PIPER

PAWNEE "C"

OWNER'S HANDBOOK

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SECTION I

SPECIFICATIONS

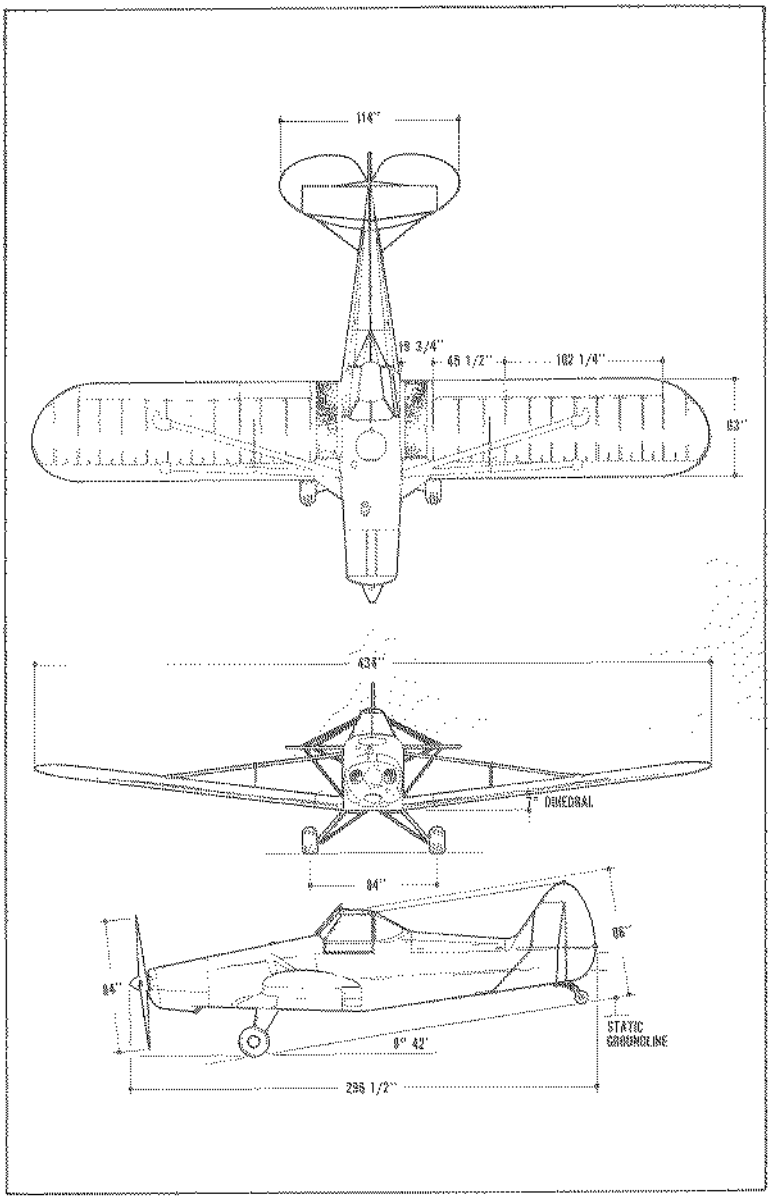
ATION FEATURES:

LANT	PA-25-235	PA-25-260 (Fixed Pitch)	PA-25-260 (Constant Speed)
	Lyc. O-540-B2C5	Lyc. O-540-G1A5	Lyc. O-540-G1A5
orsepower	235	260	260
eed RPM	2575	2700	2700
ches	5.125	5.125	5.125
Inches	3.875	4.375	4.375
ment (cubic inches)	541.5	541.5	541.5
ssion Ratio	7.20:1	8.5:1	8.5:1
ght, Pounds	368	384	386
Capacity (quarts)	12	12	12
ation (Min. Octane)	80/87	100/130	100/130

IANCE	Clean	Duster	Sprayer	Clean	Duster	Sprayer	Clean	Duster	Sprayer
Run (ft.)	785	956	800	730	890	740	660	830	680
Run over 50 ft.									
er	1350	1470	1370	1250	1420	1270	1200	1370	1220
of Climb Speed (MPH)	83	80	83	83	83	83	83	83	83
le of Climb (MPH)		71	73						
Climb (ft. per min.)	700	500	630	755	555	685	775	575	705
Ceiling (ft.)		9000	13,000						
d (MPH)	124	110	117	128	113	120	128	113	120
Speed (75% power)									
	114	100	105	118	103	108	118	103	108
sumption (75% power)									
	14	14	14	14.1	14.1	14.1	14.1	14.1	14.1
Range (75% power)									
	290	255	270	300	260	275	300	260	275
Speed at Maximum									
, flap down (MPH)	61	61	61	61	61	61	61	61	61
Speed as usually	46	46	46	46	46	46	46	46	46
	(at 1700 lbs.)	(at 1700 lbs.)	(at 1700 lbs.)	(at 1700 lbs.)	(at 1700 lbs.)	(at 1700 lbs.)	(at 1700 lbs.)	(at 1700 lbs.)	(at 1700 lb
Roll at gross	850	850	850	850	850	850	850	850	850

IFICATION FEATURES: (cont.) PA-25-235 [illegible]itch) -260 (Constant Speed)

GHTS	Sprayer	Duster	Spr[illegible]	Duster	Duster
ss Weight (lbs.)	2900	2900	290[illegible]	2900	2900
pty Weight (lbs.)	1523	1514	154[illegible]	1531	1556
EFUL LOAD (lbs.)	1377	1386	1360	1369	1353
per Load (lbs.)	1200	1200	1200	1200	1200
L AND OIL					
el Capacity (gal)		38		38	38
(Fuel tank with liner, See Figure 2, page 9)					
Capacity (qts.)		12		12	12
ENSIONS					
ng Span (ft.)		36.2		36.2	36.2
ng Area (sq. ft.)		183		183	183
ng Loading (lbs per sq. ft.)		15.8		15.8	15.8
ngth (ft.)		24.7		24.7	24.7
ght (ft.)		7.2		7.2	7.2
ver Loading (lbs per HP)		12.3		11.1	11-1
peller Diameter (max. in.)		84		84	84
DING GEAR					
e Pressure (lbs.) Main		25		25	25
Tail		50		50	50
e Size Main (four ply)		8:00 x 6		8:00 x 6	8:00 x 6
Tail (four ply)		3:00 x 4		3:00 x 4	3:00 x 4


114"
18 3/4"
45 1/2"
102 1/4"
63"
633"
DIHEDRAL
84"
86"
84"
STATIC
GROUNDLINE
8' 42"
295 1/2"

SECTION II

DESIGN INFORMATION

SECTION II

DESIGN INFORMATION

ENGINE AND PROPELLER

The PA-25-235 is powered by a Lycoming O-540-B2C5 engine rated at 235 HP at 2575 RPM, with a compression ratio of 7.20:1 and the PA-25-260 by a Lycoming O-540-G1A5 engine rated at 260 HP at 2700 RPM, with a compression ratio of 8.50:1. The six cylinder, direct drive, carburetor equipped 235 HP engine requires 80/87 minimum octane aviation fuel while the 260 HP engine requires 100/130 minimum octane aviation fuel.

Exhaust gases are carried through a single muffler system constructed of heavy gauge stainless steel and directed overboard at the right of the cowl. The muffler shroud provides a source of heat for the cabin interior, while carburetor heat is furnished by a separate shroud located on the right exhaust stack.

The carburetor air filter is of the dry pleated-paper type which features very efficient filtering action with negligible restriction to carburetor inlet flow. Also standard is a full flow oil filter, with easily replaceable cartridges.

The standard propeller on the PA-25 is a McCauley one-piece metal design. Also available for the PA-25-260 is either a Hartzell HC-C2YK-1/8477-0 or a McCauley B2D34C16/84HF-0 constant speed propeller.

FUSELAGE AND WINGS

The fuselage frame is constructed of steel tubes, gas welded to form a rigid structure. Highly stressed members are made of 4130 chrome-moly steel, others are of 1025 steel.

Repairs to the fuselage can be made in accordance with

the requirements of F.A.A. Manual 18 or Aviation Circular 43.13-1. Repair facilities for this type of construction are commonly available.

The fuselage structure is treated as follows to eliminate corrosion. The interior of the lower tubing is coated with Lionoil to prevent internal corrosion. The longerons and diagonal tubes are completely sprayed with zinc chromate primer followed by a coating of Rexton Activated Copon paint. A paste mixture composed of Permalite and polyester resin is applied at various points on the structure to eliminate dust pockets. Dope sealer is applied to the frame at points where fabric attaches.

The wing framework consists of riveted aluminum ribs mounted on extruded aluminum spars with tubular drag and compression struts and high strength stainless steel drag wires. Aluminum sheet is used to form the leading edge and the false spars. An ash wing-tip bow provides a light tough member which can withstand considerable wing tip shock without failing.

The wings are attached to the fuselage at fittings on the lower longerons, and by means of compression struts which bolt to upper fuselage members and wing spar fittings. The rear struts may be adjusted by means of a threaded attachment fitting at the outboard end of the struts. This adjustment is used to set the rigging of the wings.

LANDING GEAR

The Pawnee "C" landing gear employs two air-oil shock absorbers designed for minimum maintenance operation. (Consult Section IV for shock absorber maintenance.)

The only maintenance normally required is lubrication of the hinge bolts and each end of the shock struts according to the lubrication chart. The steel hinge bolt bushings should be inspected and replaced if worn.

The Scott 8" steerable, full-swivel tail wheel is standard equipment on the Pawnee. This unit is combined with steel leaf springs which are easily replaced if needed.

The main wheel assemblies are Cleveland Products 40-84A with Cleveland 30-41 Disc Brake Assemblies. The tires are 8:00 x 6 four ply rating. Tires should be inflated to 25 psi to prevent slippage and to produce even wear.

EMPENNAGE

The fin, rudder, stabilizers and elevator are all constructed of tubular steel with steel channel ribs. The control surface hinges have bronze bushing inserts and should be oiled according to lubrication chart. The elevators and the rudder are designed with an aerodynamic balance to increase stability and lighten control forces.

Double stainless steel tie rods and fittings brace the stabilizers to the fin and fuselage. The tail brace wires should not be used for lifting or ground handling of the airplane.

CONTROL SYSTEM

Conventional flight and engine controls are provided in the Pawnee. The flap lever has three positions, full up, half, or full down. The flaps are provided for an increased angle of descent only and should not be used for take-off or climb.

The elevator trim control is located on the left side of the cockpit and consists of a two-spring system with an irreversible geared crank mechanism. This system normally requires very little maintenance except for inspection and lubrication according to lubrication chart.

FUEL SYSTEM

Located in the first fuselage bay aft of the firewall is a 38 gallon, non-corrosive, fiberglas reinforced, plastic fuel tank incorporating a polyurethane and nylon liner. The liner is a safety feature incorporated to prevent fuel spillage in the event of a severe impact. The fuel quantity gauge is a float-type direct indicating unit installed in the top of the tank within easy view of the cockpit. The fuel shut-off valve is controlled by a "T" handle on the right side of the cockpit.

The fuel strainer, on the lower forward side of the firewall in the engine compartment, traps water or sediment that may collect in the system. Additional fuel screens are provided at the tank outlet and in the carburetor. The quick-drain valve on the strainer should be checked daily for water or dirt.

The fuel tank itself has an external vent line, and a non-vented fuel cap is used.

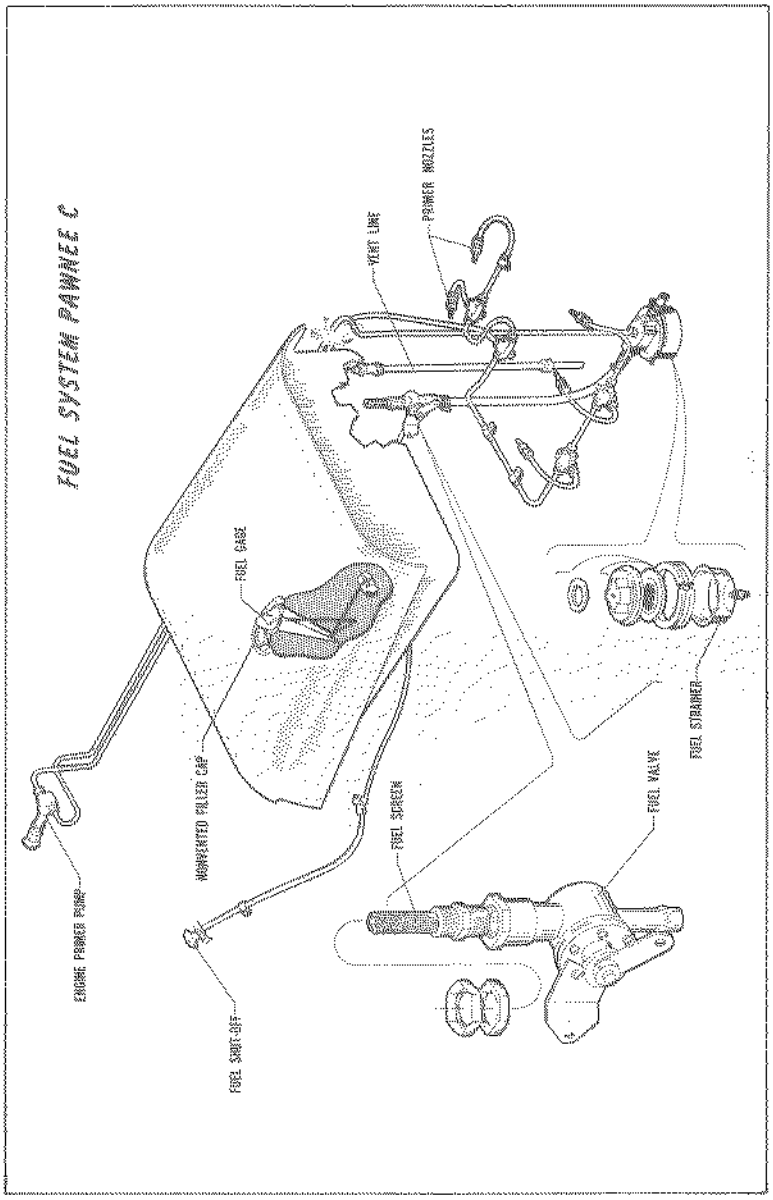
The engine primer pump on the left hand side of the instrument panel takes fuel from the top of the fuel strainer and pumps directly to the cylinders of the engine. The primer should be locked in at all times except when in use, to prevent malfunctioning of the engine.

An idle cut-off is incorporated in the mixture control. The engine should be stopped with the idle cut-off.

ELECTRICAL SYSTEM

A 12-volt 25-ampere hour battery, voltage regulator, ammeter, starter solenoid, alternator, circuit breakers, stall warning light, switches, and related wiring are all included as standard equipment on the Pawnee.

The battery is located in a box in the fuselage just forward of the horizontal stabilizer. It is accessible through the removable turtle deck. The master solenoid and an energizing diode are located on the forward side of the battery box. The diode excites a circuit permitting a completely dead battery to


FUEL SYSTEM PAWNEE C
PRIMER NOZZLES
VENT LINE
FUEL GAGE
FUEL STRAINER
MANUFACTURED FILLER CAP
FUEL SCREEN
FUEL VALVE
ENGINE PRIMER PUMP
FUEL SHUT-OFF

be charged after the engine is cranked manually. The voltage regulator is attached to the underside of the floorboard.

All switches, ammeter and circuit breakers are grouped on the right side of the instrument panel. The circuit breakers automatically break the electrical circuits if an overload is applied. When resetting an open circuit breaker, allow sufficient time for the breaker to cool before applying power to the circuit again.

Position lights, anti-collision lights, landing lights and instrument lights are available as optional equipment.

FINISH

The finish of the Pawnee consists of fire-resistant butyrate plastic material on the fabric surfaces and Rexton enamel on metal surfaces.

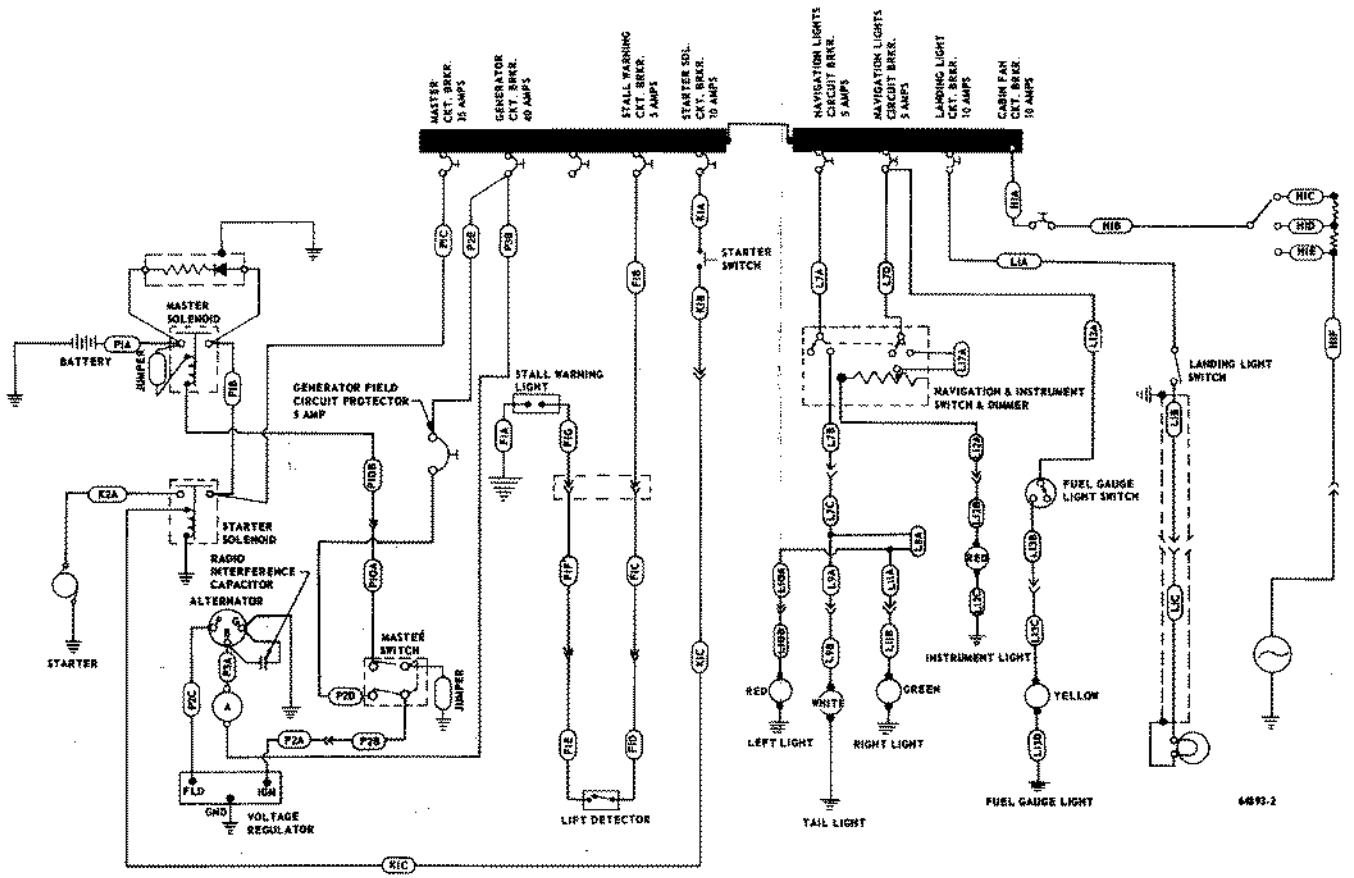
The butyrate finish must not be covered over with any incompatible material. The use of different materials from those originally applied will damage the finish.

CABIN FEATURES

The standard instrument group in the Pawnee includes the following: Altimeter, Airspeed, Compass, Oil Temperature and Pressure Gauge, and Tachometer.

The seat is adjustable fore and aft and up and down. The angle of the seat back is not adjustable.

The inertia reel for the shoulder harness installed in the Pawnee has a manual control to lock or unlock the harness in any position as well as an automatic locking device which will



ALTERNATOR AND STARTER SYSTEM SCHEMATIC

lock the reel automatically in any position upon application of more than 2-1/2 ± 1/2 G inertia load on the reel.

When the lock is set automatically and the manual control is in the unlocked position, or when the lock is unlocked manually with a shoulder harness cable load, the cable drum will remain locked after both the inertia and the shoulder harness cable loads are released. Upon removal of these loads and operation of the manual control from the unlocked to the locked position and return to unlocked position, the reel shall automatically retract the shoulder harness cable.

The cabin ventilation system serves two purposes:

1. It provides cabin and fuselage pressurization to prevent the entrance of dust and toxic fumes into the airplane.

2. It provides ventilating air to the pilot.

The pressurization is controlled by the most forward door in the canopy. When the door is opened, pressurizing air flows through the chamber in the top of the canopy and is ejected into the fuselage at the rear of the canopy. The pressurizing system should be in use during all spraying and dusting operations.

Cabin ventilation is obtained by bleeding air from the pressurizing air chamber. The flow of air can be controlled by the circular ventilator located forward and above the pilot's head, and the "Y" shaped ventilator located at the rear of the cabin. The most forward door must be opened in order to obtain any cabin ventilation.

The control to regulate the flow of hot air to the cabin is by means of the cabin-heat control located just below the right corner of the instrument panel. To better distribute the heated air within the cabin, the circulation fan may be turned on to the low position.

Emergency door releases are located on each side of the instrument panel. To operate, pull red tee handle hard enough to break safety wire then push out door.

SECTION III

OPERATING INSTRUCTIONS

SECTION III

OPERATING INSTRUCTIONS

PREFLIGHT

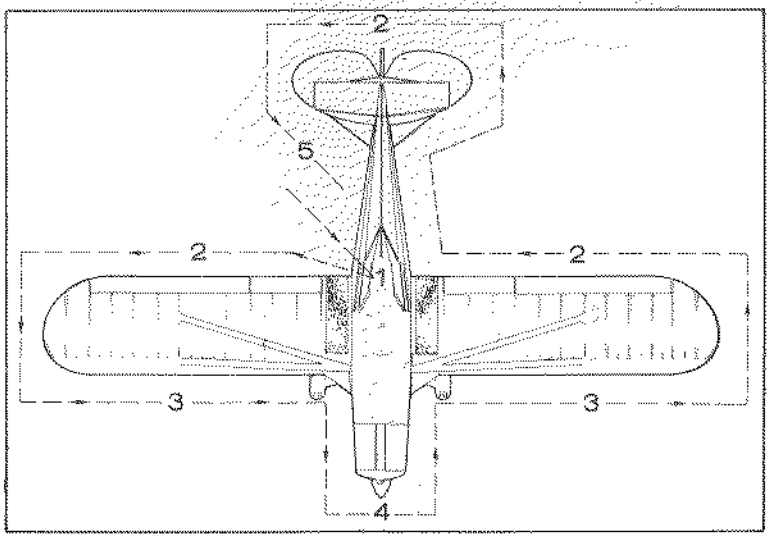
The preflight should be a careful visual inspection made prior to flight. The following is an outline for preflighting the Pawnee.

1. a. As the aircraft is approached check the general appearance.

b. Check cockpit for general appearance. Check the master and magneto switches in off position.

c. Check windshield and condition of cockpit enclosure.

2. a. Check top side of wings, strut security, flap and aileron security and wing tip light.



b. Check tail surfaces, tail brace wires and fittings for condition and security.

3. a. Check leading edge of wing for dents and condition.

b. Check landing gear for security, check tires for proper inflations, cuts and flat spots.

4. a. Check propeller and spinner for condition and security.

b. Open engine cowling and check for oil capacity. Check engine and accessories for security.

c. Drain fuel strainer. Allow sufficient fuel to drain so that the system is free of sediment.

d. Check fuel tank for leaks and quantity.

e. Check air filter for security.

5. a. If agricultural equipment is installed, check for security and general condition.

b. Check turtle deck for condition and security.

BEFORE OPERATION

1. Fasten safety belt.

2. Operate the flight controls and check for freedom of movement and proper operation.

3. Set parking brake.

STARTING ENGINE

When the engine is cold, prime three to five strokes. Push mixture control to full rich, prop pitch to full increase RPM (if so equipped), carburetor heat off, and open throttle about one-eighth inch.

Next place left magneto switch in the on position, turn on master switch, and with brakes set, push starter button. If the engine does not start in the first few revolutions open the throttle an additional one-half inch, while the engine is still turning over on the starter. If the engine appears to be loading up, open

throttle completely; when engine starts retard throttle to desired idle position and turn on right magneto switch.

When the engine is warm, do not prime before starting.

WARM-UP AND GROUND CHECK

As soon as the engine starts, the oil pressure should be checked. If no pressure is indicated within thirty seconds, stop the engine and determine the trouble.

Warm up the engine at 800 to 1000 RPM for not more than two minutes in warm weather, four minutes in cold weather. The magnetos should be checked at 1800 RPM, the drop not to exceed 125 RPM. The engine is warm enough for take-off when the throttle can be opened without the engine faltering.

If installed, the constant speed prop control should be moved through its complete range to check for proper operation and then placed to increase RPM for take-off.

Carburetor heat should be checked during the warm up to insure the correct operation of the control and the availability of heat if needed.

TAKE-OFF, CLIMB AND LEVEL FLIGHT

The fuselage, forward of the cockpit, was designed to give better visibility. During take-off and in flight the nose appears to have a nose-down attitude. If the nose-down appearance is kept in mind during the operator's first few take-offs, no difficulty should be encountered in obtaining the correct attitude.

If desired, a level flight may be simulated by raising the tail on a tail stand to a level position. With the airplane in this position, the nose attitude as seen from the cockpit is correct for take-off. Because of the nose down appearance, propeller clearance is sometimes questioned and should be observed while the aircraft is in this position to eliminate any doubts of adequate

clearance.

The elevator trim should be set three quarters of its travel nose up for take-off. The mixture should be full rich, and the carburetor heat off. The flaps should be retracted for take-off at all times. The best rate of climb speed for the Pawnee sprayer is 83 MPH, while 80 MPH is recommended for the duster.

After take-off hold the best rate of climb speed. In this attitude (normal climb) the nose attitude will appear a little low. Check the airspeed with the nose attitude until the attitude of the airplane has been determined. This is the best climb attitude and raising the nose higher will only decrease the rate of climb.

STALLS

Normal maneuvers in the Pawnee are permitted. A slip, skid, or high rate of roll will cause a slight buffet, however, this should not be interpreted as a stall warning but an indication of unbalanced flight. A slight buffet may also be felt in a steep, abrupt, pull-up but this is similar to the buffet felt in a high rate-of-roll maneuver and should not cause concern.

In any attitude or under any loading condition the stall is preceded by a moderate aerodynamic buffet and a proportional decrease in stick forces. All controls are effective up to and completely through the stall and there is no noticeable tendency to enter a spin after the stall.

With agricultural equipment installed the flaps down stall speed is 61 MPH, flaps up 62 MPH.

CRUISING

The cruising speed with agricultural equipment at gross

load under standard sea level conditions at 75% power for the PA-25-235 is 105 MPH with the sprayer installation and 100 MPH with the duster installation. For the PA-25-260 the speeds are 108 MPH and 103 MPH for the fixed pitch and 108 MPH and 103 MPH for the controllable pitch. At 75% power, fuel consumption will be approximately 14 gallons per hour for the PA-25-235 and 14.1 for the PA-25-260. See fuel consumption charts for additional information.

APPROACH AND LANDING

During the approach, trim elevator to maintain a glide speed of 75 MPH. Flap extension should not exceed 109 MPH. The mixture should be full rich, prop set to increase RPM, and carburetor heat off unless icing conditions prevail. The engine should be cleared occasionally by opening the throttle.

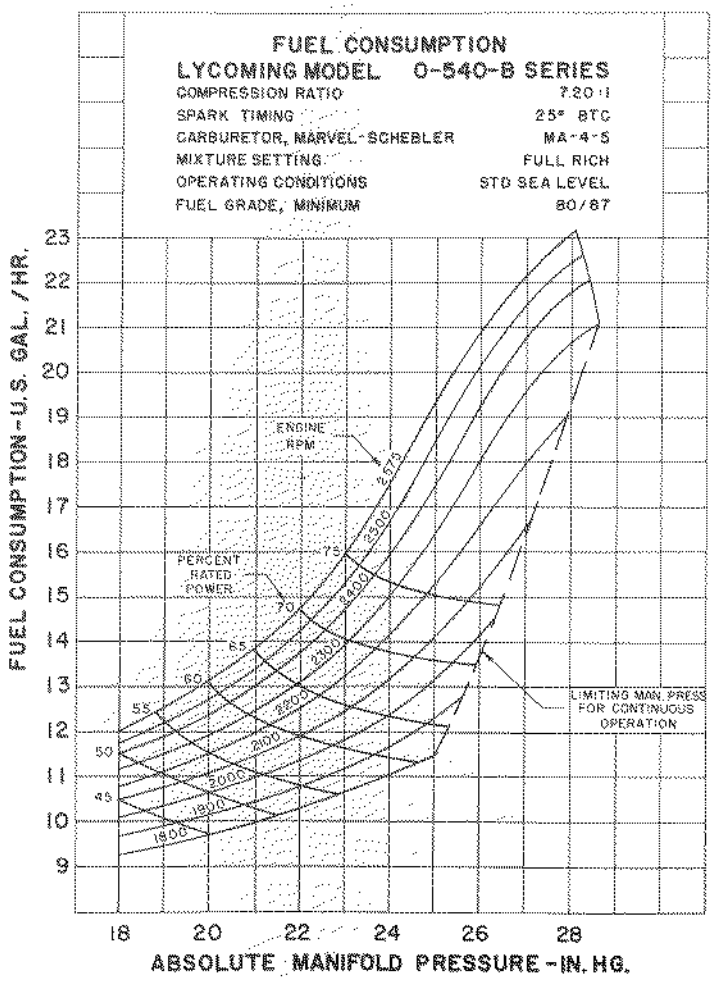
During the landing roll steer the airplane with the rudder pedals, using brakes as little as possible to avoid excessive brake and tire wear.

To stop the engine after landing, pull the mixture control full back to idle cut-off. After the engine stops turn magneto and master switches off.

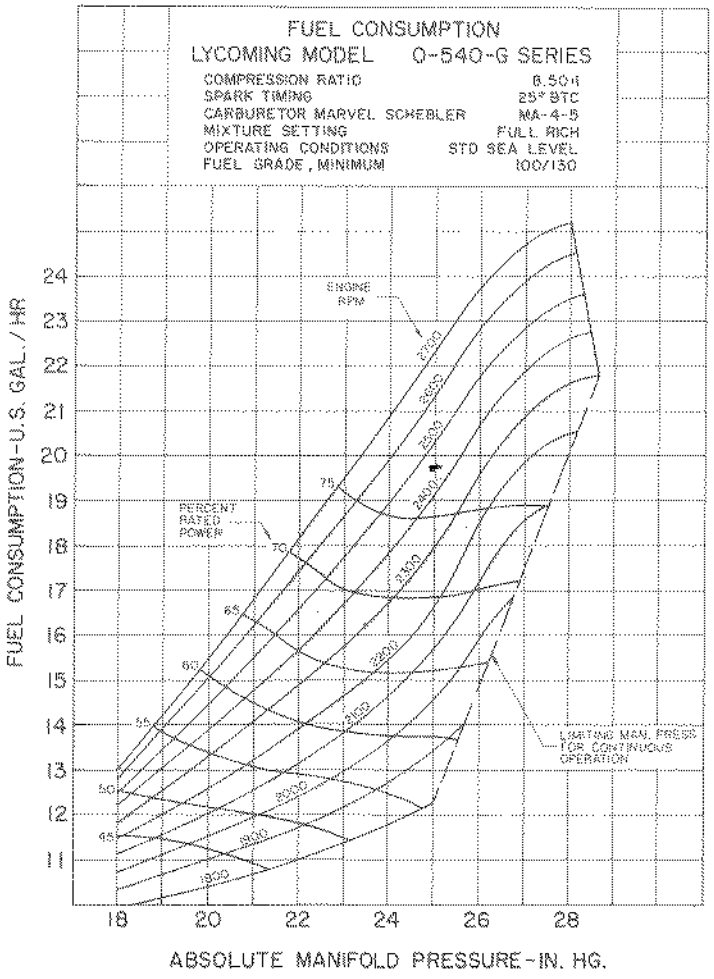
WEIGHT AND BALANCE

For weight and balance data, see the weight and balance form supplied with each airplane.

PIPER PAWNEE
PA-25-235



PIPER PAWNEE
PA-25-260



Power Setting Table - Lycoming Model O-540-E,-G, 260 HP Engine

Press. Alt Feet	Std. Alt Temp °F	143 HP – 55% Rated RPM AND MAN. PRESS. 2100	2200	2300	2400	169 HP – 65% Rated RPM AND MAN. PRESS. 2100	2200	2300	2400	195 HP – 75% Rated RPM AND MAN. PRESS. 2200	2300	2400	2500	Press. Alt Feet
SL	59	21.7	20.8	20.2	19.5	24.6	23.6	22.7	21.9	26.3	25.3	24.4	23.8	SL
1,000	55	21.5	20.6	20.0	19.3	24.4	23.3	22.5	21.7	26.0	25.0	24.1	23.5	1,000
2,000	52	21.3	20.4	19.8	19.1	24.1	23.1	22.2	21.5	25.7	24.8	23.9	23.3	2,000
3,000	48	21.0	20.1	19.6	18.9	23.8	22.9	22.0	21.2	25.4	24.5	23.6	23.0	3,000
4,000	45	20.8	19.9	19.4	18.7	23.6	22.6	21.8	21.0	25.1	24.2	23.3	22.7	4,000
5,000	41	20.6	19.7	19.2	18.4	23.3	22.4	21.5	20.8	24.8	23.9	23.0	22.5	5,000
6,000	38	20.4	19.5	18.9	18.2	23.1	22.2	21.3	20.6	--	23.7	22.8	22.2	6,000
7,000	34	20.2	19.3	18.7	18.0	22.8	22.0	21.1	20.4	--	--	22.5	22.0	7,000
8,000	31	20.0	19.1	18.5	17.8	22.6	21.8	20.8	20.1	--	--	22.3	21.7	8,000
9,000	27	19.8	18.8	18.3	17.6	--	21.6	20.6	19.9					9,000
10,000	23	19.6	18.6	18.1	17.4	--	--	20.3	19.7					10,000
11,000	19	19.4	18.4	17.9	17.2	--	--	--	19.5					11,000
12,000	16	19.2	18.2	17.7	17.0				19.3					12,000
13,000	12	--	17.9	17.4	16.8									13,000
14,000	9	--	17.7	17.2	16.6									14,000
15,000	5	--	--	17.0	16.4									15,000

To maintain constant power, correct manifold pressure approximately 0.17" Hg for each 10° F variation in carburetor air temperature from standard altitude temperature. Add manifold pressure for air temperature above standard; subtract for temperatures below standard.

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