White Paper

LockDClips

Installation and Operation of LockD Clips with Auto Belays for Ascending, Descending or Rolling Elements

The use of a smart and continuous belay system can mitigate risk, increase capacity, and reduce the number of employees required to staff an adventure course. The ease of integrating LockD Clips with new and existing courses, including auto belays in use of vertical, horizontal, and rolling (moving) elements can be performed easily.

The information in this paper is meant to help qualified persons when designing and/or retrofitting a course with LockD Clips that interact with an auto belay on an ascending, descending, or rolling element. LockD Clips as well as auto belays each have unique requirements.

Therefore, a qualified person should always design and ensure compatibility of the system prior to use, even those shown in this paper. Confirm that the installation, operation, and maintenance of all equipment follows its respective user's manual and that all parties are suitably trained in the use of the equipment to ensure proper function.

Manufactured by

ROPES PARK EQUIPMENT

Ropes Park Equipment GmbH has not evaluated all of the potential products or elements referenced in this white paper. Testing by a qualified person is required to confirm compatibility. The products shown in this paper are provided as representative of the existing technology available at time of publication.

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More resources available at LockDClips.com

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Description of Systems

Smart and Continuous Belays

Smart belays generally consist of a set of twin safety lanyards with communicating connectors that help to reduce the likelihood of accidental detachments from a safety system. Continuous Belays remain attached to the life safety system throughout the entire course. LockD Clips are able to perform both of those functions.

LockD Clips is a smart and continuous belay system. Its features can mitigate risk in different ways. LockD Clips can be used with auto belay devices and rolling elements so long as they meet the requirements of the authority having jurisdiction and the system is designed and installed by a qualified person.

LockD Clips as the Primary vs Secondary Connector

When implementing LockD Clips in conjunction with auto belay or rolling element an important decision must be made during the design: will LockD Clips act as the primary or secondary connector when attached to the element?

Primary Connector

Using LockD Clips as the primary connector means LockD Clips will be in series with the auto belay or element connected by a Tweezle™ O (closed loop key). LockD Clips will be in tension during ascent or descent. When LockD Clips is used as the primary connector, a secondary, unloaded attachment may be implemented if needed.

Secondary Connector

Using LockD Clips as the secondary connector means LockD Clips will be connected to the auto belay or element but will not be under tension during use. Instead, a suitable life safety carabiner or connector, will be the primary connector and hold the weight of the participant during use. When installed as a secondary connector, Tweezle™ O should only be loaded in the event of an improper attachment to the primary carabiner or connector. In activities where shock loads can occur, like jumping off a platform, this is the preferred method of attachment.

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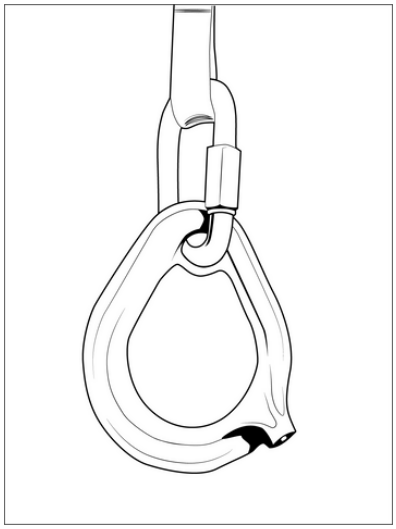
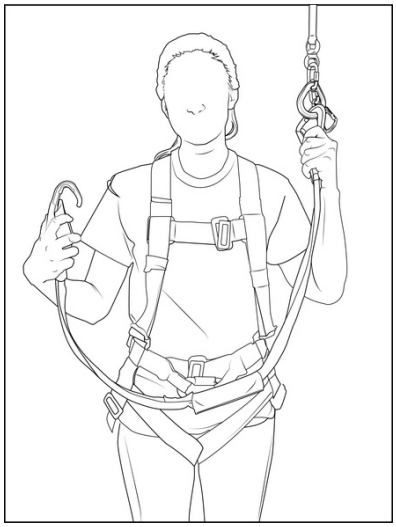
LockD Clips as the Primary Connector

Possible Installation
LockD Clips' closed loop key for special elements is the Tweezle™ O. This key should be used when connecting to auto belays or special elements and installed by a qualified person.



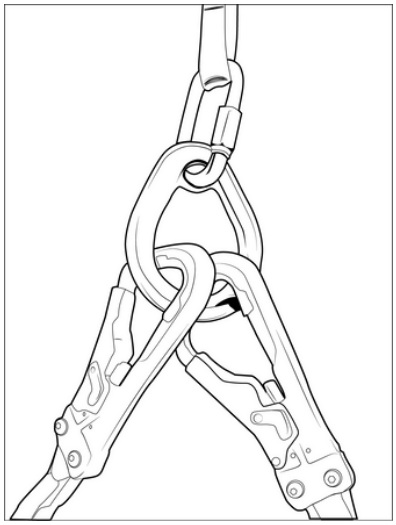
Connect the Tweezle™ O to the auto belay or rolling element with a suitably life safety rated connector that cannot be removed by a participant.

Operation



1. Participant connects themselves directly to the Tweezle O.

2. LockD Clips is the primary attachment to the element.



3. The participant must not be able to descend or ascend the element unless they're suitably attached to the system.

4. Once the participant reaches the end of the element, LockD Clips can be transitioned to a suitable life safety line with use of a Tweezle™ Key, allowing the participant to detach from the special element.

Considerations

Ascending Element

- Ensure the auto belay has adequate retraction strength to appropriately retract the webbing with the Tweezle O and LockD Clips attached.
- Ensure ascent starts from the ground or suitably large platform to ensure adequate landing area in case the participant activates the auto belay function and returns back to the start of ascent.

Descending Element

- Ensure the auto belay is mounted high enough to eliminate slack in the system with the added length of LockD Clips. If unaccounted for, the slack can result in a jolt during initial descent and cause the connectors to collide with the participant. Additionally:
    - LockD Clips can be used as the secondary connector to ensure the connectors cannot collide with a participant during descent.
    - If impact loading is possible within the system, use LockD Clips as the secondary connection.
    - Ensure participants cannot become entangled in the LockD Clips during descent.
    - Never permit the webbing line to wrap around legs, arms, neck, or other body parts, or loose clothing.
    - Prior to descent, ensure path and landing areas are large enough, free of people and obstructions.

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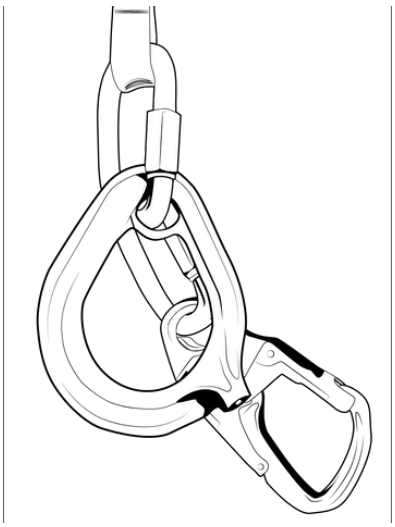
LockD Clips as the Secondary Connector

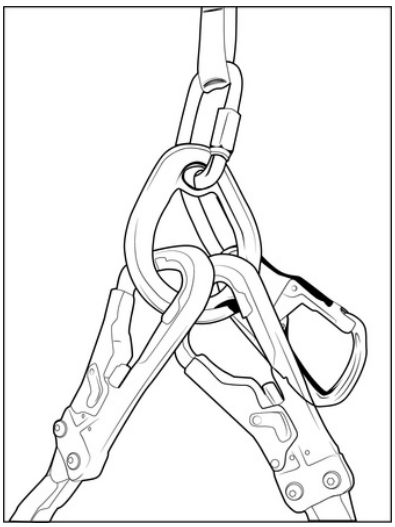
Installation
Below are images of the Tweezle™ O connected to a system as a secondary connection.

A qualified person must design and install the system to ensure large enough take-off and landing areas, compatibility with all systems, and proper function of the devices in use.

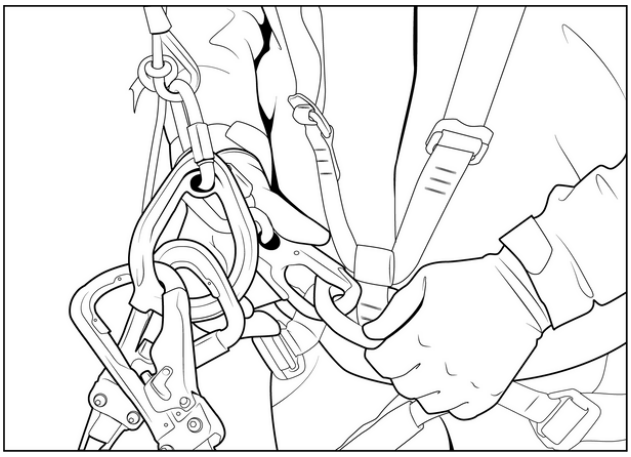


Operation

1. Participant connects themselves directly to the Tweezle O.



2. Participants then connect the Primary connector to the harness's main attachment point.



3. LockD Clips is the secondary attachment to the system and should not be under tension during ascent or descent.

4. The participant must not be able to descend or ascend the element unless they're suitably attached to the system.

5. Once the participant reaches the end of the element, LockD Clips can be transitioned to a suitable life safety line with use of a Tweezle™ Key, allowing the participant to detach from the special element.

Considerations

Descending and Ascending Elements

- If the secondary attachment is engaged, due to an improper primary attachment, the added length of LockD Clips lanyard may create slack in the system. The slack can result in a jolt during initial descent and may cause the connectors to collide with the participant.
    - To combat this the auto belay should be mounted such that the lanyard is in tension prior to the primary connector being attached to the harness.
    - Ensure participants are suitably trained on how to properly connect the primary connector.
    - Ensure participants cannot become entangled in LockD Clips during descent.
    - Never permit the webbing line to wrap around legs, arms, neck or other body parts or loose clothing of the participant.
    - Ensure participants hands are free and clear of connectors during descent. Loading may cause a pinch hazard.
    - Prior to descent, ensure descent path and landing area are free of people and obstructions.
    - Instruct participant to always descend feet first and straight down using feet to fend off obstacles and prepare for landing.