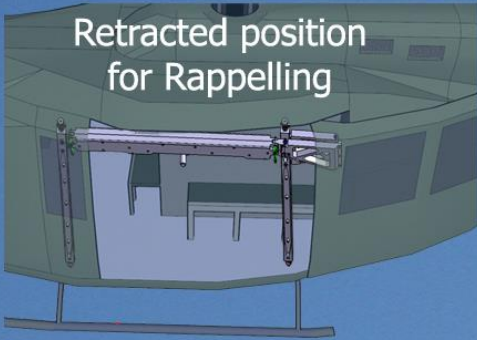


Bell helicopter mission equipment



Retracted position
for Rappelling



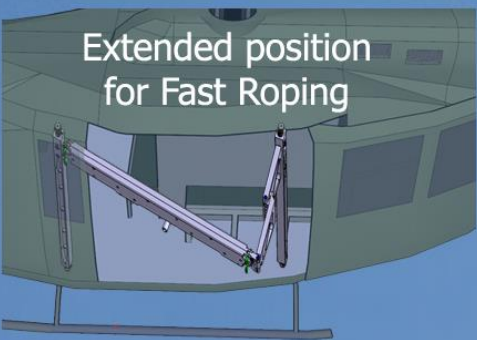
BRD01

Fast Roping and Rappelling device for
Bell 205, 212, 412 and UH-1 helicopters

Fact Box:

- Simultaneous operation with up to 4 couplings per helicopter
- High useful load of up to 270 kg (600 lbs) per coupling
- Mounted to standard hard points
- No helicopter fuselage modifications required
- Low system weight of less than 24kg (53 lbs) per unit
- NVG friendly

Extended position
for Fast Roping



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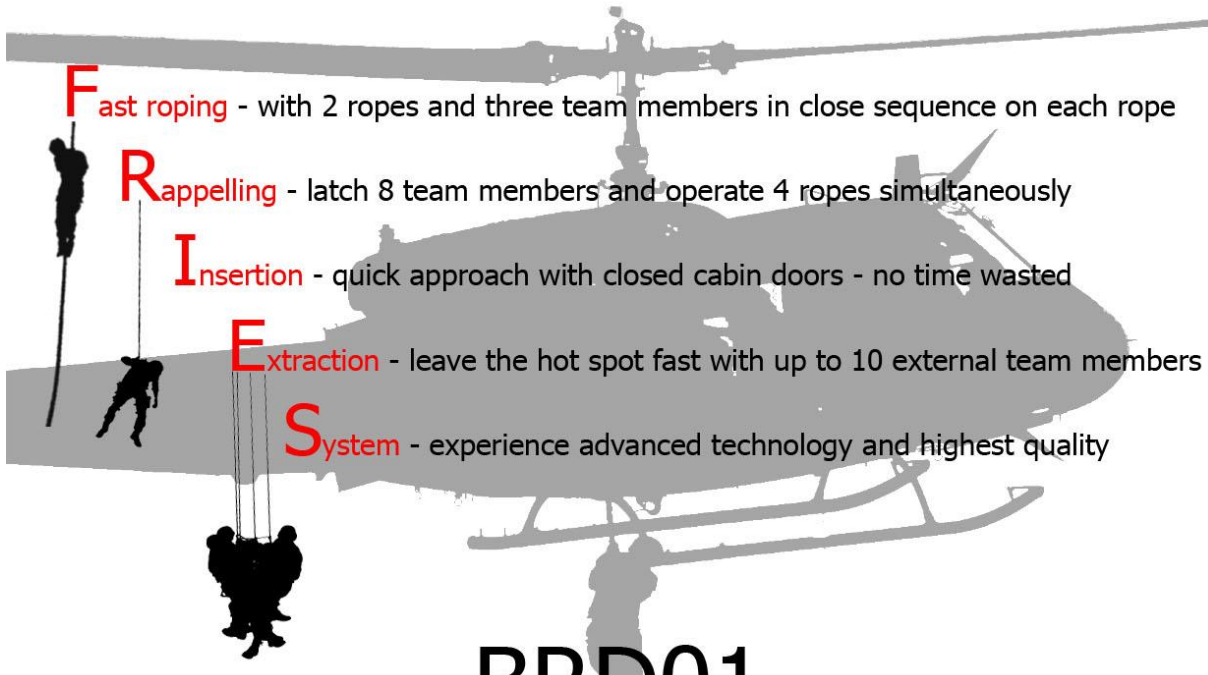


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Fast roping - with 2 ropes and three team members in close sequence on each rope

Rappelling - latch 8 team members and operate 4 ropes simultaneously

Insertion - quick approach with closed cabin doors - no time wasted

Extraction - leave the hot spot fast with up to 10 external team members

System - experience advanced technology and highest quality

BRD01

by
ecms Aviation Systems

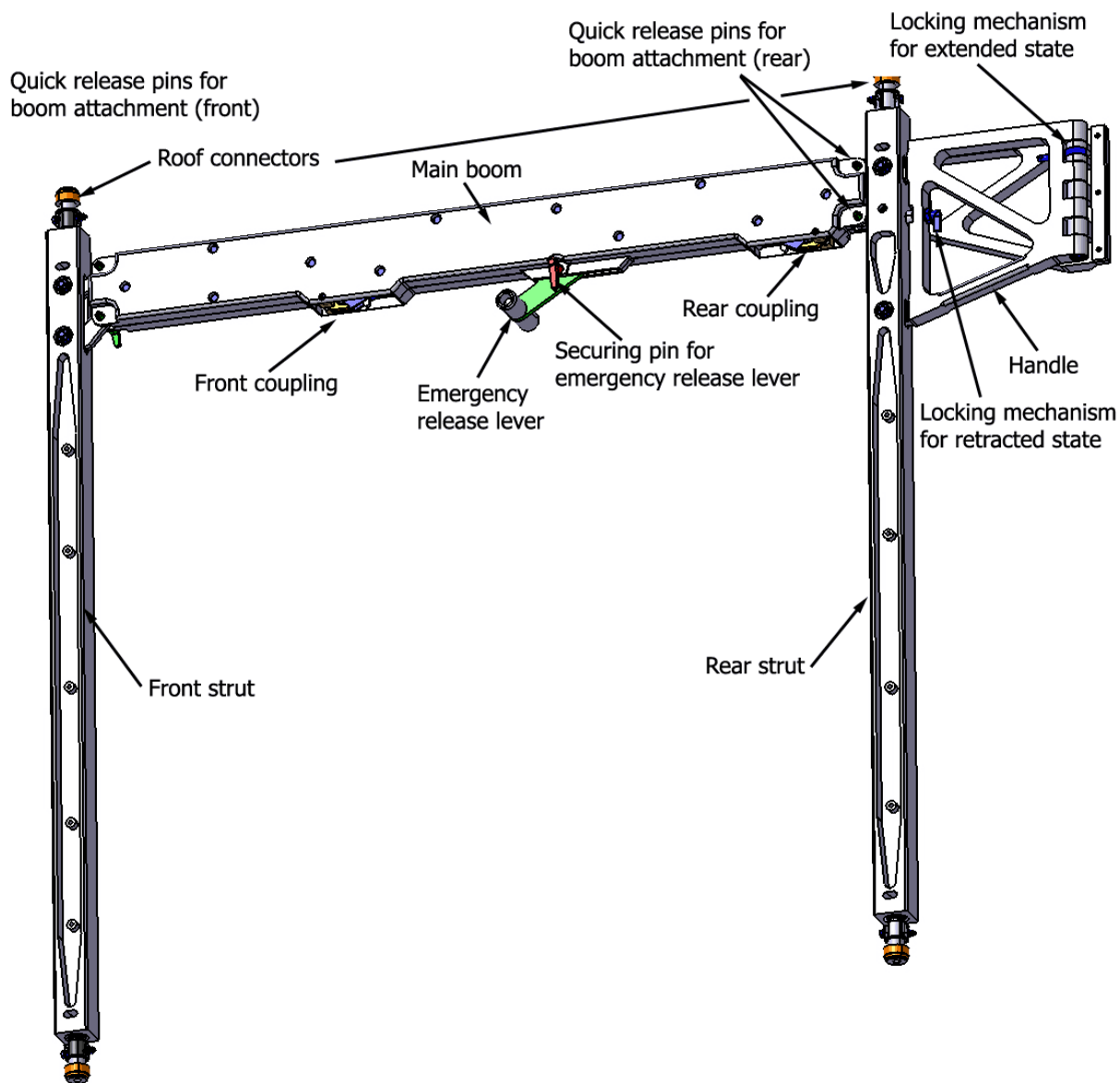
Additional system capabilities:

- HEMS
- Mass evacuation
- short haul / longline operations with variable or fixed rope length configurations



The Bell Rappelling Device (BRD01)

An Overview



The fast roping, rappelling and external load device BRD01 can be mounted within the cabin of various Bell helicopters, including the UH-1, 205, 212 and 412. It is approved through EASA STC for installation in civil helicopters of the types Bell 212 and Bell 412.

It is operated by a cabin operator and can provide up to 4 couplings for multi-purpose external load applications per helicopter. Applications include fast roping, rappelling and HEC-type external load operations, but can also include bulk cargo transportation (NHEC).

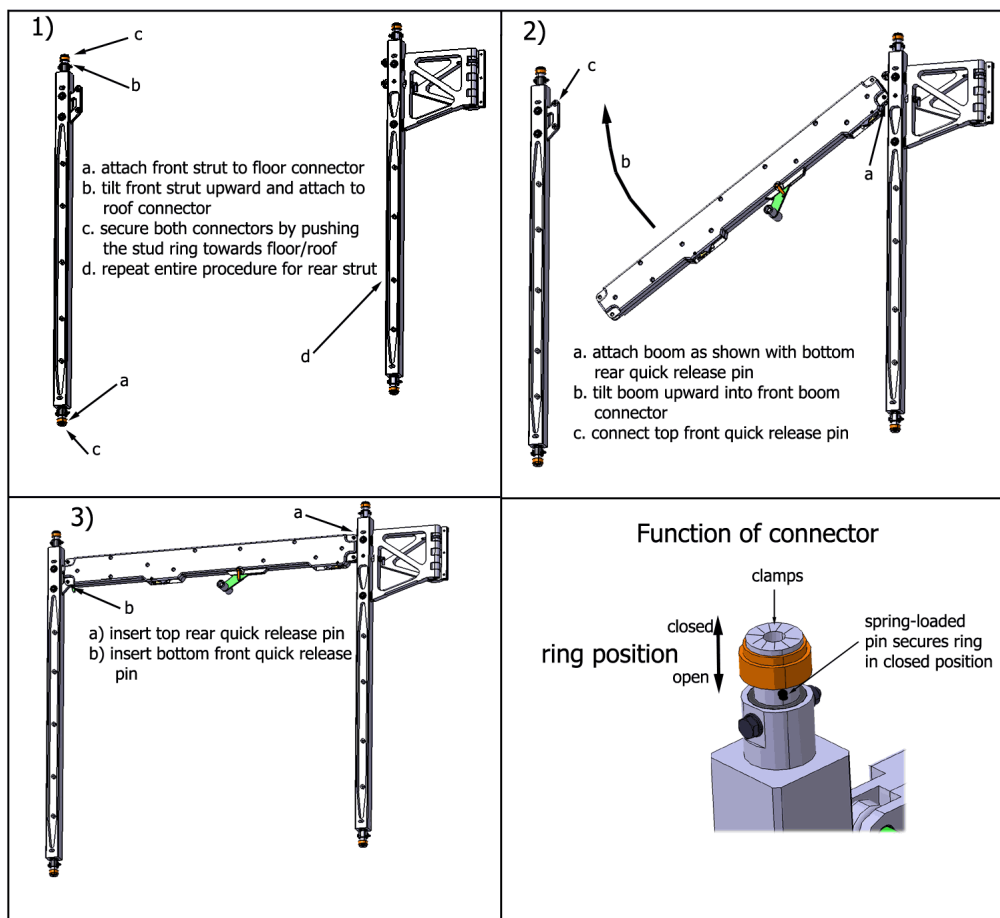
BRD01 Variants

The BRD01 system exists in a LH and RH assembly. Conversion from LH to RH and vice versa requires the exchange of a component of the retraction mechanism.

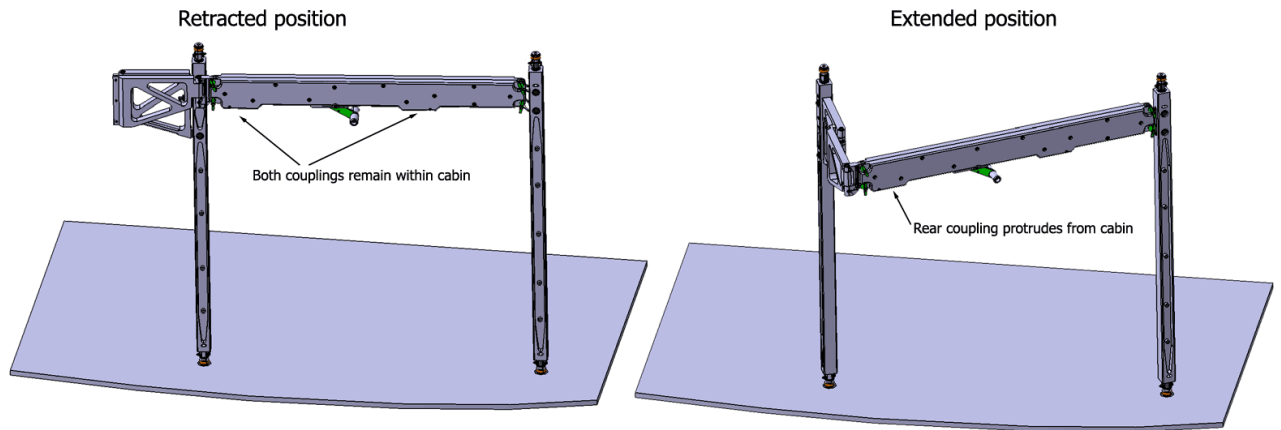
Each unit is equipped with two couplings where ropes can be attached via rings specified to industry standards.

Installation

The BRD01 uses the cabin floor and roof hardpoints for installation and does not require any mechanical fixed provisions. No tools are required for installation or removal. A BRD01 device can be installed on the RH, LH or both sides of the helicopter.



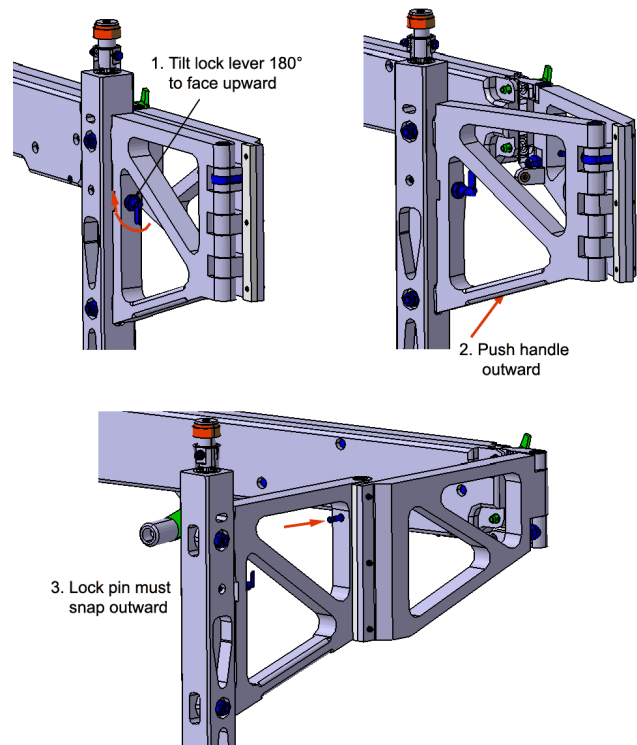
Retraction and Extension



The BRD01 device can be manually extended through the opened sliding door of the helicopter in such a way that the rear coupling protrudes sufficiently to achieve landing skid clearance.

While exit for rappelling will be easiest with the BRD01 in retracted position, and with the crewmember facing the helicopter while standing on the landing skid, the extended position provides more safety for fast roping, as the landing skid is safely avoided during descent.

Retraction and extension is done by the cabin operator with a simple and sturdy mechanical retraction mechanism. The procedure can be achieved single-handedly, leaving one hand free for handhold in the cabin. The BRD01 itself provides various provisions to install additional handholds or hardpoints for harness attachment.



Safety Couplings

The attachment of ropes to the BRD01 device is done with ecms' unique high safety couplings. The couplings incorporate a self securing mechanism locking the retainer as soon as a rope ring is latched. The latching process is designed to be performed easily and single-handedly. Manual unlatching and disconnecting a rope from a coupling is just as simple, although efficiently protected against unintentional unlatching.

To date, hundreds fast roping and rappelling devices featuring these couplings on various helicopter types have been delivered by ecms. Since its market introduction in 2003 and during 1000s of load cycles, no coupling failure has ever been reported.

Rope Release

Each BRD01 system features a mechanical rope release lever, allowing the cabin operator to jettison the ropes attached to the two couplings of the respective BRD01 device. The lever hand forces required for emergency can be managed by an average operator with ease. However, the system is designed in such a way that there is a positive feedback between release force and applied load, thus allowing the operator to "feel" if the rope is unloaded or not.

During normal operation, the rope release lever is secured with a quick release pin to avoid unintentional rope release. This securing means is sturdy enough to withstand high loads, e.g. if an occupant accidentally searches for a handhold in gusty flight conditions.

Emergency Release

In an emergency, the cabin operator can jettison the ropes/loads with the mechanical release levers even under limit load conditions.

Optional Equipment Included in BRD01 STC

Double Rope System *LifeLine* LLS01

The LifeLine system LLS01 is used as a redundant double rope load attachment device. It connects to both couplings of a single BRD01 simultaneously.

The LLS01 device is approved according to rotorcraft load combinations class B for non-commercial HEC-type operations with external occupants (Rescue, evacuation, external crewmember), or for conventional (NHEC) external loads.

The LifeLine LLS01 system is intended for fixed rope length operations with external occupants, e.g. rescue operations or extraction of a SWAT team. It consists of a double rope attached to the BRD01 couplings and a load/pulley element to attach loads or external occupants wearing a suitable harness. 400 kg or up to 5 external occupants are allowed simultaneously.

With two BRD01 and two LLS01 devices operated from the helicopter simultaneously, a sizeable team can be inserted and extracted to and from locations virtually impossible to reach without a helicopter in just minutes.

The LLS01 can be attached to the couplings in flight, and manually lowered to the ground. Thus, short haul operations can be performed at short notice, without the need to fly to an intermediate landing spot first - which is the main advantage over cargo hook operations. The high load capacity provides an advantage over a rescue hoist. Due to the twin rope configuration, attached loads are directionally stable and have less tendency of swinging. Rope lengths of 6 to 20m are typical (shortline operation), and it is also possible to extend the rope even further below the LLS01 element with a single rope to allow for genuine longline operations. The LLS01 can also be used for bulk external cargo (NHEC).

