Pathfinder Flying Club

SLINGSBY FIREFLY T67C - G-BYYG

CHECKLIST (Dec 16)

1. INITIAL CHECKS

On approaching the aircraft check:

General position	Safe location to taxy
Ground fire extinguisher	Available
Airframe	Free from ice, contamination

Before commencing the external checks carry out the following in the cockpit:

Rudder pedals	Adjust
Parking brake	On
Fire extinguisher	Check, secure
First aid kit	Secure
Escape axe	Stowed
Headsets	Available
Documents	Stowed
Baggage area	Loose articles secured
Flaps	Select landing
Magnetos	Off, key out
Master Switch	On
Alternator Warning	Cancel flasher
Structural Temperature	Press – check below 50°C
Pitot heater	On/check/off
Stall Warning	Check light and horn
Landing lights	On/check/off
Navigation lights	On/check/off
Strobe lights	On/check/off
Trim	Note position
Fuel contents gauge	Check quantity
Master switch	Off
Fuel Cock	On, locate fuel tester

2. EXTERNAL CHECKS

Start at left wing inboard edge.

Left Wing

Flap	Condition, play, stiff nut
Undercarriage	Tyre, torque link, brake leaks
Aileron	Condition, play, stiff nut, drains
Wing surfaces	Condition
Wingtip	Nav & strobe lights - condition
Leading Edge	Condition
Inspection cover	Security
Fuel cap	Correctly fitted and locked
Fuel drain	Check for water contamination
Pitot Head	Remove cover/hole clear
Undercarriage	Condition, extension, tyre condition/creep, inflation. Brakes – damage and leaks
Flap Underside	Condition, drains clear

Forward Fuselage

Fresh Air Intake	Clear
Cowling Port Side	Security, 7 fasteners, 2 pins, oil leaks
Landing Lights	Undamaged
Propeller	Condition, spinner
Nosewheel	Condition, extension, tyre-cuts/creep/inflation
Ram Air Inlet	Check foam filter is clean
Cowling Starboard Side	Security, 6 fasteners, 2 pins
Oil	Contents-maximum 8 US quarts, minimum 4 US quarts (7 quarts for aeros), panel secure (do not over tighten dipstick)
Fresh Air Intake	Clear, temperature probe

Right Wing

Leading Edge	Condition
Fuel cap	Correctly fitted and locked
Fuel drain	Check for water contamination
Undercarriage	Condition, extension, tyre condition/creep, inflation. Brakes – damage and leaks
Flap Underside	Condition
Wing surfaces	Condition
Inspection Cover	Security
Wingtip	Nav & strobe lights - condition
Aileron	Condition, play, stiff nut, drains
Wing	Drains
Undercarriage	Tyre, torque link, brake leaks
Flap	Condition, play, stiff nut

Rear Fuselage

Canopy Starboard Side	Condition, clean
Static Vent Starboard Side	Plug out, clear
VHF Aerial	Condition, security
Fin fairing	Secure
Tailplane – starboard	Condition
Elevator	Condition, drains clear
Access panel	Aligned and secure
Strobe Light	Condition
Rudder	DO NOT MOVE. Condition, stiff nut, nav light
Trim Tab	Condition, position, stiff nut, security, play
Tail Bumper	Unmarked
Static Vent Port	Plug out, clear
Canopy Port Side	Cracks, clean

3. PRESTART CHECKS

Passenger Briefing	Stated
Harness	Secure (5 straps) Solo, secure RH harness
Headset	Plugged in, don
Tacho Time (RPM gauge)	Note reading
Master Switch	On, intercom check
Alternator Warning	Cancel if flashing
Pitot Heat	Off
Flight Instruments	Check Condition
Accelerometer	Condition, reset 1g
External Lights	Off (except nav lights night flying)
Instrument Lights	Off (except night flying)
Radio	Off
Nav Equipment	Off
Transponder	Off
Circuit Breakers	All made
CO Monitor	Checked - Normal
Throttle	Full movement and Closed
Carburettor Heat	Full movement and Cold
Mixture	Full movement and Idle Cut Off (ICO)
Fuel contents	Check both gauges
Fuel Cock	On - select tank with lower contents
Fuel Pump	Off
Alternator	Off
Parking Brake	On
Flaps	Full check, leave up
Trim	Full free movement and set Neutral
Controls	Full free movement – correct sense
Canopy	Closed and locked

4. START CHECKS

Navigation Lights	On
Fuel Pump	On - check fuel pressure
Mixture	Full rich
Key In	Mags off
Throttle	Prime as required, (up to 15 strokes) set ¼" to ½" open
Magneto	Left
Intercom	Off
Propeller	Clear both sides-call "Clear Prop"
Intercom	On
Starter	Press, release when engine fires
Starter Engaged Light	**Out**
Magnetos	**Both**
Throttle	Set 1200 rpm
Oil Pressure	**Rising within 30 seconds**
Alternator	**On**

5. AFTER START CHECKS

Fuel Pump	Off
Alternator	Positive charge, warning light out
Magnetos	Check live/dead mag i.e. "Drop no stop"
Suction	Indicating
Horizon	Erecting, adjust datum, operate quick erection knob on electrical artificial horizon
DI	Synchronise with compass
Radio	On, frequencies set
Nav Equipment	On, frequencies set
Transponder	Standby, 7000 set
Radio	RT check (2 frequencies), taxy clearance

6. TAXY CHECKS

Brakes	Check immediately (dual, both sides)
Flight Instruments	Check turn co-ordinator, slip ball, compass, DI, AI, ADF ***Right turn: needle right, ball left, numbers increasing, AI steady*** ***Left turn: needle left, ball right, numbers decreasing, AI steady***
Rudder	Check full and free movement

7. RUN UP/POWER CHECKS

Park aircraft into wind with the nosewheel straight

Parking Brake	On
Safety	Canopy locked, controls central, clear behind
Fuel cock	Change tanks
Engine Temps & Pressures	Check
Throttle	Set **1800** rpm - check brakes holding
Suction	Green
Oil Pressure	Green
Ammeter	Positive charge indicating
Carburettor Heat	**Hot – drop in rpm, cold – rpm restored**
Magnetos	Max drop **175** rpm, max **50** rpm difference
Throttle	Close check smooth idle **(600-800)** - reset **1200** rpm

8. PRE TAKE-OFF CHECKS (VITAL ACTIONS)

Throttle Friction	As required
Pitot Heater	As required
Suction	Check
Flight Instruments	Check – AI, DI, TC
Engine Ts and Ps	Check
Transponder	Test (check light on) set to ALT
Carburettor Heat	Cold
Mixture	Full rich
Magnetos	Both
Fuel Cock	On, check contents – both gauges
Fuel Pump	On, check pressure
Flaps	Up or Take-off - check lift off speed Flap take - off - **53 KIAS** Flap up - **59 KIAS**
Trim	Set at Neutral
Harness	Inertia reel locked
Controls (Aileron/Elevator)	Full & free movement
Canopy	Closed & locked
Strobe lights	On
Take - off Brief	State
Radio	Call ready for departure when approaching holding point

Take-off Brief:
The following points must be briefed:

i. Operating pilot for the departure

ii State of the grass (long/wet)

iii. Runway length, surface and crosswind

iv. Action in the event of an engine failure on the ground

v. Action in the event of an engine failure after take-off – identify potential landing area

v. Action of non-operating pilot/passenger

9. **RUNWAY CHECKS**

Take-off Time	Note
Approach & Departure lanes	Clear
Compass/DI/Rwy Heading	Aligned

10. **CHECKS DURING TAKE-OFF**

Throttle	Full power, minimum **2200** rpm
Engine Temps & Pressures	Check
ASI	Increasing
	Lift-off a) **53**kias - take-off flap
	b) **59**kias - flaps up
Crosswind take-off	Delay lifting nosewheel & rotate at **60** kts
Climb	Take-off flap – 70kts, flapless 75 kts

11. **AFTER TAKE-OFF CHECKS**

Engine Temps & pressures	Check
Flaps	Raise at 300 ft, climb at 75 kts

12. **AIRFIELD DEPARTURE CHECKS**

Fuel Pump	Off
Landing Light	Off
Radio/Nav Equipment	Set
Altimeter	Set (Note airfield QNH/QFE if returning)

13 **CLIMB, CRUISE & DESCENT (REJOIN) CHECKS**

To be completed every 3000 ft in the climb, and at intervals of not greater than every 15 minutes in the cruise

Fuel	Fuel pumps as required
	Fuel cock on, tank selected
	Throttle set as required
	Mixture set as required
	Contents & pressure checked
Radios/Navaids	Set as required
	Transponder to ALT
	Ammeter charging
	Circuit breakers in
Engine	Ts & Ps checked
	Carb ice check
	CO detector - Normal
Direction Indicator	Align with compass
	Check suction
Altimeter	Set as required

14. STALLING/AEROBATIC/SPINNING CHECKS

Height	Sufficient to recover by briefed height
Airframe	Flaps up for spinning and aerobatics Structure temperature below 50 C No mist/ice on canopy
Security	Harness secure Canopy locked Loose articles stowed
Engine	Fuel pump on Fuel cock selected to fuller tank Mixture rich Fuel contents & pressure checked Ts & Ps checked Carb ice check
Location	Clear of: Active airfields Built up areas Controlled airspace & cloud Danger areas/airspace restrictions Not above monochromatic surface/sea (Spinning) Good horizon
Lookout	Clear above and below Min 180 deg before first stall, then 90 deg Minimum 360 deg before spinning
Pre spinning	Carb air hot Mixture lean

15. ERECT SPIN RECOVERY

Throttle	Closed
Flaps	Up
Turn Co-ordinator	Check direction of spin
Ailerons	Central
Rudder	Apply full rudder opposing direction of spin
Elevators	Centrally and progressively forward (ailerons neutral) until spin stops
Rudder	Centralise when spin stops
Ailerons	Level wings to horizon and recover from dive

16. CIRCUIT JOINING CHECKS: FREDA

17. CIRCUIT SPEEDS

	Normal		Flapless
	Flap Position	**Speed (Knots)**	**Speed (Knots)**
Downwind	**Up**	**85**	**85**
Base turn	**T/O**	**70**	**78**
Finals	**Land**	**66**	**76**
Threshold	**Land**	**66**	**76**

18. PRE-LANDING CHECKS

Brakes	Off.
Undercarriage	Down & Locked.
Mixture	Rich.
Fuel	On tank with sufficient fuel
Fuel pump	On
Indicators	Ts & Ps.
Carb. Heat	Select hot
Hatches	Secure.
Harnesses	Inertia reel locked

19. FINALS CHECKS

Carburetor Heat	Cold, if no risk of icing
Brakes	Toes Clear
Clearance	Obtained

20. **AFTER LANDING CHECKS**

Landing time	Note
Pitot Heat	Off
External Lights	As required (leave strobe light on)
Nav Equipment	Off
Transponder	Off
Carb Heat	Cold
Fuel pump	Off
Flaps	Up
Trim	Set neutral

21. **SHUTDOWN CHECKS**

Parking Brake	On
Throttle	Set 1200 rpm
Radios	Off
Alternator	Off – check failure warning light operates
Magnetos	Check live/dead mag i.e. “Drop no stop”

Set 1800rpm for 15 seconds, reduce to 1200 rpm, then **SLOWLY** pull out the Mixture knob until the engine shuts down.

When propeller has stopped

Magnetos	Off, key out
Fuel Cock	Off
External Lights	Off
Master Switch	Off
Flaps	Down
Accelerometer	Check for stress
Tacho Time (RPM GAUGE)	Note reading
Headsets	Remove to baggage area
Harness	Release, loosen straps
Aircraft	Vacate - remove personal belongings
Aircraft	**Carry out 4-point check (wing tips, prop and tail bumper)**

22. **FITTING FLYING CONTROL LOCKS (MOD 316)**

Flaps	Select up
Control Lock	Fit to control sticks and flaps (carefully move assembly into forward stick position)

SLINGSBY FIREFLY T67C – BASIC DATA

1. GENERAL CONSTRUCTION

The Slingsby T67C Firefly is a twin seat, single engine, low-wing monoplane of composite material construction.

2. REGISTRATION CATEGORY & PERFOMANCE GROUP

Aircraft classified as	-	Aeroplane (Landplane)
Aircraft classified in	-	Performance Group ‘E’
Aircraft certificated in	-	Public Transport Category

3. FLIGHT CONDITION LIMITATIONS

Flight in known or forecast icing conditions	-	Not cleared
Flight at night	-	Cleared*
Flight in instrument Meteorological Conditions	-	Cleared*

* Flight permitted subject to carriage of appropriate equipment

4. DIMENSIONS

Length	:	7.32 m
Wingspan	:	10.60 m
Height	:	2.36 m

5. LOAD FACTOR LIMITATIONS

‘G’ Limitations – Structural Temperature below 50°C

Flaps up	+ 6.0 g	to	- 3.0g
Flaps down	+ 2.0 g	to	- 1.0g

‘G’ Limitations – Structural Temperature above 50°C

Flaps up	+ 4.4 g	to	- 2.0 g
Flaps down	+ 2.0 g	to	- 1.0 g

6. ENGINE

Engine type	:Avco Lycoming 0-320-D2A, 4 cylinder, 4 stroke
Engine rating	:160 HP at 2700 RPM
Max permitted RPM	:2700
Cylinder head temp range	:0° to 230° (Green arc) – Maximum 260 °
Propeller type	:Sensenich M74 DM6-0-64
Propeller diameter	:1.88 m
Propeller pitch	:Fixed

Associated Engine controls / indicators:

RPM gauge, throttle, magneto switch, starter button, starter engaged light, oil pressure gauge, oil temperature gauge, cylinder head temperature gauge.

7. ENGINE LUBRICATION

Oil type (all temps)	:	SAE 15W-50 or 20W-50
Oil capacity (max/min)		8.0 US qts (club min = 7.0)
Oil capacity (normal range)	:	7.0 – 8.0 US qts
Oil consumption (cruise power)	:	Approx 0.37 US quarts/hour
Oil circulation	:	Wetsump,Engine-driven pump
Oil temperature (normal range)	:	40^{o} – 118^{o} C (green arc)
Oil pressure (normal range)	:	4.2 – 6.2 bar (green arc)

Oil pressure must be in green arc within 30 seconds of engine start.

8. FUEL SYSTEM

Fuel type	:	AVGAS 100 LL
Fuel pump	:	Engine driven + electric booster
Fuel capacity (total)	:	35.5 Imp Gals (161.4 Litres)
Fuel capacity (usable)	:	34.62 Imp Gals (157.4 Litres)
Fuel pressure – normal range	:	0.5 – 8.0 psi (Green arc)
Fuel consumption	:	Approx 7 Imp Gal/Hr @ 2300 RPM
Fuel drain positions	:	Lowest point of each wing tank
Carburettor type	:	Marvel-Schebler MA3A / MA-3PA

Associated controls / indicators :
Fuel cock, mixture control, throttle, fuel contents gauge, fuel pressure gauge, carburettor heat control.

9. ELECTRICAL SYSTEM

Battery voltage/current	:	24 Volts DC / 12 Ampere hours
Battery position	:	Forward side of firewall, left hand side of engine
Alternator	:	24 Volt / 70 Ampere

Associated controls / indicators:
Ammeter, circuit breakers, battery master switch, alternator switch, alternator warning light.

10. ELECTRICALLY DRIVEN INSTRUMENTS & SYSTEMS

Artificial Horizon (right)
Turn coordinator
Stall warning light and alarm
Pitot head heater
Clock
Outside air temperature gauge
Structural temperature gauge
Radios
Navigation aids
Internal and external lighting & strobe
Fuel booster pump and contents gauge
Starter motor and warning light
Engine instruments
Alternator and warning light

11. IGNITION SYSTEM

Number / type of magnetos	-	Two x Bendix
Magneto switch settings	-	Off – R – L – Both
Impulse & spark retard device (for engine starting)	-	Left Magneto
Dead cut check performed at	-	1200 RPM
Magneto drop check performed at	-	1800 RPM
Acceptable magneto drop @ 1800 RPM	-	175 RPM
Acceptable difference @ 1800 RPM	-	50 RPM

NB 1. Magnetos are ground to earth when switched off.
2. Ignition key should only be removable with magnetos switched off.

12. VACUUM SYSTEM

Vacuum pump	:	Engine driven
Vacuum pressure (normal range)	:	Green arc (4.5” to 5.5” Hg)
Minimum RPM for green arc	:	1500 RPM
Vacuum driven gyro instruments	:	AH (left) & DI
Time to reach operating speed	:	2 minutes
Reliable time after vacuum failure	:	1 minute
Failure indication on AH and DI	:	Nil

13. PITOT & STATIC PRESSURE SYSTEMS

Pitot tube location	:	Under leading edge port wing
Pitot heating	:	Electrical
Instrument supplied	:	Airspeed indicator
Static source locations(s)	:	Each side of rear fuselage
Instruments supplied	:	Airspeed indicator, vertical speed indicator & altimeter

14. UNDERCARRIAGE

Type	:	Fixed, tricycle with shock absorbers and pneumatic tyres and steerable nosewheel.
Tyres	:	With inner tubes
Pressure - nosewheel	:	50 PSI (Grass 45 PSI)
Pressure - mainwheels	:	35 PSI (Grass 25 PSI)
Oleo extension :		
nosewheel strut	:	Approx 3 inches
mainwheel struts	:	Approx 2 inches
Nose wheel steering	:	By rudder pedals
Wheel brakes	:	Hydraulic disc brakes
Braking methods	:	Toe brakes and parking brake

15. CRITICAL SPEEDS

V_{ne}	Velocity never exceed	180	Kn
V_{no}	Velocity normal operations	140	Kn
V_a	Velocity manoeuvring	140	Kn
V_{fe}	Velocity flaps extended - Take-off position – 18 °	88	Kn
	Landing position - 40 °	88	Kn
	Lift-off speed (take-off flap)	53	Kn
	Lift-off speed (no flap)	60	Kn
	Climb speed (take-off flap)	70	Kn
	Climb speed (no flap)	75	Kn
	Powered approach (take off flap)	70	Kn
	Best glide speed (range approx 2nm per 1000 feet)	70	Kn
	Best glide speed (endurance)	70	Kn
	Threshold speed (flaps extended)	66	Kn
	Threshold speed (no flap)	75	Kn
V_{so}	Velocity stall (take off flap : 18^o)	52	Kn
V_{so}	Velocity stall (full flap : 40^o)	47	Kn
V_{s1}	Velocity stall (no flap)	55	Kn
	Max cross-wind for take-off & landing	25	Kn

16. CRITICAL WEIGHTS

Maximum all up weight for take off and landing	975	Kg
Basic empty weight (inc engine oil)	610	Kg
Maximum luggage compartment weight	30	Kg
Weight of full fuel load (161.4 litres)	84	Kg
Max crew weight with full fuel and baggage	151	Kg

EMERGENCY DRILLS

1. ENGINE FIRE IN THE AIR
2. ENGINE FIRE ON THE GROUND
3. ELECTRICAL FIRE
4. COCKPIT FIRE
5. FUMES IN THE COCKPIT
6. OIL PRESSURE FAILURE
7. ENGINE MECHANICAL FAILURE
8. ENGINE FAILURE - PROPELLER STOPPED
9. ENGINE RESTART PROCEDURE
10. ENGINE FAILURE - PROPELLER TURNING
11. ROUGH RUNNING ENGINE
12. FORCED LANDING CHECKS
13. DITCHING
14. ALTERNATOR FAILURE
15. COMMUNICATIONS/RADIO FAILURE

WARNING: The BCF Extinguisher is toxic. Keep use to the minimum necessary and ventilate well.

1. ENGINE FIRE IN THE AIR

Carry out **Engine Mechanical Failure (Para.7)** and **Forced Landing (Para.13)** checks

2. ENGINE FIRE ON THE GROUND

Carry out **Engine Mechanical Failure** checks
Vacate aircraft ASAP

3. ELECTRICAL FIRE

Master Switch	Off
Alternator	Off
Circuit Breakers	Trip All
Cockpit Fire Drill	Action if necessary

Land as soon as possible

4. COCKPIT FIRE

Fire Extinguisher	As required
Fresh Air Vents	Open
Radio	Emergency call Squawk **7700**

5. FUMES IN THE COCKPIT

Cockpit Hot Air	Off
Fresh Air Vents	Open
Engine Instruments	Check for sign of malfunction

If smell is electrical, carry out **Electrical Fire** checks
If smell is petrol, **do not** make electrical selection
Land as soon as possible

6. OIL PRESSURE FAILURE

Throttle	Use minimum practicable power Monitor Oil temperature

Assume engine failure is imminent
Land as soon as possible via precautionary forced landing pattern

If engine seizes carry out **Engine Mechanical Failure** and **Forced Landing** checks

7. ENGINE MECHANICAL FAILURE

Fuel	Throttle closed Mixture ICO Fuel cock off Fuel pump off
Ignition	Magnetos Off
Radio	Emergency call Squawk 7700
Electrics	Master off Alternator off

DO NOT ATTEMPT TO RESTART

8. ENGINE FAILURE - PROPELLER STOPPED

Mechanical Failure: If the engine failed with unusual mechanical noise do not attempt restart.

No Apparent Reason:

Carburetor Heat	Change setting
Engine Restart Procedure	**Complete**

9. ENGINE RESTART PROCEDURE

Fuel	Fuel pump ON Fuel cock ON other tank Throttle ¼ open Mixture full rich Pressure checked Contents checked (both gauges)
Ignition	Both
Electrics	Alternator OFF Master ON

Either:
Starter Button — Press
Or:
Carry out Air Start

DIVING TO START THE PROPELLER TURNING USES AT LEAST 600-800 FEET

Dive to 115 Kts to start propeller turning, do not exceed g limits on pull-out

NOTE: If the propeller stops during aerobatics, with no unusual mechanical noise, press the starter button to restart engine

10. ENGINE FAILURE – PROPELLER TURNING

If there is no Oil Pressure, or there is an unusual mechanical noise, carry out Engine Mechanical Failure drill, otherwise attempt restart procedure.

Fuel	Fuel pump ON Fuel cock ON other tank Throttle ¼ open
	Mixture full rich Fuel Pressure indicating Fuel contents sufficient
Ignition	Select best of L-R-BOTH
Electrics	Master ON Alternator OFF

11. ROUGH RUNNING ENGINE

Try alternative carburetor heat setting then check

12. FORCED LANDING CHECKS

Glide at: (a) **70** kts - clean (still air glide range about 1.6nm/1000')
(b) **65** kts - flap take-off/land

Select suitable landing area
Plan engine out approach

If appropriate and time permitting, carry out:

(1) **Engine Restart** Drill (Para 9)

(2) **Engine Mechanical Failure** Drill (Para.7)

Harness	Inertia reel locked
Passengers	Brief

13. DITCHING

Warning: Ditching is best carried out whilst engine power is still available to control the rate of descent.

Flaps	Landing
Speed	**60** kias
Rate of descent	**300** fpm

Do not round out - continue descent into water

In strong wind, land into wind; otherwise land parallel to the swell

14. ALTERNATOR FAILURE

Alternator	Off, then On

If output not restored -

Electrical Equipment	All off
Alternator	Off
Excitation CB	Check set
Alternator CB	Check set
Alternator	On

If alternator output restored, re-establish only essential electrical loads, land as soon as practicable

If alternator output not restored, use minimum electrical services and attain VMC. Battery duration approx 30 minutes.

15. COMMUNICATIONS/RADIO FAILURE

Radio/Intercom Switches	Check
Circuit Breakers	Check
Radio	Change to Comm 2 Tx and Rx Change frequency
Headset	Check connections Change headsets if possible Plug mic/tel into other seat position and Use other transmit button
Radio	Switch Off, allow to cool for 5 minutes then On
Transponder	Squawk **7600**

LOST PROCEDURE

With radio/navigation aids serviceable

a. Climb to improve view if certain of no airspace conflictions.

b. Check DI synchronised

c. If fix not immediately available, go to 121.5 MHz and make a PAN call or request a TRAINING FIX

d. Do not delay. Make use of the emergency services as soon as possible

With no radio/navigation aids.

a. If certain of no airspace conflictions, climb to improve view.

b. Complete communications failure drill. Continue to transmit.

c. Squawk 7600.

d. Aircraft safety - check safety altitude and fuel remaining.

e. Check why lost:

- Check correct heading flown and DI synchronised.
- Check correct speed being flown.
- Time; check ETA
- Check any previous calculations
- Wind - check smoke etc to assess accuracy of planned wind

f. If feasible return to last fix

g. Revert to GROUND – CLOCK – MAP scan i.e. find large features on ground, check elapsed time and search the map for this feature around the timing mark

h. Fly to a major line feature, e.g. coastline, and re-establish position.

i. Take account of any potentially adjacent controlled airspace.

j. When position re-established decide on sensible course of action. (Divert or RTB)