HANGER STUDIOS 713

FLIGHT MANUAL

NORTH AMERICAN (RYAN) NAVION L-17B

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TECHNICAL ORDER
1L-17A-1
FORMERLY AN 01-100LAA-1)

FLIGHT HANDBOOK

USAF SERIES

L-17B AND L-17D

AIRCRAFT

This Publication replaces AN 01-100LAA-1 dated 1 October 1948

PUBLISHED UNDER AUTHORITY OF THE SECRETARY OF THE AIR FORCE AND THE CHIEF OF THE BUREAU OF AERONAUTICS

[redacted]

1 JULY 1953

This handbook contains all the information necessary for safe and efficient operation of the L-17B and L-17D series airplanes. These instructions do not teach basic flight principles, but are designed to provide you with a general knowledge of the airplane, its flight characteristics, and specific. normal and emergency operating procedures. Your flying experience is recognized, and elementary instructions have been avoided.

The only source of technically accurate and constantly current information is contained in your Flight Handbook. This information is based upon the technical knowledge of the aircraft manufacturer and the Air Force as well as the experience of the using commands. You would never recognize these new books as your old familiar, undesirable -1 technical order. To help solve your specific problems, these new books have been made attractive, accurate, current, and easy to use. Not all of the books have been prepared to the new requirements, but you can easily tell the old from the new. The new type handbook has a full page cover illustration whereas the old book has a small "spot" illustration.

Each flight crew member *(except those attached to an administrative base)* is entitled to have a personal copy of the Flight Handbook while he is stationed at a given base. *(Air Force Regulation 5-13),* issued in 1953, specifically makes that provision.

The technical order distribution system will work if you do your draft;- order your required quantity of handbooks before they are needed instead of waiting until the need arises. If you order them early, the Air Force will print enough to cover your requirements; if you delay, you will probably be kept waiting a long time when you do order because sufficient copies may not have been originally printed to cover your request.

The technical order system is easy to cope *with; (Technical order 00-5-2)* explains, in just a few pages, the easy means by which you can set the automatic machinery into motion. Actually, all you have to do is reflect your requirement quantities on the *Publications Requirement Table (T.O. 00-3-1)* and all the revisions, reissues, and supplements will be automatically forwarded to you in the same quantities. Your base supply officer is charged with the responsibility of ordering and securing quantities of the technical orders in accordance with your requirements—check with him. Of course, *each* base mus': develop a system of feeding these books and related data to their flight crew members so that no one will be using an obsolete book.

One more thing—it takes a certain amount of time to revise the Flight Handbook. Since the time lag is excessive for safety of flight information a new program has been put into effect to get suc:1 information to you in a hurry. This is done by means of safety of flight supplements which use the same number as your Flight Handbook except for the addition of a suffix letter. Supplements covering loss of life will get to you in 48 hours; those concerning serious damage to equipment will be delivered in 6 days. And what do you have to do to get these supplements? Absolutely nothing—if you have ordered your Flight Handbook on the Publications Requirements Table, you will automatically receive all supplements pertaining to your aircraft.

This handbook is divided into 4 sections and an appendix as follows:

SECTION I, DESCRIPTION.

The function of this section is to describe the airplane, its equipment, systems, and controls which are essential to flight. All emergency equipment which is not part of the auxiliary equipment, and all miscellaneous equipment is also covered in this section.

SECTION II, NORMAL OPERATING INSTRUCTIONS.

This section contains the steps of procedure to be accomplished from the time the airplane is approached by flight crew until it is left parked on the ramp after accomplishing one complete non-combat mission in good weather.

SECTION III, OPERATIONAL EQUIPMENT.

This section includes the description, normal operation and emergency operation of all equipment not directly contributing to flight but which enables the airplane to perform certain specialized functions.

SECTION IV, EXTREME WEATHER OPERATION.

This section contains operational notes and procedures to be followed under extreme weather conditions.

APPENDIX I, FLIGHT OPERATING CHARTS.

This section contains the necessary charts and instrument markings for making take-off, climb and landing speed calculations.

L-17B

L-17D

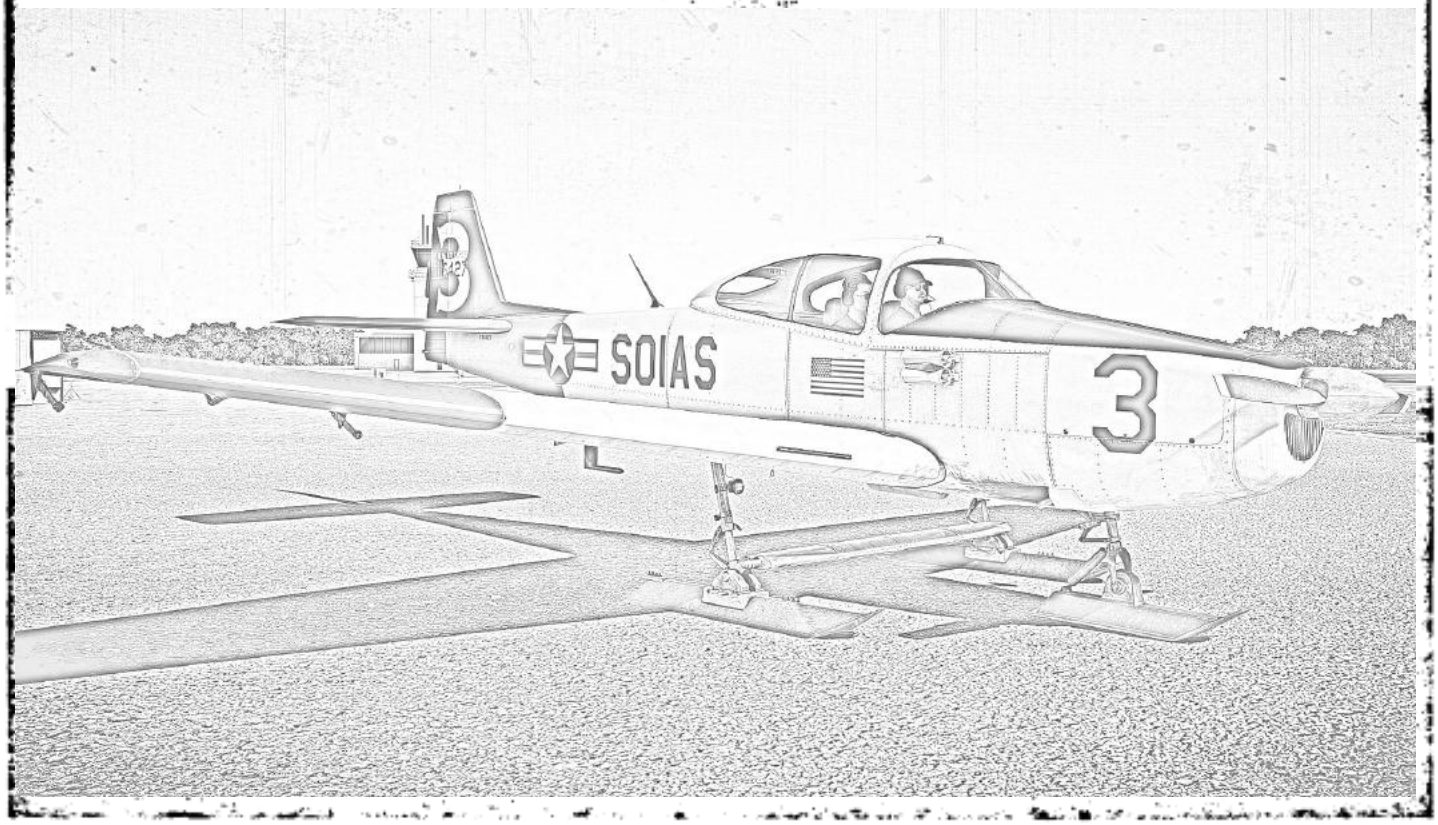


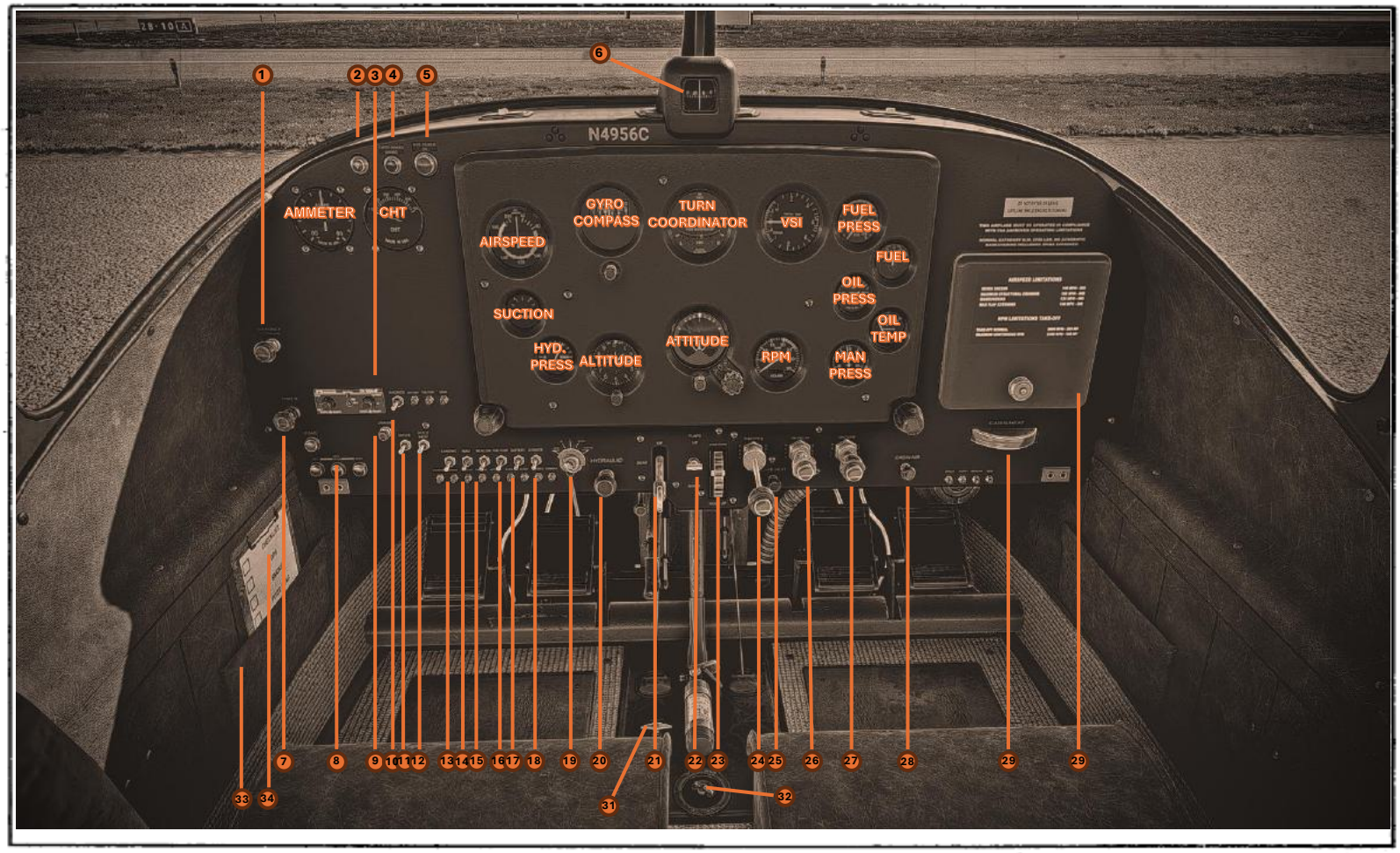
Figure 1-1 Airplane

1-2. GENERAL. The Ryan Aeronautical Co. L-17B is a four-passenger, single-engine, all-metal, low-wing airplane. It has hydraulically retractable tricycle landing gear, and flaps. The power plant is a Continental 0-470-7 engine, equipped with an injection type carburetor and a Hartzell controllable pitch propeller. The airplane is designed to accomplish liaison functions including reconnaissance, personnel and light cargo carrying, column control, camouflage checking and courier service. There are three models of this airplane, which in this book are designated as L-17B. The manual is basically written about the L-17B airplane. L-17B airplanes are L-17A airplanes that have been modified to provide a 35 amp generator in lieu of a 25 amp generator; a PS Engineering Incorporated PM1000 Intercom; a venturi vacuum system; vacuum-driven turn-and-bank indicator instrument, artificial horizon, and directional gyro; an additional neutral position in the flap control; Hayes-Goodrich expander tube type brakes in place of Firestone brakes; an electrically actuated starter system instead of the manual engaging system; and the power plant is rated at 205 bhp at 2600 rpm (take-off) instead of 1.85 bhp at 2300 rpm. The L-17B airplane incorporates all of the above changes, plus the incorporation of both fuel quantity indicating systems into one gauge, with two calibration scales and a selector switch.

L-17B Airplanes. USAF 48-921 through USAF 48-1078.

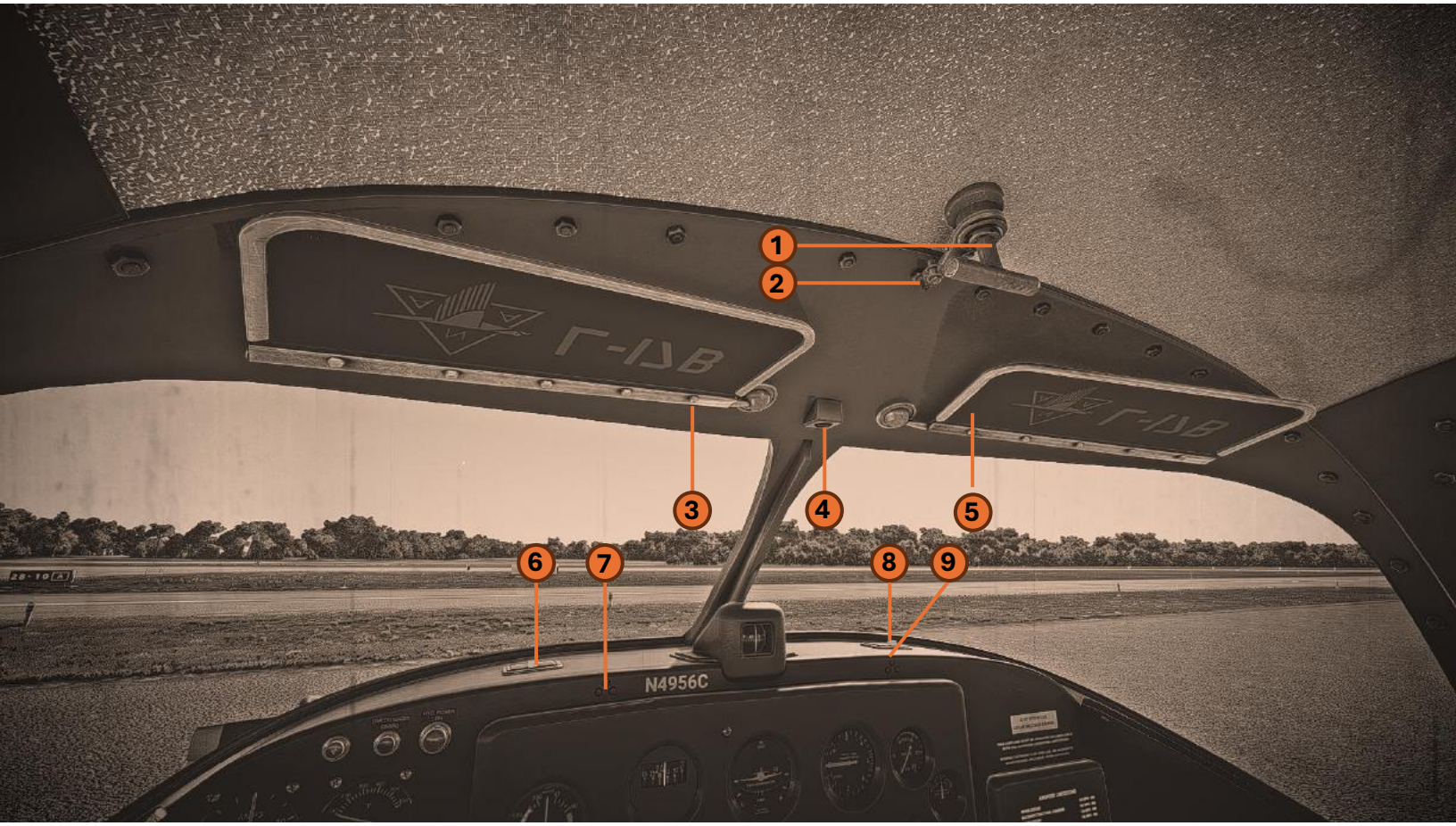
AIRPLANE SIZE.

Wing Span-33 feet, 4-9/16 inches.
Fuselage Length-27 feet, 3 inches.
Height (to top of fin)-8 feet, 6-5/16 inches. 1-4.
GROSS WEIGHT. 3,368 lb



1. EMERGENCY HYDRAULIC
2. VOLT INDICATOR
3. RADIO
4. STARTER INDICATOR
5. HYDRAULIC INDICATOR
6. MAGNETIC COMPASS
7. PRIMER
8. GEAR INDICATOR
9. CABIN LIGHTING DIMMER
10. AVIONICS POWER
11. SMOKE GENERATOR
12. PITOT HEAT
13. LANDING LIGHTS
14. NAV LIGHTS
15. BEACON LIGHT
16. FUEL PUMP
17. BATTERY
18. ALTERNATOR
19. MAGNETOS
20. HYDRAULICS
21. GEAR LEVER
22. FLAPS
23. AILERON TRIM
24. THROTTLE
25. PROP LEVER
26. CARB HEAT
27. MIXTURE
28. CABIN AIR
29. CABIN HEAT · WINDSHIELD HEAT
30. GLOVE BOX
31. CANOPY OVERRIDE HANDLE
32. FUEL VALVE
33. CLIPBOARD CLICK SPOT
34. CLIPBOARD

FIGURE 1-2. CABIN · FORWARD VIEW · L-17B AIRPLANE



1. CANOPY HANDLE
2. CANOPY LOCK
3. LEFT VISOR
4. CABIN LIGHT
5. RIGHT VISOR
6. LEFT VENT
7. PILOT VISIBILITY
8. RIGHT VENT
9. CO-PILOT VISIBILITY

CARGO · BAGGAGE AREA

SMOKE SYSTEM

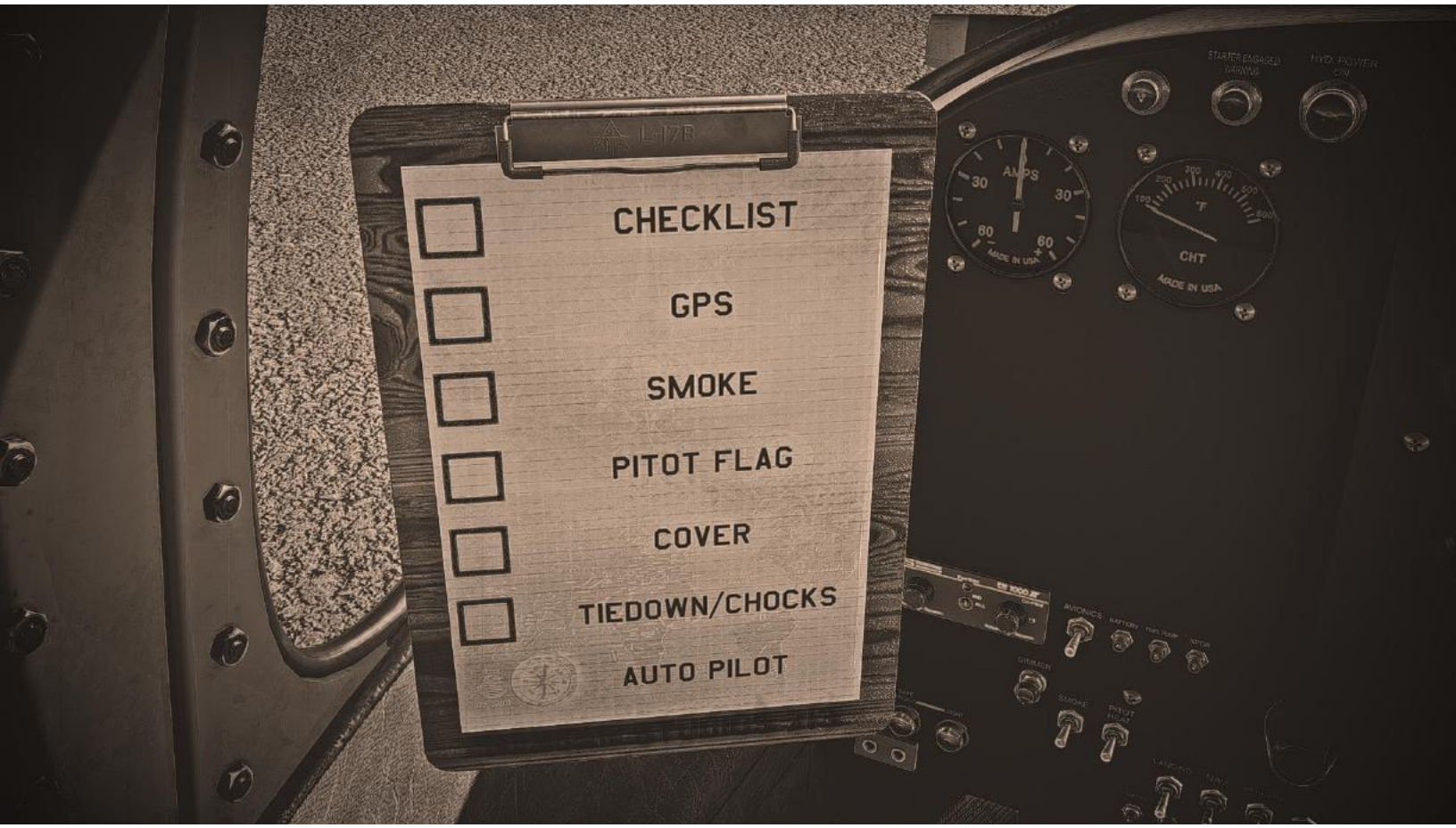
BATTERY

EXTERIOR LIGHTING

LANDING LIGHT PLACEMENT

NAVIGATION LIGHT PLACEMENT

CLIPBOARD

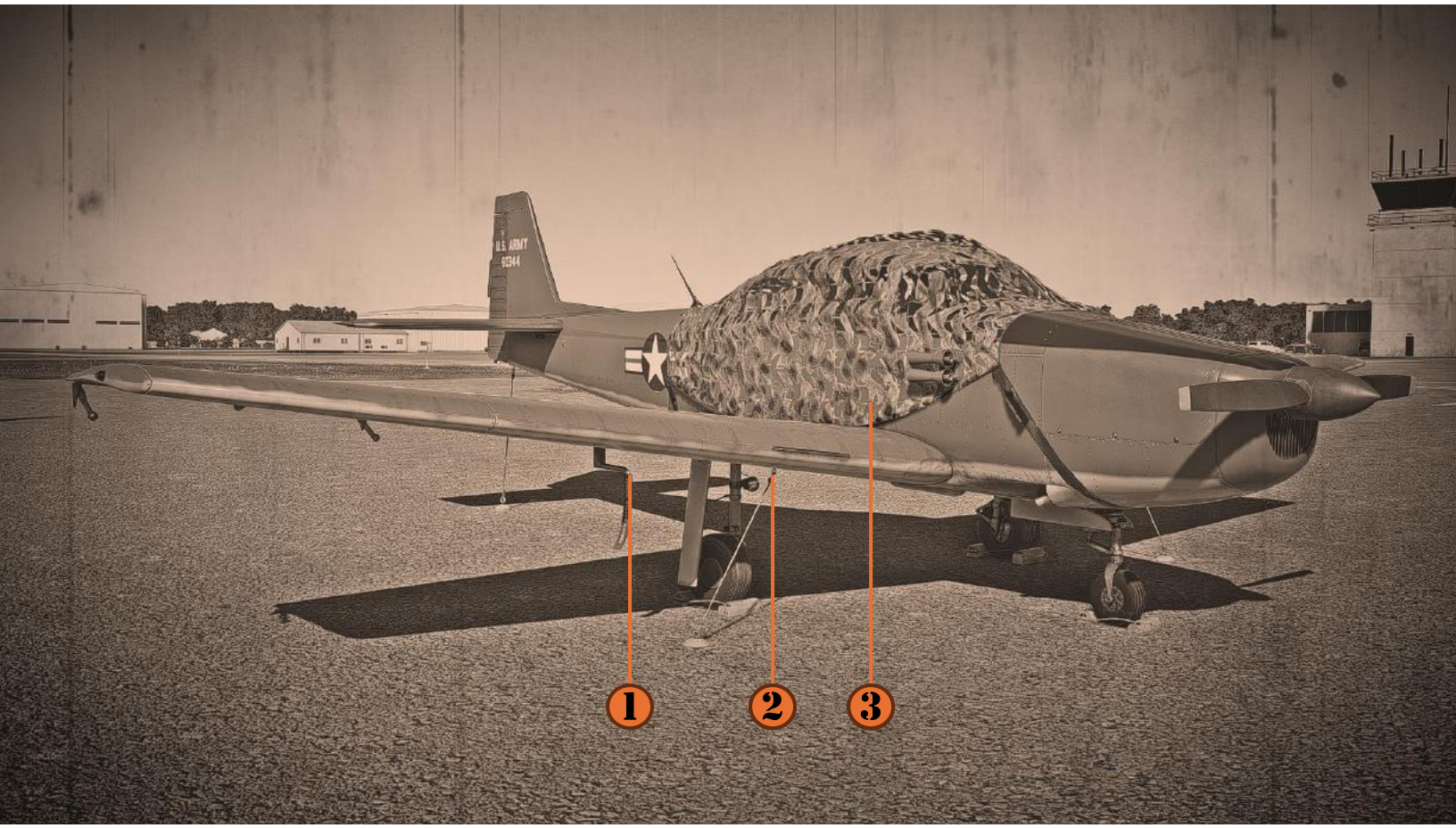


L-17B CHECKLIST

GPS GNS430 DEFAULT

GPS GTN650 - IF PMS50 MOD EQUIPPED

CLIPBOARD EXTERIOR VIEW



CLIPBOARD ONLY

1. PITOT FLAG
2. TIE DOWNS · CHOCKS (L17-B ONLY)
3. CANOPY COVER

STATIC EXTRAS

EXTERIOR VIEW SMOKE AND CANOPY

L-17D SKI VARIANT

INOP GEAR AND GEAR INDICTOR

L-17B AND L-17D VENTURI OPERATION

VENTURI --- SUCTION WORKS AUTOMATICALLY WITH WIND --- HOWEVER THE ARTIFICIAL HORIZON INDICATOR NEEDS TO BE POWERED ON AND CALIBRATED

GETTING FAMILIARIZED WITH YOUR L-17B

THROTTLE –

A CONVENTIONAL, PUSH-TO-OPEN THROTTLE, LOCATED AT THE CENTER OF THE CONTROL PANEL, IS ACCESSIBLE FROM EITHER FRONT SEAT. CLOCKWISE ROTATION OF AN ADJUSTING NUT ON THE CONTROL SHAFT INCREASES THROTTLE FRICTION.

PROP LEVER –

THE PROPELLER CONTROL IS LOCATED TO THE RIGHT OF THE THROTTLE. WHEN THE CONTROL IS PUSHED IN AGAINST THE PANEL, THE PROPELLER IS SET AT FULL INCREASE RPM; WHEN THE CONTROL IS PULLED OUT TO THE EXTREME AFT POSITION, THE PROPELLER IS AT FULL DECREASE RPM. SETTING THE CONTROL AT ANY POINT BETWEEN THESE TWO POSITIONS SELECTS THE DESIRED INTERMEDIATE ENGINE SPEED. A FRICTION ADJUSTING NUT IS PROVIDED ON THE CONTROL SHAFT.

MIXTURE—

FUEL-AIR MIXTURE IS DETERMINED BY MANUAL SETTING OF A PUSH KNOB LOCATED BELOW AND RIGHT OF THE PROPELLER CONTROL ON THE PANEL. THE CONTROL IS RELEASED FOR ADJUSTMENT BY TURNING THE KNOB CLOCKWISE. WHEN CONTROL IS PUSHED TO ITS MOST FORWARD POSITION, MIXTURE IS FULL RICH. PULLING CONTROL OUT CAUSES A PROGRESSIVE LEANING OF MIXTURE; FULL OUT IS IDLE CUT-OFF.

CARBURETOR HEAT CONTROL –

A CARBURETOR HEAT CONTROL, LOCATED BELOW AND RIGHT OF THE THROTTLE, PROVIDES SELECTION OF EITHER HOT OR COLD INDUCTION AIR (FILTERED RAM AIR.) WHEN CONTROL IS IN FULL FORWARD POSITION, COLD AIR IS SELECTED. PULLING CONTROL TO FULL AFT POSITION SELECTS HOT AIR. NORMALLY HEAT IS NOT REQUIRED BECAUSE THE AIRPLANE IS EQUIPPED WITH A PRESSURE-TYPE CARBURETOR NOT SUBJECT TO ICING; HOWEVER, WHEN LOW OUTSIDE AIR TEMPERATURES ARE ENCOUNTERED, HEAT MAY BE USED AS NECESSARY TO MAINTAIN MIXTURE TEMPERATURE IN RANGE REQUIRED FOR SMOOTH ENGINE OPERATION. UNDER EXTREME CONDITIONS, IF CARBURETOR AIR FILTER SHOULD BE OBSTRUCTED BY ICE (INDICATED BY AN UNACCOUNTABLE DROP IN RPM AND MANIFOLD PRESSURE), SELECTION OF CARBURETOR HEAT PROVIDES AN ALTERNATE SOURCE OF AIR. CARBURETOR HEAT CONTROL SHOULD BE SET ONLY IN FULL ON OR FULL OFF POSITIONS. AN INTERMEDIATE POSITION SHOULD NOT BE USED.

GETTING FAMILIARIZED WITH YOUR L-17B

PRIMER –

THE PRIMER PUMP PLUNGER HANDLE IS LOCATED AT THE EXTREME LEFT SIDE OF THE CONTROL PANEL.

STARTER–IGNITION

ON L-17B MAGNETOS FUNCTION OFF – RIGHT- LEFT- BOTH – ON/START THEN ACTUATES A DIRECT-CRANKING ELECTRIC SOLENOID ENGAGING STARTER.

FUEL—

L-17B/D FUEL SYSTEM. TWO FUEL TANKS, HOLDING APPROXIMATELY 20 GALLONS EACH, ARE INSTALLED IN THE WING, ONE IN EACH WING PANEL. AN ACCUMULATOR SUMP TANK, MOUNTED BETWEEN THE TWO TANKS AND INTER-CONNECTED WITH EACH HAS A CAPACITY OF APPROXIMATELY 1/2 GALLON. FUEL FROM BOTH MAIN TANKS IS GRAVITY FED INTO THE ACCUMULATOR SUMP TANK, WHICH ENSURES AN ADEQUATE SUPPLY OF FUEL TO THE ENGINE DURING ALL FLIGHT MANEUVERS. FROM THE ACCUMULATOR TANK, FUEL IS PASSED THROUGH A FILTER AND A SHUT-OFF CONTROL VALVE TO THE TWO ENGINE-DRIVEN PUMPS; WHICH SUPPLY FUEL TO THE CARBURETOR. THE OUTPUT OF EITHER PUMP IS SUFFICIENT (IN CASE OF FAILURE OF ONE) FOR NORMAL ENGINE OPERATION.

GETTING FAMILIARIZED WITH YOUR L-17B

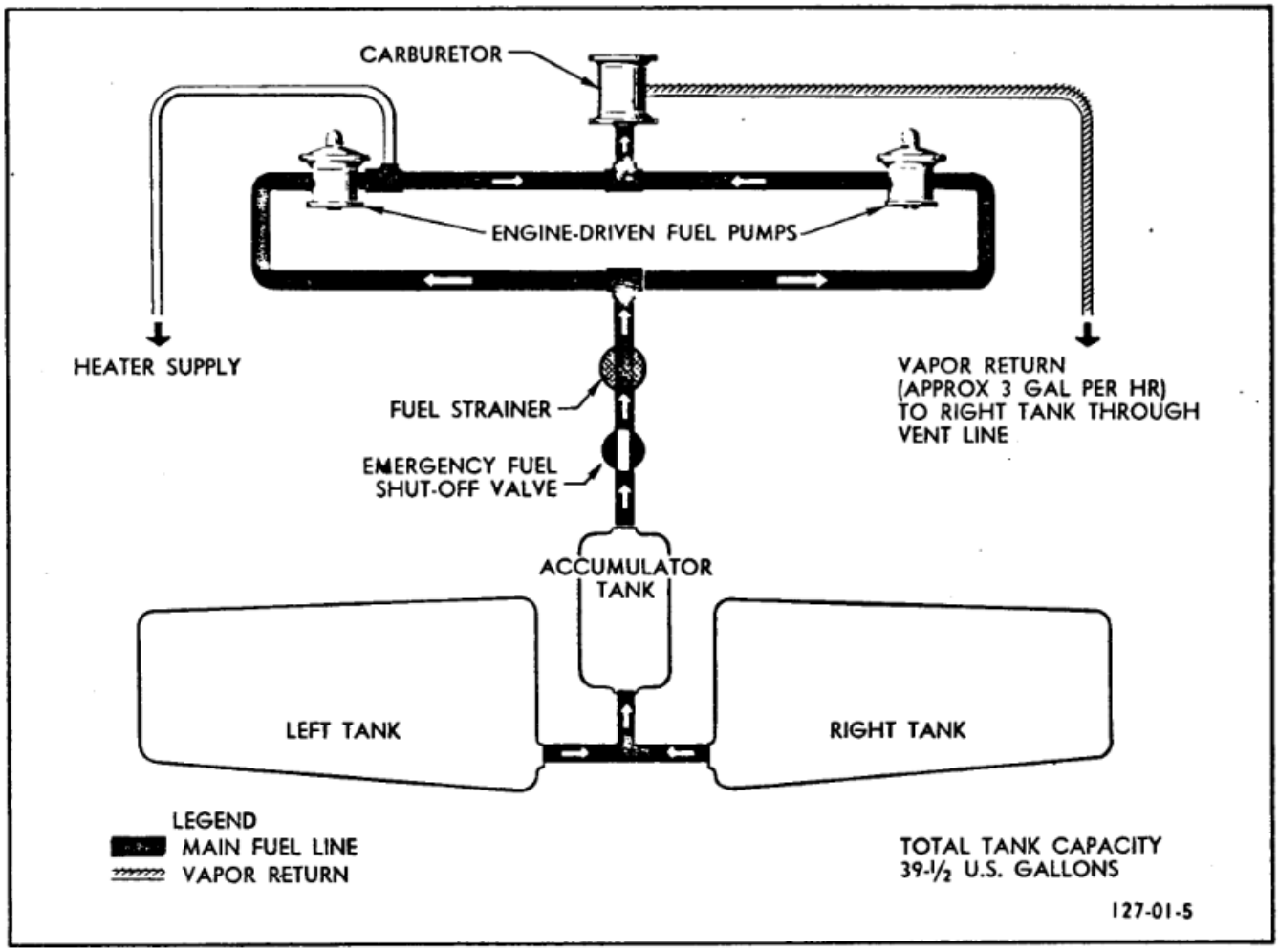
FUEL SPECIFICATION AND GRADE.

THE FUEL USED IN THIS AIRCRAFT MUST CONFORM TO SPECIFICATION MIL-F-5572, GRADE 80 (RECOMMENDED) U. S. ARMY SPECIFICATION 2-103, GRADE 80 (ALTERNATE).

FUEL SHUT-OFF CONTROL VALVE.

ON L-17B AIRPLANES AN EMERGENCY FUEL SHUT-OFF CONTROL VALVE, LOCATED FORWARD OF THE ACCUMULATOR TANK, IS OPERATED BY A FUEL, SELECTOR VALVE-CONTROL ON THE CENTER AISLE ADJACENT TO THE RIGHT SEAT THE VALVE IS NORMALLY LEFT OPEN BUT CAN BE POSITIONED TO SHUT OFF THE FUEL SUPPLY AT THE FIREWALL IN AN EMERGENCY. –

NOTE :ON THE L-17B/D FOR THE SIMULATOR BY DEFAULT IT IS OFF



GETTING FAMILIARIZED WITH YOUR L-17B

GEAR LEVER AND POSITION INDICATORS

GEAR POSITION INDICATOR LIGHTS ARE AT THE EX-CREME LEFT SIDE OF THE CONTROL PANEL. THREE GREEN LIGHTS (ONE FOR EACH GEAR) AND A SINGLE RED LIGHT (CONNECTED TO ALL THREE GEARS) GIVE A CONSTANT VISUAL INDICATION OF GEAR POSITION. EACH GREEN LIGHT ILLUMINATES WHEN ITS RESPECTIVE GEAR IS DOWN AND LOCKED. THE RED LIGHT ILLUMINATES WHEN THE GEAR IS IN ANY POSITION OTHER THAN DOWN AND LOCKED OR UP AND LOCKED.

NOSE WHEEL STEERING.

A STEERING MECHANISM ON THE NOSE WHEEL IS DIRECTLY CONNECTED TO THE RUDDER PEDALS. THROUGH THIS MECHANISM, TURNING THE AIRPLANE TO RIGHT OR LEFT IS ACCOMPLISHED BY PRESSURE ON THE RELATED RUDDER PEDAL. FULL PEDAL DEPRESSION TURNS THE NOSE WHEEL APPROXIMATELY 20 DEGREES LEFT OR RIGHT OF CENTER. WHEN PEDAL PRESSURE IS RELEASED, THE WHEEL IS ALIGNED BY CASTERING.

WHEEL BRAKES.

BRAKES ON THE TWO MAIN WHEELS ARE CONTROLLED BY A HAND LEVER MOUNTED BELOW THE CONTROL PANEL WITHIN REACH FROM EITHER FRONT SEAT. THE BRAKES OPERATE SIMULTANEOUSLY, EQUAL FORCE BEING APPLIED TO THE TWO AS THE CONTROL IS PULLED AFT. THEY ARE LOCKED FOR PARKING BY PULLING THE SAME CONTROL TO ITS EXTREME AFT POSITION AND DEPRESSING THE THUMB TRIGGER ON THE UPPER SURFACE OF THE LEVER. THEY ARE RELEASED BY PULLING AFT ON THE LEVER UNTIL THE TRIGGER DISENGAGES.

ELECTRICAL SYSTEM.

THE 12-VOLT, DIRECT CURRENT ELECTRICAL SYSTEM IS SUPPLIED WITH POWER BY AN ENGINE-DRIVEN GENERATOR OF 15-VOLT 25 AMPERE CAPACITY (35 AMPERE CAPACITY ON L-17B AND L-17D AIRPLANES). A COMBINED VOLTAGE REGULATOR AND REVERSE-CURRENT RELAY IS PROVIDED WITH THE GENERATOR. A 12 VOLT, 34 AMPERE-HOUR STORAGE BATTERY SERVES AS A STAND-BY AND SUPPLIES POWER TO ELECTRICALLY OPERATED UNITS WHEN THE GENERATOR IS NOT OPERATING. AN AMMETER IS INSTALLED ON THE INSTRUMENT PANEL. A VOLT WARNING INDICATOR IS SUPPLIED WHEN LOW VOLTAGE IS DETECTED.

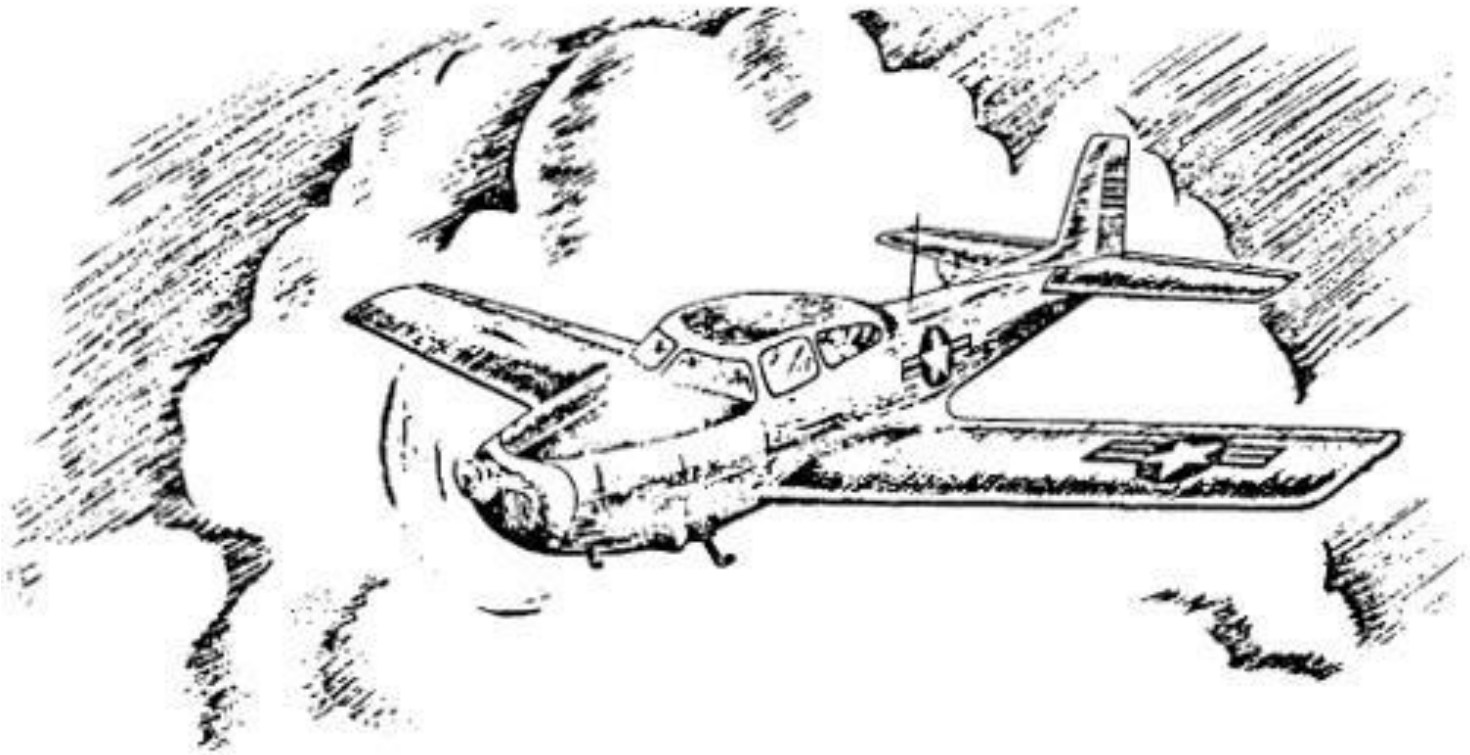
CIRCUIT BREAKERS.

ALL ELECTRICAL CIRCUITS ARE PROTECTED BY PUSH-TO-RESET CIRCUIT BREAKERS AND FUSES LOCATED ON A PANEL HINGED TO THE LOWER EDGE OF THE LEFT SIDE OF THE CONTROL PANEL (IN LINE WITH IGNITION SWITCH).

CANOPY OPERATION -

AN EXTERNAL CANOPY HANDLE (LOCATED AT FORWARD EDGE OF SLIDING PORTION OF CABIN ENCLOSURE) CONTAINS A KEY HOLE FOR LOCKING THE CANOPY FROM OUTSIDE. ROTATING HANDLE CLOCKWISE RELEASES A LATCH AND PERMITS CANOPY TO BE OPENED. AS LONG AS HANDLE IS HELD IN THE UNLOCK POSITION, THE CANOPY MAY BE MOVED FREELY ALONG THE ENCLOSURE SILL. RELEASING THE HANDLE PERMITS CANOPY TO LOCK IN OPEN POSITIONS WHERE PINS SNAP INTO DETENTS IN THE SILL.

A CANOPY ASSIST HANDLE, LOCATED ON CABIN FLOOR FORWARD AND RIGHT OF PILOT'S SEAT IS PROVIDED FOR OPENING CANOPY IN FLIGHT. PULLING THIS HANDLE, AFTER FIRST UNLOCKING CANOPY, SLIDES CANOPY BACK TO THE FIRST DETENT STOP.



SECTION 2.

RESTRICTIONS.

A. MAXIMUM PERMISSIBLE INDICATED AIRSPEED VARIES LINEARLY WITH GROSS WEIGHT FROM 190 MPH AT 2650 POUNDS TO 161 MPH AT 3200 POUNDS.

B. MAXIMUM PERMISSIBLE INDICATED AIRSPEED FOR GEAR AND FLAP LOWERING-100 MPH.

C. SPINS ARE PROHIBITED.

D. WHEN GROSS WEIGHT EXCEEDS 2350 POUNDS, ALL ACROBATICS ARE PROHIBITED. THE MOST SEVERE MANEUVER TO BE EXECUTED IS A STEEP TURN AT MAXIMUM OF 60 DEGREES BANK.

E. THE RECOMMENDED MAXIMUM GROSS WEIGHT FOR THESE AIRPLANES IS 2750 POUNDS. AT THIS WEIGHT THE AIRPLANES WILL MAKE GOOD A LIMIT LOAD FACTOR OF 3.80.

1. THE MAXIMUM ALLOWABLE GROSS WEIGHT FOR TAKE-OFF IS 3200 POUNDS. AT THIS WEIGHT THE AIRPLANES WILL MAKE GOOD A LIMIT LOAD FACTOR OF 2.1.

G. WHEN GROSS WEIGHT IS BELOW 2350 POUNDS, ALL ACROBATICS ARE PROHIBITED EXCEPT THE FOLLOWING: STEEP TURNS (UP TO 60° ONLY), CHANDELLES, LAZY 8'S, AND STALLS (EXCEPT WHIP STALLS).

H. DO NOT OPEN CANOPY BEYOND *FIRST* STOP WHILE IN FLIGHT EXCEPT IN AN EMERGENCY.

I. DO NOT ENTER OR LEAVE AIRPLANE WHILE ENGINE IS RUNNING.

J. DESIGN USEFUL LOAD WITH 39.5 GALLONS OF FUEL LIMITS CREW TO THREE; PILOT, CO-PILOT, AND ONE PASSENGER.

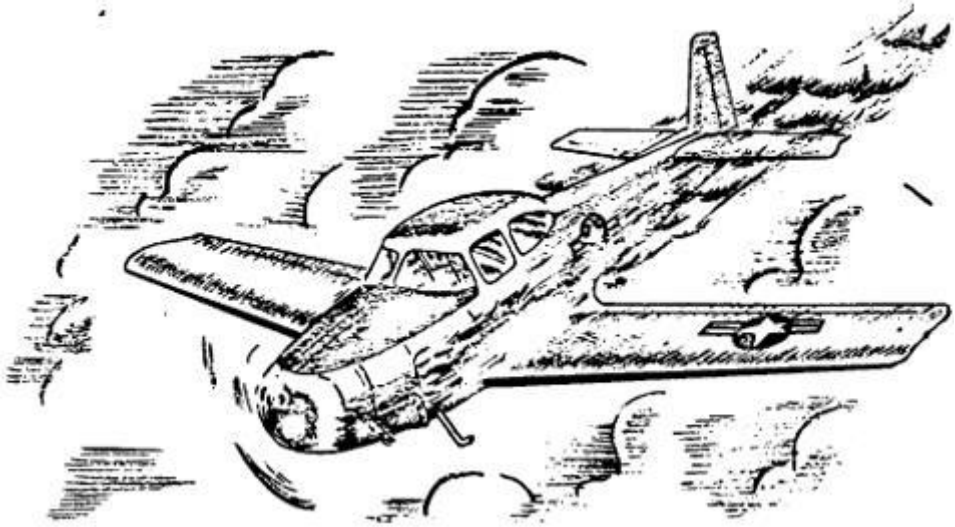
THESE LIMITATIONS AND RESTRICTIONS ARE SUBJECT TO CHANGE, AND LATEST SERVICE DIRECTIVES AND ORDERS MUST BE CONSULTED

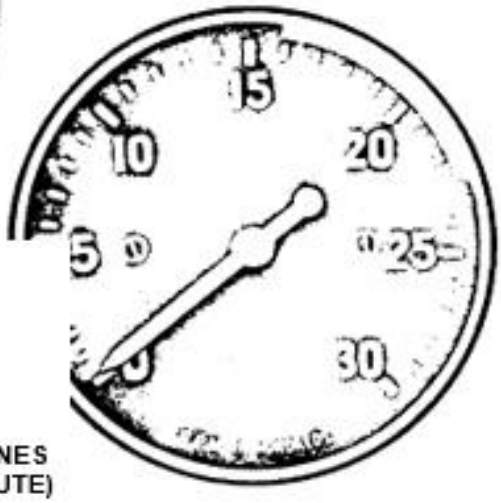
GROSS WEIGHT-2750 LB.

	GEAR AND FLAPS UP		GEAR AND FLAPS DOWN	
	Power On	Power Off	Power On	Power Off
Straight Flight	61 mph	69 mph	51 mph	54 mph
30° Bank	66 mph	75 mph	54 mph	58 mph
60° Bank	87 mph	101 mph	70 mph	78 mph

GROSS WEIGHT-2350 LB.

	GEAR AND FLAPS UP		GEAR AND FLAPS DOWN	
	Power On	Power Off	Power On	Power Off
Straight Flight	56 mph	63 mph	48 mph	50 mph
30° Bank	61 mph	69 mph	50 mph	54 mph
60° Bank	80 mph	94 mph	64 mph	73 mph





NORMAL RANGE
1600-2300 RPM

MAXIMUM CONTINUOUS
2300 RPM (OPERATION
ABOVE THIS RPM LIMITED
TO 1 MINUTE)

MAXIMUM & TAKE-OFF
2600 RPM L-178 & C AIRPLANES
(THIS RPM LIMITED TO I MINUTE)

NORMAL RANGE
21"-29" Hg

MAXIMUM
29" Hg

NORMAL RANGE
1600-2300 RPM

MAXIMUM & TAKE-OFF
2300 RPM (NO TIME LIMIT)

L-17A AIRPLANES

CHT
W/1 A 1x 2 ° F
Z75' C

MAXIMUM SPEED - FLAPS DOWN
100 MPH

MAXIMUM PERMISSIBLE IAS
190 MPH

ICZ3

FUEL GRADE 80

MINIMUM
10 PSI

DESIRED
12-14 PSI

MAXIMUM
15 PSI

MINIMUM
30 PSI

--. DESIRED
L- . 40-65 PSI

MAXIMUM
95 PSI

MINIMUM
70° F

DESIRED
110 -175 F

MAXIMUM
215 F

SECTION 3.

COMMUNICATIONS:

The Most Popular Mono Intercom in the World!

The PM1000II gives you great capabilities, unbelievable flexibility and some of the most advanced features of the product line.

The PM1000II panel mounted, four-channel intercom gains the benefits of PS Engineering's decades of design excellence. This popular panel mount has advanced features found in only more expensive competitor's units. Some of its best features include:

•Pilot Isolate and ALL modes allows the pilot to separate themselves from the intercom and focus on aircraft radio.

•Soft Mute™ circuitry is our standard-setting solution for managing the music volume levels against radio reception and transmission.

•Automatic fail-safe interconnect to the aircraft radio wires the pilot's headset to the aircraft radio in the event of disrupted power or related failure.

•Separate pilot and copilot transmit capabilities ensures that only the person pressing the PTT will be heard over the radio.

•Independent intercom volume settings do not affect radio equipment volume levels, allowing better control over communications.

SMOKE SYSTEM:

SMOKE CAN BE INITIATED ONE OF THREE WAYS –

1. USING THE CLIPBOARD CLICKABLE SMOKE FEATURE WILL ENABLE THE X OVER THE APPROPRIATE CHECK BOX AND ENGAGE SMOKE IF THE BATTERY IS ON

2. SWITCH LOCATED ON THE PANEL

3. STROBE LIGHT TOGGLE - IF YOU HAVE EQUIPPED ON YOUR CONTROLLER OR FLIGHT SIM PERIPHERAL IT CAN BE ASSIGNED IN THE IN-SIM MENU TO TOGGLE ON ANY BUTTON YOU SET IT TO

SECTION 4.

EXTREME WEATHER CONDITIONS

LUBRICATION. Use oil Specification No. AN-0-8, grade based on average ground temperature as follows:

70˚F to 20˚F	20°F to —10˚F
1080	1065

PROPELLER. When operating at temperatures of 32°F or below, it is advisable to start and stop engine with propeller in high pitch (control full out). If propeller is left in low pitch under such conditions, oil in propeller actuating cylinder may congeal before next engine start, making it difficult for propeller to change pitch. After starting in high pitch, wait until oil pressure reaches 40-50 psi and oil temperature indicates a definite rise before moving control to low pitch position.

BATTERY: When operating in cold climate, keep battery fully charged at all times.

BEFORE ENTERING AIRPLANE.

a. **Remove protective covers.**
b. **Remove snow and ice from surfaces, control hinges, propeller, pitot tube, and fuel and oil vents.**
c. **Drain moisture from fuel strainer and accumulator tank drain**
d. **Clean shock struts of dirt and ice; check for proper inflation.**
e. **Make sure battery is fully charged.**

a. **Pull propeller through five or six revolutions. Ease with which this can *be* accomplished will aid in determining amount of engine compartment heat that may be required prior to starting.**
b. **When necessary, heat engine compartment until engine may be easily pulled through by hand,**

HOT WEATHER STARTING.

STARTING DIFFICULTIES SOMETIMES EXPERIENCED WITH A HOT ENGINE ON A HOT DAY ARE CAUSED BY VAPORIZATION OF FUEL IN ENGINE LINES AND PUMPS. SHOULD THIS OCCUR, PROCEED AS FOLLOWS:

A. CRACK THROTTLE OPEN 1/2 INCH.

B. IN THE SIMULATOR PRIMING MAY NOT BE NEEDED, OVER USE OF THE PRIMER MAY CAUSE THE ENGINE TO FLOOD WITH FUEL

C. ON L-17B AND L-17D AIRPLANES, PLACE MIXTURE CONTROL IN IDLE CUT-OFF, TURN ELECTRIC-DRIVEN FUEL PUMP "ON", AND PRIME.

STARTING — FLOODED ENGINE, L-17B AND L-17D AIRPLANES. IF ENGINE IS FLOODED DURING AN ATTEMPT TO START, TURN THE IGNITION AND ELECTRIC FUEL PUMP SWITCHES "OFF", PULL MIXTURE CONTROL TO "IDLE CUT-OFF", AND PUSH THROTTLE "FULL OPEN". CRANK ENGINE WITH STARTER UNTIL CLEAR. MAKE SUBSEQUENT START AS FOLLOWS:

A. THROTTLE 1/4 INCH OPEN.

B. MIXTURE CONTROL "IDLE CUT-OFF".

C. PRESS STARTER; THEN TURN IGNITION SWITCH TO "BOTH".

D. ELECTRIC FUEL PUMP "ON“

E. AFTER ENGINE STARTS, MOVE MIXTURE CONTROL TO FULL RICH.

F. PRIME AS REQUIRED

G. ALL ELSE FAILS – RESTART THE SIMULATOR SESSION AND TRY NOT PRIMING SO MUCH

APPENDIX I
FLIGHT OPERATING CHARTS

AIRSPEED INSTALLATION CORRECTION TABLE

IAS (mph)	TIAS (mph)			
	FLAPS UP		FLAPS DOWN	
	Power On	Power Off	Power On	Power Off
50	51.5	56	47.5	54.5
60	62	66	58	64.5
	72	75.5	68.5	74.5
80	81.5	85	78.5	83.5
90	91	94.5	88	93
100	100.5	104	97.5	102
110	110.5	113.5		
120	120.5	123.5		
130	130.5	133.5		
140	141	144		
150	151.5	154.5		
160	162	164.5		

Figure A-1. Airspeed installation Correction Table.

AAFHC-527
6-1-46

AIRCRAFT MODEL

L-17A

TAKE-OFF, CLIMB & LANDING CHART

ENGINE MODEL

CONTINENTAL 0-470-7

TAKE-OFF DISTANCE FEET

GROSS WEIGHT LB.	HEAD WIND		HARD SURFACE RUNWAY						SOD-TURF RUNWAY						SOFT SURFACE RUNWAY					
			AT SEA LEVEL		AT 3000 FEET		AT 6000 FEET		AT SEA LEVEL		AT 3000 FEET		AT 6000 FEET		AT SEA LEVEL		AT 3000 FEET		AT 6000 FEET	
	M.P.H.	KTS.	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.
2750	0	0	1050	1800	1400	2200	1900	2900												
	17	15	650	1200	900	1750	1400	2150												
	34	30	350	700	500	950	750	1300												
	51	45	100	350	200	450	300	700												
2350	0	0	650	1250	900	1500	1200	1950												
	17	15	400	800	550	1200	750	1500												
	34	30	200	450	250	750	400	950												
	51	45	50	200	100	350	150	450												

NOTE: INCREASE CHART DISTANCES AS FOLLOWS: 75°F + 10%; 100°F + 20%; 125°F + 30%; 150°F + 40%

OPTIMUM TAKE-OFF WITH 2300 RPM, F.T. & 0 DEG. FLAP IS 80% OF CHART VALUES

DATA AS OF 7/1/47 BASED ON: FLIGHT TEST

CLIMB DATA

GROSS WEIGHT LB.	AT SEA LEVEL				AT 3000 FEET					AT 6000 FEET					AT 9000 FEET					AT 12,000 FEET					AT FEET				
	BEST I.A.S.		RATE OF CLIMB F.P.M.	GAL. OF FUEL USED	BEST I.A.S.		RATE OF CLIMB F.P.M.	FROM SEA LEVEL		BEST I.A.S.		RATE OF CLIMB F.P.M.	FROM SEA LEVEL		BEST I.A.S.		RATE OF CLIMB F.P.M.	FROM SEA LEVEL		BEST I.A.S.		RATE OF CLIMB F.P.M.	FROM SEA LEVEL		BEST I.A.S.		RATE OF CLIMB F.P.M.	FROM SEA LEVEL	
	MPH	KTS			MPH	KTS		TIME MIN.	FUEL USED	MPH	KTS		TIME MIN.	FUEL USED	MPH	KTS		TIME MIN.	FUEL USED	MPH	KTS		TIME MIN.	FUEL USED	MPH	KTS		TIME MIN.	FUEL USED
2750	95	80	730	3	95	80	570	5	5	95	80	410	11	7	95	80	250	20	8	95	80	90	38	12					
2350	95	80	980	3	95	80	790	3.5	4	95	80	610	8	6	95	80	430	14	7	95	80	250	23	9					

POWER PLANT SETTINGS: 2300 RPM & F.T.

DATA AS OF 7/1/47 BASED ON: FLIGHT TEST

FUEL USED (U.S. GAL.) INCLUDES WARM-UP & TAKE-OFF ALLOWANCE

LANDING DISTANCE FEET

GROSS WEIGHT LB.	BEST IAS APPROACH				HARD DRY SURFACE						FIRM DRY SOD						WET OR SLIPPERY					
	POWER OFF		POWER ON		AT SEA LEVEL		AT 3000 FEET		AT 6000 FEET		AT SEA LEVEL		AT 3000 FEET		AT 6000 FEET		AT SEA LEVEL		AT 3000 FEET		AT 6000 FEET	
	MPH	KTS	MPH	KTS	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	TO CLEAR 50' OBJ.
2750	75	65	75	65	600	1550	650	1650	750	1750												
2350	75	65	75	65	550	1400	600	1500	650	1550												

DATA AS OF 7/1/47 BASED ON: FLIGHT TEST FULL FLAPS

OPTIMUM LANDING IS 80% OF CHART VALUES

REMARKS:

NOTE: TO DETERMINE FUEL CONSUMPTION IN BRITISH IMPERIAL GALLONS, MULTIPLY BY 10, THEN DIVIDE BY 12

LEGEND

I.A.S. : INDICATED AIRSPEED
M.P.H. : MILES PER HOUR
KTS. : KNOTS
F.P.M. : FEET PER MINUTE
F.T. : FULL THROTTLE

Figure A-3. Take-Off, Climb and Landing Chart—L-17A Airplanes.

AAFMC-527
8-1-46

AIRCRAFT MODELS

L-17B and L-17C

TAKE-OFF, CLIMB & LANDING CHART

ENGINE MODEL
CONTINENTAL 0-470-7

TAKE-OFF DISTANCE FEET

GROSS WEIGHT LB.	HEAD WIND		HARD SURFACE RUNWAY						SOD-TURF RUNWAY						SOFT SURFACE RUNWAY					
			AT SEA LEVEL		AT 3000 FEET		AT 6000 FEET		AT SEA LEVEL		AT 3000 FEET		AT 6000 FEET		AT SEA LEVEL		AT 3000 FEET		AT 6000 FEET	
	M.P.H.	KTS.	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.
2750	0	0	800	1650	1000	1950	1300	2450												
	17	15	450	1100	600	1250	750	1600												
	34	30	200	700	250	800	350	950												
	51	45	50	300	50	350	100	450												
2350	0	0	600	1100	750	1350	950	1750												
	17	15	350	700	400	900	550	1150												
	34	30	150	400	200	500	250	650												
	51	45	50	150	50	200	50	250												

NOTE: INCREASE CHART DISTANCES AS FOLLOWS: 75°F & 10%; 100°F & 20%; 125°F & 30%; 150°F & 40%

OPTIMUM TAKE-OFF WITH 2600 RPM, F.T. & HALF FLAP IS 80% OF CHART VALUES

DATA AS OF 9/3/47 BASED ON: FLIGHT TEST

CLIMB DATA

GROSS WEIGHT LB.	AT SEA LEVEL				AT 3000 FEET					AT 6000 FEET					AT 9000 FEET					AT 12,000 FEET					AT FEET				
	BEST I.A.S.		RATE OF CLIMB F.P.M.	GAL. OF FUEL USED	BEST I.A.S.		RATE OF CLIMB F.P.M.	FROM SEA LEVEL		BEST I.A.S.		RATE OF CLIMB F.P.M.	FROM SEA LEVEL		BEST I.A.S.		RATE OF CLIMB F.P.M.	FROM SEA LEVEL		BEST I.A.S.		RATE OF CLIMB F.P.M.	FROM SEA LEVEL		BEST I.A.S.		RATE OF CLIMB F.P.M.	FROM SEA LEVEL	
	MPH	KTS			MPH	KTS		TIME MIN.	FUEL USED	MPH	KTS		TIME MIN.	FUEL USED	MPH	KTS		TIME MIN.	FUEL USED	MPH	KTS		TIME MIN.	FUEL USED	MPH	KTS		TIME MIN.	FUEL USED
2750	95	80	730	3	95	80	570	5	5	95	80	410	11	7	95	80	250	20	8	95	80	90	38	12					
2350	95	80	980	3	95	80	790	3.5	4	95	80	610	8	6	95	80	430	14	7	95	80	250	23	9					

POWER PLANT SETTINGS: 2300 RPM & F.T.

DATA AS OF 7/1/47 BASED ON: FLIGHT TEST

FUEL USED (U.S. GAL.) INCLUDES WARM-UP & TAKE-OFF ALLOWANCE

LANDING DISTANCE FEET

GROSS WEIGHT LB.	BEST IAS APPROACH				HARD DRY SURFACE						FIRM DRY SOD						WET OR SLIPPERY					
	POWER OFF		POWER ON		AT SEA LEVEL		AT 3000 FEET		AT 6000 FEET		AT SEA LEVEL		AT 3000 FEET		AT 6000 FEET		AT SEA LEVEL		AT 3000 FEET		AT 6000 FEET	
	MPH	KTS	MPH	KTS	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	TO CLEAR 50' OBJ.
2750	75	65	75	65	600	1550	650	1650	750	1750												
2350	75	65	75	65	550	1400	600	1500	650	1550												

DATA AS OF 7/1/47 BASED ON: FLIGHT TEST FULL FLAPS

OPTIMUM LANDING IS 85% OF CHART VALUES

REMARKS:

NOTE: TO DETERMINE FUEL CONSUMPTION IN BRITISH IMPERIAL GALLONS, MULTIPLY BY 10. THEN DIVIDE BY 12

LEGEND

I.A.S. : INDICATED AIRSPEED
M.P.H. : MILES PER HOUR
KTS. : KNOTS
F.P.M. : FEET PER MINUTE
F.T. : FULL THROTTLE

Figure A-4. Take-Off, Climb and Landing Chart—L-17B and L-17C Airplanes.

AAFNC-528
6-1-48

AIRCRAFT MODEL(S)
L-17A, L-17B, AND L-17C
ENGINE(S): CONTINENTAL 0-470-7

FLIGHT OPERATION INSTRUCTION CHART

CHART WEIGHT LIMITS: 2750 OR LESS POUNDS

EXTERNAL LOAD ITEMS
NONE
NUMBER OF ENGINES OPERATING: 1

INSTRUCTIONS FOR USING CHART: SELECT FIGURE IN FUEL COLUMN EQUAL TO OR LESS THAN AMOUNT OF FUEL TO BE USED FOR CRUISING[1] MOVE HORIZONTALLY TO RIGHT OR LEFT AND SELECT **RANGE** VALUE EQUAL TO OR GREATER THAN THE STATUTE OR NAUTICAL AIR MILES TO BE FLOWN. VERTICALLY BELOW AND OPPOSITE VALUE NEAREST DESIRED CRUISING ALTITUDE (ALT.) READ RPM, MANIFOLD PRESSURE (M.P.) AND MIXTURE SETTING REQUIRED.

NOTES: COLUMN I IS FOR EMERGENCY HIGH SPEED CRUISING ONLY. COLUMNS II, III, IV AND V GIVE PROGRESSIVE INCREASE IN RANGE AT A SACRIFICE IN SPEED. AIR MILES PER GALLON (MI./GAL.) (NO WIND), GALLONS PER HR. (G.P.H.) AND TRUE AIRSPEED (T.A.S.) ARE APPROXIMATE VALUES FOR REFERENCE. RANGE VALUES ARE FOR AN AVERAGE AIRPLANE FLYING ALONE (NO WIND).[1] TO OBTAIN BRITISH IMPERIAL GAL. (OR G.P.H.): MULTIPLY U.S. GAL. (OR G.P.H.) BY 10 THEN DIVIDE BY 12.

COLUMN I		FUEL	COLUMN II		COLUMN III		COLUMN IV		FUEL	COLUMN V	
RANGE IN AIRMILES		U.S.	RANGE IN AIRMILES		RANGE IN AIRMILES		RANGE IN AIRMILES		U.S.	RANGE IN AIRMILES	
STAUTE	NAUTICAL	GAL.	STATUTE	NAUTICAL	STATUTE	NAUTICAL	STATUTE	NAUTICAL	GAL.	STATUTE	NAUTICAL
					SUBTRACT FUEL ALLOWANCES NOT AVAILABLE FOR CRUISING[1]						
		60.5							60.5		
310 265	265 230	55 45			420 360	365 310	780 640	675 555	55 45	810 660	700 570
220 175 130	190 150 115	35 25 15			300 240 180	260 205 155	500 355 210	430 305 180	35 25 15	515 370 220	445 320 190
85 40	75 35	10 5			120 60	100 50	140 70	120 60	10 5	150 75	130 65

MAXIMUM CONTINUOUS						PRESS ALT. FEET	(STAT. (NAUT.) MI./GAL.)						(12 STAT. (10.5 NAUT.) MI./GAL.)						(14.2 STAT. (12.3 NAUT.) MI./GAL.)						PRESS ALT. FEET	MAXIMUM AIR RANGE					
R.P.M.	M.P. INCHES	MIX-TURE	APPROX. TOT. GPH	APPROX. T.A.S. MPH	APPROX. T.A.S. KTS.		R.P.M.	M.P. INCHES	MIX-TURE	APPROX. TOT. GPH	APPROX. T.A.S. MPH	APPROX. T.A.S. KTS.	R.P.M.	M.P. INCHES	MIX-TURE	APPROX. TOT. GPH	APPROX. T.A.S. MPH	APPROX. T.A.S. KTS.	R.P.M.	M.P. INCHES	MIX-TURE	APPROX. TOT. GPH	APPROX. T.A.S. MPH	APPROX. T.A.S. KTS.		R.P.M.	M.P. INCHES	MIX-TURE	APPROX. TOT. GPH	APPROX. T.A.S. MPH	APPROX. T.A.S. KTS.
2300 2300	F.T. F.T.	RICH RICH	12 13.5	143 147	124 127	12000 9000																			12000 9000	1750 1800	19.0 19.2	LEAN LEAN	7.9 7.8	102 114	89 99
2300 2300 2300	F.T. F.T. F.T.	RICH RICH RICH	15.5 16.5 17.5	151 152 154	131 132 133	6000 3000 S.L.							2180 2050 2050	F.T. 26.5 28	LEAN LEAN LEAN	12 12 11.5	147 143 137	128 124 119	1900 1850 1850	22.2 23.5 24.5	LEAN LEAN LEAN	8.8 9.0 9.3	131 130 125	113 112 108	6000 3000 S.L.	1800 1700 1750	19.7 21.5 22.9	LEAN LEAN LEAN	7.7 7.9 8.0	119 114 115	103 99 100

SPECIAL NOTES

(1) MAKE ALLOWANCE FOR WARM-UP, TAKE-OFF & CLIMB PLUS ALLOWANCE FOR WIND AND RESERVE AS REQUIRED.

(2) THERE IS NO "LEAN" POSITION ON MIXTURE CONTROL. LEAN TO POINT OF ENGINE ROUGHNESS, THEN ENRICH SLIGHTLY. (REFER TO SECTION II. "DURING FLIGHT.")

CAUTION: FOR MAXIMUM ENGINE LIFE, DO NOT EXCEED MANIFOLD PRESSURE FOR LISTED RPM.

EXAMPLE

AT 2700 LB. GROSS WEIGHT WITH 35 GAL. OF FUEL (AFTER DEDUCTING TOTAL ALLOWANCES OF 9.5 GAL.) TO FLY 500 STAT. AIRMILES AT 6000 FT. ALTITUDE MAINTAIN 1800 RPM AND 19.7 IN. MANIFOLD PRESSURE WITH MIXTURE SET: LEAN

LEGEND

ALT : PRESSURE ALTITUDE
M.P. : MANIFOLD PRESSURE
GPH : U.S. GAL. PER HOUR
TAS : TRUE AIRSPEED
KTS. : KNOTS
S.L. : SEA LEVEL
F.R. : FULL RICH
A.R. : AUTO-RICH
A.L. : AUTO-LEAN
C.L. : CRUISING LEAN
M.L. : MANUAL LEAN
F.T. : FULL THROTTLE

DATA AS OF 4/25/49 BASED ON: FLIGHT TEST

Figure A-5. Flight Operation Instruction Chart.

THANK YOU FOR YOUR PURCHASE!!

A NOTE OF GRATITUDE

DEAR FELLOW AVIATORS,
AS I SIT DOWN TO PEN THESE WORDS, I FIND MYSELF OVERWHELMED WITH GRATITUDE. THE JOURNEY OF DEVELOPING AIRCRAFT FOR MICROSOFT FLIGHT SIMULATOR 2020 HAS BEEN NOTHING SHORT OF EXTRAORDINARY, AND IT'S ALL THANKS TO YOUR UNWAVERING SUPPORT, ENCOURAGEMENT, AND PASSION FOR AVIATION.

OVER THE PAST TWO YEARS, WE'VE SOARED THROUGH COUNTLESS CHALLENGES AND TRIUMPHS TOGETHER, PUSHING THE BOUNDARIES OF WHAT'S POSSIBLE IN THE VIRTUAL SKIES. FROM THE SLEEK LINES OF THE NAVION B SUPER 260 TO THE ICONIC CAMAIR 480 TWIN NAVION, EACH AIRCRAFT HAS BEEN A LABOR OF LOVE, METICULOUSLY CRAFTED TO DELIVER AN IMMERSIVE FLYING EXPERIENCE.

AND NOW, WITH THE INTRODUCTION OF THE NAVION L-17B AND ITS EXHILARATING VARIANT, THE L-17D WITH SKIS, WE EMBARK ON YET ANOTHER THRILLING ADVENTURE. FROM THE SERENE TRANQUILITY OF THE SKIES TO THE RUGGED BEAUTY OF SNOWY LANDSCAPES, THESE AIRCRAFT ARE POISED TO TAKE YOU ON UNFORGETTABLE JOURNEYS.

NONE OF THIS WOULD HAVE BEEN POSSIBLE WITHOUT THE UNWAVERING SUPPORT OF OUR VIBRANT COMMUNITY. YOUR FEEDBACK, ENTHUSIASM, AND DEDICATION HAVE FUELED MY PASSION AND INSPIRED ME TO REACH NEW HEIGHTS. EVERY FLIGHT YOU TAKE, EVERY ADVENTURE YOU EMBARK UPON, IS A TESTAMENT TO THE SHARED LOVE FOR AVIATION THAT BINDS US TOGETHER.

I MUST ALSO EXTEND MY DEEPEST GRATITUDE TO MY FAMILY - MY ROCK, MY ANCHOR, AND MY CONSTANT SOURCE OF STRENGTH. TO MY TWO BOYS, WHO HAVE STOOD BY ME WITH UNWAVERING SUPPORT, EVEN AS THEY PURSUE THEIR OWN DREAMS IN COLLEGE AND BEYOND, THANK YOU FOR BEING THE WIND BENEATH MY WINGS.

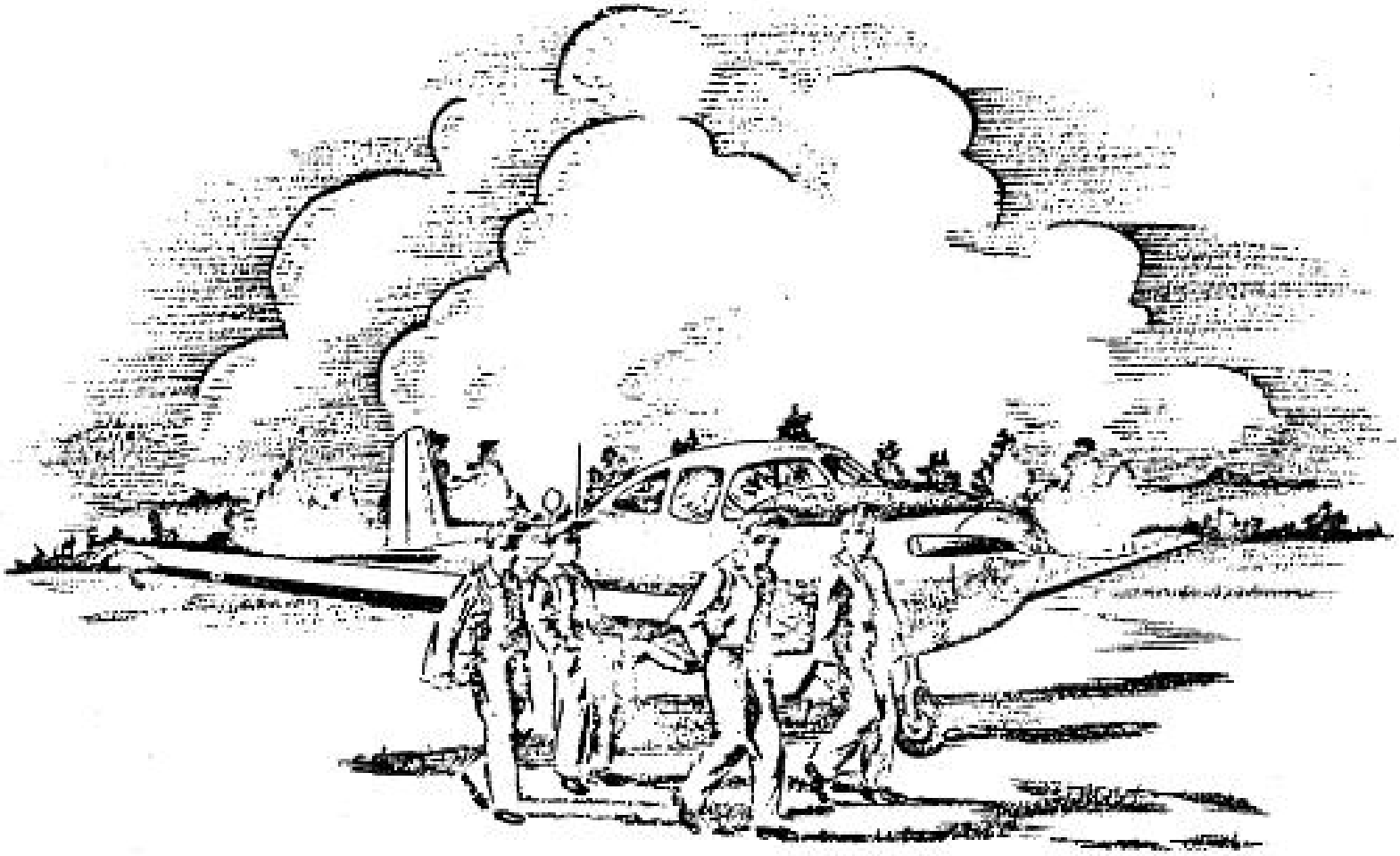
TO EXPRESS MY APPRECIATION FURTHER, I'VE CREATED A SPACE WHERE FELLOW AVIATORS CAN GATHER, SHARE STORIES, AND CONNECT. MY WEBSITE, HANGAR STUDIOS 713, SERVES AS A HUB FOR ALL MY FREEWARE CREATIONS, WHILE MY DISCORD SERVER PROVIDES A PLATFORM FOR REAL-TIME INTERACTION AND CAMARADERIE. I INVITE YOU TO JOIN ME ON THIS JOURNEY AND BECOME A PART OF OUR EVER-GROWING COMMUNITY.

IN CLOSING, I WANT TO EXPRESS MY DEEPEST GRATITUDE TO EACH AND EVERY ONE OF YOU. WHETHER YOU'RE A SEASONED PILOT OR JUST SPREADING YOUR WINGS FOR THE FIRST TIME, THANK YOU FOR ENTRUSTING ME WITH YOUR FLIGHT SIMULATION EXPERIENCE. TOGETHER, WE'LL CONTINUE TO EXPLORE THE BOUNDLESS SKIES AND CHASE OUR DREAMS AMONG THE CLOUDS.

HAPPY FLYING!
WARM REGARDS,

B4GUNNER

OWNER/DEVELOPER, HANGAR STUDIOS 713

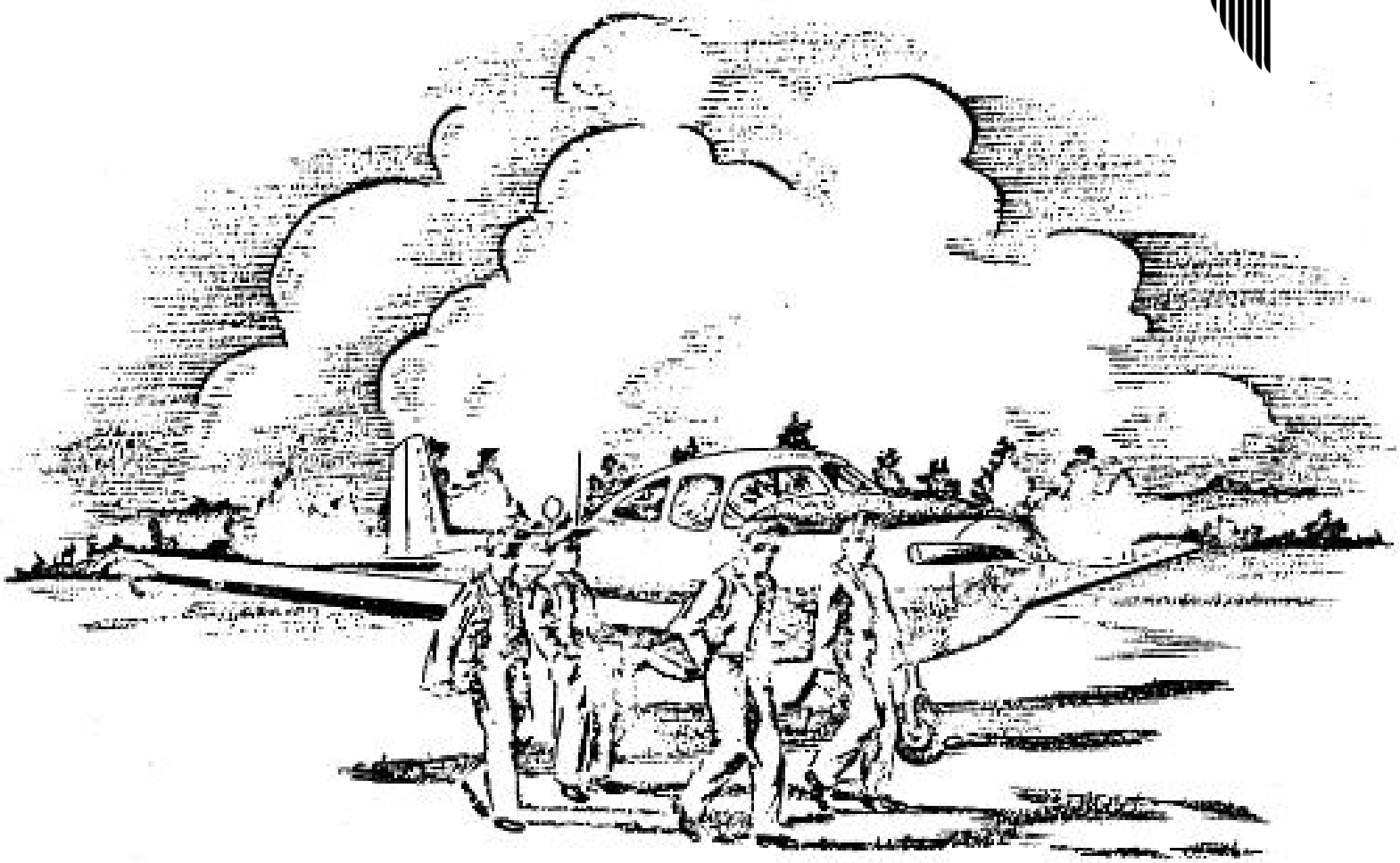


SPECIAL THANKS

- CHAD HAWTHORNE – OWNER/PILOT/TESTER N4888K
- SIMON TILLING – OWNER/PILOT N4956C
- GAWIN GRIMM – CONTENT CREATOR/TESTER
- SCOOBYX – TESTER
- FORDER LEARN TO FLY & ANDREWJ CYHZ– CONTENT CREATORS
- SIM FANATIC – CONTENT CREATOR
- GAMIWOMBAT – CONTENT CREATOR
- BRETT PLAYS – CONTENT CREATOR

- NUMEROUS PILOT/OWNERS FOR THEIR FEEDBACK ON EVERYTHING NAVION RELATED AND USE OF THEIR NAVIONS LIVERIES – TOO MANY TO MENTION ALL THEIR NAMES

Navion



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HANGER STUDIOS 713

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