HANDLING AND SERVICING

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HANDLING AND SERVICING

GROUND HANDLING

TOWING

The airplane may be moved by using the nose wheel steering bar that is stowed in the baggage area or power equipment that will not damage or cause excess strain to the nose gear steering assembly. Towing lugs are incorporated as part of the nose gear fork.

CAUTION

Do not tow airplane with control locks installed.

PARKING

When parking the airplane, insure that it is sufficiently protected against adverse weather conditions and presents no danger to other aircraft. When parking the airplane for any length of time or overnight, it is recommended that it be moored properly.

1. To park the airplane, head it into the wind if possible.
2. Set the parking brake by applying toe pressure against the top of the rudder pedals and at the same time pull out on the brake handle. To release the parking brake, apply toe pressure on the pedals and push in on the parking brake handle.

NOTE

Care should be taken when setting brakes that are overheated or during cold weather when accumulated moisture may freeze the brakes.

MOORING AND TIE-DOWN

The aileron and elevator controls should be locked with the seat belt, and chocks placed fore and aft of both main wheels.

Tie-down ropes for mooring the airplane can be fastened to the wing tie-down rings and to the tail skid at approximately a 45 degree angle to the ground. Allow sufficient slack in the ropes to avoid damage to the airplane should the ropes contract during periods of rain etc.

NOTE

Additional preparations for high winds may be made by using tie-down ropes attached to the main landing gear forks and by securing the rudder.

JACKING

When it is necessary to place the Aztec on jacks for landing gear servicing and other service operations, ascertain that the jack pads, located on the underside of the wing spars outboard of the engine nacelles, are used. A tail support will be necessary and must be attached to the tail skid and weighted with minimum 250 pounds of ballast.

CLEANING

EXTERIOR CLEANING

The airplane should be washed with a mild soap and water. Loose dirt should be flushed away with clean water. Harsh abrasive or alkaline soaps or detergents could cause corrosion or make scratches.

To remove stubborn oil and grease, use a soft cloth dampened with naphtha.

Any good automotive wax may be used to preserve the painted surfaces. Soft cleaning cloths or a chamois should be used to prevent scratches when cleaning or polishing.

A heavier coating of wax on the leading edges of the wings and tail surfaces and on the nose section cone and propeller spinners will reduce the abrasion problems in these areas.

INTERIOR CLEANING

Clean the plastic trim, control wheels and control knobs with a damp cloth. Oil and grease on the control knobs can be removed with a cloth moistened with kerosene.

Loose dirt and dust should be vacuumed from the upholstery, headliner, and carpet regularly. Heavy dirt may be cleaned by using detergent and water, household cleaners such as "Renuzit" or "Carbone", or foam upholstery cleaners. Carefully follow the manufacturer's instructions. Remember that solvent cleaners require adequate ventilation. Avoid soaking or harsh rubbing. For stubborn stains and oil stains, sponge with Carbona, blot with dry cloth, and repeat process if necessary.

All leather material can be cleaned with mild soap and warm water. Do not saturate any padded upholstery.

CLEANING WINDSHIELD AND WINDOWS

Remove dirt, mud, etc., by flushing with clean water; then wash with mild soap and warm water or Piper Plastic Cleaner. (Do not use plastic cleaners on heated glass windshields.) Use a soft cloth or sponge (DO NOT RUB).

Remove oil and grease with a cloth moistened with kerosene.

NOTE

Do not use gasoline, alcohol, benzene, carbon tetrachloride, lacquer thinner, or window cleaning sprays.

After cleaning plastic surfaces, apply a thin coat of hard polishing wax. Rub lightly with a soft cloth.

A severe scratch or mar in plastic can be removed by using jeweler's rouge to rub out the scratch. Smooth on both sides and apply wax.

CLEANING CARPETS

Use a small whisk broom or vacuum to remove dirt. For soiled spots, use a non-inflammable dry-cleaning fluid. Floor carpets may be removed and cleaned like any household carpet.

AIR FILTER

NORMALLY ASPIRATED

Remove the filter, inspect and clean by tapping it against a hard surface to remove grit, sand and dirt. (Do not blow out with an air hose, soak in oil, or cleaning fluid.)

If the filter is found to be in good condition and is not obstructed after being properly cleaned, reinstall filter.

TURBOCHARGED

Compressed air may be used to clean the filter if the major contamination on the filter panel is dust.

Direct a jet of air against the clean air side of the filter by moving the jet up and down the pleats. The nozzle pressure must not exceed 100 psi and the nozzle must be kept at least one inch from the filter. Take care that the paper is not ruptured by the nozzle or air jet.

If the filter shows an accumulation of carbon, soot or oil, the filter is cleaned by first cleaning with an air jet as directed above and then washing the filter in a good non-sudsing detergent. Soak the filter for 15 minutes and then move filter back and forth for about two minutes to free dirt deposits. Rinse complete filter with a stream of water (maximum water pressure 40 psi) until rinse water is clear. Dry filter thoroughly before reusing but do not use extreme heat for drying.

Inspection of a cleaned filter is made by holding the filter up to a light bulb and checking for damage or ruptures. The filter should not be oiled after cleaning.

Filters should be rejected for use if the paper filter material is torn or ruptured or the housing is damaged. The filter gasket should have no tears and be securely bonded in place. The usable life of a filter should be restricted to one year or 500 hours, whichever comes first.

BATTERY

Access to the battery is obtained by removing a quickly detachable access panel on the right side of the nose section. The battery is installed in a sealed stainless steel box, opened by removing wind nuts. The box has a plastic drain tube which is normally closed off with a clamp and which should be opened occasionally to drain off any accumulation of liquid.

The battery should be checked frequently for proper fluid level, but must be clean and tight. The battery and box should be flushed with soda and water in the event of any seepage from the battery.

If the battery is not up to proper charge, recharge starting with a charging rate of 4-amps and finishing with 2-amps for 12 volt systems. For 24 volt system recharge starting with a rate of 2-amps and finishing with 1 amp. Quick charges are not recommended.

HYDRAULIC SYSTEM

The hydraulic system is filled through a filler tube located inside the left nose access panel. Only petroleum base hydraulic fluid, MIL-H-5606, should be used.

To add fluid to the system, remove the cap from the filler neck and fill the system completely while holding the filler tube extension level. Then turn the elbow on the filler tube down until the excess oil has drained out.

BRAKE SYSTEM

The brake system incorporates a hydraulic fluid reservoir through which the brake system is periodically serviced. Fluid is drawn from the reservoir by the brake master cylinders to maintain the volume of fluid required for maximum braking efficiency. Spongy brake pedal action is often an indication that the brake fluid reservoir is running low on fluid.

The brake cylinder reservoir should be filled to the level marked on reservoir, with the fluid specified. The reservoir, located in the left side of the nose should be checked at every 100-hour inspection and replenished as necessary.

LANDING GEAR SYSTEM

The operation of the landing gear oleos is standard for the air-oil type; hydraulic fluid passing through an orifice serves as the major shock absorber, while air compressed statically acts as a taxiing spring. About 3 inches of the piston tube should be exposed under normal static loads.

All of the oleos are inflated through readily accessible valves on the top of the unit. The nose wheel unit is steerable through the rudder pedals, and incorporates a shimmy dampening device at the bottom of the outer housing. All major attachments and actuating bearings are equipped with grease fittings for lubrication of the bearing surfaces, and should be lubricated periodically. (See Lubrication Chart.)

To add air to the oleo struts, a strut pump is attached at the air valve and the oleo pumped up until 3 inches of piston tube is exposed with normal static weight on the gears. (Normal static weight is the empty weight of the airplane plus full fuel and oil.) To add fluid, first release all the air through the valves, allowing the oleo to extend fully. Next, remove the air valve and fill the unit through this opening. Compress the oleo again to within 1/4 inch of full compression, allowing excess oil to overflow and working out trapped air. Then reinsert the valve core and pump up the strut.

TIRE INFLATION

For maximum service, keep the main wheel tires inflated to 46 psi and the nose wheel tire to 27 psi.* When inflating tires, visually inspect them for cracks and breaks. Reverse the tires on the wheels, if necessary, to produce even wear. All tires and wheels are balanced before installation and the relationship of tire, tube and wheel should be maintained upon reinstallation. Out-of-balance wheels can cause extreme vibration in the landing gear during take-off and landing.

*On turbocharged Aztec "E" only with serial no. 27-4781 and subsequent, nose tire is 6.00 x 6, six ply rating and should be inflated to 32 psi.

OIL REQUIREMENTS

The oil capacity of the Avco-Lycoming TIO-540 and IO-540 series engines is 12 U. S. quarts. It is recommended that the engine oil and oil filter element be changed every 50 hours of flying time. Under unfavorable dusty conditions, the oil and oil filter should be changed more frequently. The minimum safe quantity of oil required is 3 U. S. quarts.

Average Oil Viscosity	Average Ambient Air Temperature
SAE 40 or 50	Above 60° F (10° C)
SAE 40	30° F to 90° F (-1° C to 32° C)
SAE 40 or 20W-30	0° F to 70° F (-17° C to 20° C)
SAE 20W-30	Below 10° F (12° C

FUEL SYSTEM

FUEL REQUIREMENTS

Aviation grade 91/96 (minimum) octane should be used in the Normally Aspirated Aztec and 100/130 (minimum) octane should be used in the Turbocharged Aztec. The use of lower grades of fuel can cause serious engine damage in a very short period of time, and is considered of such importance that the engine warranty is invalidated by such use.

FILLING FUEL CELLS

The fuel cells of each wing are filled through filler necks located in the top of the wings, outboard of the engine nacelles.

1. Observe all required safety precautions for handling gasoline.
2. Fill the cells with fuel as specified on the placard of the fuel access doors.

DRAINING MOISTURE FROM FUEL SYSTEM

Drain the crossfeed fuel valve by turning the crossfeed line drain control located on the front of the fuel panel selector control box which is between the two front seats.

The strainers and fuel line drains may be reached by opening the access panel located on the inboard sides of the main wheel wells. To drain, push up the easy drain valves.

DRAINING FUEL SYSTEM

Drain the bulk of the fuel from the system by pumping the fuel out of each cell through the filler opening with an electric fuel pump. Complete the draining by opening the crossfeed line drain control. Drain the inboard cells first, then move the fuel selectors to the outboard position, thus allowing the outboard cells to drain through the crossfeed line drain. For an alternate draining procedure, open the fuel line quick drain valves and the fuel strainer bowl drain valve or remove the fuel strainer bowl and allow the fuel to run out by gravity.

PROPELLER SERVICE

The air charge in the propeller cylinder should be kept at the pressure specified on the placard located in the spinner cap or on the cylinder unit. The pressure in the cylinder will vary due to temperature change, increasing about 1/3 psi for each degree Fahrenheit increase in temperature. This effect of temperature should be taken into account when checking the pressure from time to time, as a misleading interpretation might otherwise be made.

The air charge should be free from excessive moisture. Use dry nitrogen gas if available. An excess of water in the cylinder may freeze the piston during cold weather.

NOTE

It is important that an accurate gauge and equipment are used in checking and charging propeller chamber pressures.

CHAMBER PRESSURE REQUIREMENTS WITH TEMPERATURE

HC-E2YR-2RB or HC-E2YK-2RB

Temp. °F	Press. (psi)	Temp. °F	Press. (psi)
100	188	30	165
90	185	20	162
80	182	10	159
70	178	0	154
60	175	-10	152
50	172	-30	146

HC-E2YK-2RBS or HC-E2YR-2RBS

Temp. °F	Press. (psi)
100	74
70	70
40	66
10	62
-20	58

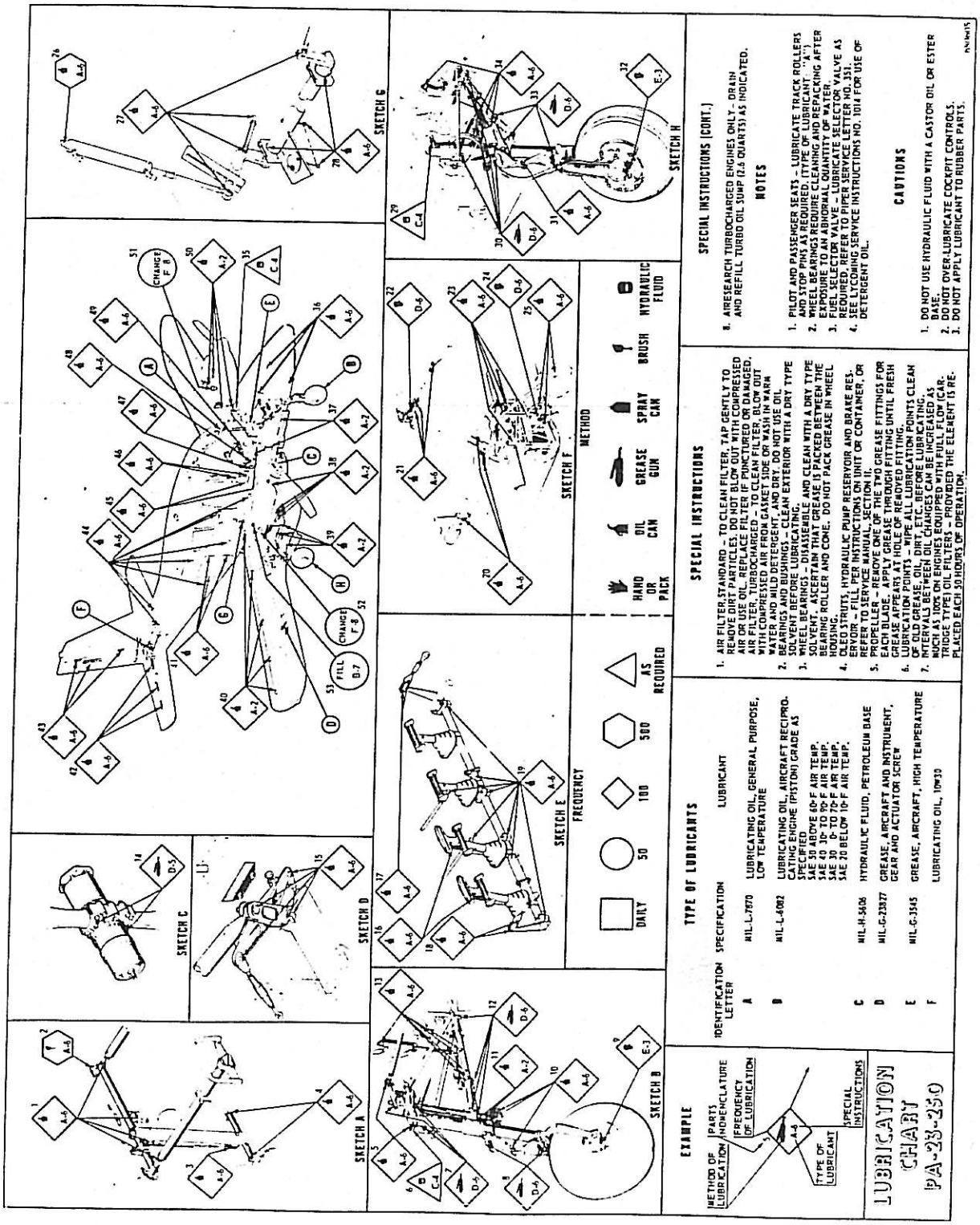
NOTE: Do not check pressure or charge with propeller in feather position.

SERIAL NUMBER PLATE

The serial number plate on the Aztec is located under the carpet on the floor panel just forward of the right seat track inside the main cabin door. A second plate with only the serial number is located on the underside of the fuselage just forward of the tail skid. The serial number of the plane should always be used in referring to the airplane on service or warranty matters.

PARTS NOMENCLATURE

1. UNIVERSAL, DOUBLE SPROCKET, GUIDE ROLLERS
2. AILERON CONTROL CHAIN
3. AILERON CONTROL CABLE PULLEY
4. CONTROL COLUMN BEARINGS
5. STEERING ROD END BEARINGS
6. OLEO AIRCHARGE VALVE
7. NOSE GEAR ATTACHMENT FITTINGS
8. TORQUE LINK ATTACHMENTS
9. WHEEL BEARINGS
10. TORQUE LINKS, STEERING LINK ENDS
11. STEERING TORQUE TUBE BEARING BLOCKS
12. DRAG LINKS
13. LATCH ATTACHMENT, ROD END BEARINGS
14. PROPELLER
15. AILERON BELLCRANK
16. BRAKE CYLINDERS
17. RUDDER CABLE ATTACHMENTS
18. RUDDER CABLE ATTACHMENTS
19. RUDDER TORQUE TUBE, BEARING BLOCKS
20. STABILATOR CABLE ATTACHMENTS, RUDDER BELLCRANK ATTACHMENTS
21. RUDDER TRIM ROD BEARINGS
22. RUDDER TRIM SCREW
23. STABILATOR TORQUE TUBE, TRIM LINKAGE
24. STABILATOR TRIM SCREW
25. TRIM LINKAGE
26. FLAP CYLINDER ATTACHMENT
27. ROD END BEARINGS
28. FLAP BEARING BLOCKS, SENDER LINKAGE
29. OLEO AIRCHARGE VALVE
30. MAIN GEAR ATTACHMENTS, DRAG LINKS, TORQUE LINKS
31. TORQUE LINKS
32. WHEEL BEARINGS
33. DRAG LINKS, TORQUE LINKS
34. CYLINDER ATTACHMENT, LATCH, RETRACTION LINKAGE
35. BRAKE RESERVOIR, POWERPAK FILLER
36. NOSE BAGGAGE DOOR
37. NOSE GEAR DOOR HINGES
38. ENGINE CONTROL CABLE ENDS
39. MAIN GEAR DOOR HINGES
40. AILERON AND FLAP HINGES
41. AFT BAGGAGE DOOR
42. STABILATOR TRIM HINGES
43. RUDDER AND RUDDER TRIM HINGES
44. RUDDER PULLEYS
45. AILERON CONTROL CABLE PULLEYS
46. CABIN DOOR HINGES
47. FUEL CONTROL CABLES
48. SEAT TRACKS
49. ENGINE CONTROL QUADRANT
50. COWL FLAP LINKAGE
51. TURBO OIL SUMP AIRESEARCH TURBOCHARGED ENGINES ONLY
52. FULL FLOW OIL FILTER (CARTRIDGE TYPE ELEMENT)
53. ENGINE OIL FILLER TUBE


LUBRICATION CHART
PA-23-250
EXAMPLE
METHOD OF LUBRICATION
PARTS NOMENCLATURE
FREQUENCY OF LUBRICATION
TYPE OF LUBRICANT
SPECIAL INSTRUCTIONS
TYPE OF LUBRICANTS
IDENTIFICATION LETTER
SPECIFICATION
LUBRICANT
A MIL-L-7870 LUBRICATING OIL, GENERAL PURPOSE, LOW TEMPERATURE
B MIL-L-6082 LUBRICATING OIL, AIRCRAFT RECIPROCATING ENGINE (PISTON) GRADE AS SPECIFIED
SAE 50 ABOVE 60° F AIR TEMP.
SAE 40 30° TO 90° F AIR TEMP.
SAE 30 0° TO 70° F AIR TEMP.
SAE 20 BELOW 10° F AIR TEMP.
C MIL-H-5606 HYDRAULIC FLUID, PETROLEUM BASE
D MIL-G-23827 GREASE, AIRCRAFT AND INSTRUMENT, GEAR AND ACTUATOR SCREW
E MIL-G-3545 GREASE, AIRCRAFT, HIGH TEMPERATURE
F LUBRICATING OIL, 10W30
FREQUENCY
DAILY
50
100
500
AS REQUIRED
METHOD
HAND OR PACK
OIL CAN
GREASE GUN
SPRAY CAN
BRUSH
HYDRAULIC FLUID
SPECIAL INSTRUCTIONS
1. AIR FILTER,STANDARD – TO CLEAN FILTER, TAP GENTLY TO REMOVE DIRT PARTICLES. DO NOT BLOW OUT WITH COMPRESSED AIR OR DIRT WILL BE FORCED THROUGH FILTER. REPLACE FILTER IF PUNCTURED OR DAMAGED. AIR FILTER, DELUXE – TO CLEAN FILTER, BLOW OUT WITH COMPRESSED AIR FROM CLEAN SIDE OR WASH IN WARM WATER AND MILD DETERGENT AND DRY. DO NOT USE OIL
2. BEARINGS AND BUSHINGS – CLEAN EXTERIOR WITH A DRY TYPE SOLVENT BEFORE LUBRICATING.
3. WHEEL BEARINGS – DISASSEMBLE AND CLEAN WITH A DRY TYPE SOLVENT. ASCERTAIN THAT GREASE IS PACKED BETWEEN THE BEARING ROLLER AND CONE. DO NOT PACK GREASE IN WHEEL HOUSING.
4. OLEO STRUTS, HYDRAULIC PUMP RESERVOIR AND BRAKE RESERVOIR – FILL PER INSTRUCTIONS ON UNIT OR CONTAINER, OR REFER TO SERVICE MANUAL, SECTION II.
5. PROPELLER – REMOVE ONE TWO-WAY GREASE FITTING FOR EACH BLADE. APPLY GREASE THROUGH FITTING UNTIL FRESH GREASE APPEARS AT HOLE OF REMOVED FITTING.
6. LUBRICATION POINTS – WIPE ALL LUBRICATION POINTS CLEAN OF OLD GREASE, OIL, DIRT, ETC. BEFORE LUBRICATING.
7. INTERVALS BETWEEN OIL CHANGES CAN BE INCREASED AS MUCH AS 100% ON ENGINES EQUIPPED WITH FULL FLOW (CARTRIDGE TYPE) OIL FILTERS – PROVIDED THE ELEMENT IS REPLACED EACH 50 HOURS OF OPERATION.
SPECIAL INSTRUCTIONS (CONT.)
8. AIRESEARCH TURBOCHARGED ENGINES ONLY – DRAIN AND REFILL TURBO OIL SUMP (2.0 QUARTS) AS INDICATED.
NOTES
1. PILOT AND PASSENGER SEATS – LUBRICATE TRACK ROLLERS AND STOP PINS AS REQUIRED. (TYPE OF LUBRICANT – "A")
2. WHEEL BEARINGS REQUIRE CLEANING AND REPACKING AFTER EXPOSURE TO AN ABNORMAL QUANTITY OF WATER.
3. FUEL SELECTOR VALVE – LUBRICATE SELECTOR VALVE AS REQUIRED. REFER TO PIPER SERVICE LETTER NO. 351.
4. LYCOMING – REFER TO LYCOMING SERVICE INSTRUCTIONS NO. 1014 FOR USE OF DETERGENT OIL.
CAUTIONS
1. DO NOT USE HYDRAULIC FLUID WITH A CASTOR OIL OR ESTER BASE.
2. DO NOT OVER-LUBRICATE COCKPIT CONTROLS.
3. DO NOT APPLY LUBRICANT TO RUBBER PARTS.
SKETCH A
SKETCH B
SKETCH C
SKETCH D
SKETCH E
SKETCH F
SKETCH G
SKETCH H