

ASU TECHNICAL SPECIFICATION 003

RAPPEL HELICOPTER FITTING REQUIREMENTS

TYPE 1 RAPPEL HELICOPTER REQUIREMENTS:

Rappel Rope Attachment:

Note the following requirements in relation to Type 1 rappelling helicopters.

1. The aircraft must be capable of rappelling at least one person, operational conditions permitting.
2. The aircraft must be fitted with one independent, approved, primary rope attachment device for the door from which rappelling is permitted.
3. The aircraft must have an independent, approved secondary rappel rope attachment device to prevent against an inadvertent release of a primary rope attachment device.
4. The aircraft must have primary and secondary rappel rope attachment devices in locations that ensure the rear cabin area remains as a clear workspace for the rappel dispatcher and rappellers.
5. The aircraft must be equipped with a suitably rated and CASA approved single, centrally located roof mounted hard point connection/s that will enable the attachment of a helicopter crewman's wander lead. The location of the hard point connections shall enable unrestricted movement to either of the doors from which rappelling is being conducted.
6. The primary and secondary rappel rope attachment device must:
 - a. be capable and approved to sustain the dynamic load of a person weighing at least 105 kg, rappelling from the helicopter at a height above ground of up to 100m; and
 - b. be able to sustain the load of persons for an emergency static extraction of at least 300kg; and
 - c. (preferred) be equipped with an approved and suitably rated fitting which permits the "quick release" of rope/s under load and able to be fitted with a descender device for the lowering of cargo.

TYPE 2 RAPPEL HELICOPTER REQUIREMENTS:

Rappel Rope Attachment:

Note the following requirements in relation to Type 2 rappelling helicopters.

1. The aircraft must be capable of rappelling two persons simultaneously, one from each side of the helicopter, operational conditions permitting.
2. The aircraft must be fitted with one independent, approved, internal roof or upper door frame mounted primary rope attachment device for each door from which rappelling is permitted.
3. The aircraft must have an independent, approved roof or bulkhead mounted secondary rappel rope attachment device to prevent against an inadvertent release of a primary rope attachment device. A single attachment device may serve as the secondary attachment device for more than one primary attachment device.

Note: For example, a single central attachment device is an acceptable backup for independent attachment devices at each doorway of helicopters equipped for simultaneous rappelling from both sides of the Helicopter.

4. The aircraft must have primary and secondary rappel rope attachment devices in locations that ensure the rear cabin area remains as a clear workspace for the rappel dispatcher and rappellers.
5. The aircraft must be equipped with a suitably rated and CASA approved single, centrally located roof mounted hard point connection/s that will enable the attachment of a helicopter crewman's wanderlead. The location of the hard point connections shall enable unrestricted movement to either of the doors from which rappelling is being conducted.

6. Each primary and secondary rappel rope attachment device must:
 - a. be capable and approved to sustain the dynamic load of each person weighing at least 105 kg, rappelling from the helicopter at a height above ground of up to 100m.

Note: *If the primary attachment device comprises a longitudinal bar, a lateral strut assembly shall be fitted to the bar to take any side/lateral load.*
 - b. sustain the load of persons for an emergency static extraction of at least 300kg.
 - c. be equipped with an approved and suitably rated fitting which permits the “quick release” of ropes under load and able to be fitted with a descender device for the lowering of cargo.

Cargo Extraction

1. The aircraft must be equipped with an approved “cargo arm” that is:
 - a. fitted in the left-hand rear door of the helicopter (unless inappropriate due to door configuration).
 - b. fitted in such a way as to not impede rappel operations.
 - c. fitted with a suitably rated and approved cargo hook capable of being opened under load by the pilot using a cyclic mounted electrical switch and by manual release at the hook so that the hook:
 - i. must be operationally positioned on the cargo arm such that the hook gate is facing forward when loaded; and
 - ii. and associated wire lead must be capable of being removed and stored as required by the pilot and rappel dispatcher; and
 - iii. is capable of swivelling outboard through an arc of 180° (except where inappropriate due to airframe or door configuration) and being stowed perpendicular to the line of the helicopter; and
 - iv. is capable of lifting a static load of at least 110kg; and
 - v. is fitted with a suitably rated and tethered pit pin enabling locking of the cargo arm in its relative positions.

Note: *In Bell 212/412 helicopters the LHS rear pod area must have approved seating to enable the rappel dispatcher to conduct the static lift of equipment from the primary attachment device comprises a longitudinal bar, a lateral strut assembly shall be fitted to the bar to take any side/lateral load.*

Off load System

1. The rappel helicopter must have an operational “offload” system for the firebombing tank that can deliver part or all the load in a controlled fashion, at a minimum flow rate of 300 litres per minute, to a ground-based tank via a hose with a diameter in the order of 38mm, and a length of at least 80 metres, whilst the helicopter hovers. The Member will provide the hose.
2. The “offload” system must include an outlet coupling mounted externally on the left-hand side that is within easy reach of an on-board rappel dispatcher / crewman.
3. The outlet of the “off-load” will be mounted facing vertically down and fitted with a 38mm Wajax coupling and capable of withstanding the load of a charged hose at 46 metres in length.
4. The “offload” system shall be operated by a master switch located in the main cockpit with a second switch capable of being operated by an on-board rappel dispatcher / crewman from the left-hand rear door position.
5. The Contractor will provide fittings to secure a Member supplied hose knife and hose key to the inside of the left-hand rear position.

Skids/Step Configuration

1. Rappel helicopters must be fitted with high skids and must be equipped with intermediate steps and have non-slip surfaces applied to the upper surface of the intermediate steps and applied to the upper surface of skid tubes but not the skid tube sides.
2. Intermediate steps must be full length on the right-hand side and three-quarter length on the left-hand side such that the area immediately below the left-hand side rear pod is clear of protrudances to enable the lowering of cargo from the side pod.

Note: *Helicopters with retractable steps or similar equipment that may affect rappel operations may be required to have steps and or fittings removed. For example, the Bell 412 retractable step and protruding fittings would have to be removed.*

3. Any intermediate step positions fitted to helicopters must not impede a rappeler wearing a leg bag standing on the main skid tube and must not interfere with the rappel rope when the rope is loaded during a rappel descent.

Note: *For example: the firebombing tank cannot interfere with the secure footing of rappellers standing on the intermediate steps.*

Additional Type 2 Helicopter Equipment

1. The rappel helicopter must be equipped with an approved spine board (or equivalent) located across the cabin behind the pilot and co-pilot positions. This must be securely mounted but able to be removed quickly. The Member can provide information as to the type/standard required.
2. The rappel helicopter must have a rear cabin floor fitted with an agreed temporary floor area to cover protrudances and non- useable floor fittings.
3. The rappel helicopter must have a minimum of one "grab" handle fitted near to the respective left-hand and right-hand rear doorways to facilitate the loading and unloading of passengers.

Note: *For Bell 212 or 412 model aircraft it is desirable to have one "grab" handle mounted externally on the rear quarter doors and one "grab" handle mounted internally on the corresponding forward rear facing seat upright support. The Member can provide advice on the preferred location of "grab" handles.*

4. Bell 212/412 rappel helicopters must be fitted with auxiliary 20 US gal fuel tanks in one or both side pods to act as seats and enable the carriage of firefighting personnel. The side pods must be fitted accordingly with approved seat belts for the available positions.
5. The rappel helicopter must be fitted with an approved rearward facing seat for the security of the rappel dispatcher on the LHS of the rear cabin. The location and size of this seat cannot impede the movement of rappellers, rappel dispatcher or the storage of rappel equipment in the rear cabin (the Member can provide information as to the location/standard required).

ALL TYPE 1 AND 2 RAPPEL HELICOPTERS REQUIREMENTS:

1. Rappel helicopters must be equipped with approved rescue knife/s supplied by the Member and mounted by the Contractor inside each rear doorway from which rappelling is permitted, in positions specified by the Member.
2. Rappel helicopters must be fitted with a siren system:
 - a. capable of alerting rappellers in descent and on the ground, forward and below the aircraft, from a hover height of 500 feet above ground level; and
 - b. able to be operated by a positive activation switch(s) accessible to the pilot and at each of the doors from which rappelling is being conducted. Switch(s) shall be clearly marked to enable easy identification during rappel operations.

3. The Contractor must:
- a. make available all documentation relating to the design of and calculation of load ratings for primary and secondary rappel rope attachment devices, cargo arm and crewman's wander lead attachment points; and
 - b. make available the CAR approvals and Engineering Orders required for the construction and fitting of all rappel rope attachment devices, cargo arm and crewman's wander lead attachments points; and
 - c. ensure that non-destructive testing of all components of the primary and secondary rappel rope attachment devices and rappel dispatcher / crewman restraint fittings is conducted preceding the commencement of each Service Period and shall provide a certificate of compliance to the Member; and
 - d. ensure all associated airframe attachment fittings are secured i.e. rear seat back bars; and
 - e. provide a suitably rated internal cargo net or restraints suitable for securing fire equipment to the rear cabin floor area. The Member shall provide advice on specific construction features; and
 - f. ensure the rear cabin floor / side walls of the aircraft shall be fitted with several cargo rings of a type sufficient and rated to enable the securing of rappel equipment; and
 - g. have aircraft approved life vests of an equivalent standard to or greater than a SWITLIK Model HV-35C for each person on board when conducting firebombing operations.
4. If fitted, the firebombing bellytank and refill snorkel must not impede rappelling operations. The hover refill snorkel/pump must be capable of being stowed in a location that in no way restricts or prevents rappel operations. The snorkel must also be secured to prevent an inadvertent release during a rappel operation.
5. Protrudances on skid tube sides or wheel assemblies that may damage rappel ropes shall be removed or suitably covered to protect rappel ropes. The Member will provide advice on this specification.