rear frame is facing upward. Re-install and screws tighten them, using the screwdriver [Figure 8].

K Rescue

During an aerial rescue, techniques must be selected on the basis of achieving minimal risk to the Climber and the rescuer, as well as the wider team. The REFLEX has a 50- 200kg WLL and may be used in SRT/SRS* and MRT/MRS for rescue applications.
Before commencing any climbing work, a full risk assessment should be carried out, and a rescue plan should be put in place.

Although the REFLEX is capable of performing a pick-off recue while on a single line*, it is always advisable to build additional friction into the system, in order to achieve an additional degree of control, and safety. Additional friction enables a smooth descent of the casualty, when the rescuer is operating the device under higher loads than they are used to during daily use, when controlling single-person loads.

***WARNING: When using ropes of < ø11.5mm for SRT/SRS, additional friction MUST be used.**

Additional friction can be added to the REFLEX system, by using one or more of the following options:

- Optimal: Add an APEX/Wrench and Tether, to share the load between the APEX/Wrench and the REFLEX device. If using an APEX Wrench, begin by adjusting the device to the highest friction setting (setting 4), then adjust if necessary.
- Optimal: Run the trailing end of the rope through a friction device, such as a figure 8 Descender, or karabiner.
- OK: Direct the trailing end of the rope over the body of the device, using the free hand to control the friction (see Section F, Figure 2B). May lead to increased wear of Aluminium side frames.
- OK: Direct the trailing end of the rope upwards, while running the rope against the curved side frame of the REFLEX, as the rope exits the device. May lead to increased wear of Aluminium side frames.

It is best practice to use a secondary back-up line for rescues, where possible. This may be achieved by maintaining the climber's primary system, in addition to having the climber attached to the rescuer's system. However, this method is only possible when the climber's primary climbing system has been deemed as being uncompromised.

The rescuer should wear climbing gloves when performing a rescue, as the device may become hot.

Testing
Certification testing was carried out (NB 0408) using Teufelberger KMIII ø11mm (7/16"), Teufelberger Tachyon ø11.5mm and Teufelberger KMIII 13mm (½") ropes; with a 200kg (440lb) test mass.

PRODUCT RECORD

1					
2					3
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6					7
8	9	10		11	12
		✓	✗		
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		✓	✗		

Product Record Details

1 Item, Položka, Element, Artikel, Artículo, Tuote, Élément, Articolo, Onderdeel, Artikkel, Pozycja, Item, Objekt, 項目, 产品

2 Serial Number, Sériové číslo, Serienummer, Seriennummer, Número de serie, Sarjanumero, Numéro de série, Numero di serie, Serienummer, Serienummer, Numer seryjny, Número de série, Serienummer, シリアル ナンバー, 编号.

3 Year of manufacture, Rok výroby, Produktionsår, Herstellungsjahr, Año de fabricación, Valmistusvuosi, Année de fabrication, Anno di produzione, Productiejaar, Produksjonsår, Rok produkcji, Ano de fabric, Tillverkningsår, 製造年, 制造年份.

4 Purchased from, Zakoupeno od, Købt af, Gekauft von, Comprado en (distribuidor), Ostopaikka, Acheté auprès de, Acquistato da, Gekocht bij, Kjøpt fra, Zakupione od, Adquirido de, Inköpt hos, 購入元, 购买来源.

5 Purchase date, Datum nákupu, Købsdato, Kaufdatum, Fecha de compra, Ostopäivä, Date d'achat, Data di acquisto, Aankoopdatum, Kjøpsdato, Data zakupu, Data da aquisição, Inköpsdatum, 購入日, 购买日期.

6 Name of Manufacturer, Výrobce, Producent, Hersteller, Fabricante, Valmistaja, Fabricant, Produttore, Fabrikant, Produsent, Producent, Fabricante, Tillverkare, メーカー名, 制造商的名字.

7 Date of first use, Datum prvního použití, Datoen for første anvendelse, Datum der ersten Benutzung, Fecha del primer uso, Ensimmäinen käyttöpäivä, Date de première utilisation, Data del primo utilizzo, Datum van ingebruikname, Dato for første gangs bruk, Data pierwszego użycia, Data da primeira utilização,
Datum för första användning, 初回使用日, 第一次使用日期.

8 Inspection date, Datum kontroly, Inspektionsdato, Prüfungsdatum, Fecha de inspección, Tarkistuspäivä, Date d'inspection, Data ispezione, Inspectiedatum, Kontrolldato, Data przeglądu, Data da inspeção, Inspektionsdatum, 検査日, 检查日期.

9 Reason (periodic examination (E) or repair (R)), Důvod (periodická prohlídka (E) nebo oprava (R)), Grund (periodisk undersøgelse (E) eller reparation (R)), Grund (regelmäßige Prüfung (E) oder Reparatur(R)), Motivo (examinación periódica (E) o reparación(R)), Syy (määräaikainen tarkistus (E) tai korjaus (R)), Motif (examen périodique (E) ou réparation (R)), Motivo (esame periodico (E) o riparazione (R)), Reden (periodiek onderzoek (E) of reparatie (R)), Årsak (periodisk kontroll (E) eller reparasjon (R)), Powód (przegląd okresowy — E; naprawa — R), Motivo (inspeção periódica [E] ou reparação [R]), Orsak (periodiskt återkommande granskning (E) eller reparation (R)), 理由 (定期検査 [E] または修理 [R], 原因（定期检查[E]或修复[R]）.

10 Conform, Odpovídá, Overholdelse, Bedingungen erfüllt, Conformidad, Vaatimustenmukaisuus, Conformité, Conforme, Voldoet aan, Samsvar, Zgodność, Conformidade, Efterlevnad,適合, 确认.

11 Comments, Připomínky, Bemærkninger, Kommentare, Comentarios, Kommentit, Commentaires, Commenti, Opmerkingen, Kommentarer, Uwagi, Comentários, Kommentarer, コメント, 评论.

12 Name and Signature, Podpis, Underskrift, Unterschrift, Firma, Allekirjoitus, Signature, Firma, Handtekening, Signatur, Podpis, Assinatura, Underskrift, 署名, 签名.

13 Next inspection date, Datum další kontroly, Næste inspektionsdato, Nächster Inspektionstermin, Próxima fecha de inspección, Seuraavan tarkastuksen päivämäärä, Prochaine inspection, Prossima data d'ispezione, Volgende inspectiedatum, Neste inspeksjonsdato, Termin kolejnego przeglądu, Próxima data de inspeção, Nästa inspektionsdatum, 次回点検日, 下次检查日期.

Certification

MH825- System fulfils the health and safety requirements of PPE Regulation (EU) 2016/425 PPE-R/11.088
Notified Body having carried out the EU type test (Module B):
Oznámený subjekt, který provedl test typu EU (Module B): Den underrettede myndighed har foretaget EU-typetesten (Module B): Zuständige Stelle, die die EU-Typ-Prüfung durchgeführt hat (Module B): Autoridad notificada tras realizar la prueba de tipo EU (Module B): EU-tyyppitestauksen suorittanut ilmoitettu laitos (Module B): Organisme notifié ayant mené le test de type EU (Module B): Organismo notificato che ha condotto il test di conformità EU (Module B): De aangemelde instantie die het EU-typeonderzoek heeft uitgevoerd (Module B): Teknisk kontrollor-gan som har utført EU-typetesten (Module B): Odpowiednia organizacja, która przeprowadziła test EU (Module B): Órgão notificado que realizou o tipo de teste EU (Module B): Anmält organ som har utfört EU-typtest (Module B):

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Notified body responsible for production monitoring and inspection (Module D):
Oznámený subjekt odpovědný za sledování výroby a kontroly (Module D): Den underrettede myndighed, der har ansvaret for overvågning og inspektion af produktionen (Module D): Zuständige Stelle für die Überwachung und Prüfung der Produktion (Module D): Autoridad notificada responsable de la inspección y del control de producción (ModuleD): Tuotannon valvonnasta ja seurannasta vastannut ilmoitettu laitos (Module D): Organisme notifié responsable de l'inspection et du contrôle de la production (Module D): Organismo notificato responsabile del monitoraggio della produzione e delle ispezioni (Module D): De aangemelde instantie die verantwoordelijk is voor het toezicht op de productie en de inspectie (Module D): Teknisk kontrollorgan som er ansvarlig for overvåkning og kontroll av produksjonen (Module D): Odpowiednia organizacja od-powiedzialna za monitorowanie i inspekcję produkcji (Module D): Órgão notificado responsável pela monitorização de produção e inspeção (Module D):

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