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AP 101B-5510-14
(AL3 January 1976)

FLIGHT REFERENCE CARDS

CHIPMUNK T Mk 10

NORMAL DRILLS

Prepared by Procurement Executive,
Ministry of Defence, in collaboration with
RAF Handling Squadron

BY COMMAND OF THE DEFENCE COUNCIL

NOTES TO USERS

1. These cards are complementary to the Chipmunk T Mk 10 Pilot's Notes (AP 101B-5510-15) the same conventions are used and amendment procedure is similar.

Comments and suggestions relating to these cards should be forwarded to the Officer Commanding, Royal Air Force Handling Squadron, Boscombe Down, Salisbury SP4 0JF.

LIST OF CARDS (AL3)

Card No	*Issued by*	*Card No*	*Issued by*
1	AL3	8	AL3
2	AL3	9	AL1
3*	AL2	10	AL2
4	AL3	11	AL1
5	AL3	12	AL1
6	Initial	13	Initial
7	AL3		

* Manuscript amendment.

INITIAL CHECKS

On approaching the aircraft check:

Initial

General position	...	Clear of other aircraft Tail not toward open hanger doors No fuel or oil leaks, or spillage under aircraft
Ground fire extinguisher available		
Chocks	...	In position
Starter breech ...	...	In engine bay stowage
Safety harness ...	...	Straps inside cockpit

Before starting the external checks, carry out the following preliminary checks:

Hood

Condition and operation	Satisfactory
Optical panels	Clean
Spring loaded panel ...	Secure
External jettison handles	Wire locked in correct position

Front Cockpit

Ignition switches	...	Off
Brakes	...	Off
Ground/flight switch	...	GROUND
Starter safety cover	...	Toggle covered
Flaps	...	Up
Flying controls ...	...	Locks removed and stowed
Rudder pedals ...	...	Check adjustment
Loose articles ...	...	Clear

(continued)

INITIAL CHECKS (*contd*)

Rear Cockpit

Ignition switches ...	Off
UHF	Front cockpit selected
Cockpit lights switches	Off
Front cockpit lights override switch ...	Guarded down
Throttle friction nut ...	Loosened
DI	Caged
Mute switch	Unmuted
VHF	Front cockpit selected, unmuted
Baggage locker	Contents secure. Closed
Safety harness	Secure if solo
Rudder pedals	Adjusted if dual
Loose articles	Clear

External

EXTERNAL CHECKS

Carry out a systematic check of the aircraft exterior for obvious signs of damage, leaks, loose panels or fairings. At the same time make the following specific checks:

Port mainplane

First-aid kit	Pack in position (if window fitted)
Flap	Position
Aileron	Condition of hinges and linkages. Full and free movement
Pressure-head	Cover removed. Condition
Fuel tank cap	Secure
Fuel gauge	Contents
Fuel vent	Hole clear

Port undercarriage

◀ Undercarriage leg ...	Extension approx. 9 inches ▶
Tyre	No cuts or creep. Inflation normal. Valve free

▶◀

Engine

Intakes and ducts ...	Unobstructed
Spinner	Secure
Exhaust	Secure
Oil filler cap	Secure
Starter exhaust	In line with cowling vent

Starboard undercarriage

As for port undercarriage

Starboard mainplane

Fuel tank cap	Secure
Fuel gauge	Contents
Fuel vent	Hole clear
VHF aerial	Secure
Aileron	Condition of hinges and linkages. Full and free movement
Flap	Position

(*continued*)

EXTERNAL CHECKS (*cont.*)

Starboard fuselage

Internal canopy break-out panels jettison levers	...	Correct position, locking wire unbroken. Operating rod pins engaged
Lower UHF aerial	...	Security

Tail unit

Elevators	... ...	Full and free movement. Condition of hinges, linkages, and tab cables
Rudder ...	... ...	Full and free movement, clear of tail fairing. Condition of hinges and linkages
Tail wheel	... ...	Strut extension correct. Tyre for cuts, creep, inflation and valve free

Port fuselage

Upper UHF aerial	...	Secure

COCKPIT CHECKS

Enter the cockpit and strap in. Check the flying controls for full, free and correct movement. Set the brake lever fully on and the ground/flight switch to FLIGHT. Check from left to right around the cockpit:

Cockpit

Pressure-head heater ...	ON
Generator test switch ...	NORMAL
Emergency lamp switch	OFF
Taxying lamp switch ...	OFF
Navigation lights switch	As required
Cockpit lamps switch ...	As required
Identification light switch	As required
UHF lamp dimmer ...	As required
Elevator trimming control	Full and correct movement Set 2 divisions nose-down
Throttle and mixture controls	Open throttle, mixture control fully forward, close throttle, check mixture control moves back with throttle. Adjust friction nut
Glider release knob ...	Check operation if towing
UHF	Off. Channel and aerial selected. Mute switch off
Generator warning light	On
Flight instruments ...	Condition. Altimeter at zero, DI caged
Engine instruments ...	Condition
VHF	Off. Light as required and mute switch off
Carb air intake ...	As required
Flap lever	Operation. Check visually with flap position. Leave UP
Fire extinguisher ...	Security
Fuel cock	On and gated
Magnetic compass ...	Serviceability. Lamp switch as required

STARTING THE ENGINE

Indicate readiness and initiate the starting drill by calling: "Fuel on, brakes on, throttle closed, switches off". Give clear thumb down signal.
When ground crewman stands clear and * confirms rear switches on, he calls "Breech inserted, cowling secure, rear switches on, clear to start", set:

Throttle ... ... ½ inch open

Give thumb up signal and call "Contact", wait for ground crewman to acknowledge "Contact", then set both ignition switches on and pull starter control to full extent.

* If the aircraft is to be flown solo, the ground crewman after priming the engine and inserting the starter breech, sets the rear cockpit ignition switches on and the hood half closed.

FAILURE TO START

a. Cartridge Fires but Engine Fails to Start
Check controls correctly set
Wait 30 seconds
Repeat starting procedure

b. Engine Fails to Start (Over-rich)
Ignition switches off
Wait 3 minutes
Unload breech
Open throttle fully
Have propeller turned backward by hand
Repeat starting procedure without priming

c. Cartridge Fails to Fire
Ignition switches off
Wait 3 minutes
Repeat starting procedure

If second cartridge fails: Ignition switches off
Wait 3 minutes
Unload breech
Investigate cause of failure
Replace *all* cartridges
Repeat starting procedure

CHECKS AFTER STARTING

Set 1100 RPM	
Oil pressure	Rising
Generator warning light	Out
Radio	On
Intercom	Test
Ignition switches ...	Dead cut check
Artificial horizon ...	Erecting
DI	Synchronise. Uncage
Pressure-head heater ...	Ground crewman checks then OFF
Radio	Test
Altimeter	Set

TESTING THE ENGINE

Aircraft into wind and/or chocked
Brakes fully on
Control column hard back, rudder neutral
Oil temperature 15°C (min)
Oil pressure 30 to 40 PSI
Set 1800 RPM
Check magnetos in turn (75 RPM max permissible drop)
Check idling RPM (650 approx)
Reset 1100 RPM
If full power check is necessary, max permissible magneto drop is 120 RPM

CHECKS BEFORE TAKE-OFF

Trim	Two divisions nose-down
Throttle friction nut ...	Adjust
Mixture	Fully rich Carburettor air intake as required
Fuel	Fully ON and gated. Contents
Flaps	UP (half flap for shortest run)
Gyros	Artificial horizon erected. DI synchronised
Gauges	Oil temperature and pressure correct for take-off
Pressure-head heater ...	On
Taxying lamp	On
Harness	Secure and tight
Hood	Closed and locked
Emergency exit panels	Retaining pins in position. Operating handles locking wire intact

CHECKS AFTER TAKE-OFF

Brakes	Off
Engine instruments ...	Checked
Flaps	Up

PRE-STALLING, SPINNING AND AEROBATIC CHECKS

Height	Sufficient for recovery (see Command Air Staff Instructions)
Airframe	Flaps as required for stalling Up for aerobatics and spinning Brakes fully off. DI caged
Security	Harness secure and tight Hood closed and locked No loose articles
Engine	Mixture fully rich. Carburettor air as required. Oil temperature and pressure within limits Fuel sufficient
Location	Clear of controlled and restricted air space
Look-out	Clear of other aircraft and cloud, vertically and horizontally

RECOMMENDED SPEEDS FOR AEROBATICS

Take-off/ Aerobatics/ Range

Roll	120 knots
Barrel roll	120 knots
Stall turn	120 knots
Loop	130 knots
Half-roll off loop ...	140 knots

RANGE AND ENDURANCE DATA

Range speed	90 knots
RPM	2030
GPH	7
Endurance speed ...	65 knots
RPM	1750
GPH	6

APPROACH PROCEDURE

Instrument approach settings

	Configuration	RPM	Rate of descent ft/min	Airspeed knots
Initial descent (fast)	Flaps up	1500	1000	90
Slow rate descent	Flaps up	Adjust to give 500 ft/min.		90
Glide path	Half flap	Adjust to give 300 ft/min.		70

When in visual contact with the runway, lower full flap and reduce speed to threshold speed. Fly the GCA pattern at 90 knots, flaps up.

CHECKS BEFORE JOINING CIRCUIT

Fuel	Contents sufficient
Instruments	Erect and synchronised
Radio	Correct frequency
	Unmuted
	Call "Rejoining"
Altimeter	Set as required
	Check reading

CHECKS BEFORE LANDING

Mixture	Rich. Carburettor air as required
Fuel	Contents sufficient
Flaps	As required
Harness	Secure and tight
Hood	Closed and locked
Brakes	As required

THRESHOLD SPEED (Knots)

	Flaps Down	*Flaps Up*
Power assisted	55	60
Glide	60	65
Short landing	45 (50 knots until experienced)	

CHECKS AFTER LANDING

Brakes	Fully on
Pressure-head heater ...	Off
Taxying lamp ...	Off
Throttle friction nut ...	Adjust
Flaps	Up

SHUT-DOWN PROCEDURE

Idle at 1100 RPM for 1 minute. Check for dead cut and live magneto. Close throttle and pull cut-out. Switch off ignition when engine stops.

If slow running cut-out not fitted:

Check for dead cut. Close throttle, switch off ignition. Open throttle fully at 200 to 300 RPM. When propeller stops, close throttle.

Lighting	Off
Direction indicator ...	Caged
Fuel cock	OFF
Electrical services ...	All off
Radio	Off
Ground/flight switch ...	GROUND

Give 'thumb down' signal
Call "switches off"
Have breech removed

Chocks	In position
Brakes	Off
Safety harness	Straps inside cockpit
Ignition switches ...	All off

LIMITATIONS

Engine Limitations

Condition	*Time Limit*	*Max RPM*	*Max Oil Temp °C*
*Max take-off	5 minutes	2550	100
Max rich	Unrestricted	2400	85
Max weak	Unrestricted	2300	85
Max diving ($\frac{1}{3}$ throttle)	20 seconds	2675	—

*Cannot be obtained on take-off or on climb at recommended speeds.

Oil Pressures:

Normal ... ... 40 to 45 PSI
Flight emergency minimum at maximum continuous RPM ... ... 30 PSI
Minimum oil temperature for opening up ... 15°C

LIMITATIONS (*contd*)

Maximum Speed (knots)

Maximum permissible	173
Flaps: between up and half	93
between half and down	71

WARNING: Care must be taken in manoeuvres at speeds above 100 knots, as it is possible to exceed the limitations of +5g.

Spinning

Up to eight turns.

Acceleration

Accelerometer readings (Mod H319) are permitted within the range +5g to minus 3g.

Weight and CG

Maximum AUW ...	2100 lb
Maximum load in luggage locker	40 lb (18 lb if two pilots)
Forward CG	6·48 ins fwd of datum
Aft CG	0·257 ins aft of datum

Aircraft Approach Limitations (in feet)

	Runway Aids Without Glide-Path Guidance	*PAR*
In-line localiser	250	200
Off-set localiser	270	—

Glider Towing

Maximum AUW ...	1900 lb
Maximum glider AUW	1150 lb
Maximum rate turn ...	2
Minimum cruising speed	50 knots (normal)

ABANDONING THE AIRCRAFT

WARNING: The minimum height for abandoning the aircraft is 1500 feet above ground level, except in a spin when it is 3000 feet above ground level.

Actions

Warn crew
Make distress call
Operate spring-loaded hood panel
Open hood
Release safety harness
Speed as low as possible
Disconnect the R/T lead
Abandon the aircraft by diving head first towards the trailing edge of the mainplane. If spinning, leave aircraft on outside of spin.

DITCHING

If possible, abandon rather than ditch. If ditching inevitable:

Crew	...	Warn
Radio	...	Transmit distress call
Flaps	...	As required
Hood	...	Jettison side panels Open
Parachute harness	...	Release
Safety harness	...	Locked and tight

Approach into wind at normal speed with full flap.
If power available, hold off just clear of water.
Touch down at lowest practicable speed.
Close throttle and stall in 3-point attitude.
Land on crest of wave if possible or, if the swell is heavy, along the swell.
Aircraft will probably turn on its back and float in a nose-down attitude.
Release harness and leave cockpit.

(Completely revised)

RESTARTING THE ENGINE IN FLIGHT

WARNING: Do not attempt to restart an engine after fire or mechanical failure.

a. Engine Stops Firing, Propeller Windmilling

(1) Check:

Ignition switches	...	ON
Fuel cock ...	...	ON
Carb air ...	...	HOT

(2) If the engine does not pick up, carry out a forced landing or abandon.

b. Engine Stops Firing, Propeller Stationary

(1) Provided that the propeller is *stationary*, restart the engine with the cartridge starter, as follows:

Ignition switches	...	ON
Fuel cock ...	...	ON
Throttle ...	...	Closed

Operate the starter in the normal manner.

(2) If the starter fails to operate, it may be possible to start the engine by diving, provided that, if the restart is unsuccessful, sufficient height will still be available to make a forced landing. Application of rudder or elevator, to induce an asymmetric load on the blades, may assist in moving the propeller.

(*Completely revised*)

ENGINE FAILURE IN FLIGHT

Immediate Actions

Close the throttle, gaining height if possible while reducing speed to 70 knots for the glide.
Warn crew.
Select suitable landing area, noting wind direction and strength.
Check altimeter setting.
Plan descent

Subsequent Actions

Check for cause of failure (mechanical, fuel state, fuel cock, ignition switches, mixture control, intake blockage or icing):

Engine Failure/ Forced Landing

If Mechanical	*If not Mechanical*
Fuel OFF	Make RT distress call
Ignition OFF	Attempt to restart (Card 12) if height available
Make RT distress call	
Carry out forced landing	
Do not attempt to restart	

Make abandon decision before committal height of 1500 ft. AGL.

FORCED LANDING

Check:

Fuel	OFF
Ignition	OFF
Hood	Closed and locked, side panels jettisoned
Harness	Secure and tight
Brakes	As required

If the speed is high after round-out, land on mainwheels, except on rough or soft ground, when 3-point landing essential.

ENGINE FAILURE AFTER TAKE-OFF

(*a*) *Immediate actions*

Warn crew
Select gliding attitude
Pick a landing area
Lower flap as necessary.

(*b*) *Subsequent actions*

Make R/T call
Carry out forced landing checks (Card 11)

NOTE: Circumstances and the time available will dictate the least hazardous course of action and which of the above drills can be completed.

Fire

ENGINE FIRE ON THE GROUND

Actions

Warn crew
Throttle ... ... Closed
Fuel cock ... ... OFF
Ignition switches ... OFF
Parking brake ... ... Off, to allow aircraft to be moved from burning fuel or other aircraft
Ground/flight switch ... GROUND

Collect hand fire extinguisher and vacate aircraft quickly. Use fire extinguisher if possible.

ENGINE FIRE IN THE AIR

NOTE: No engine fire extinguisher is fitted.

Immediate actions

Warn crew
Throttle ... ... Closed
Fuel cock ... ... OFF
Raise nose to reduce speed and RPM
Ignition switches ... OFF

Subsequent actions

Make R/T distress call

If fire does not go out, abandon aircraft if sufficient height available.

If impossible to abandon, make a forced landing.

If fire goes out, do not restart engine; make a forced landing.

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CHIPMUNK T. Mk. 10

EMERGENCIES

FIRE ON THE GROUND
FIRE IN THE AIR

ENGINE FAILURE
FORCED LANDING

RESTARTING IN FLIGHT

ABANDONING, DITCHING