AVIAT AIRCRAFT INC.

AIRPLANE FLIGHT MANUAL

MODEL PITTS S-2B AIRPLANE

FAA APPROVED: _____
for RON MAY, MANAGER
DENVER AIRCRAFT
CERTIFICATION OFFICE
NORTHWEST MOUNTAIN
REGION FEDERAL AVIATION
ADMINISTRATION

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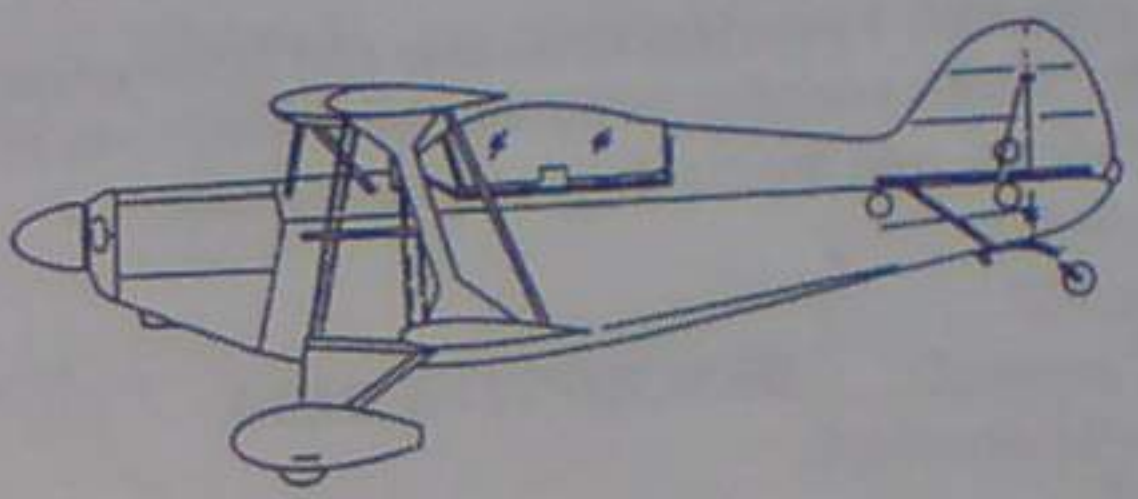
OVERALL DIMENSIONS

Wing span:	20 ft. (6.1 m)
Length:	17 ft 9 in (5.5 m)
Height:	6 ft 5 in (1.9 m)



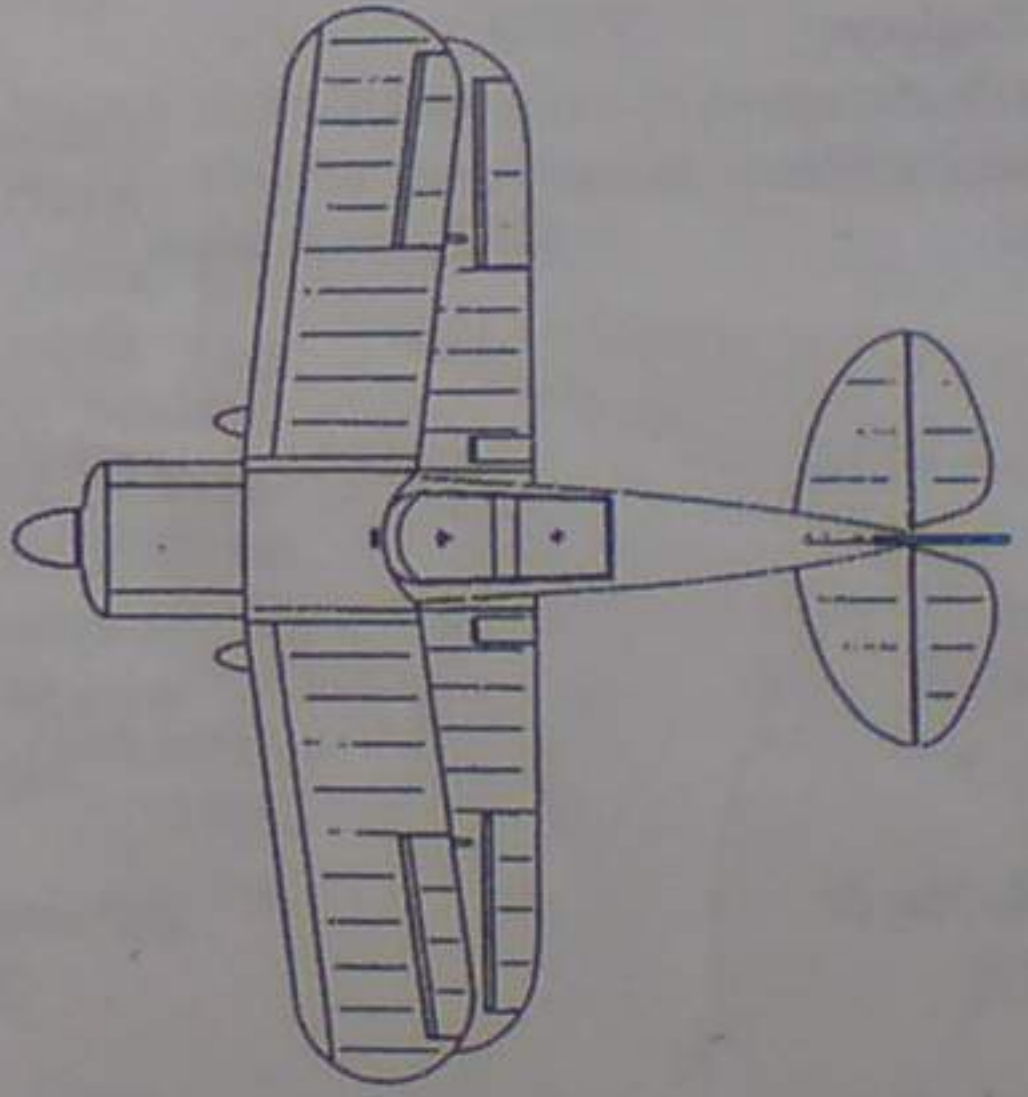


Figure 1-1 Two View

NMPG	**Nautical Miles Per Gallon** is the distance (in nautical miles) which can be expected per gallon of fuel consumed at a specific engine power setting and/or flight configuration.
SMPG	**Statute Mile Per Gallon** is distance (in statute miles) which can be expected per gallon of fuel consumed at a specific engine power setting and/or flight configuration.
g	**g** is acceleration due to gravity.

WEIGHT AND BALANCE TERMINOLOGY

Reference Datum	**Reference Datum** is an imaginary vertical plane from which all horizontal distances are measured for balance purposes.
Station	**Station** is a location along the airplane fuselage given in terms of the distance from the reference datum.
Arm	**Arm** is the horizontal distance from the reference datum to the center of gravity (C.G.) of an item.
Moment	**Moment** is the product of the weight of an item multiplied by its arm.

Center of Gravity	**Center of Gravity** is the point at which an airplane, or equipment, would balance if suspended. Its distance from the reference datum (C.G.) is found by dividing the total moment by the total weight of the airplane.
C.G. Arm	**Center of Gravity Arm** is the arm obtained by adding the airplane's individual moments and dividing the sum by the total weight.
C.G. Limits	**Center of Gravity Limits** are the extreme center of gravity locations within which the airplane must be operated at a given weight.
Standard Empty Weight	**Standard Empty Weight** is the weight of a standard airplane, including unusable fuel, full operating fluids and full engine oil.
Basic Empty Weight	**Basic Empty Weight** is the standard empty weight plus the weight of optional equipment.
Useful Load	**Useful Load** is the difference between ramp weight and the basic empty weight.
Maximum Ramp Weight	**Maximum Ramp Weight** is the maximum weight approved for ground maneuver. (It includes the weight of start, taxi and run up fuel.)

Gross (Loaded) Weight	**Gross (Loaded) Weight** is the loaded weight of the airplane.
Maximum Takeoff Weight	**Maximum Takeoff Weight** is the maximum weight approved for the start of the takeoff run.
Maximum Landing Weight	**Maximum Landing Weight** is the maximum weight approved for the landing touchdown.
Tare	**Tare** is the weight of chocks, blocks, stands, etc. used when weighing an airplane, and is included in the scale readings. Tare is deducted from the scale reading to obtain the actual (net) airplane weight.

CONVERSIONS

Miles Per Hour	X	.8690	=	Knots
Nautical Miles	X	1.852	=	kilometers
Feet	X	0.305	=	meters
Inches	X	0.0254	=	meters
Inches	X	2.54	=	centimeters
Inches	X	25.4	=	millimeters
Feet/Minute	X	.00508	=	meter/sec
Gallons (US)	X	3.785	=	liters
Gallons (Imp)	X	4.546	=	liters
Quarts (US)	X	.946	=	liters
Knots	X	1.852	=	km/h
PSI	X	.0689	=	bar
In.Hg	X	33.86	=	mbar
lb	X	.453	=	kg
(°F-32)	X	5/9	=	°C

Knots	X	1.1508	=	MPH
Kilometers	X	0.539	=	Nautical mile
Meters	X	3.281	=	Feet
Meters	X	39.37	=	Inches
Centimeters	X	3.937	=	Inches
Millimeters	X	.03937	=	Inches
Meter/sec	X	197	=	Feet/minute
Liters	X	.264	=	Gallons (US)
Liters	X	.220	=	Gallons (Imp)
Liters	X	1.057	=	Quarts (US)
Km/h	X	.539	=	Knots
bar	X	14.51	=	PSI
Mbar	X	.02953	=	In.Hg
Kg	X	2.205	=	lb
°C	X	9/5+32	=	°F

INTRODUCTION

This Airplane Flight Manual contains 10 Sections, and includes the material required to be furnished to the pilot by FAR Part 23. It also contains supplemental data supplied by Aviat Aircraft Inc.

Section 1 provides basic data and information of general interest. It also contains definitions or explanations of symbols, abbreviations, and terminology commonly used.

DESCRIPTIVE DATA

ENGINE

Number of Engines:	1
Engine Manufacturer:	Textron Lycoming
Engine Model Number:	AEIO 540-D4A5
Engine Type:	Normally-aspirated, direct-drive, air-cooled, horizontally-opposed, fuel injected, aerobatic with inverted oil, six-cylinder engine with 541.5 cu. in displacement.
Horsepower Rating & Engine Speed:	260 rated BHP @ 2700 RPM

PROPELLERS

Standard Manufacturer:		Hartzell
Model Number:		HC-C2YR-4CF/FC8477A-4
Number of Blades:		2 Metal
Diamete	Maximum:	80 inches (2.03 m)
	Minimum:	78 inches (1.98 m)
Propeller Pitch settings		
	High:	32° to 34°
	Low:	11° + or -.1° @ 30 inch station.
Propeller Type:		Constant speed and hydraulically actuated.

Optional

NOTE

Optional propeller installed in new aircraft at Aviat Aircraft per TC, also for retrofit when installed in accordance with serialized Aviat Aircraft Kit.

Manufacturer:		MT-Propeller
Model Number:		MTV-9-B-C/C190-18a
Number of Blades:		3 Composite
Diameter	Maximum:	75 inches (190 cm)
	Minimum:	75 inches (190 cm)
Propeller Pitch settings		
	High:	30° + or - 1°
	Low:	13° + or - .2° @ 26.18 in (6.5 cm) station.
Propeller Type:		Constant Speed and hydraulically actuated.

FUEL

Approved Fuel Grades (and Colors):

100 (Formerly 100/130) Grade Aviation Fuel (Green).
100LL Grade Aviation Fuel (Blue).

Fuel Capacity

Standard Tanks Normal Flight

Total Capacity:	29 US gal (109.7 L)
Total Capacity	
main:	24 US gal (90.8 L)
wing:	5 US gal (18.92 L)
Total Useable:	28 US gal (105.9 L) during normal flight conditions.

Standard Tanks Aerobatic Flight:

Total Capacity:	24 US gal (90.8 L)
Total Capacity	
main:	24 US gal (90.8 L)
wing:	0 US gal (0.0 L)
Total Useable:	23 US gal (87.0 L)

WARNING NOTE

Do not perform low altitude aerobatics with less than 1/4 tank of fuel in the main tank. **Wing tank is for ferry use only.**

OIL

Oil Grade (Specification):

1. MIL-I-6082 Aviation Grade Straight Mineral Oil: Use to replenish supply during first 25 hours and at the first 25-hour oil change. Continue to use until a total of 50 hours has accumulated or oil consumption has stabilized.

NOTE

The airplane was delivered from the factory with Aviation Grade Straight Mineral oil. This oil should be drained after the first 25 hours of operation.

2. MIL-L-22851 Ashless Dispersant Oil: This oil must be used after the first 50 hours or when oil consumption has stabilized.

Recommended Viscosity For Temperature Range:

MIL-L-6082 Aviation Grade Straight Mineral Oil:

SAE 50 above	60°F (16°C).
SAE 40 between	30°F (-1°C) and 90°F (32°C).
SAE 30 between	0°F (-1°C) and 70°F (21°C).
SAE 20 below	10°F (-12°C).

MIL-L-22851 Ashless Dispersant Oil:

SAE 40 or SAE 50 above	60°F (16°C)
SAE 40 between	30°F (-1°C) and 90°F (32°C)
SAE 30 or SAE 40 between	0°F (-18°C) and 70°F (21°C)
SAE 30 below	10°F (-12°C)

Oil Capacity:

Sump:	12 Quarts (11.3 L)
Total:	13 Quarts (12.3 L)

MAXIMUM CERTIFICATED WEIGHTS

Takeoff	
Normal Category:	1700 lbs (770.1 kg)
Aerobatic Category:	1625 lbs (736.1 kg)
Landing:	1700 lbs (770.1 kg)
Baggage Compartment:	20 lbs (9.01 kg)

WARNING NOTE

The maximum weight capacity for baggage area is 20 lbs. (9.01 kg). **NO AEROBATIC MANEUVERS WITH BAGGAGE.**

STANDARD AIRPLANE WEIGHTS

Standard Empty Weight:	1150 lbs (520.9 kg)
Maximum Useful Load	
Normal Category:	550 lbs (249.1 kg)
Aerobatics:	475 lbs (215.2 kg)

COCKPIT ENTRY DIMENSIONS

(RESERVED)

BAGGAGE SPACE AND ENTRY DIMENSIONS

(RESERVED)

SPECIFIC LOADINGS

Wing Loading	
Normal:	13.6 lb./sq.ft.
Aerobatic:	13 lb./sq.ft.
Power Loading	
Normal:	6.5 lb./hp
Aerobatic:	6.25 lb./hp

SYMBOLS, ABBREVIATIONS AND TERMINOLOGY

GENERAL AIRSPEED TERMINOLOGY AND SYMBOLS

KTCAS	**Knots Calibrated Airspeed** is indicated airspeed corrected for position and instrument error and expressed in knots. Knots calibrated airspeed is equal to KTAS in standard atmosphere at sea level.
KTIAS	**Knots Indicated Airspeed** is the speed shown on the airspeed indicator and expressed in knots.
KTAS	**Knots True Airspeed** is the airspeed expressed in knots relative to undisturbed air which is KTCAS corrected for altitude and temperature.
MPHIAS	**MPH Indicated Airspeed** is the speed that is shown on the airspeed indicator and expressed in MPH.
MPHTAS	**MPH True Airspeed** is the airspeed expressed in mph relative to undisturbed air which is MPHCAS corrected for altitude and temperature.
V_A	**Maneuvering Speed** is the maximum speed at which you may use abrupt control travel.
V_{NO}	**Maximum Structural Cruising Speed** is the speed that should not be exceeded except in smooth air, then only with caution

V_{NE}	**Never Exceed Speed** is the speed limit that may not be exceeded at any time.
V_S	**Stalling Speed or the minimum steady flight speed** at which the airplane is controllable.
V_X	**Best Angle-of-Climb Speed** is the speed which results in the greatest gain of altitude in a given horizontal distance.
V_Y	**Best Rate-of-Climb Speed** is the speed which results in the greatest gain in altitude in a given time.

METEOROLOGICAL TERMINOLOGY

OAT	**Outside Air Temperature** is the free air static temperature. It is expressed in either degrees Celsius (formerly Centigrade) or degrees Fahrenheit.
Standard Temperature	**Standard Temperature** is 59° F (15°C) at sea level pressure altitude and decreases by 3.6° F (2°C) for each 1000 feet of altitude.
Pressure Altitude	**Pressure Altitude** is the altitude read from an altimeter when the altimeter's barometric scale has been set to 29.92 inches of mercury (1013 mb).

ENGINE POWER TERMINOLOGY

BHP	**Brake Horsepower** is the power developed by the engine.
RPM	**Revolutions Per Minute** is engine speed.
MP	**Manifold Pressure** is a pressure measured in the engine induction system and is expressed in inches of mercury (Hg).

AIRPLANE PERFORMANCE AND FLIGHT PLANNING TERMINOLOGY

Demonstrated Crosswind Velocity	**Demonstrated Crosswind Velocity** is the velocity of the crosswind component for which adequate control of the airplane during takeoff and landing was actually demonstrated during certification tests. The value shown is not considered to be limiting.
Usable Fuel	**Usable Fuel** is the fuel available for flight planning.
Unusable Fuel	**Unusable Fuel** is the quantity of fuel that can not be safely used in flight.
GPH	**Gallons Per Hour** is the amount of fuel (in gallons) consumed per hour.

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INTRODUCTION

Section 2 includes operating limitations, instrument markings, and basic placards necessary for the safe operation of the airplane, its engine, standard systems and standard equipment. The limitations included in this section have been approved by the Federal Aviation Administration. When applicable, limitations associated with optional systems or equipment will be included in Section 9.

NOTE

The airspeeds listed in the Airspeed Limitations chart and the Airspeed Indicator Markings chart are based on Airspeed Calibration data shown in Section 5 with the normal static source, with the exception of the bottom of the green arc on the airspeed indicator. If the alternate static source is being used, ample airspeed margins should be observed to allow for the airspeed calibration variations between the normal and alternate static sources as shown in Section 5.

Your Pitts is certificated under FAA Type Certificate # A8S0 as Pitts Model S-2B.

FUEL LIMITATIONS

Standard Tanks

Fuselage Tank:	24 U.S. gal (90.8L)
Total Fuel:	24 U.S. gal (90.8L)
Usable Fuel:	23 U.S. gal (87.0L)
Unusable Fuel:	1 U.S. gal (3.7L)
Auxiliary Wing Tank:	5 U.S. gal (18.9L)
Total Fuel:	5 U.S. gal (18.9L)
Usable Fuel:	5 U.S. gal (18.9L)
Unusable Fuel:	0 U.S. gallons level flight only (Normal Category)
Unusable Fuel:	5 U.S. gal (18.9L) (Aerobatic Category)

NOTE

The auxiliary wing tank is usable for cross country flight ONLY. Before draining auxiliary wing tank into fuselage tank, burn enough fuel in fuselage tank to hold auxiliary fuel or fuel will be transferred overboard.

WARNING

DO NOT PERFORM LOW ALTITUDE AEROBATICS WITH LESS THAN 1/4 TANK OF FUEL IN FUSELAGE TANK.

Approved Fuel Grades (and Colors):

100 LL Grade Aviation Fuel (Blue).

100 (Formerly 100/130) Grade Aviation Fuel (Green).

PLACARDS

The following information is displayed in the form of composite or individual placards.

1. In view of the pilot on left hand side of rear cockpit fairing:

"This airplane must be operated as a normal or an aerobatic category airplane in compliance with the operating limitations stated in the form of placards, markings and manuals. All markings and placards on this airplane apply to its operation as an aerobatic category airplane. For normal category operations refer to the approved airplane flight manual. Operations limited to day VFR conditions. Flight into known icing conditions prohibited.

Approved maneuvers and recommended entry speeds: (MPH)

	INSIDE		OUTSIDE	
MANEUVER	MAX	MIN	MAX	MIN
Loop (up)	180	130	180	130
Loop (dwn)	100	70	100	70
Slow Roll	180	100	180	100
Barrel Roll	180	130	180	130
Snap Roll	140	90	110	90
Hammerhead	180	130	180	130
Lazy Eight	180	140	180	140
Chandelle	180	140	180	140
Stalls & Spins	NOTE	NOTE	NOTE	NOTE

NOTE

Stalls and Spins are to be done at (Slow Deceleration)
"For spin recovery put ailerons neutral, apply full opposite rudder briskly and then apply nose down elevator. Use power off for all spin recoveries."

2. At the fuel selector handle:

Main Fuel	Aux Fuel
ON	OFF
23 gals Usable	Transfer fuel in level flight only DO NOT TRANSFER AUX FUEL until Main tank is 1/2 full or less
OFF	ON

3. Adjacent to rear airspeed indicator:
"Design maneuver speed 154 MPH"
"Demonstrated crosswind velocity 20 MPH"

4. On inside of baggage compartment door:
"No aerobatics with baggage"
"Max baggage 20 lbs."

5. Adjacent to main fuel filler neck:
"Fuel 100/130 Octane, 23 gals. usable"

6. On rear instrument panel adjacent to alternate static valve:
"Open for alternate static"

7. Adjacent to mixture control:
"Pull for lean mixture"

8. Adjacent to engine alternate air control:
"Pull for alternate air"

9. Adjacent to elevator trim control:
"Nose up", "Neutral", "Nose down"

10. Throttle quadrants:
"Open", "Throttle", "Closed"

11. Adjacent to appropriate switches:
"Boost Pump Switch", "On", "Off"
"Alternate Field Switch", "On", "Off"
"Master Switch", "On", "Off"

12. Adjacent to appropriate circuit breakers:
"Alternator"
"Alternator Field"
"Boost Pump"
"Stall Warning"
"Radio" (if installed)

13. On instrument panel:
"No Smoking"

14. Adjacent to propeller governor control:
"Prop push high RPM"

15. Adjacent to cowl flap control:
"Open, Cowl Flap, Closed"

16. In view of pilot on rear cockpit fairing:
"For flat spins use aileron with the spin for recovery"

17. Canopy:
"Canopy
1. Open Latch Lock
2. Slide aft to stop
3. Swing open to right
CAUTION: DO NOT OPEN IN FLIGHT"

"To open canopy Lock
1. Rotate latch knob to open position
2. Slide aft to stop
3. Swing open to right"

"To jettison canopy in emergency
1. Push red knob forward
2. Unlatch canopy
3. Pull canopy aft forcefully
Canopy will leave airplane at full rear travel"

"CAUTION! Keep canopy closed and latched when starting engine, taxiing, or when aircraft is parked and unattended."

18. Adjacent to alternate static valve:
"Altimeter Error,
Alternate Static on:

Airspeed, MPH	Error, ft.
80	+10
100	+20
120	+95
140	+135
160	+190

19. In view of the pilot on rear cockpit panel:
"No aerobatic maneuvers (including spins) are approved for normal category operations."

20. On Forward instrument panel:
"Solo Rear Seat Only"

AIRSPEED LIMITATIONS

Airspeed limitations and their operational significance are shown in Figure 2-1.

	SPEED	MPH CAS	KTS CAS	REMARKS
V_{NE}	Never Exceed	212	184	Do not exceed in any operations.
V_{NO}	Normal operation	154	134	Do not exceed except in smooth air.
V_A	Maneuvering	154	134	Do not make full or abrupt control movements above this speed.

Figure 2-1 Airspeed Limitations

AIRSPEED INDICATOR MARKINGS

Airspeed indicator markings and their color code significance are shown in Figure 2-2.

MARKING	AIRSPEED RANGE	SIGNIFICANCE
GREEN ARC	61 TO 154 MPH 53 TO 134 KTS	Normal operating range. Lower limit is maximum weight V_s at most forward C.G.. Upper limit is maximum structural cruising speed.
YELLOW ARC	154 TO 211 MPH 134 TO 183 KTS	Operations must be conducted with caution and only in smooth air.
RED LINE	212 MPH 184 KTS	Maximum speed for all operations.

Figure 2-2 Airspeed Indicator Markings

POWER PLANT LIMITATIONS

Engine Manufacturer: Textron Lycoming
Engine Model Number: AEIO-540-D4A5
Engine Operating Limits for takeoff and continuous operations:
Maximum Power: 260 BHP
Maximum Engine Speed: 2700 RPM
Maximum Cylinder Head Temperature: 500°F (260°C)
Maximum Oil Temperature: 245°F (118°C)
Oil Pressure
Minimum: 25 PSI (1.7 bar)
Maximum: 100 PSI (6.89 bar)

Standard Propeller	
Manufacturer:	Hartzell
Model Number:	HC-C2YR-4CF/FC8477A-4
Number of blades	2 Metal
Diameter Maximum:	80 ins. (2.03 m)
Minimum:	78 ins. (1.98 m)
Propeller Blade Angle at 30 in (76.2cm) Station	
High:	32° to 34°
Low:	11° + or - .1°@ 30 inch station.

Optional Propeller

NOTE

Optional propeller installed in new aircraft at Aviat Aircraft per TC, also for retrofit when installed in accordance with serialized Aviat Aircraft Kit.

Manufacturer:	MT-Propeller
Model Number:	MTV-9-B-C/C190-18a
Number of Blades:	3 Composite
Diameter Maximum:	75 in (190 cm)
Minimum:	75 in (190 cm)
Propeller Blade Angle at 26.18 in (66.5 cm) station	
High:	30° + or - 1°
Low:	13° + or - .2°

NOTE

For European operations only, in the interest of noise abatement or where local noise ordinances may apply the following RPM limitations should be followed:

"2700 RPM max takeoff for five minutes followed by a reduction to 2500 RPM, for continuous cruise power."

WARNING

It is the responsibility of the pilot to check on performance differences in Section 5 of this manual when optional propeller is installed.

POWER PLANT INSTRUMENT MARKINGS

Power plant instrument markings and their color code significance are shown in Figure 2-3.

INSTRUMENT	RED LINE MIN. LIMIT	GREEN ARC NORMAL OPERATING	YELLOW ARC CAUTION RANGE	RED LINE MAX. LIMIT
TACHOMETER		500-2700 RPM		2700 RPM
OIL TEMPERATURE		100°F (38°C) 245°F (118°C)		245°F (118°C)
CYLINDER HEAD				500°F (260°C)
FUEL PRESSURE		0-9 PSI (0-.62 bar)		9 PSI (.62 bar)
OIL PRESSURE	25 PSI	60-90 PSI	25-60 PSI 90-100 PSI	100 PSI

Figure 2-3 Power Plant Instrument Markings

WEIGHT LIMITS

Maximum Takeoff Weight:

1700 lbs (770.1 kg)(Normal Category)

Maximum Landing Weight:

1700 lbs (770.1 kg)(Normal Category)

Maximum Gross Weight:

1700 lbs (770.1 kg)(Normal Category)

Maximum Gross Weight:

1625 lbs (736.1 kg)(Aerobatic Category)

Maximum Weight in Baggage Compartment:

20 lbs (9.01 kg)

WARNING NOTE

NO AEROBATIC MANEUVERS WITH BAGGAGE.

CENTER OF GRAVITY LIMITS

Center of Gravity Range

Normal category
Forward: FS 86.35 at 1475 lbs. or less, with straight line variation to FS 88.5 at 1700 lbs.

Aft: FS 90.20 at 1700 lbs. or less.

Aerobatic category
Forward: FS 86.35 at 1475 lbs. or less, with a straight line variation to FS 89.58 at 1625 lbs.

Aft: FS 90.50 at 1625 lbs. or less.

Reference Datum:

FS 00.0 is located 91.81 inches forward of lower wing leading edge.

MANEUVER LIMITS

This airplane is certificated in the normal category and the aerobatic category. The normal category is applicable to aircraft intended for non-aerobatic operations.

These include any maneuvers incidental to normal flying, stalls, lazy eights, chandelles, and steep turns in which the angle of bank is not more than 60°. The aerobatic category is applicable to aircraft intended for aerobatic operations. These include all maneuvers listed on the approved maneuvers and recommended entry speeds placard and listed in this flight manual.

FLIGHT LOAD FACTOR LIMITS

Normal Category

Positive +3.8 G., Negative -1.52 G.

Aerobatic Category

Positive +6.0 G., Negative -3.0 G.

KINDS OF OPERATION

This airplane must be operated as a DAY VFR airplane. FAR Part 91 establishes the minimum required instrumentation and equipment for these operations. The reference to types of flight operations on the operation limitations placard reflects equipment installed at the time of Airworthiness Certificated issuance.

Flight into known icing conditions is prohibited. In cold weather operation and freezing temperatures it is the pilot's duty to make sure that the engine alternate breather is open.

KINDS OF OPERATION EQUIPMENT LIST (KOEL)

		VFR DAY
Electrical Power		
1.	Battery	1
2.	Alternator	1
3.	Ammeter	1
Fire Protection		
1.	Firewall Fuel Shutoff Valve	1
Flight Controls		
1.	Trim Tab Indicator (Elevator)	1
2.	Stall Warn Horn	1
Fuel		
1.	Fuel Quantity Indicator	1
2.	Electric Fuel Boost Pump	1
3.	Engine Fuel Flow Gauge	1
4.	Upper Wing Fuel Tank Valve	1
Ice and Rain Protection		
1.	Alternate Static Air Source	1
Navigation		
1.	Sensitive Altimeter	1
2.	Airspeed Indicator	1
3.	Magnetic Compass	1

		VFR DAY
Instruments		
1.	"G" Meter (Aerobatic flight only)	0
Engine Indicating		
1.	Tachometer	1
2.	Manifold Pressure Gauge	1
3.	Cylinder Head Temperature Gauge (CHT)	1
Engine Oil		
1.	Oil Pressure Indicator	1
2.	Oil Temperature Indicator	1

NOTES

1. A zero (0) used in the above list means that the equipment and/or system was not required for type certification for that kind of operation.

2. The above equipment list is predicated on a crew of one pilot.

3. Equipment and/or systems in addition to those listed above may be required by the operating regulations.

4. The above list does not include all specific instruments, communications and navigation equipment required by FAR Parts 91 and 135.

INTRODUCTION

Section 3 provides checklist and amplified procedures for coping with emergencies that may occur. Emergencies caused by airplane or engine malfunctions are extremely rare if proper preflight inspections and maintenance are practiced. En route weather emergencies can be minimized or eliminated by careful flight planning and good judgment when unexpected weather is encountered. However, should an emergency arise, the basic guidelines described in this section should be considered and applied as necessary to correct the problem. Emergency procedures associated with ELT and other optional systems can be found in Section 9.

AIRSPEEDS FOR EMERGENCY OPERATION

Engine Failure After Takeoff:	95 MPH (83 KTS)
Maneuvering Speed:	154 MPH (134 KTS)
Maximum Glide Speed:	95 MPH (83 KTS)
Precautionary landing with Engine Power:	95 MPH (83 KTS)
Landing Without Engine Power:	95 MPH (83 KTS)

OPERATIONAL CHECKLISTS

ENGINE FAILURES

ENGINE FAILURE DURING TAKEOFF RUN

1.	Throttle:	Idle
2.	Brakes:	Apply
3.	Mixture:	Idle Cut-off
4.	Ignition Switch:	Off
5.	Master Switch:	Off

STATIC SOURCE BLOCKED

If erroneous readings of the static source instruments (airspeed, altimeter) are suspected, the alternate static source valve should be opened, thereby supplying static pressure to these instruments from the cabin. Cabin pressures will vary with open vents and with airspeed. A calibration table is provided in Section 2 and on a placard next to the valve to illustrate the effect of the alternate static source on altitudes.

SPINS

Spins are prohibited in this airplane in the Normal Category. All spins are approved in the Aerobatic Category. We strongly recommend getting the appropriate spin training before any aerobatic flight in the Pitts. Any aerobatic maneuver if done incorrectly can become a spin. Should an inadvertent spin occur, follow the procedure listed on placards and in Section 2 of this flight manual.

ROUGH ENGINE OPERATION OR LOSS OF POWER

ICING

Intake screen icing will give an unexplained drop in manifold pressure and eventual engine roughness. To restore full manifold pressure available pull on the alternate air control.

LOW OIL PRESSURE

If low oil pressure is accompanied by normal oil temperature, there is a possibility the oil pressure gage or relief valve is malfunctioning. A leak in the line to the gage is not necessarily cause for an immediate precautionary landing because an orifice in this line will prevent a sudden loss of oil from the engine sump. However, a landing at the nearest airport would be advisable to inspect the source of trouble.

Low oil pressure or no oil pressure when you roll inverted; roll upright as soon as possible. Your Pitts is equipped with an inverted oil system. Refer to Textron Lycoming Operation Manual for troubleshooting this system.

ELT OPERATION

The ELT is located behind the rear seat mounted to the bottom of the baggage area. The ELT is safety wired to the mounting bracket and must always be so safety wired during flight. The ELT is an EBC-102A or EBC-502 and should always be armed. Any hard landing can set off the ELT which transmits an emergency signal on 121.5 MHz for the EBC-102A or both 121.5 MHz and 243 MHz for the EBC-502.

Normal operation after a emergency landing is to tune your com radio to 121.5 MHz and check for the emergency signal. If it is not transmitting turn the ELT on with the switch. After rescue turn off the ELT with the switch.

Before engine shut down if you have had a hard landing tune your com radio to 121.5 MHz and check to see if you have inadvertently set off the ELT. If you have and it is not needed for an emergency turn the ELT switch to the OFF position and, for the EBC-502, then back to the arm position. The OFF position is also the arm position for the EBC-102A.

ENGINE FAILURE IMMEDIATELY AFTER TAKEOFF

1.	Airspeed:	95 MPH (83 KTS)
2.	Mixture:	Idle Cut-off
3.	Fuel Selector Valve:	Off
4.	Ignition Switch:	Off
5.	Master Switch:	Off

ENGINE FAILURE DURING FLIGHT

1.	Airspeed:	95 MPH (83 KTS)
2.	Fuel Selector Valve:	On
3.	Fuel Boost Pump:	On
4.	Mixture:	Rich
5.	Ignition Switch:	Both
		(Start if propeller is stopped)

FORCED LANDINGS

EMERGENCY LANDING WITHOUT ENGINE POWER

1.	Airspeed:	95 MPH (83 KTS)
2.	Mixture:	Idle Cut-off
3.	Fuel Selector valve:	Off
4.	Ignition Switch:	Off
5.	Canopy:	Jettison (at pilot's option)
6.	Master Switch:	Off when landing is assured
7.	Touchdown:	Tail wheel first
8.	Brakes:	Apply as needed but control the aircraft.

PRECAUTIONARY LANDING WITH ENGINE POWER

1.	Airspeed:	95 MPH (83 KTS)

2.	Selected Field:	Fly Over, noting terrain and obstructions, then upon reaching a safe altitude and airspeed.
3.	Electrical Switches:	Off
4.	Airspeed:	95 MPH (83 KTS)
5.	Canopy:	Jettison (at pilot's option)
6.	Master Switch:	Off
7.	Touchdown:	Tail wheel first
8.	Ignition Switch:	Off
9.	Brakes:	Apply as needed but control the aircraft.

DITCHING

1.	Radio:	Transmit Mayday on 121.5 mhz, giving location and intentions.
2.	Power:	Establish 300 ft/min descent at 95 MPH (83 KTS).
3.	Approach:	High Winds, Heavy seas INTO WIND Light Winds, Heavy Swells, PARALLEL TO SWELLS.
4.	Canopy:	Jettison
5.	Touchdown:	Level Attitude at established descent.
6.	Airplane:	Evacuate

FIRES

DURING START ON GROUND

1.	Cranking:	Continue to crank the engine in an attempt to start the engine and use any fuel in the lines.

Do not use the boost pump. Leave the MIXTURE control in idle cutoff and set the fuel selector to OFF.

2. Mixture: Idle cut-off
3. Fire Extinguisher: Obtain (have ground attendants obtain)
4. Engine: Secure
   A. Master Switch: Off
   B. Ignition Switch: Off
   C. Fuel Selector: Off
5. Fire: Extinguish using fire extinguisher, wool blanket, or dirt.
6. Fire Damage: Inspect, repair or replace damaged components or wiring before conducting flight.

ENGINE FIRE IN FLIGHT

1. Mixture: Idle cut-off
2. Fuel Selector Valve: Off
3. Master Switch: Off
4. Airspeed: 95 MPH (83 KTS), (If fire is not extinguished, increase glide speed to find an airspeed which will provide an incombustible mixture. If fire is not extinguished and you have a parachute jettison canopy and leave aircraft if you have proper altitude.)
5. Forced Landing: Execute (as described in Emergency Landing Without Engine Power).

ELECTRICAL FIRE IN FLIGHT

1.	Master Switch:	Off
2.	All Avionics Switch:	Off
3.	Vents/Cabin Air:	Closed
4.	Fire Extinguisher:	Activate (if available)

WARNING

After discharging an extinguisher within a closed cabin, ventilate the cabin.

If fire appears out and electrical power is necessary for continuance of flight:

6.	Master Switch:	On
7.	Circuit Breakers:	Check for faulty circuit, do not reset.
8.	Radio/Electrical Switches:	On one at a time, with delay after each until short circuit is localized.
9.	Vents/Cabin Air:	Open when it is ascertained that fire is completely extinguished.

INADVERTENT ICING ENCOUNTER

1. Turn back or change altitude to obtain an outside air temperature that is less conducive to icing.

2. Increase engine speed to minimize ice build-up on propeller blades.

3. Watch for signs of air intake ice and apply alternate air as required. An unexplained loss in manifold pressure could be caused by air intake screen ice.
4. Plan a landing at the nearest airport.
5. With any ice accumulation on the wing leading edges, be prepared for significantly higher stall speed.
6. Approach at 110 to 115 mph depending upon the amount of ice accumulation.
7. Touchdown tail wheel first.

STATIC SOURCE BLOCKAGE
(Erroneous Instrument Reading Suspected)

1. Alternate Static Source Valve: ON
2. Airspeed: Consult placard and AFM Sect 2.
3. Altitude: Consult placard and AFM Sect 2.

WARNING

BEFORE ANY FLIGHT INTO TEMPERATURES BELOW FREEZING CHECK THAT THE ENGINE ALTERNATE BREATHER HOLE IS OPEN AND CLEAR OF OIL OR OTHER FOREIGN MATERIAL.

AMPLIFIED PROCEDURES

ENGINE FAILURE

If an engine failure occurs during the takeoff run, the most important thing to do is stop the airplane on the remaining runway. Those extra items on the checklist will provide added safety after a failure of this type.

Prompt lowering of the nose to maintain airspeed and establish a glide attitude is the first response to an engine failure after takeoff. In most cases, the landing should be planned straight ahead with only small changes in direction to avoid obstructions. Altitude and airspeed are seldom sufficient to execute a 180° gliding turn necessary to return to the runway. The checklist procedures assume that adequate time exists to secure the fuel and ignition systems prior to touchdown.

After an engine failure in flight, the best glide speed should be established as quickly as possible. While gliding toward a suitable landing area, an effort should be made to identify the cause of the failure. If time permits, an engine restart should be attempted as shown in the checklist. If the engine cannot be restarted, a forced landing without power must be completed.

FORCED LANDINGS

If all attempts to restart the engine fail and a forced landing is imminent, select a suitable field and prepare for the landing as discussed in the checklist for Emergency Landing Without Engine Power.

Before attempting an "off airport" landing with engine power available, one should fly over the landing area at a safe but low altitude to inspect the terrain for obstructions and surface conditions, proceeding as discussed under the Precautionary Landing With Engine Power checklist.

Prepare for ditching by securing objects located around you. Transmit Mayday message on 121.5 MHz giving location and intentions. Avoid a landing flare because of difficulty in judging height over a water surface.

In a forced landing situation, do not turn off the avionics power and master switches until a landing is assured. Premature deactivation of the switches will disable the encoding altimeter and airplane electrical systems.

LANDING WITHOUT ELEVATOR CONTROL

Trim for horizontal flight with an airspeed of approximately 95 MPH (83 KTS) by using throttle and elevator trim control. Then do not change the elevator trim control setting; control the glide angle by adjusting power exclusively.

At flaring, the nose-down moment resulting from power reduction is an adverse factor and the airplane may hit on the main gear. Consequently, at flaring, the elevator trim control should be adjusted toward the full nose-up position and the power adjusted so the airplane will rotate to the tail low attitude for touchdown. Close the throttle at touchdown.

FIRES

Although engine fires are extremely rare in flight, the steps of the appropriate checklist should be followed if one is encountered. After completion of this procedure, execute a forced landing. Do not attempt to restart the engine.

The initial indication of an electrical fire is usually the odor of burning insulation. The checklist for this problem should result in elimination of the fire.

EMERGENCY OPERATION IN CLOUDS

The Pitts is a VFR Day only aircraft, upon inadvertently entering the clouds, and immediate plan should be made to turn 180° or descend below the clouds. **Remain VFR at all times.**

FLIGHT IN ICING CONDITIONS

Flight into icing conditions is prohibited. An inadvertent encounter with these conditions can best be handled using the checklist procedures. The best procedure, of course, is to turn back or change altitude to escape icing conditions.

At all times the engine alternate breather hole must be open and clean. If the overboard line to the tail of the aircraft becomes blocked with ice, and the alternate breather hole has become blocked, you may blow a engine front seal and loss of all engine oil will result. The aircraft will have a loss of power and a forced landing.

INTRODUCTION

Section 4 provides checklist and amplified procedures for the conduct of normal operation. Normal procedures associated with optional systems can be found in Section 9.

SPEEDS FOR NORMAL OPERATION

Unless otherwise noted, the following speeds are based on a maximum weight of 1700 lbs (770.1 kg) and may be used for any lesser weight.

Takeoff	
Normal Climb Out:	100 MPH (87 KTS)
En route Climb	
Normal:	120 MPH (104 KTS)
Best Rate:	95 MPH (71 KTS)
Best Angle:	82 MPH (83 KTS)
Landing Approach	
Normal Approach:	95 MPH (83 KTS)
Short Field Approach:	95 MPH (83 KTS)
Balked Landing	
Maximum Power:	95 MPH (83 KTS)
Maximum Demonstrated Crosswind Velocity	
Takeoff or landing:	20 MPH (17 KTS)
Demonstrated flight-time inverted is:	3 minutes

Engine inverted oil system operation:
Refer to the Textron Lycoming Operator's manual.

back of the propeller rather than pulled into it. When unavoidable small dents appear in the propeller blades they should be corrected immediately as described in Section 8 under Propeller Care.

CROSSWIND TAKEOFF

Takeoffs into strong crosswinds normally are performed with the ailerons deflected partially into the wind. The airplane is accelerated to a speed slightly higher than normal, and then pulled off abruptly to prevent possible settling back to the runway while drifting. When clear of the ground, make a coordinated turn into the wind to correct for drift.

EN ROUTE CLIMB

Normal climbs are performed at 120 MPHIAS (104 KTS) at 23 In. Hg. or full throttle (whichever is less) and 2400 RPM for the best combination of engine cooling, rate of climb and forward visibility. If it is necessary to climb rapidly to clear mountains perform the climb at 95 MPH IAS (83 KTS) and full power.

The mixture should be full rich during climb at altitudes up to 3000 feet. Above 3000 feet, a full rich mixture setting may be used or the mixture may be leaned for increased power. Also the mixture may be leaned as required for smooth engine operation and when power is below 75%.

Before any operation in cold temperatures it is the pilot or operator's responsibility to make sure the engine alternate crankcase breather hole is open and clear of any oil or foreign objects. Operation in freezing temperature on the ground or aloft may cause the moisture from the engine in the long breather tube to freeze. This can cause a high crankcase pressure which could result in blowing an engine seal. With the loss of the seal, you will loose engine crankcase oil and have a power failure.

HOT WEATHER OPERATION

The general warm temperature starting information in this section is appropriate. Avoid prolonged engine operation on the ground. Cowl Flap must be open.

NOISE ABATEMENT

Increased emphasis on improving the quality of our environment requires renewed effort on the part of all pilots to minimize the effect of airplane noise on the public.

In European operations or other countries which may require minimized effect of airplane noise do the following. "In the interest of noise abatement or where local noise ordinances may apply the following RPM limitations should be followed: 2700 RPM for takeoff and for a maximum of five minutes, followed by a reduction to 2500 RPM, for continuous cruise power."

CHECKLIST PROCEDURES

PREFLIGHT INSPECTION

COCKPIT

1.	Control locks:	Remove (if installed)
2.	Ignition Switch:	Off
3.	Master Switch:	Off
4.	Seat Belts:	Check for Wear and security secure if not to be used
5.	Loose items:	Secure or remove for aerobatics
6.	Baggage:	Secure
7.	Baggage Door:	Closed and Secure
8.	Battery:	Secure and no leaks

EMPENNAGE

1.	Fabric:	No holes, general condition
2.	Tail surfaces:	Secure and general condition
3.	Tail wheel & springs:	Secure and general condition
4.	Tie-Down:	Disconnect
5.	Control Surfaces:	Check freedom of movement and security
6.	Aux Tank Valve Drain:	Drain, check for water and sediment

RIGHT WINGS

1.	Fabric:	No holes, general condition
2.	Aileron:	Check freedom of movement and security
3.	Spade:	Check security
4.	I Strut:	Check security
5.	Stall Vane:	Check operation
6.	Flying Landing Wires:	No Nicks, and secure
7.	Tie down	Disconnect

NOSE

1.	Main wheels:	Proper inflation, wear
2.	Brakes:	Security and line clearance
3.	Alternate Engine Breather Hole:	Open and clean
4.	Propeller and Spinner:	No nicks, secure and no oil leaks
5.	Air Inlet Screen:	Check for restrictions
6.	Engine Oil Level:	Check; do not operate with less than 9 quarts. Fill to 12 quarts for extended flight
7.	Main Fuel Strainer:	Drain, check for water and sediment.

LEFT WINGS

1.	Pitot tube:	Holes open and clean
2.	Flying Landing Wires:	No Nicks, and secure
3.	I struts:	Check security
4.	Ailerons:	Freedom of movement and security
5.	Spades:	Check security
6.	Fabric:	No holes, general condition
7.	Tie Down:	disconnect

BEFORE STARTING ENGINE

1.	Preflight Inspection:	Complete
2.	Canopy:	Closed and locked
3.	Seat Belts/Shoulder Harnesses:	Adjusted and locked
4.	Brakes:	Test and On
5.	Cowl Flaps:	Open
6.	Circuit Breakers:	In

STARTING ENGINE

COLD START

1.	Mixture:	Rich
2.	Propeller:	High RPM
3.	Throttle:	1/4 open
4.	Master Switch:	On
5.	Boost Pump:	On, 2-3 sec Max
6.	Mixture:	Idle cut off
7.	Starter Switch:	On (start)
8.	Mixture:	When engine starts, move mixture control slowly and smoothly to Full Rich.
9.	Oil Pressure:	Check
10.	Alternator Field Switch:	On

HOT START

1.	Mixture:	Idle cut off
2.	Propeller:	High RPM
3.	Throttle:	1/2 open
4.	Master Switch:	On
5.	Starter Switch:	On (start)
6.	Mixture:	When engine starts, move mixture to full rich
7.	Throttle:	Move to Idle
8.	Oil Pressure:	Check
9.	Alternator Field Switch:	On

BEFORE TAKEOFF

1.	Canopy:	Check locked
2.	Brakes:	Set
3.	Flight Controls:	Free and correct
4.	Flight Instruments:	Set and correct
5.	Fuel Selector:	On
6.	Mixture:	Rich if below 5000 feet MSL, lean as required above 5000 feet MSL.
7.	Elevator Trim:	Takeoff neutral
8.	Throttle:	1700 RPM check:
	a: Propeller:	Cycle from high to low RPM, return to high RPM (full in)
9.	Throttle:	2200 RPM Check:
	a: Magnetos:	Check (RPM drop should not exceed 175 RPM on either magneto or 50 RPM differential between magnetos)
	b: Engine Instruments:	Check
	c: Ammeter:	Check
10.	Avionics:	On and set

TAKEOFF

1.	Power:	Full Throttle 2700 RPM
2.	Elevator Control:	Lift tail
3.	Rotate:	74 MPH (64 KTS)
4.	Climb Speed:	100 MPH (87 KTS)
5.	Power:	As required or desired

EN ROUTE CLIMB

1.	Airspeed:	120 MPH (104 KTS)
2.	Power:	As required or desired
3.	Mixture:	Rich or lean as needed for required power
4.	Cowl Flaps:	Open as required for cooling

CRUISE

1.	Power:	19-20 Inches Hg, 2200-2300 RPM (no more than 75% power)
2.	Elevator Trim:	Adjust
3.	Mixture:	Lean
4.	Cowl Flaps:	Closed or as needed for cooling

DESCENT

1.	Power:	As desired
2.	Mixture:	Enrichen as required
3.	Cowl Flaps:	Closed or as required for cooling

BEFORE LANDING

1.	Seat Belts/Shoulder Harnesses:	Adjust lock
2.	Fuel selector:	Check on
3.	Mixture:	Rich below 5000 feet MSL
4.	Propeller:	High RPM

LANDING

NORMAL LANDING

1.	Airspeed:	95 MPH (83 KTS)
2.	Trim:	Adjust
3.	Touchdown:	Tail wheel first
4.	Elevator control:	Full back (up elevator)
5.	Braking:	Minimum required

BALKED LANDING

1.	Power:	Full Throttle (2700 rpm)
2.	Climb Speed:	95 MPH (83 KTS)
3.	Cowl Flaps:	Open

AFTER LANDING

1.	Cowl Flaps:	Open

SECURING AIRPLANE

1.	Throttle:	Idle
2.	Avionics:	Off
3.	Mixture:	Idle cut off
4.	Ignition Switch:	Off
5.	Master Switch:	Off
6.	Alternator Field Switch:	Off
7.	Aircraft:	Tie Down or Secure

AMPLIFIED PROCEDURES

STARTING ENGINE

Ordinarily the engine starts easily when primed correctly. Weak intermittent firing followed by puffs of black smoke from the exhaust stack indicates overpriming or flooding. Excess fuel can be cleared from the combustion chambers by the hot starting checklist.

If the engine is underprimed (most likely in cold weather with a cold engine) it will not fire at all. Additional priming will be necessary for the next starting attempt.

If prolonged cranking is necessary, allow the starter motor to cool at frequent intervals, since excessive heat may damage the armature.

After starting, if the oil gage does not begin to show preasure within 30 seconds in the summertime and about twice that long in very cold weather, stop engine and investigate. Lack of oil pressure can cause serious engine damage.

TAXIING

When taxiing, it is important that speed and use of brakes be held to a minimum and that all controls be utilized to maintain directional control and balance.

Taxiing over loose gravel or cinders should be done at low engine speed to avoid abrasion and stone damage to the propeller tips.

BEFORE TAKEOFF

Since the engine is closely cowled for efficient in-flight cooling, precautions should be taken to avoid overheating on the ground. Full power checks on the ground are not recommended unless the pilot has good reason to suspect that the engine is not turning up properly.

MAGNETO CHECK

The magneto check should be made at 2200 RPM as follows. Move ignition switch first to R position and note RPM. Next move switch back to BOTH to clear the other set of plugs. Then move switch to the L position, note RPM and return the switch to the BOTH position. RPM drop should not exceed 175 RPM on either magneto or show greater than 50 RPM differential between magnetos.

An absence of RPM drop may be an indication of faulty grounding of one side of the ignition system or should be cause for suspicion that the magneto timing is set in advance of the setting specified.

TAKEOFF

It is important to check takeoff power early in the takeoff run. Any sign of rough engine operation or sluggish engine acceleration is a good cause for discontinuing the takeoff.

Full power runups over loose gravel are especially harmful to propeller tips. When takeoffs must be made over a gravel surface, it is very important that the throttle be advanced slowly. This allows the airplane to start rolling before high RPM is developed, and the gravel will be blown

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INTRODUCTION

Performance data charts on the following pages are presented so that you may know what to expect from the airplane under various conditions, and also to facilitate the planning of flights in detail and with reasonable accuracy. The data in the charts has been computed from actual flight tests with the airplane and engine in good condition and using average piloting techniques.

Fuel flow data for cruise is based on the recommended lean mixture setting. Some indeterminate variables such as mixture leaning technique, fuel metering characteristics, engine and propeller condition, and air turbulence may account for variations of 10% or more in range and endurance. Therefore, it is important to utilize all available information to estimate the fuel required for a particular flight.

AIRSPEED CALIBRATION

MPHIAS	MPHCAS
64	60.8
90	87.5
120	118.5
150	149.4
180	180.4
210	211.4

KTIAS	KTCAS
55	52.2
80	77.8
105	103.7
130	129.4
155	155.3
180	181.1

Landing

1. MT-Propeller 3 Blade Composite
Model # MTV-9-B-C/C190-18a

Notes

1. No Wind
2. Hard Surface Runway (dry, level)
3. Brakes, apply heavily
4. Airspeed at 50 ft 95 mph (83.0 kts)
5. Throttle off (idle) from 50 ft height

Pressure Altitude (ft)	Temp. F°	Temp. C°	1700 lbs (770.1 kg) Ground Roll ft	(m)	Total over 50 ft	(15 m)
0	-1	-18.5	1167	(356)	1928	(588)
	59	15.0	1320	(403)	2124	(648)
	99	37.2	1422	(434)	2287	(698)
4000	-13	-25.0	1310	(400)	2157	(658)
	45	7.2	1486	(453)	2441	(745)
	84	29.0	1604	(489)	2581	(787)
8000	-26	-32.2	1474	(449)	2371	(723)
	30	-1.0	1680	(512)	2702	(824)
	68	20.0	1817	(554)	2923	(892)

POWER OFF STALLING SPEED

1625 lbs (736.1 kg)	
Bank Angle	Stalling Speed (CAS)
0°	60 mph (52.1 kts)
30°	64 mph (55.6 kts)
45°	71 mph (61.7 kts)
60°	85 mph (73.9 kts)

1700 lbs (770.1 kg)	
Bank Angle	Stalling Speed (CAS)
0°	61 mph (53.0 kts)
30°	66 mph (57.4 kts)
45°	73 mph (63.4 kts)
60°	86 mph (74.7 kts)

ALTIMETER CORRECTION (Alternate Static on)

Airspeed	Altimeter Error
80 mph (69.6 kts)	+10 ft (3.05 m)
100 mph (86.9 kts)	+20 ft (6.10 m)
120 mph (104.3 kts)	+95 ft (28.98 m)
140 mph (121.7 kts)	+135 ft (41.18 m)
160 mph (139.0 kts)	+190 ft (57.95 m)

TAKEOFF

1. Hartzell 2 Blade Metal
   Model # HC-C2YR-4CF/FC8477A-4

Notes

1. No Wind
2. Hard Surface Runway (dry, level)
3. Lift-off 74 mph (64.3 kts)
4. Airspeed at 50 ft. 85 mph (73.9 kts)
5. Full throttle 2700 rpm

Pressure Altitude (ft)	Temp. F°	Temp. C°	1700 lbs (770.1 kg) Ground Roll ft	(m)	Total over 50 ft	(15 m)
0	-1	-18.5	427	(130)	698	(213)
	59	15.0	557	(169)	893	(272)
	99	37.2	653	(199)	1036	(316)
4000	-13	-25.0	594	(181)	960	(293)
	45	7.2	780	(238)	1237	(377)
	84	29.0	919	(280)	1442	(440)
8000	-26	-32.2	850	(259)	1362	(415)
	30	-1.0	1125	(343)	1768	(539)
	68	20.0	1332	(406)	2070	(631)

TAKEOFF

1. MT-Propeller 3 Blade Composite
Model # MTV-9-B-C/C190-18a

Notes

1. No Wind
2. Hard Surface Runway (dry, level)
3. Lift-off 74 mph (64.3 kts)
4. Airspeed at 50 ft 85 mph (73.9 kts)
5. Full throttle 2700 rpm

Pressure Altitude (ft)	Temp. F°	C°	1700 lbs (770.1 kg) Ground Roll ft	(m)	Total over 50 ft	(15 m)
0	-1	-18.5	458	(140)	723	(221)
	59	15.0	596	(182)	925	(282)
	99	37.2	700	(214)	1074	(328)
4000	-13	-25.0	636	(194)	994	(303)
	45	7.2	835	(255)	1282	(391)
	84	29.0	984	(300)	1495	(456)
8000	-26	-32.2	910	(278)	1410	(430)
	30	-1.0	1205	(368)	1834	(559)
	68	20.0	1426	(435)	2147	(654)

CLIMBS

1. Hartzell Metal 2 Blade
   Model # HC-C2YR-4CF/FC8477A-4

Notes

1. Smooth air, no wind
2. Climb speed is 95 mph (83 kts)
3. Weight 1700 lbs (770.1 kg)

Pressure Altitude (ft)	Temp. F°	Temp. C°	1700 lbs (770.1 kg) Rate of Climb per min. ft	(m)
0	-1	-18.5	2432	(742)
	59	15.0	2145	(654)
	99	37.2	1873	(571)
4000	-13	-25.0	1890	(576)
	45	7.2	1648	(503)
	84	29.0	1437	(438)
8000	-26	-32.2	1408	(429)
	30	-1.0	1202	(367)
	68	20.0	1037	(316)

CLIMBS

1. MT-Propeller 3 Blade Composite
Model # MTV-9-B-C/C190-18a

Notes

1. Smooth air, no wind
2. Climb speed is 95 mph (83 kts)
3. Weight 1700 lbs (770.1 kg)

With the MT propeller fitted the rate of climb specified on page 5-5 is reduced by 100 ft/min (31 m/min).

CRUISE PERFORMANCE

Best Power

Fuel Consumption Textron Lycoming AEIO-540-D4A5

Notes

1. Spark Timing 25° BTC
2. Fuel Injector Model RSA-5AD1
3. Mixture Control Manual to Best Economy or Best Power indicated
4. Data from Textron Lycoming curves 12958 and 12957
5. Endurance is based on 28 US gal (105.9 L) without reserves

Best Power					
Alt hp"	RPM	MP "	Gal/hr	L/Hr	Endurance h.mm
2000	2700	27.0	21.2	80.2	1.19
	2600	27.0	18.7	70.8	1.30
6000	2700	23.0	18.4	69.6	1.31
	2400	23.0	16.4	62.1	1.42
	2200	23.0	14.7	55.6	1.54
10000	2700	20.0	17.1	64.7	1.38
	2400	20.0	15.0	56.8	1.52
	2200	20.0	13.4	50.7	2.05

CRUISE PERFORMANCE

Best Economy

Fuel Consumption Textron Lycoming AEIO-540-D4A5

Notes

1. Spark Timing 25° BTC
2. Fuel Injector Model RSA-5AD1
3. Mixture Control Manual to Best Economy or Best Power indicated
4. Data from Textron Lycoming curves 12958 and 12957
5. Endurance is based on 28 US gal (105.9 L) without reserves

Best Economy					
Alt hp"	RPM	MP "	Gal/hr	L/Hr	Endurance h.mm
6000	2700	21.0	14.0	53.0	2.00
	2400	21.0	13.0	49.2	2.09
	2200	21.0	11.4	43.1	2.27
10000	2700	19.0	13.7	51.9	2.02
	2400	19.0	12.4	46.9	2.15
	2200	19.0	11.0	41.6	2.33

LANDING

1. Hartzell 2 Blade Metal
   Model # HC-C2YR-4CF/FC8477A-4

Notes

1. No Wind
2. Hard Surface Runway (dry, level)
3. Brakes, apply heavily
4. Airspeed at 50 ft 95 mph (83.0 kts)
5. Throttle off (idle) from 50 ft height

Pressure Altitude (ft)	Temp. F°	Temp. C°	1700 lbs (770.1 kg) Ground Roll ft	(m)	Total over 50 ft	(15 m)
0	-1	-18.5	933	(285)	1796	(548)
	59	15.0	1054	(321)	1973	(602)
	99	37.2	1136	(346)	2126	(648)
4000	-13	-25.0	1046	(319)	2008	(612)
	45	7.2	1187	(362)	2272	(693)
	84	29.0	1282	(391)	2399	(732)
8000	-26	-32.2	1178	(359)	2205	(672)
	30	-1.0	1342	(409)	2512	(766)
	68	20.0	1451	(442)	2716	(828)

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INTRODUCTION

This section describes the procedure for establishing the basic empty weight and moment of the airplane. Procedures for calculating the weight and moment for various operations are also provided. A list of equipment for this airplane is included at the back of this section.

ACTUAL WEIGHT AND BALANCE

MODEL: PITTS S-2B

SERIAL NUMBER: 5175

DATE THIS SECTION WAS COMPLETED:

11-27-96

ORIGINAL PREPARED BY: _____
Aviat Aircraft Inc.

NOTE

It is the responsibility of the pilot to ensure his airplane is operated in loading configurations which are within the approved weight and center of gravity limits.

(X) 24. Manifold Pressure Gauge (Fwd. Panel)
(AN5770-1 or equiv.)

Weight .50 lb. @ FS 94.5

(X) 25. ELT (EBC-502)

Weight 2.95 lb. @ FS 86.0

(X) 26. Radio (Use Actual Radio Weight)
Included in weight.

Weight ____ lb. @ FS 112.0

( ) 27. Radio (Use Actual Radio Weight)

Weight ____ lb. @ FS 112.0

( ) 28. Smoke System
(Per 337 approval)

Weight 14.7 lb. @ FS 89.17

(X) 29. Fuel Display System
(Per 337 approval)

Weight 1.5 lb. @ FS 89.17

( ) 30.

Weight ____ lb. @ FS ____

( ) 31.

Weight ____ lb. @ FS ____

( ) 32.

Weight ____ lb. @ FS ____

( ) 33.

Weight ____ lb. @ FS ____

AIRPLANE WEIGHING PROCEDURES

Datum is 91.81" (2.332m) forward of lower wing leading edge.

NOTE

Weighing performed with airplane level.
Level airplane on upper longerons in rear cockpit.

CALCULATE EMPTY WEIGHT & CG

SCALE	READING LBS (KG)	-TARE LBS (KG)	=NET LBS (KG)
LEFT MAIN	560.8	0	560.8
RIGHT MAIN	567.0	0	567.0
TAIL	108.3	34	74.3
EMPTY WEIGHT (SUM OF NET)			1202.1

Figure 1, Aircraft as weighed record

As weighed 1202.1 lbs (kg)

Calculate empty weight CG.

Standard
CG=(LH net lbs+ RH net lbs)(72.19")+(Tail lbs)(216.69")
/TOTAL NET WEIGHT LBS

Metric
CG=(LH net (KG) + RH net (KG))(1.834M) +(Tail (KG)) (5.504 m)/TOTAL NET WEIGHT (KG)

CG= 81.1 inches (meters) aft of datum, as weighed.

For items of equipment installed at weighing see the standard and option equipment list in this section.

WARNING

IN ALL WEIGHT AND BALANCE CALCULATIONS, DO NOT MIX METRIC AND STANDARD SYSTEMS.

STANDARD EQUIPPED WEIGHT

The equipped weight empty of the Pitts S-2B is the as weighed weight plus one gallon of unusable fuel 6 lbs (2.7kg), full oil three gallons 22.5 lbs (10.2kg), and optional equipment installed.

ITEM	WEIGHT LBS (KG)	ARM INS (M)	MOMENT IN-LB (M.KG)
EMPTY WEIGHT	1202.3	81.1	97559.2
OIL INCLUDED	#22.5# (10.2)	49.7 (1.26)	1118.0 (12.85)
UNUSABLE FUEL	6 (2.7)	81.32 (2.07)	487.0 (5.589)
OPTIONAL EQ Included			
STANDARD WEIGHT & CG	1202.3	81.1	97559.2

Figure 2 Standard Empty Weight

Moment = weight in lbs or (kg) x arm in inchs or (meters)
C.G. = moment in-lb or (m.kg) / weight lbs or (kg)

DETERMINE YOUR WEIGHT AND C.G.

1. Begin with the Standard Weight & CG for your aircraft. Record this weight and moment in Figure 3 of this section.

2. From the chart on page 6-7 of this section (Occupants Weight and Moment), locate the weight and moment corresponding to the actual weight of the pilot, and co-pilot on board, including parachute. Record this weight and moment in Figure 3 of this section.

3. Show the weight of the fuel you have in the main tank, 6 lbs per US gallon (.72 kg per litre). Record this weight in Figure 3 of this section.

4. Show the weight of the fuel you have in the aux tank, 6 lbs per US gallon (.72 kg per litre). Record this weight in Figure 3 of this section.

WARNING
NO AEROBATICS WITH AUX FUEL

5. If the weight of items 1 through 4 results in a gross weight of less than 1700 LBS (770.1 kg), Normal Category, baggage may be added up to a maximum of 20 lbs (9.01 kg). Record any baggage you may have added to Figure 3 in this section.

WARNING
NO AEROBATICS WITH BAGGAGE

6. Multiply the weights for all the listed items by the arm shown in Figure 3, and record that moment for each in the moment column.

7. Add the weights and list the total weight on the total line.

8. Add the moments and list the total moment at the bottom of the moment column.

9. Divide the total moment by the total weight to obtain the C.G. of the airplane loaded. Check to be sure the C.G. lies within the C.G. envelope shown on page 6-8.

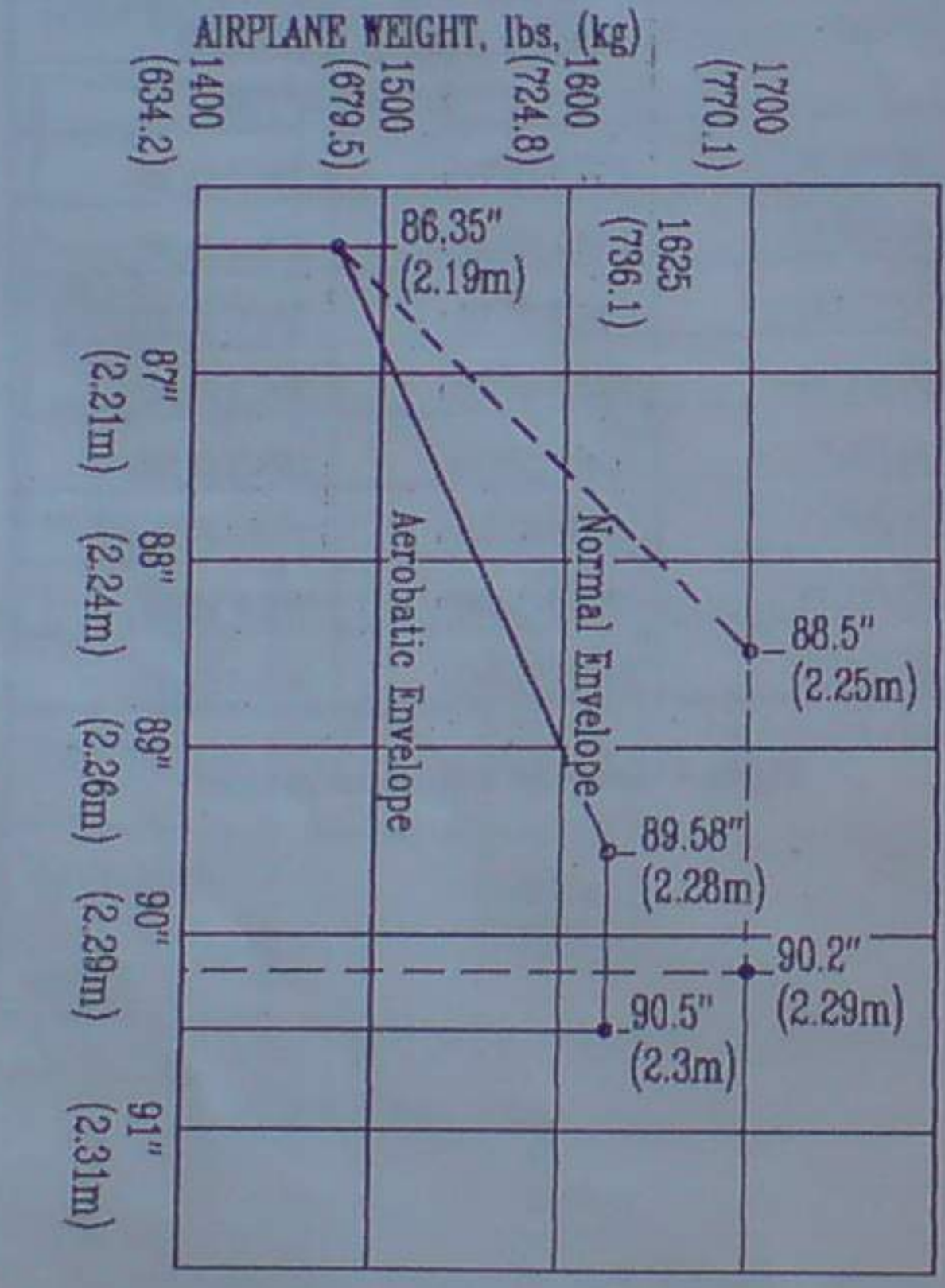
10. If the C.G. lies outside the envelope, then the baggage and fuel must be adjusted to bring the C.G. inside the envelope. In extreme cases, where the pilot and chute weight exceeds 200 lbs (90.6 kg) or is less than 150 lbs (67.95 kg), it may be necessary to ballast the airplane to bring the C.G. within the approved limits.

ITEM	WEIGHT LBS (KG)	ARM INCH (METER)	MOMENT IN-LB (M-KG)
STANDARD WEIGHT			
FUEL MAIN		81.32 IN (2.06 M)	
FUEL AUX		81.75 IN (2.07 M)	
PILOT FWD		105.15 IN (2,67 M)	
PILOT REAR		136.5 IN (3.47 M)	
BAGGAGE		157.81 IN (4.01 M)	
TOTAL			

Figure 3 Your Weight and C.G

WEIGHT lbs (kg)	FWD 105.15 IN (2.67 M)	REAR 136.5 IN (3.47 M)
	MOMENT /100	
150 (67.9)	157.7 (1.81)	204.7 (2.36)
160 (72.4)	168.2 (1.93)	218.4 (2.51)
170 (77.0)	178.7 (2.05)	232.0 (2.67)
180 (81.5)	189.3 (2.17)	245.7 (2.82)
190 (86.0)	199.8 (2.29)	259.3 (2.98)
200 (90.6)	210.3 (2.42)	273.0 (3.14)
210 (95.1)	220.8 (2.54)	286.6 (3.29)
220 (99.6)	231.3 (2.66)	300.3 (3.45)

Figure 4 Occupants Weight and Moment


Weight Versus C of G Model S-2B
AIRPLANE WEIGHT, lbs, (kg)
1400 (634.2)
1500 (679.5)
1600 (724.8)
1625 (736.1)
1700 (770.1)
87" (2.21m)
88" (2.24m)
89" (2.26m)
90" (2.29m)
91" (2.31m)
86.35" (2.19m)
88.5" (2.25m)
89.58" (2.28m)
90.2" (2.29m)
90.5" (2.3m)
Aerobatic Envelope
Normal Envelope

EQUIPMENT LIST

The following equipment list, shows equipment installed in your Pitts S-2B. This equipment was included in the empty weight of the aircraft. This list does not include some of the required equipment installed.

CHECK ITEMS INSTALLED

(X) 1. Compass (Airpath P/N C-2300)
Weight .50 lb. @ FS 123.0

(X) 2. Brake Master Cylinders (2) (Cleveland Model 10-19)
Weight 1.00 lb. @ FS 102.0

3. Battery
(X) (Gel/Cell U-128 or U1-31)
Weight 24.00 lb. @ FS 154.8
( ) (Concorde RG-25) Weight 22.80 lb. @ FS 154.8

(X) 4. Starter Solenoid (Echlin ST-81)
Weight .75 lb. @ FS 150.8

(X) 5. Engine (Textron Lycoming AEIO-540-D4A5)
Weight 415.00 lb. @ FS 48.5

6. Propeller
(X) (Hartzell HC-C2YR-4CF/FC8477A-4)
Weight 58.00 lb. @ FS 25.4
( ) (MT MTV-9-B-C/C190-18a)
Weight 62.10 lb. @ FS 25.4

7. Propeller Spinner
(X) (Hartzell P/N 836-60)
Weight 4.50 lb. @ FS 24.55
( ) (MT P-208)
Weight 1.95 lb. @ FS 24.55

INTRODUCTION

This section provides description and operation of the airplane and its systems. Some equipment described herein is optional and may not be installed in the airplane.

AIRFRAME

The airplane is a two place, bi-wing, single engine airplane and is able to do unlimited aerobatics.

The construction of the fuselage is of conventional welded 4130N tube construction. There is no specially heat treated members in the fuselage. The entire fuselage frame assembly is sandblasted and primed with an epoxy primer for protection against corrosion.

The fuselage is covered with fabric aft of the cockpit. The covering material is 2.7 oz. per yard dacron. Some Pitts have been covered in Grade A cotton. The filler and finish on all fabric surfaces is nontautening butyrate dope.

The wings are made from spruce and are covered with fabric. Four fat symmetrical ailerons with two aerodynamic counter balances on the lower wings are standard, which give very good roll rates. All wings are externally braced.

The tail construction is the same as the fuselage of welded tube construction, covered with fabric.

CAUTION

If there is any chance of fire do not turn on the electric system.

2. FOLLOWING RESCUE--Place ELT function selector switch in the "OFF" position, terminating emergency transmissions.

Following a lightning strike, or an exceptionally hard landing, the ELT may activate although no emergency exists. To check your ELT for inadvertent activation, select 121.5 MHz on your radio transceiver and listen for an emergency tone transmission. If the ELT can be heard transmitting, place the function selector switch in the "OFF" position and the tone should cease.

The airframe has been tested to loads in excess of the Federal Aviation Agency Requirements for the stringent Aerobatic Category. This means, in practical language, that at indicated airspeeds of 154 MPH or less, you may apply sudden full aileron, rudder, or nose up elevator deflection without exceeding the airframe minimum design loads. Sudden full nose down elevator may likewise be applied at 106 MPH indicated or less, without exceeding the design loads.

FLIGHT CONTROL

The elevator, and ailerons use a push pull 4130N tube system with extensive use of ball bearings which assures smooth trouble free operation and minimum wear. The rudder system has the use of cables. The control system is very positive and there is no time between input and aircraft movement.

TRIM SYSTEM

Manually operated elevator trim is provided. Elevator trimming is accomplished through elevator boost tabs mounted on each elevator. The handle is located in the rear cockpit only and when moved down gives you nose down trim, and when moved up it gives you nose up trim. The boost tabs help lighten the elevator forces when doing aerobatics.

INSTRUMENT PANELS

Both front and rear instrument panels are provided in your Pitts. The rear panel has all equipment needed by the pilot. The aircraft is solo rear seat only. The equipment installed in a standard Pitts as required by the Federal Aviation requirements by TC is as follow: Fuel sight gage rear only, full electric panel with ammeter, circuit breakers, and switches. Airspeed fwd and rear, altimeter fwd and rear, G meter rear only, compass rear only, manifold pressure gage fwd and rear, fuel flow gage rear only, oil pressure and temp gage rear only, tach fwd and rear, and CHT rear only. The factory is installing for the CHT gage a CHT/EGT combination gage. Other optional equipment that can be installed is an electric fuel display system, smoke systems, and radios of your choosing.

GROUND CONTROL

The Pitts ground handling qualities are typical of the tail wheel type, and entirely normal in this respect. Effective ground control while taxiing is accomplished through tail wheel steering by using the rudder pedals; left to go left and right to go right. When a rudder pedal is depressed, a spring loaded steering bungee (which is connected to the tail wheel and a bar on the bottom of the rudder) will turn the tail wheel approximately 15° right or left. By applying either left or right brake the tail wheel will unlock and free swivel 360°. To lock the tail wheel for steerable you must get the wheel in its normal straight ahead taxi and it will lock automatically.

Moving the Pitts by hand is most easily accomplished by pushing using the interplane I-struts for push points. Do not push the spinner, the propeller, or the empennage.

LANDING GEAR

The main landing gear is fabricated of 4130N tubing. There are no heat treated parts in the main gear. Energy is absorbed by four 1280HD shock rings and a safety cable is provided in the event the shock rings fail.

The tail gear consists of a Maule SFS-1-4 steerable swivel tail wheel assembly, a flat leaf spring for energy absorption and two steering spring assemblies are standard.

The tires on the main gear are 5.00 x 5 Type III 6 ply rating tube type tires inflated to 35 PSI. The Maule tail wheel is a solid rubber type 4 inches in diameter.

BAGGAGE COMPARTMENT

The baggage area is in the turtledeck aft of the pilots head. The access door has a latch installed. The maximum weight that may be cared in the baggage area is 20 lbs. No aerobatics is to be flown with any baggage in the baggage area.

SEAT BELTS AND SHOULDER HARNESS

Your Pitts is equipped with a five point aerobatic primary seat belt system in both the fwd and rear cockpit. A shoulder harness is part of this five point aerobatic system. A secondary seat belt system is also provide in both cockpits. Always use both systems when you fly, aerobatic or not.

When parking the airplane outdoors, the rear seat belt is only secured around the rear control stick providing a simple effective control lock.

CANOPY AND WINDSHIELD

The windshield and canopy on the Pitts is made of Plexiglass. The canopy must be closed and locked at all times other than when you need entry or exit from the airplane. Any operation with the canopy unlock could result in the loss of the canopy from the aircraft and other damage to the airplane or yourself. The canopy should only be opened when the engine is shut off. If there is a strong wind care should be taken to not have the wind blow the canopy from the aircraft. Again the canopy must be locked at all times other than for entry or exit from the aircraft.

Canopy operation is as follows. To open the canopy from the outside, operate canopy latch at lower left front corner of canopy on outside, slide canopy aft to stop, and swing canopy open to the right until it hits the stop on the top wing.

To open from the inside, operate canopy latch knob on centerline of the airplane immediately in front of the pilot, slide canopy aft to stop, and swing canopy open to the right unit it hits the stop on the top wing. To jettison the canopy, push the red knob on the right side and then unlock the canopy and begin to move the canopy aft and it will depart the aircraft.

ENGINE

The airplane is powered by a horizontally-opposed, six cylinder, air cooled, fuel injected and wet sump oil with inverted system installed. The engine is a Textron Lycoming AEIO-540-D4A5 and is rated at 260 horsepower at 2700 rpm. Major accessories include a light weight starter, belt driven alternator, and propeller governor on the front of the engine and dual magnetos, and engine driven fuel pump on the rear of the engine. A inverted oil system is also installed for unlimited time for oil pressure when in inverted flight.

PROPELLER

Standard propeller is an all metal, two blade, constant speed, governor regulated aerobatic propeller. A setting introduced into the governor with the propeller control establishes propeller rpm, and thus the engine rpm to be maintained. The governor controls flow of engine oil, boosted to high pressure by the governing pump, to or from a piston in the propeller hub. Oil pressure acting on the piston twists the blades toward low pitch (High RPM). When oil pressure to the piston in the propeller hub is relieved, centrifugal force, assisted by counter weights, twists the blades toward high pitch (low RPM). An optional 3 blade composite propeller may be installed.

FUEL SYSTEM

The Pitts has two fuel tanks installed. The main tank is in the fuselage and has 23 US gallons usable. In this main tank there is a flop tube that remains in the fuel when doing aerobatics. From the tank the fuel goes through a fuel shut off valve then to a main fuel strainer (filter). It then goes through a electric boost fuel pump and through the firewall to the engine driven pump. The engine has an injection system installed which puts fuel to each cylinder intake. The injection system is a constant fuel flow system. The electric boost pump is for priming and for loss of the engine driven pump.

The upper wing tank is for cross country flight only. No aerobatics should be flown with fuel in the top wing tank. This tank holds 5 US gallons of fuel. Before draining this tank you must first burn 12 gallons or be at 1/2 tank on the main tank, then you may drain the top tank. You will know you are draining the top tank because the fuel sight gage fuel level will increase when the fuel is being drained to the main tank. When the fuel has drained to the main tank then the fuel sight gage will return to the fuel level in the main tank. The upper tank drain valve is on the right side of the rear cockpit. Do not attempt to empty the main tank and then run the engine with the top tank draining into the main tank.

The main tank is the only tank with a fuel sight gage installed, therefore the top wing tank must be drained into it. This sight gage will only show fuel levels in level flight. The sight gage will not show any fuel levels above 3/4 full, but is very actuate below this level. The empty line is at the unusable fuel level in the tank in level flight. It is very important to know what amount of fuel you have on board before any flight is attempted.

BRAKES

The airplane has a single disc, hydraulically actuated brake on each main landing gear wheel. Each brake is connected, by a hydraulic line, to a master cylinder. This master cylinder is located forward of the rear rudder pedals. The brakes are operated by applying pressure to the toe brake pedals on either rudder pedals, forward or rear which are interconnected. This hydraulically actuated brake system on the Pitts is a sealed system, meaning not vented, to prevent fluid lost when doing aerobatics.

ELECTRICAL SYSTEM

The electrical energy is supplied by a 14 volt, direct current system powered by an engine driven, 60 amp alternator. The battery is located aft of the rear seat. Power is supplied to most general electrical circuits through the primary bus bar.

The master switch is a single switch not a split rocker type switch. There is a separate alternator field switch which is turned on after the engine is running. The ammeter indicates the flow of current, in amperes, from the alternator to the battery or from the battery to the airplane electrical system.

STALL WARNING SYSTEM

The airplane is equipped with a vane type stall warning unit, in the leading edge of the right lower wing, which is electrically connected to a stall warning horn. The master switch must be on to have the stall warning system activated. The vane in the wing senses the change of airflow over the wing, and operates the warning horn at airspeeds between 5 to 10 MPH (4 to 8 KTS) above the stall in upright configurations.

EMERGENCY LOCATOR TRANSMITTER (ELT)

The ELT consists of a self contained radio transmitter and battery power supply and is activated by impact that may be experienced in a crash landing. The ELT emits an omni-directional signal on the international distress frequency of 121.5. Following a crash landing, the ELT will provide line of sight transmission up to 100 miles at 10,000 feet.

The ELT is readily identified as a bright orange or yellow unit mounted behind the rear seat on the bottom of the baggage area. The ELT has been safety wired to its mounting tray so that it will not come loose while doing aerobatics. Immediately after a forced landing where emergency assistance is required, the ELT should be utilized as follows:

1. ENSURE ELT ACTIVATION--Turn a radio transceiver on and select 121.5 MHz. If the ELT can be heard transmitting, it was activated by the "g" switch and is functioning properly. If no emergency tone is audible, place the function selector switch in the "ON" position.

INTRODUCTION

This section contains factory recommended procedures for proper ground handling and routine care and servicing of your Pitts. It also identifies certain inspection and maintenance requirements which must be followed if your airplane is to retain that new plane performance and dependability. It is wise to follow a planned schedule of lubrication and preventive maintenance based on climatic and flying conditions encountered in your locality.

IDENTIFICATION PLATE

All correspondence regarding your airplane should include the SERIAL NUMBER. The serial number, model number, Production Certificate number (PC) and Type Certificate number (TC) can be found on the Identification Plate (Data Plate), located on the left rear cockpit panel.

OWNER FOLLOW UP SYSTEM

Your Pitts has an owner warranty card in the aircraft paperwork. When completed and mailed back to the company, this will put you on the mailing list to receive service, and other information on your Pitts.

PUBLICATIONS

Various publications are furnished with the airplane when delivered from the factory. These items are listed below.

1. AFM (Airplane Flight Manual)
2. Owners Manual, Maintenance Manual
3. Parts Catalogs
4. Engine Owners and Operators Manual
5. Propeller Operators Manual
6. Avionics Operator Flyers
7. Warranty cards on major items, ie: engine, prop, etc.

AIRPLANE FILE

There is miscellaneous data, information and licenses that are a part of the airplane file. The following is a checklist for that file. In addition, a periodic check should be made of the latest Federal Aviation Regulations to ensure that all requirements are met.

A: To be displayed in the airplane at all times:

1. Aircraft Airworthiness Certificate (FAA Form 8100-2)
2. Aircraft Registration Certificate (FAA Form 8050-3)
3. Aircraft Radio Station License, if transmitter installed (FCC form 556).

B: To be carried in the airplane at all times:

1. Weight and Balance, and associated papers.
2. Equipment List.

C: To be made available upon request:

1. Airplane Log Book.
2. Engine Log Book.
3. Propeller Log Book.

Most of the items listed are required by the United States Federal Aviation Regulations. The Regulations of other nations may require other documents and data. Owners of airplanes not registered in the United States should check with their own aviation officials to determine their individual requirements.

AIRPLANE INSPECTION PERIODS

FAA REQUIRED INSPECTIONS

As required by Federal Aviation Regulations, all civil aircraft of U.S. registry must undergo a complete inspection (Annual) each twelve calendar months. In addition to the required Annual inspection, aircraft operated commercially (for hire) must have a complete inspection every 100 hours of operation.

The FAA may require other inspections by the issuance of Airworthiness Directives (ADs) applicable to the airplane, engine, propeller and components. It is the responsibility of the owner/operator to ensure compliance with all applicable (ADs), service bulletins, and if the inspections are repetitive, to take appropriate steps to prevent inadvertent noncompliance.

PILOT CONDUCTED PREVENTIVE MAINTENANCE

The owner or operator of an aircraft is primarily responsible for maintaining that aircraft in an airworthy condition.

A certified pilot who owns or operates an airplane for noncommercial use is authorized by FAR Part 91, Subpart E to perform limited maintenance on his airplane. Refer to FAR Part 91 Subpart E and FAR Part 43 for a list of the specific maintenance operations which are allowed.

Pilots operating airplanes of other than U.S. registry should refer to the regulations of the country of certification for information on preventive maintenance that may be performed by pilots.

GROUND HANDLING

The airplane is most easily and safely maneuvered by hand by pushing on the I Struts.

JACKING

Refer to the Owners Manual, Maintenance Manual for specific procedures and equipment required.

LEVELING

Longitudinal leveling is accomplished by placing a level on leveling boards across the top longerons in the rear cockpit.

STORAGE

If storage of the aircraft is needed refer to the service bulletins from Textron Lycoming for storage of the engine. If the aircraft has not been flown for 30 days the aircraft should be flown or put into storage to protect the engine and airplane from corrosion. For preparation on airframe storage please contact the factory.

SERVICING

In addition to the PREFLIGHT INSPECTION covered in Section 4, COMPLETE servicing, inspection, and test requirements for your airplane are detailed in the Owners, Maintenance manual. The Owners, Maintenance Manual outlines items which require attention at 50, 100, and 1000 hour intervals plus those items which require servicing, inspection, and/or testing at special intervals.

ENGINE OIL

Refer to the Textron Lycoming letters, instructions or bulletins, for grade and viscosity and temperature range of use. These Textron Lycoming publications will also give you oil change intervals.

Your new Pitts leaves the factory with a straight weight mineral oil. Ask at the time of delivery as to the weight of mineral oil your aircraft has been serviced with.

ENGINE AND PROPELLER CARE

Refer to the publications from the engine and propeller manufacturers for total cleaning and care.

CLEANING AND CARE

CANOPY

Your canopy is made from plexiglass and should be cleaned with an aircraft windshield cleaner. Follow the directions on the cleaner being used. Never use gasoline, benzine, alcohol, acetone, carbon tetrachloride, or any other materials that will attack the plexiglass.

FABRIC/PAINT

The fabric on your Pitts has been waxed at the factory. To clean the finish of the fabric use warm water and mild dish washing soap with a soft rag. Wash and then wipe it dry with a dry clean soft rag. Wax the finish as required.

The painted surfaces can be kept bright by washing with water and mild soap, followed by a rinse with water and drying with a cloth or chamois. Waxing is unnecessary to keep the painted surfaces bright. However, if desired, the airplane may be waxed with a good automotive wax.

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INTRODUCTION

This section consists of a series of supplements, each covering a single optional system which may be installed in the airplane. Each supplement contains a brief description, and when applicable, operation limitations, emergency and normal procedures, and performance.

FUEL DISPLAY SYSTEM

INTRODUCTION

The Pitts S-2B Fuel Display provides precise fuel usage instrumentation. The system includes a fuel flow transducer, a panel mounted display instrument which includes all computing circuitry.

NOTE

Although very reliable and accurate, this system is intended as a secondary indication of fuel quantity and fuel consumption rate. The primary means of determining fuel quantity is the sight gage which directly shows the level of fuel in the tank.

DESCRIPTION

The Fuel Display system consists of two main components: (a) the transducer and (b) the fuel display indicator.

The transducer is mounted in the fuel line at the bottom front of the engine between the fuel injector and the fuel divider. It senses fuel flow and provides an electrical output which represents fuel quantity used.

The fuel display indicator is mounted in the rear instrument panel. It includes all electrical circuits for computing fuel flow and total usage, as well as a liquid-crystal display (LCD) for visual display of fuel usage and flow rate.

BASIC OPERATION

A push button switch on the fuel display indicator permits selection of several modes of operation.

During normal in-flight operation, the indicator displays either total gallons of fuel used (display suffixed "U") or current rate of fuel flow in gallons per hour (display suffixed "F").

For example, if the display reads "14.6U", the total fuel consumed since the last resetting of the indicator is 14.6 gallons. If the display reads "12.1F", the current rate of fuel flow is 12.1 gph.

START UP BLINKING

At start up, after turning on the aircraft master switch, the indicator will display fuel used in a blinking mode. If the aircraft has not been refueled, press the FUEL METER push button momentarily. The start up blinking will stop and fuel usage determination will continue from the previous reading. After starting the engine you may have to press the FUEL METER push button momentarily again to stop the blinking.

ZEROING AFTER REFUELING

If the aircraft has been refueled (fuel tank full), press and hold the FUEL METER push button for 3 seconds to reset the indicator to zero. The start up blinking will stop and fuel usage determination will start from zero.

ACCIDENTAL ZEROING

If the FUEL METER push button is accidentally held for 3 seconds, but the aircraft has not been refueled, the indicator will be zeroed. To correct for unwanted zeroing, press and hold the FUEL METER push button for 15 seconds to return the indicator to the last fuel used reading.

SWITCHING "U" TO "F"

After start up, the display shows quantity of fuel used in gph (suffix "U"). To switch the display to fuel flow, press the FUEL METER switch momentarily, and the display will indicate fuel flow (suffix "F"). To return to quantity of fuel used (suffix "U") again press the push button momentarily.

NOTE

All fuel quantity indication is in US Gallons

SMOKE SYSTEM

INTRODUCTION

The Pitts S-2B Smoke System provides a means to generate smoke for airshows, or other needs.

DESCRIPTION

The Smoke System consists of a smoke oil tank, electric pump, switch, hoses and nozzles to dispense the smoke oil into the exhaust system of the aircraft.

The tank is mounted between the fwd floorboards. An electric "ON", "OFF" switch is located below the rear panel.

BASIC OPERATION

When the electric switch is placed in the "ON" position an electric solenoid is opened and the electric pump is turned on which begins to pump smoke oil to the nozzles in the engine exhaust system. The smoke oil is burnt which produces smoke to depart the aircraft exhaust system. An electric solenoid in the oil line to the firewall of the aircraft makes a positive oil cut off when the smoke switch is placed in the "OFF" position.

The system uses Texaco Corvus Oil, Shell Tellus or 5W non-detergent oil for making smoke. This oil is injected into the exhaust system at a rate of one gallon per minute or less. The oil flow rate may be adjusted by changing the size of the orifice in the nozzles if more or less smoke is required.

PLACARD & LIMITATIONS

A placard must be installed when the Smoke System has been installed in the Aircraft. The placard is installed in the rear cockpit on the instrument panel in the vicinity of the smoke pump switch. This placard reads as follows:

"OPERATE SMOKE DURING SOLO FLIGHT ONLY
DRAIN OIL TANK FOR TWO PLACE FLIGHT"

PILOT'S OPERATING HANDBOOK AND FAA-APPROVED AIRPLANE FLIGHT MANUAL SUPPLEMENT E-662-E

For Airplane Model

PITTS MODEL	ENGINE
S2B	Lyc. AEIO-540-D4A5

Serial No._____

Registration No._____

Hydraulic 3-Blade-Constant-Speed Propeller
MTV-9-B-C/C203-46

The information contained herein supplements or supersedes the information presented in the basic Pilot's Operating Handbook and FAA Approved Airplane Flight Manual when this propeller is installed in accordance with STC ....SA00458DE.....
For Limitations , Procedures , and Performance information not contained in this supplement, consult the basic Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.

This supplement must be inserted into Section 9 of the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.

Approved by the Federal Aviation Administration

David T. Crosson

Aircraft Certification Office
Federal Aviation Administration

Date: August 20, 2001

Section 1
GENERAL

Information concerning the propeller MTV-9-B-C/C203-46 see Section 2.

Section 2
LIMITATIONS

Propeller MTV-9-B-C/C203-46.

Diameter:	203 cm (80,0 in) cut-off to 198 cm (77,95 in) allowed for repair
Blade angle:	at station 76 cm (29,92 in) : low pitch: 8,3° ±0,2 high pitch: 30,0° ±1,0°

Markings and placards:

Markings at the propeller speed indicator:

Normal range (green arc)	between 500 RPM and 2700 RPM
Do not exceed red radial line	at 2.700 RPM

Markings and placards concerning other propellers, are obsolete.

Propeller-Governor:	According to Pitts equipment list.
Propeller-Spinner:	MT-Propeller No. P-208-C The aircraft may be operated without spinner as well. In this case remove filler plates.

Section 3
EMERGENCY PROCEDURES

Malfunction of the propeller pitch control:
If oil-pressure in the system is decreasing, or the pitch control fails, the propeller will return to high pitch position.

Control propeller-speed with the power lever. Be aware of reduced balked landing capability. Monitor oil pressure and oil temperature.