

AA-5 SERIES
MAINTENANCE MANUAL

CHAPTER 12

SERVICING

TABLE OF CONTENTS

<u>NUMBER</u>		<u>PAGE</u>
12-0	SERVICING	
	General	1
	Servicing Points	1
	Access and Inspection Provisions	1
	Special Tools and Equipment	8
12-1-1	REPLENISHING	
	General	1
	Refueling	1
	Defueling	1
	Engine Oil Replenishing	3
	Brake Fluid Replenishing	6
	Tire Inflation	6
	Battery Fluid Replenishing	6
12-2-1	SCHEDULED SERVICING	
	General	1
	Engine Oil Servicing	1
	Engine Air Filter Servicing (AA5-0001 through AA5-0640)	2
	Engine Air Filter Servicing (AA5-0641 and AA-5A Aircraft)	2
	Engine Air Filter Servicing (AA-5B Aircraft)	3
	Vacuum System Air Filter Servicing	3
	Airframe Lubrication	7
	Auxiliary Fuel Pump Filter Servicing	10
	Carburetor Filter Servicing	10
12-3-1	UNSCHEDULED SERVICING	
	General	1
	Ice and Snow Removal	1

**AA-5 SERIES
MAINTENANCE MANUAL**

<u>NUMBER</u>		<u>PAGE</u>
	Battery Servicing and Charging	1
	External Cleaning	2
	Internal Cleaning	2
	Windshield and Window Cleaning	2
	Engine Cleaning	3
	Propeller Care	3

SERVICING

1. General

This section describes the procedures and precautions necessary for proper servicing of the AA-5 series aircraft. Safety precautions are also presented to acquaint the user with those potential hazards that may not be readily apparent to persons unfamiliar with the AA-5 series aircraft.

2. Servicing Points

Figure 1 illustrates the locations of the major servicing points on the AA-5 aircraft. Figure 2 lists approved lubricants.

3. Access and Inspection Provisions

Various openings in the airframe are provided to enable access for inspection or maintenance. In addition to the normal access provided by opening the engine cowl the other openings, which are covered by removable plates, are located as shown in Figure 3.

Access to the interior of the aft fuselage is gained by removal of the panel at the rear of the baggage compartment. Control cables are exposed by removal of the aft console, and by removal of the inspection plate beneath the rear passenger seat.

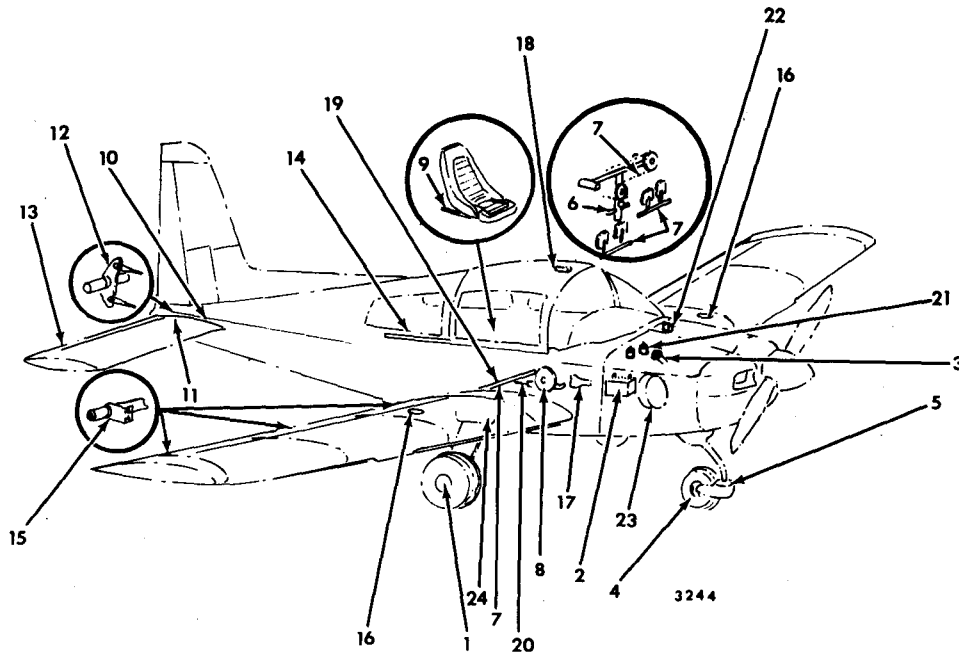
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MAINTENANCE MANUAL**

1. MAIN WHEEL BEARINGS (LEFT AND RIGHT) — Grease with MIL-G-25760 (See Figure 2) grease every 100 hours or as required.

TIRES — Inflate to 24 psi on the AA-5 and AA-5A and 35 psi on the AA-5B.
2. BATTERY TERMINALS — Coat with VV-P-236 (Figure 2) petrolatum as required to prevent corrosion.

BATTERY — Fill with distilled water as required to maintain fluid level at top of plates.
3. ENGINE OIL — (Figure 2) Change engine oil every 50 hours. Add oil as required to maintain safe level.
4. NOSE WHEEL BEARINGS — Grease with MIL-G-25760 (Figure 2) grease every 100 hours or as required.

NOSE WHEEL TIRE — Inflate to 21 psi on the AA-5 and AA-5A and 25 psi on the AA-5B.
5. NOSE FORK SWIVEL AND BELLVILLE WASHERS — Grease with MIL-G-7711 (See Figure 2) grease every 100 hours or as required.
6. T-COLUMN NEEDLE BEARING — Grease with MIL-G-7711 (Figure 2) grease as required.
7. T-COLUMN, RUDDER AND FLAP TORQUE TUBE OILITE BEARINGS AND ROLLER CHAIN — Oil with MIL-L-7870 (Figure 2) as required.
8. TRIM WHEEL GEARS — Grease with MIL-G-7711 (Figure 2) as required.
9. SEAT TRACKS — Oil with MIL-L-7870 (Figure 2) oil every 100 hours.



Servicing Points (Sheet 1 of 2)
Figure 1

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MAINTENANCE MANUAL**

10. TRIM ACTUATOR SHAFT — Grease with MIL-G-7711 (Figure 2) grease as required.
11. TRIM TAB BELLCRANKS — Oil with MIL-L-7870 (Figure 2) oil as required.
12. RUDDER AND ELEVATOR BELLCRANK CLEVIS PINS — Oil with MIL-L-7870 (Figure 2) oil as required.
13. TRIM TAB HINGE — Oil with MIL-L-7870 (Figure 2) oil (Note C).
14. CANOPY SLIDES — Spray with E-Z-Free lubricant as required.
15. ALL CONTROL SURFACE BEARINGS — Grease with Aeroshell No. 6 or MIL-G-7711 (Figure 2) as required. (Note A)
16. FUEL SELECTOR VALVE AND FUEL CAP GASKET — Grease with MIL-G-6032A grease as required.
FUEL TANKS (AA-5 and AA-5A) — Fill with 80/87 minimum grade aviation fuel (pink). (Note B.)
FUEL TANKS (AA-5B) — Fill with 100/130 minimum grade aviation fuel (green). (Note B.)
17. FRESH AIR VENTS — Oil with MIL-L-7870 (Figure 2) as required.
18. CANOPY LATCH — Grease with white grease, Lubriplate No. 501 or equivalent as required.
19. FLAP DRIVE JACKSCREW — Oil with MIL-L-7870 (Figure 2) oil. Coat with a light film for corrosion prevention only.
20. FLAP POSITION INDICATOR CABLE — Grease with MIL-G-21164 (Figure 2) Molybdenum Disulphide grease as required.
21. BRAKE RESERVOIRS — Fill to within 1/4 inch of top with MIL-H-5606 (Figure 2) hydraulic fluid, as required.
22. VACUUM SYSTEM FILTER — Replace filter at 400 hours or as required.
23. ENGINE AIR FILTER — Replace and service as required. (See Section 12-2-1, this chapter.)
24. FUEL SUMP DRAINS — Clear of water and sediment prior to first flight of day.

NOTES:

- A. Elevator bearings do not require lubrication.
- B. 100 Low Lead Aviation Fuel (blue) is also approved on the AA-5A and AA-5B. Refer to the latest revision of Lycoming Service Instruction No. 1070 for further information concerning fuels.
- C. Acceptable substitute is powdered graphite (MIL-G-6711) (Figure 2).

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MAINTENANCE MANUAL**

TRADE NAME	MANUFACTURER
MIL-G-21164 GREASE (Note 1)	
Aeroshell Grease 17 Braycote 664 PED 3350 Grease Royco 64 Grease TG-4727 Grease	Shell Oil Company Bray Oil Company Standard Oil Company Royal Lubricants Company Texaco Inc.
MIL-G-6711 GRAPHITE (Note 1)	
Graphite Graphite Graphite	Dixon Company Electrofilm Company Electro-Graph Company
MIL-H-5606 HYDRAULIC FLUID (Note 1)	
3125 HVD Oil Brayco Micronic 756C PED-3337, -3335 Royco 756 A & B XSL 7828 YT-283	Humble Oil & Refining Company Bray Oil Company Standard Oil Company Royal Lubricants Company Shell Oil Company Union Carbide
MIL-L-22851 OIL (Note 1)	
Premium AD 80 Premium AD 120	Texaco Inc. Texaco Inc.
VV-P-236 PETROLATUM (Note 1)	
Braycote 236 Parmo 70 Royco 1 R	Bray Oil Company Humble Oil & Refining Company Royal Lubricants Company
MIL-L-7870 OIL (Note 1)	
Brayco 363 Cosmolube 263 Enco Instrument Oil Low Temperature Oil 1692 Royco 363	Bray Oil Company E. F. Houghton Company Humble Oil & Refining Company Texaco Inc. Royal Lubricants Company
MIL-G-25760 GREASE (Note 1)	
Aeroshell Grease 16 Braycote 6605 Royco 60R Supermil ASU No. 06752 TG-4971 Grease	Shell Oil Company Bray Oil Company Royal Lubricants Company American Oil Company Texaco Inc.
MIL-G-7711 GREASE (Note 1)	
Aeroshell No. 6 Regal AFB 2	Shell Oil Company Texaco Inc.

Lubricants
Figure 2 (Sheet 1 of 2)

**AA-5 SERIES
MAINTENANCE MANUAL**

TRADE NAME	MANUFACTURER
MIL-L-6082B ENGINE OIL (Notes 1 and 2)	
Aeroshell W 120* Aeroshell W80* Aeroshell Oil 65** Aeroshell Oil 100** Chevron Aero Oil Grade 120* Chevron Aviation Oil 65** Grade 1100** RT-451* RM-173E* RM-180E* Avrex 100/1065** Avrex 101/1100** TX-6309* Premium AD 120* Premium AD 80* Conoco Aero Oil 1065** Conoco Aero Oil 1100** Chevron Aero Oil Grade 120* Oil E-120* Oil A-100* Oil E-80* Grade 1065** Grade 1100**	Shell Oil Company Shell Oil Company Shell Oil Company Shell Oil Company Standard Oil Company Chevron Oil Company Chevron Oil Company Mobil Oil Company Mobil Oil Company Mobil Oil Company Mobil Oil Company Mobil Oil Company Texaco Inc. Texaco Inc. Texaco Inc. Continental Oil Company Continental Oil Company Standard Oil Company Exxon Company Exxon Company Exxon Company Champlin Oil & Refining Company Champlin Oil & Refining Company

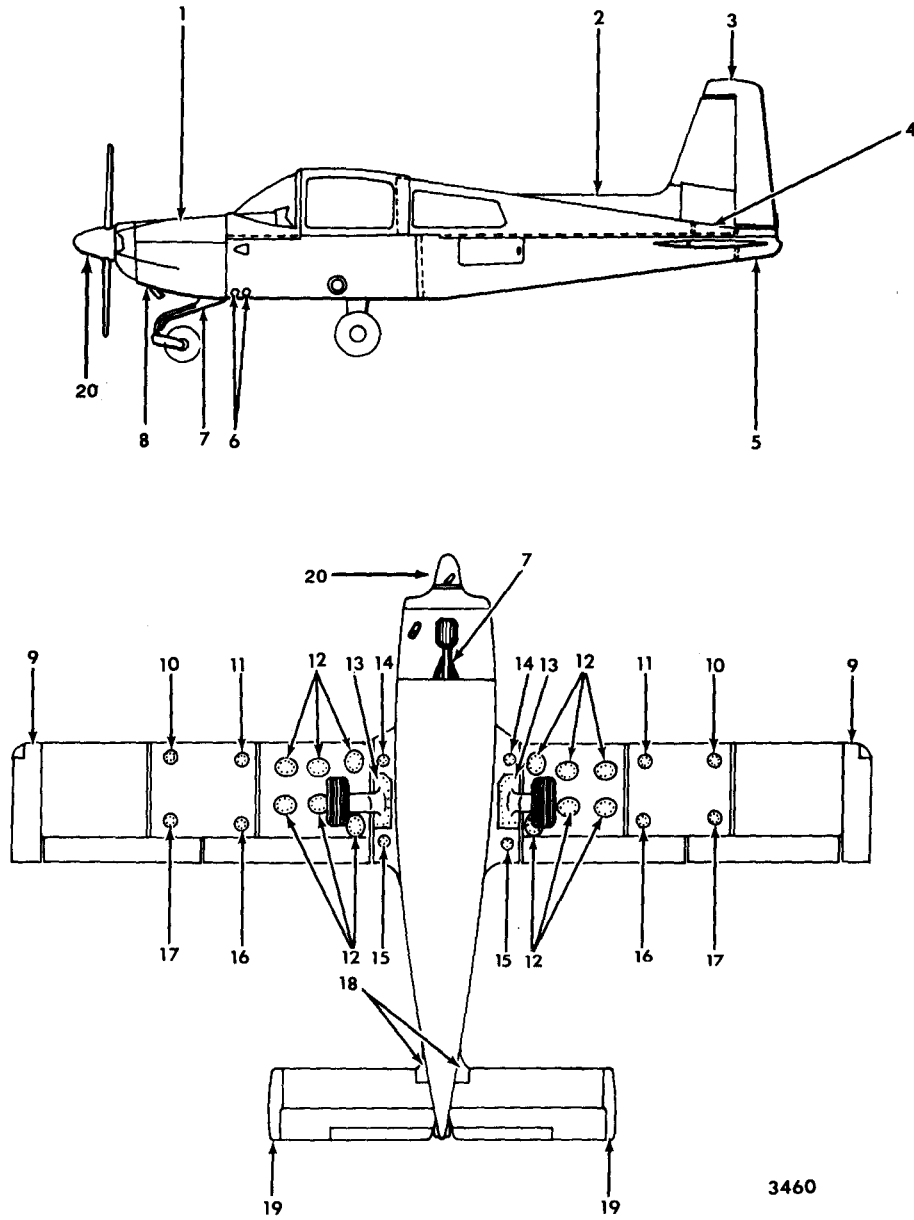
*Ashless Dispersant Oils with additives conforming to MIL-L-22851.

**Straight Mineral Oils.

Note 1: The vendor products listed in this chart have been selected as representative of the specification under which they appear. Other equivalent products conforming to the same specifications may be used.

Note 2: Oils conforming to the latest revision of Lycoming Service Instruction No. 1014 may be used.

AA-5 SERIES
MAINTENANCE MANUAL



3460

Access Openings (Sheet 1 of 2)
Figure 3

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1. Engine Upper Cowl
2. Dorsal Fin
3. Rudder Tip
4. ELT Access Panel
5. Tailcone
6. Nose Gear Torque Tube Bolt Access Plates
7. Nose Gear Boot
8. Engine Lower Cowl
9. Wing Tip
10. Wing Outboard Forward Access Plate
11. Wing Inboard Forward Access Plate
12. Fuel Tank Access Plates
13. Landing Gear Root Fairing
14. Wing Root Forward Access Plate
15. Wing Root Aft Access Plate
16. Wing Inboard Aft Access Plate
17. Wing Outboard Aft Access Plate
18. Horizontal Stabilizer Root Fairing
19. Elevator Tips
20. Propeller Spinner

Access Openings (Sheet 2 of 2)
Figure 3

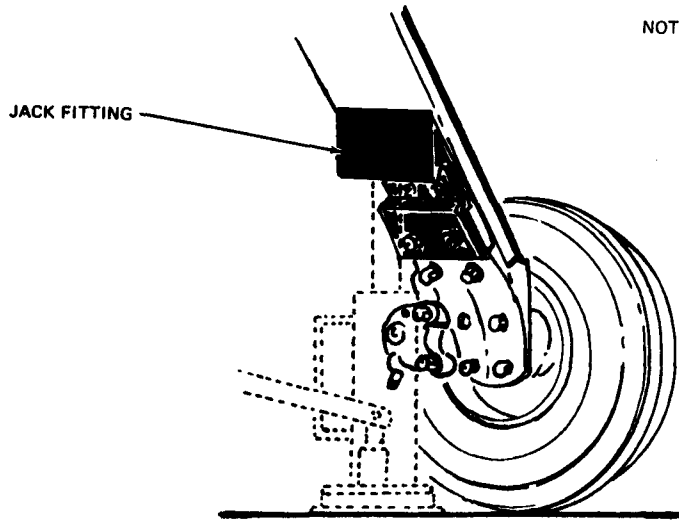
**AA-5 SERIES
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4. SPECIAL TOOLS AND EQUIPMENT

The following is a list of service tools available from the Parts Department. See the applicable parts catalog for ordering information.

TOOL NUMBER	TOOL NAME	MODELS APPLICABLE	FIGURE SHOWN
DE-0001-501	Main Gear Jack Fitting	AA-5	4
DE-0002-501 (Old P/N A-11533)	Rudder Rigging Fixture	AA-5, 5A, 5B	5
DE-5003-501	Aileron & Flap Rigging Fixture	AA-5, 5A, 5B	6
DE-5004-501	Trim Tab Rigging Fixture	AA-5	7
DE-5004-502	Trim Tab Rigging Fixture	AA-5A, 5B	8
DE-5005-501	Control Wheel/Elevator Rigging Fixture	AA-5, 5A, 5B	9
DE-5006-1	Aileron & Flap Bearing Sizing Tool: 1-1/8 inch I.D. & 1-1/2 inch I.D.	AA-5, 5A, 5B	Not Shown
ST 1064	Canopy Track Sizing Tool	AA-5, 5A, 5B	10
ST 1074	Canopy Track Drilling Tool	AA-5, 5A, 5B	10
719-40 MRP	Spring Scale-Chatillon Gauge R (0-40 lb. Range)	AA-5, 5A, 5B	11

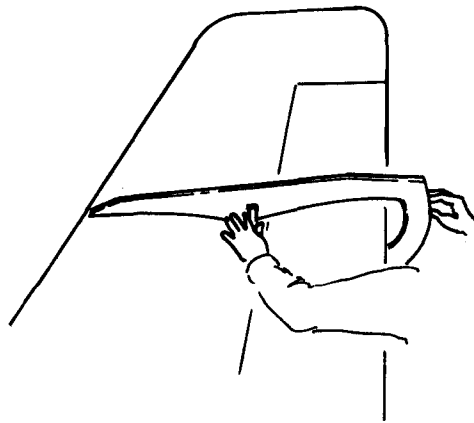
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MAINTENANCE MANUAL



NOTE: THE JACK FITTING IS NOT PERMANENTLY INSTALLED. IT IS A "SLIP ON" FITTING THAT CAN BE USED ONLY ON AA-5 AIRCRAFT MANUFACTURED PRIOR TO 1975.

3364

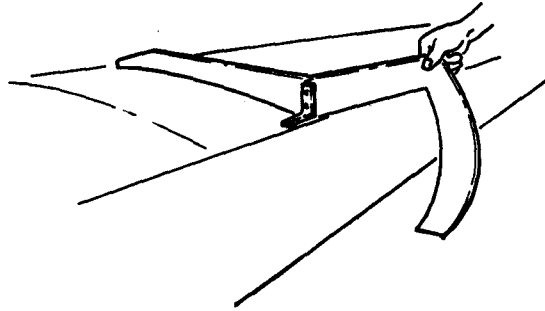
Main Gear Jack Fitting
Figure 4



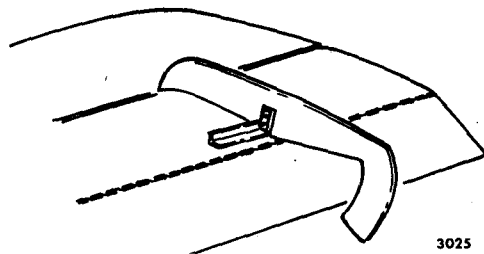
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Rudder Rigging Fixture
Figure 5

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MAINTENANCE MANUAL

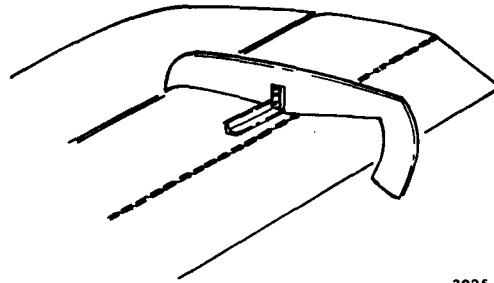


Aileron & Flap Rigging Fixture
Figure 6



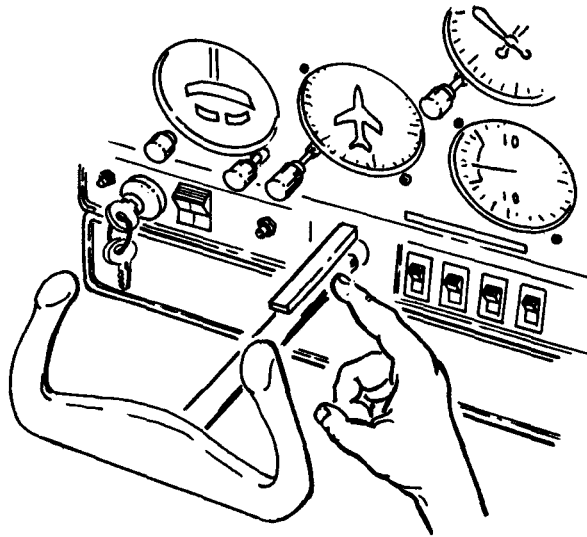
Trim Tab Rigging Fixture AA-5
Figure 7

AA-5 SERIES
MAINTENANCE MANUAL



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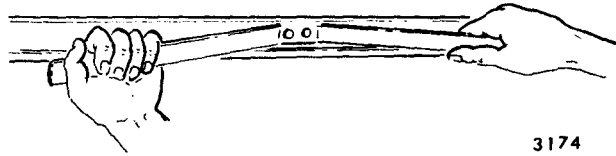
Trim Tab Rigging Fixture (AA-5A, AA-5B)
Figure 8



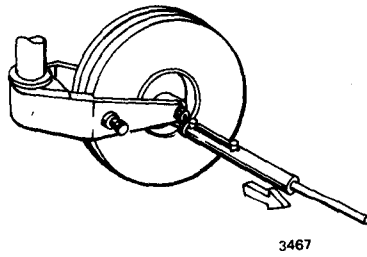
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Control Wheel/Elevator Rigging System
Figure 9

AA-5 SERIES
MAINTENANCE MANUAL



Canopy Track Sizing Tool
Figure 10



Spring Scale - Chatillon Gauge R
Figure 11

REPLENISHING

1. General

The replenishing procedures contained in this section provide the proper methods for replacing consumed fuel, oil, hydraulic fluid, and battery electrolyte. Also included are methods for inflation of tires.

2. Refueling

Refueling is accomplished by pumping or pouring fuel into the two wing tanks through their respective filler caps. (See Figure 1.) When fueling the aircraft, the following safety precautions should be followed:

- A. Never refuel the aircraft with the engine running.
- B. Always ensure that the aircraft is grounded before refueling.
- C. Ensure that no one is smoking within 100 feet of the aircraft during refueling.
- D. Ensure that all aircraft electrical systems are deenergized while refueling.
- E. Ensure that no aircraft radar or other powerful transmitters are operating within 100 feet of the aircraft during fueling.
- F. If fuel is spilled, ensure that the area of spillage is thoroughly flushed with water and that all residual fuel and vapor have dissipated or been neutralized prior to starting the aircraft engine.
- G. Ensure that all fuel used is from an approved source and that it is free of contamination.

The AA-5 aircraft must be fueled with the following fuel:

CAUTION: UNDER NO CIRCUMSTANCES SHOULD FUEL OF A LOWER OCTANE RATING THAN THAT SPECIFIED BELOW OR AUTOMOTIVE FUEL (REGARDLESS OF OCTANE) BE USED.

Grade (and color): AA-5 and AA-5A aircraft — 80/87 Minimum Grade Aviation Fuel (Pink). 100 Low Lead Aviation Fuel (Blue) is also approved. AA-5B aircraft — 100/130 Minimum Grade Aviation Fuel (Green). 100 Low Lead Aviation Fuel (Blue) is also approved. Refer to the latest revision of Lycoming Service Instruction No. 1070 and other Lycoming Publications for further information concerning fuels.

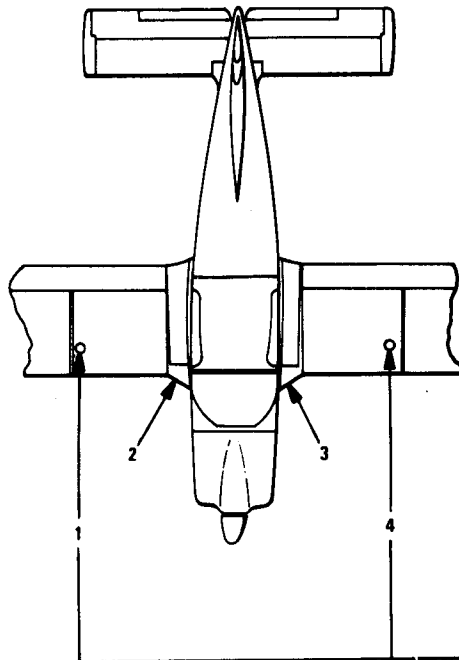
NOTE: The following quantities were measured at an ambient temperature of 70°F. Changes from this temperature will cause a corresponding change in fuel quantities.



The AA-5 and the AA-5A (with standard tanks) fuel system capacities are as follows:

	<u>U.S. Gallons</u>	<u>Liters</u>	<u>Imp. Gallons</u>
Total Fuel Capacity:	38.0	143.8	31.6
Each Tank:	19.0	71.9	15.8
Total Usable Fuel:	37.0	140.0	30.8

AA-5 SERIES
MAINTENANCE MANUAL

1. Right Fuel Tank Cap
2. Right Sump (Under Wing)
3. Left Sump (Under Wing)
4. Left Fuel Tank Cap



<p>FUEL MIN 80/87 OCT 19 U.S. GAL. CAP</p>  <p>AA - 5 & AA - 5A (STD. TANKS)</p>	<p>FUEL MIN 100/130 OCT. 26.3 U.S. GAL. TOTAL CAP. 19.0 U.S. GAL. TO TAB</p>  <p>AA - 5B ONLY</p>
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3466

FUEL
MIN 80/87 OCT.
26.3 U.S. GAL. TOTAL CAP.
19.0 U.S. GAL. TO TAB

AA - 5A (OPTIONAL
LONG RANGE TANKS)

Fueling Points
Figure 14

**AA-5 SERIES
MAINTENANCE MANUAL**

The AA-5A (with optional long range tanks) and the AA-5B fuel system capacities are as follows:

	<u>U.S. Gallons</u>	<u>Liters</u>	<u>Imp. Gallons</u>
Total Fuel Capacity:	52.6	199.1	43.8
Each Tank:	26.3	99.5	21.9
Total Usable Fuel:	51.0	193.0	42.5

After refueling, ensure that both fuel tank caps are securely installed prior to flight.

3. Defueling

WARNING: WHEN SIPHONING FUEL FROM THE TANKS NEVER ATTEMPT TO START SIPHONING BY MOUTH. INTRODUCTION OF EVEN A SMALL AMOUNT OF FUEL INTO THE LUNGS CAN BE FATAL. USE ONLY SAFETY APPROVED SIPHONING EQUIPMENT.

Defueling is best accomplished by siphoning fuel through a siphon hose introduced into the tank through the fuel filler cap. If the tank is to be completely emptied, the small amount of fuel that cannot be removed by siphoning can be removed through the sump drain beneath the wing. During the aircraft defueling, observe the safety precautions specified in Paragraph 2.

4. Engine Oil Replenishing

Engine oil replenishment is accomplished by pouring oil into the oil filler spout. (See Figure 2.) Oil quantity can be conveniently checked by use of the dipstick attached to the oil filler spout cap.

Oil quantity is checked as follows:

- A. Open right side of engine cowl (or oil access door).
- B. Locate oil filler spout. (See Figure 2.)
- C. Unscrew oil filler spout cap.
- D. Remove dipstick from engine and wipe oil from dipstick with a clean cloth or paper towel.
- E. Replace dipstick into filler spout and tighten finger tight.
- F. Unscrew and remove dipstick. Check oil level on dipstick versus the markings stamped on the dipstick.
- G. Wipe oil from dipstick with a clean cloth or paper towel and replace dipstick in filler spout. Tighten filler spout cap finger tight.

NOTE: When tightening the cap, ensure that it is secure. Do not overtighten as this may damage the O-ring seal in the cap.

Replenish engine oil using oil of the following specification:

MIL-L-6082B (Section 12-0, Figure 2) Aviation Grade Straight Mineral oil shall be used to replenish oil supply during the first 25 hours of operation and at the first 25-hour oil change. Continue to use this grade of oil the first 50 hours of operation.

**AA-5 SERIES
MAINTENANCE MANUAL**

NOTE: The aircraft is delivered from the factory with corrosion preventive aircraft engine oil. This oil should be drained after the first 25 hours of engine operation.

MIL-L-22851 (Section 12-0, Figure 2) Ashless Dispersant Oil: This specification oil shall be used after the first 50 hours of engine operation.

***Recommended Viscosity**

<u>Average Ambient Air Temperature</u>	<u>Mineral Grade</u>	<u>Ashless Dispersant</u>
Above 16°C (60°F)	SAE 50	SAE 40 or SAE 50
-1°C (30°F) to 32°C (90°F)	SAE 40	SAE 40
-18°C (0°F) to 21°C (70°F)	SAE 30	SAE 40 or SAE 30
Below -12°C (10°F)	SAE 20	SAE 30

*Refer to latest revision of Lycoming Service Instruction No. 1014 and other Lycoming Publications for further information.

Replenish engine oil as follows:

- A. Open right side of engine cowling.
- B. Locate oil filler spout (Figure 2) and unscrew cap.
- C. Using a clean rag or paper towel wipe any oil or foreign material from the edges of the oil filler spout opening. Also wipe oil from the dipstick.

NOTE: When adding engine oil, ensure that no dirt or foreign material is allowed to enter the oil filler spout, and that the cap/dipstick is clean prior to reinstallation.

- D. Pour oil of proper specification and viscosity into filler spout to achieve desired oil level.

NOTE: When adding engine oil during extremely cold weather, the change in viscosity due to extreme cold may cause the oil to pour very slowly. Keeping the oil in a heated building or warming it prior to use may expedite oil replenishment.

- E. Replace oil filler spout cap/dipstick and tighten finger tight.

NOTE: Any oil spillage, particularly on exhaust manifolds, should be wiped clean prior to flight.

- F. Close and secure engine cowl.

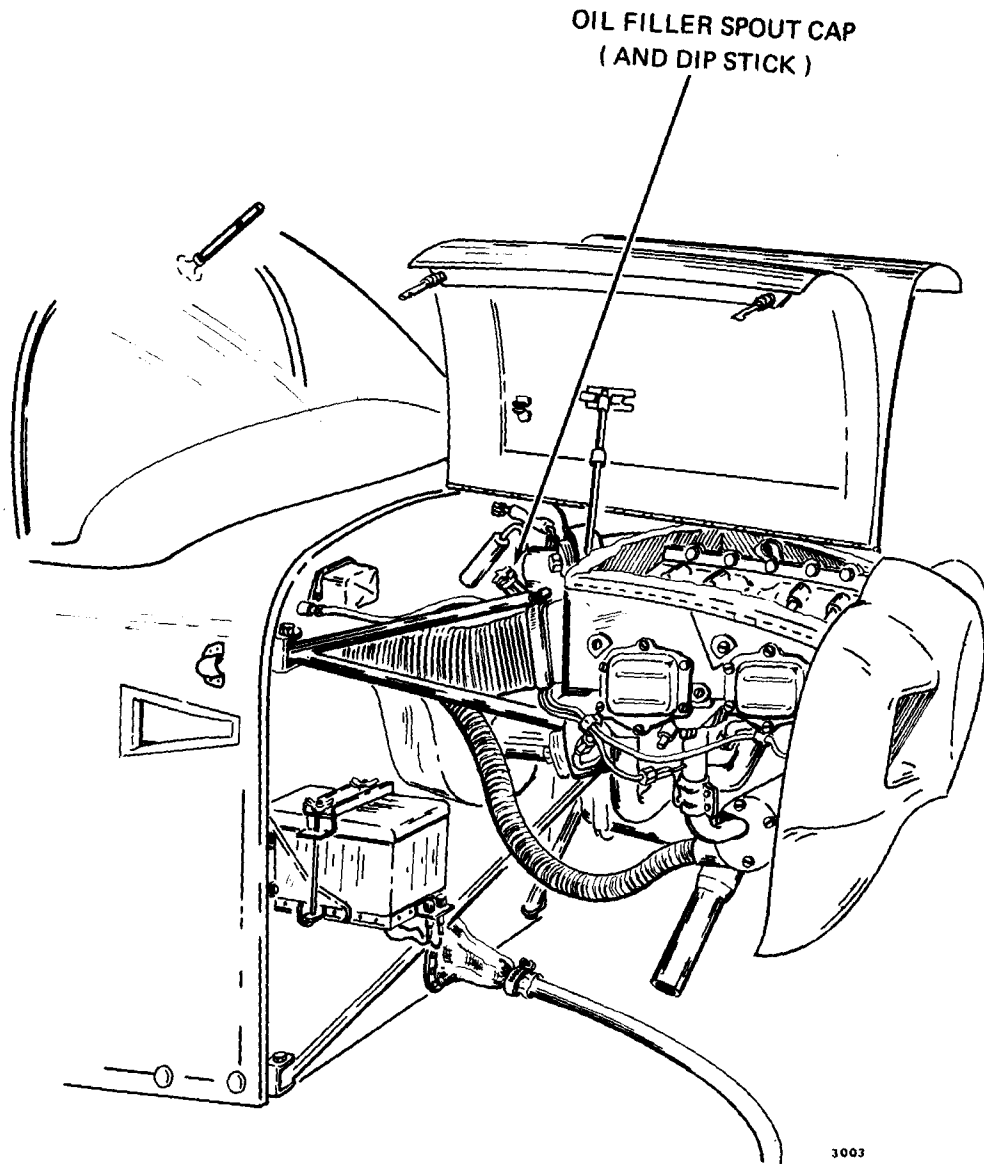
NOTE: Check that cowl latches are flush with cowl.

The AA-5, AA-5A, and AA-5B aircraft oil system capacities are as follows:

NOTE: The following quantities were measured at an ambient temperature of 70°F.

	<u>U.S. Quarts</u>	<u>Liters</u>	<u>Imp. Quarts</u>
Total Engine Capacity	8.00	7.59	6.66
Minimum Safe Quantity	2.00	1.89	1.66

AA-5 SERIES
MAINTENANCE MANUAL



Oil Filler Spout
Figure 15

**AA-5 SERIES
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5. Brake Fluid Replenishing

Brake fluid replenishing is accomplished as follows:

NOTE: When replenishing brake fluid, ensure that the fluid used conforms to specification MIL-H-5606, (Section 12-0, Figure 2) and that the fluid is uncontaminated.

- A. Locate brake cylinder reservoirs as shown in Figure 3.
- B. Using a clean rag or paper towel, wipe any accumulated dirt or other foreign material from area around filler plugs.
- C. Remove filler plugs.
- D. Using a syringe, hand pump, or other suitable means, add brake fluid (MIL-H-5606) (Section 12-0, Figure 2), to the reservoirs through the filler ports until the level of fluid is 1/4 inch from the top of the reservoir.
- E. Replace filler plugs in reservoirs.
- F. Check brake action.
- G. If more fluid is required, repeat Steps (B) through (F).
- H. If it is necessary to bleed the brakes, refer to Chapter 32.

6. Tire Inflation

WARNING: WHEN INFLATING TIRES, USE REGULATED AIR PRESSURE THROUGH VALVE STEMS. TIRE PRESSURES ARE AS FOLLOWS:

MAIN LANDING GEAR TIRES — 35 psig (AA-5B) 24 psig (AA-5 & AA-5A)
NOSE LANDING GEAR TIRES — 25 psig (AA-5B) 21 psig (AA-5 & AA-5A)

7. Battery Fluid Replenishing

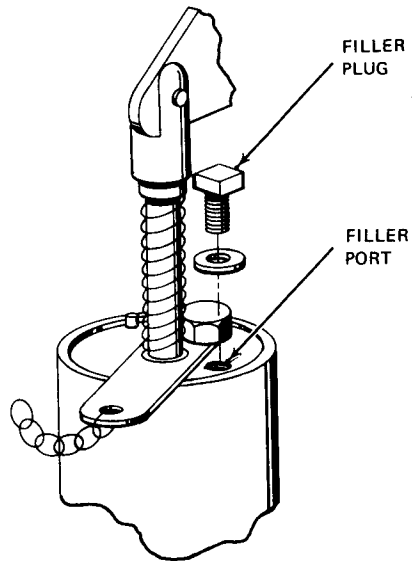
WARNING: THE BATTERY CONTAINS A SULPHURIC ACID ELECTROLYTE SOLUTION. DO NOT ALLOW THE ELECTROLYTE TO COME INTO CONTACT WITH CLOTHES OR SKIN. ANY SPILLAGE SHOULD BE FLUSHED WITH WATER OR NEUTRALIZED WITH BAKING SODA IMMEDIATELY.

Replenish battery fluid as follows:

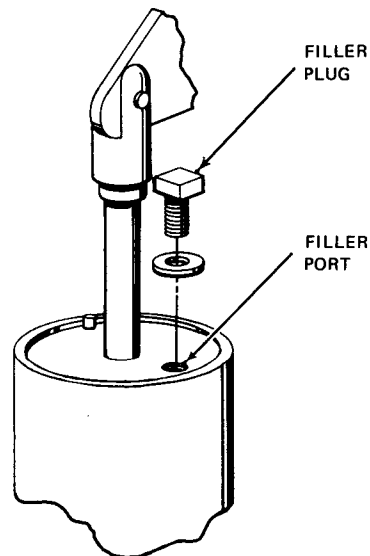
- A. Open the engine cowl on the right hand side.
- B. Remove the two wing nuts (1), washers (2), tiedown (3), heat shield (4), and battery cover (5) as shown in Figure 4.
- C. Using a clean rag or paper towel, wipe all dirt and foreign material from the area around the battery filler plugs.
- D. Remove filler plugs (6) and visually check electrolyte level in battery. If electrolyte level is below the bottom of the split rings, distilled water should be added.

NOTE: When replenishing battery water, use only distilled water. Ensure that the electrolyte level in the battery comes to bottom of split rings. Do not overfill.

AA-5 SERIES
MAINTENANCE MANUAL



AA5 AND AA5A



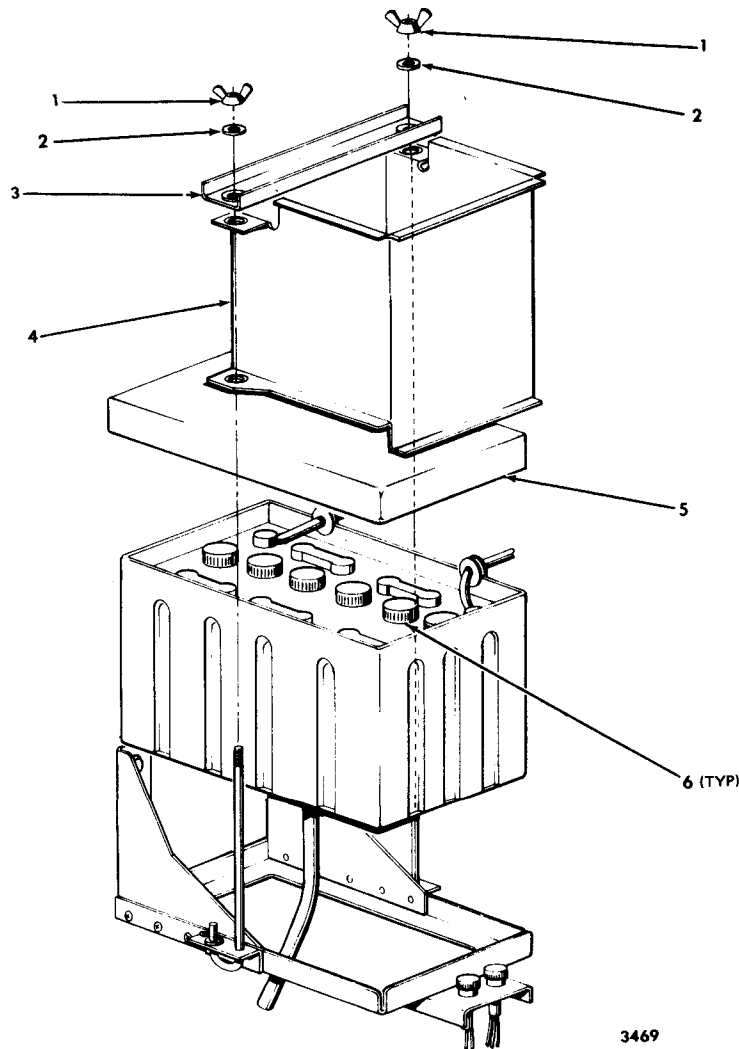
AA5B 0945 AND SUBSEQUENT

Brake Cylinder
Figure 3

AA-5 SERIES
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- E. Add water to bring electrolyte level to top of plates.
- F. Install battery filler plugs (6).
- G. Install battery box cover (5), heat shield (4), and tiedown (3). Secure with the washers (2) and wing nuts (1).
- H. Close and secure cowl.

NOTE: Check that cowl latches are flush with cowl.



- 1. Wing Nut
- 2. Washer
- 3. Tiedown
- 4. Heat Shield
- 5. Battery Cover
- 6. Filler Plug

Battery Servicing
Figure 4

SCHEDULED SERVICING

1. General

This section provides the procedures required to perform servicing that is required on a scheduled basis.

2. Engine Oil Servicing

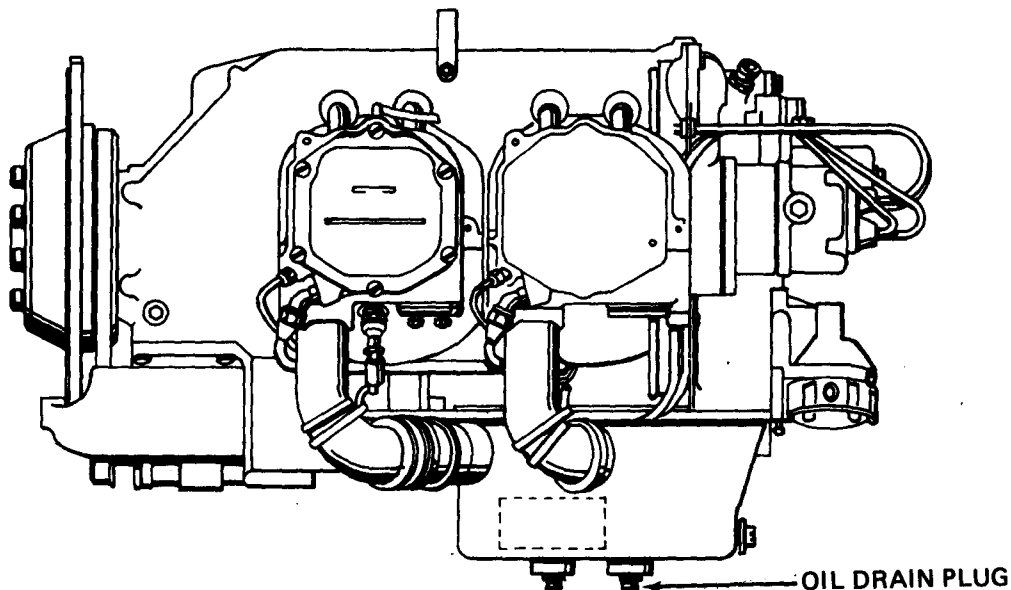
The engine oil should be changed after the first 25 hours of operation. It should be refilled with straight mineral oil conforming to Specification No. MIL-L-6082B (Section 12-0, Figure 2). This straight mineral oil should be used until a total of 50 hours has accumulated, then it should be drained and replaced with dispersant oil. The oil should be changed at least every 50 hours or 6 months, whichever occurs first. At the time of each oil change, the engine oil strainers should be removed, cleaned, and inspected for metal particles. If the engine is equipped with a paper throw-away type oil filter, it should be cut apart and inspected for accumulations of metal chips and evidence of internal engine failure.

Change engine oil as follows:

- A. Open both sides of upper engine cowl, and secure with support tubes.
- B. Remove lower engine cowl.
- C. Locate engine oil drain plug (Figure 5) and cut safety wire securing plug.

NOTE: On aircraft equipped with a quick oil drain, do not cut safety wire at plug. Place a hose over the quick drain and push the fitting up into its detent to drain the oil.
- D. Place a suitable container under the oil drain.
- E. Unscrew the drain plug and allow the oil to drain thoroughly.
- F. Remove remaining safety wire from drain plug and safety wire hole on engine.
- G. Using a clean rag or paper towel, wipe drain plug clean and clean area on engine around oil drain.
- H. Reinstall drain plug and safety wire.
- I. Remove, clean, and inspect engine oil strainers in accordance with Lycoming Operating Manual.
- J. Replace strainers per Lycoming Operating Manual.
- K. Unscrew and remove engine oil filler spout plug.
- L. Pour 8 quarts of oil conforming to Specification No. MIL-L-6082B (Section 12-0, Figure 2) or ashless dispersant aviation grade into oil filler spout.
- M. Using a clean rag or paper towel wipe oil from dipstick, and reinstall engine oil filler spout plug. Tighten finger tight.
- N. Reinstall lower engine cowl.
- O. Close and secure upper engine cowl (both sides).

AA-5 SERIES
MAINTENANCE MANUAL



Engine Oil Drain Plug
Figure 5

NOTE: Check that the cowl latches are flush with cowl.

3. Engine Air Filter Servicing (AA5-0001 through AA5-0640)

- A. Remove the screws attaching the adapter assembly, air filter and air box assembly together. (See Figure 2 of Section 30-1-1.)

WARNING: USE SOLVENTS IN A WELL VENTILATED AREA. AVOID BREATHING FUMES. KEEP AWAY FROM FLAMES.

- B. Thoroughly wash the filter in petroleum solvent. Make certain all dirt is removed and filter is in serviceable condition. If filter has flocking worn from screen wire, replace filter.
- C. Dry the filter at room temperature. Filter must be completely dry before proceeding with next step. If the filter is not dry, the solvent will prevent oil from adhering to the filter, thereby reducing the filter efficiency.
- D. Immerse the filter in the grade oil called for on the filter. If none is called out, use engine preservative oil per MIL-L-21260. (Section 12-0, Figure 2.)
- E. After removing the filter from the oil, allow it to drain thoroughly before installing in the aircraft.
- F. Inspect the gasket between the air filter and air box. If damaged or otherwise defective, replace with a new gasket.
- G. Position the air box assembly, filter, and adapter together and install the screws.
- H. Position the air box assembly to the carburetor and forward cowl, and install the bolts being sure to install the left rear bolt with a washer to prevent it from bottoming out in the carburetor.
- I. Connect the carburetor heat control to the air box assembly.
- J. Install the carburetor heat inlet hose and clamp to the air box assembly.
- K. Install the lower cowl.

4. Engine Air Filter Servicing (AA5-0641 and subsequent and AA-5A Aircraft)

The engine air filter element should be replaced every 100 hours of engine operation, every 12

calendar months, or when torn (or 50% covered with foreign material). Filter element, Part No. 13203 or 8994914, should be used as replacement.

Replace the engine air filter element as follows:

NOTE: Never blow off filter with compressed air or attempt to wash element in any liquid or soak in oil.

- A. Locate filter access per Figure 6. Remove the screws that attach the filter cover plate and remove the plate.
- B. Remove old filter element and install replacement.
- C. Replace filter cover plate and reinstall screws attaching it.

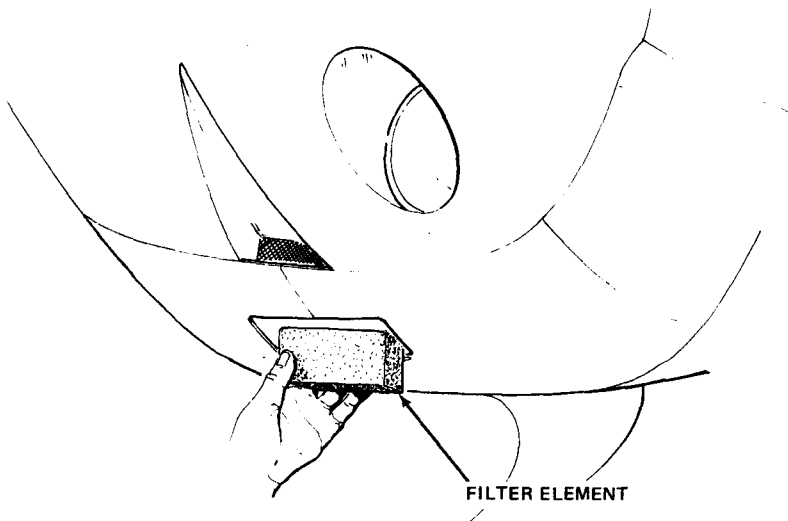
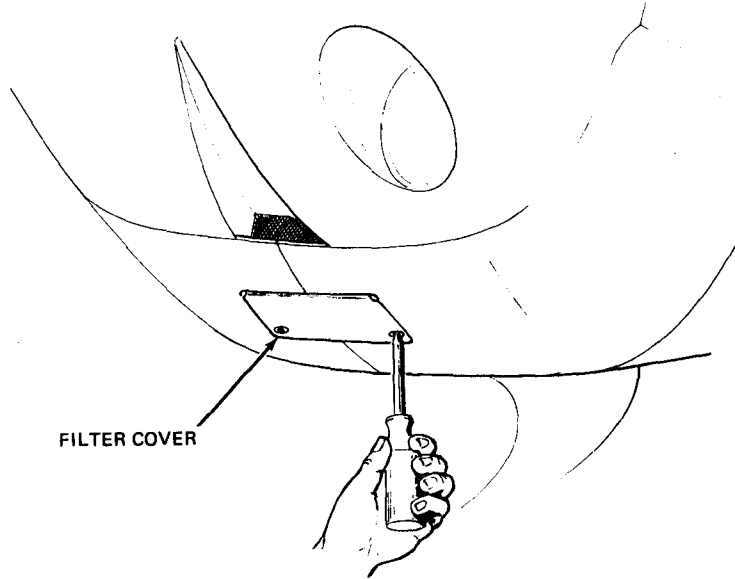
5. Engine Air Filter Servicing (AA-5B Aircraft)

- A. On Aircraft AA5B-0001 through 0549 using filter Part No. 8994656, and Aircraft AA5B-0550 through 0950 using filter Part No. 5500015-501, replace the foam type filter element every 300 hours, every twelve months, when torn or 50 percent covered with foreign material. Replace filter as follows:

NOTE: Never blow off filter with compressed air or attempt to wash element in any liquid or soak in oil.

- (1) Open both sides of upper cowl and secure with support tubes.
 - (2) Remove lower engine cowl.
 - (3) Unbolt filter access door (Figure 7) on bottom of air box/filter assembly.
 - (4) Remove old filter and install replacement.
 - (5) Close and secure filter access door.
 - (6) Install lower engine cowl.
 - (7) Close and secure upper engine cowl.
- B. On Aircraft AA5B-0951 and subsequent, check the paper type carburetor air filter during each preflight inspection. If the filter is dusty it may be removed and cleaned with compressed air or washed in a solution of water and Donaldson D-1400 filter cleaning compound or equivalent. Replace the filter after one year, after ten cleanings, or after 500 flight hours, whichever occurs first. Service filter as follows:
 - (1) Open both sides of upper cowl and secure with tubes.
 - (2) Remove lower engine cowl.
 - (3) Unbolt filter access door (See Figure 7.) on bottom of air box/filter housing.
 - (4) Remove filter. Clean and inspect as follows:
 - (a) Clean filter, using one of methods described above.
 - (b) After filter is clean and dry inspect filter by using a bright light on one side and looking through the filter from the other side. Check thoroughly for holes or tears in the filter.
 - (5) Install cleaned or new filter.
 - (6) Close and secure filter access door.
 - (7) Install lower engine cowl.
 - (8) Close and secure upper engine cowl.

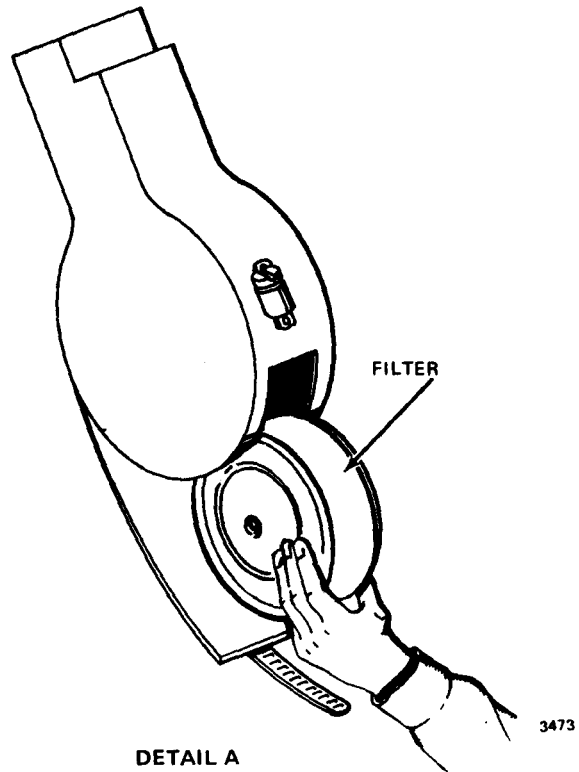
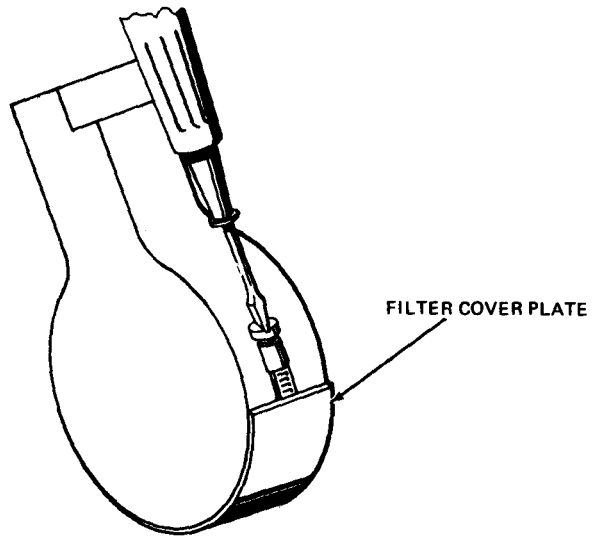
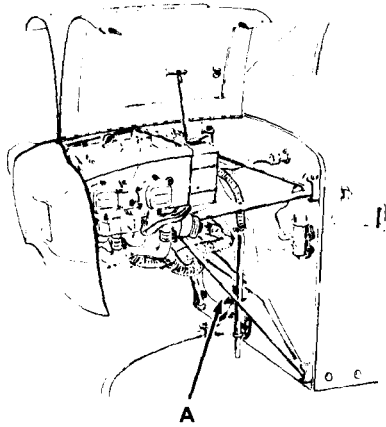
**AA-5 SERIES
MAINTENANCE MANUAL**



3472

**Air Filter Servicing (AA5-0641 and AA-5A Aircraft)
Figure 6**

AA-5 SERIES
MAINTENANCE MANUAL



DETAIL A

Engine Air Filter Servicing (AA-5B Aircraft)
Figure 7

6. Vacuum System Air Filter Servicing

The vacuum system air filter (Figure 8) is located beneath the instrument panel, and attached to the inside of the firewall near its center. The filter elements of both the air filter and the regulator should be checked periodically to ensure that they are not clogged by dirt or foreign material. If either of the filter elements are dirty and appear to be clogged, they should be replaced. The air filter element should be replaced by Part No. 1J7-1 or EBG03-0003. The regulator filter element should be replaced by Part No. B3-5-1.

Replace the filter elements as follows:

NOTE: Never blow off filter with compressed air or attempt to wash element in any liquid or soak in oil.

- A. Locate air filter and regulator per Figure 8. Remove fastener attaching filter to firewall.

NOTE: Do not disconnect vacuum hoses from filter unless hoses are to be replaced.

- B. Remove the nut and washer as shown in Figure 8.
C. Remove old filter element and replace with new element.
D. Reinstall washer and nut.
E. Reconnect air filter to firewall.

To replace regulator filter, proceed as follows:

- F. Remove screw in top of regulator (Figure 8) and remove regulator cover.
G. Remove old filter element and replace with new element.
H. Reinstall cover and secure with screw.

7. Airframe Lubrication

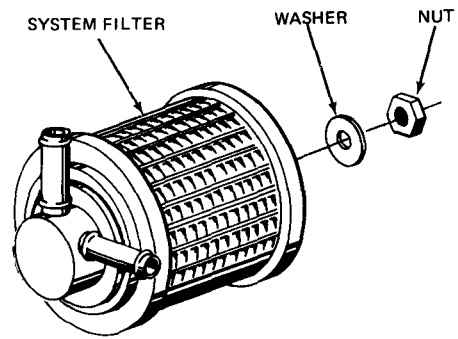
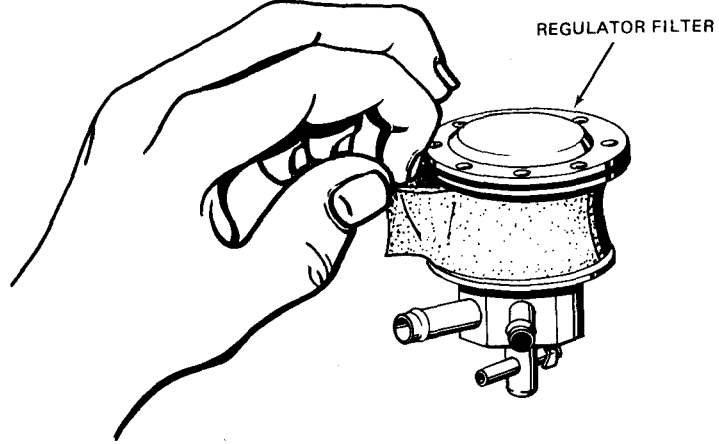
Lubricate the airframe in accordance with Section 12-0, Figure 1, this chapter. During airframe lubrication, observe the following precautions and procedures:

WARNING: USE CLEANING SOLVENT IN A WELL VENTILATED AREA. AVOID BREATHING FUMES. KEEP AWAY FROM FLAMES.

CAUTION: SYNTHETIC COMPOUNDS SUCH AS THOSE FOUND IN AIRCRAFT OILS AND GREASES CONTAIN ELEMENTS WHICH CAN SOFTEN PAINT, NATURAL RUBBER, NEOPRENE, AND SOME ELECTRICAL INSULATORS. IF THIS TYPE LUBRICANT IS SPILLED ON ANY OF THESE MATERIALS, WIPE IT OFF IMMEDIATELY AND THOROUGHLY WITH A CLEAN CLOTH.

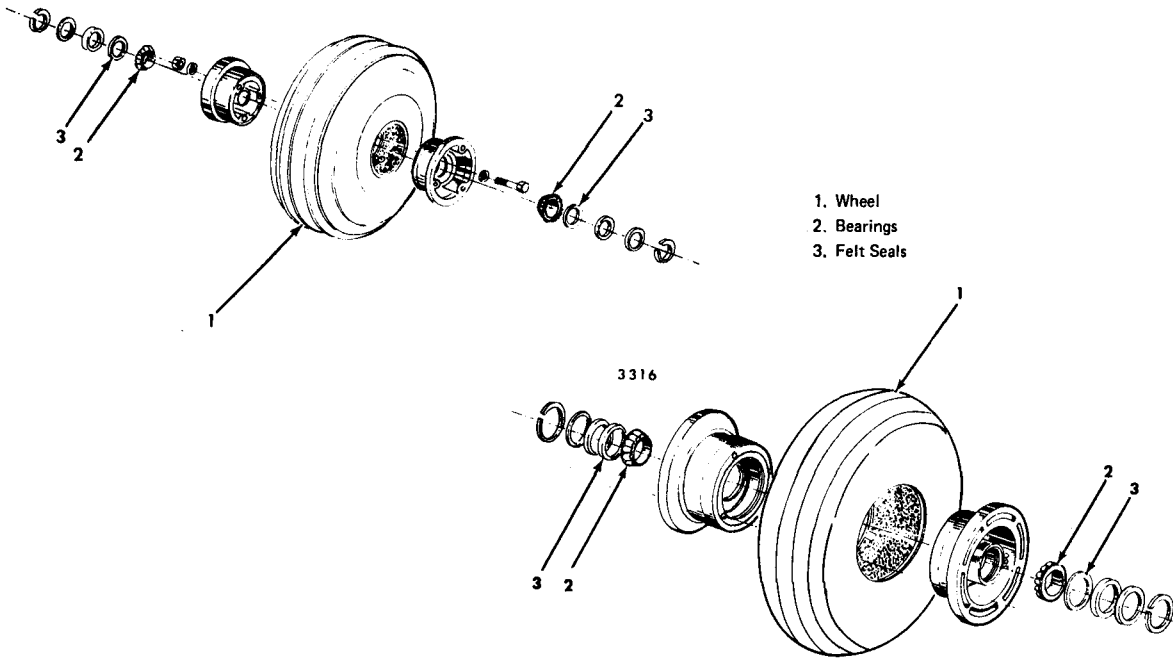
- A. Remove all foreign matter from joints, fittings, or bearing surfaces immediately before application of lubricant. Use a clean cloth saturated with a cleaning solvent.
B. Apply lubricant sparingly to prevent accumulation of contaminants.
C. Main gear and nose gear bearings. (See Figure 9).

AA-5 SERIES
MAINTENANCE MANUAL

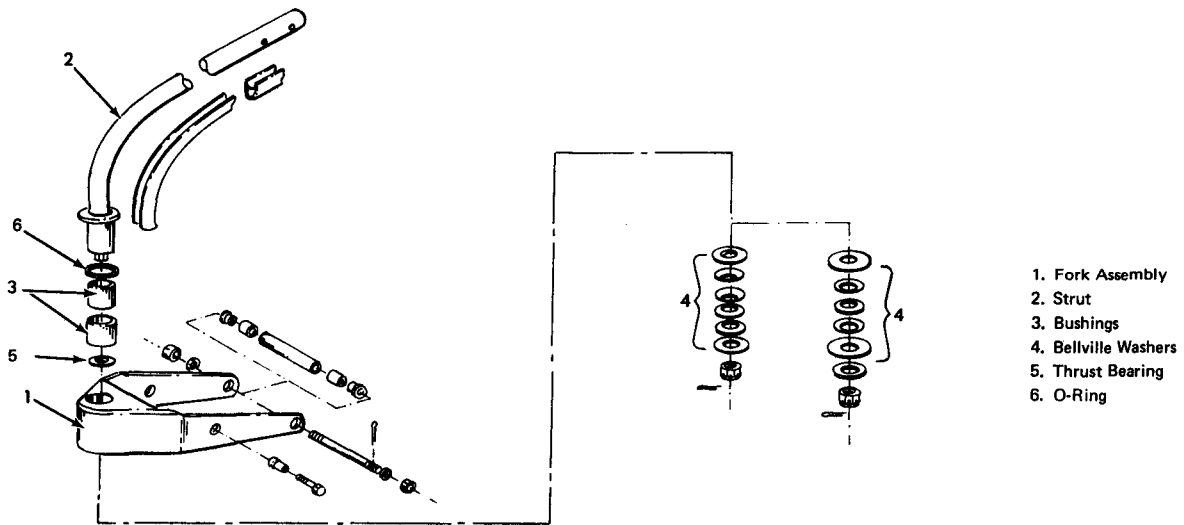


Vacuum System Air Filter Servicing
Figure 8

AA-5 SERIES
MAINTENANCE MANUAL



Wheel Bearing Lubrication
Figure 9



3314

Nose Gear Fork Assembly Servicing
Figure 10

WARNING: USE CLEANING SOLVENTS IN A WELL VENTILATED AREA. AVOID BREATHING FUMES. KEEP AWAY FROM FLAMES.

CAUTION: DO NOT SPIN BEARINGS WHEN DRYING WITH COMPRESSED AIR. WASH BEARING SEALS IN STODDARD SOLVENT (P-S-661 OR EQUIVALENT) AND DRY WITH A CLEAN, SOFT CLOTH.

CAUTION: USE A CLEAN, LINT-FREE CLOTH TO CLEAN AND HANDLE BEARINGS. DO NOT USE A DIFFERENT TYPE GREASE IN WHEEL BEARINGS.

(1) Clean and repack wheel bearings after the first 100 hours of operation. Thereafter clean and repack at each tire change. Remove wheels (1) and bearings (2). Clean wheel bearings and felt seals (3) with Stoddard solvent (P-S-661) or equivalent and dry with soft lint-free cloth.

(2) Inspect bearings (2) and races for wear or damage and replace if necessary.

NOTE: For adjustment of nose wheel and main landing gear bearings, refer to Chapter 32.

(3) Repack bearings only with grease MIL-G-25760 (Section 12-0, Figure 2) and lubricate felt seals with oil MIL-L-7870 (Section 12-0, Figure 2) before installation.

D. Nose gear fork assembly (See Figure 10.)

WARNING: USE CLEANING SOLVENT IN A WELL VENTILATED AREA. AVOID BREATHING FUMES. KEEP AWAY FROM FLAMES.

(1) Clean and grease the nose gear fork assembly, bushings, and Bellville washers every 100 hours. Remove nose gear fork assembly (1) from strut (2), clean bushings (3), Bellville washers (4) and fork (1) with Stoddard solvent (P-S-661) or equivalent and dry with soft lint-free cloth.

(2) Inspect bushings (3), thrust bearings (5), and Bellville washers (4), for wear or damage and replace if necessary.

NOTE: For adjustment of nose gear fork assembly, refer to Chapter 32.

(3) Repack nose gear fork assembly, bushings, thrust bearing and Bellville washers only with grease MIL-G-7711 (Section 12-0, Figure 2) before installation.

E. T-Column Bearings

The T-column needle and thrust bearings should be lubricated when evidence of binding occurs, or when the assembly must be disassembled for repair or replacement of parts. Lubricate the bearings as follows:

CAUTION: DO NOT HANDLE BEARINGS WITH BARE HANDS. USE CLEAN LINT-FREE CLOTH.

(1) Remove the needle and thrust bearings.

WARNING: USE CLEANING SOLVENT IN A WELL VENTILATED AREA. AVOID BREATHING FUMES. KEEP AWAY FROM FLAMES.

(2) Clean the bearings and races with Stoddard solvent (P-S-661) or equivalent and dry with soft lint-free cloth.

- (3) Visually inspect bearings and races for wear or damage and replace if necessary.

NOTE: For adjustment of T-column, refer to Chapter 27.

- (4) Repack bearings only with MIL-G-7711 (Section 12-0, Figure 2) grease before installation.

F. Trim Wheel Gears

- (1) Use a clean lint-free cloth to wipe excess grease and foreign material from shaft.
- (2) Apply a thin coating of MIL-G-7711 (Section 12-0, Figure 2) grease to the shaft by hand.

G. Trim Actuator Shaft

- (1) Use a clean lint-free cloth to wipe excess grease and foreign material from shaft.
- (2) Apply a thin coating of MIL-G-7711 (Figure 2) grease to the shaft by hand.

H. Canopy and Baggage Door Latches

WARNING: USE CLEANING SOLVENT IN A WELL VENTILATED AREA. AVOID BREATHING FUMES. KEEP AWAY FROM FLAMES.

The canopy and baggage door latches should be lubricated at each 100-hour inspection or when they must be disassembled for repair. Lubricate the latches as follows:

- (1) Clean internal parts of latch with Stoddard solvent (P-S-661 or equivalent) and dry with soft lint-free cloth.
- (2) Inspect parts for wear and damage. Replace if necessary.

NOTE: For adjustment of canopy and baggage door latches, refer to Chapter 52.

- (3) Lubricate latch parts with a light coating of Lubriplate #50 white grease or equivalent, before assembly.

I. Flap Position Indicator Cable

The flap position indicator cable should be lubricated when evidence of binding occurs or when it is removed for maintenance. Lubricate the cable as follows:

- (1) Use a clean lint-free cloth to wipe excess grease and foreign material from cable.
- (2) Apply a thin coating of MIL-G-21164 (Section 12-0, Figure 2) Molybdenum Disulphide grease to the cable by hand.

8. Auxiliary Fuel Pump Filter Servicing

Clean the auxiliary fuel pump filter as follows:

WARNING: PRIOR TO REMOVING FILTER FROM FUEL PUMP, CLOSE AND LOCK CANOPY, OR OTHERWISE ENSURE THAT PUMP IS NOT ENERGIZED WHILE FILTER IS REMOVED. ENERGIZING PUMP WITH A FILTER REMOVED WILL RESULT IN RAW FUEL BEING PUMPED INTO THE ENGINE COMPARTMENT.

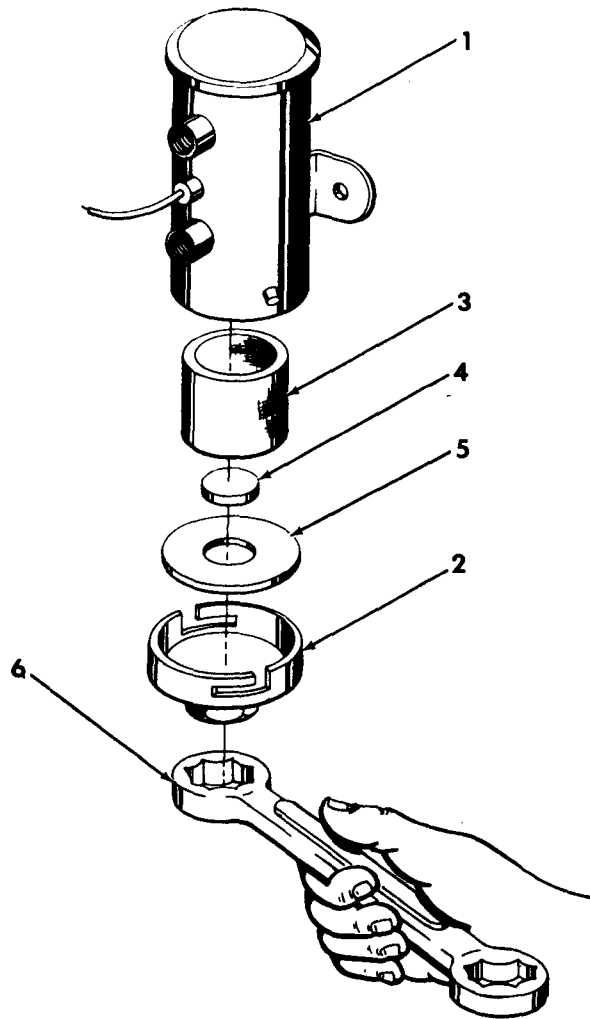
- A. Locate auxiliary fuel pump (1, Figure 11), cut safety wire and remove bottom cover (2), from pump (1), by turning it counterclockwise.
- B. Remove filter element (3) from fuel pump, and remove magnet (4), and gasket (5) from bottom cover.
- C. Use compressed air and a clean, lint-free cloth to remove foreign material from filter (3), magnet (4), and gasket (5).

NOTE: If excessive amounts of foreign material are found in the filter, the Fuel System should be checked for contamination as shown in Chapter 28.

AA-5 SERIES
MAINTENANCE MANUAL

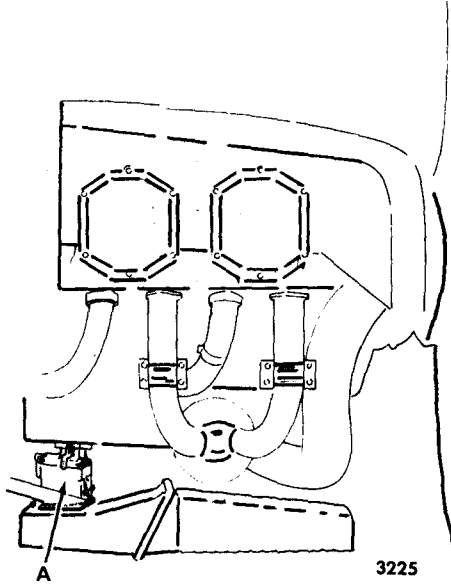
- D. Reinstall filter element (3) in pump (1), and magnet (4), and gasket (5) in bottom cover (2).
- E. Install bottom cover (2) on pump (1), by pressing slots over lugs and rotating cover clockwise into detent.
- F. Safety wire bottom cover on pump with .032 inch wire.
- G. Energize auxiliary fuel pump and check for leakage around bottom cover.

- 1. PUMP
- 2. BOTTOM COVER
- 3. FILTER ELEMENT
- 4. MAGNET
- 5. GASKET
- 6. 5/8 INCH WRENCH

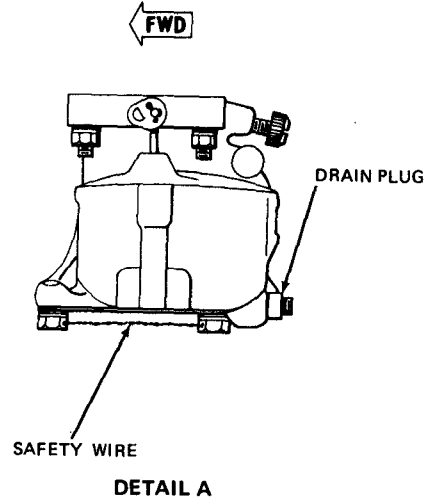


Auxiliary Fuel Pump Servicing
Figure 11

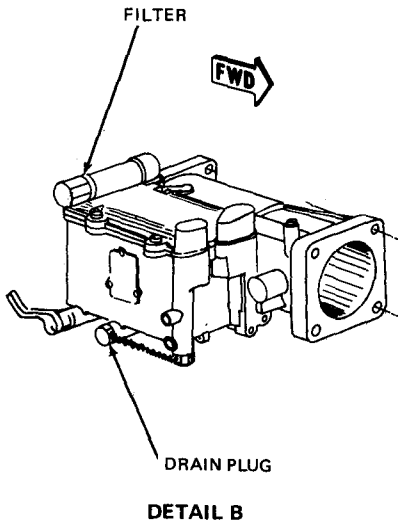
AA-5 SERIES
MAINTENANCE MANUAL



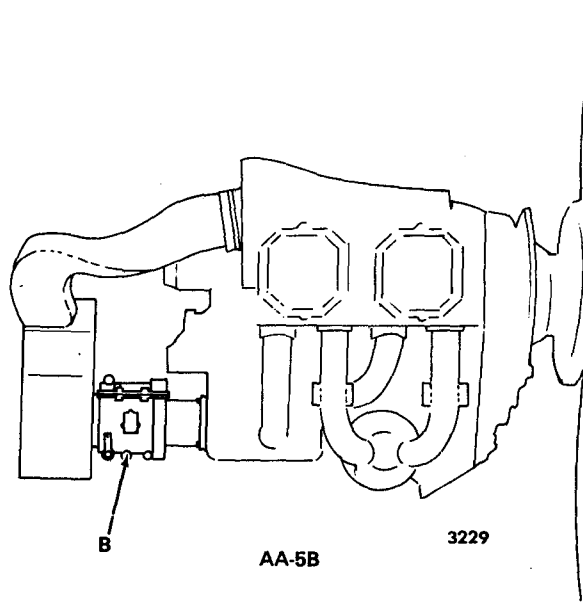
AA-5 AND AA-5A



DETAIL A



DETAIL B



AA-5B

Carburetor Filter Servicing
Figure 25

3. Carburetor Filter Servicing

Drain carburetor bowl and clean carburetor filter as follows:

WARNING: WHEN THE DRAIN PLUG IS REMOVED FROM THE CARBURETOR BOWL, A SMALL AMOUNT OF FUEL WILL DRAIN FROM THE CARBURETOR. CATCH THIS FUEL IN A CONTAINER FOR PROPER DISPOSAL.

- (1) Cut the safety wire on the carburetor (See Figure 12) between the filter and the bowl drain plug.
- (2) Remove the bowl drain plug, and catch the fuel that drains from the carburetor in a suitable container.
- (3) When the carburetor bowl has drained, replace the plug.
- (4) Remove filter and clean with compressed air.
- (5) Install filter.
- (6) Install 0.032 inch safety wire on filter and bowl drain plug.

UNSCHEDULED SERVICING

1. General

This section provides procedures required to be performed in the event of unusual environmental conditions, and other servicing procedures which are performed as required rather than on a regularly scheduled basis.

2. Ice and Snow Removal

Accumulations of ice and snow on the aircraft can result in damage during ground handling, and can constitute a flight hazard if not completely removed. Ice and snow removal can result in damage to the aircraft if the right methods are not employed. Taxiing or towing through snow or slush can result in ice formation on wheels, brake parts, and fairings during freezing weather. Subsequent attempts to move the aircraft without clearing this ice may damage the wheels or fairings.

The recommended method of ice and snow removal is to allow it to melt. Remove as much snow as possible with a soft bristle boom, make sure the wheels and brakes are clear, and tow the aircraft into a heated hangar. This method is particularly desirable, since it will melt any undetected ice and snow that could constitute a flight hazard.

If heated facilities are not available, ice must be carefully removed with wooden or plastic scrapers, or by hand.

CAUTION: DO NOT USE SOLVENTS, ALCOHOL, ETHYLENE GLYCOL (ANTI-FREEZE), OR ANY PETROLEUM DERIVATIVE FOR ICE OR SNOW REMOVAL. THESE SUBSTANCES CAN DAMAGE PAINT, PLEXIGLAS, RUBBER, AND PLASTICS, AND CAN REMOVE LUBRICANTS.

Make sure ice and snow accumulations have been removed from the following areas:

- A. Wings, empennage, and all control surfaces.
- B. Between the wing trailing edges and the leading edges of the flaps and ailerons.
- C. Pitot tube and fuel tank vents.
- D. Propeller spinner (inside and outside).
- E. Nose cowling air intakes.
- F. Landing light.
- G. Propeller blades.
- H. Engine oil breather pipe.
- I. Windshield, canopy, and canopy tracks.
- J. Wheels, brakes, and wheel fairings.

NOTE: Taxiing or towing through snow and slush can result in the accumulation of ice in the wheel fairings and on wheels and brake parts during freezing weather.

- K. Between rudder and vertical stabilizer.
- L. Between elevators and horizontal stabilizer
- M. Between elevator and trim tab.
- N. Around rudder, elevator, and elevator trim tab linkages.

3. Battery Servicing and Charging

Refer to Chapter 24 for battery servicing and charging procedures.

4. External Cleaning

The painted surfaces of the aircraft have a long lasting, all-weather finish and should require no buffing or rubbing out in normal conditions. However, it is desirable to wash and polish it to preserve the outstanding exterior finish. It is recommended that wax or polish operations be delayed (at least 60 days after date of certification) to allow proper curing of paint. The paint can be kept bright simply by washing with water and mild soap. Avoid abrasive or harsh detergents. Rinse with clear water and dry with terry cloth towels or chamois. Oil and grease spots may be removed with kerosene or mineral spirits.

NOTE: No commercial paint removers are to be used on any airframe components unless specific prior approval has been received from the factory. (See Chapter 20.)

If you choose to wax your aircraft, use a good automotive-type wax applied as directed. The use of wax in areas subject to high abrasion, such as leading edges of wings and tail surfaces, propeller, spinner, and blade, is recommended.

5. Internal Cleaning

Clean the interior regularly with a vacuum cleaner to remove dust and loose dirt from the upholstery and carpet.

CAUTION: THE APPLICATION OF CERTAIN CLEANING AGENTS, PROTECTIVE COATINGS, STAIN REPELLENTS, AND OTHER CHEMICAL COMPOUNDS MAY REDUCE THE FIRE RETARDANT QUALITIES OF INTERIOR FABRICS. CONSULT THE COMPOUND MANUFACTURER BEFORE USE.

If liquid (coffee, etc.) is spilled on the upholstery or carpet, blot it up promptly with cleansing tissue or rags. Continue blotting until no more liquid is taken up. Sticky materials may be cleaned with household spot removers, used sparingly. Before using any solvent, read the instructions on the container and test it on an obscure place on the fabric to be cleaned. Never saturate the fabric with a volatile solvent: it may damage the padding and backing materials.

WARNING: USE STODDARD SOLVENT IN A WELL VENTILATED AREA. AVOID BREATHING FUMES. KEEP AWAY FROM FLAMES.

CAUTION: NEVER USE GASOLINE, BENZINE, ALCOHOL, ACETONE, CARBON TETRACHLORIDE, FIRE EXTINGUISHER FLUID, ANTI-ICE FLUID, LACQUER THINNER, OR GLASS CLEANER TO CLEAN PLASTIC. THESE MATERIALS WILL DAMAGE THE PLASTIC AND MAY CAUSE SEVERE CRAZING.

The plastic trim, headliner, instrument panel, and control knobs can be cleaned with a cloth moistened with Stoddard solvent, (P-S-661) or equivalent.

6. Windshield and Window Cleaning

In order to maintain good visibility at all times, the Plexiglas in the windshield, windows, and canopy should be given good care and kept clean at all times. Techniques and materials used to clean glass should be avoided since Plexiglas is softer than glass and subject to damage by solvents and abrasive glass cleaning agents.

A. Precautions

- (1) Cleaning agents should be limited to soap and water applied with a sponge or wadding of soft cloth. Most solvents will cloud plastic and may cause cracking and crazing. Many commercial glass cleaners contain abrasives and solvents which may cause damage.
- (2) Do not use burlap, duck, canvas, or other harsh cloths on Plexiglas. Use only cotton or soft linen cloths and rinse them out frequently.
- (3) Do not rub on the Plexiglas. Mud, dirt, and other foreign matter dislodged and trapped beneath the cloth or sponge will cause fine scratches in the surface.

CAUTION: NEVER USE GASOLINE, BENZINE, ALCOHOL, ACETONE, CARBON TETRACHLORIDE, FIRE EXTINGUISHER FLUID, ANTI-ICE FLUID, LACQUER THINNER OR GLASS CLEANER TO CLEAN PLASTIC. THESE MATERIALS WILL DAMAGE THE PLASTIC AND MAY CAUSE SEVERE CRAZING.

B. Recommended Procedures

- (1) Flush the area to be cleaned with a solution of mild soap and water. Wait a few moments to allow the soap to work.
- (2) Flood the area with clear water. Use the stream of water and the hands to dislodge dirt accumulations.
- (3) After all dirt and grit have been removed, apply soap and water again. Go over the area lightly with a sponge or heavy wadding of soft cloth, followed by flooding with clean water. Rinse the cloth or sponge frequently.
- (4) A soft cloth soaked in kerosene may be used to remove heavy grease and tar.
- (5) After cleaning, allow the Plexiglas to air dry. Remove any water spots with a damp cloth.
- (6) After cleaning, a thin coat of hard polish wax may be applied in accordance with the manufacturer's directions. Buff lightly with a soft cloth.
- (7) Jeweler's rouge may be used to work out or reduce scratches and other marks. Follow the manufacturer's directions. Apply wax and buff when finished.

7. Engine Cleaning

WARNING: USE STODDARD SOLVENT IN A WELL VENTILATED AREA. AVOID BREATHING FUMES. KEEP AWAY FROM FLAMES.

CAUTION: PARTICULAR CARE SHOULD BE TAKEN TO PROTECT ELECTRICAL EQUIPMENT BEFORE CLEANING. SOLVENT SHOULD NOT BE ALLOWED TO ENTER MAGNETOS, STARTER OR ALTERNATOR. COVER ANY FUEL, OIL, AND AIR OPENINGS ON THE ENGINE AND ACCESSORIES BEFORE WASHING THE ENGINE WITH SOLVENT. CAUSTIC CLEANING SOLUTIONS SHOULD BE USED CAUTIOUSLY AND SHOULD ALWAYS BE PROPERLY NEUTRALIZED AFTER THEIR USE.

The engine should be cleaned with a suitable solvent, such as Stoddard solvent, (P-S-661) or equivalent, then dried thoroughly. If caustic or emulsifying cleaners are used, they should be flushed with water and neutralized as soon as possible after cleaning is accomplished.

8. Propeller Care

Nicks, gouges, and other damage to the propeller should receive immediate attention. Refer to Chapter 61.

WARNING: USE SOLVENT IN A WELL VENTILATED AREA. AVOID BREATHING FUMES. KEEP AWAY FROM FLAMES.

Cleaning agents such as mineral spirits may be used to clean the propeller, but do not allow the solvent to flow into the spinner. Any residue will be blown aft over the aircraft when the engine is started. The blade should be coated with a light film of oil, or waxed if desired.

Tighten or replace any loose or missing spinner attaching parts. Replace the spinner if it sustains any damage.