SECTION 3 NORMAL PROCEDURES

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SLINGSBY
AVIATION PLC

PILOTS NOTES
FIREFLY T67M-MkII

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CAA Approved
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TP.T67M-MkII/FM

3.1 BEFORE STARTING THE ENGINE

3.1.1 Initial Check

Check loading and C of G (Section 7.1.1)

Approaching the aircraft: Chocks, towing arm, fire axe, fire extinguisher stowed, pitot cover, snow/ice/hoar frost, obstructions, aircraft attitude, obvious leaks.

Cockpit

Control lock	Remove from aircraft
Parking Brake	On
Magnetos	Off, key out
Master switch	On
Alternator warning	Cancel flasher
Pitot heater	On for 20 secs
Strobe light	On - check - off
Landing lights	On - check - off
Trim	Note position
Stall warning	Check light/horn
Pitot head	Check heat
Pitot heater	Off
(Night flying)	Nav lights on - check, landing lights on - check both - off
(Structural temperature ..... in hot conditions) (Pre Mod 734B/D) **(For Post Mod 734B/D see Supplement F)**	Press test switch Check structural temperature - on OAT gauge below 50°C
Master switch	Off

CAUTION

Strobe position light not to be used in cloud or mist or on the ground.

3.1.2 External Check (ref. illustration 8.3 Principal Features)

Start at left wing inboard trailing edge.

Left wing

Flap	Condition, play, stiff nut
Undercarriage (rear)	Tyre, torque link, brake leaks
Aileron	Condition, movement, play, stiff nut, drains
Wing	Condition, drains
Wingtip	Nav light
Leading edge	Condition
Fuel cap	Correctly fitted and locked
Fuel drain	Check for water contamination
Access panel	Security
Pitot head	Remove cover/hole clear
Undercarriage (front)	Condition/extension. Tyre creep/ inflation/condition. Brakes - leaks/damage
Flap underside	Condition, drains

Forward fuselage

Fresh air intake	Clear
Cowling Pt side	Security, 7 fasteners, 2 pins, oil leaks
Landing lights	Undamaged
Propeller	Condition, spinner
Nosewheel	Condition, extension, tyre-cuts/creep/ inflation
Engine air inlet	Check foam filter is clean
Cowling Stbd side	Security, 6 fasteners, 2 pins
Oil	Contents, panel secure
Fresh air intake	Clear. Temp. probe

3.1.2 External Check (continued)

Right Wing

Leading edge	Condition
Fuel cap	Correctly fitted and locked
Fuel drain	Check for water contamination
Undercarriage (front)	Condition, extension. Tyre-creep/ inflation/condition. Brakes damage/leaks
Flap underside	Condition, drains
Wing surfaces	Condition
Access panel	Security
Wingtip	Nav light
Aileron	Condition, movement, play, stiff nut, drains
Wing	Drains
Undercarriage (rear)	Tyre, torque link, brake-leaks
Flap	Condition, play, stiff nut
Nav aerials (if fitted)	Secure/undamaged

Rear fuselage

Canopy stbd side	Cracks, clean
Static vent starboard	Plug out, clear
VHF aerial (if fitted)	Secure/undamaged
Fin fairing	Secure
Elevator	Condition, movement, play, drains
Inspection cover	Secure (side)
Strobe light	Condition
Rudder	DO NOT MOVE Condition stiff nuts. Nav light
Trim tab	Position, stiff nut, security, play

3.1.2 External Check (continued)

Rear fuselage (continued)

Tail bumper ..... Unmarked

Static vent port ..... Plug out, clear

Canopy port side ..... Cracks, clean

3.2 STARTING THE ENGINE

3.2.1 Pre-start Cockpit Checks

Cockpit ..... Check for loose articles

Rudder pedals ..... Adjust for leg length

Harness ..... Strap in (5 straps).
If solo secure RH harness

Helmet/headset ..... Plugged in

Controls (ail/elev) ..... Full and free movement

Lights ..... All off

Radios ..... Off

Avionics ..... Off

Fuel pump ..... Off

Alternator ..... Off

Master switch ..... On

Intercomm ..... On

Alternator warn ..... Cancel

Pitot heat ..... Off

Accelerometer ..... Reset

Manifold pressure ..... Note

Clock ..... Correct

3.2.1 Pre-start Cockpit Checks (Continued)

ASI	Zero
VSI	±100ft/min
Emergency static vent (Mod 485	Closed
Circuit breakers	All in
Throttle	Check full movement leave closed
Propeller	Check full movement leave at max RPM
Mixture	Check full movement leave at cut-off
Fuel contents	Check (both gauges wing tank A/C)
Fuel cock	On (select tank with lowest quantity)
Parking brake	On (Pump brakes)
Flap	Full check - leave up
Trim	Check full range and leave neutral
Canopy	Secure
Propeller	Clear

3.2.2 Starting the Engine and After Start Checks

Engine hot or cold

Mixture	Full rich
Booster pump	On
Throttle	Open (1/4 inch to 1/2 inch) until a slight fuel pressure is indicated on the fuel pressure gauge
Booster pump	Off
Mixture	Lean to cutoff
Magneto	Left
Starter	Press; (check starter warning light on during start); release when engine fires

3.2.2 Starting the Engine and After Start Checks (continued)

Engine hot or cold (continued)

Mixture	Slowly to full rich
Magneto	Both
Starter warning	Check out
RPM	Set 1200 to warm up
Oil pressure	Risen within 30 secs, if not, magneto off
Fuel pressure	Check
Magneto	Check for dead cut
Alternator	On
Radios Nav aids	As required
Suction	Indicating
Horizon	Erecting - adjust datum
DI	Synchronise
Radio	Check on 2 freqs if possible Obtain taxy clearance
Altimeter	Check setting/indications
Ammeter	Shows positive charge
Alternator failure warning	Check light out
Canopy	Closed and locked

CAUTION

Should starter warning light fail to extinguish after starter button is released SHUT DOWN ENGINE and establish cause.

3.2.2 Starting the Engine and After Start Checks

Alternator ..... On

NOTE

Avoid long periods of operation with the throttle at idle as this can lead to spark plug fouling.

3.4 TESTING THE ENGINE

CAUTION

WHEN CLOSING THE CANOPY PRIOR TO FLIGHT, CHECK ALIGNMENT OF WITNESS LINE ON CANOPY OPEN/CLOSE PLACARD AND BOTTOM OF RELEASE HANDLE, TO ENSURE THAT THE LATCH MECHANISM IS IN THE FULLY LOCKED POSITION

Canopy	Closed and locked
Parking brake	On (Pump brakes)
Safety	Clear behind
Fuel cock	Check on (Change tanks)
Fuel pressure	0.5 to 8 psi
Oil pressure	Green 4.2 to 6.2 bar
Oil temp	Green 40°C to 118°C
Cylinder head temp	Green 100°C to 230°C
RPM	Set 1800 RPM
Suction	Green (4.5 to 5.5 in Hg)
Magneto drop	Max 175 RPM, no more than 50 RPM difference between L and R
Propeller	Exercise pitch control 4 times RPM drop not more than 500
Idling	Check idling 800 RPM minimum

NOTE

Oil Pressure During Normal Operation Because of the greater length of the oil flow path from the sump to the oil pump, the pump has to work harder than normal to draw oil through these lines: the resultant pressure drop through these lines results in a lowered oil pressure. This effect will be more marked when the engine is cold and unlike a standard engine, the indicated oil pressure will normally tend to rise as the engine warms up. Thus it is not necessarily an indication of trouble if the oil pressure minima are only just met on start-up.

3.3 TAXYING

Check brakes immediately.

Check full rudder travel whilst taxying.

Check compasses and horizon and turn and slip for correct indications during turns.

3.4 TESTING THE ENGINE

Parking brake	On
Safety	Clear behind - Canopy locked
Fuel contents	Check (Both gauges)
Fuel cock	Check on (Change tanks)
Fuel pressure	Indicating
Oil pressure	Green (4.2 to 6.2 bar)
Oil temp	Green (40°C to 118°C)
Cylinder head temp	Green (0°C to 230°C)
RPM	Set 1800 RPM
Suction	Green (4.5 to 5.5 in Hg)
Oil pressure	Green
Magneto drop	Max 175 RPM, no more than 50 RPM difference between L and R
Propeller	Check pitch control functional
Idling	Check idling 800 RPM minimum

NOTE:

Oil Pressure During Normal Operation Because of the length of the oil flow between the sump and the oil pump there is a slightly lower oil pressure than would be expected. This effect will be more marked when the engine is cold and unlike a standard engine, the indicated oil pressure will normally tend to rise as the engine warms up. Thus it is not necessarily an indication of trouble if the oil pressure minima are only just met on start-up.

3.5 PRE-TAKEOFF VITAL ACTIONS

Throttle friction	Stiff
Suction	Green (4.5 to 5.5 in Hg)
Oil temp/press	Green
Fuel press	Green
Pitot heater	On (if conditions require)
Horizon	Erect
DI	Synchronised - note wander
Strobe light	On
Magnetos	Both
Fuel booster pump	On
Fuel contents	Check (Both gauges)
Fuel cock	Check on (Left or Right Tank)
Flaps	Up or takeoff
	Check liftoff speed
	55 kts takeoff flap (18°)
	63 kts no flaps
Trim	Set at N
Harness	Tight and secure
Controls elev/ail	Full and free movement
Canopy latch	Closed position

PRE-TAKEOFF EMERGENCY BRIEF

The following points must be briefed:

1. Engine failure on the ground.
2. Engine failure below about 300 ft.
3. Engine failure above 300 ft.

The following points must be considered:

1. Runway surface type and condition.
2. Runway length.
3. Surface wind.
4. Availability of emergency landing areas round airfield.

3.6 TAKEOFF AND CLIMB

Takeoff

Throttle	Full throttle
RPM	Check 2550 RPM minimum
Oil pressure	Green
Oil temp	Green
Cylinder head temp	Green
ASI	Increasing
Raise nosewheel	at 45 kts IAS
Takeoff - liftoff speed	55 kts takeoff flap
	63 kts no flap
Climb	70 kts takeoff flap (18°)
	77 kts no flap

WARNING

> IN STRONG CROSSWIND CONDITIONS LEAVE NOSEWHEEL ON THE GROUND UNTIL TAKEOFF SPEED THEN ROTATE TO TAKEOFF ATTITUDE. <

After Takeoff Checks

Brakes	On/off
Flaps	Raise at 73 kts
Temps & press	Check
Booster pump	Off (at a safe height)
Fuel pressure	Check

Departure Checks

Altimeter	Set as required
Temps & press	Check

3.7 ERECT SPIN RECOVERY

3.7.1 Standard Recovery Technique

a) Close the throttle.

b) Raise the flaps.

c) Check direction of spin on the turn co-ordinator.

d) Apply full rudder to oppose the indicated direction of turn.

e) Hold ailerons firmly neutral.

f) Move control column progressively forward until spin stops.

g) Centralise rudder.

h) Level the wings with aileron.

i) Recover from the dive.

WARNING

WITH C OF G AT REARWARD LIMIT THE PILOT MUST BE PREPARED TO MOVE CONTROL COLUMN FULLY FORWARD TO RECOVER FROM SPIN.

3.7.2 Incorrect Recovery

A high rotation rate spin may occur if the correct recovery procedure is not followed, particularly if the control column is moved forward, partially or fully, BEFORE the application of full anti-spin rudder. Such out-of-sequence control actions will delay recovery, and increase the height loss. If the aircraft has not recovered within 2 complete rotations after application of full anti-spin rudder and fully forward control column, the following procedure may be used to expedite recovery.

a. Check that FULL anti-spin rudder is applied.

b. Move the control column FULLY AFT - then SLOWLY FORWARD until the spin stops.

c. Centralise the controls and recover to level flight, (observing the "g" limitations).

3.7.3. Aerobatics or Spinning - Gyro Instruments

Aerobatics or spinning may cause the artificial horizon or directional gyro to topple. Up to 10 minutes may be required for a gyro instrument to resume normal operation.

3.8 PRACTICE FORCED LANDINGS

Mixture rich.

Descend at 78 kts.

Warm engine and clear plugs every 1000 ft.

3.9 REJOIN CHECKS

Fuel contents	Check (Both gauges Wing Tank A/C)
Fuel control	Check on (Select tank with highest quantity Wing Tank A/C)
Engine	Check gauges green. Mixture rich
DI	Synchronise
Radio	Select and check comms and navigation aids. Make joining call.
Altimeter	Set correct millibar setting

3.10 LANDING CHECKS AND SPEEDS

3.10.1 Downwind Checks

Brakes	Off - parking brake off
Engine	Temps and press green. Mixture rich and locked. RPM to max
Fuel cock	Check on (Left or Right Tank Wing Tank A/C)
Fuel contents	Check (For tank selected Wing Tank A/C)
Booster pump	On
Fuel pressure	Check
Flaps	As required
Altimeter	QFE set
Harness	Tight and locked

3.10.2 Circuit Speeds

	Normal and Glide		Flapless	
	Flap Position	Speed (Kts)	Flap Position	Speed (Kts)
Down Wind	Up	85	Up	85
Final Turn	Takeoff	75	Up	78
Finals	Landing	70	Up	75
Threshold	Landing	70	Up	75

3.10.3 Final Checks

Flap ..... Set as required

Altimeter ..... Correct QFE set

Landing ..... Clearance received

.11 AFTER LANDING

.11.1 Checks After Landing

Landing light ..... Off

Strobe light ..... Off

Pitot heat ..... Off

Booster pump ..... Off

Flaps ..... Up

3.11.2 Stopping the Engine

> RPM .....Increase to 1800 for 15–20 seconds, then reduce to 1200 prior to shut down. <

Throttle .....Closed

3.11.2 Stopping the Engine

Parking brake	On

Run at 1000 RPM for 1 minute

Radios	Off
Navigation Aids	Off
Nav lights	Off
Alternator	Off (Check alternator fail warning operates)
Magnetos	Check for dead cut
Throttle	Closed
Mixture	Cutoff
Magnetos	When engine stops, Off
Master switch	Off
Fuel cock	Off
Flaps	Down
Parking brake	Leave on if aircraft not chocked

> ### 3.11.3 Fitting Flying Control Lock (Mod 435)

Flaps	Select up
Control lock	Fit to control sticks and flap operating lever (carefully move assembly into forward stick position)

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