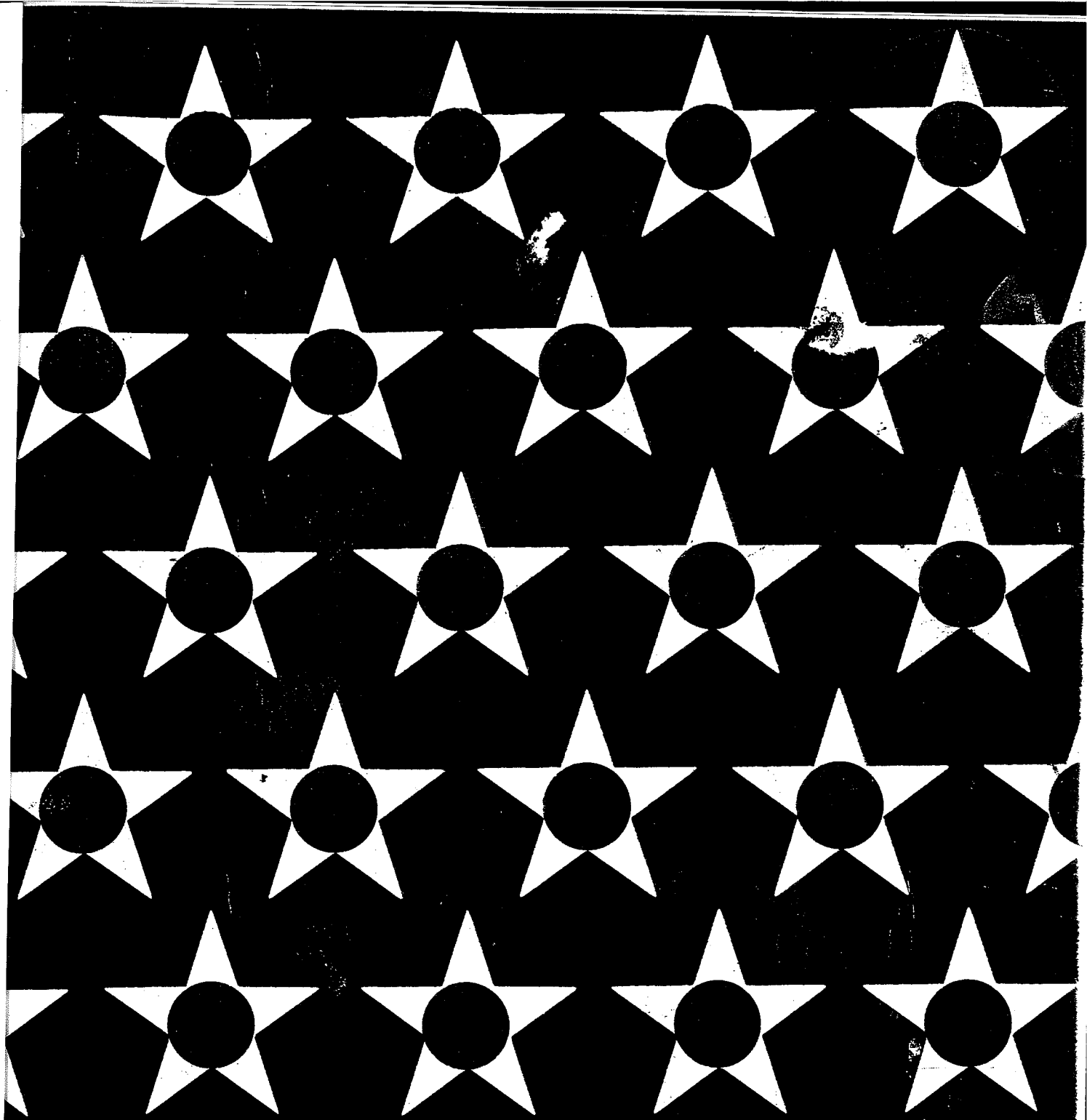


AA-1 YANKEE SERVICE MANUAL

American Aviation Corporation

The American Yankee

Service Manual

DECEMBER, 1969

American Aviation Corporation
318 Bishop Road, Cleveland Ohio 44143
Cable Address: AMERICAV

TABLE OF CONTENTS

SECTION		PAGE
1	GENERAL	1-1
	A. INTRODUCTION	1-2
	B. GENERAL DESCRIPTION	1-2
	SPECIFICATIONS	1-2
	3-VIEW	1-3
	SERIAL NUMBER AND TRIM PLATE	1-4
2	SERVICING	2-1
	A. GROUND HANDLING	2-2
	B. LEVELING	2-2
	C. WEIGHING	2-2
	D. LUBRICATION	2-2
	E. MOORING	2-2
	F. CLEANING	2-3
	G. JACKING	2-3
	H. LUBRICATION CHART	2-4
	I. INSPECTION	2-5
	SERVICE GUIDE	2-6
	ANNUAL OR 100 HOUR INSPECTION PROCEDURE	8 pages
3	AIRFRAME	3-1
	A. WING REMOVAL	3-2
	B. EMPENNAGE REMOVAL	3-2
	C. CANOPY REMOVAL	3-2
	D. COWLING REMOVAL	3-3
	E. TAILCONE REMOVAL	3-3
	F. WING TIP REMOVAL	3-3
	G. WING ROOT REMOVAL	3-3
	H. SEAT REMOVAL	3-3
	I. WINDSHIELD REMOVAL	3-4
	J. CONSOLE REMOVAL	3-4
4	LANDING GEAR	4-1
	A. MAIN LANDING GEAR	4-2
	B. NOSE LANDING GEAR	4-2
	C. WHEELS, TIRES, AND BRAKES	4-5
	D. TOE-IN AND CAMBER ADJUSTMENTS	4-7
	E. WHEEL FAIRINGS	4-7
5	CONTROL SYSTEM	5-2
	A. AILERONS	5-2
	B. ELEVATORS	5-2
	C. RUDDER	5-2
	D. FLAPS	5-2
	E. TRIM	5-2
	F. FLAP MOTOR	5-3
	G. CONTROL SURFACES REMOVAL	5-3

SECTION I

GENERAL

SECTION		PAGE
1	GENERAL	1-1
	A. INTRODUCTION	1-2
	B. GENERAL DESCRIPTION	1-2
	SPECIFICATIONS	1-2
	3-VIEW	1-3
	SERIAL NUMBER AND TRIM PLATE	1-4

REVISED NO. 71-1

1. GENERAL

A. INTRODUCTION

This service manual contains information to be used by qualified service personnel in the service and maintenance of the American Aviation Yankee (Model AA-1). The information contained herein does in no way supersede AC 43.13-1, Aircraft Inspection and Repair Manual, published by the Federal Aviation Administration (formerly Civil Aeronautics Manual 18).

For specific information not contained within this manual, consult the Customer Service Department of American Aviation Corporation.

B. GENERAL DESCRIPTION

The Yankee is a single engine, low wing, tricycle gear, 2-place airplane. The Yankee features a horizontally opposed, air-cooled, 108-horsepower Lycoming engine; a unique fiberglass main landing gear strut, and an all-metal bonded construction which employs very few structural rivets or fasteners. A sliding, plexiglass canopy affords visibility in all directions.

SPECIFICATIONS

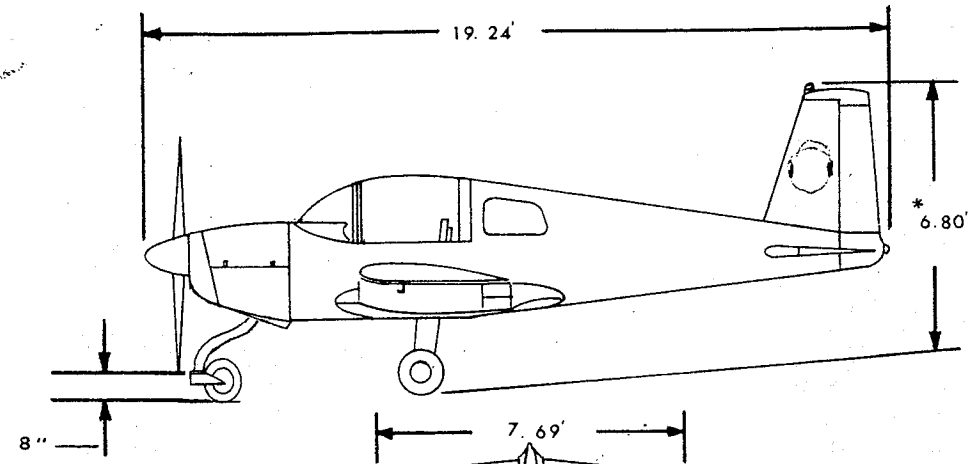
FAA Type Certificate	A11EA
Gross Weight (Normal Category)	1500 lbs.
Gross Weight (Utility Category)	1430 lbs.
Fuel Capacity	24 gal.
Oil Capacity	6 qts.
Engine	Lycoming 0-235-C2C
Propeller (Fixed pitch)	71" McCauley
Length	19.24 ft.
*Height (with flashing beacon)	6.80 ft.
Height (without flashing beacon)	6.64 ft.
Wings	
Span	24.46 ft.
Dihedral	5°
Incidence	3-1/2°
Aileron Travel (Up)	25° ± 2
Aileron Travel (Dn)	20° ± 2
Flap Travel	0° -30° (±2)
Empennage	
Horizontal Tail Incidence	-3°
Vertical Tail Offset	0°
Elevator Travel (Up)	25° ±2
(Dn)	15° ±2
Rudder Travel (Left & Right)	25° ±2
Trim Tab Travel (Up)	3° ±1
(Dn)	(11°) ±1
Main Wheel Tire (26 psi)	15 x 6.00 -6 4-ply rating
Nose Wheel Tire (22 psi)	5.00 -5 4-ply rating

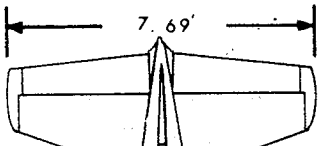
TABLE OF CONTENTS

SECTION		PAGE
6	POWERPLANT	6-1
	A. GENERAL	6-2
	B. SPECIFICATIONS	6-2
	C. ENGINE REMOVAL	6-2
	D. ENGINE CONTROLS	6-2
	E. INDUCTION SYSTEM	6-3
	F. EXHAUST SYSTEM	6-4
	G. OIL SYSTEM	6-4
	H. PRIMING SYSTEM	6-4
	I. IGNITION SYSTEM	6-5
	J. COOLING SYSTEM	6-7
	K. PROPELLER	6-7
	L. IDLE SPEED AND MIXTURE ADJUSTMENT	6-7
	ENGINE TROUBLE SHOOTING CHART	6-8
7	FUEL SYSTEM	7-1
	A. GENERAL	7-2
	B. FUEL TANK	7-2
	C. FUEL TANK DRAIN	7-4
	D. FUEL CAP	7-4
	E. FUEL SELECTOR VALVE	7-4
	F. FUEL PRESSURE GAUGE	7-4
	G. ELECTRIC FUEL PUMP	7-4
	H. FUEL MEASUREMENT SYSTEM	7-5
	FUEL SYSTEM TROUBLE SHOOTING CHART	7-5
8	UTILITY SYSTEMS	8-1
	A. BRAKE SYSTEM	8-2
	BRAKE SYSTEM TROUBLE SHOOTING CHART	8-3
	B. CABIN HEATING AND VENTILATING SYSTEM	8-4
9	INSTRUMENTATION	9-1
	A. MAGNETIC COMPASS	9-2
	B. CLUSTER ASSEMBLY	9-2
	C. TURN AND BANK INDICATOR	9-2
	D. HOURMETER	9-2
	E. TACHOMETER	9-2
	TURN AND BANK INDICATOR TROUBLE SHOOTING CHART	9-2
	HOURMETER TROUBLE SHOOTING CHART	9-2
	MAGNETIC COMPASS TROUBLE SHOOTING CHART	9-3
	TACHOMETER TROUBLE SHOOTING CHART	9-3
	OIL PRESSURE GAUGE TROUBLE SHOOTING CHART.	9-3
	OIL TEMPERATURE GAUGE TROUBLE SHOOTING CHART	9-3
	F. PITOT AND STATIC SYSTEM	9-6
	PITOT AND STATIC SYSTEM TROUBLE SHOOTING CHART	9-7
	G. VACUUM SYSTEM	9-9
	VACUUM SYSTEM TROUBLE SHOOTING CHART	9-9

TABLE OF CONTENTS

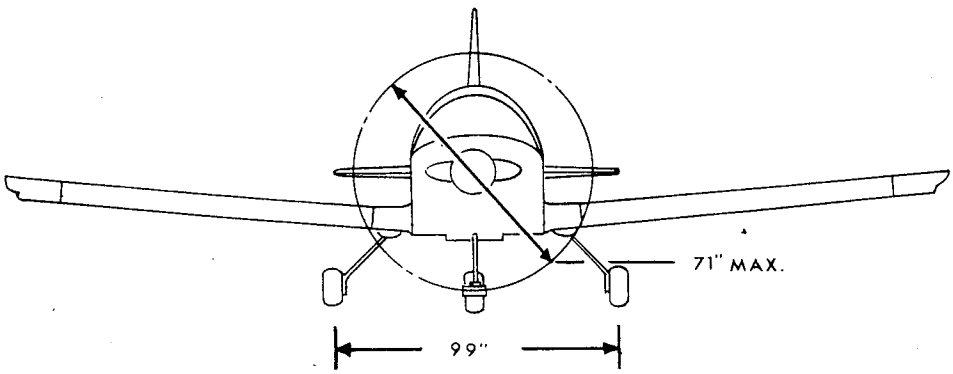
SECTION		PAGE
10	STRUCTURAL REPAIR	10-1
	A. GENERAL	10-2
	B. TOOLS, JIGS, AND FIXTURES	10-2
	C. MATERIALS	10-2
	D. SERVICE KITS	10-2
	E. HONEYCOMB REPAIRS	10-2
	STRUCTURAL REPAIRS	10-2
	F. REPAIR OF FORMED THERMO-PLASTIC PARTS	10-3
	G. ENGINE MOUNT REPAIR	10-3
	H. CONTROL SURFACE REPAIR	10-3
	AIRFRAME MATERIALS CHART	10-4
11	ELECTRICAL SYSTEMS	11-1
	A. GENERAL	11-2
	B. BATTERY	11-2
	C. ALTERNATOR	11-2
	D. VOLTAGE REGULATOR	11-3
	E. AMMETER	11-3
	F. FLAP MOTOR	11-3
	G. LANDING LIGHT	11-3
	H. NAVIGATION LIGHT	11-3
	I. FLASHING BEACON	11-4
	J. INSTRUMENT LIGHTS	11-4
	K. DOME LIGHT	11-4
	ELECTRICAL SYSTEM TROUBLE SHOOTING CHART	11-8
	L. ELECTRICAL LOAD ANALYSIS	
	APPENDIX A - WIRING DIAGRAMS	



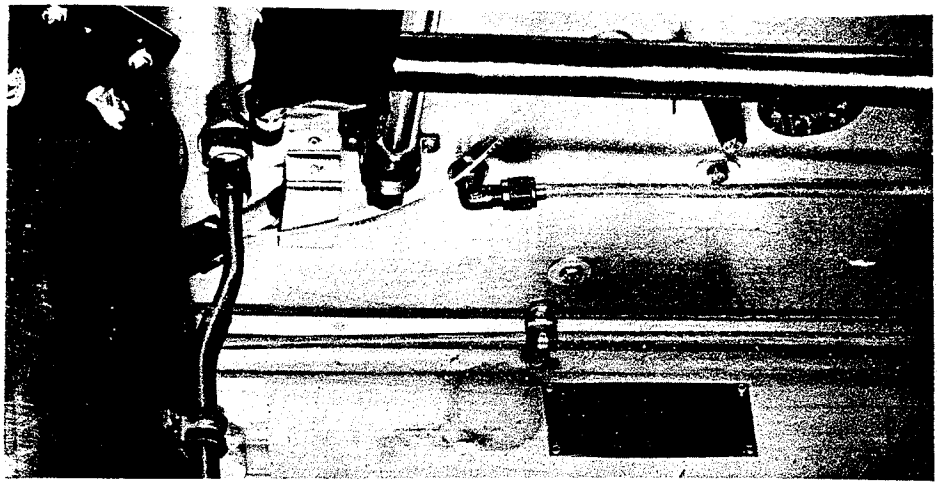


Yankee

PRINCIPAL DIMENSIONS



C/L TIRES



SERIAL NO. PLATE LOCATED UNDER RUG IN FRONT OF LEFT SEAT IN CABIN

TRIM PLATE LOCATED ON UPPER LEFT CORNER OF FIREWALL

NOTE: ON EARLY MODELS, THE TRIM PLATE IS LOCATED ADJACENT TO THE SERIAL NO. PLATE
ALWAYS GIVE AIRCRAFT SERIAL NUMBER AND TRIM NUMBER WHEN CONTACTING THE FACTORY RELATIVE TO PARTS OR SERVICE

1. GENERAL

A. INTRODUCTION

This service manual contains information to be used by qualified service personnel in the service and maintenance of the American Aviation Yankee (Model AA-1). The information contained herein does in no way supersede AC 43.13-1, Aircraft Inspection and Repair Manual, published by the Federal Aviation Administration (formerly Civil Aeronautics Manual 18).

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B. GENERAL DESCRIPTION

The Yankee is a single engine, low wing, tricycle gear, 2-place airplane. The Yankee features a horizontally opposed, air-cooled, 108-horsepower Lycoming engine; a unique fiberglass main landing gear strut, and an all-metal bonded construction which employs very few structural rivets or fasteners. A sliding, plexiglass canopy affords visibility in all directions.

SPECIFICATIONS

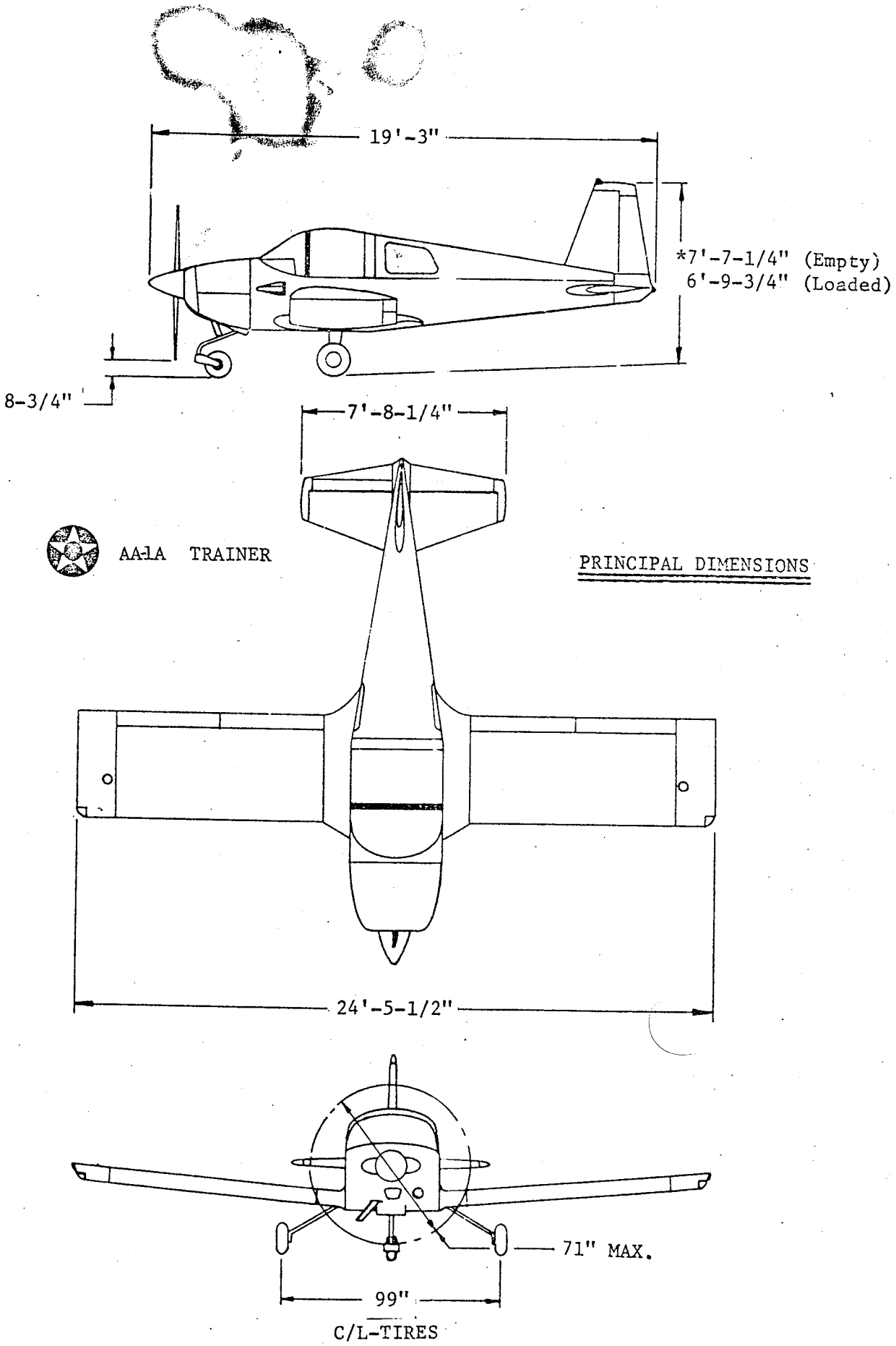
FAA Type Certificate	A11EA
Gross Weight (Normal Category)	1500 lbs.
Gross Weight (Utility Category)	1430 lbs.
Fuel Capacity	24 gal.
Oil Capacity	6 qts.
Engine	Lycoming 0-235-C2C
Propeller (Fixed pitch)	71" McCauley
Length	19.24 ft.
Height (with flashing beacon)	6.80 ft.
Height (without flashing beacon)	6.64 ft.
Wings	
Span	24.46 ft.
Dihedral	5°
Incidence	3-1/2°
Aileron Travel (Up)	25° ± 2
Aileron Travel (Dn)	20° ± 2
Flap Travel	0° -30° (±2)
Empennage	
Horizontal Tail Incidence	-3°
Vertical Tail Offset	0°
Elevator Travel (Up)	25° ±2
(Dn)	15° ±2
Rudder Travel (Left & Right)	25° ±2
Trim Tab Travel (Up)	3° ±1
(Dn)	21.5° ± 2
Large main wheel tire (19 psi)	6.00-6 4 ply rating
Nose wheel tire (22 psi)	5.00-5 4 ply rating
Small main wheel tire (26 psi)	15X6.00-6 4 ply rating

NOTE: Small main tires and nose gear fork required for wheel fairing installation

AA-1A Trainer Specifications

FAA Type Certificate	A11EA
Gross Weight (Normal Category)	1500 lbs.
Gross Weight (Utility Category)	1430 lbs.
Fuel Capacity	24 gal.
Oil Capacity	6 qts.
Engine	Lycoming O-235-C2C
Propeller (Fixed Pitch)	71" McCauley
Length	19 ft. - 3 inches
Height (With Flashing Beacon)	(Empty) 7 ft. - 7 1/4inches
	(Loaded) 6 ft. - 9 3/4inches
Height (Without Flashing Beacon)	(Empty) 7 ft. - 5 1/4inches
	(Loaded) 6 ft. - 7 3/4inches
Wings:	
Span	24 ft. - 5 1/2inches
Dihedral	5°
Incidence	1° 25'
Aileron Travel (Up)	25° ± 2
(Dn)	20° ± 2
Empennage:	
Horizontal Tail Incidence	-3°
Vertical Tail Offset	0°
Elevator Travel (Up)	25° ± 2
(Dn)	15° ± 2
Rudder Travel (Left & Right)	25° ± 2
Trim Tab Travel (Up)	14.5° ± 2
Trim Tab Travel (Dn)	18° ± 2
Large main wheel tire (19 psi)	6.00-6 4 ply rating
Nose wheel tire (22 psi)	5.00-5 4 ply rating
Small main wheel tire (26 psi)	15X6.00-6 4 ply rating

NOTE: Small main tires and nose gear fork required for wheel fairing installation



AA-1A TRAINER

PRINCIPAL DIMENSIONS

SECTION II

SERVICING

SECTION		PAGE
2	SERVICING	2-1
	A. GROUND HANDLING	2-2
	B. LEVELING	2-2
	C. WEIGHING	2-2
	D. LUBRICATION	2-2
	E. MOORING	2-2
	F. CLEANING	2-3
	G. JACKING	2-3
	H. LUBRICATION CHART	2-4
	I. INSPECTION	2-5
	SERVICE GUIDE	2-6
	ANNUAL OR 100 HOUR INSPECTION PROCEDURE	8 pages

2. SERVICING

A. GROUND HANDLING

Ground handling of the aircraft should be accomplished with the use of a tow bar as shown in Figure 2-1.

CAUTION

Using the propeller for ground handling could result in serious damage, especially if pressure is exerted on the outer ends. Do not attempt to push the airplane backward without the aid of a tow bar. This action could cause the nose wheel to pivot abruptly, damaging the nose wheel stops.

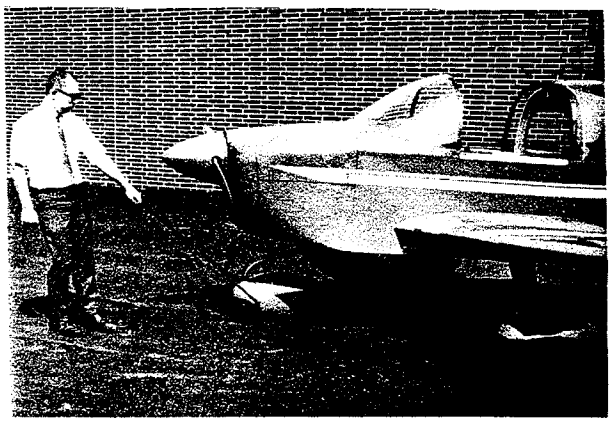


FIGURE 2-1 TOWING

B. LEVELING

Lateral leveling of the aircraft should be accomplished with a four-foot carpenter's level or equivalent. Place the level across the canopy tracks as shown in Figure 2-2.

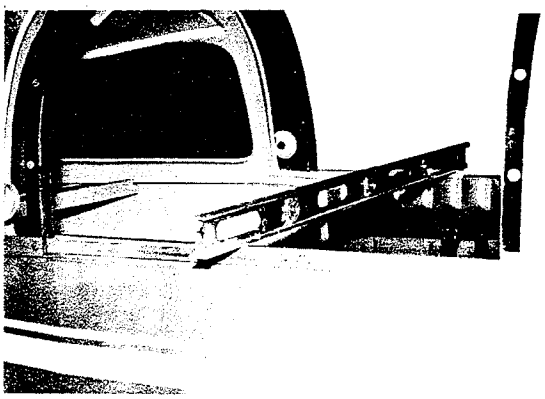


FIGURE 2-2 LATERAL LEVELING

For longitudinal leveling, place a level along side the canopy track, as shown in Figure 2-3.

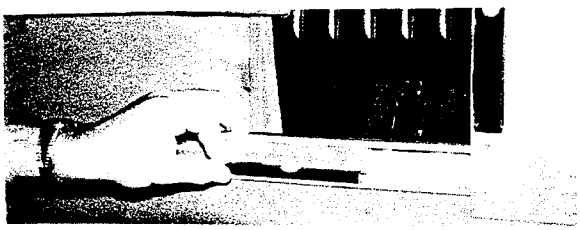


FIGURE 2-3 LONGITUDINAL LEVELING

C. WEIGHING

The aircraft can be weighed with the use of three platform scales. Figure 2-4 shows a typical weighing operation.

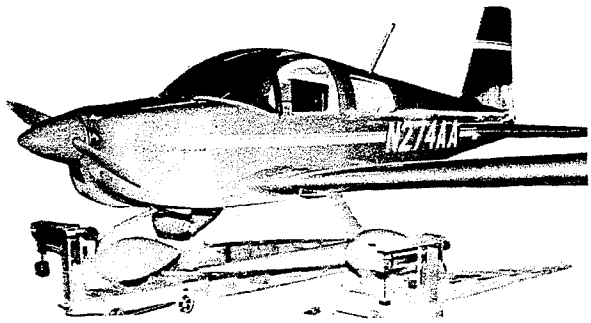


FIGURE 2-4 WEIGHING

D. LUBRICATION

Figure 2-5 illustrates the various parts requiring lubrication along with the types of lubricants to be used. When applying oil or grease to any part, care should be taken not to apply too much. Remove excess lubricant with a dry, clean rag.

Refer to Page 2-3

E. MOORING

Every airplane is equipped with a tie-down ring on the underside of each wing and one tie-down ring close to the tail. When securing the airplane, be sure to set the parking brake and install the control gust lock (See Figure 2-6).

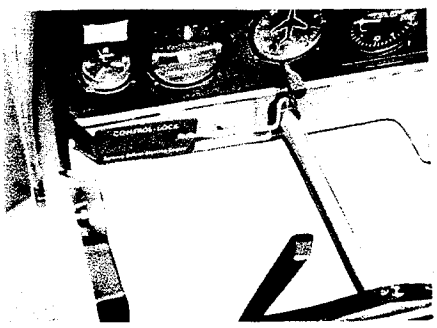


FIGURE 2-6 CONTROL GUST LOCK

F. CLEANING

It is very important to maintain a clean airplane. Not only does the airplane look nicer and become more enjoyable to fly, it also simplifies inspection and maintenance.

Engine cleaning: Cleansing of the engine can be accomplished by washing with a suitable solvent and drying thoroughly.

NOTE

Exercise extreme care not to allow the solvent to enter the magnetos, alternator, starter, vacuum pump, or any opening in the engine. Keep to a minimum the amount of solvent contacting any wire.

Exterior: The outside surface of the airplane will require little attention besides an occasional washing and polishing. Wash the airplane with clean water and mild detergent.

NOTE

Application of heavy coating of wax at the leading edge surfaces is recommended to reduce the amount of abrasion in those areas.

Exterior paint touch-up may be accomplished by the use of a 6 oz. can of spray paint available through the Customer Service Department.

Windshield, canopy and windows: The plexiglass on the airplane should be cleaned with clean water and mild detergent. Stubborn spots or cakes of dirt should be scrubbed with the hand and not with a rag. Only use a soft cloth, sponge, or chamois when applying a cleaner, or attempting to dry the plexiglass.

CAUTION

Paint Removers - Fully cured adhesives used in the construction of American Aviation Aircraft are resistant to common solvents. However, certain chlorinated solvents, particularly Methylene Chloride, a constituant of several commercial paint removers, can be detrimental to the strength of bonded joints. Unless specific prior approval has been obtained from the factory, no commercial paint removers are to be used on any American Aviation airframe component.

Methyl Ethyl Ketone or Acetone can be safely used in lieu of commercial paint removers. If there is any question concerning the use of specific commercial paint removers, contact the Customer Service Department.

CAUTION

Do not use gasoline, alcohol, benzene, acetone, carbon tetrachloride, or glass window cleanser. These fluids can damage the plexiglass.

Interior and upholstery: The interior of the airplane should be cleaned with a damp cloth. Spots of stains may be removed with a household spot remover, used sparingly.

Propellers: The propellers should be occasionally wiped with an oily cloth to remove any stains. This action will also assist in corrosion-proofing the propeller.

G. JACKING

To remove the weight from the landing gear, support the aircraft as shown in Figure 2-7A. The forward jacks should be located just aft of the cowling. The aft support can be the cradle type as shown, or the hook type which attaches to the rear tie-down ring.

CAUTION

A rubber pad and wooden block should be positioned between the airframe and the jack.

To support the aircraft for main wheel removal, either place the jack arrangement at the edge of the fuselage, beside the gear strut, or use the optional jack supports as shown in Figure 2-7B.

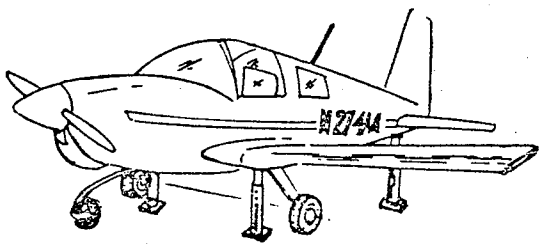


FIGURE 2-7A JACKING ARRANGEMENT

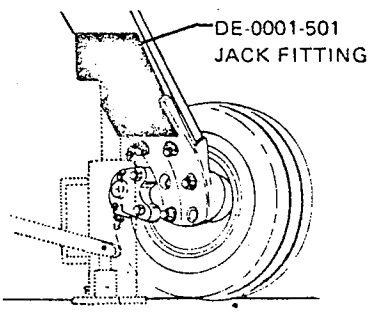
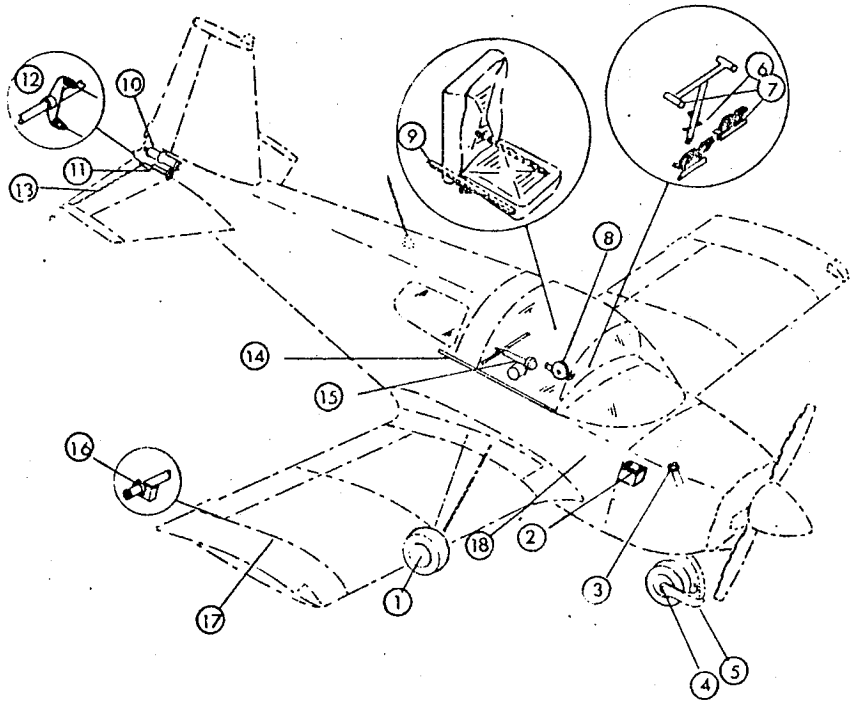


FIGURE 2-7B OPTIONAL JACK SUPPORTS

LUBRICATION CHART



1. MAIN WHEEL BEARING
LEFT AND RIGHT
GREASE
MIL-G-25760
EVERY 100 HOURS

2. BATTERY TERMINALS
PETROLATUM
VV-P-236
AS REQUIRED

3. ENGINE OIL
OIL
SAE GRADE
(SEE NOTE 1)
EVERY 50 HOURS

4. NOSE WHEEL BEARINGS
GREASE
MIL-G-25760
EVERY 100 HOURS

5. NOSE FORK SWIVEL
AND
BELLVILLE WASHERS
GREASE
MIL-G-7711
EVERY 100 HOURS

6. T-COLUMN NEEDLE BEARING
GREASE
GENERAL PURPOSE
MIL-G-7711
AS REQUIRED

7. T-COLUMN AND RUDDER
TORQUE TUBE OILITE BEARINGS
OIL
GENERAL PURPOSE
MIL-L-7870
AS REQUIRED

8. TRIM WHEEL GEARS
GREASE
GENERAL PURPOSE
MIL-G-7711
EVERY 100 HOURS

9. SEAT TRACKS
OIL
GENERAL PURPOSE
MIL-L-7870
EVERY 100 HOURS

10. TRIM ACTUATOR SHAFT
GREASE
GENERAL PURPOSE
MIL-G-7870
AS REQUIRED

11. TRIM TAB BELLCRANK
OIL
GENERAL PURPOSE
MIL-L-7870
AS REQUIRED

12. RUDDER AND ELEVATOR
BELLCRANK CLEVIS PINS
OIL
GENERAL PURPOSE
MIL-L-7870
AS REQUIRED

13. TRIM TAB HINGE
OIL
GENERAL PURPOSE
MIL-L-7870

14. CANOPY SLIDES
SPRAY LUBRICANT
E-Z-FREE
AS REQUIRED

15. FLAP ACTUATOR SCREW JACK
GREASE
GENERAL PURPOSE
MIL-G-7711
AS REQUIRED

16. ALL CONTROL SURFACE
BEARINGS
GREASE
AEROSHELL GREASE #6
AS REQUIRED

17. FUEL SELECTOR VALVE AND
FUEL CAP GASKET
GREASE
MIL-G-6032A
AS REQUIRED

18. FRESH AIR VENTS
GREASE
GENERAL PURPOSE
MIL-G-7711
AS REQUIRED

NOTES:

1. REFER TO SECTION 6G FOR RECOMMENDED SEASONAL GRADES
2. CARE SHOULD BE TAKEN TO AVOID GREASE CONTACTING OUTER SURFACE OF NYLON NUT
3. ACCEPTABLE SUBSTITUTE IS POWDERED GRAPHITE MIL-G-6711

H. INSPECTION

As an aid in performing periodic inspections, an inspection guide has been included in this section. Perform each function which has an "X" marked in its appropriate inspection column.

In addition to the inspection guide, the following steps should be adhered to when performing any inspection or overhaul:

1. Check any FAA Airworthiness Directives or American Aviation Corporation Service Bulletins/Letters for compliance at the time specified thereon.
2. Check that all the airplane's documents are present and in order:

   Aircraft Airworthiness Certificate (Form FAA 1362)
   Aircraft Registration Certificate (Form FAA 8050-1 or FAA 8050-3)
   Weight and Balance Sheet
   Aircraft Equipment List
   Any repair and Alteration Forms if applicable (Form FAA 337)
   Aircraft Radio Station License if applicable (Form FCC 556 or Form FCC 453B)
   Aircraft and Engine Log Books

NOTE

All of the above items except the log books must be carried in the airplane at all times. Forms FAA 1362B, FAA 8050-3 and FCC 556 (FCC 453-3) must be visually displayed.

3. Just prior to beginning the inspection, perform an engine run-up to facilitate oil drainage and to observe the following, noting any discrepancies:

   Oil and fuel pressures.
   Magneto RPM drop
   Static RPM
   Idling speed
   Ammeter
   Suction gauge
   Fuel selector (check operation in all positions)
   Garburetor heat control
   Engine response to changes in power
   Any unusual noises
   Idle cut-off

It is not necessary to remove the console for normal inspection. By removing the two forward access panels and hinging the rear of the console as shown on figure 2-8 , a visual inspection of components under the console can be made.

4. After completion of the inspection, another engine run-up should be performed to assure that all discrepancies have been eliminated and new ones have been introduced.

CAUTION

Be sure that the oil supply has been replenished prior to post inspection run-up.

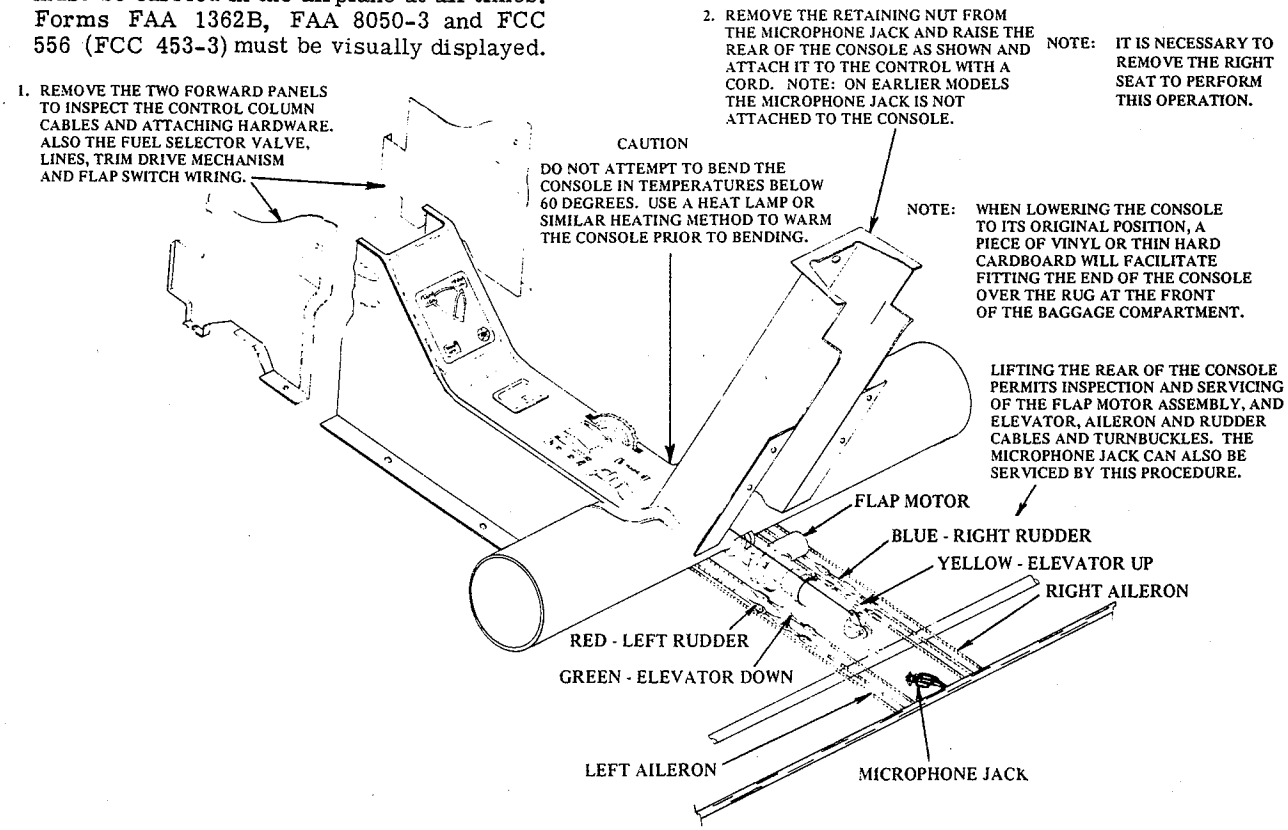


FIGURE 2-8 METHOD OF PROVIDING ACCESS FOR UNDER CONSOLE INSPECTION

Service Guide	50	100	Note
AIRFRAME			
1. Aircraft structure (especially the spar around the wing lock pins, gear attachments, and fuselage attach collars.		X	
2. Windows, windshield, and canopy	X	X	
3. Seats, console, interior, and seat belts	X	X	
4. Instrument panel, instruments, and placards		X	
5. Baggage compartment and cargo tie downs		X	
6. Radio antennas		X	
7. Nose gear torque tube assembly		X	
8. Control T-column and bearings		X	
9. Forward empennage attachments	X	X	
LANDING GEAR			
1. Strut and upper and lower strut brackets, main gear		X	
2. Strut, fork, and boot assy, nose gear		X	
3. Nose and main wheel bearing lubrication		X	
4. Nose fork swivel lubrication		X	
5. Brake linings and discs		X	
6. Wheel fairings scraper adjustment		X	
7. Main and nose tires pressure	X	X	
CONTROL SYSTEMS			
1. Cables, turnbuckles, pulleys, guards, and terminals		X	
2. Rudder pedals		X	
3. Flaps, flap actuator and indicator		X	
4. All control stops		X	
5. Trim wheel, indicator, bungee, and actuator shaft		X	
6. Flap actuator screw jack		X	
7. Flap torque tube, bearings, and push-pull rods		X	

Service Guide	50	100	Note
POWERPLANT			
1. Oil change	X	X	
2. Oil screen	X	X	
3. Spark plugs		X	
4. Ignition harness	X	X	
5. Magneto timing			a
6. Exhaust system	X	X	
7. Throttle, carburetor heat and mixture controls operation	X	X	
8. Engine baffles	X	X	
9. Air filter	X	X	
10. Engine mount	X	X	
11. Oil breather vent	X	X	
12. All lines, flex ducts, and connections	X	X	
13. Oil and fuel pressures	X	X	
14. Propeller and spinner	X	X	
15. Alternator belt	X	X	
16. Cylinders, crankcase, accessory section, front crankshaft seal	X	X	
17. Engine overhaul			b
FUEL SYSTEM			
1. Electric fuel pump filter		X	
2. Fuel cap gaskets		X	
3. Fuel overboard vents	X	X	
4. Fuel tank drains		X	
5. Fuel selector and placard		X	
6. Fuel gauges		X	
7. All hoses and lines		X	
8. Fuel primer		X	

Service Guide	50	100	Note
UTILITY SYSTEMS			
1. Master cylinder fluid level	X	X	
2. Parking brake operation		X	
3. All hoses, lines, and connections		X	
4. Pitot and static systems		X	
5. Pitot line drain		X	
6. Vacuum regulator and filter		X	
7. Flexible ducts for heating system		X	
8. Cabin heat control operation		X	
9. Compass check			c
ELECTRICAL SYSTEM			
1. Battery fluid level	X	X	
2. Battery hydrometer check		X	
3. All connections		X	
4. Voltage regulator adjustment		X	
5. All lights for operation	X	X	
6. All wiring harnesses and wires		X	
7. Stall Warning	X	X	
8. Electric flap motor		X	

NOTES:

a. Maximum time between magneto timing checks 200 hours.

b. Maximum engine overhaul time 2000 hours.

c. Check every 1000 hours.

d. The following pages contain a comprehensive Annual or 100-Hour Inspection procedure. In the event an inspection form is not readily available, remove and make copies of this list on a suitable copying machine. Be sure to insert original back in the manual for future reference.

AMERICAN
MODEL AA-1 YANKEE
ANNUAL OR 100 - HOUR INSPECTION PROCEDURE

OWNER'S NAME	STREET ADDRESS		
	CITY	STATE	ZIP CODE

IDENTIFICATION NUMBER	SERIAL NUMBER	HOURS	DATE INSPECTION COMPLETED

SERVICING AGENCY	CITY	STATE

Check for conformity with FAA Specifications, Airworthiness Directives and American Aviation Corporation and Supplier's Service Bulletins and Letters.

NOTE

It is recommended that reference be made to the applicable maintenance handbook, service bulletins, letters, installation instructions, and vendor specifications for torque values, clearances, settings, tolerances and other specification data.

AMERICAN
MODEL AA-1 YANKEE
ANNUAL OR 100-HOUR INSPECTION PROCEDURE

A.	PROPELLER GROUP	MECH.	INSP.
1.	Remove spinner and check for cracks and loose rivets in forward bulkhead		
2.	Inspect blades for nicks and cracks		
3.	Inspect spinner back plate for cracks and secure mounting		
4.	Check front crankshaft seal for oil leaks		
5.	Check propeller mounting bolt torque to 280-320 in. lbs. Resafety if necessary		
B.	ENGINE GROUP	MECH.	INSP.
1.	Remove engine cowl. Clean and check for cracks, distortion and loose or missing fasteners		
2.	Drain oil sump. Remove oil screens, clean and inspect for metal particles. Reinstall and resafety		
3.	Check oil temperature sending unit, oil lines and fittings for leaks, chafing, dents, cracks and secure mounting		
4.	Check valve rocker clearance		
5.	Fill engine with oil per lubrication chart		
6.	Clean engine		
7.	Check engine cylinder compression		
8.	Clean or replace spark plugs as required		
9.	Check ignition harnesses. Clean and inspect insulators		
10.	Check magnetos to engine timing, oil seal leakage, and distributor block for cracks, burned areas and corrosion		
11.	Remove, clean, inspect, oil and reinstall carburetor air filter. Replace if damaged or defective		
12.	Check intake seals and flex ducts for leaks, deterioration and hardness		

AMERICAN
MODEL AA-1 YANKEE
ANNUAL OR 100-HOUR INSPECTION PROCEDURE

B.	ENGINE GROUP (Continued)	MECH.	INSP.
13.	Drain carburetor. Reinstall drain plug. Remove and clean carburetor fuel screen. Reinstall screen		
14.	Remove and clean electric fuel pump filter. Reinstall and resafety		
15.	Check fuel pump for proper operation and secure mounting. Inspect fuel system and lines for leaks		
16.	Check alternator and starter for proper operation and secure mounting		
17.	Check throttle, carburetor heat and carburetor mixture controls for proper travel, security, operating condition and control cushion		
18.	Remove exhaust shroud and check exhaust system for cracks, leaks and secure mounting		
19.	Check breather tube for obstructions and secure mounting		
20.	Inspect cylinders for evidence of excessive heat indicated by burned paint on the cylinder. Check for cracks, loose bolts and general condition		
21.	Inspect engine mount for secure mounting and proper safety wiring. Check rubber vibration dampeners for signs of deterioration. Replace as required		
22.	Check all baffles for cracks, loose or missing screws and deteriorated seal material		
23.	Check condition and tension of alternator drive belt. Replace if required		
24.	Check battery electrolyte level and specific gravity. Clean and tighten battery terminals		
25.	Inspect vacuum system components (if installed) for secure mounting. Check vacuum pump drive for evidence of seal leakage. Replace seal if required. Check all inter-connecting lines and fittings for leaks, deterioration and damage. Replace as required		

AMERICAN
MODEL AA-1 YANKEE
ANNUAL OR 100-HOUR INSPECTION PROCEDURE

C.	CABIN GROUP	MECH.	INSP.
1.	Remove seats, roll up baggage floor covering, remove inspection covers and fold up aft section of console. Leave in this position until flap, aileron, rudder and elevator inspection and adjustments are completed		
2.	Check windshield, windows and canopy for cracks and secure mounting. Check canopy operation and locking devices		
3.	Check seat belts for condition and secure mounting		
4.	Check trim operation		
5.	Check rudder pedal and brake system for proper operation and condition		
6.	Check control "T" for secure mounting and adequate clearance from other equipment		
7.	Check cables and pulleys for condition, secure attachment and safeties		
8.	Check cable tension		
9.	Check all controls for clearance and proper operation		
10.	Check all interior bond lines for indications of peeling or cracking		
11.	Check nose gear torque tubes and mounting brackets for cracks and secure mounting		
12.	Check flap actuator, push rods, limit switch and indicator for proper operation and secure mounting		
13.	Lubricate per lubrication chart		
14.	Check all plumbing in cabin for leaks and condition		
15.	Check gyro system filters (if installed), replace if necessary		
16.	Check instruments for condition, secure mounting and legible markings		
17.	Check electrical wiring, switches and lights		
18.	Inspect baggage compartment and cargo tie-downs		
19.	Inspect all placards in cabin for condition and legibility		

AMERICAN
MODEL AA-1 YANKEE
ANNUAL OR 100-HOUR INSPECTION PROCEDURE

D.	FUSELAGE AND EMPENNAGE GROUP	MECH.	INSP.
1.	Remove tailcone and empennage covers		
2.	Inspect exterior surfaces for condition and damage		
3.	Inspect bond lines for separation or peeling		
4.	Check horizontal and vertical stabilizers for secure mounting		
5.	Check elevator and stops, rudder and stops, tab hinges and bellcranks for damage, travel and proper operation		
6.	Check elevator trim and bungee mechanism for damage, secure mounting and proper operation		
7.	Check rudder and elevator cables and pulleys for damage, proper operation and safeties. Check bellcrank attaching bolts for wear		
8.	Lubricate per lubrication chart		
9.	Inspect antenna mounting, wiring, and electronic installations		
10.	Check flashing beacon for secure mounting and proper operation		
11.	Check static system openings and lines		
E.	WING GROUP	MECH.	INSP.
1.	Remove wing tips and access panels		
2.	Inspect surfaces, skins and tips for damage		
3.	Visually inspect interior and exterior bond lines for separation and cracks		
4.	Check ailerons, aileron stops and flaps for secure mounting, damage and proper travel		
5.	Check fuel vents and connecting lines for damage and restrictions		
6.	Check fuel tank outboard end plates for leaks and secure mounting		
7.	Check fuel block lines and spar for evidence of leakage through wing root access opening		

AMERICAN
MODEL AA-1 YANKEE
ANNUAL OR 100-HOUR INSPECTION PROCEDURE

E.	WING GROUP (Continued)	MECH.	INSP.
8.	Check fuel cap gaskets		
9.	Check wing attaching bolts		
10.	Inspect fuel tank placard		
11.	Check pitot heating element for proper operation		
12.	Check pitot tube opening and lines, drain accumulated moisture		
13.	Check for interior corrosion of skin indicated by a white flaking ash		
F.	MAIN LANDING GEAR GROUP	MECH.	INSP.
1.	Remove wheels and check brake linings for wear and condition. Pack wheel bearings, reinstall wheels and key axle nuts		
2.	Check wheels for wear and proper inflation		
3.	Check brake lines for leaks and secure attachment		
4.	Check struts for secure mounting. Inspect for cracks and nicks		
5.	Inspect the upper main mounting brackets and spar attaching collars for wear, cracks and loose bolts		
6.	Inspect wheel fairings for damage and secure mounting (if installed)		
G.	NOSE GEAR GROUP	MECH.	INSP.
1.	Check nose gear strut for secure mounting, damage and cracks		
2.	Remove and check nose gear fork for wear and cracks		
3.	Grease fork and friction dampener, assemble to strut and tighten to 10-13 lb. drag at axle		
4.	Oil and inspect the nose centering detent (if used) for wear, secure mounting and proper operation		

AMERICAN
MODEL AA-1 YANKEE
ANNUAL OR 100-HOUR INSPECTION PROCEDURE

G.	NOSE GEAR GROUP (Continued)	MECH.	INSP.
5.	Remove nose wheel, clean, inspect and repack bearings		
6.	Inspect wheel for cracks, corrosion and loose or broken bolts		
7.	Check tire for wear and proper inflation		
8.	Check wheel fairings for damage and secure mounting (if installed)		
H.	OPERATIONAL INSPECTION	MECH.	INSP.
1.	Check brake operation (including parking brake)		
2.	Check fuel primer operation		
3.	Check booster pump operation		
4.	Check fuel pressure		
5.	Check starter for proper operation		
6.	Check oil pressure and temperature		
7.	Check engine controls for proper operation. Check throttle control for proper cushion		
8.	Check magneto operation, both on, left off, right off		
9.	Check engine static rpm (2150-2300)* * Climb prop static rpm (2250-2400)		
10.	Check carburetor heater for proper operation		
11.	Check alternator output		
12.	Check suction gauge and vacuum system output		
13.	Check fuel selector valve operation and indexing		
13.	Check heating and ventilating system for proper operation		
15.	Check radio for proper operation		
16.	Check engine idle speed (600 to 650 rpm) and mixture setting		

AMERICAN
MODEL AA-1 YANKEE
ANNUAL OR 100-HOUR INSPECTION PROCEDURE

H.	OPERATIONAL INSPECTION (Continued)	MECH.	INSP.
17.	Check idle cut off on carburetor for proper operation		
18.	Check flaps for proper operation		
19.	Check fuel quantity gauges for condition and proper operation		
20.	Check interior lights for proper operation and adjustment		
21.	Check flashing beacon for proper operation		
22.	Check navigation and landing lights for proper operation and adjustment		
23.	Check pitot heat for proper operation		
24.	Check stall warning device for operation		
25.	Inspect engine after ground run-up. Flight test and inspect for oil leaks and secure mounting of all components		
I.	GENERAL	MECH.	INSP.
1.	Aircraft cleaned and serviced		
2.	Aircraft conforms to FAA Specifications		
3.	All FAA Airworthiness Directives complied with		
4.	All manufacturer's Service Letters and Bulletins complied with		
5.	Checked for proper flight manual		
6.	Aircraft papers in proper order		
	"END OF INSPECTION"		

SECTION III

AIR FRAME

SECTION		PAGE
3	AIRFRAME	3-1
	A. WING REMOVAL	3-2
	B. EMPENNAGE REMOVAL	3-2
	C. CANOPY REMOVAL	3-2
	D. COWLING REMOVAL	3-3
	E. TAILCONE REMOVAL	3-3
	F. WING TIP REMOVAL	3-3
	G. WING ROOT REMOVAL	3-3
	H. SEAT REMOVAL	3-3
	I. WINDSHIELD REMOVAL	3-4
	J. CONSOLE REMOVAL	3-4

3. AIRFRAME

The airframe consists of an all-metal bonded construction utilizing one half inch honeycomb in the fuselage cabin area. The following sub-headings describe the removal of various airframe components.

A. WING REMOVAL

1. Remove the inspection cover from under the wing root.
2. Disconnect the airspeed pitot line located in the wing root (left wing only).
3. Disconnect the main fuel line and the fuel measurement gauge located in the wing root.

NOTE

Be sure the tank has been completely drained before attempting to disconnect the fuel lines.

4. Disconnect all wiring in the wing root.
5. Raise the baggage compartment carpet and remove the inspection plate from the compartment floor.
6. Remove the nut and bolt securing the aileron bellcrank to the torque tube and remove it from the torque tube by rotating and sliding from the end of the tube.

NOTE

Do not disturb cable turnbuckles or control surface rigging.

7. Remove the two bolts securing the flap bellcrank to the flap torque tube and rotate bellcrank out of way.

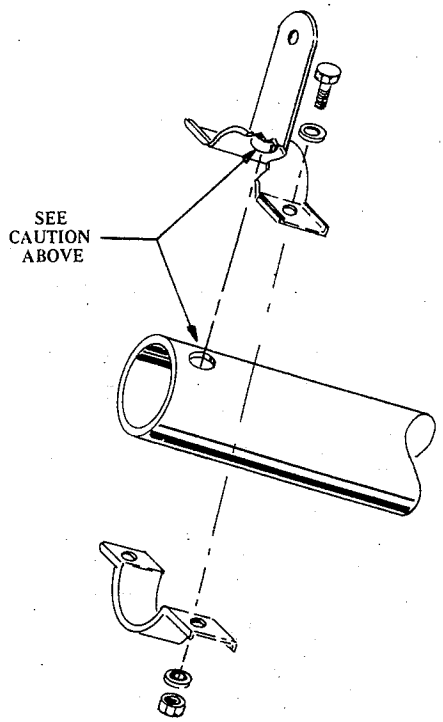
NOTE

Do not disturb control system rigging.

8. Through the wing root access opening, remove the two 3/8-inch wing lock bolts.
9. Use three men; one at the wing tip to support weight and pull; one at the leading edge and one at the rear edge to rotate wing slightly, clockwise and counter-clockwise, until the wing is free of the spar.
10. Install the wing assembly in reverse order after spraying the spar mating surfaces with a solid film lubricant* and rubbing general purpose lubricating oil over the fuselage carry-through spar.

CAUTION

When installing the flap bellcrank horn, be sure the pin is engaged in the flap torque tube hole. This is essential for proper flap operation and rigging.



*Approved solid film lubricants:

McLube 1708 by McGee Chemicals Co., Inc.
Lube-Lok 5396 by Allen Aircraft Products, Inc.

B. EMPENNAGE REMOVAL

NOTE

The three stabilizers are identical in construction and attachment, thus the disassembly procedures are the same.

1. Remove the tailcone as described in Section 3-E.
2. Remove the control surface as described in Section 5-G.
3. Remove the inspection covers at the base of the vertical stabilizer.
4. Remove the four bolts attaching the rear stabilizer spar to the aft bulkhead.

5. Remove the bolt attaching the forward stabilizer support to the fuselage bulkhead.
6. Before removing the vertical stabilizer, it is necessary to remove the omni antenna cable and to disconnect the flashing beacon wires.
7. Reassemble in the reverse order.

C. CANOPY REMOVAL

1. Remove the screws on each side which attach the canopy plexiglass to the canopy slides.
2. Lift the canopy off.

NOTE

The inner canopy tracks must be perfectly straight to ensure free movement of the canopy. If the tracks are bent, they should be straightened or replaced.

The sliding surfaces of the canopy inner tracks and the teflon glide material in the canopy outer tracks must be kept clean and lightly lubricated. Smoother operation can be achieved by cleaning the sliding surfaces with isopropyl alcohol using a small brush and then injecting a small amount of Dow Corning DC-7 Compound or silicon grease into the sliding surfaces.

If the canopy tracks are severely bound up, the canopy glass and bows must be removed from the tracks and the tracks completely removed from the airplane. Clean all sliding surfaces carefully with isopropyl alcohol or lacquer thinner, and relubricate with a thin film of DC-7 compound or silicon grease. If the teflon glide material is galled, it should be replaced with new material available from the factory.

3. Reinstall in reverse of the removal procedure.

D. COWLING REMOVAL

1. Unlatch the four cowl latches which join the upper and lower cowl.
2. Loosen the two quarter turn fasteners which attach the upper cowl to the cowl nose cap.
3. Pull cowl gently forward and upward and remove.

NOTE

The above two steps describe the procedures for the removal of the upper cowl only.

4. Remove the screws which attach the lower cowl to the cowl nose cap and to the fuselage.

NOTE

Completion of Step 4 allows easy removal of the lower cowl. To remove the cowl nose cap, it will be necessary to remove the spinner and propeller.

5. Reassemble in the reverse order.

E. TAILCONE REMOVAL

1. Remove the 7 mounting screws which attach the tailcone to the fuselage.
2. Disconnect the taillight wires at the aft bulkhead.
3. Reassemble in the reverse order.

F. WING TIP REMOVAL

1. Remove the 4 mounting screws which hold the scupper assembly to the wing tip.
2. Remove the 24 screws which attach the wing tip to the wing.
3. Remove the scupper drain tube from the bottom of the tip.
4. Drop the tip a few inches away from the wing in order to reach inside and disconnect the navigation light wires.
5. Reassemble in the reverse order.

G. WING ROOT REMOVAL

1. Remove the access panel from the underside of the wing root.
2. Remove the wing as instructed in 3-A.
3. From inside the wing root, disconnect the flexible line connecting the fuel vent to the fuel gauge vent line.
4. Up to and including serial number 0067, the wing root is removed as follows:
   a. From the inside face of the fuselage side, remove the 6 bolts which attach the wing root supporting structure.
   b. From the exterior of the aircraft, remove the 6 screws which attach the wing root to the fuselage.
5. On serial numbers 0068 and up, the wing root ribs are separate and not required to be removed unless necessary for repair. The wing root is removed as follows:
   a. Remove the 6 screws which attach the the wing root to the fuselage.
   b. Remove the 2 screws which attach the wing root to the rear rib. One is located under the wing root and the other at the outboard end.
   c. The front rib is secured by 4 screws, two in the outboard end and two underneath. Remove these screws.
6. Install the wing root in reverse of the removal procedure.

H. SEAT REMOVAL

1. Lift the seat cushion to expose the seat tracks.
2. Remove the bolts which fasten the seat tracks to the spar mounting brackets.
3. Remove the spring which is attached to the seat adjustment lever.
4. Remove the seat adjustment boost springs which are connected to the bottom of the seat and to a bracket mounted on the carry-through spar.
5. Remove the bolts which fasten the seat tracks to the mounting brackets on the bulkhead behind the seat.

NOTE

On the later models, the aft mounting brackets are slotted in order to remove the seat without having to remove the rear mounting bolts.

6. Reassemble in the reverse order.

I. WINDSHIELD REMOVAL

The windshield should be considered a fixed part of the airframe and should not be removed unless absolutely necessary.

To remove the windshield:

1. Remove the cowl deck
2. Remove the 12 screws which attach the windshield to the windshield bow.
3. Remove the 5 screws which attach the windshield to the windshield fairing.
4. Carefully pull the windshield out from under fairing, cleaning away the sealant as required.

To install the windshield:

1. Thoroughly clean all adhesive, sealant, dirt and grease, from the inner surface of the windshield fairing.
2. Repeat step (1) to the windshield.
3. Repeat step (1) to the windshield bow.
4. Apply a 1.00-inch by .063-inch vinyl foam tape (3M Company Y-9132D) or an equivalent to the windshield along the windshield bow mating surface.
5. Apply a 1.00-inch by .063-inch vinyl foam tape (3M Company Y-9132A) or an equivalent along the windshield on the windshield fairing mating surface.
6. Locate the windshield in its proper position.
7. Insert sealant between the windshield and the windshield fairing and apply sealant* to the mating surfaces of the windshield bow and the vinyl seal.
8. Install the 5 fasteners to the windshield fairing and the 12 fasteners into the windshield bow.

CAUTION

Be sure all fastener holes are aligned prior to tightening to avoid cracking the windshield.

9. Install the cowl deck.

*Approved sealants:

576.1 by Presstite Engineering Co.
EC 1239 and EC 1675 by EM Company
3201 by Chemical Seal Corporation of America 567 by Coast Pro-Seal.

J. CONSOLE REMOVAL

1. Remove the seats as described in 3-H.
2. Remove the microphone.
3. Remove the fuel valve handle.
4. Remove the two screws located along side the flap position indicator.
5. Remove the six screws attaching the console to the floor.
6. Remove the six screws attaching the center console to the forward console.
7. Spread the sides of the console aft of the spar, and lift up. Repeat this process to the sides of the console forward of the spar.
8. To remove the forward section of the console, remove the two additional screws from the floor and withdraw.
9. Reassemble in the reverse order.

SECTION IV

LANDING GEAR

SECTION		PAGE
4	LANDING GEAR	4-1
	A. MAIN LANDING GEAR	4-2
	B. NOSE LANDING GEAR	4-2
	C. WHEELS, TIRES, AND BRAKES	4-5
	D. TOE-IN AND CAMBER ADJUSTMENTS	4-7
	E. WHEEL FAIRINGS	4-7

4. LANDING GEAR

A. MAIN LANDING GEAR

The main landing gear for the Yankee consists of a laminated fiberglass strut attached to the spar with two welded and one extruded bracket. On the lower end of the strut is a forging which serves as the wheel axle and is attached directly to the strut without additional bracketry.

A thorough inspection should peridically (100 hours) be made of the strut and strut attach brackets. Examine the mounting brackets for signs of cracks around the joints.

NOTE

The landing gear strut attaching brackets are heat-treated. If they are found cracked or damaged, do not weld. They must be replaced. Serial number AA1-0001 to AA1-0149 only. Serial numbers AA1-0150 and up have forged aluminum brackets.

To remove the main landing gear:

1. Remove the wing and wing root as described in Sections 3A and 3G

NOTE

Beginning with Serial No. AA1-0011 & on, removal of wing and wing root is not necessary, although it would simplify gear removal.

2. Support the airframe as shown in Section 2G.
3. Bleed the fluid from the brake system and disconnect the brake line at the fuselage side.
4. Remove the six bolts which attach the brackets to the carry-through spar.
5. Remove the three remaining bolts attaching the strut brackets to the spar mounting bracket.
6. Remove the six bolts which connect the upper end of the strut to the brackets.
7. The strut may be removed from the lower bracket by removing the four attaching bolts.

NOTE

Inspect each individual bracket for signs of cracking or hole elongation. Replace where necessary.

8. Reassemble in the reverse order. Shim as required, to assure a tight fit.

NOTE

Be sure to place the phenolic spacer against the strut to prevent damage to the fiberglass.

NOTE

Apply a solid film lubricant* to the mating surfaces of the carry-through spar and spar mounting bracket.

Approved solid film lubricants:

McLube 1708 by McGee Chemicals Co., Inc.
Lube-Lok 5396 by Allen Aircraft Prod., Inc.

Torque values for the main landing gear bracketry hardware is shown below.

1/2-inch bolts	650-750 inch-lbs.
3/8-inch bolts	250-300 inch-lbs.
5/16-inch bolts	200-225 inch-lbs.

B. NOSE LANDING GEAR (FIGURES 4-1 and 4-2).

The nose landing gear consists of a fuselage mounted torque tube connected to a non-steerable strut with a castering nose wheel on the forward end. Normal servicing of the nose wheel will include the application of grease to the nose fork swivel at every 100 hour inspection. Addition of general purpose oil to the detent groove is recommended.

At each 100 hour inspection, perform a close examination of the bond fillet on the nose gear torque tube assembly fuselage attachments.

FIGURE 4-1 NOSE WHEEL TRAVEL STOP

To remove the nose gear:

1. Remove the nose wheel fork from the strut by removing the cotter pin and nut on the underside.
2. Remove the nose gear boot assembly by removing the twelve mounting screws.
3. Remove the strut from the torque tube assembly by withdrawing the two attaching bolts.
4. Install the nose gear in reverse of the removal procedure.
5. In reversing Step 2, apply sealant* to all mating surfaces of the boot assembly, honeycomb, and firewall.
6. When attaching the nose fork to the strut, tighten nut until a 10-13 pound drag is attained (measured at the axle) when the fork is rotated with the cotter pin in place.

NOTE

Step 6 is extremely important since it will alleviate any tendency for nose wheel shimmy. Apply grease per MIL-G-7711 to the strut swivel before assembling nose fork.

*Approved firewall sealants:
Pro-Seal 700 by Coast Pro-Seal and 93-004 by Dow Corning.

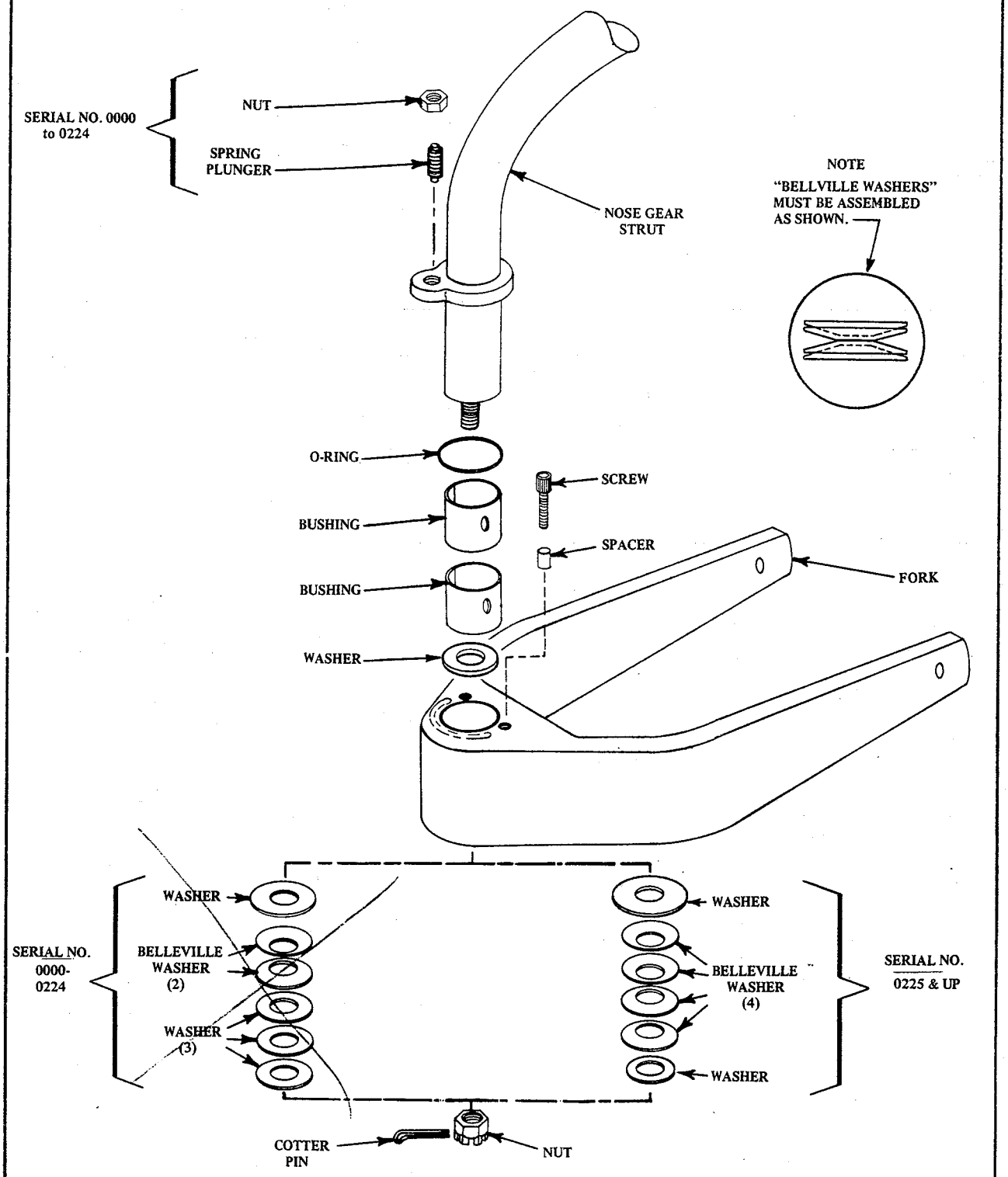


FIGURE 4-2 NOSE LANDING GEAR ASSEMBLY

7. Apply general purpose lubricating oil to the detent groove. (Early models only, later models have no detent.)

NOTE

All normal maintenance and repair can be accomplished with no further procedures than those listed above. If removal of the torque tube assembly is required, the following additional steps are necessary.

o remove the torque tube assembly:

1. Remove the seats. This is done by removing the four 3/16" bolts that attaching the seat rails to the center section spar, removing the seat spring and lifting the seats forward and up. (On a few early aircraft, it will also be necessary to remove the four bolts located at rear of the seat rails attaching the seat rails to the aft bulkhead.)

2. Remove the lefthand and righthand forward console panels by removing the three screws that attach each side of the panels to the aft console and then removing the three screws that attach each panel to the floor. The panels may be easily removed by grasping the forward edge at the firewall and bending the panels out 90 degrees and parallel with the firewall. Then slide the panels forward far enough so that they slip out from behind the aft portion of the console.
3. Remove the fuel gauge moldings and the upholstery side panels and fiberglas insulating material from the left and right hand forward inside panels by removing the sheet metal screws that attach these parts to the side panels. Do not disconnect any wiring from the fuel gauge covers; simply drape the covers over the outside of the fuselage protecting the wing root surface from scratching with a suitable cloth.
4. Remove the upper and lower cowling.
5. Jack up the aircraft at the forward end or weight down the tail.
6. Remove the nose gear boot assembly by removing the 12 mounting screws. This provides an access to the two 3/8" bolts which attach the strut to the torque tube and yoke assembly. Pull the strut downward with a rotating motion to remove.
7. Disconnect the rudder return springs by unbolting the eye bolts from the forward face of the firewall. Note that additional washers are used under the left hand eye bolt for proper rudder pedal centering and rudder trim.
8. Remove the two 3/16" nuts that secure the right forward rudder bar attach bracket to the floor. Lift the rudder bar up and aft to provide clearance for removing left brake cylinder attach bracket on co-pilot's side from the floor.
9. Remove the eight 3/16" nuts that attach the brake cylinder brackets to the floor. Lift brake cylinders free from the floor and allow pedals to rotate aft.
10. Remove clevis pins from left and right brake cylinder attachment to rudder pedals on pilot's side.
11. Disconnect one end of the parking brake chain by cutting the wire which attaches it to the link on the master cylinder on the pilot's side.
12. Move the left and right master cylinders on the pilot's side up as high as possible and against the firewall and secure them temporarily in this position.
13. Remove the number 10 screw and nut which attach the throttle cable clamp to the instrument panel brace.
14. Remove the six 1/4" nuts that attach the T-column support to the floor. Lift the T-column and support assembly from the studs which protrude through the floor and allow the assembly to come as far aft as possible.
15. Remove the eight 3/8" bolts that secure the center torque tube assembly bearing supports to the floor and firewall.
16. Remove the four snap plugs on the outside on the lower forward fuselage. Remove the four 3/8" bolts which secure the outer ends of the torque tube assembly to the fuselage side panels.
17. Remove the torque tube assembly from the fuselage by working the assembly up and aft left end first so that the assembly is withdrawn from under the pilot's side of the instrument panel. Care should be taken not to wedge the torque tube assembly into the fuselage panels as damage to the honeycomb skin may result.

To install the torque tube assembly:

All operations described in the removal procedure are repeated in the reverse order. However, installation may be simplified by noting the following items:

1. After the torque tube is installed in the fuselage but before the mounting bolts are installed, slide the torque tube assembly all the way over to one side of the fuselage and note the clearance between the other end of the torque tube assembly and the inside of the lower engine mount extrusion. It will be recalled that shims are installed on both ends of the torque tube assembly at the factory. The torque tube fit is to be adjusted when the new torque tube assembly is installed in the field by using one of the various thickness shims supplied with the torque tube kit. Shim as required to arrive at a minimum clearance between the torque tube end fittings and the lower engine mount extrusions.