
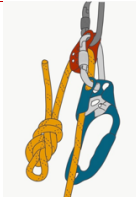



Suggested Belay Devices/Systems for the Level 2 Award



The following notes have been drawn up from correspondence with manufactures, testing and users experience. The notes are presented to stimulate a discussion on which devices and systems we should be teaching candidates at the Level 2 Cave & Mine Leader award. Please feedback any comments to gethin.caving@me.com or Mary which will be consolidated to help form guidance notes for candidates, trainers and assessors working within the scheme.

Suggested Inappropriate Devices

	<p>STOP (pre 2019 model): EN341. Rescue Descender. Suitable for descent with a one or two-person load. Suitable to lower a one-person load from a belay at the head of a pitch. Not endorsed by the manufacture for belaying or used part threaded. If it is desirable to continue to teach these techniques, then providers need to satisfy themselves they are for purpose (i.e. conduct repeatable tests in line with the appropriate EN standard for a belay device) and draw up their own risk assessment. Can also be used to rig a Tyrolean.</p>
	<p>Pulley/Jammer Systems: Shown to damage ropes with even a small dynamic fall. Should not be used or taught as a belaying system for the Level 2 award. May have a place in the CIC scheme as an improvised technique? Must not be used to support a tensioned line in a Tyrolean. Appropriate in some configuration (not with the jamming device on the "dead" side of the pulley; see warning notice on the BCA website) as a progress capture device for long hauls at Level 2 (although candidates must demonstrate they can competently convert a haul to a lower).</p>
	<p>Traxion devices: As with the pulley/jammer system. See Petzl technical notices on their website. Should not be used or taught as a belaying system for the Level 2 award. May have a place in the CIC scheme as an improvised technique? Must not be used to support a tensioned line in a Tyrolean. Appropriate as a progress capture device for long hauls at Level 2 (although candidates must demonstrate they can competently convert a haul to a lower).</p>


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	<p>GriGri: The GriGri 1 was endorsed by Petzl for use in belaying underground, the GriGri 2 was not endorsed for use with low stretch ropes (EN1891), however the more recent GriGri's do have a note supporting the use of low stretch ropes for top-roping on the Petzl website. Petzl also indicate methods to belay from a pitch head and endorse the GriGris use for rappelling on their website.</p> <p>However, Petzl also indicate that prolonged use in hauling (for example) generates such high friction that the device may wear out the lighter weight materials of the new GriGris, therefore have significant limitations. Would suggest these devices are not taught or used within the Level 2 award. Limited use in rigging a Tyrolean; manufactures endorse a 3:1 haul with one person at the most and experience of the device has highlighted it's difficult to release once under high tension. Should not be used within the Tyrolean module.</p>
	<p>Pivot (DMM): DMM's manufactures instructions only endorse the use of their belay devices with EN1891 ropes to abseil (not to belay).</p> <p>Discussions with DMM are on-going at the time of writing, however they have highlighted concerns with the potential impact forces falling onto a low-stretch rope and their devices. Other manufactures of similar type devices may endorse their use with low-stretch ropes.</p>

The use of a Pulley/Jammer system (other than that highlighted in the recent BCA publication), or better a Traxion type device is suggested as an appropriate progress capture device provided candidates are aware of the limitations of the device, and can demonstrate their ability to release the device when loaded to convert to a lower.

Alternative systems that require care




	<p>Italian (Munter) Hitch: Useful for short pitches or in an improvised system. Prolonged use, particularly when lowering, can cause the rope to kink significantly and become difficult to handle.</p> <p>Can be used to haul (although there's significant friction) or used to rig a Tyrolean (however the knot "flips" when loaded significantly reducing the tension in the system).</p>
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Suggested Appropriate Devices

The following list is by no means definitive, however represents components which the manufactures have confirmed are appropriate for abseiling with one or two people (in a rescue situation), belaying from both a harness and a fixed anchor be it at the base or head of a pitch, lowering, and for short hauls.

	<p>RIG/ID (both the pre and post 2018 models, RIG post 2018 illustrated): Provided they are used within the current manufacture's guidance are appropriate devices to belay, abseil and perform short improvised rescues. They are less appropriate for longer rescues due to the high levels of friction. Can be used in a Tyrolean.</p>
	<p>STec Flow: Provided they are used within the current manufacture's guidance are appropriate devices to belay, abseil and perform short improvised rescues. They are less appropriate for longer rescues due to the high levels of friction. Can be used in a Tyrolean. Made of harder wearing components so may last longer than a RIG/ID although heavier and more expensive. Option of "panic lock" and non-panic lock available. Subjective testing indicates it's a little harder to haul through the device.</p>
	<p>ISC D4: Provided they are used within the current manufacture's guidance are appropriate devices to belay, abseil and perform short improvised rescues. They are less appropriate for longer rescues due to the high levels of friction. Can be used in a Tyrolean. Subjective testing suggests the device can be a little "snatchy" in use as a descender.</p>

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	<p>Edelrid Eddy: Provided they are used within the current manufacture's guidance are appropriate devices to belay, abseil and perform short improvised rescues. They are less appropriate for longer rescues due to the high levels of friction. Can be used in a Tyrolean. Set up the opposite way to a GriGri which can be confusing for some. Has an anti-panic function which users need to be familiar with.</p>
	<p>CAMP Druid/Druid Pro: Provided they are used within the current manufacture's guidance are appropriate devices to belay, abseil and perform short improvised rescues. They are less appropriate for longer rescues due to the high levels of friction. Can be used in a Tyrolean. Compact but robust device, however tricky to fit on and off the rope (needs to be removed from the carabiner, manufacture suggest a piece of cord is used to prevent dropping the device). Only officially endorsed by the manufacture for 11mm rope, however correspondence with the manufactures indicate recognition of loser diameter ropes so this may be something worth pursuing. Subjective experience found it challenging to give slack rope to a client climbing down a pitch/ladder.</p>
	<p>CAMP Giant: Provided they are used within the current manufacture's guidance are appropriate devices to belay, abseil and perform short improvised rescues. They are less appropriate for longer rescues due to the high levels of friction. Can be used in a Tyrolean.</p>
	<p>STOP (2019): At the time of writing (16th June 2019) the new STOP has yet to be officially released. Note the older STOP is no longer listed on Petzls website. Indications are that the new STOP has been tested to EN15151:1; the standard for a belay device and so the new STOP may be appropriate to use for this purpose. It's unlikely the use of the STOP part threaded will appear in the manufactures instructions (pre-release draft copies do not indicate the use of the device part threaded) and so it's likely to have undesirably high levels of friction for use in a haul system.</p>

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Rope Choice

It has been common practice to use EN1891 (low-stretch) ropes when belaying clients underground in preference to EN892 dynamic climbing rope. The rationale for this choice has come from experience of belaying clients with dynamic ropes and the real risk of clients experiencing a ground fall due to the stretch in the rope, as well as the disadvantages in using a dynamic rope during a haul.

Award holders must bear in mind any dynamic fall onto a low-stretch rope will result in significantly higher impacts which may injure a client or damage components.

When belaying with a low-stretch rope the following guidelines must be followed

- Ropes must be kept tight at all times
- If belaying from the head of a pitch the belay device must be positioned high to ensure the rope can be kept tight on the client until they have transferred to a traverse rope (using cowstails)
- If belaying from the bottom of a pitch (typical top rope set up) clients should never climb above the carabiner/pulley at the head of the pitch

When belaying a client climbing (ladder or other)

- Consider the use of a Dynamic rope, preferably one designed not to stretch significantly (such as a “gym” rope)
- Alternatively consider attaching the client through their cowstails to incorporate some dynamic rope into the system, however
 - Managing a pitch head transition will be more difficult unless the belay device is rigged exceptionally high
 - If converting to a haul it's likely clients will need to be lowered to the ground and secured directly to a low-stretch rope rather than their cowstails