

LIMITATIONS, SPEEDS & VITAL ACTIONS

MOTOR..... LEFT HAND TRACTOR		
CONDITION	RPM	OIL TEMP.
MAX EMERG (5 min.)	2550	100 °C
MAX TAKE OFF	2400	85 °C
MAX CRUISE	2300	85 °C
MAX O'SPEED (20 sec)	2675	
NORMAL CRUISE	1900-2050	
OIL PRESSURE: MIN: NORMAL..... 30 (5 min): 40-45		
SPEEDS		MIAS
FLY OFF		60
CLIMB (2400 RPM)		77
CRUISE (2080 RPM)		120
SPINNING:AEROBATICS.....		PROHIBITED
MAXIMUM DIVING (V _{NE}).....		140
MAX FLAP EXTEND (V _{FE})		75
NORMAL APPROACH		65
FLAPLESS.....		70
STALL (Flaps UP:DOWN).....		55:45
MAX CROSSWIND		10 kt
BEFORE TAKE-OFF		BEFORE LANDING
TRIM..... FRICTION OFF	CARB AIR.....A/R	
FRICTION SET	FUEL ON:CONTENTS	
FUEL..... FULLER TANK	FLAPS.....A/R	
FLAPS.....NORMALLY UP	DOOR/HATCH..... SECURE	
CARB HEATHOT	HARNESS SECURE	
INSTRUMENTS CHECK	BRAKES OFF	
DOOR/HATCH.....SECURE		
HARNESS.....SECURE		
BRAKES..... OFF		
CONTROLS..... F & F		

COCKPIT BRIEF & INITIAL SETTINGS

FLIGHT CONTROLS	
Control column	Full & free movement
Rudder	Full & free movement (Castoring tail wheel)
Flap selector	Select as required (Lever with red painted knob on left cockpit side)
FLAPS PUMP	Check operation (Pump handle with wooden knob on left cockpit side)
FLAPS indicator	Check indication (Left insts panel)
Elevator bias lever	Full & free (Between rudder pedals) (Leave friction off)
Wheel Brakes	Full & free: Set on (Lever on left cockpit side)
MOTOR (GIPSY MAJOR 10 Mk 2 - 145 HP)	
Throttle (Left cockpit side)	Full & free: Set closed
MIXTURE – PULL LEAN	Inoperative
CARB HEAT PULL HOT	Select HOT (Under left insts panel)
MAGNETO switches.....	Check OFF (Sws on left insts panel)
FUEL (2 x 16 Gal)	
Fuel selector	Set to PORT or STBD A/R (Left lower cockpit side) (Select least full tank)
Gauges	Check (Top surface of each wing) (Dip tanks to confirm)
ELECTRICAL PANEL (Forward of stick)	
GROUND/FLIGHT switch	GROUND (Right cockpit side) N.B. START button live
Generator FIELD switch.....	Off
VHF COMM:GPS:ATC	Off for start

STARTING PROCEDURE

PILOT	ENGINEER
	"FUEL ON" "BRAKES ON" "THROTTLE CLOSED" "SWITCHES OFF"
"FUEL ON" "BRAKES ON" "THROTTLE CLOSED" "SWITCHES OFF"	Primes carb. and sucks in "READY FOR STARTING"
"CLEAR PROP" Set throttle 1/4" open MAGNETOs.....Both ON START button Push When engine runs: Oil press. within 30 sec. GND/FLIGHT..... FLIGHT Gen FIELD sw..... ON Avionics..... ON A/R	

WARM UP/RUN-UP

RPM..... 1100 for ≈ 4 minutes Brakes Set on Fuel selector.....Set to fuller tank Ignition.....Dead cut check MAGNETO check @ 1800 RPM: Max drop 75 RPM CARB HEAT Check and leave in HOT Low voltage light.....Check extinguished Throttle Gently SHUT :Idling ≈ 650
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BEFORE TAKEOFF

Trim	Friction off
Throttle friction.....	Set
Fuel	Fuller tank
MIXTURE	Rich (Fully in)
FLAPS.....	Normally UP
CARB HEAT	Pull to HOT
Instruments	Check
Door, hatch & harnesses	Secure
Brakes.....	Off
Flight Controls	Full & free

BEFORE LANDING

MIXTURE	Rich (Fully in)
CARB HEAT	Pull to HOT
Fuel	On, contents
FLAPS (V _{FE} 75)	As required
Door, hatch & harnesses	Secure
Brakes.....	Off

AFTER LANDING

FLAPS.....	UP
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SHUT DOWN

Brakes.....	Set on
RPM	Set 1200 for 2 minutes – can include taxi in
Avionics	Off
Ignition.....	Dead cut check
Throttle.....	Closed
MAGNETO switches.....	OFF
Fuel	OFF
GROUND/FLIGHT switch.....	GROUND
Generator FIELD switch.....	Off
Brakes.....	Release when chocks in

PERFORMANCE	
Check full throttle RPM on take-off. Adequate, good for 120 mph on the level. Use 90 mph for formation lead.	
HANDLING QUALITIES	
STABILITY	
Longitudinal	Satisfactory, phugoid present & damped
Lateral	Satisfactory
Directional	Rudder fixed - Good Rudder free – stable at cruise power
CONTROL	
Longitudinal	Satisfactory but high forces during flare with trim free
Lateral	Satisfactory, aileron only turns possible
Directional	
In-Flight	On-Ground
Satisfactory, Rudder only turns possible	Brakes and castoring tail-wheel aid manoeuvrability. Set 1 notch differential brake for takeoff and landing.
HINTS/TIPS/LESSONS LEARNED	
Risk of bouncing on rough field takeoffs – raise tail promptly and support forearm to avoid inadvertent stick movements. Leave elevator bias loose for takeoff and accept out of trim forces unless prolonged climb/cruise envisaged. There is a 10 mph difference in indicated stall speed with the flaps full down – if making flapless approach adjust speeds accordingly. Undamped bouncing during ground operations can stop engine!	

LOADING DATA & LIMITATIONS			
MWTA (lb)	2200	998 kg	
Weighing Datum:	LE of wing 24 " from centre-line		
Permitted c.g. range (inches aft of datum)	15	to	24
Percentage SMC	25.3%	to	38.4%
Total Fuel Capacity	Tank 1	16	(Gal)
	Tank 2	16	(Gal)
WEIGHT AND BALANCE CALCULATIONS			
ITEM (WITH METAL PROP)	WEIGHT "W" (lb)	ARM "A" (in)	MOMENT "M"="W" x "A"
BASIC or APS	1725	17.5	30188
PILOT		23.6	
PAX (REAR SEATS)		51.5	
BAGGAGE (Mx 20 lb)		74.6	
BALLAST			
MISC.			
	(Σ W)	(Σ M/ Σ W)	(Σ M)
ZERO FUEL WEIGHT			
(Gal)	FUEL	(lb)	
	(Gal x 7.2 =)	27.6	
	(Gal x 7.2 =)	27.6	
	(ZFW+Fuel)	(Σ M/ Σ W)	(Σ M)
TAKEOFF STATE			
ZERO FUEL WEIGHT			
(Gal)	FUEL	(lb)	
	(Gal x 7.2 =)	27.6	
	(Gal x 7.2 =)	27.6	
	(ZFW+Fuel)	(Σ M/ Σ W)	(Σ M)
LANDING STATE			