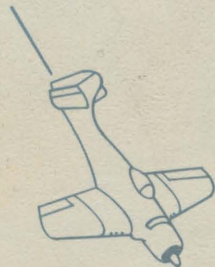




BOEING
XF8B-1
PILOT'S MANUAL

Preliminary

RESTRICTED



THIS PRELIMINARY MANUAL IS BASED ON THE MODEL XF8B-1 SECOND FLIGHT AIRPLANE, BAC NO. 8485, NAVY SERIAL NO. 57985, AS IT IS TO BE DELIVERED TO THE NAVY. ANY CORRECTIONS OR ADDITIONS TO THE MANUAL APPLICABLE TO THIS AIRPLANE ARE REQUESTED AND WILL BE APPRECIATED. CORRECTIONS MAY BE MAILED ON A V.O.D.G. OR HANDBOOK UNIT INFORMATION FORM L-2205 TO THE XF8B-1 HANDBOOK GROUP, PLANT II.

THIS PRELIMINARY MANUAL WILL NOT BE REVISED BUT WILL BE SUPERSEDED BY D-5850, XF8B-1 PILOT'S MANUAL, AT A LATER DATE.

ISSUED TO:

W. B. Savage

PRELIMINARY

PILOT'S MANUAL

FOR

MODEL XF8B-1 NAVY FIGHTER

RESTRICTED: This document contains information affecting the National Defence of the United States within the meaning of the Espionage Act, 50 U.S.C., 31 & 32 as amended. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

BOEING AIRCRAFT COMPANY

Seattle, Washington

July 15, 1944

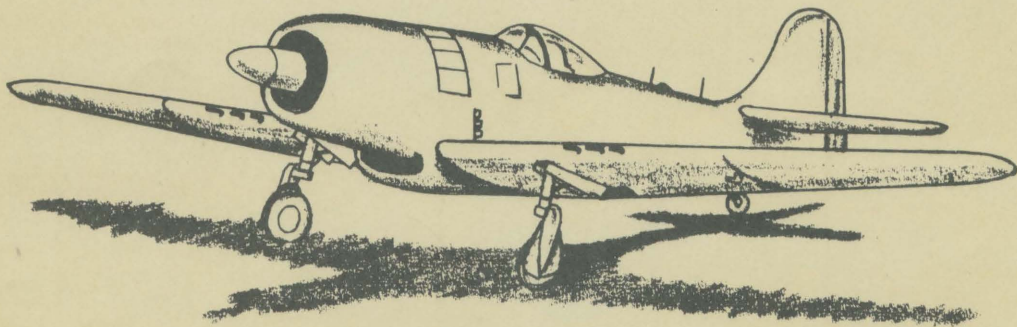
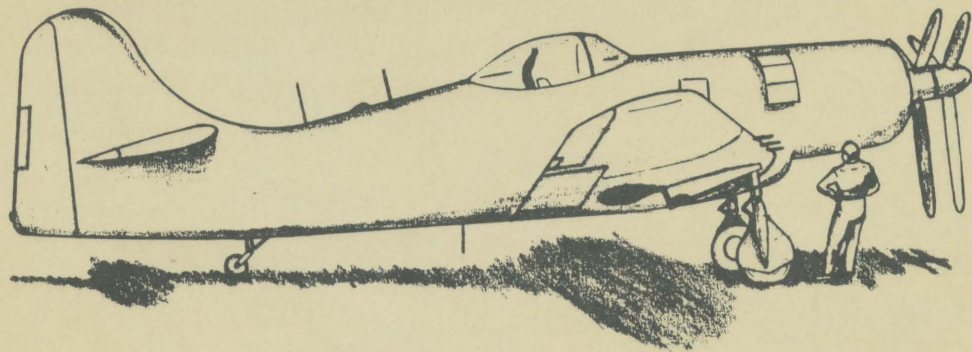
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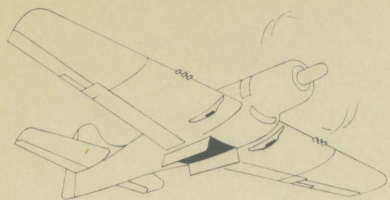
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HERE IS THE NEW XF8B-1 NAVY FIGHTER

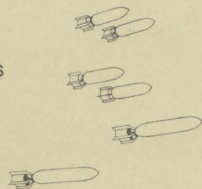


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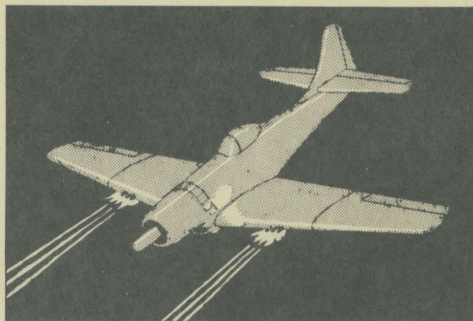
IT'S A SLUGGER!



8000 POUNDS
OF BOMBS



IT'S TOUGH!

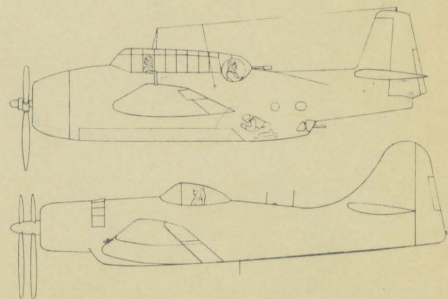


SIX .50 CALIBER
MACHINE GUNS OR
SIX 20 MM CANNONS.....

IT'S BIG!

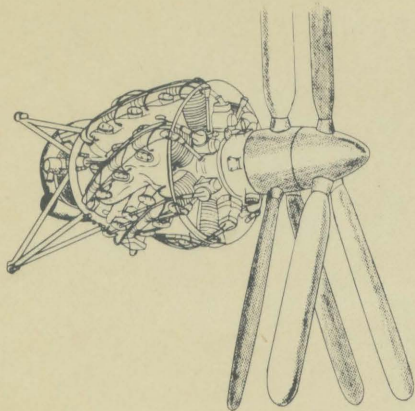
TBF-1
SPAN 54' 2"
LENGTH 41'
BASIC WEIGHT 11,625 #
H.P. - WRT. 1700

XF8B-1
SPAN 54'
LENGTH 43' 4"
BASIC WEIGHT 13,146 #
H.P. - P&W 3000



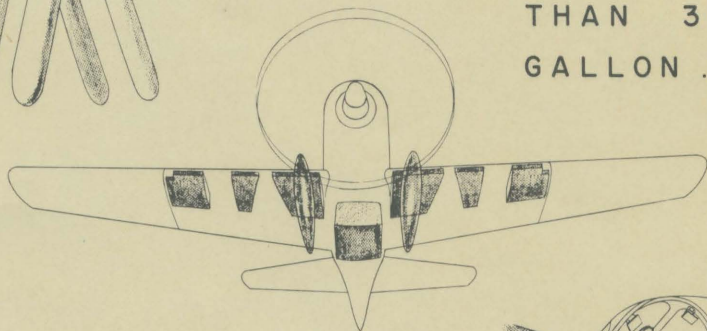
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TAKE A WALK AROUND IT AND NOTICE THE

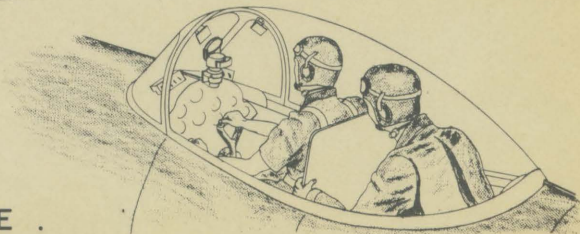


3000 HORSEPOWER ENGINE,
DUAL ROTATION PROPELLER

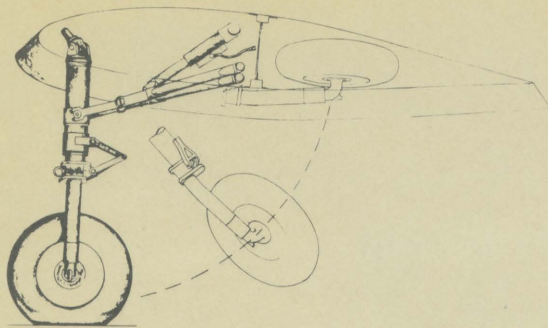
954 GALLONS TO FLY
3000 MILES — BETTER
THAN 3 MILES PER
GALLON



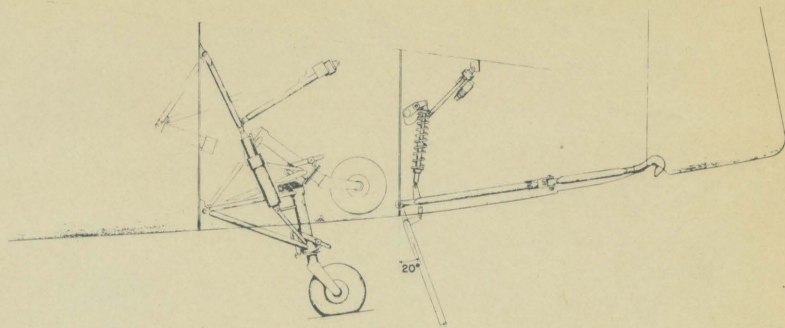
PIGGY BACK FOR
TEST OR TRAINEE .



RESTRICTED

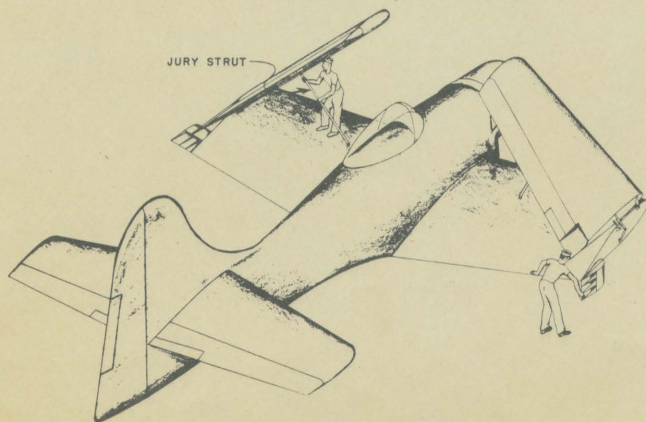


THE MAIN WHEELS



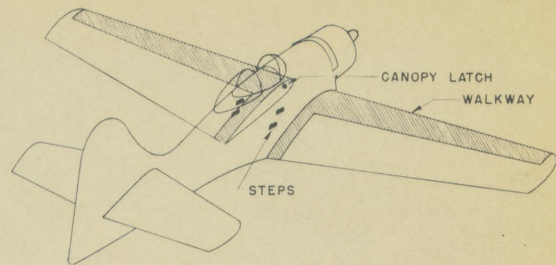
TAIL WHEEL

AND EVEN THE
ARRESTING HOOK
RETRACT ELECTRICALLY.

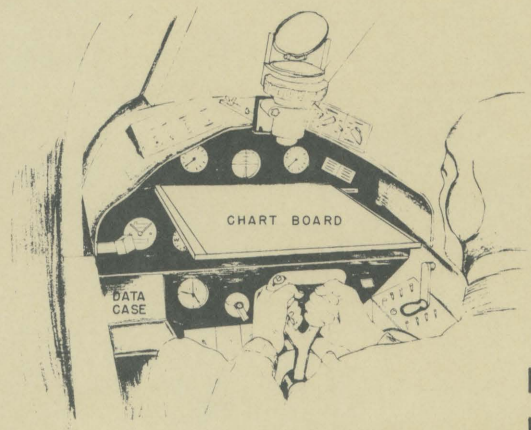
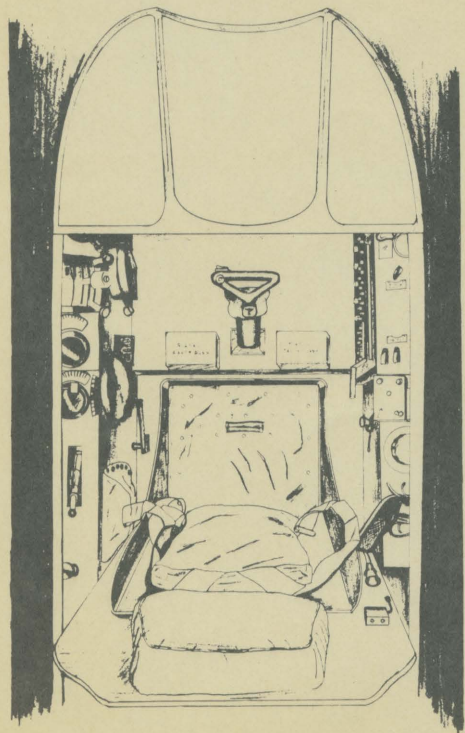


THE WINGS FOLD ELECTRICALLY
BUT 20 INCHES OF THE FLAPS
MUST BE FOLDED UNDER
BY HAND.

CLIMB UP INTO THE COCKPIT.



IT'S
ROOMY....

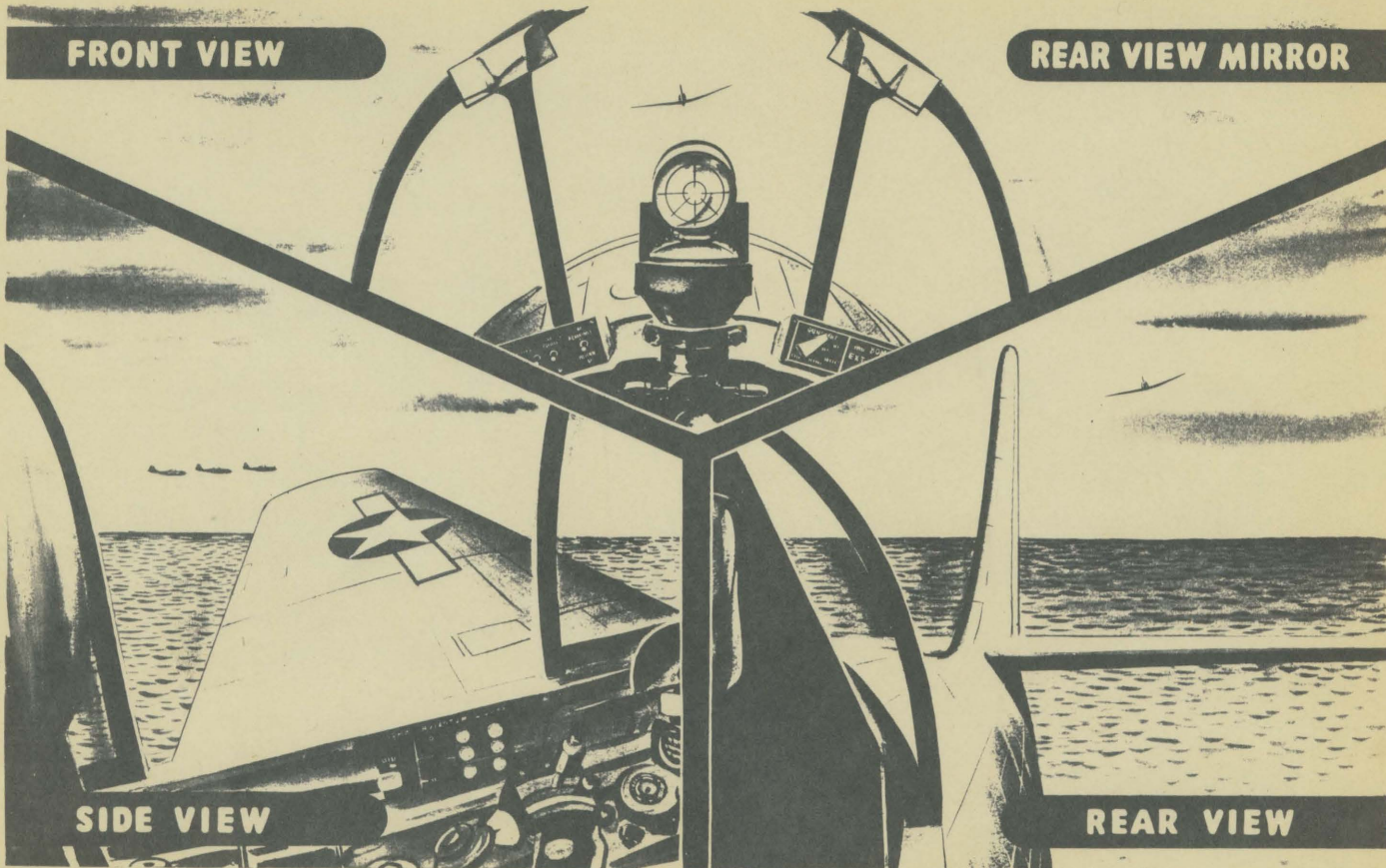


IT'S
HANDY.....

RESTRICTED

FRONT VIEW

REAR VIEW MIRROR

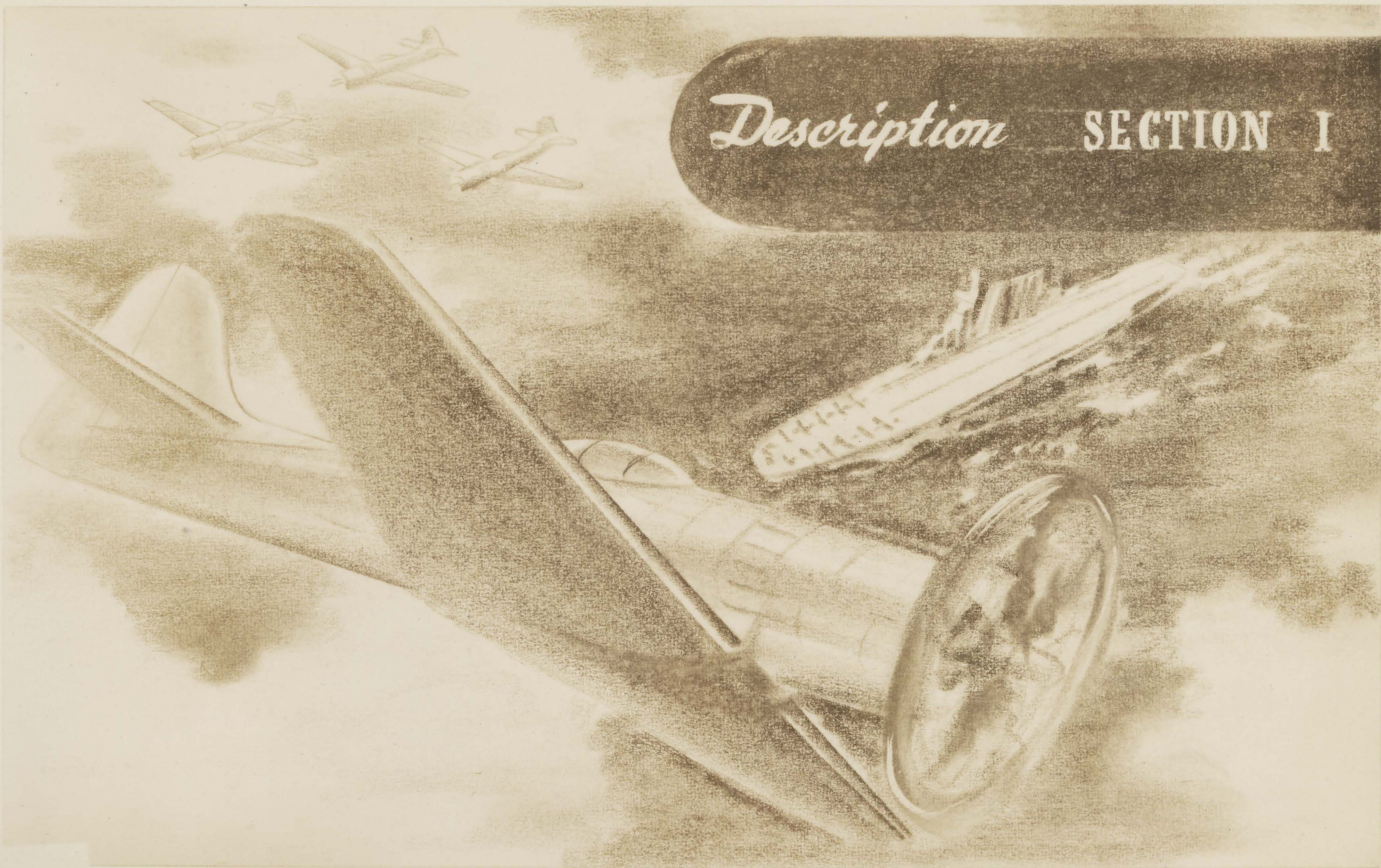


SIDE VIEW

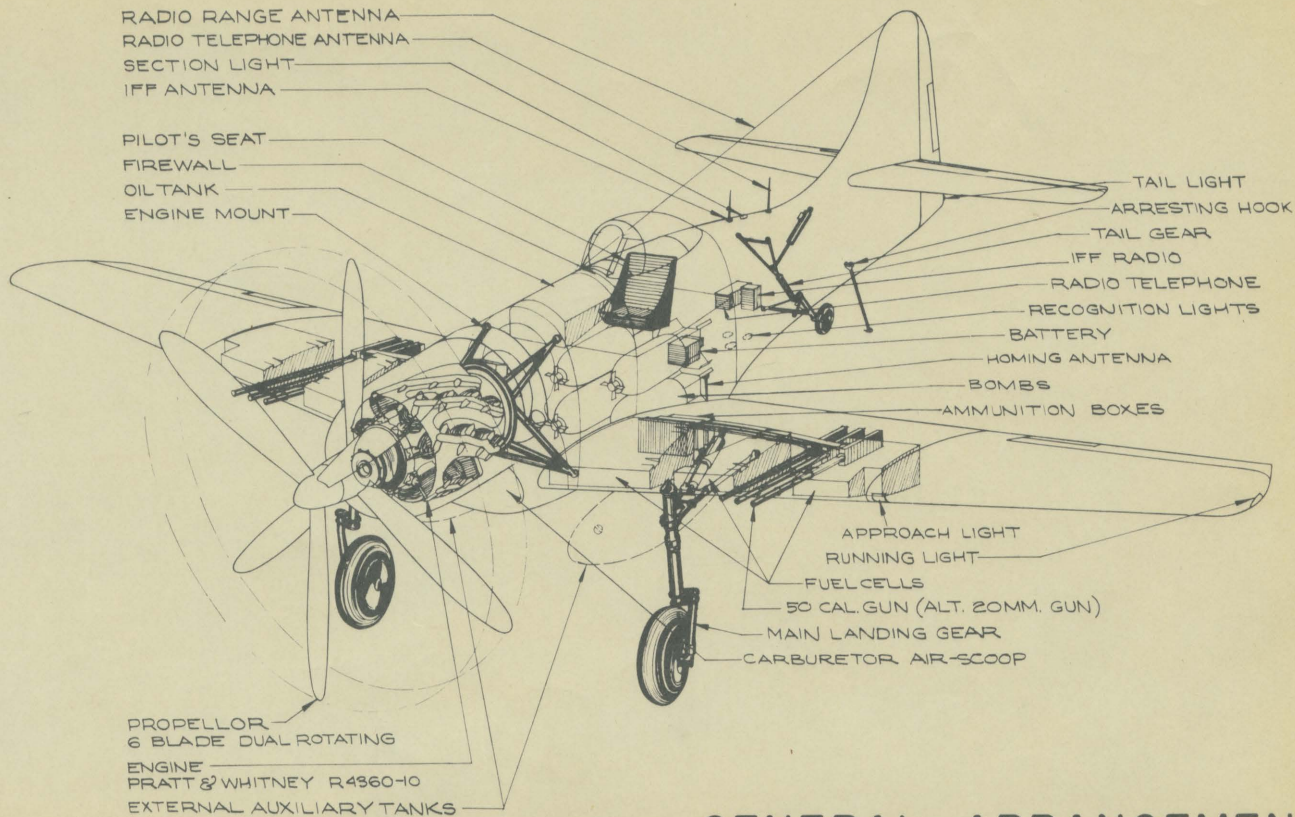
REAR VIEW

RESTRICTED

Description SECTION I



RESTRICTED



GENERAL ARRANGEMENT

RESTRICTED

The main and tail landing gear are retracted electrically, or in an emergency, by a hand crank. The landing gear cannot be retracted electrically when the airplane is on the ground.

Fuel is carried in three self-sealing cells in each wing, a self-sealing drop-pable tank in the bomb bay, and a stream-lined metal droppable tank under each wing. The 40 gallon metal oil tank forms the top of the cowling forward of the windshield. The fuel and corresponding oil quantities are as follows:

FUEL TANKS	GALLONS	FUEL OIL
Wing (192 gal. each side)	384	17
Bomb bay (270 gal.) & Wing	654	32
External (2 at 150) & Wing	684	32
Wing, bomb bay, & external	954	40

Three .50 caliber machine guns or three 20 millimeter cannons are mounted in each wing and aimed to converge at 250 yards.

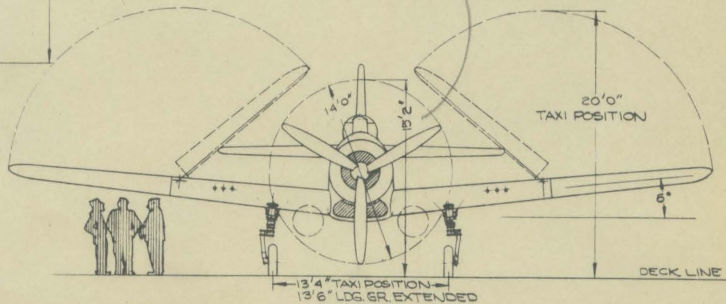
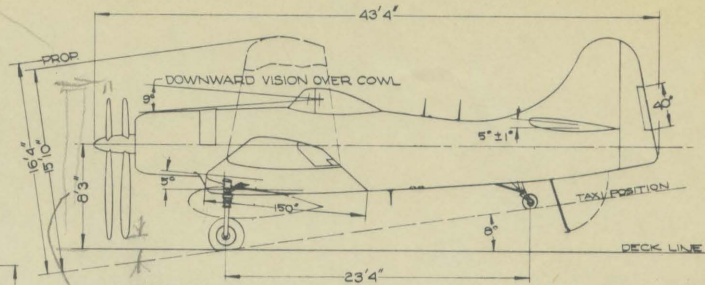
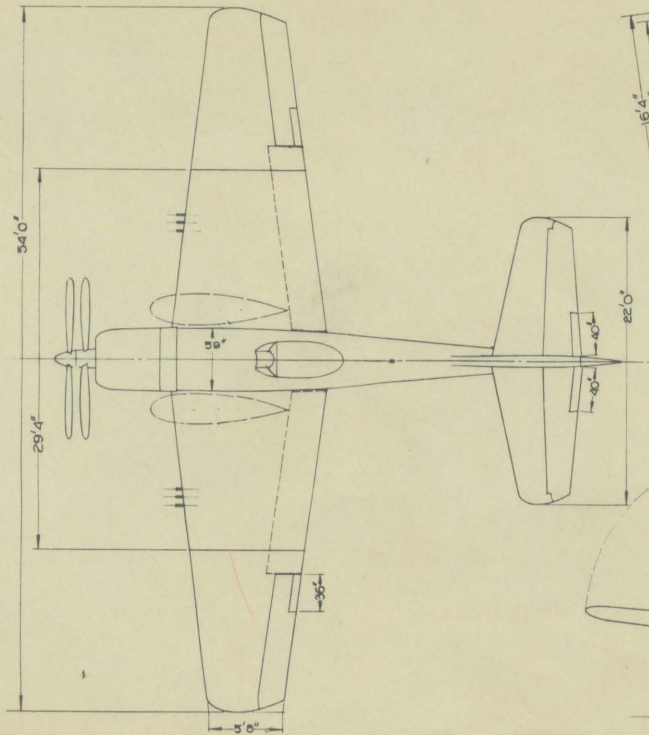
Approximately 400 rounds of .50 caliber

ammunition per gun or 200 rounds of 20 millimeter shells per cannon may be loaded. The guns are manually charged, and electrically fired and heated. A 16 millimeter gun camera is installed in the carburetor air scoop. The maximum load of bombs of any one size which may be carried in the bomb bay and under the wings is shown by the following table:

BOMBS - LBS	NO.	LOAD
500	6	3000
1000	4	4000
1000 Armor Piercing	6*	6000
1600 Armor Piercing	4	6400
2000	2*	4000
2000	2*	4000

*Overload: Factor of safety reduced

Armor plate protects the pilot from .50 caliber gunfire originating in a 30 degree cone from the rear and a 15 degree cone from the front.



DIMENSIONS

RESTRICTED

POWER PLANT

ENGINE ACCESSORIES - The Pratt and Whitney Wasp Major engine is equipped with seven dual magnetos mounted radially around the engine nose and pressurized by a pump on the left rear of the engine. A spark control on the top of the engine nose automatically retards the spark to 5 degrees before top center (BTC) for starting, advanced to 20 degrees BTC for normal operation, and may be advanced to 35 degrees BTC for optimum cruising fuel consumption below 1400 horsepower. A toggle switch beside the throttle controls the normal-cruise setting. The injection carburetor, 200 ampere generator, hand-electric starter, fuel pump, electric tachometer, and automatic manifold pressure control are mounted radially on the rear of the engine.

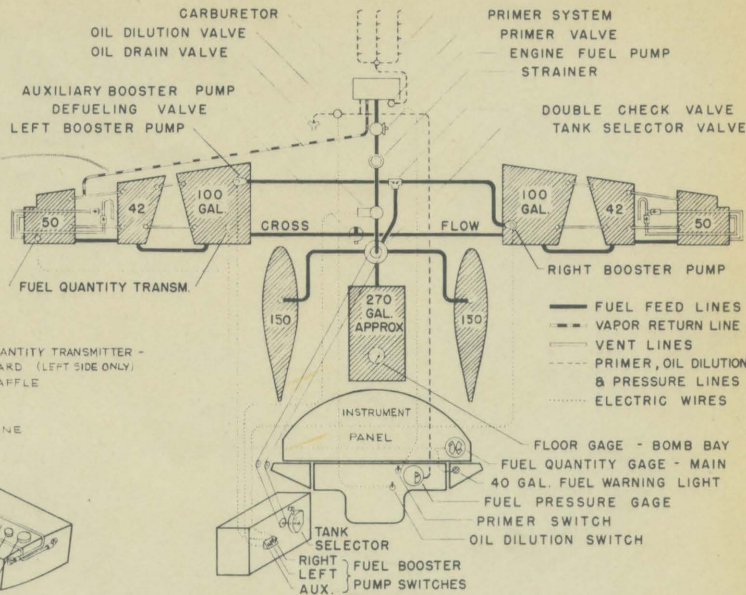
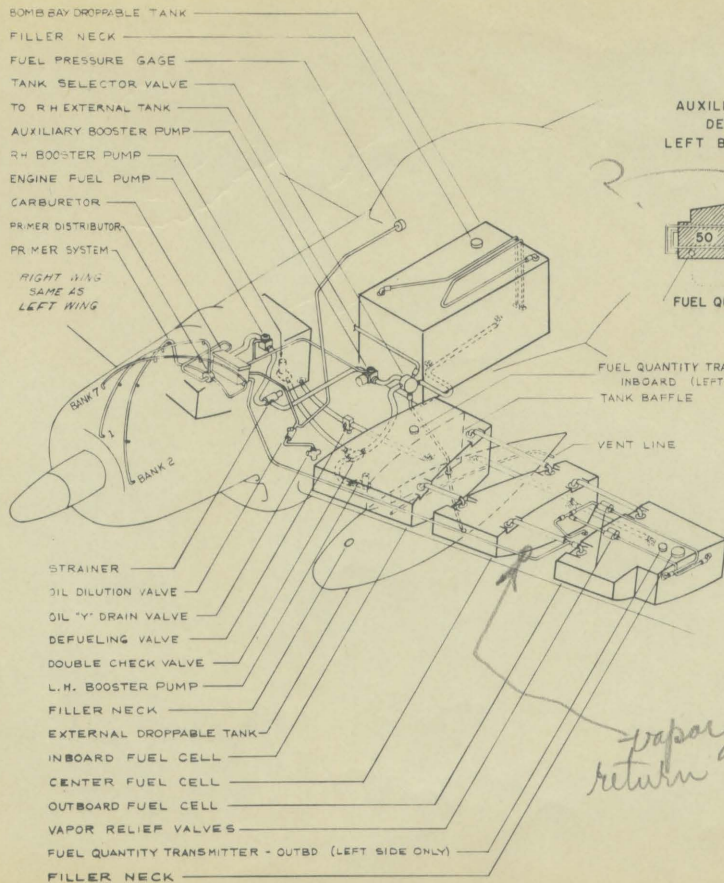
The carburetor air scoop divides the ram air four ways: to the carburetor, through the intercooler, and through the two oil coolers. When the auxiliary supercharger is not running, a spring loaded valve by-passes the carburetor ram air

XF8B-1

POWER PLANT

directly into the carburetor. When warm, dry air is necessary to prevent carburetor icing, or if the ram air is in some way cut off, the alternate air valve can be opened by the knob on the instrument panel to admit air from the engine accessory section into the carburetor air duct. A carburetor air filter can be installed when operating in dust conditions. The cowl flaps are controlled electrically by a toggle switch on the instrument panel.

FUEL SYSTEM - Fuel, Specification AN-F-28, Grade 100/130, is carried in three main cells in each wing, a droppable body tank, and a streamlined droppable tank under each wing. The tank selector handle on the left console in the cockpit may be set at OFF, MAIN, BODY DROP, LEFT EXT., or RIGHT EXT., and turns on the proper electric booster pump for each tank. The FUEL PUMP AUX. ON-OFF switch aft of the tank selector handle is normally left at OFF except when the tank selector is on MAIN and the fuel pressure gage indicates less than 16 pounds per square inch (PSI). For testing and to conserve battery power



FUEL CAPACITY

TANKS	GALLONS
WING (192 GAL EACH SIDE)	384
BOMB BAY	270
EXTERNAL (2AT 150 GAL.)	300
WING + BOMB BAY	654
WING + EXTERNAL	684
WING + BOMB BAY + EXTERNAL	954

vapor return?

RESTRICTED

FUEL SYSTEM

if the generator fails in flight, the FUEL PUMP LH and RH ON-OFF switches can be held in the OFF position.

The fuel quantity gage on the instrument panel is for the main (wing) tank only. The gage is marked with a red area to indicate a 40 gallon reserve for 30 minutes flying at 40 percent power, and a red warning light turns on when the main fuel quantity is less than 40 gallons. The fuel quantity transmitters are in the left wing and will indicate a temporary error after banking the airplane, due to the cross flow connection between the left and right wing cells. A vapor return line from the carburetor to the main tank causes the main tank to fill up when operating on any of the droppable tanks. Therefore warm-up, take-off, and climb should be made with the tank selector on MAIN before switching to any droppable tank, and when the fuel quantity gage indicates full, switch to MAIN again for 10 to 15 minutes.

A fuel gage on the bomb bay tank is visible through a hole in the cockpit floor. A fuel pressure gage on the instrument panel shows the pressure at the carburetor.

Pushing the throttle handle forward increases the amount of carburetor airflow until the throttle is wide open. Additional manifold pressure is obtained by pushing the supercharger handle forward to start the auxiliary fluid driven supercharger. To decrease power, first pull back the supercharger handle and then the throttle handle. The push button on top of the throttle handle is the throat, mask, or lip microphone switch.

The mixture control handle has 4 positions:

- IDLE CUTOFF - fuel to engine completely shut off
- AUTOMATIC LEAN - high air, low fuel ratio for cruising
- AUTOMATIC RICH - normal fuel-air ratio, altitude compensated for take-off, climb, military power, etc.

FULL RICH - emergency position, in case of failure of altitude compensator.

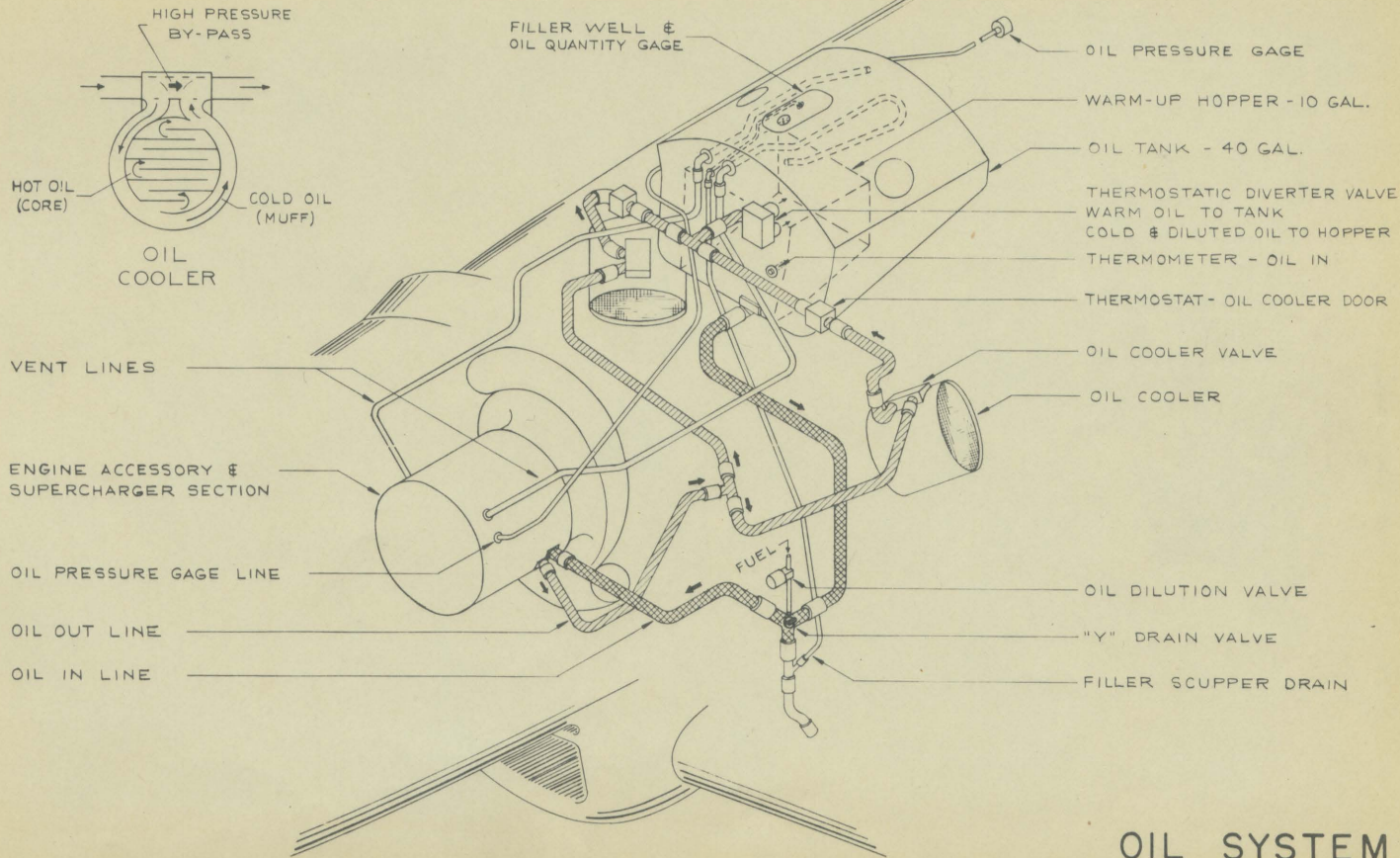
Because of the type of mixture control valve, manual leaning is not possible and definitely should not be attempted. The tank selector handle must always be at OFF when the engine is not running, except to prime, because a fuel bleed entirely independent of the mixture IDLE CUT-OFF valve admits fuel to the blower case and will load it up to make starting difficult or impossible until the engine is pulled through by hand.

The primer system on the Wasp Major engine operates from the electric fuel booster pump pressure through an electric solenoid primer valve on the carburetor to the intake manifolds of the 12 cylinders in the three top cylinder banks and to the manifold supercharger. The primer switch on the instrument panel should be pressed before starting for 2 or 3 seconds when the outside air temperature is between 5° and 21°C. If the engine has been run previously during the

same day, do not prime more than two seconds. If it has been run during the previous two hours, do not prime at all.

The oil dilution switch opens the oil dilution valve and operates the oil diverter valve to dilute the oil in the engine and in the warm-up hopper of the oil tank. ~~When the engine is started~~. The oil should be diluted when a cold weather start is anticipated, when necessary to prevent the oil pressure from exceeding 400 pounds per square inch (PSI) and damaging the oil pressure gage, and to thin the oil for an emergency take-off.

OIL SYSTEM - The 40 gallon oil tank forming the top section of cowling forward of the windshield has a 10 gallon integral warm-up hopper and an additional seven gallons expansion space. Oil is directed either into the main tank or into the hopper by a thermostatically controlled diverter valve. During oil dilution also, the diverter valve restricts the diluted oil to the warm-up hopper and the engine.



RESTRICTED

OIL SYSTEM

The oil quantity gage is in the filler well and is not visible from the cockpit. The engine gage on the instrument panel indicates the oil pressure in the engine and the oil "in" temperature at the oil tank outlet.

The oil temperature is controlled by the oil cooler switch on the instrument panel which operates the electric motor driven oil cooler flaps. In the AUTO switch position, the doors are thermostatically controlled to maintain the oil temperature at approximately 70 degrees C. (160 degrees F.) In case the temperature exceeds the safe operating ranges specified in the Specific Engine Flight Chart, the flaps can be opened and closed with the switch independent of the thermostat control.

PROPELLER - A Hamilton Standard super hydromatic dual rotation, six-bladed, constant speed propeller is used on the engine. The propeller pitch handle on the left console controls the constant speed setting of the propeller.

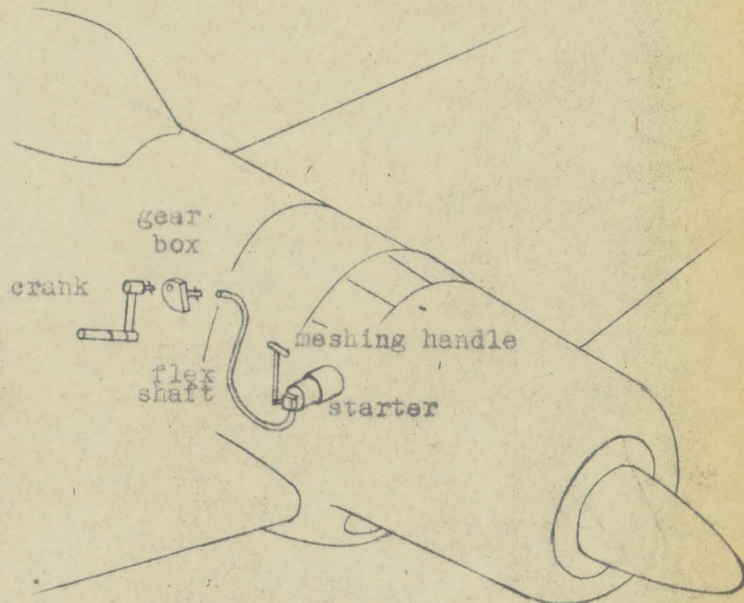
IGNITION - Each of the 28 engine cylinders is fired by a front and a rear spark plug. Seven dual magnetos generate and distribute the sparks. The magnetos are controlled from the cockpit by the ignition switch which includes the master lever switch with four positions: OFF, L, R, and BOTH; and a rotary knob switch which may be set to each magneto separately in eight positions numbered 0 through 7. When the knob is set to any magneto, pulled out, and rotated to R or L, the right or left section respectively of that magneto is grounded and the corresponding spark plug on the four cylinders on that magneto stop firing. The knob must be returned to 0 and the lever to BOTH for normal operation.

The ignition system from the magnetos to the switch connection at the right rear of the engine is pressurized by a pump on the left rear side of the engine to reduce power losses at high altitudes.

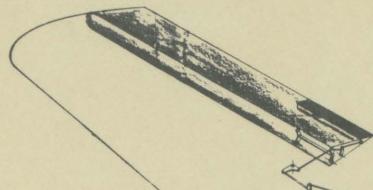
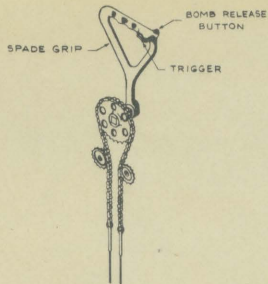
STARTING SYSTEM - The engine starter is a combination hand crank and electric inertia-direct cranking starter with both manual and electrical meshing. The starter motor is not connected to the battery-generator circuit so that electrical starting is possible only when the external power plug is connected. The starter switch has three positions, OFF, START and MESH. The switch should be flipped momentarily to MESH to be sure that the motor brushes are lowered on the commutator, and then held on START for not more than 20 seconds since there is no overspeed governor. MESH until the engine is definitely running or until the motor slows down to a constant speed. The inertia flywheel starts the engine turning, and the motor continues cranking until the engine speed exceeds the starter speed and disengages the meshing jaws.

A hand crank and a reduction gear box provided with the airplane are plugged in to the flexible shaft on the right side of the engine for manual starting. The




manual meshing handle is under a small access door forward of the hand crank attachment. The manual meshing handle also lifts the motor brushes off the commutator to make hand cranking easier.







MANUAL STARTING

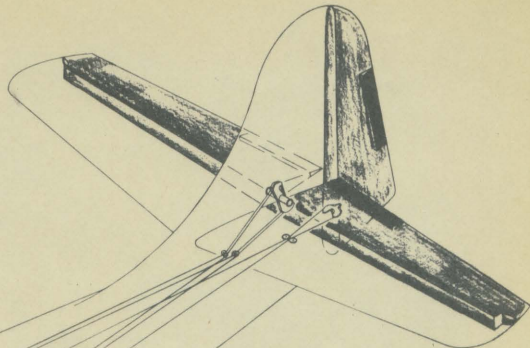


BALANCE TAB
(RUDDER & ELEVATORS)

-  NEUTRAL
-  AS ELEVATOR MOVES DOWN, TAB MOVES OUT INTO WIND AND HELPS PILOT MOVE SURFACE.
-  THE MORE THE DEFLECTION OF THE SURFACE, THE MORE THE TAB PROJECTS INTO WIND, TENDING TO MAKE FORCE ON CONTROL STICK UNIFORM AT ALL DEFLECTIONS.

BOOSTER TAB
(AILERONS)

-  NEUTRAL
-  SPADE GRIP PUSHED TO RIGHT - TAB MOVES UP.
-  WIND LOAD ON TAB PUSHES AILERON DOWN, RAISING LEFT WING FOR BANK..
-  WHEN LOAD ON TAB EQUALS LOAD ON AILERON PLUS TWIST IN SPRING TUBE, AILERON STOPS IN DOWN POSITION.






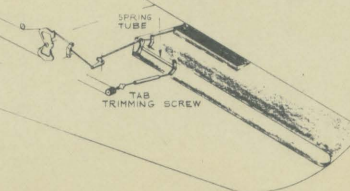
COMBINED FUNCTIONS OF TABS

	RUDDER	ELEVATORS	AILERONS LEFT	RIGHT
TRIM	✓	✓	✓	
BALANCE	✓	✓		
BOOSTER			✓	✓

TRIM TAB

(RUDDER, ELEVATORS, & LEFT AILERON)

-  TAB IS TRIMMED TO MAKE AIRPLANE FLY STRAIGHT AND LEVEL FOR ANY LOAD.
-  AS CONTROL SURFACE IS MOVED, ANGLE α BETWEEN SURFACE AND TAB REMAINS CONSTANT.
- 



FLIGHT CONTROLS
RESTRICTED

FLIGHT CONTROLS

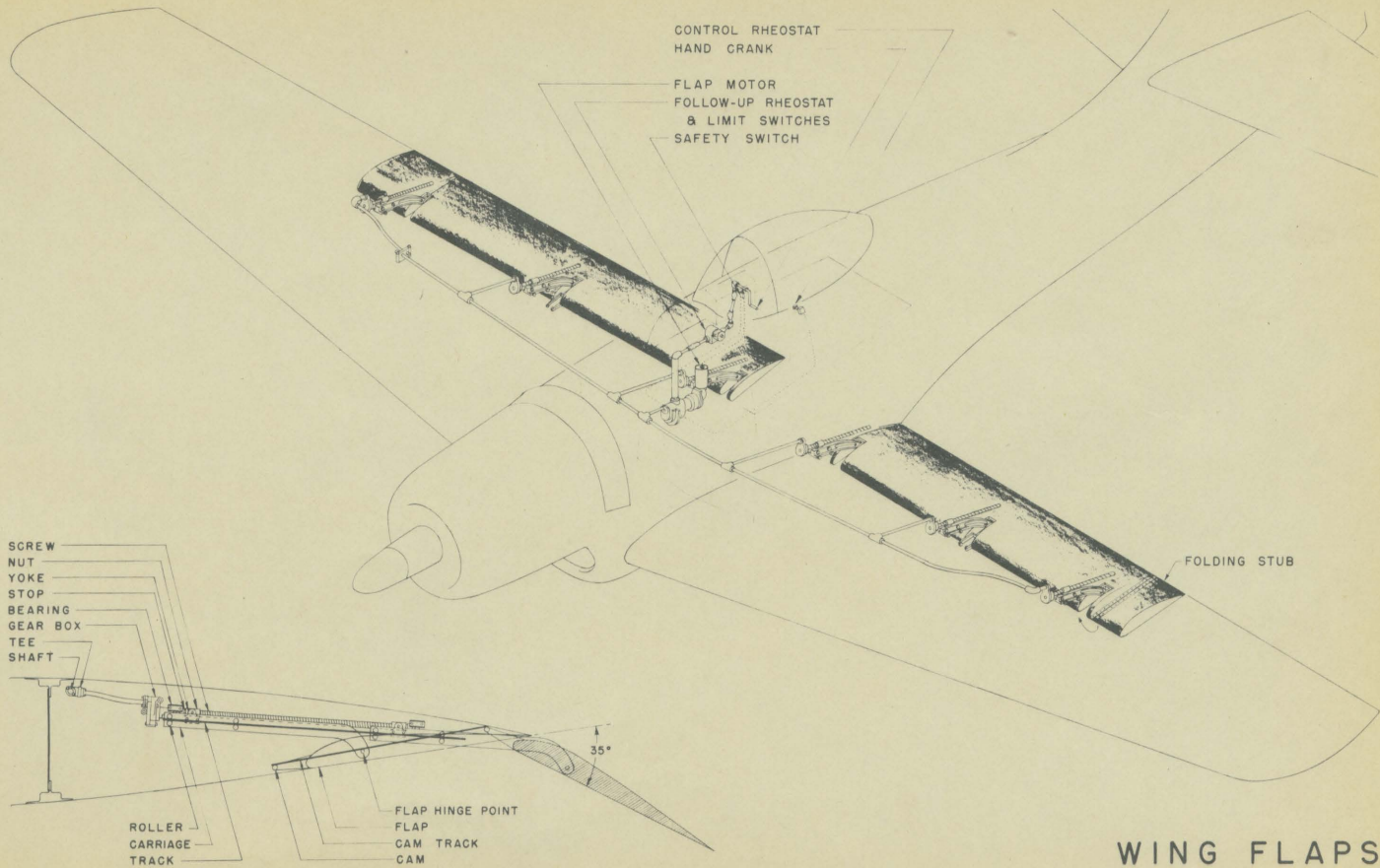
AILERONS AND ELEVATORS - The control stick moves in a fore and aft arc for elevator control, but the ailerons are controlled by the pivoted spade grip at the top of the control stick. The grip is connected by sprockets and chain to the aileron control cables so that the control stick does not have to be swung sidewise between the pilot's legs. The aileron cables connect to the booster tab which is deflected into the airstream to drive the aileron, making the control forces light and the response quick. The gun trigger and the bomb release button are on the spade grip.

RUDDER - The rudder is controlled by conventional pedals. The pedals are adjustable fore and aft for leg length by a knurled wheel at the center. Adjusting the length of the parallel rods behind the rudder bar changes the amount of toe in or toe out of the pedals. The hydraulic brakes are applied by pushing forward on the top of the rudder pedals.

SURFACE LOCK - The ailerons, elevators, rudder, and throttle are locked by pulling out the SURFACE LOCK knob on the instrument panel, and moving the controls into neutral. The throttle is automatically moved back and locked in the closed position.

TABS - The three trim tab control wheels on the left console in the cockpit are conventional. The rudder and elevator trim tabs act also as balance tabs, tending to make the control force uniform for all deflections of the control surface. The left hand aileron tab is also a booster tab. The right hand aileron tab is a booster only. A booster tab deflects into the airstream to help move the control surface, and realigns when the control is neutralized.

WING FLAPS - The Fowler type wing flaps are electrically driven and are controlled by a toggle rheostat on the left sidewall of the cockpit. A similar



RESTRICTED

rheostat cancels out the control signal at the desired position, permitting an infinite number of flap positions. A switch in the right wing fold prevents the flaps from operating until the wings are completely spread; at which time they will automatically move to the position set. When the toggle rheostat is not at UP, a pressure switch working from the airspeed pitot tube automatically brings the flaps up when the airspeed exceeds 130 knots (150 MPH) and lowers them when the airspeed falls below 120 knots (138 MPH). Check the flap position by looking over the side of the cockpit.

The flaps ^{can} be operated by a hand crank stowed on the right console in case of failure of the electrical system. When the hand crank is inserted in its attachment in the right console, a safety switch automatically prevents electrical operation.

The wing flap is folded under and latched manually when stowed, and must be manually extended before take-off.

FOLDING WINGS - The wings are folded upward by an electric motor and retracting screw, and can be braced in the stowed position by a strut to prevent wind damage. (The airplane may be taxied below 30 knots without the strut). The wings are hinged at the top of the ribs and are locked in the spread position by a pin through fittings at the bottom of the ribs. An electric motor automatically removes the pin before the wing is folded and inserts it after spreading. Two red cylinders attached directly to the pin protrude from the top and bottom of the wing when the pin is not inserted. A red warning light on the right console in the cockpit remains lit until both pins are fully inserted. The control switch and a safety switch are on the console beside the light and are protected by hinged guards against accidental operation. To fold or spread the wings on generator power, the throttle must be above approximately 1000 RPM; on external power, it must be below 1000 RPM. A "squat" switch on the landing gear permits wing folding only when the airplane is on the ground.

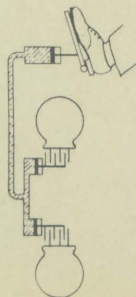
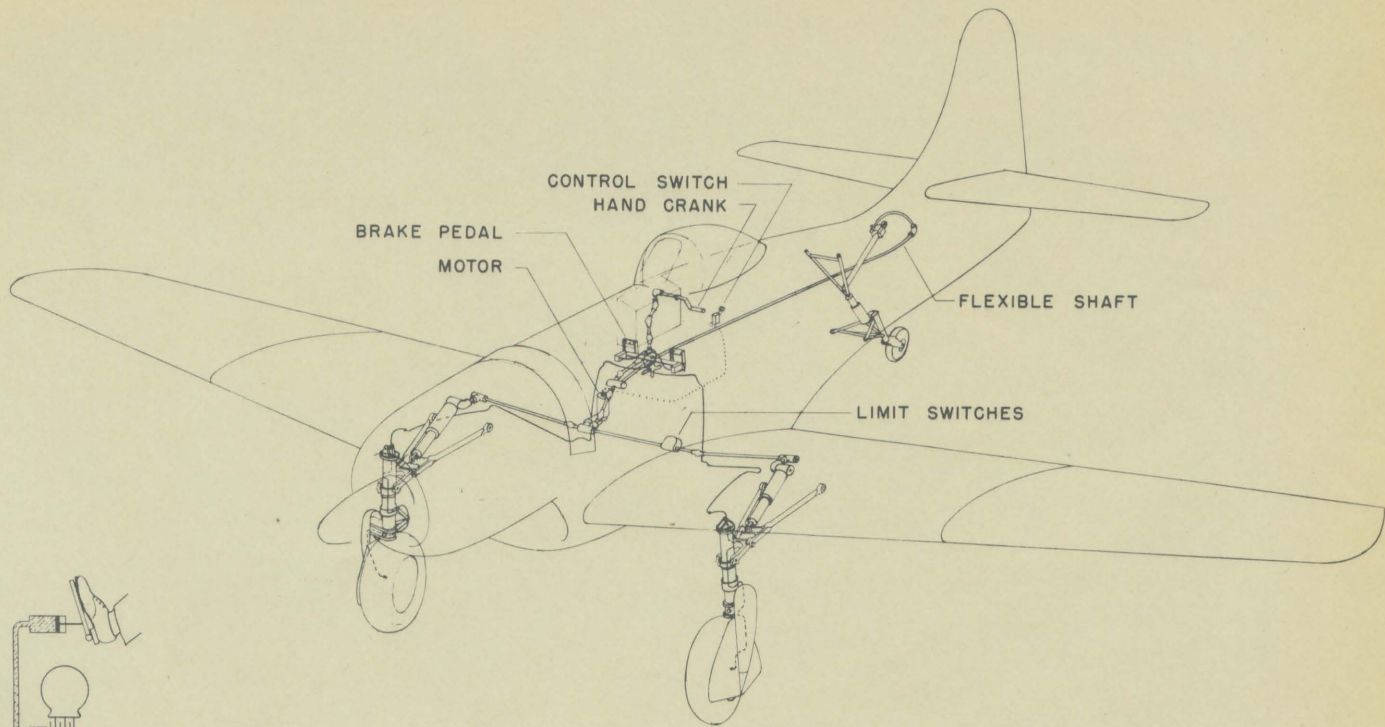
LANDING GEAR

WHEELS - The two main wheels and the tail wheel are retractable both electrically and manually. A single electric motor drives all three retracting screws through a torque tube system, a branch of which terminates in the right hand console in the cockpit. The hand crank stowed on the right console is attached to this branch for manual operation. When the hand crank is inserted in the attachment, a safety switch automatically prevents electrical operation.

For normal electrical operation, a three position (UP-OFF-DOWN) toggle switch at the upper left corner of the instrument panel turns on the motor. Limit switches stop the motor. A "squat" switch on the right wheel prevents the landing gear being retracted when the airplane is on the ground. A landing gear position indicator on the instrument panel shows when the wheels are up or down.

BRAKES - The hydraulic disc type brakes are applied by foot pressure on the rudder toe pedal. No pump and accumulator are necessary. There is no parking brake.

TAIL WHEEL LOCK - The tail wheel is not steerable and will caster through 360 degrees. An anti-shimmy brake is built into the spindle to dampen out tail wheel shimmy while taxiing at low speeds and a locking pin prevents shimmy at high speeds. The tail wheel must be locked except when taking off or landing on a carrier, or when taxiing under ___ knots (___ MPH). The tail wheel lock control handle is on the left console beside the pilot's seat. The handle is locked in the down position and unlocked when pulled up. In the event ground maneuvers are attempted while the tail wheel is locked, an aluminum shear bolt will fail, thus preventing damage to the airplane structure. The tail wheel must be centered in order to retract the landing gear.

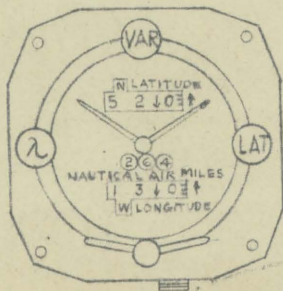


LANDING GEAR

RESTRICTED

ARRESTING HOOK - The arresting hook is electrically extended and retracted. When the arresting hook control handle on the side of the right console is moved to the DOWN position, the hook is unlatched and drops down. At the same time the electrical retracting motor is started and follows down to re-latch with the hook. When the control handle is returned to UP, the motor retracts the hook in about nine seconds. Limit switches stop the motor in the UP and DOWN positions. The approach light is turned on automatically when the arresting hook is lowered, but may be turned on for practice ground landings by a toggle switch in the radio compartment.

AIR
POSITION
INDICATOR



INSTRUMENTS

All of the instruments are conventional except the Air Position Indicator (API). The A.P.I. combines true airspeed with true compass heading to indicate latitude, longitude, and air mileage. The latitude, longitude, and variation of magnetic North from true North at the take-off point are set on the indicator by three knobs on the face. Either North or South latitude and either East or West longitude may be shown by operating the two levers at the bottom of the instrument dial. The variation pointer may be reset on long flights according to the navigation chart for more accurate readings. For further information see Technical Order AN 05-35-34.

The fuel quantity gage on the instrument panel indicates the total fuel in the main tank only. The bomb bay tank fuel gage is visible through a hole in the cockpit floor. The external tanks have no fuel quantity gages.

ARMAMENT

GUNS AND CANNONS - Either six .50 caliber machine guns or six 20 millimeter cannons are installed in the wings, with provisions for approximately 400 rounds of ammunition per machine gun or 200 rounds per cannon. The guns must be manually charged on the ground by lowering the wing flaps, inserting a charging rod through the flap opening, and pulling on the gun charging lug.

The armament switches are on each side of the hood over the instrument panel. The armament master switch when OFF prevents gun firing or electrical bomb release. The three gun selector switches control the guns in both wings in pairs; inboard, center, and outboard. When the trigger on the spade grip is pressed, electric solenoids fire the guns and electric booster motors feed the ammunition to the guns.

The gun camera switch permits use of the 16 millimeter movie camera in the carbur-

XF8B-1

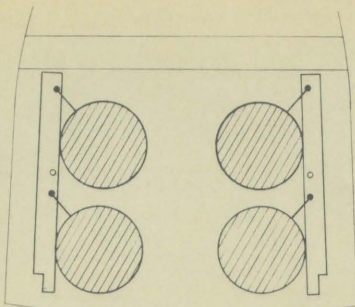
etor air scoop with the guns, during bomb release, or alone if the armament master switch is off.

The gun sight switch turns on the light in the illuminated sight. The bulb has two filaments so that if one fails, the alternate can be turned on. The gun sight rheostat varies the intensity of the light, and can be but should not be turned off so that it will not be confused with the switch.

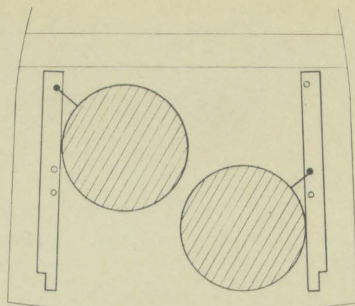
The gun heaters go on automatically when the generator cuts into the electrical system.

BOMBS - Bombs (or fuel tanks) can be carried on the detachable racks in the bomb bay and under each wing. Bombs released electrically are armed; bombs released mechanically are unarmed. The bomb release handle on top of the left console in the cockpit latches in three positions: SAFE, SELECT, and SALVO. In SAFE, no bombs can be released electrically. To release any bombs electrically,

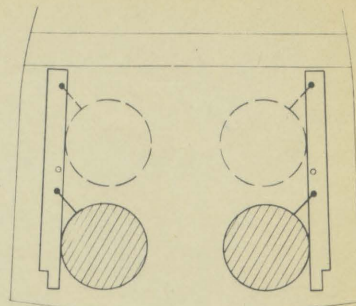
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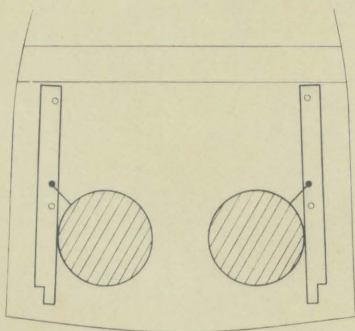
4- AN-M43 500 LB. G.P. OR
4- AN-M58A1 500 LB. S.A.P.



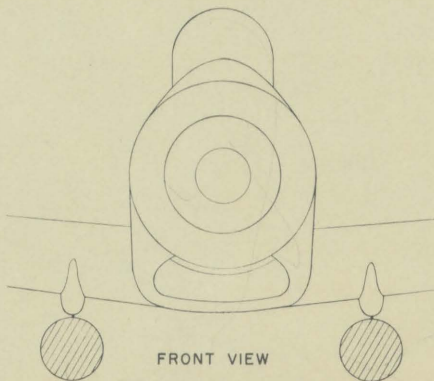
2- AN-M44 1000 LB. G.P.



2- AN-M59 1000 LB. S.A.P. OR
2- AN-MK33 1000 LB. A.P. OR
*4- AN-MK33 1000 LB. A.P.



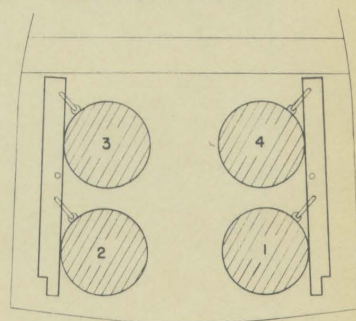
2- AN-MK1 1600 LB. A.P.



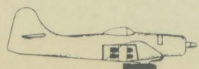
FRONT VIEW

2- 500 LB. OR
2- 1000 LB. OR
2- 1600 LB. OR
*2- 2000 LB. OR

*2- MK-13 TORPEDOES- 2000 LB.



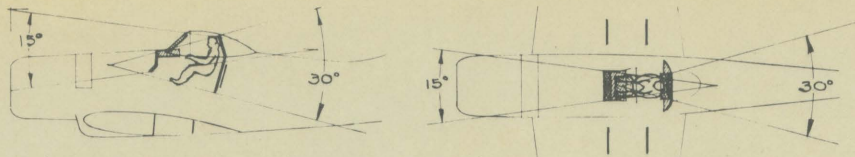
BOMB RELEASE ORDER
REAR VIEW



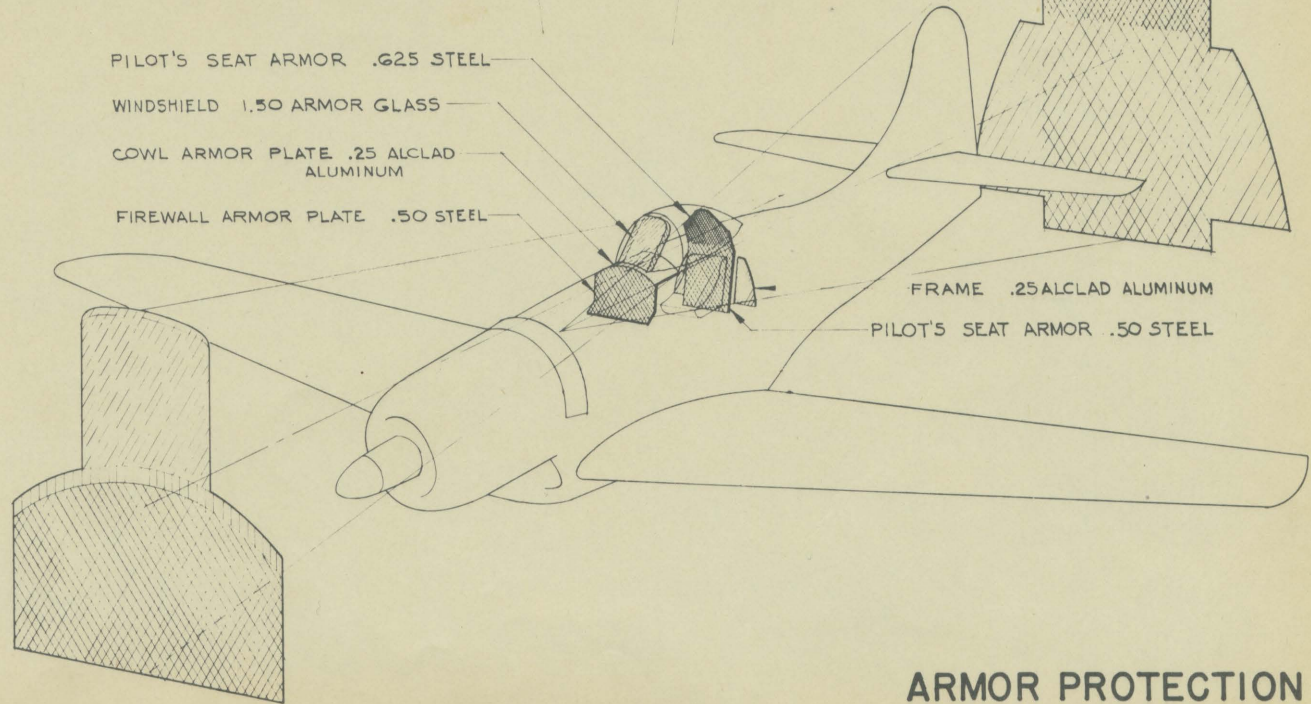
* OVERLOAD: SAFETY
FACTOR REDUCED

BOMB LOADS

RESTRICTED



- PILOT'S SEAT ARMOR .625 STEEL
- WINDSHIELD 1.50 ARMOR GLASS
- COWL ARMOR PLATE .25 ALCLAD ALUMINUM
- FIREWALL ARMOR PLATE .50 STEEL



- FRAME .25ALCLAD ALUMINUM
- PILOT'S SEAT ARMOR .50 STEEL

ARMOR PROTECTION

RESTRICTED

ELECTRICAL POWER

the handle must be moved to SELECT. Pushing the handle through to SALVO mechanically releases only the internal bombs, unarmed. The two red pull handles above the bomb release handle mechanically release the external bombs unarmed. The armament master switch, previously mentioned under guns and cannons, must be on to release bombs electrically. The bomb selector switch over the instrument panel must be set to the desired rack: INTERNAL, L.H. EXTERNAL, R.H. EXTERNAL, or BOTH EXTERNAL. The bomb release button is on the control stick spade grip.

ARMOR PROTECTION - Armor plate protects the pilot from .50 caliber gun fire originating in a 30 degree cone from the rear and a 15 degree cone from the front. Steel plate on the back of the seat and front of the cockpit firewall, 1/4 inch duraluminum beside the seat and over the instrument panel, armor glass windshield, the engine, fuel tanks, oil tank, and structure protect the pilot.

BATTERY - A 17 ampere-hour 24 volt battery is installed to carry light loads when the generator is not running or external power is not plugged in, and to aid the generator during peak loads. The battery should be used alone only for such light loads as instruments, lights, priming, electrically meshing the starter, opening cowl flaps, etc. The battery should not be used alone to operate the radios, bomb doors, landing gear, wing flaps, or wing folding mechanism.

The battery switch on the right console in the cockpit controls a solenoid switch which connects and disconnects the battery from the airplane electrical system. The recognition lights, the IFF radio destructor, and the cockpit receptacle operate directly from the battery, regardless of the battery switch position.

GENERATOR - The 200 ampere 28 volt direct current engine driven generator carries the electrical load during taxiing and in

flight, and recharges the battery. The generator is driven at three times engine RPM, and is automatically connected to the electrical system at engine speeds above 700 RPM. ~~The gun heaters turn on at the same time.~~ In case of an impending crash landing, the generator can be turned off by the generator field switch under the red guard on the instrument panel.

The voltmeter on the right console shows when the generator is operating, and warns of low voltage when it may be advisable to turn off unessential electrical equipment.

EXTERNAL POWER - When the engine is not running above 700 RPM, an external source of 24 volt direct current (battery cart, auxiliary power plant, or ship's generator) should be plugged into the airplane electrical system to conserve the battery charge. External power is required for electrical starting, since the starter motor is not connected to the battery-

generator circuit. The external power receptacle is on the right side of the fuselage above the trailing edge of the wing. The external power plug is usually disconnected immediately after the engine is started.

CIRCUIT BREAKERS - All circuits in the airplane except the IFF radio destructor, the starter motor, battery, generator, tachometer, and thermocouple are protected by thermal pushbutton circuit breakers on the right hand console. The radio circuit breakers cannot be reset until they cool. All others can be held in even though a dangerous overload may exist, to operate the equipment in an emergency. A luminous ring and a red area on the latter circuit breakers show when the circuit breakers have popped out, indicating that the circuit is broken.



LIGHTING

COCKPIT LIGHTS - The cockpit lights rheostat on the right console controls five red lights - one above the wing flap toggle and two on each side of the cockpit under the canopy sill which illuminate the cockpit below the sill.

CHARTBOARD LIGHTS - The two red chartboard lights on the instrument panel just under the gun sight illuminate the maps when the chartboard is plugged into the instrument panel. Each light has its own built-in switch.

INSTRUMENT PANEL LIGHTS - The instrument panel rheostat on the right console controls seventeen small red lights which illuminate the instruments. The lights are between the instrument panel and the false front of the panel so they shine on the instruments but not in the pilot's eyes. A snap cover over the rear of the light permits replacement of the bulbs in flight.

SPARE BULBS - Spare bulbs for about 50% replacement of all interior lights are carried in the cockpit in the right hand console.

APPROACH LIGHT - When the arresting hook is lowered, the approach light in the nose of the left wing turns on automatically to help the carrier signal officer guide the pilot to a landing. The approach light is in three sections: red at the top, a narrow yellow band in the middle, and green at the bottom. The light is installed so that only the yellow band is visible to the carrier officer when the airplane is 100 feet astern and 25 feet above the deck, and the airplane speed is 10 to 12 knots above stall speed.

A manual toggle switch in the radio compartment on the right side also turns on the light for practice landings when the hook is not lowered.

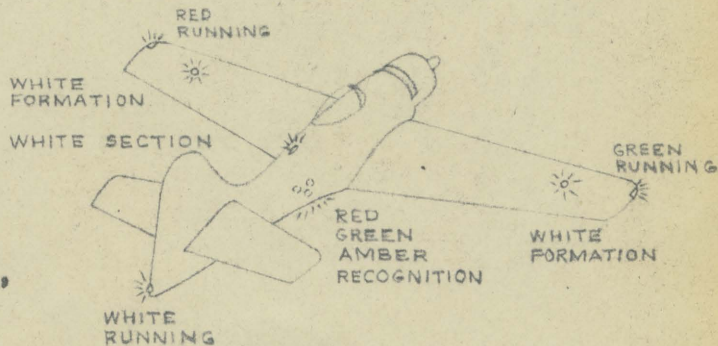
RECOGNITION LIGHTS - Each of the three recognition lights - red, green, and amber - on the bottom of the fuselage is

controlled by a separate switch with three positions: OFF, STEADY, and SIGNAL. When the switches are on, the lights can be blinked in code with the pushbutton key on the right console. The recognition lights operate directly from the battery regardless of whether the battery switch is ON or OFF.

RUNNING LIGHTS - The three running lights are the red left wing tip light, the green right wing tip light, and the white tail light. One of the two running light switches on the right console in the cockpit controls the wing lights, and the other the tail light. Each switch has three positions: OFF, BRIGHT, and DIM. All three lights are also turned on and off by the master exterior lights switch.

Three Resin lenses - red, green, and white - interchangeable with the tail light lens, are provided with the airplane for recognition and signal purposes in tactical operations.

FORMATION AND SECTION LIGHTS - The two white formation lights are on the upper surface of the outer wing and are controlled by a two position BRIGHT-DIM switch on the right console. The white section light on top of the fuselage behind the cockpit is controlled by a similar switch. Both the formation and the section lights are turned on and off, or may be flashed by a third switch. All three lights are also turned on and off by the master exterior lights switch.



RADIOS

RADIOS - Four radios may be installed in the airplane: a radio telephone for two-way voice communication, a homing receiver for locating the transmitting station, a range receiver used primarily over land for following the airways beacons, and an IFF set for identification. All major components of the radios are mounted in the radio compartment behind the bomb bay, except the range receiver and the control boxes which are on the right hand console in the cockpit, and the jack box on the right side of the pilot's seat armor plate.

MICROPHONES - Two microphones may be used in the airplane: a hand microphone which must be plugged into the top of the jack box and is left in the airplane at all times, and a throat, lip, or mask microphone issued to the pilot and plugged into the jack box extension cord. The microphones operate only through the radio telephone. The hand microphone is

cut in by pressing the switch on the "mike", while the microphone button on the throttle handle cuts in the throat, lip, or mask microphone.

HEADSET - The headset is issued to the pilot and should be plugged into the top of the jack box in order to hear all of the radios. Select the desired radio by varying the volume controls.

Do not plug the headset, lip, mask, or throat microphone into any jacks except on the jack box, so that in case of a bail out the cords will pull free easily.

MASTER RADIO SWITCH - All of the radio equipment except the IFF destructor circuit is turned on and off by the master radio switch on the right console in the cockpit. Turn the switch off when leaving the cockpit and do not turn it on until the radios are needed.

RADIO TELEPHONE CONTROLS - The control box for the two-way voice communication radio has five controls:

1. The ON-OFF switch.
2. A RADIO-INTERPHONE switch which must be left on RADIO to receive and transmit.
3. A switch labeled P-G, BOTH, P-P. On P-G, three channels may be selected for plane-to-ground communication. On P-P, the radio is set for plane-to-plane communication on one fixed channel. On BOTH, the pilot can talk over and listen to the plane-to-plane and one plane-to-ground channel simultaneously.
4. The four position channel selector switch providing the following connections:

SWITCH POSITION	TRANSM. CHANNEL	RECEIVER CHANNEL
1	P-P	P-P & P-G No. 1
2	P-G No.1	P-P & P-G No. 1
3	P-G No.2	P-P & P-G No. 2
4	P-G No.3	P-P & P-G No. 3

5. The volume control which increases the output when turned clockwise.

HOMING RECEIVER CONTROLS - The homing receiver control box has a headset PHONE jack which should not be used because the cord may not pull free in an emergency bail out, and four controls:

1. A channel selector crank by which any one of six transmitters may be tuned in. The channel number appears in the cutout on the control box face.
2. A volume control.
3. A switch labeled OFF, NAV, VOICE which turns the set on and off, and separates voice and CW signals.
4. A BEAT NOTE knob for varying the pitch of CW signals.

Carrier wave

RANGE RECEIVER - The range receiver may be installed on the right hand console and includes its own controls as follows:

1. An OFF-ON-VOLUME control knob.
2. A tuning knob and dial covering the beacon range from approximately 200 to 400 kilocycles.
3. A phone jack which is connected to the jack box on the seat armor.

IFF RADIO CONTROLS - Four switches on the right console control the IFF radio:

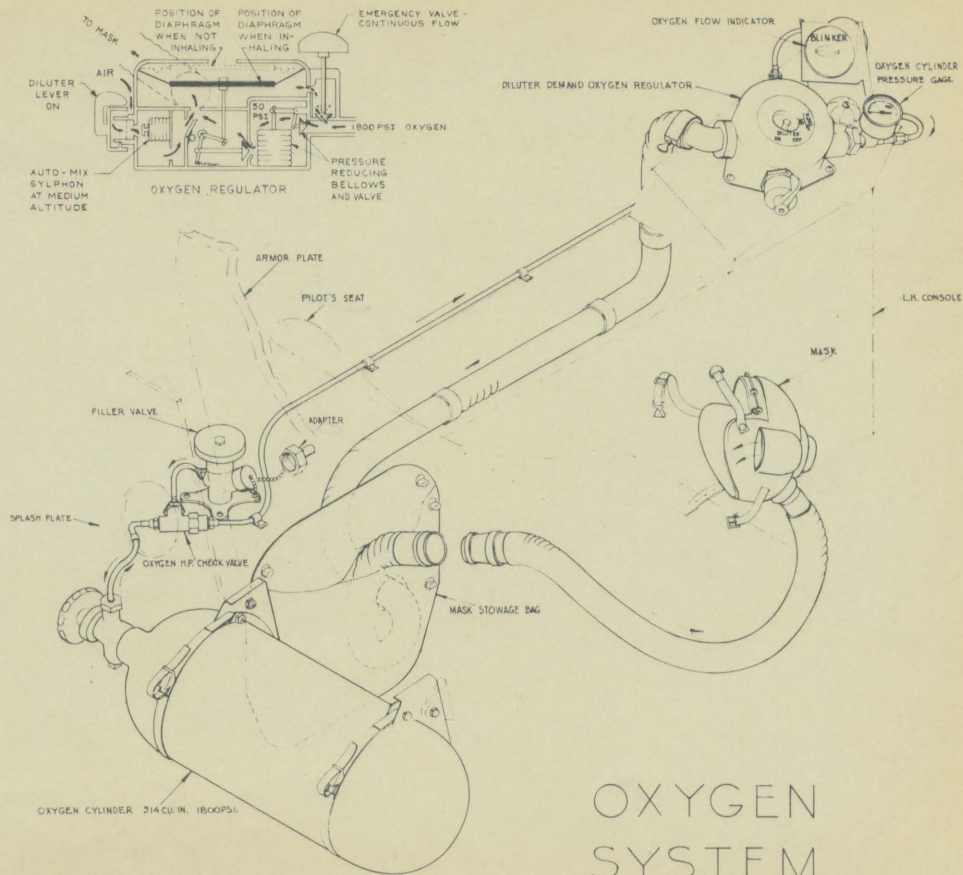
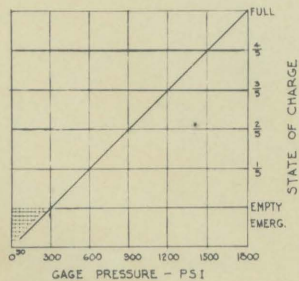
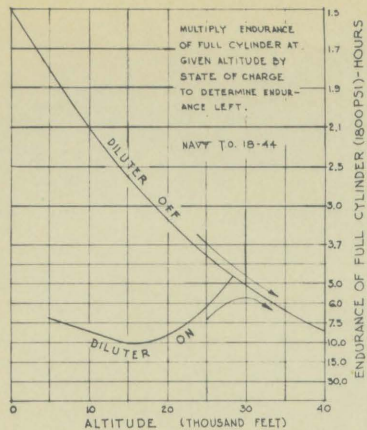
1. The IFF ON-OFF SWITCH
2. The IFF-G switch which should be off unless otherwise instructed by the Commanding Officer. The switch will remain in the ON position but must be held at TIME.
3. The EMERGENCY switch under the green safetied guard which should be used if the pilot is in trouble, the airplane damaged, or conditions exist such that assistance is required.
4. The DESTRUCTOR switch under the red guard which must be turned on only if the necessity for a forced landing in enemy territory becomes apparent. In case of a hard shock parallel to the thrust line of the airplane, an inertia crash switch will automatically set off the destructors.

OXYGEN

BOTTLE - The 514 cubic inch high pressure (1800 PSI) oxygen bottle is behind the pilot's seat armor with the shutoff valve extending out at the left side of the seat. A filler valve is on the left console by the bottle.

MASK - The oxygen mask is stowed in a canvas pocket on the left console, and is connected to the oxygen regulator by a flexible hose with a disconnect joint near the mask.

REGULATOR - A diluter demand regulator at the forward end of the left console automatically meters the correct proportion of air and oxygen for all altitudes to the oxygen mask. A diaphragm valve meters the oxygen only when the wearer inhales. In case pure oxygen is desired, the DILUTER lever can be turned off. If a steady flow of oxygen is required in an emergency, the red EMERG. knob can be turned on.



OXYGEN SYSTEM

RESTRICTED

PRESSURE GAGE - A pressure gage by the regulator shows the amount of pressure in the bottle. The last 300 PSI are indicated by a yellow area on the gage.

FLOW INDICATOR - A blinker type oxygen flow indicator shows the pilot that the demand valve is working properly and that oxygen is flowing to the mask.

Hot air for heating and ventilating the cockpit and defrosting the windshield is taken from the fairing around the two exhaust stacks which pass through the carburetor air scoop. Fresh air enters the front of the fairing, is directed by baffle plates over the two stacks, and is taken out of the rear of the fairing to a valve which directs the air into the cockpit, over the inside of the windshield, or vents it into the engine accessory section. The valve can be set to divide the hot air between any two openings in any proportions. The valve control is a pointer knob and dial on the top of the right hand console behind the radio controls.

Cold air can be mixed with the hot air entering the cockpit or can be brought in separately if the cockpit is too hot. The cold air control is a lever on the side of the right hand console below the radio controls. The cold air is taken out of the oil cooler air duct.

EMERGENCY EQUIPMENT

SEAT PARACHUTE - A standard issue seat parachute will be worn by the pilot.

PARACHUTE LIFE RAFT - A one-man 16 pound life raft which must be attached to the parachute is worn by the pilot. The raft contains the following emergency equipment:

Hand Paddles (2)	Repair Kit
Bailing Cup	Bullet Hole Plugs
Sea Anchor	CO ₂ Inflation Bottle
Sail	Can of Water
Sea Marker Dye	First Aid Kit

BACK PAD KIT - A one-man 13 pound back pad kit on a separate harness is worn on the pilot's back to form the seat pad. The kit contains the following emergency equipment:

Rations (3 cans)	Sunburn Ointment
Water (2 cans)	Compass & Matches
First Aid Kit	Jungle Machete
Salt Tablets	Pocket Knife
Safety Pins	Sharpening Stone
Fishing Kit	Can of Oil

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Whistle
Magnifying Glass
Signalling Mirror
Adhesive Tape

EMERGENCY EQUIPMENT

Cotton Line - 25 ft.
Canvas Gloves
Poncho
Mosquito Headnet

CANOPY RELEASE - The cockpit canopy is normally opened and closed by a hand crank at the forward right corner, but in an emergency it can be quickly jettisoned by pulling the red knob above the windshield between the rear view mirrors.

The canopy is opened from the outside by lifting a lever on the right side of the body below the windshield which disengages the handcrank drive.

ENGINE FIRE EXTINGUISHER - The carbon dioxide fire extinguisher system directs CO₂ at the base of the engine cylinders, floods the accessories section between the engine and the firewall, and injects the CO₂ into the carburetor air scoop and oil cooler ducts. The four bottles are in the radio compartment behind the pilot's cockpit, and the release handle

Restricted

is at the rear of the right hand console.

surround
Fire around the cylinders will be indicated by flames blowing out of the cowl flaps. Immediately open the cowl flaps wide and pull the carbon dioxide charge to limit the trapped heat damage. Fire in the accessory section will come out of the ventilating slots on the sides of the nacelle.

CHARTBOARD - The navigating chartboard containing maps and necessary flight data is stowed in the right hand console and is held in by a catch. In use, the chartboard is plugged into two sockets on the instrument panel. Two lights above the chartboard on the instrument panel can be turned on at night.

DATA COMPARTMENT - Pencils, notebooks, maps, miscellaneous papers, etc. can be stored in the small compartment beside the clock on the instrument panel. The compartment opening is 3 by 5 inches, and the box is 15-1/2 inches deep.

REAR VIEW MIRRORS - Two small rear view mirrors at the top of the windshield enables the pilot to see around his armor plate down both sides of the tail.

RELIEF TUBE - The pilot's relief tube is stowed in a clamp at the right of the seat, and drains out by the hinge of the right bomb bay door.

PILOT'S SEAT - The pilot's seat is attached to the seat armor and is adjustable to five positions up and down by the handle on the right side. The lever on the left side releases the shoulder harness so the pilot can lean forward. The harness is spring loaded to pull the pilot upright, but latches in four positions for various sized pilots.

COCKPIT RECEPTACLE - A 24 volt direct current electrical receptacle is on the right sidewall above the console. A screw cap on a chain covers the receptacle when not in use. The receptacle is "hot" all the time. Portable equipment with connecting plug NAF1078-3 (AN3106-16-11p) can be attached to the receptacle, or a bomb firing key with plug NAF1078-2 (AN3106-16S-4p). Similar receptacles are in the bomb bay and the radio compartment.

PYROTECHNIC PISTOL - The pyrotechnic pistol (AN-M8) is fired through a firing tube at the right of the pilot's seat and is stowed in a canvas bag on the right console. Six cartridges are

carried in each of the two covered containers in the floor in front of the pilot's seat. The gun is cocked when the breech is closed, and fires downward past the right wing trailing edge.

TOW TARGET PROVISIONS - The tow target hook may be bolted onto the tail of the airplane at the jacking point just forward of the tail wheel. The hook is unlatched by a handle on the right console. The handle should be left in the unlocked position when not in use to pull the latching pin up inside the body. The target is suspended in a container from the external wing rack, and is released from the container by pulling the respective external bomb release handle on the left sidewall of the cockpit.

BAGGAGE COMPARTMENT - The space behind the pilot's seat is left free for baggage or for a man to ride "piggy back". Baggage should be tied down to the six loops on the floor.

XF8B-1

MISCELLANEOUS EQUIPMENT

HANDBOOK STOWAGE - The Pilot's Manual and the Weight and Balance Handbook are stowed in a canvas bag on the floor under the pilot's seat. The Service and Maintenance Manual is stowed in a bag in the baggage compartment.

EQUIPMENT NOT CARRIED IN AIRPLANE -

Equipment furnished with but not carried in each airplane includes the following:

Airplane Log Book

Engine Log Book

Towing Bar

Hoisting Sling

Airplane Tool Kit

Engine Covers

Starter Hand Crank & Gear Box

Folding Wing Jury Strut

Resin (tail) Light Lenses - red, green, and white.

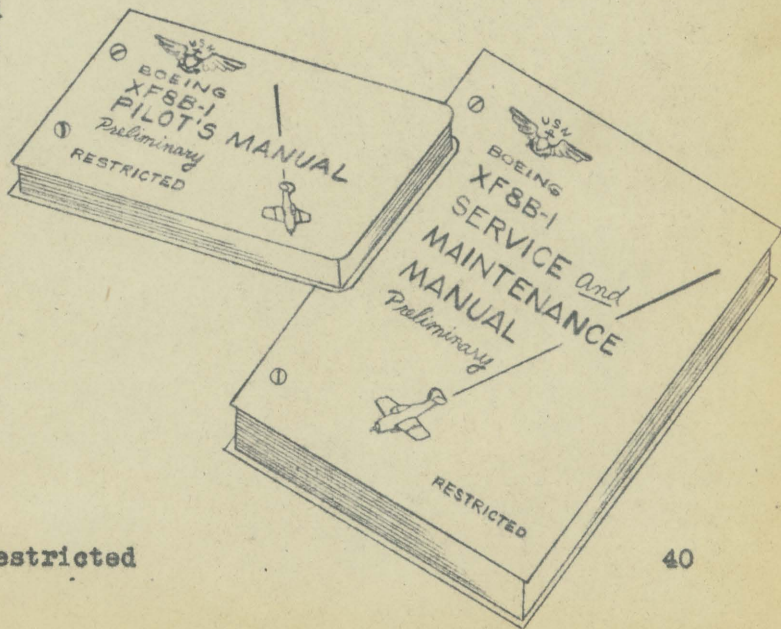
IFF Auxiliary Control Unit

Droppable Fuel Tanks

Bomb Racks

20 MM Cannon Alternate Parts

GUN CHARGERS - The .50 caliber gun charging handle and the 20 mm gun charging rod are stowed in clips on the access door under the guns in the left wing. Roll the wing flaps down and reach up into the wing ahead of the flap to get the gun charger. Insert it in the gun and pull back to charge.



Restricted

Normal
**FLIGHT
OPERATIONS**

SECTION II

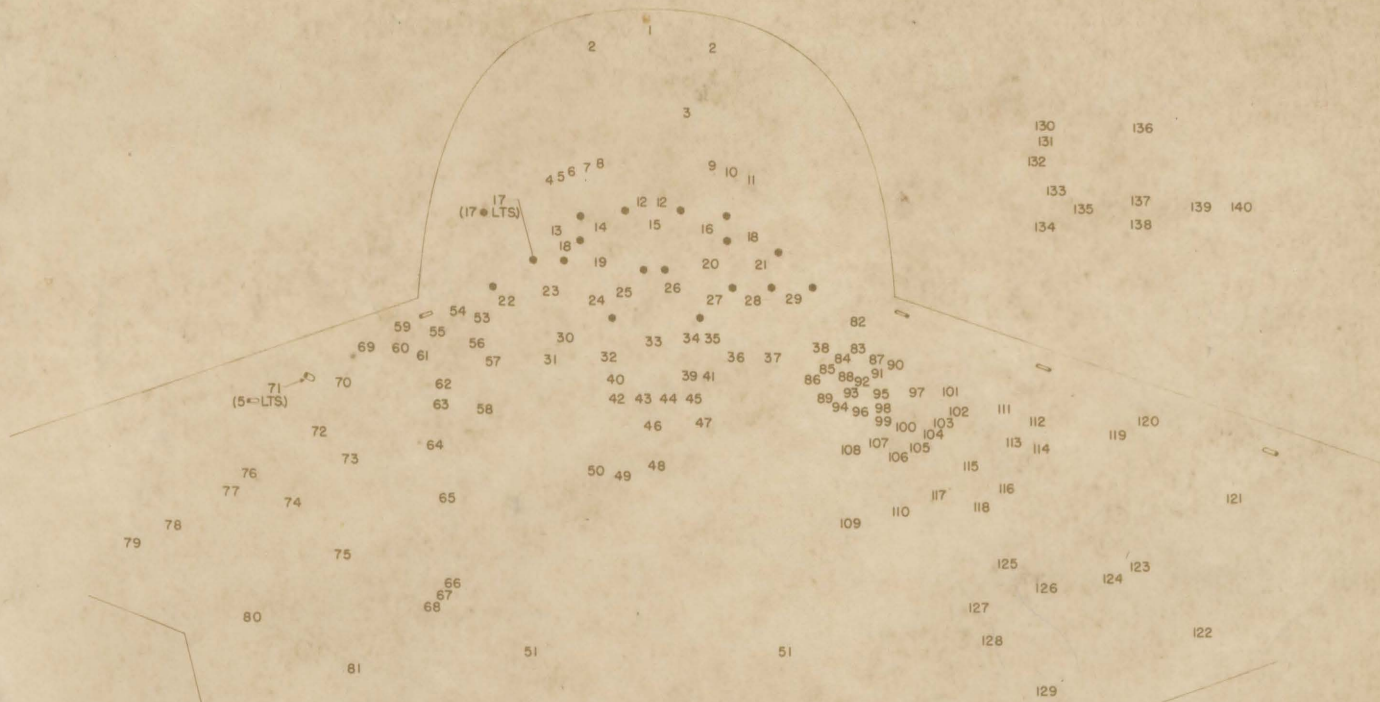


1. CANOPY EMERGENCY RELEASE KNOB
2. REAR VIEW MIRRORS
3. GUN SIGHT SUN FILTER
4. GUN SELECTOR SWITCH - OUTBOARD
5. GUN SELECTOR SWITCH - CENTER
6. GUN SELECTOR SWITCH - INBOARD
7. CAMERA SWITCH - 16 MM - GUN OR BOMB
8. ARMAMENT MASTER SWITCH
9. GUN SIGHT LIGHT RHEOSTAT
10. GUN SIGHT LIGHT SWITCH - ALTERNATE FILAMENTS
11. BOMB SELECTOR SWITCH - INTERNAL OR EXTERNAL
12. CHARTBOARD LIGHT AND SWITCH
13. AIRSPEED CORRECTION CARD
14. AIRSPEED INDICATOR
15. ALTITUDE GYRO INDICATOR
16. RATE-OF-CLIMB INDICATOR
17. INSTRUMENT LIGHTS - 17 RED.
18. CHARTBOARD SOCKETS
19. ALTIMETER
20. TURN AND BANK INDICATOR
21. CARBURETOR AIR THERMOMETER
22. WHEEL POSITION INDICATOR
23. A/R POSITION INDICATOR
24. REMOTE COMPASS
25. REMOTE COMPASS CORRECTION CARD
26. DIRECTIONAL GYRO INDICATOR
27. MANIFOLD PRESSURE GAGE
28. TACHOMETER
29. FUEL LEVEL INDICATOR
30. DATA COMPARTMENT
31. CHECK LIST - TAKEOFF AND LANDING
32. CLOCK - 2 1/2 HOUR CIVIL DATE - (8 DAY)
33. IGNITION SWITCH
34. ENGINE STARTER SWITCH
35. ENGINE PRIMER SWITCH
36. ENGINE GAGE - FUEL & OIL PRESSURE - OIL TEMPERATURE
37. CYLINDER TEMPERATURE INDICATOR
38. FUEL LEVEL WARNING LIGHT
39. OIL DILUTION SWITCH
40. SURFACE (AND THROTTLE) LOCK KNOB
41. ALTERNATE AIR KNOB - CARBURETOR AIR
42. COWL FLAP SWITCH
43. INTERCOOLER SWITCH - CARBURETOR AIR
44. OIL COOLER SWITCH
45. CARBURETOR AIR FILTER SWITCH
46. ENGINE LIMITATIONS CHART
47. GENERATOR FIELD SWITCH - EMERGENCY
48. RUDDER PEDAL ADJUSTING KNOB - FORE AND AFT
49. GUN TRIGGER
50. BOMB RELEASE BUTTON
51. SIGNAL CARTRIDGE CONTAINER - 6 CARTRIDGES
52. HANDBOOK STOWAGE - PILOT'S MANUAL, WEIGHT & BALANCE HANDBOOK
53. LANDING GEAR CONTROL TOGGLE
54. LANDING GEAR - THROTTLE WARNING LIGHT
55. OXYGEN PRESSURE GAGE
56. OXYGEN FLOW FLIKER
57. OXYGEN EMERGENCY VALVE
58. OXYGEN DILUTER VALVE
59. MICROPHONE BUTTON - THROAT, MASK OR LIP MICROPHONE
60. THROTTLE CONTROL HANDLE
61. SPARK CONTROL SWITCH
62. PROPELLER RPM CONTROL HANDLE
63. MIXTURE CONTROL HANDLE
64. FRICTION KNOB - THROTTLE, PROPELLER & MIXTURE HANDLES
65. FUEL TANK SELECTOR HANDLE
66. RIGHT HAND FUEL BOOSTER PUMP SWITCH
67. LEFT HAND FUEL BOOSTER PUMP SWITCH
68. AUXILIARY FUEL PUMP SWITCH
69. BOMB LOAD INDICATOR LIGHTS - 6 GREEN
70. BOMB LOAD INDICATOR LIGHTS SWITCHES - INTERNAL & EXTERNAL
71. COCKPIT LIGHT - 5 RED (4 UNDER SILLS)
72. WING FLAP CONTROL TOGGLE
73. AILERON TRIM TAB KNOB
74. RUDDER TRIM TAB KNOB
75. ELEVATOR TRIM TAB WHEEL
76. RIGHT WING BOMB SALVO OR TANK RELEASE HANDLE
77. LEFT WING BOMB SALVO OR TANK RELEASE HANDLE
78. BOMB RELEASE HANDLE - "SAFE", "SELECT", INTERNAL "SALVO"
79. OXYGEN BOTTLE FILLER VALVE
80. OXYGEN MASK STOWAGE BAG
81. TAIL WHEEL LOCK HANDLE
82. CANOPY CRANK
83. AMBER RECOGNITION LIGHT SWITCH
84. GREEN RECOGNITION LIGHT SWITCH
85. RED RECOGNITION LIGHT SWITCH
86. RECOGNITION LIGHTS KEYING SWITCH
87. WING FOLDING "FOLD - SPREAD" SWITCH
88. WING FOLDING "READY - SAFE" SWITCH
89. WING FOLD WARNING LIGHT - RED
90. FORMATION & SECTION LIGHTS "ON - FLASH" SWITCH
91. SECTION LIGHTS "BRIGHT - DIM" SWITCH - (WHITE LIGHT)
92. FORMATION LIGHTS "BRIGHT - DIM" SWITCH - (WHITE LIGHTS)
93. TAIL RUNNING LIGHT SWITCH - (WHITE LIGHT)
94. WING RUNNING LIGHTS SWITCH - (LEFT LIGHT RED, RIGHT LIGHT WHITE)
95. VOLTMETER
96. MASTER EXTERIOR LIGHTS SWITCH - (FORMATION, SECTION & RUNNING LIGHTS)
97. BATTERY SWITCH
98. INSTRUMENT LIGHTS RHEOSTAT
99. MASTER RADIO SWITCH
100. COCKPIT LIGHTS RHEOSTAT
101. PITOT HEATER SWITCH
102. IFF RADIO "ON" - BAND SWITCH
103. IFF RADIO "ON - OFF" SWITCH
104. IFF RADIO EMERGENCY BAND SWITCH
105. IFF RADIO DESTRUCTOR SWITCH
106. LANDING GEAR HAND CRANK ATTACHMENT
107. WING FLAP HAND CRANK ATTACHMENT
108. CHARTBOARD AND LATCH
109. CIRCUIT BREAKERS - 39
110. EMERGENCY HAND CRANK - FLAP & LANDING GEAR
111. HAND MICROPHONE & BUTTON - (STOWED)
112. RADIO TELEPHONE "RADIO - INTERPHONE" SWITCH
113. RADIO TELEPHONE "P-O BOTH P-P" SWITCH
114. RADIO TELEPHONE CHANNEL SELECTOR SWITCH
115. HOMING RECEIVER VOLUME CONTROL KNOB
116. HOMING RECEIVER TUNING CRANK
117. HOMING RECEIVER BEAT NOTE KNOB
118. HOMING RECEIVER "OFF - CW - VOICE" SWITCH
119. RANGE RECEIVER VOLUME CONTROL KNOB
120. RANGE RECEIVER TUNING DIAL KNOB
121. COCKPIT RECEPTACLE - 2 1/2 VOLT DIRECT CURRENT
122. PYROTECHNIC PISTOL TRIGGER
123. PYROTECHNIC PISTOL MOUNTING LATCH
124. PYROTECHNIC PISTOL BREECH LATCH
125. SPARE LAMPS - INTERIOR LIGHTS
126. HOT AIR CONTROL KNOB - CABIN & WINDSHIELD AIR
127. COLD AIR CONTROL HANDLE - CABIN
128. ARRESTING HOOK CONTROL HANDLE
129. PYROTECHNIC PISTOL STOWAGE BAG
130. HEADPHONE JACK
131. HAND MICROPHONE JACK
132. LIP, THROAT, OR MASK MICROPHONE JACK
133. ENGINE FIRE EXTINGUISHER HANDLE
134. RELIEF TUBE
135. SEAT HEIGHT ADJUSTING HANDLE
136. BACK PAD
137. LIFE RAFT
138. PARACHUTE
139. SHOULDER STRAP ADJUSTING HANDLE
140. OXYGEN BOTTLE SHUTOFF VALVE

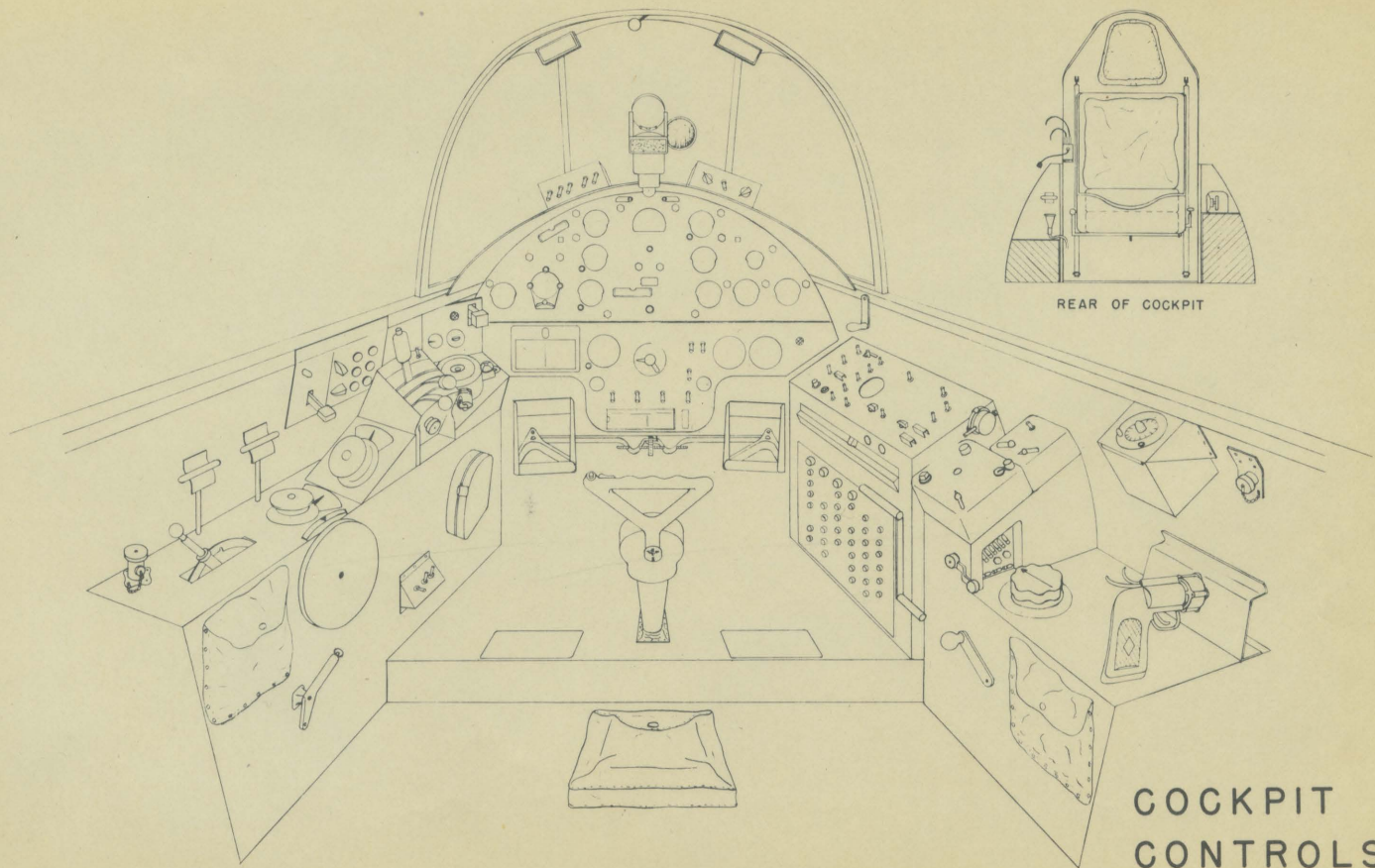
LEGEND -
COCKPIT
CONTROLS

RESTRICTED

RESTRICTED



KEY-
COCKPIT
CONTROLS

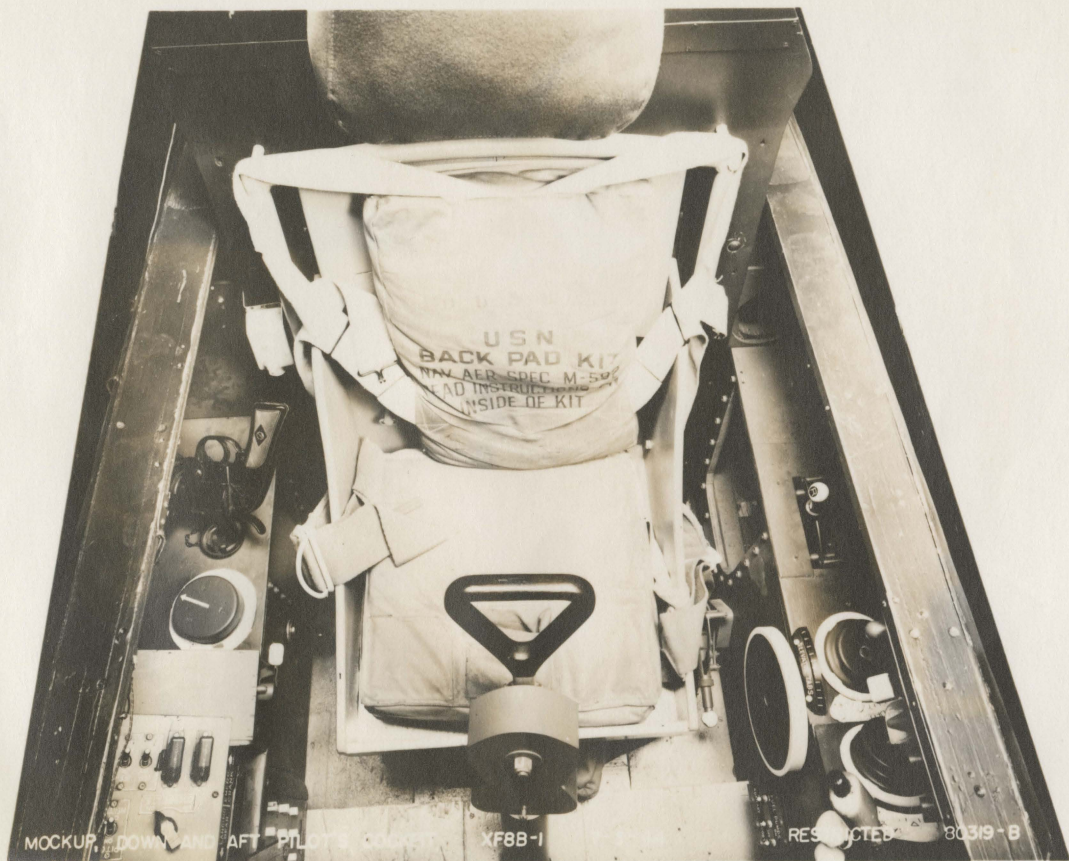


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COCKPIT
CONTROLS

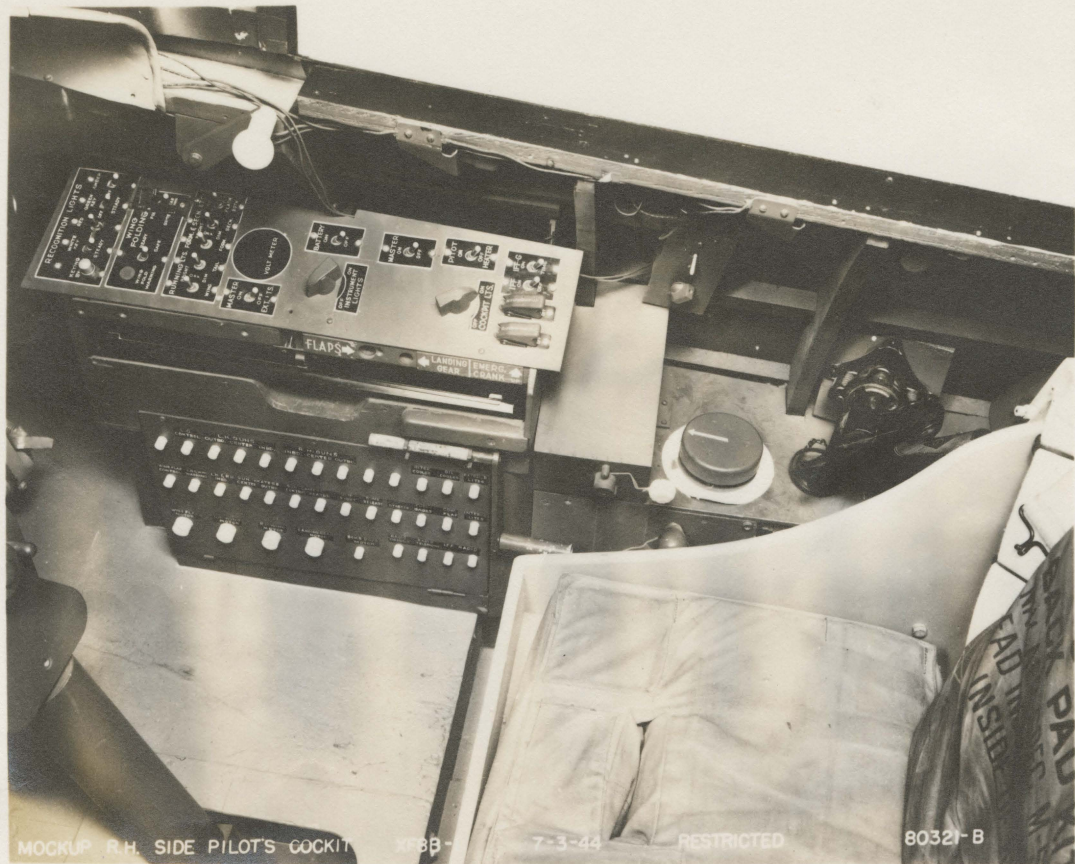


MOCKUP FRONT OF PILOT'S COCKPIT XFB 7-3-44 RESTRICTED 0318-B



MOCKUP OF DOWN AND AFT PILOT'S COCKPIT XF88-1

RESERVED 80319-B



MOCKUP R.H. SIDE PILOT'S COCKIT

XF8B-

7-3-43

RESTRICTED

80321-B



MOCKUP L.H. SIDE PILOT'S COCKPIT

AFB

7-3-44

RESTRICTED

80320-B

BEFORE ENTERING COCKPIT

HAVE--Fuel quantity

- Oil quantity
- Ammunition load
- Bomb load
- Baggage load
- Gross weight
- CG location
- Latitude
- Longitude
- Barometric pressure,
- IFF instructions
- Homing radio instructions
- Recognition and Resin lights code
- Back pad
- "Mae West" life jacket
- Parachute harness

CHECK--Protective canvas covers off

- Wheel chocks in place
- Grounding wire removed
- Folded wing bracing struts removed
- External electrical power plug connected at right wing root. If not connected, turn on as little electrical equipment as possible to conserve the battery for engine

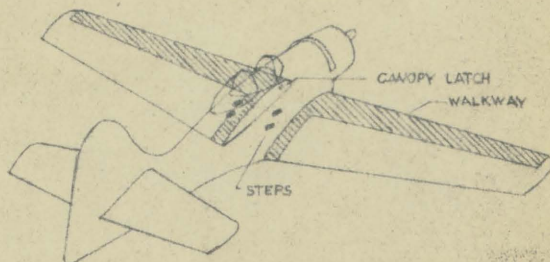
XP8B-1

BEFORE ENTERING COCKPIT

- priming and fuel boost.
- Baggage stowed in compartment behind pilot's seat.

ENTERING COCKPIT

- Walk on wing only next to fuselage and forward of wing spar.
- Lift latch on right side of fuselage by windshield and push canopy back.



Restricted

BEFORE STARTING ENGINE
(From left to right around cockpit)

SEAT CONTROLS

- Adjust seat height with handle on right side.
- Attach life raft and parachute to harness.
- Fasten safety belt and shoulder harness.
- Adjust shoulder harness for comfort with handle on left side of seat. Depress and move handle aft, lean forward to unwind cable, and return handle forward to latch for proper clearance.

LEFT SIDEWALL CONTROLS

- If oxygen is to be used, check that oxygen bottle is open (knob counterclockwise).
- Check that oxygen filler valve is closed (clockwise).
- Put on oxygen mask. Be sure flexible tube quick disconnect coupling is fully engaged.
- With red EMERG. knob on regulator OFF (clockwise), pinch mask tube and inhale lightly. If mask leaks, tighten suspension straps and/or adjust nose wire.

Turn DILUTER OFF, inhale, and check that oxygen flow indicator "blinks", and turn DILUTER ON again.

If oxygen is not to be used, remove mask and turn bottle off.

Bomb release lever at SAFE (aft).

Wing tank release handles seated.

Tail wheel handle at LOCKED.

Tow target handle at UNLOCKED.

Elevator tab wheel centered.

Rudder tab wheel centered.

Aileron tab wheel centered.

Wing flap rheostat toggle at TAKE-OFF.

Observe flaps aft of wing trailing edge.

Bomb indicator lights test switches momentarily on TEST. All bulbs must light.

Spare lamps stowed in right console.

Switch to ON. Indicates bombs loaded.

Supercharger handles in LOW BLOWER.

Throttle microphone switch not sticking.

Propeller pitch handle at full INCREASE RPM for 2700 RPM.

Mixture handle at IDLE CUTOFF.

Fuel tank selector handle OFF at all times when engine is not running. THIS IS MANDATORY.

Fuel pumps switches:

AUXILIARY - OFF

L.H. BOOSTER - ON +

R.H. BOOSTER - ON +

Oxygen pressure 1800 \pm 50 PSI.

Oxygen regulator DILUTER lever ON except when medical advice is to breath oxygen from sea level up.

Oxygen regulator red EMERGENCY knob OFF except when necessary to remove the mask temporarily to blow the nose, spit vomit, etc. Loosen mask on one side and hold near nose. Turn the EMERGENCY valve OFF as soon as possible to maintain oxygen endurance.

Landing gear switch DOWN

INSTRUMENT PANEL HOOD CONTROLS

Armament master switch OFF (Guns & bombs only).

Gun camera switch OFF.

Gun selection switches ON except as desired.

Gun sight sun filter down out of line of vision.

Gun sight light rheostat between DIM and BRIGHT. To prevent confusion, do not

XFEB-1

BEFORE STARTING ENGINE

turn light off with rheostat.

Gun sight light switch OFF. (use ON ALT. only if ON filament burns out.)

Bomb selection switch as determined by mission.

Emergency canopy release red pull-knob at top of windshield seated.

Adjust the two rear view mirrors.

INSTRUMENT PANEL CONTROLS

Chartboard light switches off unless to check bulbs or for illumination. Spare bulbs stowed in right console.

Attitude gyro knob OFF (caged).

Rate-of-climb pointer set to zero with knob.

Altimeter set to field altitude or barometric pressure with knob.

Landing gear position indicator - all wheels down.

Air position indicator set for latitude, longitude, and magnetic variation of starting point with three knobs. Select North or South latitude and East or West longitude with flip levers as desired.

Remote compass course marker set with

Restricted

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knob.

Directional gyro course set, gyro caged.

Fuel gage showing fuel quantity in taxi position. Check calibration card for quantity in flight position.

Clock wound and set (pull knob out to set) Set civil date by pushing in on red dimple with pencil point.

Ignition switch lever OFF, knob at zero. Engine starter switch momentarily to MESH to insure that brushes are lowered; return to OFF.

Oil dilution switch OFF.

Surface lock knob pushed in. Push throttle handle forward and return to 1/8 to 1/4 open for 1000 RPM. Push control column forward and observe that elevators move downward. Move spade grip to left and note that left aileron comes up. Push left rudder pedal forward and note that rudder swings to left.

Check oil cooler door operation by moving switch to CLOSE, OPEN, and back to AUTO.

Intercooler switch AUTO.

Check cowl flap operation by flipping

switch to CLOSE till flaps are fully closed, and then back to OPEN.

Carburetor air filter switch to UNFILTERED except when filter is installed and dust or icing conditions are present.

Alternate air knob pushed in (no alternate carburetor air) except in icing conditions.

Generator field emergency switch ON (guard closed).

RUDDER PEDAL ADJUSTMENT

Turn knurled knob between rudder pedals to adjust pedals fore and aft.

RIGHT SIDEWALL CONTROLS

Turn canopy hand crank counterclockwise to close canopy; clockwise to open.

Recognition lights switches OFF.

Wing fold READY-SAFE switch on SAFE and guard in place until bracing struts removed and pilot ready to spread wings.

Wing fold-spread switch OFF.

Master exterior lights switch OFF unless running, formation, or section lights

SPEC. AN-H-8
DEC. 18, 1942

FORM ASC-512

AIRPLANE MODELS
XF8B-1

**SPECIFIC ENGINE
FLIGHT CHART**

ENGINE MODELS
**PRATT & WHITNEY
R-4360-10**

CONDITION	FUEL PRESSURE (LB./SQ. IN.)	OIL PRESSURE (LB./SQ. IN.)	OIL TEMP.		CARB. AIR TEMP.		MAX. PERMISSIBLE DIVING RPM: 3060 (30 SEC.)
			°C	°F	°C	°F	
DESIRED	16 - 18	80 - 90	70	160	30	85	
MAXIMUM	19	90	85	185	38	100	
MINIMUM	16	50	40	104			
IDLING	8	25					

CONDITION	ALLOWABLE OIL CONSUMPTION	
MAX. CONT.	40 U.S.QT. HR.	68 IMP.PT. HR.
MAX. CRUISE	18 U.S.QT. HR.	31 IMP.PT. HR.
MIN. SPECIFIC U.S.QT. HR. IMP.PT. HR.

OIL GRADE: (S) 1120 (W) 1120

SUPERCHARGER TYPE: TWO STAGE, ENGINE DRIVEN, AUTOMATIC VARIABLE SPEED FUEL GRADE: 100/130 AN-F-28 OCTANE 100

OPERATING CONDITION	RPM	MANIFOLD PRESSURE (BOOST)	HORSE-POWER	CRITICAL ALTITUDE		BLOWER	SPARK CONTROL POSITION	MIXTURE CONTROL POSITION	FUEL FLOW (GAL. HR./ENG.)		MAXIMUM CYL. TEMP.		MAXIMUM DURATION (MINUTES)
				WITH RAM	NO RAM				U.S.	IMP.	°C	°F	
TAKE-OFF	2700	52	3000		S.L.		NORMAL	AUTO RICH	362	302	232	450	5
WAR EMERGENCY						AUTOMATIC	NORMAL	AUTO RICH	420	350	232	450	3
MILITARY	2700	52	3000 2400		2500 25,000	AUTOMATIC	NORMAL	AUTO RICH	362	302	232	450	5
MAXIMUM CONTINUOUS	2550	43.5	2500 2200		5000 25,000	AUTOMATIC	NORMAL	AUTO RICH	300	250	232	450	NO LIMIT
MAXIMUM CRUISE	2230	33	1675 1500		10,000 23,000	AUTOMATIC	NORMAL	AUTO LEAN	130	108	204	400	NO LIMIT
MINIMUM SPECIFIC CONSUMPTION	1400 1550 1800	24 22 19.5	750		10,000 15,000 20,000		CRUISE (BELOW 1400 HP)	AUTO LEAN	65 70 75	54 58 62	204	400	NO LIMIT

REMARKS: FIGURES IN ITALICS ARE ESTIMATED DATA

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RESTRICTED

to be turned on.

Wing and tail running lights switches OFF unless night flight or for check of BRIGHT and DIM settings. Lights visible from cockpit when wings folded and rudder swung either way.

Formation and section lights switches OFF, unless for check of formation lights on upper surface of outer wings and section light behind cockpit.

Battery switch ON.

Instrument lights rheostat OFF unless to check bulbs or for illumination. OFF if three or more lights turned out.

Spare bulbs carried in right console.

Pitot heater switch OFF unless icing conditions anticipated.

Master radio switch ON. Controls all radios.

IFF radio destructor, emergency, on-off, and G - band switches OFF except as instructed by commanding officer.

For operation of IFF radio, radio telephone, homing receiver, and range receiver, see pages 32 and 76. Master radio switch must be ON.

Cockpit receptacle; remove screw cap to

connect electrical equipment. Mating plugs must be NAF1078-2, NAF1078-3, AN3106-16-1lp, or AN3106-16S-4p.

Pyrotechnic pistol stowed in bag. Knurled cap on mounting bracket. Check cartridges stowed in containers in front of seat.

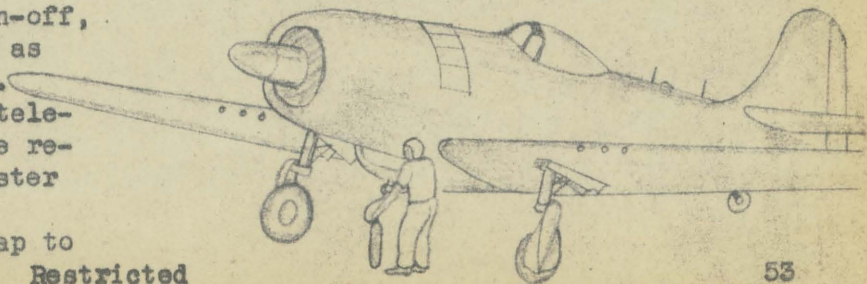
Relief tube stowed in clip beside seat.

Plug headset and hand microphone into jacks on top of jackbox at right side of seat armor. Plug lip, throat, or mask microphone into short extension cord from side of jackbox.

Check that all circuit breakers on side of right console are pushed in.

Check fire extinguisher handle beside seat. Be sure bottles are charged.

Be sure fireman with extinguisher is standing beside engine.



ENGINE STARTING

Cowl flaps full open
 Intercooler switch AUTO
 Oil cooler switch AUTO
 Tank selector OFF (mandatory)
 Spark switch NORMAL
 Throttle 1/8 to 1/4 open for 1000 RPM
 Mixture IDLE CUTOFF (mandatory)
 Propeller full INCREASE RPM for 2700 RPM
 Supercharger in LOW BLOWER

With ignition switch OFF, have propeller pulled through ~~five~~ ~~of~~ ~~ten~~ ~~blades~~ by hand to clear the cylinders if the engine has not been run for one hour or more.

Turn ignition switch lever to BOTH.
 Hold starter switch to START for no longer than 20 seconds as there is no over-speed governor, and a maximum of ten seconds if the voltage is above 24 volts.
 During the 20 second period, turn the fuel tank selector handle to MAIN, and hold the primer switch on for 2 or 3 seconds. If the engine has been run previously during the day, prime not more than 2 seconds; if during the

previous two hours, do not prime at all. After energizing starter 20 seconds, move the starter switch to MESH and hold until the engine is running or until the starter slows down to its constant slow speed. Allow one to two minutes cooling time before a new start. After the engine is definitely running and speeds up after the first few pops, move the mixture handle steadily and evenly to AUTO RICH.

IMPORTANT

A fuel bleed past the mixture idle cutoff valve pours fuel into the manifold supercharger whenever the tank selector is not OFF. Therefore the tank selector should not be moved to MAIN until ready to mesh starter, nor mixture moved too hurriedly to AUTO RICH, or the engine will be flooded and must be pulled through by hand to clear it.

If the engine starts to die and black fuel smoke comes out of the exhausts, jerk the mixture handle to IDLE CUTOFF. As the engine slows and suddenly

speeds up when the excess fuel is burned, move the mixture handle back to AUTO RICH.

If heavy black smoke is exhausted even after the mixture handle is at IDLE CUTOFF, it may be necessary to open the throttle about half way until the engine speeds up, then close the throttle for 1000 RPM and move the mixture handle to AUTO RICH.

Do not pump the throttle. There is more possibility of killing the engine than of aiding it.

If the engine does not start in 10 to 15 seconds after meshing, it probably will not start and a new attempt should be made. Be sure to return the tank selector to OFF and the mixture handle to IDLE CUTOFF.

Adjust the throttle to hold the engine RPM below 1000 RPM for the first 30 seconds after starting and watch for an indication of oil pressure on the gauge. If oil pressure does not register almost immediately, move mixture handle to IDLE CUTOFF and turn off ignition switch. Check the oil

supply and investigate the oil lines for leaks, congealed oil in cold weather, or clogged filter.

MANUAL STARTING - Push and release meshing handle under spring loaded access door between cowl flaps and the ventilating slots on right side of engine cowling. This lifts and latches starter brushes off commutator to eliminate friction. Insert starter gear box (AN4097-1) in hand crank socket just aft of meshing handle access door, and insert hand crank in gear box.

Apply pressure slowly to the hand crank for the first rotation in counterclockwise direction. Accelerate to about 96 RPM. Not more than 20 seconds before meshing, have someone in cockpit turn ignition switch to BOTH, set fuel tank selector to MAIN, and prime as instructed on page 54. Pull meshing handle until engine starts, then release. If ignition boost is necessary, mesh electrically with starter switch on instrument panel instead of with meshing handle.

WARM UP

After the first 30 seconds, adjust the throttle to about 1000 RPM with the propeller control at full INCREASE RPM. Normal oil pressure is 80 to 90 PSI. The initial oil pressure may exceed 300 PSI and the engine RPM should be held below 1000 RPM until the oil temperature reaches 40°C (104°F).

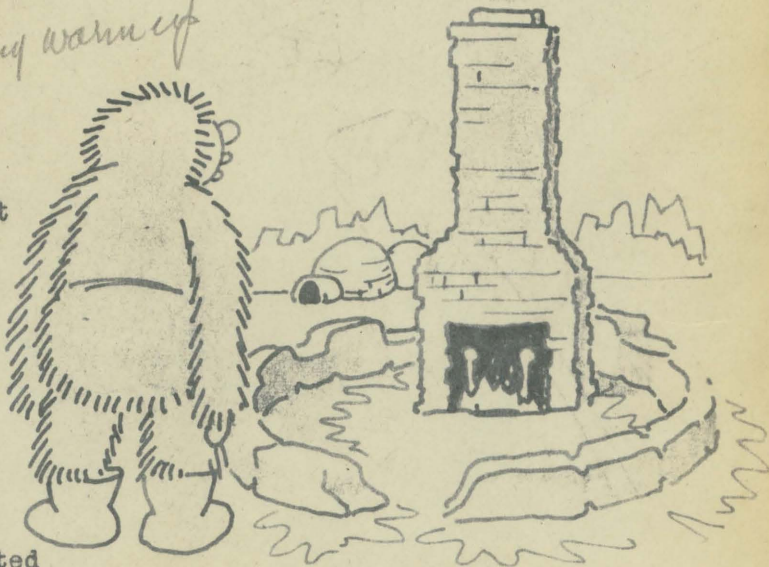
Cowl flaps must be full open, even in extremely cold weather, to prevent burning the ignition wire insulation, particularly at the spark plug elbows. Prolonged idling below 800 RPM may result in fouled spark plugs. However, with an occasional run-up for cleaning out, short periods of idling at as low as 700 RPM are entirely permissible.

When the oil-in temperature has risen above 40°C (104°F) and the cylinder temperature has reached 120°C (248°F) advance the throttle to give 30 inches Hg. manifold pressure with the propeller at full INCREASE RPM.

The external power plug can be disconnected after starting since the engine driven

generator cuts in at approximately 800 RPM. However, increase the RPM before applying any heavy electrical loads such as folding the wings or operating the flaps, bomb doors, or radios.

during warm up



GROUND TEST

With the engine running at 2000 RPM (manifold pressure at approximately 30 inches Hg.), move the ignition switch lever from BOTH to OFF and immediately back to BOTH. The RPM drop should be approximately 100 RPM. Move the switch from BOTH to L and note the drop in engine RPM. The normal drop-off is 25 to 50 RPM, and does not usually exceed 100 RPM. Return the lever to BOTH as soon as possible after a stable reading is obtained.

Repeat the ignition test, switching from BOTH to R, and from R to L before returning to BOTH. The dip in RPM from R to L should not be more than 30 or 40 RPM.

This check should be made in as short a time as possible. Continued running with the switch in L or R positions with manifold pressure as high as 25 to 30 inches Hg. may cause serious detonation. Excessive RPM drop and engine vibration indicate that one or more cylinders are misfiring.

In case of excessive drop, advance the

throttle to give 33 inches Hg. manifold pressure and make a very quick check as above.

With the manifold pressure at 30 inches Hg. and the ignition switch lever on BOTH, rotate the ignition switch knob from 0 to 1, pull out the knob and rotate to L. A drop of 20 RPM should be considered maximum. If more, one or more spark plugs of the four cylinders in that bank are misfiring.

Repeat the check for 1R, and for the L and R positions of the remaining banks. Make each check as brief as possible, and allow the RPM to return to normal before starting each check. Return the knob to 0 when the check is completed.

Advance the throttle to give 2000 RPM with propeller control at full increase RPM and check the following:

Oil temperature	60°C (140°F)
Oil pressure (at 60°C)	85-90 PSI
Fuel pressure	16-18 PSI
Manifold pressure	29 in. Hg.

Do not exceed 204°C (400°F) cylinder head temperature during ground operation.

TAXIING

Mixture handle AUTO RICH.

Propeller pitch handle full INCREASE RPM.

Gowl flaps full open.

Cylinder temperature maximum 204°C (400°F)

Oil temperature at least 40°C (104°F),
preferably 60°C (140°F).

Oil pressure 80 to 100 PSI.

If icing conditions are present, pull
ALTERNATE AIR knob during taxiing to
prevent carburetor icing, but push
knob in before takeoff.

Use throttle to regulate power.

With tail wheel locked, taxi "off the
spot" until tail surfaces are clear of
other airplanes. Unlock tail wheel
by raising handle on side of left
console.

Steer with rudder. Tail wheel is not
steerable.

Spread wings while taxiing to employ
full generator power. Raise guard from
READY-SAFE switch on right hand console
and move switch to READY. Raise guard
from FOLD-SPREAD switch and hold switch
at SPREAD until the red warning light

XF8B-1

TAXIING

goes off and the red cylinders at the
wing folds have disappeared into the
wing flush with the surface.

The wing flaps will move automatically
to the position set on the control
rheostat when the wings are fully
spread.

Restricted

CHECK LIST

TAKE-OFF

FLAPS UNFOLDED
WINGS LOCKED
CHECK GAS
MIXTURE RICH
SET PROPELLER
COWL FLAPS
CHECK TABS
TAIL WHEEL
WING FLAPS

LANDING

ARMAMENT SWITCH
CHECK GAS
MIXTURE RICH
SET PROPELLER
WHEELS DOWN
FLAPS DOWN
TAIL WHEEL
ARRESTING HOOK

DO NOT EXTEND OR RETRACT LANDING
GEAR ABOVE 150 KNOTS INDICATED
AIR SPEED

TAKEOFF

(Left to right around cockpit)

Tail wheel handle unlocked (carrier),
locked (land).
Wing flap rheostat toggle at T.O. (Take-
off). Note positioning marks on flap
aft of wing trailing edge.
Spark control switch NORMAL.
Throttle set for 2000 RPM ignition check.
Propeller pitch handle at INCREASE RPM.
Supercharger handle at LOW BLOWER.
Mixture handle AUTO RICH.
Fuel tank selector handle on MAIN.
Oil cooler switch AUTO.
Intercooler switch AUTO.
Cowl flaps as required to maintain take-
off cylinder temperature between 120°C
(250°F) and 232°C (450°F). Temperature
should have started to rise before
starting take-off.
Carburetor air filter switch UNFILTERED
unless dusty or icing.
Alternate air knob pushed in unless icing
Oil temperature at least 40°C (104°F),
preferably 60°C (140°F).
Oil pressure 80 to 90 PSI.

Fuel pressure 16 to 18 PSI.
Check ignition. Switch lever BOTH to R,
BOTH to L (RPM drop 25 to 50, max-
imum 100); L to R (RPM dip 30-40).
Return lever to BOTH.
Obtain radio or visual clearance
for takeoff.
Controls free.
Safety belt fastened and shoulder harness
latched against forward pull.
Advance throttle to 52 inches mercury
manifold pressures and take-off at
2700 RPM (5 minutes maximum).
Landing gear switch UP. If tail wheel is
not centered the wheels cannot retract.
Touch the brakes to stop the wheels.
Wing flap toggle UP after clearing all
obstacles.
Before five minutes operation at take-
off power, first throttle back to 43.5
inches Hg. manifold pressure and then
set propeller pitch handle for 2550
RPM. If further reduction of power is
desired, reduce the manifold pressure
2 to 4 inches Hg., then the RPM approx-
imately 200 RPM in alternate steps

until the desired engine speed is obtained, and finally, adjust the manifold pressure to the desired value.

CATAPULTING

All controls same as for TAKE-OFF except:
Auxiliary full pump switch ON.
Canopy open.
Chartboard stowed.
Data case snapped closed.
Check cockpit and airplane for loose equipment and either secure it or remove it.
Throttle friction knob tightened to prevent movement during catapult.
Use head rest.
After take-off, turn auxiliary fuel pump OFF.

CLIMB AND LEVEL FLIGHT

Engine horsepower is determined by three factors: RPM, manifold pressure, and fuel-air mixture.

The propeller pitch lever controls RPM, and a governor automatically maintains the RPM during climb, dive, variable winds, etc. The RPM is adjustable with the propeller pitch lever between 2700 RPM and approximately 1000 RPM.

The throttle controls the manifold pressure, as well as metering the amount of air flow to the cylinders. Opening the throttle increases the manifold pressure and air flow. When climbing, the RPM is set for the desired power and, as the altitude increases, the throttle is opened to maintain constant manifold pressure. When the throttle is open as far as possible, the supercharger handle is advanced to start the auxiliary fluid driven supercharger. When reducing power, the supercharger handle must be closed before the throttle is reduced.

The mixture lever varies the ratio of fuel to air. AUTO RICH is the normal flight condition, and is automatically compensated for altitude. AUTO LEAN is used only during cruise below 75% rated power to conserve fuel when cooling is adequate. Whenever engine power is to be increased, move the mixture lever to AUTO RICH before advancing throttle. FULL RICH is an emergency position, to be used only if the altitude compensation fails. IDLE CUT-OFF completely stops the main fuel flow to the engine. Manual leaning is not permissible.

The cruising spark control switch beside the throttle handle operates the spark advance gearing in the magneto distributors. The switch must be on NORMAL for all operation above 1400 horsepower, and may be used below 1400 H.P. while cruising with AUTO LEAN mixture for optimum fuel consumption. Normal rated power at 2550 RPM and 43.5 inches of mercury manifold pressure is the maximum power for continuous oper-

ation and is considered 100% power for comparison.

Military power is the maximum permitted for military services with less regard for long life of the engine than for immediate tactical needs and is limited to five minutes duration up to 2700 RPM and 52 inches Hg.

Takeoff power is the same as maximum military power, and is also limited to five minutes duration.

War Emergency power at 2700 RPM and manifold pressure up to 60 inches Hg. is available in extreme emergency for three minutes.

When increasing power, always adjust the mixture control first to the desired power condition, then the propeller pitch control for the correct RPM, and finally the throttle for the corresponding manifold pressure.

When decreasing power, set the throttle first, then propeller pitch, and finally mixture control.

An easy way to remember this is:

When increasing power, go up the alphabet - mixture (M), propeller (P)

throttle (T); when decreasing power, go down the alphabet - T,P,M.

The following maximum power settings are taken from the Specific Engine Flight Chart:

Condition	Max. Man.		"Hg.	Mix.
	S.L. H.P.	RPM		
 	 	 	 	
Military (5 min.)	3000	2700	52	AR
Rated (Max.Contin)	2500	2550	43.5	AR

Adjust the cowl flaps to maintain cylinder temperatures below 232° (450F).

Cylinder and oil temperatures can be reduced by climbing at an indicated air speed of 10 to 20 miles per hour higher than the speed for best climb, without much loss in rate of climb.

A tendency for oil to overheat can be checked more quickly by reducing engine RPM than by throttling. A tendency for the carburetor air temperature to exceed 32°C (90°F) can be counteracted by opening the intercooler or reducing engine RPM.

Set fuel valve to droppable tank after climb.

CRUISING

Cruising is defined by the use of AUTO
LEAN fuel-air mixture and spark control
CRUISE settings to obtain better fuel

consumption ratios for long range flying.
The following power settings are an
expansion of the Specific Engine Flight
Chart:

POWER	RPM	MP	ALTITUDE	MIXTURE	SPARK	GAL./HR.
Rated 100%	2550	43.5	SL - 25,000	AUTO RICH	NORMAL	300
Cruise 67%	2230	33	SL - 20,000	AUTO LEAN	NORMAL	130
Cruise 60%	2000	33	SL - 20,000	AUTO LEAN	NORMAL	110
Cruise 56%	1800	33	SL - 20,000	AUTO LEAN	CRUISE	97
Cruise 50%	1600	33	SL - 20,000	AUTO LEAN	CRUISE	87
Min. Cruise						
30%	1400	24	SL - 10,000	AUTO LEAN	CRUISE	65
30%	1550	22	10,000-15,000	AUTO LEAN	CRUISE	70
30%	1800	19.5	15,000-20,000	AUTO LEAN	CRUISE	75

AIRSPEED LIMITATIONS

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PROHIBITED FLIGHT MANEUVERS
PROHIBITED FLIGHT MANEUVERS

	LIMITING FACTOR	INDICATED AIRSPEED	
		KNOTS	MPH
Wing Folding	Design Load	30	35
Wings folded	Strut Braced	60	70
Wing Flaps	Do Not Lower	130	150
Canopy	Must be closed	152	175
Landing Gear	Wont operate	152	175
Arresting Hook	Do not lower	152	175
Cowl Flaps	Cannot close	326	375
Bomb Doors	Do not open	326	375
Structure	Design Limit	542	625

Apply gage correction for actual airspeed.

Inverted flight

Outside Loop

The following maneuvers are prohibited when carrying bombs or droppable fuel tanks:

Loop

Aileron Roll except when entering dive.

Snap Roll

Sideslip

Chandelle

Immelman Turn

Wing Over

Vertical Turn

Spin

Maximum dive angle is 100 degrees between thrust line and horizontal.

Maximum engine overspeed is 3060 RPM for 30 seconds.

DIVING

GLIDE AND APPROACH FOR LANDING

When overspeeding above 2700 RPM of the engine is unavoidable in dives, it is recommended that the throttle be partially opened to give 12 to 15 inches Hg. manifold pressure if possible. However the maximum safe overspeed of 3060 RPM for 30 seconds must not be exceeded.

Unless military power is being used for tactical purposes, dives should be started with the propeller pitch and manifold pressures set at some cruising value (maximum cruise 2230 RPM, 33 in. Hg.) The throttle should be closed gradually as the speed increases to hold down engine RPM and regulate manifold pressure.

Mixture handle must be at AUTO RICH.

GLIDE

While the airplane speed is being reduced in a glide, the propeller pitch handle should be set for maximum cruising RPM (2230 RPM) or less to prevent high speed windmilling of the engine. The throttle should be closed as desired.

APPROACH FOR LANDING

Armament master switch OFF. (So guns cannot be fired when the airplane is landing.)

Landing gear DOWN below 152 knots.

Arresting hook DOWN (carrier), UP (land).

Wing flaps DOWN.

Tail wheel UNLOCKED (carrier), LOCKED (land).

Canopy open (carrier).

Fuel tank selector on fullest tank.

Cowl flaps partially opened.

Spark control switch NORMAL.

Propeller pitch handle between 2230 and 2550 RPM.

Close throttle during descent; cut at carrier signal.

Open cowl flaps completely before taxiing.

Raise wing flaps and fold wings while taxiing to obtain full generator power.

WAVE-OFF

Open throttle to 52 inches Hg. manifold pressure. Use supercharger if needed.

Increase propeller pitch to 2700 RPM

Arresting hook UP.

Landing gear UP.

Wing flaps UP.

Cowl flaps partially closed to keep cylinder temperature between 190°C (374°F) and 232°C (450°F)

Before five minutes, close throttle to 43.5 in. Hg. manifold pressure.

Decrease propeller pitch to 2550 RPM.

For further power reduction, close throttle for 2 to 4 in. Hg. less manifold pressure and lower RPM approximately 200 RPM in alternate steps.

STOPPING ENGINE

Idle engine until cylinder temperature cools below 204°C (400°F), at 700 RPM. Propeller pitch handle at INCREASE RPM. Cowl flaps full open.

To stop the engine, open throttle to 1200 RPM for 30 seconds. Set mixture handle to IDLE CUTOFF and open throttle.

When the engine has stopped, turn ignition switch OFF.

If IDLE CUTOFF should not stop the engine, close throttle, turn ignition OFF, and slowly open throttle wide. Have idle cutoff adjusted properly as soon as possible.

Turn fuel tank selector OFF.

After the engine stops, leave cowl flaps fully open to prevent burning ignition system insulation.

Leave mixture handle at IDLE CUTOFF.

OIL DILUTION

When a cold engine start is anticipated with outside air temperatures below 0°C (32°F), dilute the engine oil with fuel as follows:

Idle or stop the engine to allow the cylinder temperature to fall below 148°C (300°F) and the oil temperature below 50°C (120°F). It is suggested if the engine is stopped that the oil tank be refilled after cooling to dilute all of the starting oil.

Restart the engine and run at 800 RPM.

Note the oil pressure.

Press the oil dilution switch and observe the oil pressure gage as follows:

ANTICIPATED OUTSIDE AIR TEMPERATURE	DILUTE TILL OIL PRESSURE DROPS
0 to -12°C, 32 to 10°F	10 PSI
-10 to -18°C, 15 to 0°F	15 PSI
-18 to -23°C, 0 to -10°F	20 PSI

When the oil pressure drop is complete,

shut off the engine by moving the mixture handle to IDLE CUTOFF. Cut ignition.

If the engine is run again after dilution before the anticipated cold start, re-dilute as above to the final oil pressure obtained during the first dilution.

BEFORE LEAVING AIRPLANE
(Left to right around cockpit)

Oxygen bottle off (knob clockwise).
 Bomb release handle at SAFE.
 Tail wheel handle UNLOCKED.
 Wing flap toggle UP.
 Propeller pitch handle full INCREASE RPM.
 Mixture handle IDLE CUTOFF.
 Fuel tank selector handle OFF.
 Armament master switch OFF.
 Gun camera switch OFF.
 Gun sight light switch OFF.
 Ignition switch lever OFF, knob at zero.
 Surface lock knob pulled out. Throttle automatically closed. Move control column, spade grip, and rudder pedals to neutral to engage locks.
 Recognition lights switches OFF.
 Master exterior lights switch OFF.
 Master radio switch OFF.
 Pitot heater switch OFF.
 Pyrotechnic pistol stowed in bag. Cover on mount.
 Battery switch OFF
 Wheel chocks in place before releasing brakes.
 There is no parking brake.

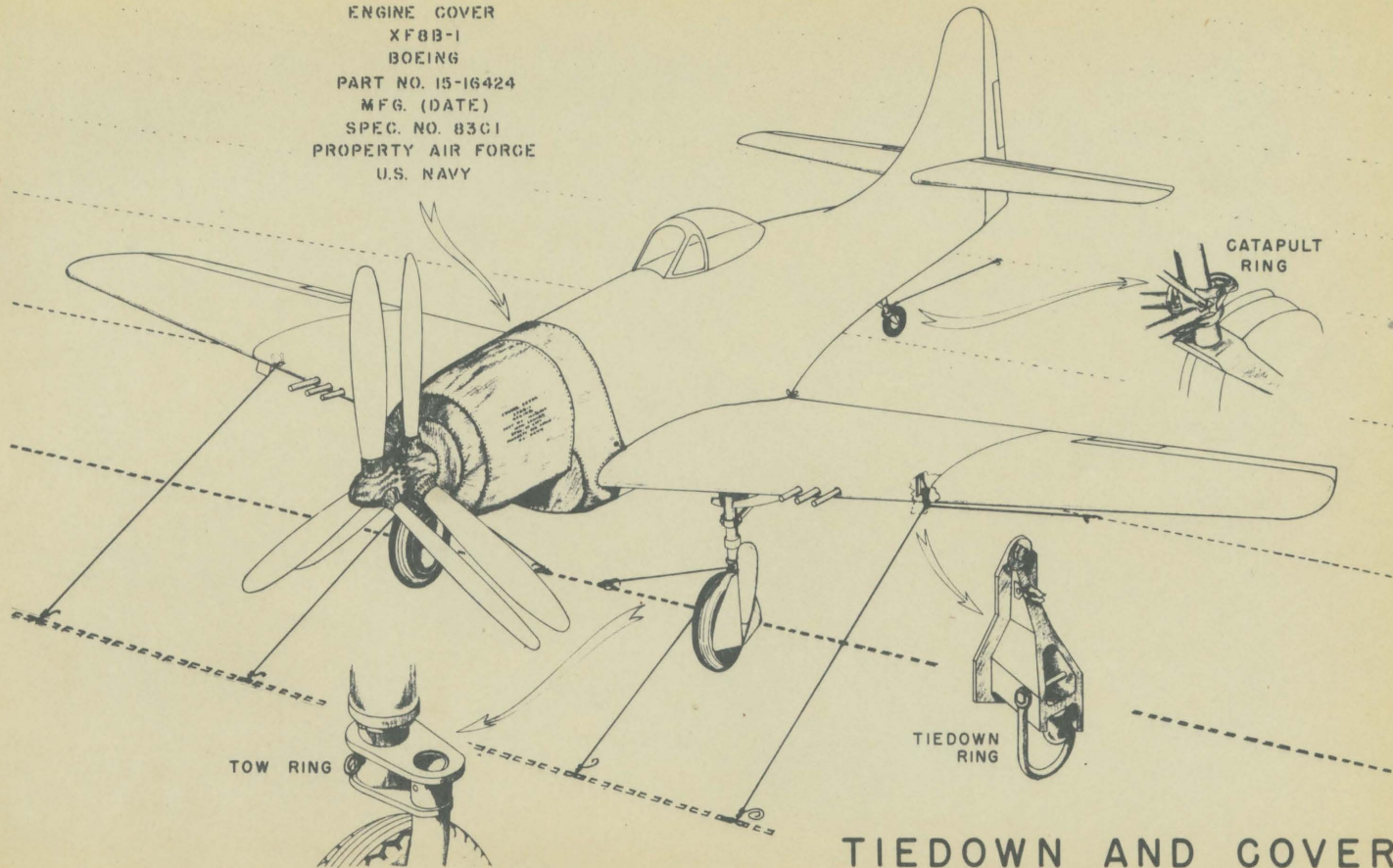
TOWING

A towing bar is provided with the airplane to be attached to lugs on the front of the main landing gear for towing forward and pushing backward. A standard Navy tail wheel tow bar attached through the tail wheel axle may be used to tow the airplane backward.

A man must always be in the cockpit when towing to unlock the tail wheel and to apply the brakes. The tail wheel is unlocked by raising the lever on the side of the left console. If the tail wheel is not unlocked, a shear bolt in the tail wheel treadle will fail when the airplane turns and must be replaced.

In case the forward towing bar is not available and it is necessary to use a cable for towing, the cable should be attached to the towing lugs. The cable must not be shorter than 32 feet (each leg 16 feet long, or towing point at least four feet in front of propellers) and the load must be applied at the middle. The maximum load in each leg of the cable must not exceed 7500

ENGINE COVER
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BOEING
PART NO. 15-16424
MFG. (DATE)
SPEC. NO. 83G1
PROPERTY AIR FORCE
U.S. NAVY



TIEDOWN AND COVER

RESTRICTED

pounds, or the total load acting forward on the cable must not exceed 13,500 pounds.

Do not try to turn the airplane by the cables alone. As the tractor starts to turn, apply the brake in the direction of the turn to keep both cables taut.

In case the tail wheel towing bar is not available, a cable may be attached through the tail wheel axle or around the vertical spindle housing. Do not tie to the catapult hold-back ring, since it is not designed for side loads. With the cable attached to the spindle, the load acting straight aft must not exceed 10,000 pounds. When towing at any angle from straight aft, the load in the cable must not exceed 10,000 pounds and its side component must not exceed 2500 pounds. When the cable is attached through the tail wheel axle, the maximum load in any direction is 2500 pounds.

TIE DOWN

Tie down rings are located in the nose of each wing just inboard of the fold. The rings are covered by an access door on the under side of the wing nose. The catapult ring on the tail wheel can be used for the tail tie down. Other tie down points are the wheel axles and struts.



Tactical
OPERATIONS

SECTION III

FIRING GUNS

Before entering cockpit, obtain ammunition loading and check that all guns have been manually charged. Check camera installation.

After take-off, turn on desired gun selector switches: INBOARD, CENTER, OUTBOARD pairs of guns. Check that circuit breakers are pushed in.

Before firing guns, set gun camera switch to GUNS if camera is to be run. Turn gun sight switch ON (use ALT only if normal bulb filament burned out). Adjust gun sight light rheostat for desired brilliance. Turn on armament master switch.

To fire guns, press trigger on control column grip. Jammed guns cannot be cleared in flight.

To shut down guns, turn off armament master switch, and gun camera switch.

BOMBING

Before entering cockpit, obtain bomb loading, check that bomb doors are closed, and check camera installation in air scoop.

Before starting engine, check that bomb release lever on left console is on SAFE and that the two external wing bomb emergency release handles are seated. Test bomb indicator light bulbs (spare bulbs in right console) and turn lights off until needed.

Bombs cannot be released from both internal and external racks at one time, even in unarmed salvo. Internal bombs can all be salvoed unarmed simultaneously, but must be dropped armed one at a time. External bombs can be dropped armed either separately or together, but must be jettisoned unarmed separately.

To release internal bombs armed, move bomb release handle to SELECT; turn bomb selector switch on instrument

panel hood to INTERNAL, set camera switch to BOMBS if desired, turn on armament master switch, and press bomb release button on control grip for each bomb (3/10th second minimum between bombs).

To release internal bombs unarmed at any time, move bomb release handle to SALVO. To close doors again, turn armament master switch on, move release handle to SELECT for 10 seconds; then to SAFE.

To release external bombs armed, separately or together, set bomb selector switch to EXT. LEFT, EXT. RIGHT, or EXT. BOTH as desired. Move bomb release handle to SELECT, set camera switch to BOMBS if desired, turn on armament master switch, and press bomb release button on control grip.

To release external bombs unarmed, pull the respective red T-handle on left sidewall of cockpit.

USE OF GUN CAMERA

The gun camera operates whenever the camera switch on the instrument panel hood is set to BOMBS or GUNS and the respective bomb release button or gun trigger on the control column is pressed. The camera can be operated while firing the guns or bombing, or if the armament master switch is off, for practise alone.

The camera is parallel to the gun sight. To record the results of a bombing, turn off the armament master switch, swing the airplane around to sight at the target through the gun sight, and press the bomb release button again as long as desired.

USE OF OXYGEN

PRE-FLIGHT CHECK

Red EMERGENCY valve closed.

Oxygen filler valve closed (clockwise).

Oxygen bottle open (knob counterclockwise).

Oxygen pressure 1800 ± 50 PSI.

Put on oxygen mask. Be sure flexible tube quick disconnect coupling is fully engaged.

Pinch mask tube and inhale lightly. If mask leaks, tighten suspension straps and/or adjust nose wire.

Turn DILUTER lever OFF, inhale and check that oxygen flow indicator "blinks" and turn DILUTER lever ON again.

OPERATING INSTRUCTIONS

Oxygen will be used on all flights above 10,000 feet and from the ground up on combat or tactical night flights.

Oxygen regulator DILUTER lever will be ON at all times except:

1. On extended flights above 30,000 feet or when medical advice is to

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USE OF OXYGEN

breath pure oxygen from the ground up.
2. When pure oxygen is needed to treat for shock, loss of blood, or protection against poison gas or carbon monoxide (CO) in cockpit. If carbon monoxide is suspected in cockpit, reduce throttle to normal cruise, mixture to AUTO LEAN if possible.

Oxygen regulator red EMERGENCY knob will be OFF at all times except:

1. For revival of pilot if fainting.
2. For positive flow in case of excessive mask leakage.
3. When necessary to remove the mask temporarily to blow the nose, vomit, spit, etc. Loosen mask on one side and hold as near nose as possible.
4. When blinker shows that the demand regulator is not functioning.

Turn the EMERGENCY valve off as soon as possible to maintain oxygen endurance, or if it must be left on, descend to a safe altitude.

Observe blinker frequently to check flow of oxygen to mask.

Check the cylinder pressure occasionally and determine the endurance at future

altitudes by reference to the oxygen system diagram in this manual (page 35). For any one altitude, the average endurance of a full bottle is as follows:

<u>ALTITUDE</u> <u>(feet)</u>	<u>DILUTER ON</u> <u>(Hours)</u>	<u>DILUTER OFF</u> <u>(Hours)</u>
5,000	7.3	1.8
10,000	8.7	2.1
15,000	11.0	2.6
20,000	9.3	3.3
25,000	6.3	4.1
30,000	5.2	5.2
35,000	6.5	6.5
40,000	8.3	8.3

RADIO OPERATION

HEADSET AND MICROPHONES

Plug headset and hand microphone into jacks on top of jack box at right side of seat back. Plug lip, throat, or mask microphone into short extension cord from side of jack box.

MASTER RADIO SWITCH

Turn on the master radio switch 30 seconds before ready to operate. Do not run the radios on the battery alone (no generator or external power) if possible, or keep the number of radios operating to a minimum. Turn off the switch after parking the airplane.

VOICE COMMUNICATION

Master radio switch ON.

Turn on the ON-OFF switch of the radio telephone box (nearest the sidewall immediately aft of the right hand console switch panel.)

RADIO-INTERPHONE switch on RADIO.

P-G, BOTH, P-P switch as desired to

communicate plane-to-ground, plane-to-plane, or both.

Four-position selector switch set to desired channel as follows:

<u>SW.POS.</u>	<u>TRANS.CHANNEL</u>	<u>REC.CHANNEL</u>
1	P-P	P-P & P-G No.1
2	P-G No. 1	P-P & P-G No.1
3	P-G No. 2	P-P & P-G No.2
4	P-G No. 3	P-P & P-G No.3

INCREASE OUTPUT knob set for desired volume.

Depress microphone button on throttle or switch on hand microphone to talk over radio telephone, and release to listen.

IDENTIFICATION

Master radio switch ON.

IFF ON-OFF switch on right console switch panel ON before takeoff.

The IFF-G switch should be OFF unless otherwise instructed by Commanding Officer.

The EMERGENCY switch under the green guard should be used only when the pilot is in trouble, the airplane damaged, or conditions exist such that

assistance is required.

The DESTRUCTOR switch must not be turned ON unless the necessity of a forced landing in enemy territory becomes apparent. This switch is connected directly to the battery and is operative at all times.

HOMING

Master radio switch on.

Turn OFF, NAV, VOICE switch of the homing receiver control box (nearest the seat and immediately aft of the right hand console switch panel) to NAV to receive code signals.

Select the desired channel by turning the handcrank until the correct number appears in the dial window.

Adjust the volume control.

Set the BEAT NOTE knob for the desired pitch of code signals.

RANGE SIGNAL RECEPTION

Master radio switch ON

OFF-ON-VOLUME control knob ON

Tune in desired range station by knob and dial.

Adjust the volume.

USE OF PYROTECHNIC PISTOL

Pull on the cover cap to remove it from the mount above the right console.

Insert the pistol muzzle into the mount so that the lugs on the pistol barrel slip into the mount slots. Turn the pistol approximately 45 degrees either direction to engage the lugs.

Press the breech lock lever, which is the one nearest the handle, and apply pressure on the handle to open the breech for loading.

Insert the signal cartridge and pull the handle back into position until it snaps. This also cocks the pistol.

Fire by simply pulling the trigger.

When a signal cartridge misfires, make at least two attempts to fire it. If it still fails to fire, wait 30 seconds and unload it.

Remove the empty signal cartridge by opening the breech again, and stow the empty in the cartridge rack below the seat.

Remove the pistol by pulling the mount release trigger on top of the pistol

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USE OF PYROTECHNIC PISTOL

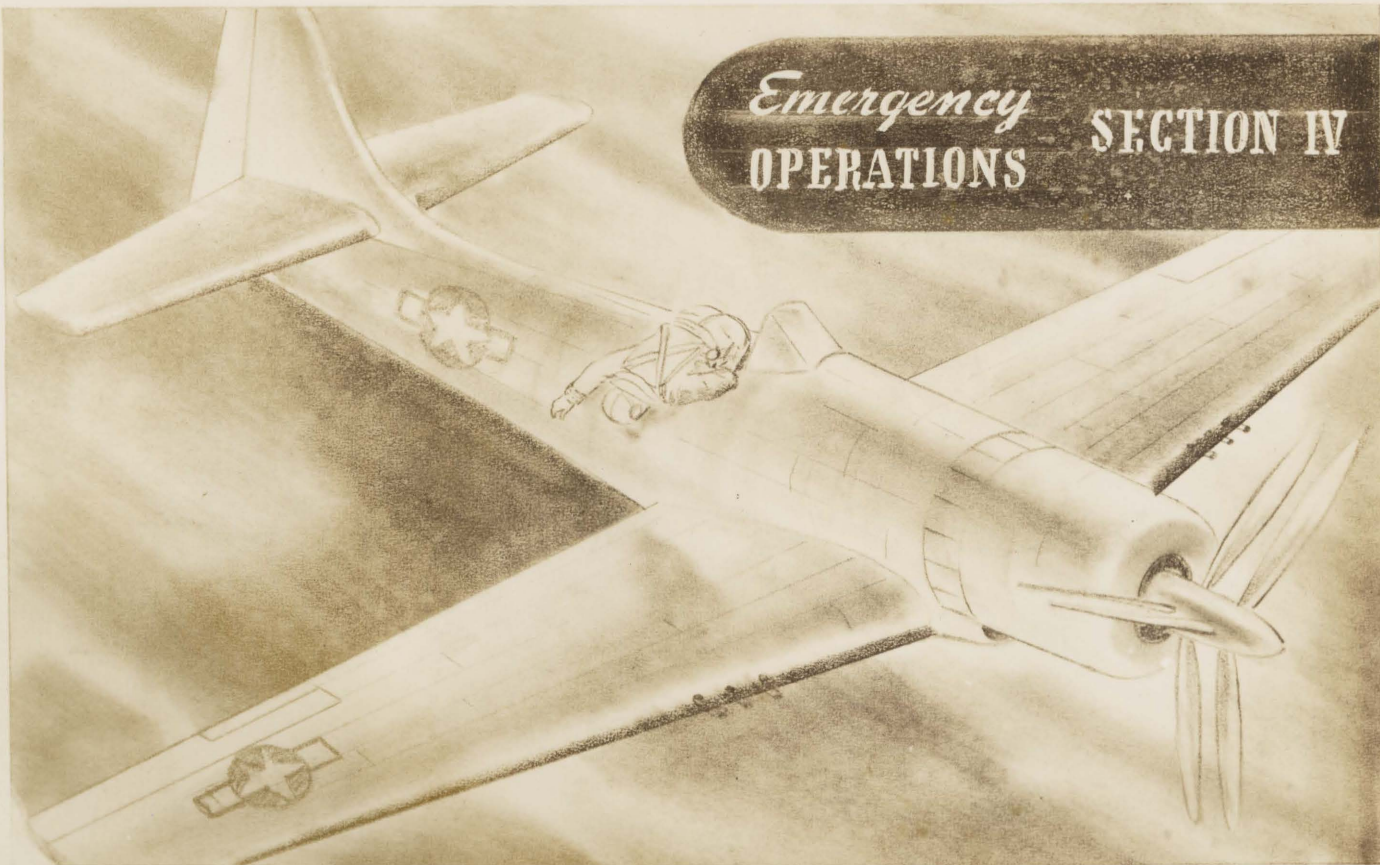
and turn the pistol until the lugs disengage.

Stow the pistol in the case on right console and replace the mount cap.

The proper method of holding the pyrotechnic pistol for hand firing is with the forearm across the chest, the pistol pointed upward approximately 45 degrees, and on its side with the top away from the chest. When fired, the recoil is absorbed by the bent arm and the pistol is pushed away from the body. The recoil is slightly greater than that of a .45 caliber service pistol.

Emergency
OPERATIONS

SECTION IV



RESTRICTED

EMERGENCY TAKE-OFF

Take-off may be made in an emergency without engine warm up and ground test providing that the oil temperature has shown a definite increase (at least 10°C - 18°F) since starting and that the oil pressure is steady below 100 lbs. per. sq. inch. Use the oil dilution system, carefully, to reduce the oil pressure if necessary.

ENGINE FAILURE DURING TAKE-OFF
ENGINE FAILURE DURING TAKE-OFF

If the engine fails and it appears possible to stop on the deck, close the throttle and apply the brakes. If it is impossible to stop, release the brakes, apply full right rudder to go off the side of the carrier, and flip the landing gear switch to UP. On land, apply the brakes and if the airport runs out, retract the landing gear and slide STRAIGHT AHEAD.

If the engine fails immediately after take-off from a carrier, maintain air-speed by nosing down, flip the landing gear switch to UP, wing flap toggle full DOWN, turn to the right, and ditch the airplane. In take-off from an airport, land straight ahead, only changing direction sufficiently to miss obstructions. If there is time, switch ignition OFF and set fuel tank selector to OFF to prevent fire. In any case, do it after landing.

If within gliding distance of a landing area, immediately feather the propeller if there is a feathering switch or move propeller pitch handle to DECREASE RPM. Close cowl flaps, oil cooler and intercooler doors.

Switch off all electrical equipment possible (radios, electric fuel pumps, pitot heater, lights) to conserve battery charge. Flip wing flap toggle to full DOWN, and if flap does not reach limit of travel before battery fails, crank it down with hand-crank. Approximately 25 seconds are required to lower the flaps electrically, and about 2 minutes with the crank (120 turns).

If landing on an airport or deck is possible, lower the landing gear electrically (7-12 seconds) if battery power is available, or with the hand-crank (2½ minutes - 153 turns).

If landing is to be made on water or rough ground, leave the landing gear retracted. Jettison all bombs and extra fuel tanks.

In case of fire, first try to blow the fire out.

If the fire breaks out while starting the engine, keep the engine turning over by holding the starter switch on START and continue attempt to start.

If the fire spreads or does not go out, hold the starter switch on START until the engine can be shut down in the following manner.

In case of fire, when the engine is running, move the mixture handle to IDLE CUT-OFF. Set the fuel tank selector handle to OFF. Turn ignition switch OFF.

Pull the fire extinguisher handle at the right of the seat.

If on the ground, have fire extinguisher directed into the cowl, the air scoop, or over the exhaust stacks depending on the location of the fire.

Set the oil cooler, intercooler, and cowl flap switches to OPEN to reduce trapped heat damage.

DO NOT TRY TO START THE ENGINE AGAIN UNTIL THE CAUSE OF THE FIRE HAS BEEN DETERMINED AND REMOVED.

CARBURETOR ICING

CAUSES

Carburetor icing is directly dependent upon the temperature and relative humidity of the carburetor inlet air. Icing can occur at the fuel jets in the manifold blower at carburetor air temperatures less than 15°C (59°F) and relative humidities of 50% or more due to temperature drop induced by the fuel evaporation.

Throttle icing is most hazardous at carburetor air temperatures of 20 to 100°C (35° to 500°F) and a relative humidity greater than 100% (rain or snow entering the carburetor).

SYMPTOMS

Carburetor air temperature gage reading less than 15°C (59°F), and particularly 2° to 10°C. (35° to 50°F)

Rain, snow, or heavy fog.

Engine roughness.

Manifold pressure loss, or high throttle settings to maintain desired manifold pressure.

PREVENTION

Carburetor air temperature above 27°C and less than 32°C (80° to 90°F)
Carburetor air filter closed, alternate air valve open, intercoolers adjusted to maintain carburetor air temperature between 27°C and 32°C. (80°-90°F).

REMOVAL

Carburetor air filter closed.
Alternate air valve open (knob pulled out).
Intercoolers adjusted to maintain carburetor air temperature reading just under 32°C (90°F)
Set propeller pitch lever for 2550 RPM, and increase manifold pressure to 43.5 inches Hg. with throttle.
Change altitude to increase or decrease the outside air temperature and reduce the amount of rain, snow, or fog.

ELECTRICAL POWER FAILURES

BATTERY

The battery may discharge rapidly during taxiing, combat, and landing. It will usually recover during take-off, climb and level flight, but may have been discharged so rapidly as to boil away the electrolyte, thereby preventing a full recharge. It may also be discharged a second time before complete recharge, and make the recharging time even longer.

If the battery is discharged before starting the engine when external power is not available it may be impossible to obtain the necessary fuel boost, ignition boost, and fuel priming.

Low battery charge is indicated by a low voltmeter reading (below 20 volts) for longer than 5 seconds when the engine is running above 1000 RPM and a heavy load is applied to the system.

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ELECTRICAL POWER FAILURES

GENERATOR

If the generator fails during combat, the battery would discharge in 60 seconds with the guns firing, or 13 minutes with the guns not firing.

Even if the generator fails, it is possible to continue flying with the battery switch turned off if the engine driven fuel pump will carry the load and the radios and instruments are needed only occasionally.

With the main fuel booster pumps, instruments, and radios operating, the battery alone will last about 19 minutes.

Turning on the auxiliary fuel pump also, will shorten the time to 10 minutes. Generator failure is indicated by zero voltmeter reading.

Restricted

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WING FLAP MOTOR FAILURE

The wings must be spread before the flaps will operate electrically. The airspeed must be below 130 knots (150 MPH) when increasing or below 117 knots (135 MPH) when decreasing before the airspeed pressure switch will close the motor control circuit and allow the flaps to operate.

If the wing flaps do not move when the control toggle is changed, check that the circuit breaker on the right console is pushed in. In an emergency when it is imperative to get the flaps down in a few seconds, it may be possible to keep the motor running by holding the circuit breaker in, even though it is trying to pop out from the overload. If the flaps do not move, however, release the circuit breaker to keep from discharging the battery.

If the electrical system fails, the flaps can be operated with the hand-crank which is stowed on the right console. The crank is inserted in the attachment on the right console for

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WING FLAP MOTOR FAILURE

use. Approximately two minutes (120 turns of the crank) are required to completely lower the wing flaps. Do not lower the flaps above 130 knots indicated airspeed.

LANDING GEAR FAILURE

The landing gear should not be lowered above 152 knots (175 MPH).

In case the landing gear does not operate when the toggle is moved, check that the circuit breaker on the right console is pushed in. In an emergency when it is imperative to get the wheels down in a few seconds, it may be possible to run the retracting motor by holding the circuit breaker in, even though it is trying to pop out from the overload. If the landing gear does not move, however, release the circuit breaker to keep from discharging the battery.

The landing gear cannot be retracted electrically when the weight of the airplane is on the wheels, or if the tail wheel is not centered.

If the tail gear jams, a shear pin in the drive shaft will fail before the motor clutch slips so that the main wheels will still go down.

If the electrical drive system fails, the landing gear can be operated with the hand crank which is stowed on the right console. The crank is inserted in the

LANDING GEAR FAILURE

attachment on the right console for use. Approximately $2\frac{1}{4}$ minutes (153 turns of the hand crank) are required to completely operate the landing gear. A safety switch prevents electrical operation when the hand crank is inserted in the attachment.

EMERGENCY LANDING
WITH WHEELS RETRACTED

Jettison all bombs and fuel tanks by setting the bomb release handle on the left console to SALVO, and pulling the two red handles above. Close the bomb doors by returning the bomb release handle to SELECT and turning the armament master switch ON. Turn armament master switch off when doors are closed.

Tighten shoulder straps by moving lever on left side of seat aft, leaning back, and returning handle forward.

Open canopy with hand crank on right side.

Lower wing flaps with toggle on left sidewall and retard speed.

Make a carrier type landing at as low an altitude as possible.

JETTISONING

INTERNAL BOMBS OR FUEL TANK.

Move bomb release handle on right console to SALVO.

When bomb bay is empty, return handle to SELECT and turn on armament master switch to close doors.

When doors are closed, return handle to SAFE and turn off armament master switch.

EXTERNAL BOMBS OR FUEL TANKS

Pull red T-handles on right sidewall.

CANOPY

Pull red knob at top of windshield.

IFF RADIO DESTRUCTION

If a forced landing in enemy territory becomes apparent, raise the red DESTRUCTOR guard on the right hand console and turn on the switch to explode the IFF radio in the radio compartment aft of the bomb bay.

If the explosion is not heard or felt, the destructor may be faulty. When on the ground, open the radio compartment hatch behind the bomb bay doors and destroy the radio, either with several shots from the service pistol, or with a rock or other heavy object. Tear out all wiring possible, obliterate nameplates and circuit diagrams, and destroy the coding disks.

If the hatch cannot be opened, the radio can be shot by locating the point six inches to the rear of the radio hatch and 24 inches up on the left side, and firing straight through the fuselage. The radio is close to the skin at this point.

Burn all code papers and manuals which contain circuit diagrams, pictures of internal construction, and tactical use. The inertia switch may set off the destructor in case of a crash landing.

HOMING RECEIVER DESTRUCTION

There is no destructor for the confidential homing receiver. Therefore an attempt to destroy the receiver after a forced landing in enemy territory should be made by firing into it with the service pistol or by destroying it with a heavy object.

If entry can be made into the radio compartment through the hatch aft of the bomb bay doors, the radio will be seen just forward of the hatch on a bracket about 20 inches above the bottom of the fuselage. Smash in the receiver, destroy all nameplates and circuit diagrams, and tear out as much wiring as possible.

If entry cannot be made into the radio compartment but is possible into the bomb bay, fire several shots from the service pistol straight aft through a point on the centerline of the airplane about 20 inches above the bottom.

If entry cannot be made into either the radio compartment or the bomb bay, locate the point six inches aft of the bomb bay and 20 inches above the bottom

of the fuselage, and fire several shots straight through the fuselage.

Burn all coding instructions and any data or manuals containing circuit diagrams, pictures of internal construction, or tactical operation.

AIRPLANE DESTRUCTION

The best way to destroy the airplane on the ground is by burning gasoline.

All internal fuel cells are self sealing. If the external wing tanks are still on, and are not empty, they can be shot with the service pistol and then the pyrotechnic pistol carried in the airplane.

Fuel from the main tanks can be released by opening the defueling valve in the intercooler duct just forward of the bomb bay doors.

If the airplane is sitting on its belly, it may be better to open the fuel filler cap on the top of the wing near the wing fold, and fire the pyrotechnic pistol into the hole.

If the fuel lines in the nacelle can be pulled apart, the fuel tank selector

handle in the cockpit can be set to a full tank and the battery switch turned on to spray the fuel into the nacelle.

EMERGENCY EXIT

Detach oxygen lines, headset and microphone cords.

Check that parachute, backpad, and life raft are properly attached. Check "Mae West".

Pull the canopy release knob at the top of the windshield.

Release safety belt and shoulder straps and see that they will not catch on clothing.

If possible, roll airplane upside down and fall out.

If bail out is made in level flight, pull out surface lock knob and neutralize controls to engage the locks. Trim if desired. Lower landing gear and wing flaps to slow down. Go out head first and slide off the wing. If the range receiver antenna is attached from the fin the the right side of the cockpit, go over the left side. The high elevator stabilizers aid in clearing the tail.

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DITCHING

DITCHING

Release canopy with the red emergency knob at the top of the windshield.

Check that safety belt and shoulder straps are fastened. Tighten shoulder straps by moving lever on left side of seat aft, leaning back, and returning lever forward.

Check that master radio and IFF switches are ON. Break string on green EMERGENCY switch guard on right console and turn IFF EMERGENCY switch on.

Turn on radio telephone set and after 15 seconds for tube warm up, report latitude and longitude from air position indicator on instrument panel.

Jettison bombs and extra fuel tanks by moving bomb release lever on left console to SALVO and pulling the two red T-handles above. Close the bomb doors by returning the bomb release lever to SELECT and turning the armament master switch on.

The landing gear should be retracted.

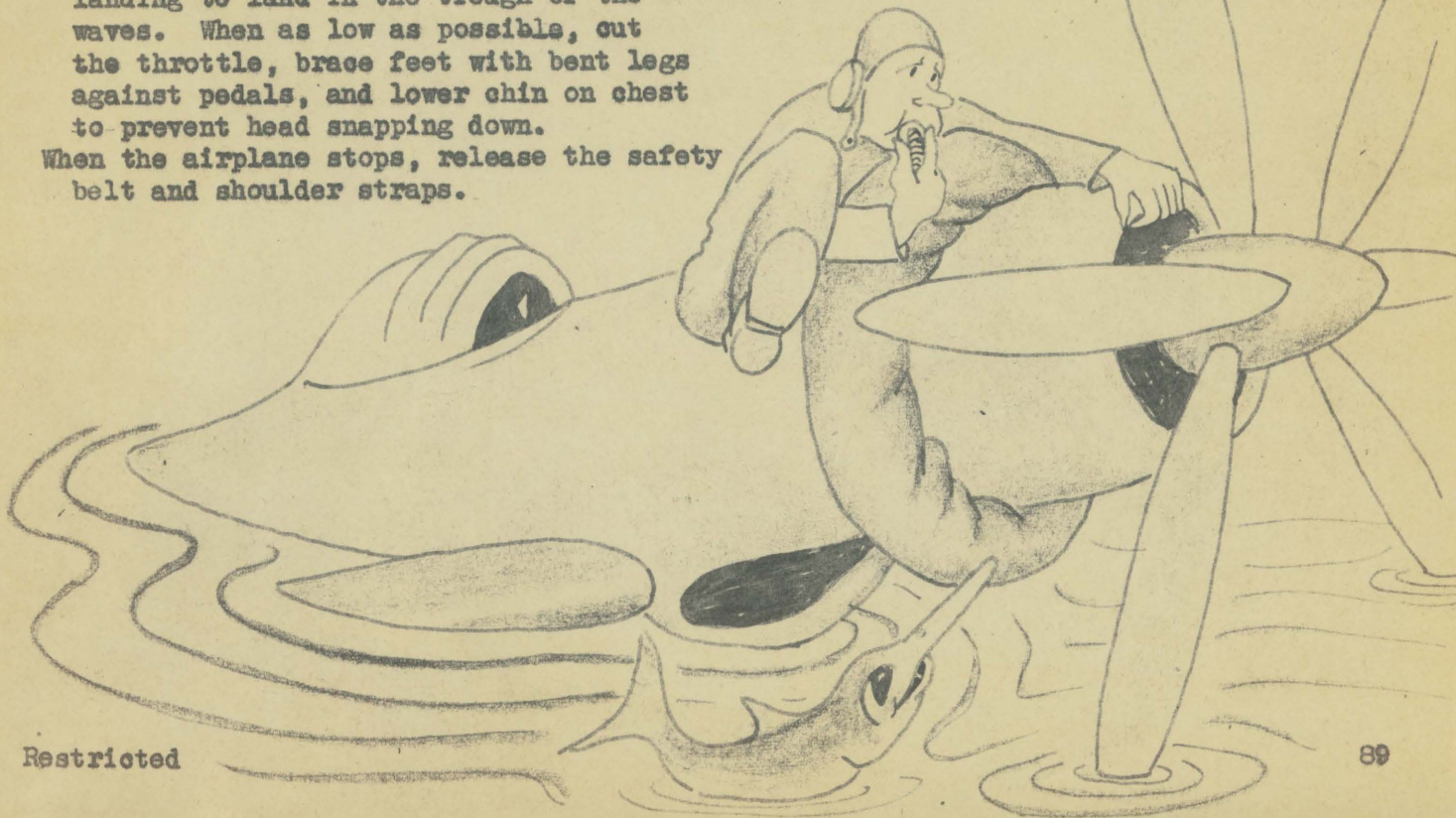
Set the wing flap toggle switch full DOWN.

Check that the flaps move down.

Disconnect headset and microphone cords,
and remove oxygen mask.

Fly the airplane in as for a carrier
landing to land in the trough of the
waves. When as low as possible, cut
the throttle, brace feet with bent legs
against pedals, and lower chin on chest
to prevent head snapping down.

When the airplane stops, release the safety
belt and shoulder straps.



NOTES

