# Care and MAINTENANCE

#### ACCESS, INSPECTION AND DRAIN PROVISIONS

Access and inspection holes are provided in the cabin floor for servicing cables, hydraulic lines, landing gear and gasoline tank. Additional access holes are provided on the exterior at the boom for servicing the tail wheel shaft and surface control cables. The engine cowling is hood type and opens from the aft end for ready access to the power plant. Drain plugs are provided in the keel and at the aft ends of the floats.

# **GROUND HANDLING**

The best push points for ground handling are the wing struts. Do not use floats, float struts or empennage for push points.

# JACKING

The base of the oleo and the cross tube will accommodate jacks. To jack the tail wheel, place jack under aft end of keel.

# HOISTING AND LIFTING

Hoisting lugs are available for both the engine and the airplane. Do not lift Seabee by the stabilizer.

# LEVELING

Leveling lugs are provided on the door posts for reference in leveling the Seabee.

# ANCHORING AND TOWING

An anchor cleat is provided at the bow of the airplane. Tow by attaching suitable harness or tow bars at the landing gear.



Parts to be Lubricated	Lubricate Every 25 Hours	Parts to be Lubricated	Lubricate Every 25 Hours
Control Column Pulleys	-	Gear Segments@Rudder Pedal Rods	<b>E</b> (6)
Control Column Bearings	-@	Parking Brake	
Engine Control Shaft	-3	Rudder and Brake Pedal Pivots	-18
Aileron Control Chain	<b>E</b> (4)	Fuel Shut-Off Valve	-0
Trim Tab Control	<b>E</b> (6)	Flap and Gear Selectors	-20
Door Hinges and Locks	-6	Door Stop	-1
Generator	-0	Seat Tracks	<b>E2</b>
Starter		L.G. Pivots	-23 -24
Cowl Hinges		L.G. Bearings	- 125
Throttle and Mixture Controls	-0	L.G. Wheel Bearings	       
Flap Cylinder Pivots	0	Flap Hinges	-
Tab Mechanism	<b>ED</b>	Tail Wheel Shaft	(29)
Tail Surfaces Hinges Water Rudder	-0-0-0	Aileron Hinges and Bracket	-30
Symbol Lubricant		* Engine Oil	
General Purpose, aircraft lubricating oil General Purpose, aircraft lubricating grease AN-0-15 General Purpose, aircraft lubricating grease AN-0-15		SAE 40 Above 40° F (Free Air Temp.) SAE 30 Between 40°F and 10°F SAE 20 Below 10°F *Use Aircraft Engine Lubricating Oil (AN-VV-0-446a or equivalent)	

NOTE: Grease propeller with AN-G-15 every 25 hours or more frequently to assure free blade action.

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LUBRICATION CHART



38

GENERAL SERVICING					
UNIT OR SYSTEM	CAPACITY	FLUID SPECIFICATION	INSTRUCTIONS AND NOTES		
Engine Oil	12 Quarts See Note <mark>(1)</mark>	Aircraft engine lubricating oil, AN-VV-O-446 or equivalent.	SAE 40 - Above 40°F. SAE 30 - From 40°F to 10°F. SAE 20 - Below 10°F.		
Brake Fluid	¼ Pint, each	See Note <mark>(2)</mark> Petrolium oil base hydraulic fluid. Specification 3580D or equivalent.	Fill to high screw at each master cylinder.		
Fuel	75 Gallons (maximum)	80 octane non-leaded aviation gasoline.	For limited duration only and in emergencies leaded aviation gasoline of 80 octane or higher is permitted.		
Hydraulic System	3½ Pints	See Note <mark>(2)</mark> Petrolium oil base hydraulic fluid. Specification 3580D or equivalent.	With flaps full up and wheels down, fill reservoir to within 1%'' of the top		
Shock Strut Fluid	1½ Quarts, each	See Note (2) Petrolium oil base hydraulic fluid. Specification 3580D or equivalent.	With srtut bottomed, fill to top of filler.		
Main Tires T. W. Tire			Inflate to 30 psi. Inflate to 45 psi.		
Shock Strut Inflation			See Note <mark>(3)</mark> With no load on struts inflate to 53 psi With full gross load inflate to 225 psi		

Note (1): With Seabee in three-point position read side of oil stick inscribed"LAND Note (2) : No castor oil or alcohol base fluid permissible on Seabee OIL LEVEL"; with Seabee resting on water read side of oil stick inscribed "WATER OIL LEVEL". Note (3) : See page 40 for more complete instructions.

39

# SERVICING THE SHOCK ABSORBER STRUT

The following service instructions when followed will result in a rapid and proper servicing of your shock absorber. All references used in this outline pertain to the illustration shown.

Instructions are given for both pressure readings and measurements. Before attempting to take an extension measurement the airplane must be vigorously rocked. This is necessary since the gear is equipped with packing and is subject to the usual binding loads. It is also recommended that the gear be inflated to a higher pressure and the air bled to achieve proper extension, rather than try to build up the proper pressure by lifting the entire airplane with air pressure.

The fluid level should be checked with the gear in the fully compressed condition before inflation. Before attempting to add to or check the fluid it is absolutely necessary to first bleed off any air that might be present by depressing the air valve. When all air has escaped the valve housing may be removed so that fluid can be added.

- 1. Depress air valve (A). Allow all air to escape.
- 2. Rock airplane vigorously. Check dimension (X) for full compression. This should be 2 7/16 inches.
- 3. Remove air valve body (A) and fill to overflowing with petroleum oil base hydraulic fluid Specification AAF-3580D or equivalent.

DO NOT USE ALCOHOL OR CASTOR OIL BASE FLUIDS IN SEABEE STRUTS!

- 4. Replace and tighten air valve body and with the airplane in the empty weight condition, inflate to approximately 140-150 psi. Rock the airplane vigorously to get a true extension reading at "X". This should be  $6\frac{1}{2}$ "  $\pm \frac{1}{4}$ ".
- 5. If necessary to obtain this reading, slowly bleed the air valve, rocking the Seabee at intervals until the desired dimension has been reached.
- 6. Should the gas tanks be full but the airplane otherwise empty inflate to approximately 190-200 psi. Bleed air pressure, rocking airplane at intervals until the "X" dimension is  $5^{"} \pm \frac{1}{4}$ ".
- 7. To service the gear on a jacked-up plane, the strut should be inflated to 53 psi  $\pm$  5 psi. This should indicate full extension of 10 7/16"  $\pm$  1/4".

#### **REMOVAL OF WHEEL AXLE**

In removing the axle from the strut, the air must be completely removed from the strut before the axle itself is touched. The air valve body must not only be loosened, but must be removed when sufficient air has escaped to safety permit this. This is necessary because even with the air valve in the open position there still remains enough trapped air to push down on the lower sealing ring as the axle is removed. This force although slight could injure the mechanic performing this operation.

When the air pressure has been removed from the strut, loosen and remove the bolt (B) in the lower portion of the strut and extract the axle. As an added safety precaution, a soft metal mandrel should be used to tap the axle out of the strut.



### **TIE-DOWN AND MOORING**

Tie-down rings for tie-down and mooring are provided at the outboard side of each float strut and at the aft end of the boom. The aft end should be tied to two points as noted in the illustration below.

When tying-down, leave tail wheel in fore and aft direction.

Use manila rope of at least 5/8" diameter for tie-down.

When facing into the wind, use spoilers.

If the area is dusty or heavy snow is falling use covers over plexiglass areas.

If locking boards or control locks of any kind are used, place a conspicuous warning in the cockpit.



# **CONTROL SETTINGS**

Neutral setting of the controls is accomplished as indicated in the diagram shown below.

With the exception of the trim tab and water rudder cables which are adjusted to hand-tight tension, cables for all control surfaces are adjusted to  $20 \pm 5$  pounds.

Adjustments for surface travel are made at the adjustable rod ends which actuate the surfaces; angular travel of all surfaces is:

Elevators	28° up	28° down
Elevator trim tabs	22° up	22° down
Aileron	20° up	20° down
Rudder	30° left	30° right
Water rudder	30° left	30° right
Flaps		30° down



# UPHOLSTERY

The upholstery is a plastic coated fabric which may be cleaned with soap and water and further protected by waxing.

#### **EXTERIOR SURFACES**

The exterior surfaces of the Seabee can best be protected with a coating of high-grade wax.

Salt water spray should not be allowed to remain on the surfaces for extended periods; washing with clear water is recommended.



# PLEXIGLASS

The plexiglass areas of the Seabee must be cleaned with grit free agents; such as, soap and water, or a dilute water solution of a synthetic wetting agent. Kerosene or *white* gasoline may be used to remove grease or oil.

Do not use plexiglass solvents or abrasives; such as, benzene, carbon tetrachloride, lacquer thinner, kitchen scouring powders, etc.

To clean, a soft sponge or rag may be used, but it is preferable to use bare hand thus insuring grit free cleaning.

Scratches may be reduced by using Franklin Plexiglass Cleaner, Simoniz Liquid Cleaner or Noxon Cleaner-Polish on a grit-free cloth.

Do not rub scratch-reducer too long or

too hard at one spot.

The glass areas should be waxed for added protection; recommended waxes are- Franklin's Plexiglass Wax, Johnson's Industrial Wax No. 102-C, 3M Auto or Simoniz Wax or Duco No. 7.

To avoid undue abrasion follow these practices:

Park Seabee so that it avoids propeller blasts from other airplanes.

If dirt and sand is blowing, tie down Seabee with tail into wind. Do not dust plexiglass with a dry cloth. Always use water as a

vehicle.

Keep plexiglass well waxed.

During hot weather allow cabin ventilation and thereby avoid high ambient temperature.



#### WHEELS

To remove wheels it is necessary to release the parking brake and brake adjusters so that pressure is relieved on the wheel brakes. BRAKES

The master cylinders are equipped with O-ring type synthetic rubber packing. Fluid is admitted into the master cylinder by removing the screw at the top of the cylinder. The vent hole in the filler screw must be clear at al times.



Brake pedals should respond with firmness when depressed. Sponginess or softness of brake pedal denotes presence of air in the system. If brake pedal is firm but slowly and steadily requires further pedal depression, leakage past rings is indicated. Worn rings may be replaced by disassembly of the defective unit.

Gravity bleeding is inefficient on the Seabee brake installation. In order to bleed system properly, pressure type bleeding is necessary. This may be done by attaching hoses at the wheel and master brake cylinders and pumping fluid up from the wheel cylinder until escaped fluid at the master cylinder is clear of air bubbles.

The wheel brake is an expander type brake.

# **BRAKE ADJUSTMENT**

To readjust the brake linings for wear, turn the brake adjusters clockwise as far as possible and push the brake pedals hard. This action will lock the wheels; then back off on the adjusters until the wheels may be turned by hand against a slight drag. Before bleeding, loosen adjusters; after bleeding, readjust brakes as above.



# TAIL WHEEL UPSTOP

Tail wheel upstop adjustment is made as shown in the following illustration.



# LANDING GEAR SIGNAL SWITCHES

Landing gear signal switches are located in the hull and are actuated by a lever on a shaft. Adjustment screws, which depress the switches, are installed on the lever; these screws are adjusted so that the switches are tripped at the up and down position of the gear.



# **CYLINDER ADJUSTMENTS**

Adjustment for the main gear lock is made at rod end of retracting cylinder; adjust rod end so pins and lever are under moderate pinch.



# **FUEL-FLOW SHUT-OFF**

Adjustment of the fuel-flow shut-off control is indicated in the illustration below:



# VALVE ADJUSTMENTS

Since the Franklin "500" is equipped with hydraulic valve lifters which automatically compensate for variations in engine clearances, rocker adjustment is seldom necessary. Before adjustments are made, oil must be bled out of the lifter bodies; adjustments are then made in the same general sequence of operation as is applied on most other aircraft engines.



### CARBURETOR

The carburetor is a fixed jet type and requires only an idle adjustment. The idle setting is 500 to 600 RPM. To adjust, warm up the engine and turn the throttle arm adjusting screw until an idle speed of 600 RPM is reached. *Slowly* adjust the idle metering adjustment until the engine runs smoothly at the maximum RPM which it is possible to obtain. Speed the engine up slightly and then permit it to settle back to idle position and readjust to 500 to 600 RPM. Permit the engine to run a little while at idle and then accelerate and return to idle again. If necessary, readjust to get a smooth idle with maximum RPM.



#### ENGINE

Detailed specifications for the engine and various adjustments are included on page 21.

Magneto distributor rotation is counterclockwise on the right magneto which is on the odd numbered cylinder side of the engine and clockwise on the left magneto which is on the even numbered cylinder side of the engine. The diagram of the high tension ignition wires shown below is for left and right as referred to the airplane.

