TAYLORCRAFT AVIATION CORP.
ALLIANCE, OHIO

OWNER'S MANUAL MODEL F21

WARRANTY

The Taylorcraft Aviation Corp. warrants each new airplane or part manufactured by them to be free from defects in material and workmanship when used under normal conditions for 6 months after delivery of the plane from the factory to the original retail purchaser or first user (provided aircraft is not used as a demonstrator and has no more than 10 hours total time when sold to the first user).

This warranty is limited to replacing or repairing at the factory any part or parts, at its option, which have been returned to the factory within the 6 month period as above set forth, with transportation charges prepaid, and which in the opinion of Taylorcraft, are defective. A new warranty period is not established for replacements. Replacements are warranted for the remainder of the original 6 month warranty period.

The repair or replacement of defective parts under this warranty will be made by Taylorcraft or the dealer without charge for parts or labor for removel, installation and/or actual repair of such defective parts at the option of Taylorcraft.

The provisions of this warranty do not apply to any aircraft, equipment, accessories or service parts manufactured or sold by Taylorcraft which have been subject to misuse, negligence or accident, or which have been repaired or altered outside our factory in any way so as in the judgement of Taylorcraft to affect adversely its performance, stability and reliability, nor normal maintenance services (such as engine tune-up, cleaning, control rigging, brake and other mechanical adjustments, maintenance inspections, etc.) and replacement of service items (such as spark plugs, brake linings, filters, hoses, etc.) made in connection with such services or required as maintenance, nor to normal deterioration of trim and items such as paint or upholstery due to wear and exposure.

The Taylorcraft Aviation Corp. makes no warranty with respect to engine, instruments, propellers, tires, wheels or other trade accessories, inasmuch as they are warranted by their respective manufacturers.

The Taylorcraft Aviation Corp. is not responsible to any purchaser or any party or parties, for any representation, undertaking, promise or warranty made by representatives selling its products beyond those herein expressed.

This warranty is in lieu of all warranties and representations, expressed or implied, in fact or by law, and all other obligations or liabilities on the part of the Taylorcraft Aviation Corp. The procedures of repair or replacement as above set forth are the only procedures under this warranty. Taylorcraft disclaims any obligation or liability for loss of use of the product warranted, loss of time, inconvenience, commercial loss or any other direct, consequential, special or incidental damages. Taylorcraft neither assumes or authorizes anyone to assume for it any other obligation or liability in connection with such aircraft products.

This warranty is not valid unless owner/operator complies with all portions of the Owner's Manual.

FORWARD

This manual has been compiled with the view of giving the private owner or operator of Taylorcraft Airplanes sufficient knowledge of the construction, operation and care of the airplane so that the service and satisfaction built into it may be obtained.

Carelessness in one form or another is the true source of practically all airplane mishaps. Neglect of, or improper inspection on the ground is the hardest form of carelessness to overcome. While we all condemn reckless flying, improper care on the ground cannot be too strongly pointed out as the most dangerous form of recklessness. Be sure, therefore, when taking delivery of your Taylorcraft Airplane that you know how to care for it, and if you cannot give it thorough and regular care, put it in the hands of a competent mechanic and give him free use of this manual.

In case of doubt concerning any service or operating problems not covered in this manual, or obtainable through our sales representatives, consult the factory which will assist you in obtaining economical and efficient service from your Taylorcraft.

SPECIFICATIONS AND PERFORMANCE

Lycoming Engine 0-235 L2C, 118 HP @ 2800 RPM (Takeoff 5 Min.)
115 HP @ 2700 RPM, 112 HP @ 2600 RPM
Metal Propeller - Sensenich 72CK-0-50

Length	22' 2-3/4"
Height	6'6"
Wing Span	36'
Airfoil	NACA 23012
Wing Area	183.73 Sq. Ft.
Wing Loading	8.17# Sq. Ft.
Seats	2 Side-By-Side
Empty Weight	990 lb.
Useful Load	510 lb.
Gross Weight	1500 lb.
Power Loading	15 lb./HP
Fuel Capacity	24 Gal.
Fuel Consumption	6.1 GPH
Oil Capacity	6 Qt.
Baggage Capacity	82 lb.
Takeoff Roll (Full)	275'
Rate of Climb (1st min.)	875'
Best Rate of Climb Speed	75 MPH
Top Speed (At Sea Level)	125 MPH

Optimum Cruise Altitudes 6000-8000 ft. (75% power) at 2450-2500 RPM -

True Airspeed	118-122 MPH
Range	400 MI
Stall Speed (Power Off)	43 MPH
Service Ceiling	18,000'
Takeoff/Landing Distance (Ft.) over 50' Obstacle	350/350

YOUR TAYLORCRAFT

GENERAL DESCRIPTION

The Taylorcraft, Model F21, is a two-place, side-by-side, high wing, strut braced monoplane.

Fuselage and wings are covered with 2.7 oz. dacron fabric. For safety, high grade butyrate dope, which is fire resistant after cured, is used to provide cloth tautness and finish.

Power is supplied by the Lycoming 0-235 L2C engine developing 118 HP at 2800 RPM (takeoff 5 min.) 115 HP at 2700 RPM and 112 HP @ 2600 RPM. The engine is insulated against excessive vibration, has a dynafocal mount with rubber bushings at the motor mount attachment points resulting in smooth, noise-free operation. The engine is equipped with an accelerator pump for cold weather starting.

Unrestricted vision is attained through the use of a one-piece moulded windshield, large door windows and rear side windows.

Cabin control cables are concealed adding to the comfort of the spacious cabin. Engine and flight controls are readily accessible from both seats. The baggage compartment capacity is 72 lbs.

The shock absorbing system consists of bungee cord assembly attahced to two extensions of the main gear at the center line of the fuselage and the main structure of the fuselage. Ease in ground handling is assured with a steerable, full swivel, leaf spring tail wheel and positive action hydraulic brakes.

Foam type insulation is installed around the inside of the rear cowl and firewall assembly, under the floorboards and around the windshield.

FUSELAGE

The fuselage is composed entirely of steel tubing welded into a unit structure. All members are of SAE 4130 steel. The fuselage frame structure is coated with rust preventive primer at the factory. Saltwater seaplane fuselage has a special corrosion protection.

WINGS

The wings are built-up structures having two solid spruce spars braced with steel tubular compression struts and stamped aluminum three section ribs. This type construction lends itself to ease in repair at a minimum cost.

Proper amount of incidence is built into fuselage fittings and Dihedral is fixed by the length of the front strut. This will assure stable flying characteristics for years to come. After the plane is out in service, any slight change in balance causing wing heaviness can be corrected by varying length of the rear strut.

AILERONS

Ailerons are also a built-up structure with solid spruce spars and stamped aluminum ribs. Ailerons are attached to the wings through magnesium hinge brackets to absorb vibrations.

TAIL SURFACES

The tail surfaces are built up with steel tubing framework and formed steel ribs. Fin and horizontal stabilizers are wire braced.

LANDING GEAR

Landing gear is built of steel tubing forming two separate units. Heavy duty shock cords are used for each unit as shock absorbers. A stop cable is provided to prevent the shock cord being stretched beyond its elastic limit.

HYDRAULIC BRAKES

Hydraulic toe brakes (both left and right side) are installed. The parking brake control operates from the pilot's side only. Pressure must be applied to left and right brake simultaneously before engaging parking brake.

CONTROLS

The control system has dual wheels attached to an H column to control the elevators and ailerons. Flexible steel cables are used throughout the control system to transmit motion. To keep friction at a minimum, all pulleys are mounted on graphite bronze bushings. The trim tab control is located overhead, forward center and is to compensate for slight nose or tail heaviness.

ENGINE CONTROLS

The engine controls consist of ignition switch, throttle, mixture control, carburetor heat control, gas shut-off and primer. Operating instructions are shown on the instrument panel or on the knobs.

FUEL SYSTEM

The fuel system consists of a twelve-gallon fuel tank located in front of the instrument panel in the fuselage. Only nine gallons of this fuel may be safely used. Fuel gauge indicator shows content of fuselage tank is consumed. This gauge is calibrated to read empty when usable fuel of fuselage tank is consumed. In additon to the fuselage tank, two auxilliary six-gallon tanks are installed in the wings. Selector valve for each auxilliary tank is located under the instrument panel. Fuel from wing tank, one tank at a time, must be transferred to the fuselage tank in level flight and only when main tank is approximately 1/4 full. Fuel is gravity fed to the carburetor from the fuselage tank.

ELECTRICAL SYSTEM

The plane is equipped with navigation lights with provision for landing light and cabin light installation. A 12-volt battery is installed in the baggage compartment.

Electrical system also consists of a 60 AMP alternator and electrical starter. A 10 AMP fuse is placed in the navigation light system. Fuseholder is located on the instrument panel. Spare fuse is located on the inside of the door of right glove compartment.

The ammeter indicates the flow of current, in amperes, from the alternator to the battery or from the battery to the aircraft electrical system. When the engine is operating and the master switch is "ON" the ammeter indicates the charging rate applied to the battery. In the event the alternator is not functioning or the electrical load exceeds the output of the alternator, the ammeter indicates the discharging rate of the battery. Care must be exercised in charging the battery. It should not be charged over 7 amperes for more than 30 minute period. If the charging rate is excessive or if one cell is broken down, the battery will boil causing acid to leave the battery and perhaps come in contact with parts of the aircraft which may result in a failure. There is an outside vent line to the alternator.

CABIN LIGHT (OPTIONAL)
Cabin light may be mounted on the bracket at the center of cabin top truss. The light illuminates the instrument panel.

ANTI-COLLISION LIGHT (OPTIONAL)
This light may be mounted on the top of the vertical stabilizer. The light should not be used when flying through clouds or overcast, particularly at night during these conditions. The flashing light may reflect from water droplets or particles in the atmosphere producing vertigo and loss of orientation.

All front spars are pre-drilled at the inner side of the tip for installation of the power supply for wing tip strobe lights, and an inspection or access plate is on the bottom of the wing. A power supply provision for each strobe light must be installed in each wing.

LANDING LIGHT (OPTIONAL)
Landing light may be installed in the left wing. The bracket holding the light can be rotated up to 5 degrees. The wing is wired for landing light.

NOTE: The Model F21 Taylorcraft is not equipped with a thermostatic by-pass valve for oil cooler installation. Should you find the need to install an oil cooler, the following parts can be purchased from Avco Lycoming Williamsport Div., Avco Corporation, Williamsport, Pa. 17701, Customer Service Dept.:

P/N 75944 Valve
P/N 69510 Screen Housing

PREFLIGHT INSPECTION

1. INSIDE CABIN
   - (a) Free control wheel.
   - (b) Check fuel quantity indicator.
   - (c) Push in fuel shut-off valve.
   - (d) Set trim at neutral position.

2. AT TAIL SURFACES
   - (a) Inspect tail surface hinges - check rudder stops.
   - (b) Check brace wires for tautness.
   - (c) Check trim tab for security and neutral position.
   - (d) Apply moderate force on elevators in opposite direction to detect looseness.
   - (e) Disconnect tie-down rope
   - (f) Check anti-collision light (if installed) for damage.
   - (g) Check leaf spring at main bolt attachment for play.
   - (h) Check Tailwheel clip and felt pads.
   - (i) Check tailwheel springs.

3. AT RIGHT WING
   - (a) Inspect aileron hinges for security.
   - (b) Remove tie-down rope or chain.
   - (c) Check lift struts for nicks and cuts and attaching hardware for safety.
   - (d) Check wing fabric top and bottom.
   - (e) Inspect navigation light for damage - check wing bow.
   - (f) Drain fuel from wing tank for four (4) seconds (about two ounce quantity) to check for presence of water and sediment.
   - (g) Remove cap and check fuel level in wing tank.
   - (h) Check tire for cuts and proper inflation

4. AT ENGINE COMPARTMENT
   - (a) Check oil level - do not operate with less than 5 quarts.
   - (b) Check cleanliness of firewall and lower cowl to determine any oil leaks.
   - (c) Check looseness of muffs and flexible tubing.
   - (d) Inspect propeller and spinner for abrasion and security.
   - (e) Check carburetor air filter screen for restriction by foreign matter.
   - (f) Open quick drain valve on fuel filter and drain fuel for four (4) seconds to clear and check presence of water and sediment. Close drain valve.
   - (g) After engine check fasten cowl lids securely.
   - (h) Check windshield for nicks and looseness.
   - (i) Remove cap and check visually amount of fuel in tank.

5. AT LEFT WING - Inspect left wing in similar manner as right wing.
   - (a) Check airspeed pitot tube at jury strut for restriction by foreign matter.

6. GENERAL
   - (a) Check bottom of fuselage cover for cleanliness and torn fabric.
   - (b) Check hydraulic brakes for leakage at cylinder both outside and inside.
   - (c) If anti-collision light is installed at top of fin, check if it develops over 70 flashes per minute. If so, check output of voltage regulator.
   - (d) Keep drain hole open at base of tailpost
   - (e) Keep grommet drain hole open at bottom, aft end of fuselage fabric.

OPERATING INSTRUCTIONS AND CHECK LIST

BEFORE STARTING, PERFORM PREFLIGHT INSPECTION

STARTING THE ENGINE

Fuel shut-off valve - On
Carburetor Heat - Cold
Mixture - Rich
Primer - As required
Throttle - Open 1/4"
Propeller area - Clear
Master Switch - On
Ignition Switch - Start (Release when engine starts)
Oil Pressure - Check (60 - 90 PSI)

BEFORE TAKE-OFF

Flight Controls - Check
Elevator Trim - Neutral
Throttle Setting - 1700 RPM
Oil Pressure - 60-90 PSI
Oil Temperature - 100° F Minimum
RPM Drop - Carburetor heat on - 75-150 @ 1700 RPM
Magnetos Drop - 0-100 @ 1700 RPM
Cabin Doors - Latched
Parking Brake - Push in to release. Press toe brakes and pull straight out to set (do not turn left or right).
Fuses - Secured
Primer - Locked position

NORMAL TAKE-OFF

Carburetor Heat - Cold
Throttle - Full "Open"
Elevator Control - Advance forward lifting tail slightly - airplane will accelerate to take-off speed within 300 Ft. depending upon gross weight and weather conditions.
Best Rate of Climb Speed - 75 MPH

MAXIMUM PERFORMANCE TAKE-OFF

Carburetor Heat - Cold
Brakes - Hold
Throttle - Full "Open"
Brakes - Release
Elevator Control - Advance elevator control slightly forward to obtain fast acceleration. Hold elevator control for three-point take-off position. Proper execution of the above will result in lift-off 2 or 3 miles above stalling speed. Lower nose gradually to obtain higher airspeed and finally assume normal climb speed of 75 MPH.

ROUGH FIELD TAKE-OFF

Follow maximum take-off procedure.

OBSTACLE TAKE-OFF

Follow maximum take-off procedure.
Climb Speed - Lower nose to best angle of climb speed - 65 MPH. After clearing obstacle, lower nose and assume best rate of climb speed of 75 MPH.

CLIMB

NORMAL CLIMB
Air Speed - 75-80 MPH
Power - Full throttle
Mixture - Rich

CRUISING
Power - 1950-2700 RPM. Recommended high cruise 2500 RPM.
Elevator trim - Adjust
Mixture - Rich

BEFORE LANDING
Mixture - Rich
Carburetor Heat - Apply full heat before closing throttle.
Airspeed - 65-75 MPH
Elevator Trim - Adjust

NORMAL LANDING
Touch Down - Three-point position
Landing Roll - Hold control wheel all the way back to keep tailwheel on ground during landing roll.
Braking - Not needed except in extreme cross-wind conditions.

AFTER LANDING
Carburetor Heat - Cold

SECURE AIRCRAFT
Mixture - Idle cut-off
All Switches - Off
Parking Brake - Set
Controls - Locked

CROSSWIND PROCEDURE

TAKE-OFF
To prevent airplane from weather-vaning into the wind, apply opposite rudder to hold aircraft in straight line and apply aileron control into the wind. Actually, a cross control movement for proper crosswind take-off.

CLIMB
As soon as airplane is definitely airborne, turn into the wind, picking up the low wing to establish just enough crab to take care of drift.

LANDING APPROACH
Strong Crosswind - (Actually a controlled slip). Lower wing into the wind and enough opposite rudder to maintain a straight glide path. With a strong crosswind, land with the wing down with the one front gear touching down with the tail gear. Opposite gear will follow on ground impact. Still hold airleron into the wind and maintain direction with rudder.

Crosswind - Level flight crab angle in the wind can be used.

SPINS
Power off 41-46 MPH
Normal Entry - rudder to stop as it stalls. Control wheel held securely in full elevator up position. Cannot relax full elevator up or rudder in position or ship will spiral.

Use Normal Recovery - reverse rudder, wheel forward and back to neutralized position, neutralizing rudder pedals at same time.

NOTE: Excessive airspeed will develop if control wheel is pushed too far forward and held in that position. Just release wheel from full elevator up position through neutral position, then back to neutral position. Rudder should be neutralized at the same time. Recovery speed should be held between 100-120 MPH.

LANDING

Strong Crosswind - Land with windward wheel and tailwheel first. When opposite wheel touches ground, keep airplane in straight line by rudder and brakes if necessary.

Crosswind - Straighten crab angle, land three-point and keep in straight line by rudder and brakes if necessary.

CARE OF YOUR TAYLORCRAFT

Care of your Taylorcraft on the ground is as important as safely flying it. Proper inspection, lubrication and maintenance of your airplane at scheduled intervals cannot be too strongly pointed out. This manual has been compiled in great detail providing you the necessary information to take care of your Taylorcraft.

EXTERIOR CARE

Your Taylorcraft can be kept clean by washing with mild soap and water. Never use abrasive soap or detergent. Dry the surface with a soft cloth or chanois. You may wax the exterior but it is not necessary.

If it is necessary to remove ice during cold climate, prepare de-icing solution containing 40% isopropyl alcohol and 60% water. While applying solution keep it away from plastic windshield and windows since solution will damage plastic.

Windshield and windows may be cleaned with aircraft windshield cleaner to be used with plastic windshield. Always use soft cloth or chamois to wipe the plastic material. Never use alcohol, gasoline or glass cleaner to clean plastic. Windshield may be waxed with commercial wax. Apply a thin, even hand-rubbed coat with a soft cloth.

Wipe propeller occasionally with an oily cloth. Small nicks on the propeller may start crack propagation and hence should be dressed out as soon as possible.

INTERIOR CARE

Vacuum clean upholstery and carpet. Wipe clean with a damp cloth. Never use any chemicals to brighten headliner and control knobs. Never use any chemicals to brighten the interior.

TIE DOWN

Head the airplane into the prevailing wind and set the controls by securing the wheel all the way back with the safety belts. Rudder controls do not normally require locking as rudder is held in place by the tail wheel springs. However, for long term storage outside, or where it is suspected the wind could change and blow from the tail, a clamp can be used to secure the rudder. Two pieces of wood, felt covered with a screw and wing nut should do the job very well. This assembly is fastened at the bottom of the rudder, the screw going between the vertical stabilizer and rudder.

If high winds are anticipated, or airplane is to be parked unattended, it is recommended that the airplane be moored. To moor the airplane, attach ropes to tail wheel leaf springs and to mooring rings near each wing strut end. Stake ropes to the ground, leaving enough slack to allow for shrinkage of ropes due to moisture or rain.

TIE DOWN (CONT'D)
If your airplane is not equipped with mooring rings, tie the mooring ropes to the outer end of the front lift strut. If mooring stakes are not available and new ones are being driven, do not drive straight into ground directly under the tie down point, but drive diagonally into the ground several feet away from the tie down point to fix a 90° angle between the rope and the stake when tied.

LUBRICATION CHART

ENGINE
It is recommended that oil be changed each 50 hours. Your Taylorcraft is delivered with non-additive mineral oil. Some aviation additive oils appear to be superior in performance to straight mineral oil, and their use in Avco Lycoming aircraft engines is recommended. Included in these oils are the ashless dispersant oils essentially conforming to Specification MIL-L-22851 except for correct seasonal viscosity grade suitable to Avco Lycoming series engines. The following seasonal aviation oil grades and seasonal ambient temperature ranges are recommended:

Average Ambient Temperature	MIL-L-6082-B SAE Grade	MIL-L-22851 Ashless Dispersant SAE Grades	Operating Oil - in Temp. °F Desired	Max.
Above 80° F	60	60	180	245
Above 60° F	50	40 or 50	180	245
30°F to 90° F	40	40	180	245
0°F to 70° F	30	40, 30 or 20W-40	170	225
Below 10° F	20	30 or 20W-30	160	210

In engines that have been operating on straight mineral oil for several hundred hours, a change to additive oil should be made with a degree of caution, the cleaning action of some additive oils will tend to loosen sludge deposits and cause plugged oil passages. When an engine has been operating in excessively dirty condition, the switch to additive or compounded oil should be deferred until after the engine is overhauled.

When changing from straight mineral oil to compounded oil, the following precautionary steps should be taken:

1. Do not add additive oil to straight mineral oil. Drain the straight mineral oil from the engine and fill with additive oil.
2. Do not operate the engine longer than five hours before the first oil change.
3. Check all oil screens for evidence of sludge or plugging.
   Change oil every ten hours if sludge conditions are evident.
   Resume normal oil drain periods after sludge conditions improve.

CAUTION

The terms "detergent", "additive", "compounded" and "ashless dispersant" used herein are intended to refer to a class of aviation engine lubricating oils to which certain substances have been added to improve them for aircraft use. These terms do not refer to such materials commonly known as "top cylinder lubricant", "dopes", "carbon remover" which are sometimes added to fuel or oil. These products may cause damage to the engine and their presence in an engine will void the owner's warranty. Under no circumstances should automotive oil be used. The use of automotive lubricants in Avco Lycoming engines is not recommended because its use could cause engine failure.

CAUTION

Control Column & Rudder Bearings: SAE #40 mixed with graphite.
Aileron Pulleys: SAE #10
Wheel Bearings: Good grade of bearing grease.
Universal Joints & Control Sprockets & Chain: SAE #10 Oil
Control Column: Powdered Graphite or DOW DC4 Compound
Aileron Bellcrank & Hinges: SAE #10 Oil
Tailwheel Axle Bearing: Good grade of bearing grease
Door Latches & Hinges: Powdered graphite or graphited oil
Tail Surface Hinges: Powdered graphite or graphited oil

CONTROLS IN FUSELAGE

In the fuselage the main points to be lubricated are in the control system. The shafts of the control wheels slide through bakelite bearings. A small amount of grease on the shafts will make a smoother working control at this point.

The following points on the Control Column should be oiled frequently:

1. The universal joint at the top of the control column.
2. There is also an oil hole in the top of the control column to lubricate the shaft of the universal joint.
3. The sprocket chain links.
4. The bearings at the bottom of the control column.
5. All pulley bearings and faces of pulleys.

NOTE: There are two pulleys for the aileron cable at the top front of the cabin and two more at the rear of the cabin. The front two can be reached by removing center section of headliner.

On the right side of the floor just in front of the door, are three pulleys carrying the elevator cables and one of the rudder cables. There is one pulley on the left side of the floor carrying the other rudder cable. These pulleys should be oiled and checked frequently. There are also cable guides in the rear of the fuselage that may be seen by removing center section of headliner that should be checked every 20 hours for frayed cables. There are also cable guides under the seat which may be inspected by lifting edge of the seat canvas. Inspection covers at the rear of the fuselage provide access to the elevator control cable ends and these points should be oiled frequently.

CONTROLS IN WINGS

The aileron control horn which is located in the wing at the center aileron hinge bracket may be reached by removing the cover plate on the top of the wing. Oil placed in the hole of the control horn will lubricate the bearing. The ball joints and drag link at this point should be checked for looseness. Looseness due to wear may be removed by tightening the ball stud seat in the end of the drag link. The bronze bearings in the aileron hinge brackets should be oiled frequently. When wear occurs here, new bushings and hinge pins may be installed.

TAIL SURFACES

The hinge joints on all tail surfaces should be oiled frequently. When looseness occurs, new bushings and hinge pins will correct this condition.

LANDING GEAR

The roller bearings in the landing wheels should be lubricated with graphite grease, being careful not to get grease on the brake drum or band. Oil the hinge bearings frequently at the top of the landing gear between the fittings on the fuselage and landing gear.

On planes equipped with a swivel type tail wheel, oil the swivel bearing and grease the ball bearings in the hub of the tail wheel.

NOTE: It is important that the bumpers on the fuselage truss under the shock cord be inspected every 20 hours and replaced when needed.

INSTRUCTIONS FOR INSTALLING PLEXIGLAS WINDSHIELD

This windshield is manufactured from the finest grade of plexiglas available and is easily installed if these instructions are carefully followed:

1. Check windshield for scratches or distortion.
2. Allow windshield to remain in heated room (not less than 70^{0} F) for 6 hours before cutting, drilling or fitting.
3. Remove old windshield and use as pattern to make a paper template.
4. Lay template over windshield and mark outline.
5. Trim to size by using a metal cutting band saw or hack saw. If using a hack saw along straight edges, it is recommended that the edge be supported with two pieces of wood and clamp with a "C" clamp. Also, as final resort, mechanic can use heat lamp and pair of tin snips. After all operations, sand rough edges smooth.
6. Place windshield in position on airplane. Drill slightly oversize holes on top.

Remove papers after completion by picking up edge and peeling.

IMPORTANT: Use drill slightly larger than fastening bolts to allow for natural expansion and contraction of the windshield. Do not use high speed drill bit or fast motor. If drill is cold, warm it by gripping it in your hand until room temperature.

Install windshield in heated room or hangar.

FITTING INSTRUCTIONS: We suggest you roll the edge of the paper masking or spraying coating back about 1-1/2¼, leaving the covering on the rest of the surface while you are handling and fitting the item. After you have completed the fitting, remove the total covering and inspect for scratches or distortion that might have passed our inspection procedure. If any adhesive from the paper remains on the surface or if any spot has been sprayed too thin for stripping, you may use Isoproply Alcohol (rubbing alcohol) to remove these spots.

INSTRUCTION FOR FUEL TANK REMOVAL

On rare occasions it may be necessary to remove the fuel tank. To accomplish this, remove the control wheels and the front instrument panel which will give access to the tie rods that support the tank. Next remove the caps from the control column bearings and drop the column to the floor. Several engine controls and attachments must also be removed. Remove the forward tie-rod nuts next to the firewall and pull the rods. The tank is then free to be removed down and out through the cabin.

INSPECTION SERVICE AND INSPECTION PERIODS

F.A.A. requires that all planes have a periodic (annual) inspection as prescribed by the administrator and performed by a person designated by the administrator. In addition, 100 hour periodic inspection made by an "appropriately-rated mechanic" are required if the plane is flown for hire.

A periodic check should be made of the latest F.A.A. regulations to insure that all data requirements are met.

1. To be displayed in the aircraft at all times:
   (a) Aircraft airworthiness certificate (Form F.A.A. -1362B)
   (b) Aircraft registration certificate (Form F.A.A. - 500A)
   (c) Aircraft radio station license (Form FCC-404, if transmitter is installed)
   (d) Current appropriate operation manual

INSPECTION SERVICE AND INSPECTION PERIODS (cont'd)

2. To be carried in the aircraft at all times:
   (a) Weight and balance and associated papers (latest copy of the Repair and Alteration Form. Form F.A.A. - 337 if applicable)
   (b) Aircraft equipment list.

3. To be made available upon request:
   (a) Aircraft log book
   (b) Engine log book

The Taylorcraft Aviation Corp. recommends that the above items be carried in the airplane at all times. Regulation of other nations may require other documents and data, and we suggest that owners of exported aircraft check with their aviation officials to determine their individual requirements.

INSPECTION INSTRUCTIONS

ENGINE OPERATION: Lycoming 0-235 L2C
Run engine to minimum 150 degrees oil temperature - check full throttle static RPM (consult specifications for propeller used).
Check magnetos 0-100 RPM drop at 1700 RPM.
Check carburetor heat 75-150 RPM drop at 1700 RPM.
Check ignition switch for operation so that it does not stick in start position.
Check idle RPM 500-600 RPM with carburetor heat off.
Oil pressure 60-90PSI.

ENGINE MOUNT AND ATTACHMENTS:
Check engine mount for damage and cracks.
Inspect protective finish on mount. Sand and touch up bare areas.
Inspect engine shock mounts for worn and/or deterioration every 50 hours of operation. If this condition exists, replace or check engine to mount bolts using a dye penetrant or magnetic particle type of inspection. All engine to mount bolts should be torqued to 450-500 in. lbs. at bolt end, engine mount to firewall torque nut end 100-140 in. lbs. Rough engine operation and improper ground handling can cause premature bolt failure.

COWLING BAFFLES:
Clean and inspect engine cowling for dents and cracks at hinges and reinforcement.
Check for tension adjustment on cowl doors at fasteners. Tension prevents vibration and cowl cracking.
Check baffles for cracks and felt installation to prevent chafing.

MAGNETOS, WIRING AND SHIELDING:
Check magnetos for secure attachment.
Check breaker point housing for excessive oil.
Check plug wiring connections at magnetos and insulation for deterioration and chafing.
Check for grommet at baffles and at firewall.

OIL DRAIN AND SAFETY PLUG:
Drain oil and check for metal particles.
Remove, clean and check oil screen for metal particles, drain plug and inlet oil temperature housing.
Reinstall oil drain plug.
Change oil filter if installed and check flexible lines for deterioration.

SPARK PLUG SERVICE:
Remove plug, bomb blast and clean.
Plugs with badly burned electrodes should be replaced.
Reset gap, consult manufacturers charts.
Reinstall using thread lubricant and new gaskets to prevent leakage and seizing.

CARBURETOR AND HEATER:
Check carburetor for mounting security.
Inspect carburetor bowl for cracks, particularly at inlet.
Drain carburetor float chamber and check inlet finger screen safety.
Operate throttle in cockpit to be sure that throttle arm hits stops in open and closed positions without binding or sticking.
Check operation of mixture control for binding or sticking and full rich position.
Inspect carburetor air box for security and cracks, heater valve for full travel.
Check intake system for leaks and cracks.
Clean air filter in kerosene and saturate with #10 oil and allow to drain before installation.

FUEL LINES AND STRAINERS:

Check fuel lines for leaks and hose deterioration
Check hose supports for security and chafing.
Drain and clean fuel strainer and resafety.
Check for stains around fuel system indicating leaks.
Check all connections for tightness.

EXHAUST STACK:

Check stack flanges for security, cracks and leaks.
Remove all heater and shrouds and inspect for corrosion, cracks and leaks that might transfer gas to the cockpit, particularly through the cabin heater system.
Check tailpipe and stacks for security at all clamps and joints.
Check cabin heater box and control valve for operation.
Check cabin and carburetor heat flexible tubing for security and general condition.

ENGINE CONTROLS AND FIREWALL:

Check firewall for open holes and gas leaks from engine compartment (if open holes, use Pro-Seal 700).
Check all controls for grommets and sealant.

PROPELLER:

Remove spinner and check for cracks or dents in spinner and back plates.
Check propeller cracks and protective finish.
Propeller flange bolts are to torque   300 in. lbs.

COCKPIT AND BAGGAGE AREA:

SEATS: Check general condition.
Check condition of safety belts, airworthiness directive on seat belts, if frayed, replace.
Check baggage area plywood - if deteriorated or ripped, replace.

WINDSHIELD: Check weatherstripping for security in channels and for leaks.
Check plastic windshield and side windows for cracks, crazing, distortion and discoloration.

POWER PLANT INSTRUMENTS:

Check powerplant instruments for mounting security.
Check connections and plugs.
Check placards and limitation markings.
Tachourmeter: Red Line 2800 RPM (Take off 5 min.)
Oil Pressure: Red Line - 15-115 PSI
Green Arc - 60-90 PSI
Oil Temperature: Red Line - 245^0
Green Arc - $100-245^0$

FLIGHT INSTRUMENTS:

Check flight instruments for mounting security.
Check placards and limitation markings.
Airspeed: Red Line - 136 MPH

DOOR LATCH AND HINGES:

Check door hinges and rivets for looseness.
Check door latch plunger for complete extension to prevent doors opening while taxiing.
Check door for proper fit or damage resulting in air leaks.

ENGINE CONTROLS:

Check mixture control operation for smoothness.
Check carburetor heat control for smooth operation.
Check throttle for smooth operation and operation of friction lock.
Check primer for operation and leaks behind the panel.
Check ignition switch for panel and terminal security.

RUDDER PEDALS AND LINKAGE:
Check rudder pedal assembly for play and travel freedom.
Lubricate hinges and torque tube bearings and check for safety.
Check rudder pedal return spring for attachments.

CABLES AND PULLEYS:
Check all cables for broken strands.
Remove butt fairings and check top deck aileron pulleys for wear and security.
Check aileron pulleys at both ends of panel.
Remove floorboards and check pulleys.

FLIGHT CONTROL OPERATION:
Check aileron, rudder and elevator controls from cockpit for smooth operation.
Check wheel for neutral position with controls surfaces streamlined.

TRIM TAB CONTROLS:
Check elevator trim control for smooth operation.
Check indicator against trim tab for proper position.

WING FUEL SELECTOR VALVE:
Check fuel valve for smooth operation.
Check placard for "ON and OFF" position and operating restrictions.
Check valve for leaks.

LANDING GEAR:
Shock cord - for broken strands and elongation.
Keep drain hole open at base of diagonal tube at trailing edge.

HYDRAULIC BRAKES:
Check for leakage inside and outside.

AXLES AND WHEELS:
Remove wheels, wash, check and relubricate bearings.
Check brake shoes for wear and drums for scoring.
Install wheel and axle nut only tight enough to remove any play.

TIRES AND FAIRINGS:
Check tires for 20 lbs. of air pressure.
Replace tires that have cord showing.
Check gear fairings for security and chafing.

WINGS AND AILERONS:
Wing fabric: Check left and right wing fabric for holes, cracks or checks in the finish and open drain grommets at each rib bay trailing edge.
Fabric usually deteriorates on the upper surface of the wing or along the trailing edge.

STRUTS - LIFT:
Check right and left wing strut fittings for elongation by having someone lift up and down on the wing.
Check bolts for fitting attachment to the spar.
Check struts for dents or cracks, also sight down strut trailing edge to ascertain that struts are straight.
Check strut and forks and fork lock units.
Keep drain hole open at trailing edge.

WING BOLTS:
Check strut attachment bolts to be sure there are no threads in bearing, that nuts are not bottoming on unthreaded part of bolts, and bolts are properly safetied.

TAILWHEEL:
Maule 8" pneumatic - nnot over 9-10# pressure.

AILERON HINGES:

Check aileron hinge bracket legs for security at rear spar and housing.

Check hinge pins for wear and safety. Worn or loose pins must be replaced. It may be necessary to replace steel hinges on aileron if worn.

AILERON CONTROLS:

Remove inspection covers and check the two cables on each wing for interference and chafing.

Check travel, 23° Up, 23° Down.

Check the six turnbuckles in the center top of fuselage for safety and not more than three threads showing outside of barrel.

To locate broken strands at fairleads or pulleys, slide a cloth over the cable. All cables with broken strands are to be replaced.

WING ROOT FAIRINGS:

Check left and right wing root fairings for tension.

Check all metal screws for security and the fairing for cracks.

EMPENNAGE: STABILIZER

Check stabilizer fabric condition and drain grommets for restrictions.

If the fabric strength is suspected, a Seybooth Tester may be used to accurately test the strength.

Lift up and down on stabilizer checking for excessive play.

FIN:

Inspect vertical fin for fabric condition and finish.

Check for wrinkles, dents and signs of internal damage.

RUDDER:

Inspect fabric cover on the rudder for fabric and dope condition.

Check bottom of rudder for an open drain grommet.

Check rudder for alignment and possible internal damage usually indicated by a wrinkle in the fabric.

Inspect rudder hinge pins for wear and safety.

Check hinge bushings for play. These bushings are pressed in and should be replaced when worn.

Check rudder travel, 26° Right, 26° Left.

ELEVATORS:

Check fabric condition and finish on the elevators.

Check for open drain grommets along the elevator trailing edge.

Sight one elevator against the other for alignment.

Check hinge pins and bushings for wear and replace any worn pins or bushings.

Check elevator cable horns for safety, worn bolts and clearance in travel.

Check elevator travel, 27° UP, 25° Down.

EXTERNAL BRACING:

Check empennage rigging wires for corrosion and cracks or nicks that might result in failure.

Check fittings for alignment with the wire and bolts for safety.

Rigging wires should be taut with little hand deflection.

Check each wire to be sure there are no loose fork lock nuts.

RUDDER AND ELEVATOR CONTROLS:

Check rudder elevator horns for worn bolts and safety with no threads in bearing.

Check fittings for alignment with the cable and freedom of travel.

Check top and bottom cable turnbuckles for safety and a maximum of three threads showing outside the barrel.

Periodically oil trim tab screw at top of elevator front spar.

ELECTRICAL SYSTEM:

Check battery drain for any restrictions.
Check battery mounting area for any acid spills.
Remove battery and check battery box.
Check all cable terminals for corrosion and looseness at connections.
Check cable insulation for nicks or burns and for any bare conductor showing.
Turn master switch on and then turn light switch ON.
Check all lights for proper operation and ammeter for discharge reading.
With engine running, check alternator by checking ammeter indicating charge current.

PERMANENT BALLAST LOCATED AT TAIL SECTION OF FUSELAGE:

Remove cover plates and inspect to make sure it is securely fastened.

RIGGING INFORMATION

As the airplane is built entirely in jigs, it requires no rerigging to disassemble and reassemble the wings. There are only two points where any wing adjustment may be made.

The front wing struts being jig built have no adjustment.

To check the rigging of the wings and tail, stretch a cord across the wings at the front spar and level the ship with a line level placed over the center of the cabin. Stretch a second cord across the wings at the rear spar and level with the line level. The rear strut adjustment is used to accomplish this. The bolt at the point of attachment of the wing strut with the wing fitting must first be removed. A long screwdriver may be used to move the adjusting nut as required.

In flight testing, if the airplane flies either wing heavy, the rear strut adjustment may be used to correct this by washing the opposite wing out, or the heavy wing in.

If the airplane flies nose heavy, both wings may be washed in, or if tail heavy, both wings may be washed out for correction.

The tail is rigged level and perpendicular while the ship is level. An ordinary level used along the rear tube or the stabilizer and rear tube of the fin will accomplish this. The wires should be rigged snug but not too taut. A low bass tone is satisfactory.

SERVICE

When in need of service, contact the nearest Taylorcraft Representative or factory. The factory maintains a service department to assist the representatives and you to obtain the most service from your airplane.

HOW TO ORDER PARTS

When ordering parts, always give the following information to the Taylorcraft representative or factory: (Parts catalogue is available at no charge).

1. The model, serial no., and registration number of your plane.
   The model and serial number can be found on the metal plate attached to the door sill, left side.
2. The part number and name of the piece wanted, whenever possible.
   If you cannot find the part number, give as complete a description as possible of the part required and location, stating right or left. A sketch is frequently of assistance in filling orders.
3. Quantity needed. This is important.
4. If representatives do not carry the part needed, state: to whom the shipment is to be made, address to where parts are to be sent, transportation - Parcel Post, Airmail, Air Express, United Parcel, Motor Freight, Bus.
5. Parts will be shipped COD unlss certified check or money order accompanies the order.
6. Parts ordered to be shipped by motor freight or air express must be accompanied by a money order or certified check.
7. For engine service, contact the engine manufacturer's service station directly.

NOTE: In order to avoid delays, all communications should be addressed to the attention of the Service Department.

TAYLORCRAFT AVIATION CORP.

TRIM TAB CONTROL SYSTEM

The following procedure is recommended for rigging of trim tab control system:

Prior to rigging and to avoid slippage of control cable on pulleys, remove grease from cable completely. Also remove grease from pulley grooves of cabin top pulley (which actuates tab indicator) and pulley at tail post of fuselage (which actuates trim tab). Coat portion of control cable which comes in contact with both pulleys with shellac.

Knowledge of trim control system stops is necessary to accomplish rigging. Stops provided on control cable are "U" channels. Each stop is attached to cable with AN3 bolt and a nut. These stops come against welded stops on fuselage structure and limit up and down travel of trim tab. Forward welded stop of fuselage structure is left fairlead located on top of tube which connects left and right rear wing attaching fittings. In cabin section this tube is just behind pilot's head. When stop on control cable is against forward fuselage stop (above fairlead) it limits maximum up travel of trim tab (nose down). Welded rear stop on fuselage is also a fairlead located behind baggage compartment. This stop limits maximum down travel of trim tab (nose up).

Rig trim tab control system as follows: Take control cable off both pulleys. Set trim tab to maximum down travel (nose up) of 30° ± 2°, by rotating pulley at tail post with hand. Rotate cabin top pulley with hand until indicator shows nose up condition. Slide control cable in fairleads until stop on cable is against rear fuselage stop. NOW SLIDE CONTROL CABLE COVER OVER BOTH PULLEYS. Turn trim control crank until indicator shows neutral position. Make usual check for trim tab in neutral position. If tab is not in neutral position, reset indicator in cabin to read neutral. Now turn crank until cable stop is against forward fuselage stop. Trim tab should be in up position (nose down). Measure up travel angle in this position. It should be 25° ± 2°. If angle is incorrect, loosen the stop on cable so that cable can slide freely in "U" channel stop. Set trim tab to maximum up travel position (nose down) of 25° ± by turning crank. Tighten cable stop so that cable will not slide inside stop and that cable stop is against fuselage stop. This completes rigging procedure.

To receive trouble free performance out of trim tab control system, observe the following steps:

1. In flight <u>or</u> during ground check up when trim tab is brought to maximum travel position (against stop) it should be done gently. <u>Any</u> force applied at crank after reaching stop will cause cable to slip over pulley or in stops throwing rigging of complete system out of calibration.

2. Always keep grease away from control cable and pulley groove.

INSTALLATION OF SHOCK CORDS

1. LOAD MUST BE REMOVED FROM THE LANDING GEAR ON SIDE THAT IS BEING REPLACED WITH NEW SHOCK CORDS. THIS IS DONE BY PROPPING WING UP AT THE FRONT LIFT STRUT WHERE IT INTERSECTS THE WING, RAISING IT UNTIL LANDING GEAR IS FREE. TAIL OF AIRCRAFT MUST BE SECURED TO ELIMINATE PLANE MOVING.

2. TURN SCREW ON SHOCK TRUSS TOOL TO ITS OUTERMOST POSITION, PLACE TOOL DIRECTLY ABOVE SHOCK CORDS BEING REPLACED. TOOL MUST STRADDLE SHOCK TRUSS OF AIRCRAFT WITH THE SCREW IN CENTER OF TOOL ENGAGING A WASHER ON TOP OF THE SHOCK TRUSS. WASHER HAS HOLE IN CENTER TO RECEIVE END OF SCREW ON THE TOOL.

3. WITH TOOL IN THIS POSITION, RAISE THE SLIDING GUARDS ON EACH SIDE OF TOOL TO THEIR UPPERMOST POSITION. WITH LANDING GEAR IN NORMAL POSITION LOOP NEW SHOCK CORD AROUND PROPER POSITION ON GEAR AND PLACE EACH END OF LOOP OVER LOWER END OF TOOL WHERE THE TOOL FORMS A 90° ANGLE. AFTER LOOPS OF SHOCK CORD ARE IN POSITION, DROP THE GUARDS OF TOOL DOWN UNTIL RADIUS OF GUARD MATES WITH LOWER PORTION OF TOOL. AT THIS POINT, TURN SCREW IN ON TOOL, THEREBY RAISING LOWER PORTION OF TOOL WITH NEW SHOCK CORD IN PLACE. CONTINUE UNTIL LOWER PORTION OF TOOL MATCHES WITH THE OVAL SHAPED RETAINING WASHERS AT THE BOTTOM OF SHOCK TRUSS ON AIRCRAFT. AT THIS POINT, RAISE THE GUARDS ON SHOCK CORD TOOL AND BY USING A LONG SCREW DRIVER OR SIMILAR OBJECT, SLIDE THE SHOCK OFF OF THE TOOL ONTO THE RETAINING SADDLE OF THE SHOCK TRUSS.

CAUTION: DO NOT LET GO OF THE TOOL UNTIL THE SHOCK CORD IS INSTALLED. REPLACE ONLY ONE SHOCK CORD AT A TIME. SAFETY CABLE LOOP MUST BE INSTALLED BETWEEN THE SHOCK CORDS ON SHOCK TRUSS SADDLE.

INSTRUCTIONS FOR INSTALLING PLEXIGLAS WINDSHIELD

This windshield is manufactured from the finest grade of plexiglas available and is easily installed if these instructions are carefully followed:

1. Check windshield for scratches or distortion.
2. Allow windshield to remain in heated room (not less than 70° F) for 6 hours before cutting, drilling or fitting.
3. Remove old windshield and use a pattern to make a paper template.
4. Lay template over windshield and mark outlines.
5. Trim to size by using a metal cutting band saw or hack saw. If using a hack saw along straight edges, it is recommended that the edge be supported with two pieces of wood and clamped with a "C" clamp. Also as final resort, mechanic can use heat lamp and pair of tin snips. After all operations, sand rough edges smooth.
6. Place windshield in position on airplane.

   Drill slightly oversized holes on top only for Taylorcraft.

   REMOVE PAPER AFTER COMPLETION BY PICKING UP EDGE AND PEELING.

IMPORTANT: Use drill slightly larger than fastening bolts to allow for natural expansion and contraction of the windshield. DO NOT USE HIGH SPEED DRILL BIT OR FAST MOTOR. If drill is cold, warm it by gripping it in your hand until room temperature. Install windshield in heated room or hangar.

FITTING INSTRUCTIONS: We suggest you roll the edge of the paper masking or spray coating back about 1½", leaving the covering on the rest of the surface while you are handling and fitting the item. After you have completed the fitting, remove the total covering and inspect for scratches or distortion that might have passed our inspection procedure. If any adhesive from the paper remains on the surface or if any spot has been sprayed too thin for stripping, you may use Isoproply Alcohol (rubbing alcohol) to remove these spots.