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PILOT'S FLIGHT OPERATING INSTRUCTIONS

FOR

ARMY MODEL PT-17 AIRPLANES

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13	January 30, 1944
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★ Figure 1 - PT-17 Airplane - Three-Quarter Rear View ★

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SECTION I

DESCRIPTION

1. Airplane.

a. General. - The PT-17 Airplane is a two-place open biplane, manufactured by Boeing Airplane Company and powered with a Continental 220 hp air-cooled engine coupled to an 8'-6" diameter steel blade, fixed pitch propeller. The wings are of internally braced wooden construction, with aluminum alloy leading and trailing edges. Both the empennage and fuselage are welded tubular steel structures, provided with aluminum alloy fairing. The ailerons are a riveted structure of formed aluminum alloy. With the exception of the engine and fuselage cowling, the wings, fuselage, empennage, and ailerons are fabric covered. The landing gear is of the fixed cantilever type with hydraulic brakes. Overall dimensions of the airplane are as follows:

Length 24'-9"
Span 32'-2"
Height 9'-8½"

2. Power Plant.

The PT-17 Airplane is powered with a Continental R-670-4 air-cooled engine, rated at 220 hp, at 2075 rpm at sea level. Maximum allowable flight rpm is 2075. Compression ratio 5.4:1, direct drive.

Fuel - Oil. - The fuel tank is located in the center section of the upper wing and has a capacity of 46 U.S. gallons (38.23 Imp. gallons) with an expansion space of 1.4 U. S. gallons (1-1/4 Imp. gallons). The fuel system is of the gravity feed type.

Service this airplane with 73 octane gasoline - Spec. AN-VV-F-761 only. If not available, the next higher grade will be used in an emergency.

The oil tank is mounted on the forward side of the firewall in the engine compartment and has a capacity of 4.4 U. S. gallons (3.67 Imp. gallons) with an expansion space of 1.4 gallons (1.17 Imp. gallons).

Replenish oil supply with aircraft engine oil, Spec. AN-VV-O-446. For temperatures above 4° C. (39° F.) use Grade 1120--operating under extreme cold conditions, use Grade 1080.

3. Controls and Operational Equipment.

a. Cockpit Seats. - Pilot's seats are of Standard Air Corps Types, in both front and rear cockpits. The seats may be adjusted through five inches, in increments of one-half inch. To raise or lower the seat, pull the release lever on the right side of the seat, upward, and move the seat up or down to the desired height. When released, the handle is returned to the locked position by a spring. If the locking pin, attached to the release lever will not engage, move the seat slightly upward or downward until the pin slides in place.

b. Aileron and Elevator Control (Fig. 5).- The ailerons and elevators are controlled, by inter-connected control sticks in each cockpit, through a series of push-pull tubes and bellcranks. Pushing the stick forward, deflects the elevator down against the airstream, causing the nose of the airplane to drop; pulling the stick back, deflects the elevator upward and causes the nose of the airplane to raise. If the stick is pushed to right or left, the ailerons are deflected in opposite directions, causing the airplane to roll about the longitudinal axis in the direction the stick is moved.

c. Elevator Trim Tab Control (Fig. 8). - Elevator trim tab controls are mounted on the left side of each cockpit and control the trim tabs through a system of cables and pulleys. The tab control is fitted with a dial that indicates in degrees the displacement of the tab with respect to the elevator. The control is moved aft to correct for a nose heavy condition, and pushed forward to correct for a tail heavy condition.

d. Rudder Controls (Fig. 5). - The rudder is controlled through a system of cables and pulleys, by two pedals in each cockpit. Pushing the right pedal forward, turns the rudder to the right, into the airstream, causing the airplane to turn to the right; pushing the left pedal forward, turns the rudder to the left, causing the airplane to turn to the left. Toe type brake controls are incorporated with the rudder pedals. Toe pressure, when applied to the top of the pedals, serves to actuate the braking system. Independent brake control is thus obtained on each wheel.

e. Tail Wheel. - The tail wheel is the steerable, free-swiveling type, mounting a 10" smooth contour tire. A shock absorber of the air-oil type is provided.

f. Fuel Tank Gage (Fig. 3). - A sight type fuel gage extends from the bottom of the tank and is visable to both members of the crew. It is calibrated in fourths of capacity and must be read with the airplane in level flight.

g. Fuel Valve (Fig. 3). - A fuel shut-off-valve, remotely operated by control handles mounted on the left side, below the instrument panel in both cockpits, controls the flow of fuel to the engine.

Don't set your brakes in the air.. unless, of course, you just don't care!

h. Parking Brake (Fig. 5 and 9).- A pull handle is located on the right side of each cockpit, below the instrument panel for the control of the parking brake. The brakes are set for parking, by pulling this handle out, and while holding it, applying firm pressure to both brake pedals. The brakes are released by application of further pressure on the pedals without touching the control handle.

CAUTION: Do not operate the parking brakes while in the air.

i. Control Surface Lock (Fig. 6).- A handle for the operation of the control surface lock, which secures the rudder, ailerons and elevator, is installed in each cockpit. To lock the controls, push the red handle, on the left side of the cockpit, forward, to disengage the latch pin. Neutralize the rudder pedals and stick; push the stick slightly forward, and while holding the controls in this position, turn the locking handle down and allow the latch pin to snap into place. If the latch pin does not seat readily, a slight movement of the rudder pedals will assist in lining up the pin for engagement.

j. Engine Controls. -

(1) Throttle (Figs. 6 and 8). - The throttle control lever, mounted on the left side of each cockpit, controls the throttle valve through a system of rods and bellcranks. Pushing the throttle lever forward, increases the rpm of the engine; pulling the lever aft, decreases the rpm.

(2) Mixture Control (Figs. 6 and 8). - A mixture control lever, mounted adjacent to the throttle lever in each cockpit, controls the carburetor mixture valve through a system of rods and bellcranks. Forward movement of the control lever, richens the carburetor mixture--aft movement leans the mixture.

(3) Carburetor Air Control (Fig 7) .- The control for admitting heated air into the carburetor is located on the right side of the airplane between the front and rear cockpits and is accessible to both pilots. A spring latch on the control lever keeps it locked in the desired position. In the full forward position, cold air only, goes into the carburetor. Moving the control aft, increases the proportion of heated air, until, in the full aft position, only heated air is admitted into the carburetor.

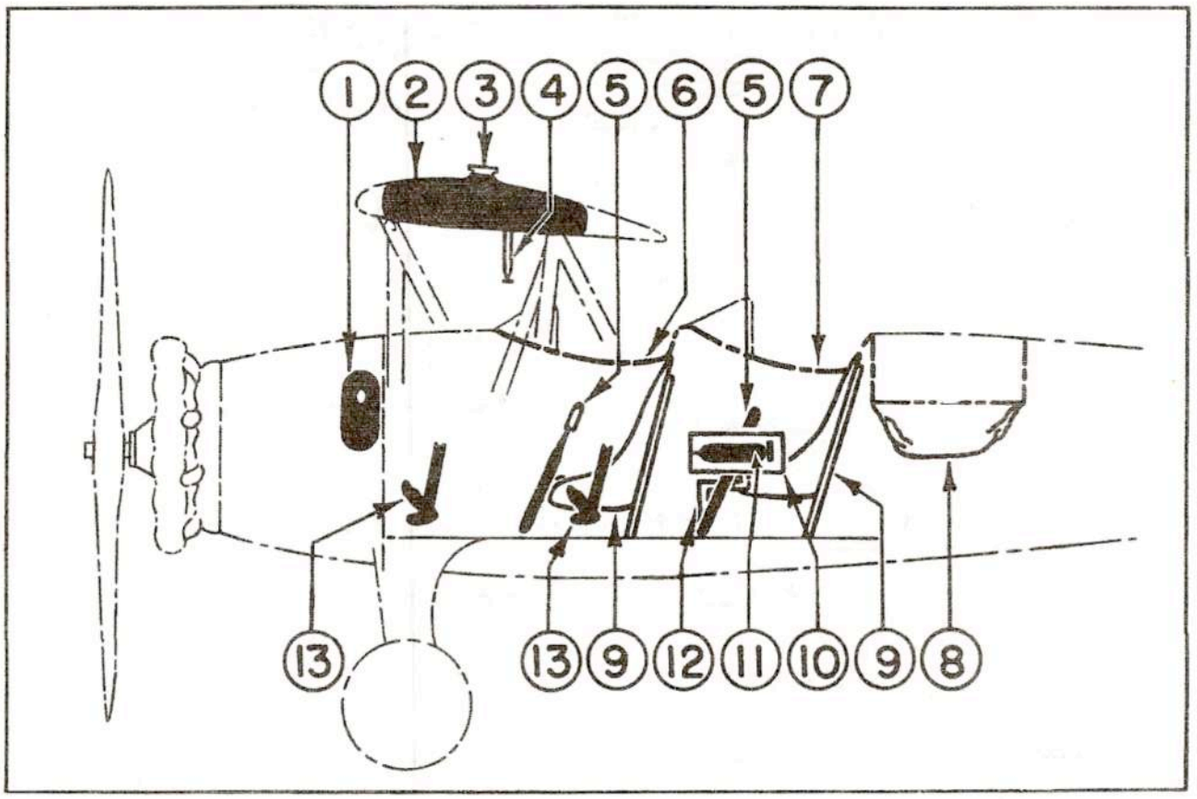
k. Flight Report Holder (Fig. 7). - A Type A-2 flight report holder is provided on the right side in the front cockpit.

l. Fire Extinguisher (Fig. 8). - A Type A-2 hand fire extinguisher is fastened in a holder on the inside of an access door at the left side of the rear cockpit. The fire extinguisher may be removed from either inside or outside of the airplane. If inside the airplane, pull down the holder catch located just forward of the fire extinguisher handle, and remove the extinguisher from the holder. If standing outside the airplane, opening the access door will swing the extinguisher out into easy reach, so that the holder catch may be raised and the extinguisher removed.

"Instructor talks. Student listens"

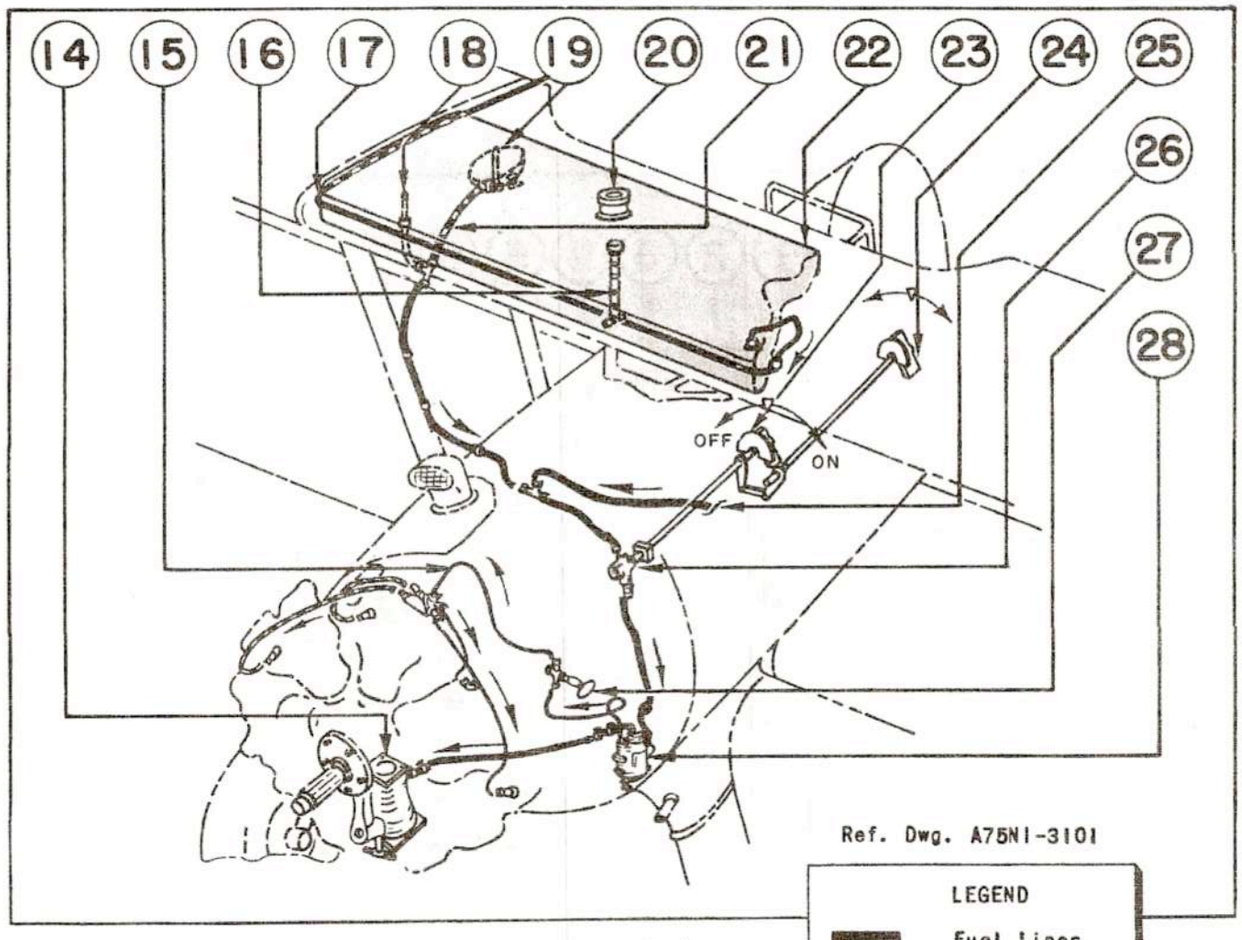
m. Speaking Tube (Fig. 8) A speaking tube is installed, enabling the instructor to speak to the student pilot; no provision is made for the student to speak to the instructor. Mouthpiece and earphone tubes are held in clips at the left side of the cockpit.

n. Baggage Compartment Lock. - A keyless combination lock is provided for the baggage compartment door. When the airplane leaves the factory, the three dials are set at zero. Any desired lock combination may be obtained by pressing the button at the rear of the lock and then setting the three dials to the combination desired.



1 Oil Tank
2 Fuel Tank
3 Fuel Filler Neck
4 Fuel Gage
5 Flight Control Stick
6 Front Cockpit
7 Rear Cockpit
8 Baggage Compartment
9 Pilot's Seat
10 Fire Extinguisher Access Door
11 Fire Extinguisher
12 Starter Crank
13 Rudder Pedals

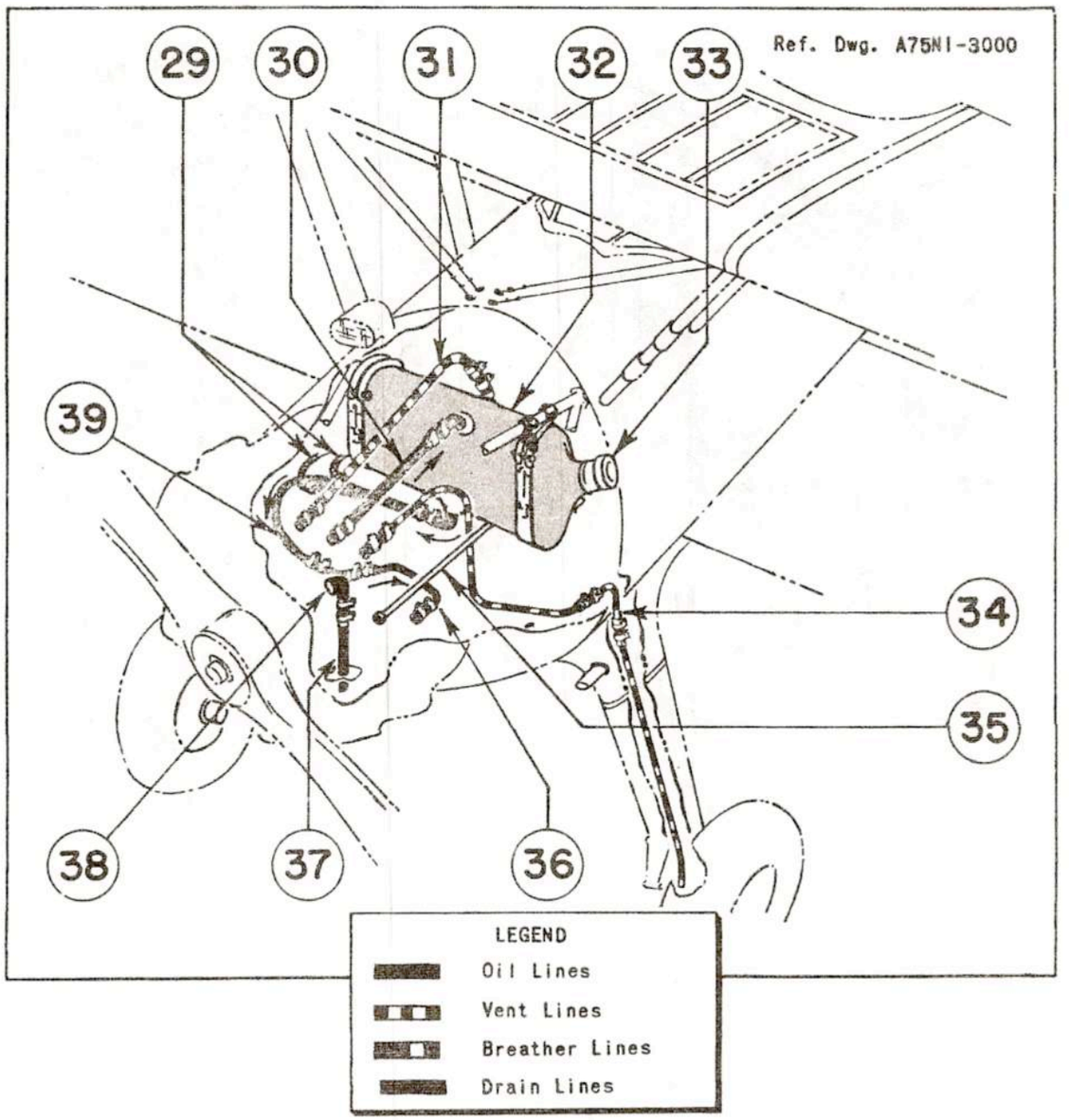
Figure 2 - Fuselage Contents Arrangement



NOTE: Left-Hand Side Of Fuel Tank Identical With Right-Hand Side

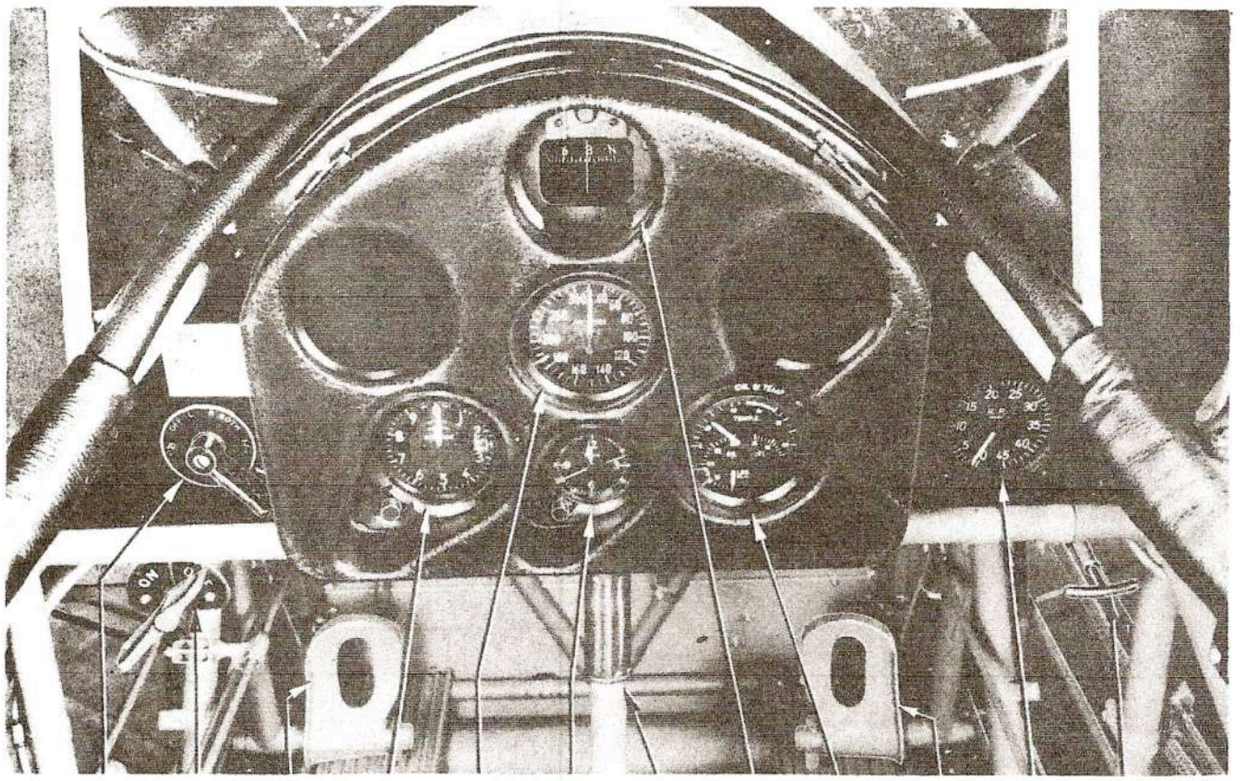
14 Carburetor
15 Primer Line To Engine
16 Fuel Gage
17 Vent Line
18 Outlet Line
19 Sump
20 Filler Neck
21 Fuel Line From Tank
22 Fuel Tank-46 Gal
23 Fuel Valve Control Front Cockpit
24 Fuel Valve Control Rear Cockpit
25 Line From Left Outlet & Sump
26 Fuel Valve
27 Primer
28 Fuel Strainer

Figure 3 - Fuel System Diagram



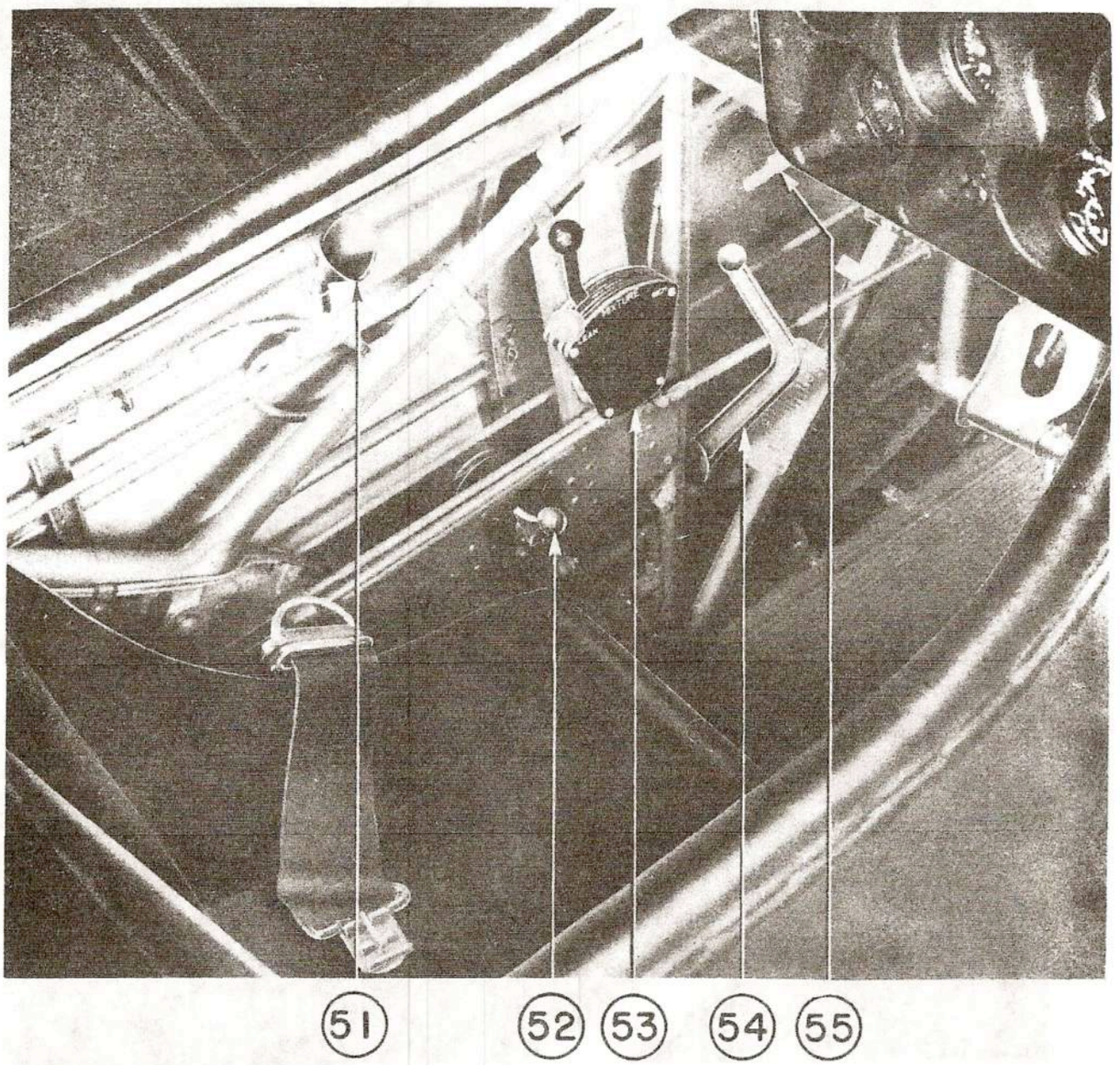
29 Oil Temp Lines To Gages on Both Instrument Panels
30 Return Line From Engine
31 Vent Line From Tank To Engine
32 Oil Tank - 4.4 Gal
33 Filler Neck
34 Breather Line From Engine
35 Oil Pressure Line From Engine To Gages On Both Instrument Panels
36 Intake Line To Engine
37 Drain Line
38 Drain "Y"
39 Outlet Line From Tank

Figure 4 - Oil System Diagram



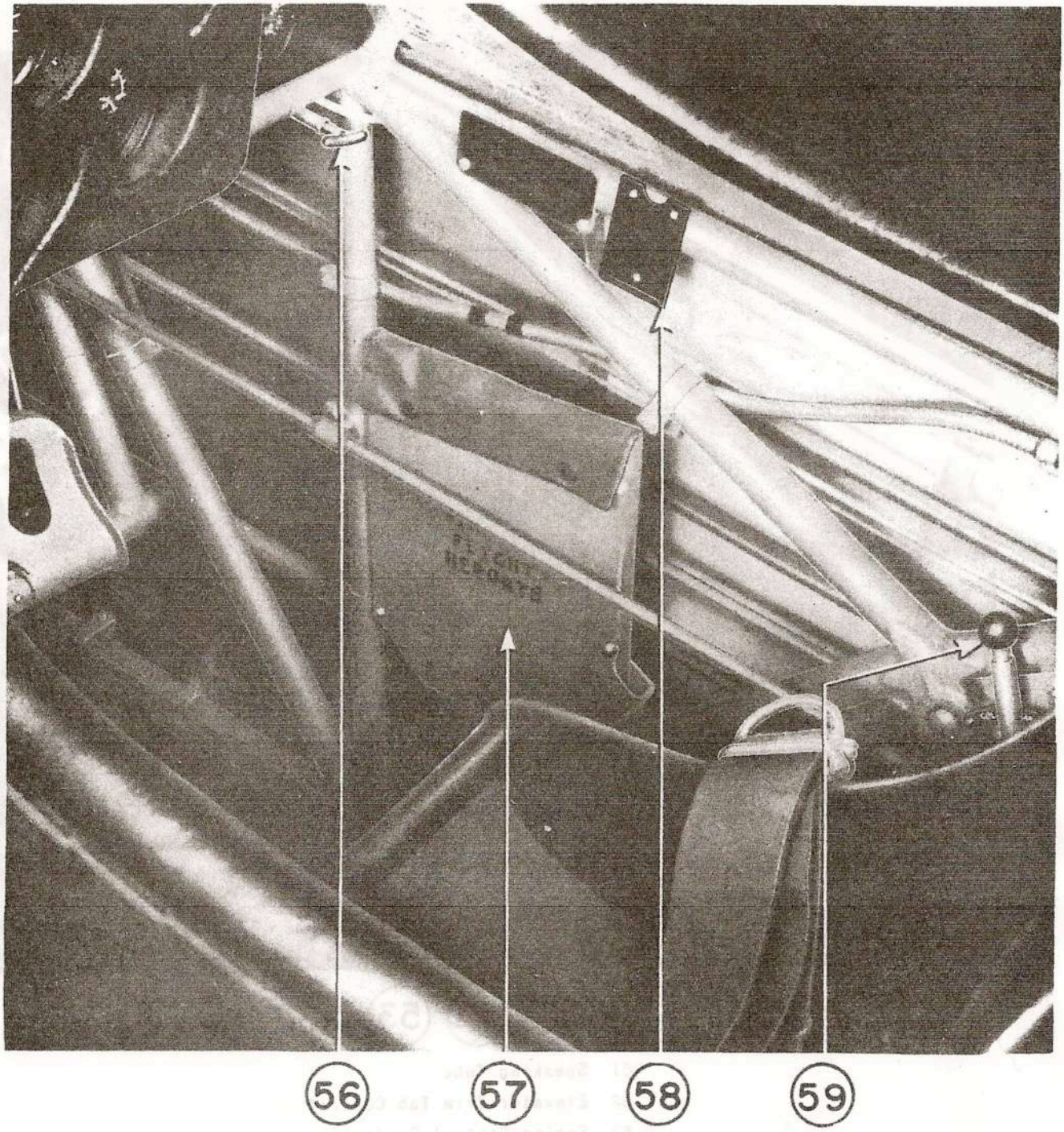
40 Ignition Switch Control
41 Fuel Valve Control
42 Rudder Pedals
43 Altimeter
44 Airspeed Indicator
45 Clock
46 Control Stick
47 Compass
48 Oil Temperature & Pressure Gage
49 Tachometer
50 Parking Brake Handle

Figure 5 - Instrument Panel



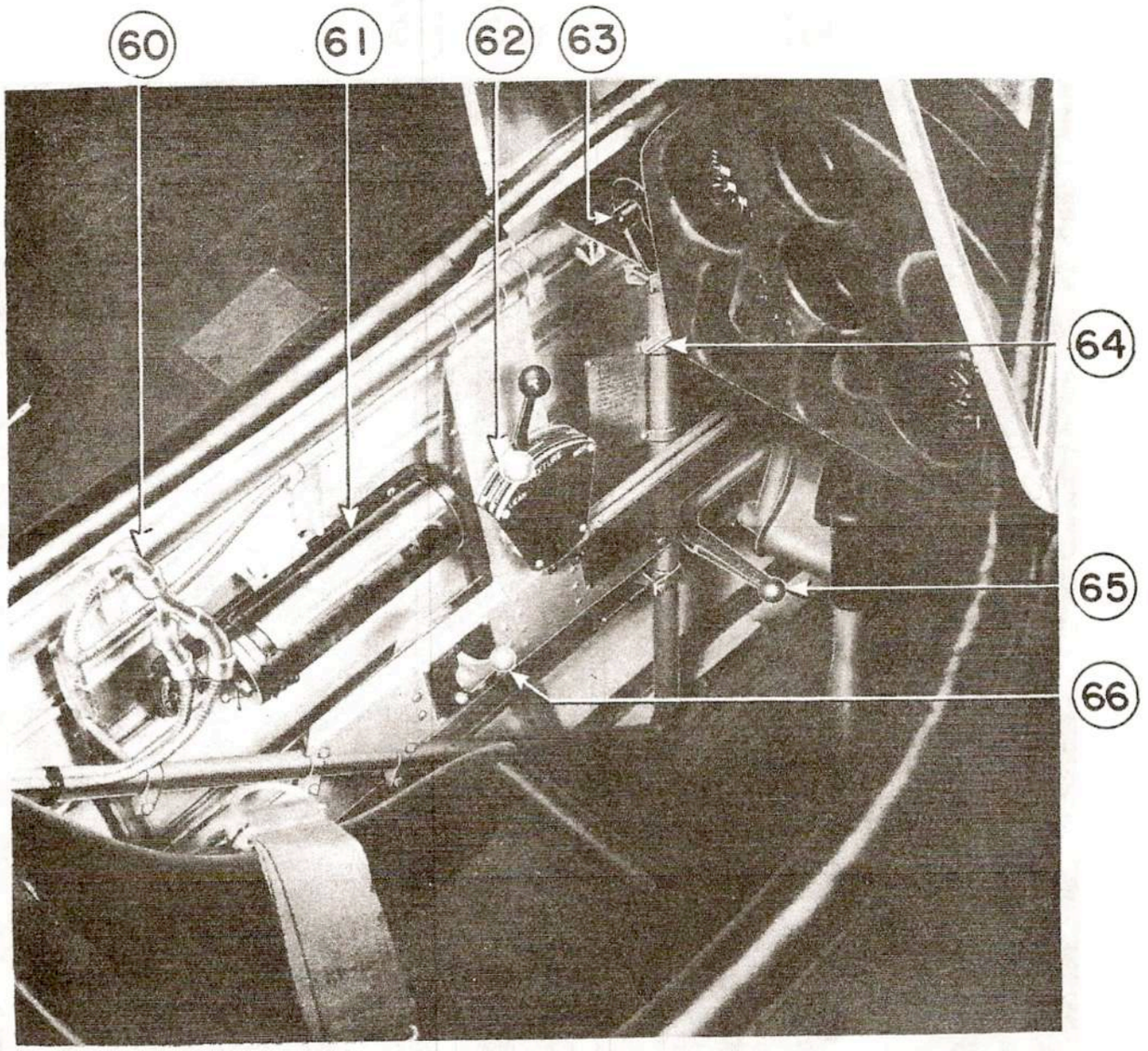
51 Speaking Tube
52 Elevator Trim Tab Control
53 Engine Control Quadrant
54 Control Surface Lock
55 Fuel Valve Control

Figure 6 - Front Cockpit - Left Side



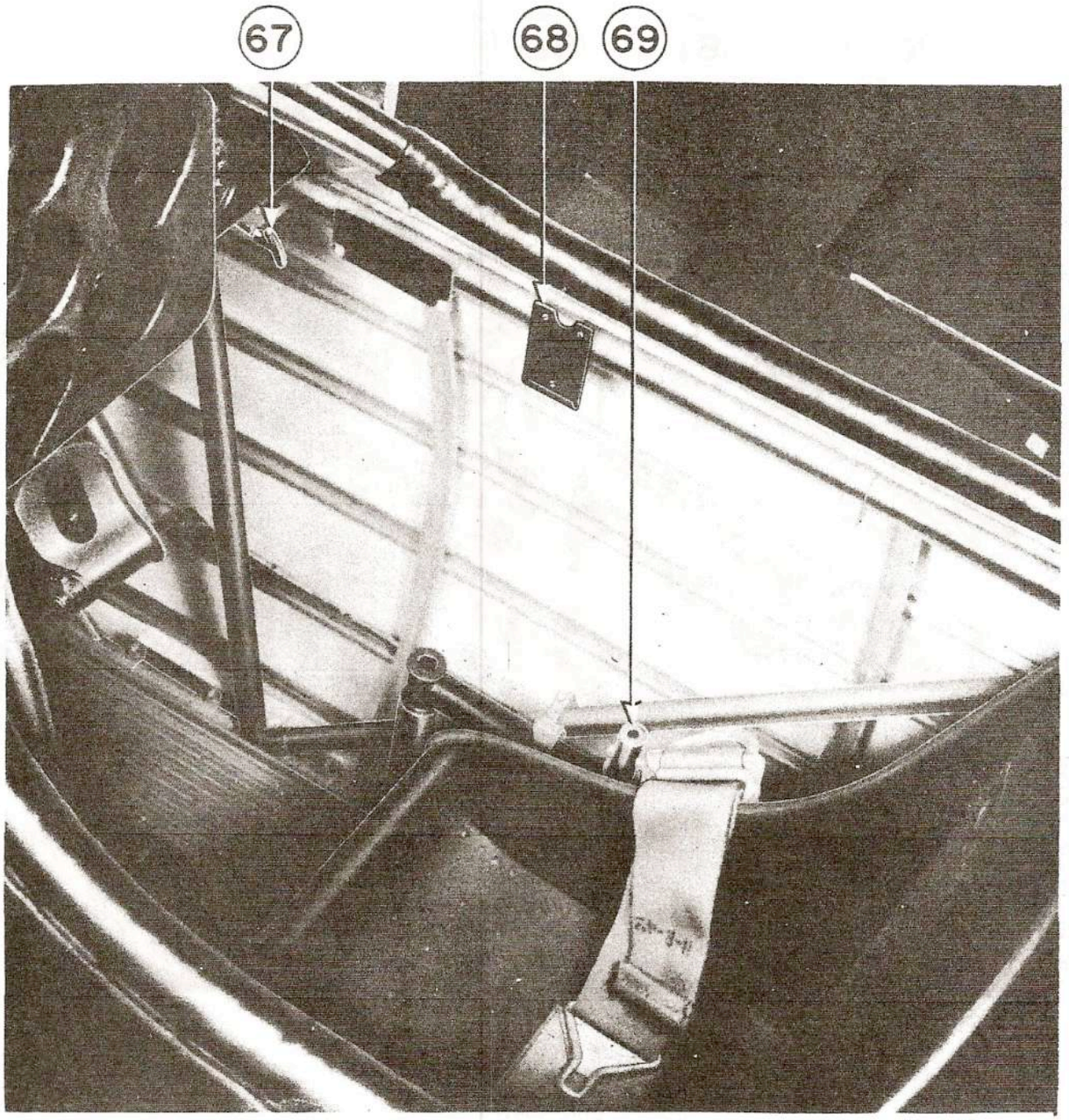
56 Parking Brake Handle
57 Flight Report Holder
58 Compass Correction Card Holder
59 Carburetor Air Control

Figure 7 - Front Cockpit - Right Side



60 Speaking Tube
61 Fire Extinguisher
62 Engine Control Quadrant
63 Ignition Switch Control
64 Fuel Valve Control
65 Control Surface Lock
66 Elevator Trim Tab Control

Figure 8 - Rear Cockpit - Left Side



67 Parking Brake Handle
68 Compass Correction Holder
69 Engine Starter Crank

Figure 9 - Rear Cockpit - Right Side

SECTION II

PILOT OPERATING INSTRUCTIONS

1. On Entering the Pilot's Compartment.

a. Check For All Flights.-

(1) Ignition Switch - "Off"

(2) Parking Brake - "On"

(3) Controls - "Locked"

(4) Throttle - "Closed"

(5) Mixture Control - "Full Lean"

(6) Carburetor Air Heater Control- "Cold"

2. Starting Engine.

a. Ignition Switch - "Off"

The switch was "ON" when he turned the prop. Now his wife is working in a little dress shop . . .

b. Pull propeller through several times to free combustion chambers of excess oil.

c. Fuel - "On"

d. Carburetor Air Control - "Full Cold"

e. Mixture Control - "Full Rich"

f. Throttle Setting - approximately 1/2 inch "Open"

g. Primer - 2 to 4 strokes.

h. Starter - Energize the inertia starter with hand crank.

i. Engage Starter - Pull starter clutch control located on the starter panel in the left side of engine cowling.

3. Engine Warm-Up.

a. when the engine starts, set throttle to obtain 700 rpm.

WARNING: Shut off the engine if the oil pressure does not register within 30 seconds after starting.

b. Oil Temperature.-

20°C.-40°C. (68°F.-104°F.) for Taxi.

40°C.-90°C. (104°F.-194°F.) Max. 90°C. (194°F.) for Take-Off

Continue warming engine during taxiing.

c. Carburetor Air Control - "Cold"

4. Engine and Accessories Ground Test.

a. After warm-up has been completed, as indicated by oil temperature gage registering 40°C.-90°C. (104°F.-194°F.), advance throttle to between 1200 and 1500 rpm.

b. Test ignition by switching from "BOTH" to one magneto and then back to "BOTH", to allow engine to pick up loss in rpm. Test each magneto in the same manner. The speed of the engine as indicated by the tachometer, should not decrease more than 50 rpm when running on only one magneto.

WARNING: This test should never exceed 15 seconds on either magneto.

c. Check oil pressure - 60-90 psi.

d. Check oil temperature - 40°C.-90°C. (104°F.-194°F.)

5. Taxiing Instructions.

Taxiing Characteristics.- No special precautions need be taken.

6. Take-Off.

a. Pre-Flight Check.

(1) Flight Controls:- "Unlocked" (handle up).

(2) Elevator Trim Tab:- Set trim tab in neutral position. (It is recommended that the airplane be taken off in a slightly nose heavy condition. Best setting may be determined after trial flight.)

(3) Mixture Control:- "Full Rich" (Forward)

(4) Carburetor Air:- "Cold" (Forward, except under icing conditions.)

(5) Altimeter, Clock, Airspeed:- Check for operation and proper indication, if installed.

(6) Throttle:- Ground rpm is approximately 1650 - Take off on full throttle.

CAUTION: Engine speeds between 1500 and 1750 rpm are to be avoided. Pass through these speeds as rapidly as possible on take-off.

(7) Oil Pressure - 60-90 psi.

(8) Oil Temperature - 40°C.-90°C.(104°F-194°F.) Desired 70°C. (158°F.).

7. Engine Failure During Take-Off.

a. Throttle closed.

b. Ignition Switch "Off"

c. Put nose of airplane down and maintain a gliding speed of approximately 75 mph - STRAIGHT AHEAD - Do not attempt to turn back into the field.

8. Climb.

Initial rate of Climb:- 850 feet per minute on full throttle, at sea level, under standard conditions.

9. General Flying Characteristics.

a. Stability.- With normal loads the airplane is stable about all axis.

b. Longitudinal balance is maintained by the use of elevator trim tab.

10. Engine Failure During Flight.

a. Drop nose of airplane sufficiently to maintain glide of approximately 75 mph, indicated air speed--select most suitable area and land into the wind, if possible.

b. Ignition Switch - "Off"

c. Fuel - "Off"

11. Stalls

Here lie the remains of 'Dreamy Joe' he loved to fly both slow and low.

a. The airplane stalls at 55 mph with normal load.

b. The stall is symmetrical with either power on or power off.

12. Spins.

The spin characteristics of the airplane are normal.

13. Acrobatics.

Acrobatics with this airplane shall be restricted to those permissible with this type of airplane. Under no circumstances should the maximum allowable engine rpm be exceeded. Prohibited maneuvers are listed in Par. 18.

14. Diving.

"Better to be a live pilot than a dead clown."

Speed Limitation.- Do not exceed a diving speed of 186 mph, indicated airspeed.

15. Approach, Landing and Cross-Wind.

a. Approach.- No unusual procedure need be followed during the approach for landing.

b. Cross-Wind Landing.- Avoid cross-wind landing whenever practicable. Exercise care to avoid ground loop.

c. Landing. - At conclusion of landing run, no unusual procedure need be followed before starting to taxi.

16. Stopping Engine.

a. Idle Engine to approximately 500 rpm.

b. Stop engine by using the "Idle Cut-Off" position, leaving the fuel valve on.

17. Before Leaving Pilot's Cockpit.

a. Fuel - "Off" position.

b. Ignition Switch - "Off" position.

c. Set Parking Brakes.

d. Lock Flight Controls.

18. Maneuvers Prohibited.

a. Inverted Flight.

b. Inverted Spins

c. Outside Loops.

d. Snap rolls, at more than 106 mph, indicated air speed.

e. Slow rolls, at more than 124 mph.

Do not exceed an indicated air speed of 186 mph.

NOTE: The baggage compartment of this airplane is of heavy duck designed to carry not more than sixty pounds. Objects carried which have sharp edges or corners should be wrapped to prevent pierceing the fabric. All objects should be secured to the supporting structure. When baggage is carried avoid all acrobatics and violent maneuvers.

SECTION III

FLIGHT OPERATION DATA

1. WEIGHT AND BALANCE CHART is a tabulation of typical loading of the aircraft. The tatical weight empty is the sum of the empty airplane weight, fixed equipment, crew, and oil. Alternate load items which may be carried are listed in typical combinations and totaled to give the gross weight. See the warning note regarding baggage, in Section II

2. SPECIFIC ENGINE FLIGHT CHART summarizes the characteristics of the engine. This form is standard for all Army aircraft. The important items for the PT-17 Airplane are: Maximum permissible diving rpm, oil pressure and temperature, rpm, for the various operating conditions with corresponding mixture control position and the precautionary note regarding rpm. It should be noted that rpm, in level flight is limited to 1750-1900 except in emergency.

3. TAKE-OFF, CLIMB AND LANDING CHART is composed of three tables. (A) "Take-Off distance" lists for various weights, wind velocities, surface conditions and altitudes, the approximate number of feet required to take-off and also the total distance required to clear a fifty foot obstacle. Example: At full gross weight with slight wind near sea level, the distance required to take-off from a sod runway and clear a fifty foot obstacle such as a power line, should be at least 900 feet, if the temperature is near freezing. Assuming the temperature on the field is ninety two degrees Fahrenheit (92^0F.), a correction of approximately 30 per cent, or roughly, one-third (92^0-30^0 = 62^0, which is approximately three, twenty degree increments thus, requiring about thirty per cent increase in distance), additional distance will be required, increasing the ground run, and take-off distance to clear 50 foot object, to approximately 600 and 1200 feet respectively. As shown on the chart, full throttle is used for all take-offs. (B) The landing distance chart lists data similar to the take-off chart, except the best indicated airspeed for landing approach replaces the head wind column since the wind velocity is seldom known prior to landing. It should be noted that temperature corrections are only necessary in very hot weather. While it is possible to take-off or land in distances somewhat shorter than those shown, it is stupid not to take advantage of the entire field. (C) Climb data lists the best indicated airspeed, approximate rate of climb, time and fuel required to reach the altitude shown for light and heavy take-off weights. No values are listed opposite "Ferry" climb since climb at reduced power is not recommended. In planning a flight to reach a certain altitude at a given time, it is necessary to apply the temperature correction shown.

4. FLIGHT OPERATION INSTRUCTION CHART is included to illustrate the standard form on which cruising control data is presented. In the upper half of the chart, typical fuel quantities are listed in the "fuel" columns. On a line with each fuel quantity, various ranges are listed in both statute and nautical air miles. Directly below each column of ranges the rpm and mixture setting are set forth on a line with the altitude of flight. Indicated airspeed and fuel consumption are listed. The column on the extreme left shows conditions for high speed cruising. Columns to the right progressively show increase in range at a sacrifice in speed. The extreme right column lists maximum range data. Conditions shown on this chart apply when the gross weight is between 2700 and 2200 pounds as shown in the title block. Example to illustrate the use of the flight operation instruction chart: Assume (A) no head wind (B) full load solo flight (gross weight 2500 pounds) (C) desired range 240 statute miles plus 20 mile reserve, (D) flight altitude 6000 feet. Solution: 240 plus 20 is 260 miles required. Total fuel 46 gallons less three gallons, take-off allowance leaves 43 gallons available (7/8 Tank). Select column II showing 260 statute miles.In this column opposite 6000 feet read 1850 rpm, with lean mixture as indicated by light print. Upon reaching 6000 feet in full rich, reduce rpm to 1875 by throttle, "establish course and trim." With mixture control "lean out" for 50 rpm drop and carefully "rich up" 25 rpm or to 1850 rpm. Under these conditions the fuel consumption will be about 14 gallons per hour and indicated airspeed 103 mph. It will be noted that the same range may be obtained at 3000 feet, 1900 rpm, full rich, or at 9000 feet, 1750 rpm, leaned out as explained above whereas 1750 rpm, with lean mixture at 6000 feet will give increased range but with decreased speed. The maximum range of the PT-17 is obtained at sea level with 1750 rpm, and lean mixture.

5. On each of the charts red figures have been entered to indicate values which have not been varified in flight. All chart values are conservative.

R-985
SUGGESTED ENGINE OPERATION TABLE

Pratt & Whitney Engines

TAKE-OFF, CLIMB, and CRUISE -- NO RAM (4)

POWER CONDITION	% NORMAL RATED POWER	BHP (2)	RPM	MANIFOLD PRESSURE IN. HG.	MIXTURE (5)		APPROX. FUEL GAL/HR	CRITICAL ALTITUDE
					NA-R9B	NA-R9C		
Take-Off		**450**	**2300**	**36.5**	**FR**	**AR**	**50**	**S.L**
Military		**450**	**2300**	**35.5**	**FR**	**AR**	**50**	**3500**
Normal Rated	**100**	**400**	**2200**	**33.5**	**FR**	**AR**	**44**	**5000**
Climb	**91**	**365**	**2100**	**30.5**	**FR**	**AR**	**39**	**6500**
Climb	**82**	**330**	**2000**	**29.0**	**FR**	**AR**	**34**	**7000**
Max. Cruise	**75**	**300**	**2000**	**26.5**	**0.075**	**AL**	**28**	**10,000**
Cruise	**67.5**	**270**	**1950**	**24.0**	**0.075**	**AL**	**23**	**11,500**
Cruise	**67.5**	**270**	**1800**	**26.5**	**0.072**	**AL**	**21**	**8500**
Cruise (3)	**60**	**240**	**1850**	**22.5**	**0.072**	**AL**	**19**	**12,500**
Cruise	**60**	**240**	**1700**	**25.5**	**0.072**	**AL**	**19**	**9000**
Cruise	**60**	**240**	**1600**	**27.5**	**0.072**	**AL**	**19**	**6500**
Cruise (3)	**50**	**200**	**1750**	**20.0**	**0.072**	**AL**	**17**	**15,500**
Cruise	**50**	**200**	**1600**	**22.5**	**0.072**	**AL**	**16**	**11,500**
Cruise	**50**	**200**	**1450**	**26.0**	**0.072**	**AL**	**16**	**7000**
Cruise	**50**	**200**	**1300**	**30.5**	**0.072**	**AL**	**15**	**1500**

1. Critical Altitudes will be increased by the amount of ram developed in any particular operation.
2. Specified BHP is at the Critical Altitude shown, at the designated RPM, Manifold Pressure, and Mixture settings. To obtain this BHP at lower altitudes with part throttle, increase MP approximately 0.3 in Hg for each thousand feet below the critical altitudes shown.
3. The cruise power settings include a range of RPM, the highest RPM being on propeller load and the lowest at approximately 120 BMEP. (BMEP=805 x BHP/RPM)
4. All power settings are based upon NAC standard atmospheric conditions of temperature and pressure with no carburetor heat. During Climb, Cruise, and Descent it is desirable, whenever practicable, to maintain 32°C carb air temp for best engine operation. This will require increased manifold pressure at part throttle and increased RPM at full throttle to obtain the specified power. The correction amounts to about 0.5 in Hg more MP (part throttle) or 20 more more RPM (full throttle) for each 10° C above Standard Day values.
5. With NA-R9B carburetor, when above 5000' altitude lean mixture to minimum required for smooth engine operation, or to desired F/A ratio if such instrument is provided.

SPEC. AN-H-8 Dec. 18, 1942 FORM ASC-510

AIRPLANE MODELS
PT-17

TAKE-OFF, CLIMB & LANDING CHART

ENGINE MODELS
CONTINENTAL R-670-4, R-670-5, AND R-670-11

TAKE-OFF DISTANCE (IN FEET)

GROSS WEIGHT (IN LBS.)	HEAD WIND (MPH)	HARD SURFACE RUNWAY						SOD-TURF RUNWAY						SOFT SURFACE RUNWAY					
		AT SEA LEVEL		AT 3,000 FT.		AT 6,000 FT.		AT SEA LEVEL		AT 3,000 FT.		AT 6,000 FT.		AT SEA LEVEL		AT 3,000 FT.		AT 6,000 FT.	
		GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.	GROUND RUN	TO CLEAR 50' OBJ.
2700	0	300	650	400	850	550	1150	450	900	600	1200	800	1608	900	1500	1200	2000	1600	2650
	20	200	400	250	550	350	700	300	550	400	700	550	1000	550	950	700	900	1000	1700
	40	100	250	150	350	200	450	150	300	200	400	250	700	300	500	400	650	550	900
2300	0	225	500	300	650	425	870	350	700	450	900	600	1250	700	1150	900	1500	1250	2000
	20	150	300	200	425	275	550	225	425	300	550	425	750	425	725	550	700	750	1300
	40	75	125	125	150	150	350	125	225	150	300	200	550	225	425	300	500	425	700
	0																		
	20																		
	40																		

NOTE: INCREASE DISTANCE 10 % FOR EACH 10°C ABOVE 0°C (10 % FOR EACH 20°F ABOVE 32°F)

ENGINE LIMITS FOR TAKE-OFF * RPM & IN. HG

COMBAT MISSIONS USE * RPM & IN. HG

CLIMB DATA

FERRY MISSIONS USE * RPM & IN. HG

GROSS WEIGHT IN LBS.	TYPE OF CLIMB	S. L. TO 5000 FT. ALT.				10000 FT. ALT.						13200 FT. ALT.						FT. ALT.						FT. ALT.						BLOWER CHANGE
		BEST I.A.S.		FT/MIN	TIME FROM S. L.	BEST I.A.S.		FT/MIN	TIME FROM S. L.	FUEL FROM S.L.		BEST I.A.S.		FT/MIN	TIME FROM S. L.	FUEL FROM S.L.		BEST I.A.S.		FT/MIN	TIME FROM S. L.	FUEL FROM S.L.		BEST I.A.S.		FT/MIN	TIME FROM S. L.	FUEL FROM S.L.		
		MPH	KNOTS			MPH	KNOTS			U. S.	IMP.	MPH	KNOTS			U. S.	IMP.	MPH	KNOTS			U.S.	IMP.	MPH	KNOTS			U.S.	IMP.	
2700	COMBAT	83		960	6	80		635	17	6		76		310	34	9														
	FERRY																													
2300	COMBAT	83		1250	5	80		840	14	5		76		415	28	8														
	FERRY																													
	COMBAT																													
	FERRY																													

NOTE: INCREASED ELAPSED CLIMBING TIME 5 % FOR EACH 10°C ABOVE 0°C FREE AIR TEMPERATURE (10 % FOR EACH 20°F ABOVE 32°F) FUEL INCLUDES WARM-UP AND TAKE-OFF ALLOWANCE

LANDING DISTANCE (IN FEET)

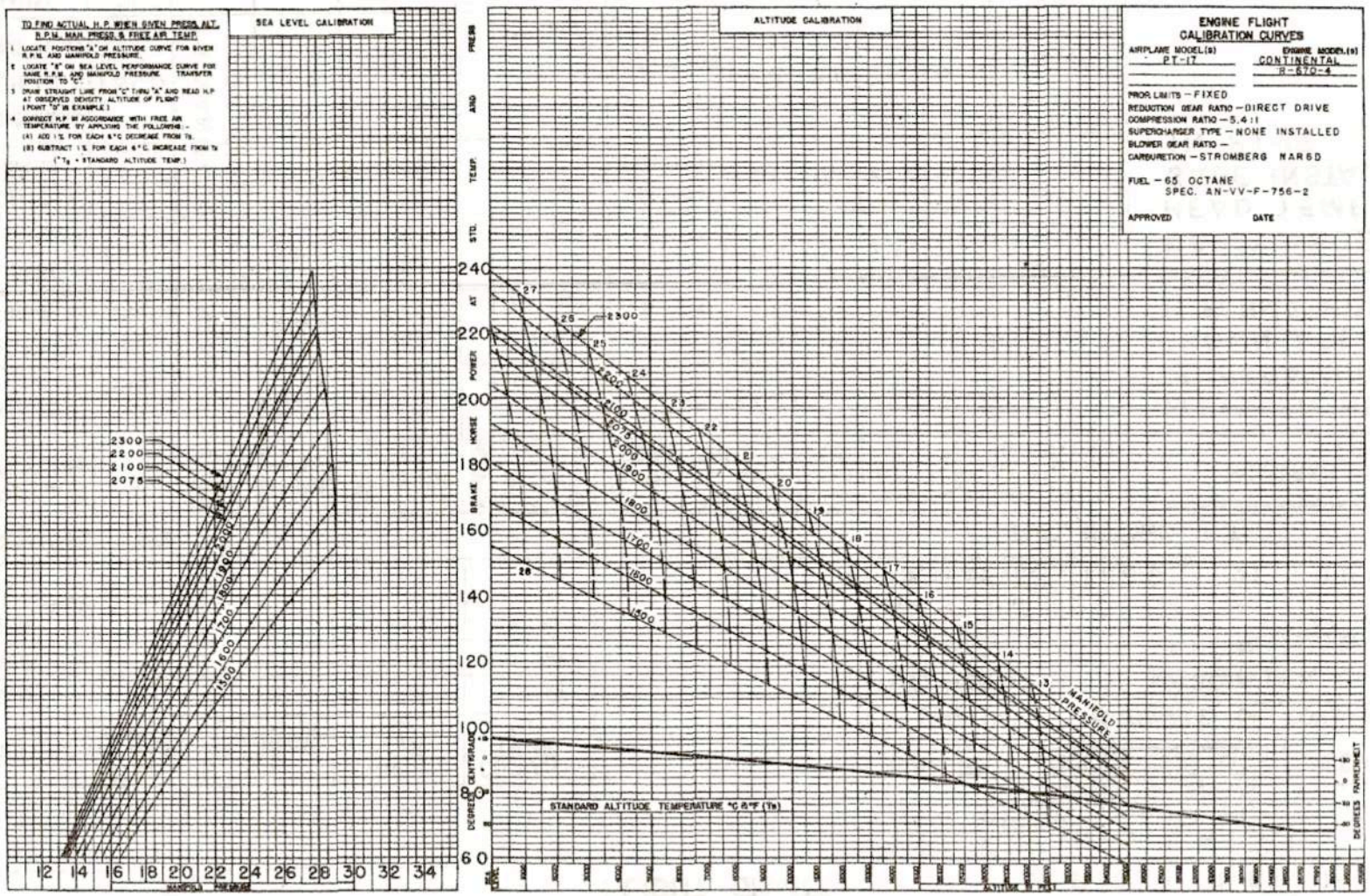
GROSS WEIGHT IN LBS.	BEST I. A. S. APPROACH		HARD DRY SURFACE						FIRM DRY SOD						WET OR SLIPPERY					
			AT SEA LEVEL		AT 3,000 FT.		AT 6,000 FT.		AT SEA LEVEL		AT 3,000 FT.		AT 6,000 FT.		AT SEA LEVEL		AT 3,000 FT.		AT 6,000 FT.	
	MPH	KNOTS	TO CLEAR 50' OBJ.	GROUND ROLL	TO CLEAR 50' OBJ.	GROUND ROLL	TO CLEAR 50' OBJ.	GROUND ROLL	TO CLEAR 50' OBJ.	GROUND ROLL	TO CLEAR 50' OBJ.	GROUND ROLL	TO CLEAR 50' OBJ.	GROUND ROLL	TO CLEAR 50' OBJ.	GROUND ROLL	TO CLEAR 50' OBJ.	GROUND ROLL	TO CLEAR 50' OBJ.	GROUND ROLL
2680	75		750	250	800	300	850	350	850	350	900	400	950	450	1300	800	1400	900	1500	1000
2200	70		650	225	700	275	750	300	750	325	800	375	850	400	1150	725	1225	800	1300	850

NOTE: FOR GROUND TEMPERATURES ABOVE 35°C (95°F) INCREASE APPROACH I.A.S. 10% AND ALLOW 20% INCREASE IN GROUND ROLL.

REMARKS

* USE FULL THROTTLE FOR FIVE MINUTES THEN REDUCE TO 1900 R.P.M.

LEGEND
I.A.S.: Indicated Air Speed
M.P.H.: Miles Per Hour
S.L.: Sea Level
U.S.: U. S. Gallons
IMP.: Imperial Gallons
NOTE: All Distances are Average
RED FIGURES HAVE NOT BEEN FLIGHT CHECKED


TO FIND ACTUAL H.P. WHEN GIVEN PRESS. ALT., R.P.M., MAN. PRESS. & FREE AIR TEMP.
1. LOCATE POSITIONS "A" ON ALTITUDE CURVE FOR GIVEN R.P.M. AND MANIFOLD PRESSURE.
2. LOCATE "B" ON SEA LEVEL PERFORMANCE CURVE FOR SAME R.P.M. AND MANIFOLD PRESSURE. TRANSFER POSITION TO "C".
3. DRAW STRAIGHT LINE FROM "C" THRU "A" AND READ H.P. AT OBSERVED DENSITY ALTITUDE OF FLIGHT (POINT "D" IN EXAMPLE.)
4. CORRECT H.P. IN ACCORDANCE WITH FREE AIR TEMPERATURE BY APPLYING THE FOLLOWING -
(A) ADD 1% FOR EACH 6°C DECREASE FROM Ts
(B) SUBTRACT 1% FOR EACH 6°C. INCREASE FROM Ts
(°Ts = STANDARD ALTITUDE TEMP.)
SEA LEVEL CALIBRATION
2300
2200
2100
2075
1900
1800
1700
1600
1500
12 14 16 18 20 22 24 26 28 30 32 34
MANIFOLD PRESSURE
ALTITUDE CALIBRATION
BRAKE HORSE POWER AT STD. TEMP. AND PRESS
240 220 200 180 160 140 120 100 80 60
DEGREES CENTIGRADE
27 26 25 24 23 22 21 20 19 18 17 16 15 14 13
2300
2200
2100
2075
2000
1900
1800
1700
1600
1500
MANIFOLD PRESSURE
STANDARD ALTITUDE TEMPERATURE °C & °F (Ts)
DEGREES FAHRENHEIT
ENGINE FLIGHT CALIBRATION CURVES
AIRPLANE MODEL(S) PT-17
ENGINE MODEL(S) CONTINENTAL R-670-4
PROP. LIMITS - FIXED
REDUCTION GEAR RATIO - DIRECT DRIVE
COMPRESSION RATIO - 5.4:1
SUPERCHARGER TYPE - NONE INSTALLED
BLOWER GEAR RATIO -
CARBURETION - STROMBERG NAR6D
FUEL - 65 OCTANE
SPEC. AN-VV-F-756-2
APPROVED
DATE

5-1-42

AIRPLANE MODEL
PT-17

SPECIFIC ENGINE FLIGHT CHART

ENGINE MODELS
R-670-4, R-670-5
AND R-670-11

CONDITION	FUEL PRESSURE LB./SQ. IN.	OIL PRESSURE LB./SQ. IN.	OIL TEMP. °C	COOLANT TEMP. °C		
DESIRED	GRAVITY FEED	75	70	AIR COOLED		
MAXIMUM		90	90			
MINIMUM		60	40			
IDLING		30	20			

MAX. PERMISSIBLE DIVING R.P.M. 2490

CONDITION	ALLOWABLE OIL CONSUMPTION	
"MAX CONTINUOUS"	2.48 IMP. PT/HR.	1.49 U.S. QT./HR.
"ECONOMICAL MAX."	1.96 IMP. PT./HR.	1.18 U.S.QT./HR.
"MIN. SPECIFIC"	1.96 IMP. PT./HR.	1.18 U.S.QT./HR.

OIL GRADE: (S) 1120 (W) 1080

SUPERCHARGER TYPE:

FUEL OCTANE 73

OPERATING CONDITION	R.P.M.	MANIF. PRESS. (BOOST.)	HORSE POWER	CRITICAL ALTITUDE (FEET)	BLOWER	USE LOW BLOWER BELOW	MIXTURE CONTROL POSITION	FUEL FLOW (GAL./HR./ENG.) U.S.	FUEL FLOW IMP.	MAXIMUM CYL. TEMP. °C	MAXIMUM CYL. TEMP. °F	MAXIMUM DURATION (MINUTES)	REMARKS
TAKE-OFF	FULL THROTTLE	NO MANIFOLD SUPERCHARGER ON THIS AIRPLANE	220	SEA LEVEL		— FT. ALT.	FULL RICH	21.2	18.7	260	500	5	CYLINDER HEAD TEMPERATURES SHOWN ARE INFORMATION ONLY. NO CYLINDER HEAD TEMP. GAGE INSTALLED IN PT-17
EMERGENCY MAXIMUM	FULL THROTTLE		220	SEA LEVEL		— FT. ALT.	FULL RICH	21.2	18.7	260	500	5	
MAXIMUM CONTINUOUS	1900		165	SEA LEVEL		— FT. ALT.	FULL RICH	14.5	12.0	245	475	NO LIMIT	
ECONOMICAL MAXIMUM	1750		130	SEA LEVEL		— FT. ALT.	SMOOTH OPERATION	12.2	10.2	235	455	NO LIMIT	
MINIMUM SPECIFIC CONSUMPTION	1900		165	SEA LEVEL		— FT. ALT.	SMOOTH OPERATION	14.3	12.0	245	475	NO LIMIT	
MINIMUM CRUISING	1750		130	SEA LEVEL		— FT. ALT.	SMOOTH OPERATION	12.2	10.2	235	455	NO LIMIT	

CONDITIONS TO AVOID	ENGINE SPEEDS OF 1500 TO 1750 R.P.M. ARE TO BE AVOIDED

NOTE: CRITICAL ALTITUDE IS THAT AT WHICH MAXIMUM POWER IS OBTAINED WITH FULL THROTTLE UNDER CONDITIONS SHOWN.

WEIGHT & BALANCE CHART

AIRPLANE MODEL

PT-17

BASIC LOAD ITEMS	POUNDS
WEIGHT EMPTY, (INCLUDING: NORMAL EQUIPMENT	1967
FIXED GUN INSTALLATION (S): ( ) ___ CAL. ___ LB. ( ) ___ CAL. ___ LB. GUN SIGHT. ___ LB. FIXED CANNON INSTALLATION (S): ( ) ___ MM ___ LB. ( ) ___ MM ___ LB. NO ARMAMENT INSTALLED	
FLEXIBLE GUN INSTALLATION (S): ( ) ___ CAL ___ LB. ( ) ___ CAL. ___ LB. FLEXIBLE CANNON INSTALLATION (S): ( ) ___ MM ___ LB. ( ) ___ MM ___ LB.	
EQUIPMENT:- NAVIGATION ___ LB. PHOTOGRAPHIC ___ LB. OXYGEN ___ LB. PYROTECNICS (FLARES ETC.) ___ LB.	
CREW 1 (200 LB. EA. INCLUDING PARACHUTES) 200 LB. OIL (4.4 U.S. GAL. 3.7 IMP. GAL.) 33 LB.	233
TACTICAL WEIGHT EMPTY	2200

ALTERNATE ITEMS	ALTERNATE LOADING (POUNDS) MAXIMUM FUEL	SOLO FLIGHT	SPECIAL OVERLOAD	
FUEL (6 LB. PER U.S. GAL. - 72 LB. PER IMPERIAL GAL.) U.S. GAL 46 (IMP. GAL.) (38.3)	276	276	276	
EXTRA TANK (S) INSTALLATION				
EXTRA OIL (AS REQUIRED - MAXIMUM IS SHOWN) ___ G. (___ G)				
BOMB INSTALLATION (S): INTERNAL ( ) ___ LB. ( ) EXTERNAL ___ LB. OR ( ) EXTERNAL ___ LB.				
TORPEDO INSTALLATION				
AMMUNITION: ___ RDS. ___ CAL ___ RDS. ___ CAL. ___ RDS ___ MM ___ RDS ___ MM				
PASSENGERS 1 BAGGAGE (MAX.) 54 LB. BAGGAGE (NORMAL) 24 LB. *When baggage is carried see warning . . . Section II.*	224	24	254	
GROSS WEIGHT	2700	2500	2730	

MODEL	FLIGHT OPERATION INSTRUCTION CHART	EXTERNAL LOAD ITEMS
PT-17	SHEET 1 OF 1 SHEET GR. WT. 2700 TO 2200 POUNDS	NONE

CONDITION	R.P.M.	M.P. (IN. HG.)	BLOWER POSITION	MIXTURE POSITION	DURATION IN MIN.	U.S. G.P.H.	IMP. G.P.H.
TAKE-OFF	MAX.	—	—	FULL RICH	5	3	2.5
MILITARY POWER	MAX.	—	—	FULL RICH	5	3	2.5
ENGINE (S)	R-670-4 AND R-670-5						

INSTRUCTIONS FOR USING CHART: Select figure in fuel column equal to or less than total amount of fuel in airplane. Move horizontally to the right or left and select a figure equal to or greater than the air miles to be flown. Vertically below and opposite desired cruising altitude read optimum cruising conditions. *NOTES:* (A) Avoid continuous cruising in Column I except in emergency. (B) Columns (II, III, IV & V) toward the right progressively give increase in range at sacrifice in speed. (C) Manifold Pressure (M.P.), Gallons Per Hour (G.P.H.), are approximate maximum values for reference. (D) For quick reference, take-off and military power data are listed in the upper left corner of chart.

(NO WIND) **ALTERNATE CRUISING CONDITIONS** (NO RESERVE FUEL ALLOWANCE)

I (MAX. CONT. POWER) RANGE IN AIR MILES		FUEL GAGE ⑧	FUEL U.S. GALS.	II RANGE IN AIR MILES		III RANGE IN AIR MILES		IV RANGE IN AIR MILES		FUEL IMP. GALS. ②	V (MAX. RANGE) RANGE IN AIR MILES	
STATUTE	NAUTICAL			STATUTE	NAUTICAL	STATUTE	NAUTICAL	STATUTE	NAUTICAL		STATUTE	NAUTICAL
		FULL	46	② 3 GALLONS TAKEOFF ALLOWANCE NOT AVAILABLE IN FLIGHT						38		
260	225	7/8	43	260	225	270	235			36	280	240
210	185	3/4	35	210	185	220	190			29	230	200
140	120	1/2	23	140	120	145	125			19	150	130
70	65	1/4	12	65	60	70	60			10	75	65

OPERATING DATA R.P.M.	I.A.S. M.P.H.	I.A.S. KNOTS	M.P. IN. Hg	U.S. G.P.H.	IMP. G.P.H.	① DENSITY ALT. IN FEET	OPERATING DATA R.P.M.	I.A.S. M.P.H.	I.A.S. KNOTS	M.P. IN. Hg	U.S. G.P.H.	IMP. G.P.H.	OPERATING DATA R.P.M.	I.A.S. M.P.H.	I.A.S. KNOTS	M.P. IN. Hg	U.S. G.P.H.	IMP. G.P.H.	OPERATING DATA R.P.M.	I.A.S. M.P.H.	I.A.S. KNOTS	M.P. IN. Hg	U.S. G.P.H.	IMP. G.P.H.	① DENSITY ALT. IN FEET	OPERATING DATA R.P.M.	I.A.S. M.P.H.	I.A.S. KNOTS	M.P. IN. Hg	U.S. G.P.H.	IMP. G.P.H.
						30000																			30000						
						25000																			25000						
						20000																			20000						
						15000																			15000						
						~~12000~~	— CRUISING ABOVE 10,000 FEET IS NOT RECOMMENDED —																		~~12000~~						
						9000	1750	92	80		13	11													9000						
			③			6000	1850	103	90	③	14	11.5	1750	96	84	③	12	10							6000				③		
1900	110	96		14.5	12	3000	1900	108	94		15	12.5	1750	98	85		12	10							3000						
						S.L.																			S.L.	1750	100	87		12	10

LEGEND

① INDICATED ALTITUDE CORRECTED FOR FREE AIR TEMPERATURE.

② ALLOW 3 U. S. GALS. 2.5 IMP. GALS. FOR WARM UP, TAKE-OFF AND CLIMB TO 500 FEET ALTITUDE

③ NO INSTRUMENT INSTALLED

BOLD NUMBERS: Use Rich

LIGHT NUMBERS: Use Lean

I.A.S.: Indicated Air Speed
M.P.: Manifold Pressure (In. Hg.)
U.S.G.P.H.: U. S. Gallons Per Hour
IMP.G.P.H.: Imperial Gallons Per Hour
F.T.: Full Throttle

EDITOR'S NOTE: AAF inspectors at modification centers will strike out columns not matching calibration of instruments in the airplane at time of delivery.

REFER TO "SPECIFIC ENGINE FLIGHT CHART" FOR ADDITIONAL ENGINE OPERATION DATA.

RED FIGURES ARE PRELIMINARY: SUBJECT TO REVISION AFTER FLIGHT CHECK

T.O. No. 01-70A-1