

UNITED STATES ARMY AVIATION SCHOOL
Department of Maintenance Training
Fort Rucker, Alabama

File No. 5/69-1766-1

PERFORMANCE OBJECTIVES

WEIGHT AND BALANCE, UH-1

1. KNOWLEDGES:

- a. With the use of Chart E in the applicable -10, the student should be able to answer a list of questions on weight and balance with 100 percent accuracy.
- b. With the use of the loading tables in Chapter 7 of the applicable -10, the student should be able to answer a list of questions on weight and balance with 100 percent accuracy.

2. SKILLS: None.

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STUDENT OUTLINE

WEIGHT AND BALANCE, UH-1

1. Definitions of weight and balance terms.
 - a. Reference datum - 7.6 inches aft of nose of aircraft, station 0.0.
 - b. Arm - distance in inches from reference datum to the center of a specific weight.
 - c. Moment - turning force applied to the aircraft.
 - (1) Description. *Wgt \times Arm = Moment*
 - (2) Computation.
 - d. Center of gravity (C.G.) - a point at which the helicopter will balance.
 - (1) Divide the total moment by the total weight.
 - (2) Distance in inches from the reference datum (basis for determining if the aircraft is within C.G. limits).
2. Limitations - found in the applicable -10.
 - a. UH-1B.
 - (1) Gross weight.
 - (a) Design gross weight - 6,600 pounds.

(b) Alternate gross weight - 7,600 pounds.

(c) Maximum gross weight - 8,500 pounds.

(2) Center of gravity limits.

(a) Forward limit - FS 125 up to 8,500 pounds.

Forward Section - P-5

(b) Aft limits.

1. FS 138 to 6,000 pounds.
2. FS 136 from 6,600 to 8,500 pounds.

b. UH-1C.

(1) Gross weight.

- (a) Normal - 6,600 pounds.
- (b) Alternate - 7,600 and 8,500 pounds.
- (c) Maximum - 9,500 pounds.

(2) Center of gravity limits.

(a) Forward limits.

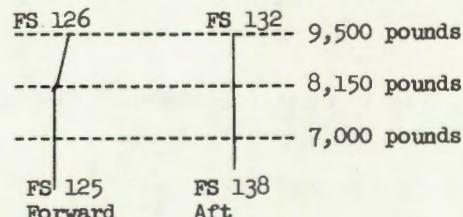
1. FS 125 to 8,150 pounds.
2. FS 126 at 9,500 pounds.

(b) Aft limits.

1. FS 138 to 7,000 pounds.
2. FS 132 at 9,500 pounds.

c. UH-1D and UH-1H.

(1) Gross weight.



- (a) Normal - 7,500 pounds.
- (b) Alternate - 8,500 pounds.
- (c) Maximum - 9,500 pounds.

(2) Center of gravity limits.

(a) Forward.

- 1. FS 130 to 8,600 pounds. FS 13⁴ ----- FS 14³ 9,500 pounds
- 2. FS 13⁴ at 9,500 pounds. ----- 8,600 pounds

(b) Aft.

- 1. FS 14⁴ to 8,600 pounds. FS 130 Forward FS 14⁴ Aft
- 2. FS 14³ at 9,500 pounds.

3. Loading charts - located in applicable -10, chapter 12.

a. Loading data, chart E.

- (1) Purpose. Simplifies weight and balance computations.

(2) Contents.

(a) Oil.

(b) Crew.

(c) Fuel.

(d) Cargo.

(e) Center of gravity table.

b. Weight limitations charts. Located in applicable -10, chapter 7.

c. Internal cargo loading chart. Located in applicable -10, chapter 7.

NOTE.—THIS TRANSPORT CLEARANCE FORM HAS RESULTED FROM TRIPARTITE AGREEMENT AND NO FURTHER CHANGES
MAY BE MADE TO IT WITHOUT PRIOR CONSIDERATION BY TRIPARTITE AUTHORITIES.

WEIGHT AND BALANCE CLEARANCE FORM F TRANSPORT (USE REVERSE FOR TACTICAL MISSIONS)						Cross Reference RAF Form 2870 BOAF Form F. 115 C 50M 5-51 (577)		FOR USE IN T.O. 1-1B-40 AN 01-1B-40 & TM 55-403-9		
DATE <i>Current Date</i>		AIRCRAFT TYPE <i>UH-1B</i>		FROM <i>Hanley AAF</i>		HOME STATION <i>Hanley AAF</i>				
MISSION/TRIP/FLIGHT/NO. <i>Admin</i>		SERIAL NO. <i>62-1985</i>		TO <i>H Banning, Ga.</i>		PILOT <i>You</i>				
LIMITATIONS				REF	ITEM		WEIGHT		INDEX OR MOM/	
CONDITION	TAKEOFF	LANDING	LIMITING WING FUEL		1	BASIC AIRCRAFT (From Chart C)		45865	63870	
¹ ALLOWABLE GROSS WEIGHT	7600	7600		2	OIL (2.5 Gal.)		190	300		
TOTAL AIRCRAFT WEIGHT (Ref. 1)	6013.0			3	CREW (No.) 2 @ 200		4000	1860		
OPERATING WEIGHT PLUS ESTIMATED LANDING FUEL WEIGHT		5358.0		4	CREW'S BAGGAGE					
OPERATING WEIGHT (Ref. 8)				5	STEWARD'S EQUIPMENT					
ALLOWABLE LOAD (Ref. 15) (use SMALLEST figure)	1587	2042		6	EMERGENCY EQUIPMENT					
² PERMISSIBLE C. G. TAKEOFF	FROM 125	TO (% M.A.C. or IN.) 136		7	EXTRA EQUIPMENT					
⁴ PERMISSIBLE C. G. LANDING	FROM 125	TO (% M.A.C. or IN.) 136		8	OPERATING WEIGHT		50055	66030		
¹ LANDING FUEL WEIGHT	552.5			9	TAKEOFF FUEL (155 Gal.)		10075	13700		
REMARKS <i>ETE 1+00</i>				10	WATER INJ. FLUID (Gal.)					
				11	TOTAL AIRCRAFT WEIGHT		60130	79730		
				12	DISTRIBUTION OF ALLOWABLE LOAD (PAYLOAD)					
				UPPER COMPARTMENTS		LOWER COMPARTMENTS				
				COMPT	PASSENGERS	CARGO	COMPT	PASSENGERS	CARGO	
					NO.	WEIGHT		NO.	WEIGHT	
				A			C	4 190		
				B					7600	8240
				C						
				D						
				E						
				F						
				G						
				H						
				I						
				J						
				K						
				L						
				M						
				N						
				O						
				P						
				FWD BELLY						
				AFT BELLY						
CORRECTIONS (Ref. 14)						13	TAKEOFF CONDITION (Uncorrected)		67730	87970
						14	CORRECTIONS (If required)			
COMPT	ITEM	CHANGES (+ or -)		WEIGHT	INDEX OR MOM/	15	TAKEOFF CONDITION (Corrected)		67730	87970
						16	TAKEOFF C. G. IN % M. A. C. OR IN.		130.0	
						17	LESS FUEL		4550	6190
						18	LESS AIR SUPPLY LOAD DROPPED			
						19	MISC. VARIABLES			
						20	ESTIMATED LANDING CONDITION		63180	81780
						21	ESTIMATED LANDING C. G. IN % M. A. C. OR IN.		130.0	
COMPUTED BY <i>R. Rae</i> <i>Civ</i>						SIGNATURE				
WEIGHT AND BALANCE AUTHORITY										
A. Cole <i>MAJ</i>						SIGNATURE				
PILOT										
L. L. Jones <i>CWO</i>						SIGNATURE				

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PERFORMANCE CHECK

WEIGHT AND BALANCE, UH-1

1. The following questions pertain to the UH-1B chart E:
 - a. What is the moment/100 of 160 gallons of fuel?
 - b. What is the weight of 160 gallons of fuel?
 - c. What is the moment/100 of a 210-pound passenger at station 108.2?
 - d. What is the center of gravity of the UH-1B if the gross weight is 8,150 pounds and the moment/100 is 10,758?
2. The following questions pertain to the UH-1B weight limitations and cargo charts:
 - a. The weight limitations chart is based on a basic operation weight of _____ pounds?
 - b. How much fuel could be placed in an aircraft without exceeding 7,600 pounds gross weight if its basic operating weight is 4,900 pounds and the cargo weight is 2,100 pounds?
 - c. What is the most forward station that a cargo of 2,100 pounds can be placed if the pilot load is 200 pounds and the baggage compartment load is 100 pounds?