

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.

$$T_{max} M = 0.04 \times T_{gnd}$$

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

File No. 5/69-1766-1

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 X 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.

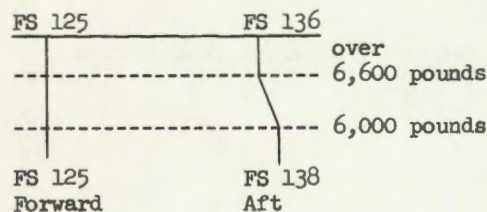
(2) Center of gravity limits.

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

*Forward Limit - 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.

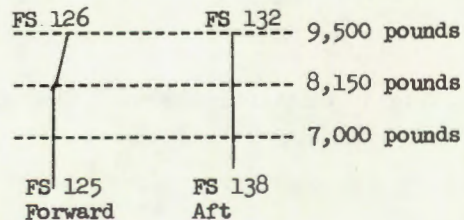
1. FS 125 to 8,150 pounds.

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.

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

- (b) Aft.

<u>1.</u> FS 144 to 8,600 pounds.	FS 130	FS 144
<u>2.</u> FS 143 at 9,500 pounds.	Forward	Aft

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 BAF Form 2870 BOAT Form F. 115 C 80M 4-61 (879)		FOR USE IN T.O. 1-1B-40 AN 01-1B-40 & TM 55-405-9	
DATE <i>Current Date</i>			AIRCRAFT TYPE <i>UH-1B</i>			FROM <i>Hanchey AAF</i>			HOME STATION <i>Hanchey AAF</i>				
MISSION/TRIP/FLIGHT/NO. <i>Admin</i>			SERIAL NO. <i>62-1985</i>			TO <i>H. Benning, Ga.</i>			PILOT <i>you</i>				
LIMITATIONS										R E F		I N D E X O R M O M	
CONDITION	TAKEDOFF	LANDING	LIMITING WING FUEL		ITEM		WEIGHT		I N D E X O R M O M				
1 ALLOWABLE GROSS WEIGHT	7600	7600			1 BASIC AIRCRAFT (From Chart C)		45865		63870				
TOTAL AIRCRAFT WEIGHT (Ref. 11)	6013.0				2 OIL ( 2.5 Gal.)		190		300				
OPERATING WEIGHT PLUS ESTIMATED LANDING FUEL WEIGHT		5338.0			3 CREW (No.) 2 @ 200		4000		1860				
OPERATING WEIGHT (Ref. 8)					4 CREW'S BAGGAGE								
ALLOWABLE LOAD (Ref. 12) (use SMALLEST figure)	1587	2042			5 STEWARD'S EQUIPMENT								
1 PERMISSIBLE C. G. TAKEOFF	FROM 125	TO (% M.A.C. or IN.) 136		6 EMERGENCY EQUIPMENT									
1 PERMISSIBLE C. G. LANDING	FROM 125	TO (% M.A.C. or IN.) 136		7 EXTRA EQUIPMENT									
1 LANDING FUEL WEIGHT	552.5			8 OPERATING WEIGHT		50055		66030					
REMARKS <i>EFE 1+00</i>				DISTRIBUTION OF ALLOWABLE LOAD (PAYLOAD)									
				UPPER COMPARTMENTS				LOWER COMPARTMENTS					
				PASSENGERS		CARGO	PASSENGERS		CARGO				
				NO.	WEIGHT		NO.	WEIGHT					
				A			C	4	190			7600	8240
				B									
				C									
				D									
				E									
				F									
G													
H													
I													
J													
K													
L													
M													
N													
O													
P													
TOTAL FREIGHT				0									
TOTAL MAIL				0									
COMPUTER PLATE NUMBER (If used)													
1 Enter constant used.													
2 Enter values from current applicable T.O./TM													
3 Applicable to gross weight (Ref. 15).													
4 Applicable to gross weight (Ref. 16).													
5 Ref. 9 minus Ref. 17.													
CORRECTIONS (Ref. 14)						13 TAKEOFF CONDITION (Uncorrected)				67730 87970			
CHANGES (+ or -)						14 CORRECTIONS (If required)							
COMPT	ITEM	WEIGHT	I N D E X O R M O M		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						SIGNATURE							
TOTAL WEIGHT REMOVED -0 -0						R. Roe CWO SIGNATURE							
TOTAL WEIGHT ADDED +0 +0						G. Cole MAJ SIGNATURE							
NET DIFFERENCE (Ref. 14) 0 0						PILOT L. L. Jones CWO SIGNATURE							

DD FORM 1 SEPT 54 365F

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

File No. 5/69-1766-1

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?