

DEPARTMENT OF THE INTERIOR - AVIATION MANAGEMENT
AIRCRAFT RENTAL AGREEMENT PROVISIONS: SUPPLEMENT NO. 1
SPECIAL USE - HELICOPTER CLASS A, B & C
EXTERNAL LOAD INCLUDING LONG LINE

Definitions

Class A rotorcraft-load combination means one in which the external load cannot move freely, cannot be jettisoned, and does not extend below the landing gear.

Class B rotorcraft-load combination means one in which the external load is jettisonable and is lifted free of land or water during the rotorcraft operation.

Class C rotorcraft-load combination means one in which the external load is jettisonable and remains in contact with land or water during the rotorcraft operation.

Long Line: Any line, cable or lead line attached to the cargo hook of the aircraft for the purpose of carrying an external load, that is greater than 50 feet.

Remote Hook: An electrically operated cargo hook attached to the lower end of a line with the upper end of the line attached to an aircraft cargo hook and controlled from the pilot's position.

Vertical Reference: A term used to describe the pilot technique of controlling the aircraft while looking down vertically at the load attached to the cargo hook.

B8.1.1 CERTIFICATION

B8.1.1.1 In lieu of the certification requirement of the basic Aircraft Rental Agreement (B1.2.1.1) when the helicopter is used for external load operations only, the vendor is only required to be certificated under 14 CFR Part 133, Rotorcraft External Load Operations. This certificate shall include Class A, B, or C as appropriate.

B8.1.2 FLIGHT OPERATIONS

B8.1.2.1 A remote hook is not always required for long line external load operations. Spring guarded hooks or shackles can be used on the lower end of a line. All hooks and shackles must be safetied when attached to a line, either with a self-locking nut, a safety pin or safety wire.

B8.1.2.2 Helicopters which are configured from former military aircraft, which have FAA Type Certificates based upon military operation in lieu of a manufacturer's type certificate, must have all applicable Time Compliance Technical Orders (TCTO's) or Navy/Army Service Bulletins accomplished. This includes any directives which refer to later models of the same type which were issued after the earlier models had left the military inventory. If FAA approvals establish more restrictive limits, they shall prevail.

B8.1.3 PERSONNEL REQUIREMENTS

B8.1.3.1 The precision placement of externally carried cargo is the operational requirement of this supplement. Pilots shall be required to place cargo precisely where requested regardless of the cable length while operating within the helicopter's capability. Pilots shall provide written evidence of qualification to transport Class A, B, or C external loads as appropriate. Pilots may be required to demonstrate their ability during an agency evaluation flight.

B8.1.3.1.1 A long line pilot endorsement shall require a flight evaluation utilizing a cable length greater than 50 feet.

B8.1.3.2 Pilots shall have recorded minimum flying time as pilot-in-command as follows:

B8.1.3.2.1 200 hours Mountainous Terrain (When operating in mountainous terrain)

B8.1.3.2.2 10 hours Mountainous Terrain in Make and Model

PIC mountainous terrain experience is defined as: Experience in maneuvering a helicopter at more than 7,000 feet mean sea level (MSL) altitude including numerous take-offs and landings in situations indicative to mountainous terrain. This terrain consists of abrupt, rapidly rising terrain resulting in a high land mass projecting above its surroundings, wherein complex structures in which folding, faulting, and igneous activity have taken place. These mountainous areas produce vertical mountain winds, and turbulence associated with mountain waves, producing abrupt changes in wind direction often resulting in up flowing or down flowing air currents.

Mountain qualified pilots are considered rough terrain qualified.

B8.1.3.2.3 200 hours Rough Terrain (When operating in rough terrain)

B8.1.3.2.4 10 hours Rough Terrain in Make and Model

PIC with rough terrain experience is defined as: Experience in maneuvering a helicopter at less than 7,000-foot MSL altitude including numerous takeoffs and landings in situations indicative to rough terrain. This terrain consists of abrupt, rapidly rising terrain resulting in a high land mass projecting above its surroundings, wherein complex structures in which folding, faulting, and igneous activity have taken place. Rough terrain features can disrupt smooth wind flow into a complex of eddies or mechanical turbulence. Characteristic of this type of terrain is the higher the wind speed and/or the rougher the terrain the greater the turbulence.

B8.1.3.3 Personal Protective Equipment (PPE). The following items shall be worn by the pilot, be operable, and maintained in good repair:

B8.1.3.3.1 An aviator's flight helmet, consisting of a one-piece hard shell made of polycarbonate, Kevlar, carbon fiber, or fiberglass, must cover the top, sides (including the temple area and to below the ears), and the rear of the head. The helmet shall be equipped with a chinstrap and appropriately adjusted for proper fit.

Flight helmets for helicopter usage must conform to a national certifying agency standard, such as DOT, Snell-95, SFI, or an appropriate military standard, and be compatible with required avionics (see section B8.1.5.2). "Shorty" (David Clark style) helmets are not approved. Flight helmets currently meeting this requirement are the SPH-3, SPH-4, SPH-5, SPH-4B, SPH-8, HGU-56 and HGU-84. Helmets designed for use in fixed wing aircraft do not provide adequate protection for helicopter occupants and are not approved for helicopter use.

B8.1.3.3.2 A long-sleeved shirt and trousers (or long-sleeved flight suit) made of fire-resistant polyamide or aramid material or equal.

B8.1.3.3.3 Boots made of all-leather uppers which extend above the ankles.

B8.1.3.3.4 Gloves made of leather, fire-resistant polyamide or aramid material.

B8.1.3.3.5 Shirt with sleeves overlapping gloves and pants with legs overlapping boots.

B8.1.4 HELICOPTER EQUIPMENT REQUIREMENTS

B8.1.4.1 A first aid kit containing items specified in Exhibit 4 shall be furnished by the Vendor and carried aboard the aircraft on all flights.

B8.1.4.2 A survival kit containing items specified in Exhibit 4 shall be furnished by the Vendor and carried aboard the aircraft on all flights.

B8.1.4.3 Class A External Load - Cargo racks, when provided, shall be capable of accommodating 58-inch long shovels, rakes, and other tools. Cargo racks shall be at least two and one-half inches deep,

meeting construction methods and procedures prescribed in Advisory Circular 43.13.1A and 43.13-2A.

B8.1.4.4 Class B or C External Load – One cargo hook that may be loaded and locked in a single motion with one hand, and is rated at the maximum lifting capacity of the aircraft.

B8.1.4.4.1 Helicopters for which an automatic locking cargo hook is not available are exempt from this requirement provided the cargo hook which is provided complies with the FAR applicable to the model aircraft.

B8.1.4.5 All wire rope assemblies and hardware shall have a minimum breaking strength of 3.75 times the working load.

B8.1.4.6 The aircraft shall be equipped with a convex mirror for observation of the sling load by the pilot. For aircraft equipped and modified for vertical reference external load operation (i.e., door gauges, modified seat, alternate cargo hook release positions, bubble window, etc.) or for helicopters such as the MD Model 500 where direct vertical reference is possible the convex mirror is not required.

B8.1.4.7 When a remote hook is used, the aircraft must be wired with a switch available to the pilot to release the remote hook electrically.

B8.1.4.8 During cold weather, a bubble window may be required to maintain cabin heat and allow the pilot to see the load.

B8.1.4.9 All fabrication and installation methods shall comply with 14 CFR Part 133 and Advisory Circular AC 43.13-1B.

B8.1.4.10 Additional requirements for external load when utilizing a remote hook:

B8.1.4.10.1 One electrically activated remote cargo hook that automatically closes and resets the release mechanism after use and is rated at the maximum lifting capacity of the helicopter.

B8.1.4.10.2 The remote hook should be protected by a metal ring or cage that does not interfere with the use or function of the hook.

B8.1.4.10.2.1 Counterwound or rotation resistant wire rope with swaged fittings having a minimum breaking strength of 3.75 times the working load with appropriate placards.

B8.1.4.10.2.2 Electric cables shall be protected from pinching by hooks or shackles, and damage caused by stretching of the line. The electrical wire shall be long enough at the aircraft cargo hook end to prevent a swinging load from unplugging the electrical connector.

B8.1.4.11 Helicopter Synthetic Longline: See Exhibit 8

B8.1.5 AVIONICS REQUIREMENTS (NOT REQUIRED FOR RESTRICTED CATEGORY AIRCRAFT)

B8.1.5.1 An InterCommunication System (ICS) shall be provided for the pilot, observer, and all required aft positions. ICS audio shall mix with, but not mute, selected receiver audio. ICS sidetone audio shall be provided for the earphones corresponding with the microphone in use. The ICS audio output shall be free of distortion, hum, noise, and crosstalk, and shall be amplified sufficiently to facilitate ease of use in a noisy cockpit/cabin environment.

B8.1.5.2 Microphones, PTTs, & Jacks

B8.1.5.2.1 The system shall be designed for operation with 600 ohm earphones and carbon-equivalent, noise-canceling boom type microphones (Gentex electret type Model 5060-2, military dynamic type M-87/AIC with CE-100 TR preamplifier, or equivalent). The pilot position ~~only~~ may be configured for low impedance (dynamic) operation.

B8.1.5.2.2 Push-to-talk (PTT) operation: separate PTT switches shall be provided for radio transmitter and ICS microphone operation at the pilot and observer positions. ICS PTT switches shall be provided for the

other ICS-equipped positions. The pilot's PTT switches shall be mounted on the cyclic control. The PTT switch(es) for all other positions shall be mounted on the cord to the earphone/microphone connector.

B8.1.5.2.3 All earphone/microphone jacks in the aircraft (except the pilot's) shall be U92A/U (single/female) type, which shall accept U-174/U type plugs.

B8.1.6 MAINTENANCE REQUIREMENTS

B8.1.6.1 Weight & Balance. The aircraft's required weight and balance data shall be determined by actual weighing of the aircraft and following any major repair or major alteration or change to the equipment list which significantly affects the center of gravity of the aircraft.

B8.1.6.1.1 All weighing of aircraft shall be performed on scales that have been certified as accurate within preceding 24 calendar months. The certifying agency may be any accredited weights and measures laboratory.

B8.1.6.1.2 A list of equipment installed in the aircraft at the time of weighing must be compiled. The equipment list shall include the name of each item installed. Items which may be easily removed or installed for aircraft configuration changes (seats, doors, radios, cargo hook, baskets, special mission equipment, etc.) shall also be listed including the name, the weight and arm of each item. Each page of the equipment list must identify the specific aircraft by at least serial number or registration number of the aircraft. Each page of the equipment list shall be dated indicating the last date of weighing or computation. The weight and balance must be revised each time new equipment is installed or old equipment is removed. Weight and balance procedures under 14 CFR 135.23(b) and 135.185 are acceptable.

B8.1.6.2 Time Between Overhaul and Life Limited Parts.

B8.1.6.2.1 All components, including engines, shall be replaced upon reaching the factory-recommended TBO or FAA-approved extension. Life limited parts shall be replaced at the specified time in service hours or cycles.

B8.1.6.2.2 Aircraft operated with components or accessories on approved TBO extension programs are acceptable provided: (1) the Vendor is the holder of the approved extension authorization (not the owner if the aircraft is leased), and (2) the Vendor operates in accordance with the extension authorization.

B8.1.6.2.3 The Vendor shall supply, at the time of the initial agency inspection, a list of all items installed on the aircraft that are required to be overhauled or replaced on a specified time basis. This list shall include the components name, part number, serial number, total time, service life (or inspection/overhaul time interval), and time and date when component was overhauled, replaced, or inspected.

B8.1.6.3 Turbine Engine Power Assurance Check. The first day of operation and no more than each ten hours of operation thereafter, a power assurance check shall be performed. The power assurance check shall be accomplished in accordance with the helicopter flight manual (pilots operating handbook) or approved company performance monitoring program. The results shall be recorded and kept in the helicopter or at the designated base. Engines with power output below minimum approved limits shall be removed from use until the cause of the low power condition is corrected.

FIRST AID & SURVIVAL KITS

These are minimum required items for Special Use Activities in the United States and U.S. Possessions. Additional survival kit items are required for flight activities conducted in Canada and Alaska.

Minimum First Aid Kit Items		
Each kit must be in a dust-proof and moisture-proof container. The kit must be readily accessible to the pilot and passengers.		
<u>Item</u>	Passenger Seats <u>0-9</u>	Passenger Seats <u>10-50</u>
Adhesive bandage strips, (3"long)	8	16
Antiseptic or alcohol wipes (pkts)	10	20
Bandage compresses, 4"	2	4
Triangular bandage, 40" (sling)	2	4
Roller bandage, 4"x 5 yds (gauze)	2	4
Adhesive tape, 1"x 5 yds (std roll)	1	2
Bandage scissors	1	1
Body Fluids Barrier kit:	1	1
2 - pair latex gloves		
1 - face shield		
1 - mouth-to-mouth barrier		
1 - protective gown		
2 - antiseptic towelettes		
1 - biohazard disposable bag		
NOTE Splints are recommended if space permits.		

MINIMUM AIRCRFT SURVIVAL KIT ITEMS

These are minimum required items for special use activities in the conterminous United States (including Alaska) and U.S. possessions.

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| Fire Starter (can be two boxes of matches in a waterproof container) | Magnesium fire starter |
| One knife | Signal Mirror |
| Signal Flares (six each occupant) | Food (two days emergency rations per occupant) |
| Candles | Water purification tablets |
| Collapsible water bag | Whistle |
| Space Blanket (one per occupant) | Nylon rope or parachute cord (50 feet) |

These are additional items for the contiguous U.S. and U.S. Possessions:

Water (one quart per occupant required when operating over areas without adequate drinking water)

These are additional items for Alaska only:

- Rations for each occupant sufficient to sustain life for one week
- One axe or hatchet
- One first aid kit
- One mosquito headnet for each occupant
- Insect repellent
- An assortment of tackle such as hooks, flies, lines, sinkers, etc.

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- One pair of snowshoes
- One sleeping bag
- One wool blanket or equivalent for each occupant over four years of age

Note: Operators of multiengine aircraft licensed to carry more than 15 passengers need carry only the food, mosquito nets, and signaling equipment at all times other than the period from October 15 to April 1 of each year, when two sleeping bags and one blanket for every two passengers shall also be carried. All of the above emergency rations and equipment requirements are the minimum requirements under current law.

HELICOPTER SYNTHETIC LONGLINE

1. REQUIREMENTS

a. Material Type. Helicopter synthetic longlines shall be constructed from the HMWPE or HMPE (High Molecular Weight Polyethylene) family of rope fibers including brand names such as Spectra by Allied Signal or fibers with similar properties. Spectra has very high strength, high flex fatigue life, very low stretch (less than 1 percent elongation at 30 percent of break strength), excellent chemical resistance, and less than 1 percent water absorption. Another high strength, high performance rope fiber is Vectran produced by Hoechst-Celanese. Rope brand names made from these types of fibers include Plasma 12, Spectron II, and Spectron 12 or AmSteel. Ropes from these fibers are usually twelve-strand or double-braid construction.

b. Rope Diameter. Minimum rope diameter shall be ½-inch.

c. Working or Rated Load. The working or rated load of a rope is the maximum static load that shall be lifted by the rope. Working loads are based on a percentage of the approximate breaking or ultimate strength of the rope when new and unused. The working load shall be appropriate to the lifting capability of the helicopter. For reference, lifting capability for each category of helicopter is as follows:

Type 1: 8,000 lb to 30,000 lb or greater

Type 2: 1,600 lb to 4,500 lb

Type 3: 750 lb to 1,600 lb

d. Factor of Safety. A factor of safety of 7 shall be used for helicopter synthetic longlines. Therefore, all ropes shall have an ultimate strength (minimum breaking strength) of seven times the rated or working load. For example, if a Type II helicopter line shall have a working load of 4,500 pounds, the rope must have a minimum breaking strength when new of at least 31,500 pounds. Rope diameters shall vary depending on strength and type of rope.

e. Knots and Splices. No knots are permitted in the synthetic longline. Knots can decrease rope strength by as much as 50 percent. Splices may be used in the assembly of the longline, but no mid-line splicing repairs may be done. Resplicing at the end of the line is permitted only if the rope is in good condition and the new splice is done per the manufacturer's recommended splicing practices. Splices should always follow the manufacturer's recommended splicing practices.

f. Protective Coatings and Covers. Rope manufacturers offer protective coatings such as aromatic urethane coatings, which help with abrasion resistance and provide some UV protection. The coating appears as a dye on the rope and does not change the rope dimension. Heavy plastic coatings are not recommended because the inside of the rope cannot be inspected. Some companies also sell "sleeve" covers that attach with Velcro. These are easily removable for rope inspection and provide the greatest UV and debris protection. It is recommended but not required that synthetic longlines have the UV coating and/or the removable covers to help protect the lines. Consult rope manufacturers for acceptable coating methods.

2. CARE AND USAGE

a. Heat. Rope strength can be seriously decreased by heat exposure. The critical temperature of rope is the temperature at which 50 percent strength loss can occur. The critical temperature of HMWPE-type ropes is only 150 °F, and melting temperature is 297 °F. Critical temperatures for other types of rope are: Polypropylene 250 °F, Kevlar 400 °F, Nylon 350 °F, Polyester 350 °F.

b. Chemicals and Dirt. Chemicals can cause damage to rope. Keep ropes away from acids, bleach, and solvents. Laundry detergents can also weaken rope, and ropes should only be rinsed if cleaning is needed. Grit from mud, dirt, and sand can work into the rope fibers and cause deterioration. It is difficult to inspect for any debris that has worked its way inside the rope fibers. It is important to keep ropes clean.

c. Ultraviolet. Ultraviolet (UV) exposure causes degradation in rope strength. According to the American

Group, a rope manufacturer, the AmSteel fibers lose approximately 30 percent of their strength after 5 or 6 months of sun exposure.

d. Storage. In addition to keeping the rope away from heat, ropes should be stored clean, dry, and out of direct sunlight. Helicopter synthetic longlines should be stored in a rope bag away from batteries and chemicals. If ropes are wet, ideal storage is off the floor on racks to provide ventilation. Never store rope on concrete or dirt floors. Grit from dirt can abrade and weaken rope fibers. Acid is often used in concrete work and can remain on the surface. Abrasive surfaces should also be avoided. Never step on rope, drive over rope, or allow the helicopter to land on the rope. If any of these occur, inspect the line for damage and enter the event in the rope log.

e. Shock Loads. A line is shock- or impact-loaded when it suddenly changes from no load or low load to high load. The further the load falls, the greater the impact. Since synthetic fibers have a memory, the effects of shock loading remain with time and can result in failure even when loaded within the normal range. Any shock loading noticed by the pilot or crew should be recorded in the log.

3. DOCUMENTATION

All synthetic longlines shall be assigned a unique identification number that shall be retired with the longline. Synthetic longlines shall be permanently and legibly marked with a unique identification number, the rated load of the line, name of rope manufacturer, rope lot number, and line manufacture date. A documented history of each synthetic longline must be maintained from the date of purchase until its retirement from service. A rope log shall be assigned to each synthetic longline to record the rope history. The following minimum items shall be recorded in the rope log:

- Manufacture date
- Date put into service
- Rope ID number
- Date of external load and/or inspection
- Approximate weight of load lifted
- Number of lifts per day at each weight
- Remarks/problems
- Inspector signature/initial

Examples of items to note in the remarks/problems section could include any unusual shock loading noticed by the pilot or crew, exposure to chemicals or excessive dirt, problems such as the rope landed on by the helicopter skid, or any irregularities found during inspection.

4. RETIREMENT AND INSPECTION

No visual inspection can accurately determine residual strength. Avoid using rope that shows sign of aging and wear. If in doubt, destroy the used rope. Rope should be inspected after each day of use.

a. Abrasion. All rope fibers contribute to rope strength. When either the outer or inner fibers are worn, rope strength is reduced. Check the line regularly for frayed and broken strands. Rethread pulled strands into the rope if possible. Open the rope strands to look for powdered fiber that is a sign of internal wear.

b. Compacted Rope. Ropes can become hard or compacted when heavily used. Any rope that has become hard or compacted indicates reduced strength and should be discarded.

c. Heat Damage. Glazed or glossy areas indicate heat damage and decreased strength. Even normal looking fibers adjacent to the visibly heat-damaged areas have been damaged.

d. Inconsistent Diameter. Flat areas, lumps, or bumps can indicate internal damage from overloading and usually indicate reason to replace the rope.

e. Discoloration. All ropes shall get dirty. Check for unusual discoloration that could indicate chemical

contamination. Determine source of contamination and replace the rope if it is brittle or stiff.

f. Splice Movement. For a buried eye splice (typical splice for lines under $\frac{3}{4}$ -inch in diameter), unacceptable splice slippage would be approximately 2 inches maximum. Tuck splices typically found on larger diameter ropes are also limited to 2-inch maximum slippage.

g. Rope Inspection Check List. If any of these conditions are met, discard the rope:

Condition:

1. Original rope bulk reduced by abrasion:
 - Double braid cover by 50 percent
 - Twelve-strand braid by 25 percent
 - Eight-strand plait by 25 percent
2. Fiber strands cut:
 - Double braid by three or more adjacent strands cut
 - Twelve-strand braid by two or more adjacent strands cut
 - Eight-strand plait by one or more adjacent strands cut
3. Diameter inconsistency:
 - Localized diameter reduction
 - Flat areas
 - Lumps and bumps in rope
4. Glossy or glazed fiber:
 - Localized or extended areas
5. Inconsistency of texture:
 - Localized or extended areas or stiffness
6. Discoloration:
 - Localized or extended areas caused by chemical contamination
7. Splice slippage:
 - Maximum slippage of 2 inches

h. Retirement. No rope shall be used more than 5 years after its manufacture date and no more than 3 years after its put-in-service date.