

AIR ONE HELICOPTERS, INC.
ROTORCRAFT LOAD COMBINATION MANUAL
CLASSES B & C LOAD COMBINATIONS

AEROSPATIALE AS 350

SIKORSKY SK58T

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FINAL APPROVAL	
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AIR ONE HELICOPTERS, INC.
LOAD COMBINATION FLIGHT MANUAL

DISTRIBUTION

ONE COPY.....EACH APPLICABLE HELICOPTER
ONE COPY.....EACH APPLICABLE PILOT
ONE COPY.....FAA FSDO, SAN JOSE, CA.
ONE COPY.....AIR ONE BUSINESS OFFICE

AIR ONE HELICOPTERS, INC.

LOAD COMBINATION MANUAL-GENERAL

1. No person subject to FAR 133 may conduct rotorcraft external load operations for hire within the United States without, or in violation of the terms of, a Rotorcraft External Load Operator Certificate issued by the Administrator under Federal Aviation Regulation (FAR) 133.
2. Before conducting operations under Part 133, the operator must ascertain that all requirements have been met.
They are as follows:
 - a. A copy of the Operator Certificate must be on board the helicopter and the helicopter must be listed by registration number on the certificate. Also, the helicopter must carry a copy of the Load Combination Manual.
 - b. Each pilot must possess at least a commercial pilot certificate and have been issued a letter of competence by an FAA Inspector or a company check pilot for each class of load he is to carry.
 - c. Each load attaching device must be approved by the FAA.
 - d. Operations over congested areas will not be conducted without prior coordination with the FAA Flight Standards District Office concerned.
 - e. No person who is not a crew member may be carried during an external load operation unless that person performs an essential function in connection with that operation or is a crew member-in-training.

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EXTERNAL LOAD OPERATING LIMITATIONS

1. In addition to the operating limitations set forth in the approved rotorcraft flight manual, this aircraft will be operated in accordance with the following limitations:

a. The total weight of this aircraft and load combination shall not exceed that weight specified in the Cargo Hook Supplement of the approved Flight Manual.

b. The location of the center- of-gravity shall not exceed those limits specified in the approved supplement of the rotorcraft Flight Manual.

c. While conducting external load operations, the following maximum speeds will be adhered to:

i) the maximum speed for external load operations specified in the approved Flight Manual supplement, or,

ii) the maximum door(s) off speed specified in the limitations section of the Flight Manual, whichever is lower.

Additionally, the pilot will determine the safe speed at which the operation can be conducted based on the size, shape, weight, and aerodynamic properties of the actual load.

d. The weight of the external load shall never intentionally exceed the maximum specified for the attaching device.

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EXTERNAL LOAD OPERATING PROCEDURES

1. Pre-flight check:

- a) inspect all sling gear for condition & security
- b) inspect cargo hook for security & function-- test both manual & electrical release mechanisms for proper operation.
- c) ensure that all loads are properly rigged & determine that the load weights do not exceed the maximum allowed.
- d) if utilizing a remote hook, inspect & test it for condition & function.

2. Normal operations:

- a) when hooking up cargo loads, ground personnel must be cautioned about static electricity discharge from the attaching device. a suitable means of dealing with this condition should be discussed with all ground crew members.
- b) after hook-up, the helicopter should lift the load vertically, hover momentarily to determine the load's stability, & determine the power required to carry the weight.
- c) before entering horizontal flight, determine that adequate directional control exists.
- d) transition into horizontal flight is to be made using slow, smooth control movements to prevent load oscillation or helicopter settling. care must be taken to avoid entangling the sling and/or load in nearby obstacles, i.e.: wires, trees, or tall poles.
- d) an altitude/speed combination should be used, when feasible, to avoid the height/velocity curve. avoid over-flying people, structures & vehicles. when crossing a roadway, traffic must be controlled by personnel on the ground.
- e) when delivering loads, ensure that ground personnel are aware of the arrival, fly a slow final approach, and come to a motionless hover prior to setting the load in position.
- f) if a load requires manual positioning by ground personnel, the helicopter may be positioned visually (by the pilot), by hand signals from the ground crew, by radio message, or by any combination of these. the ground crew & the pilot are required to be familiar with the hand signals found in this manual.

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EXTERNAL LOAD EMERGENCY PROCEDURES

EMERGENCY PROCEDURES:

1. electrical failure: if the electrical release fails to function, the load may be released using the manual release mechanism.
2. if an emergency arises, the pilot will land immediately. He should be prepared to release the load whenever it endangers the flight operation.
3. if an emergency arises requiring an autorotation, the pilot should release the load as soon as possible, considering the ultimate safety of any person(s) on the ground. If, for any reason during autorotation, the load does not release, the pilot should use a full-flare landing to eliminate forward speed and minimize dragging the load on touchdown.
4. if, at any time, the load produces an uncontrollable oscillation, the pilot should immediately release it.

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GROUND CREWMEMBERS

1. Hooking-up external loads:

- a. direct the pilot by radio/hand signals to the proper load.
- b. always watch the helicopter and sling/hook. The weight and speed of these objects make them potentially hazardous to ground personnel.
- c. after hook-up, carefully observe the rigging and load to ensure its' stability and security. If the load does not appear stable, immediately notify the pilot to return it to the pick site.

2. Receiving/setting external loads:

- a. direct the pilot to the landing site by radio/hand signals.
- b. always watch the helicopter and load. Stay away from the load until the pilot has come to a stabilized hover and the load is steady. Maneuver the load by hand and signal the pilot by radio/hand signals to the exact set site. Unhook the load and signal the pilot that the load is clear. He will not move the helicopter until he receives your signal.
- c. notify the pilot of any obstructions or potential hazards, even if they seem very obvious. This will assist him in conducting a safe operation.

HELICOPTER HAND SIGNALS



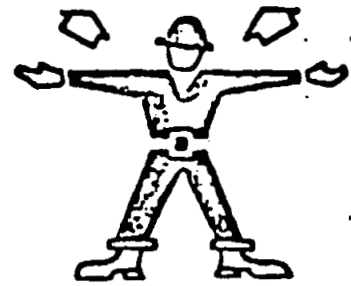
**CLEAR TO
START ENGINE**



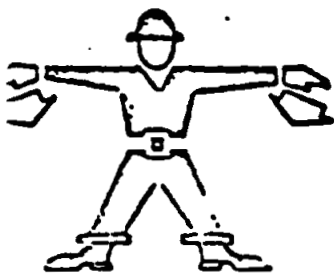
TAKEOFF
RIGHT HAND
BEHIND BACK
LEFT HAND
POINTING UP



HOLD-HOVER
PLACE ARMS OVER
HEAD WITH
CLENCHED FISTS



MOVE UPWARD
ARMS EXTENDED,
SWEEPING UP



**MOVE
DOWNWARD**
ARMS EXTENDED,
PALMS DOWN,
ARMS SWEEPING
DOWN



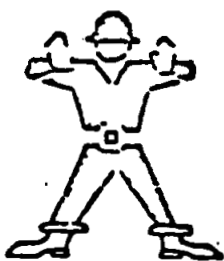
MOVE RIGHT
LEFT ARM
HORIZONTAL
RIGHT ARM SWEEPS
UPWARD TO POSITION
OVER HEAD



MOVE LEFT
RIGHT ARM
HORIZONTAL
LEFT ARM SWEEPS
UPWARD TO POSITION
OVER HEAD



**MOVE
FORWARD**
COMBINATION OF
ARM AND HAND
MOVEMENT IN A
COLLECTING
MOTION PULLING
TOWARD BODY



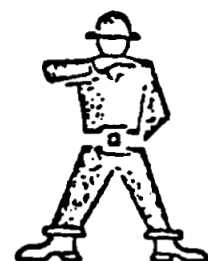
**MOVE
REARWARD**
HANDS ABOVE
ARM, PALMS OUT
USING A SHOVING
MOTION



**RELEASE
SLING LOAD**
LEFT ARM DOWN AWAY
FROM BODY. RIGHT ARM
CUTS ACROSS LEFT
ARM IN A SLASHING
MOVEMENT FROM
ABOVE



LAND
ARMS CROSSED
IN FRONT OF
BODY AND POINT-
ING DOWNWARD
WITH BACK TO
WIND



**SHUT OFF
ENGINE**
SLASH ACROSS
THROAT

AIR ONE HELICOPTERS
LOAD COMBINATION MANUAL
REQUIRED PLACARDS

1. A placard for the maximum load will be placed on each side of the helicopter fuselage near the external cargo hook.
2. An instrument panel placard will be installed describing CLASS load approval.



AIR ONE HELICOPTERS, INC.
Rotorcraft Load Combination Manual
APPENDIX A

Under certain conditions, it may be necessary to refuel the helicopter without stopping the engine(s) or rotor systems. If this procedure is utilized, several safety considerations must be recognized and safety procedures adhered to. This appendix outlines the required actions to be taken by Air One Helicopters personnel while "Hot-refueling" a helicopter.

- a) The pilot will stay at the helicopter controls during the fueling procedure. The engine(s) will be at ground idle rpm and the appropriate control frictions will be "on". Radios will be "off".
- b) The service truck will be guided into position by a ground crew member using hand and/or radio signals.
- c) No passengers will be allowed either in the helicopter or in the service truck during fueling. Any person not directly involved with the fueling procedure will be kept at least 100' feet away from the helicopter and the service truck.
- d) Appropriate grounding devices will always be attached prior to beginning the fueling operation.
- e) No smoking will be allowed within 100' feet of the helicopter or service truck during the fueling procedure.
- f) All personnel to be utilized in "Hot-refueling" operations will be trained in the correct procedures by using this appendix and also the HAI RAPID REFUELING GUIDELINES. A notation will be made on each person's 133 Certificate of Training to acknowledge that such training has been completed.

FAA Examined & Accepted

SJC FSDO

DATE: 02/25/91

INSPECTOR: [Signature]