blackbushe aviation
flying club and school

Socata TB 20

Checklist

G-BPTI

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Pre-flight checklist

Ensure tie downs, chocks, pitot covers and control locks removed

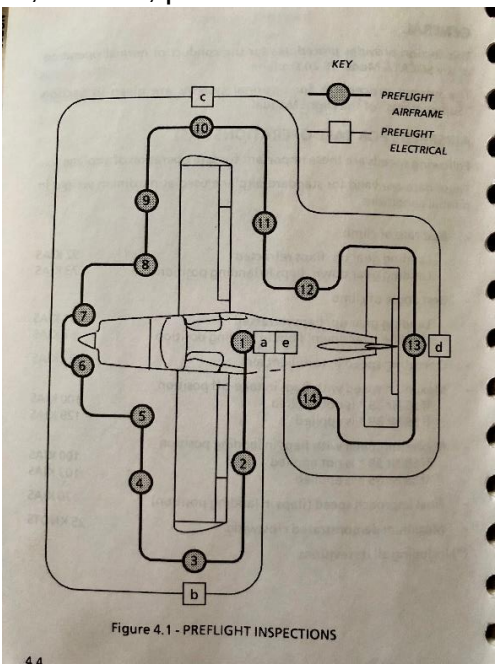

Figure 4.1 - PREFLIGHT INSPECTIONS

4.4

1)	Windows	clean
	Cabin	Check for loose objects
	Mags	Off
	Gear	Down
	Mixture	I.C.O.
	Main switch	On
	Flaps	Landing
	Lights	Working
	Stall warner	Working
	Alarm panel	test
	Gear lights	three greens
	Pitot heat	check
	Gauges	check
	Instrument lights	check
	Pitch & Rudder trim	Take off position
	Fire extinguisher	Check
	First aid kit	Check
	Main switch	Off
	Fuel selector	Left

External

2)	LH wing	
	Flap	Check control, hinges, play, deflections
	Aileron	Check control, hinges, play, deflections
	Wing tip	Undamaged
	Lights	Undamaged
	Landing light	Undamaged
	Leading edge	Free of contamination
	Fuel	Check level
	Fuel cap	Secure
	Fuel drain	Test for contamination, check closed
3)	Left Main Gear	
	Tyre	Condition, inflation, tread, creep
	Oleo	Normal
	Gear door	Check for play and condition
	Microswitches	Clean
	Gear well	No foreign bodies
4)	Forward fuselage	
	Cowling	Fastened
	Oil	Check level min 6 quarts
	Prop	Clean, no nicks
	Spinner	check secure
	Air intakes	Clean and clear
	Oil breather	Clear
	Exhaust	Secure and good condition
5)	Nose gear	
	Tow bar	Stowed
	Tyre	Condition, inflation, tread, creep
	Oleo	Normal
	Gear door	Check for play and condition
	Microswitches	clean
	Gear well	no foreign bodies
6)	Right Main Gear	
	Tyre	Condition, inflation, tread, creep
	Oleo	Normal
	Gear door	Check for play and condition
	Microswitches	Clean
	Gear well	No foreign bodies

7)	RH wing	
	Flap	Check control, hinges, play, deflections
	Aileron	Check control, hinges, play, deflections
	Wing tip	Undamaged
	Lights	Undamaged
	Landing light	Undamaged
	Leading edge	Free of contamination
	Fuel	Check level
	Fuel cap	Secure
	Fuel drain	Test for contamination, check closed
8)	RH fuselage	
	Door	Unlocked
	Static port	cover off, clean
	Fin	check
	Rudder and tab	check controls hinges play, deflection
	Stabilator and tab	check controls hinges play, deflection
	Tail cone	Check
	Nav light	check
	LH fuselage	
	Static port	cover off, clean
	Baggage door	secure

PERFORM WEIGHT AND BALANCE

Before Engine Start

External check	Complete
Doors	closed
Main switch	off
Park brake	on
Seats, seatbelts	adjusted and secure
Controls	full and free, correct sense
Pitch/rudder trim	check deflection
Fuel selector	lowest tank
Circuit breakers	in check bottom row all in
Mags	off
Emergency gear	in
Avionics master	off
Gear lever	down
Alt air	in

Engine Start

Cold start

Main switch	on
Prop	forward
Throttle	¼ open
Fuel pump	on
Mixture	rich till fuel flow then I.C.O.
Fuel pump	off
Area	clear
Mags	start (max 30 sec)
When engine starts	
Mags	both
Mixture	full rich
Oil pressure	check within 30 secs if not shut down

Hot start

Main switch	on
Prop	forward
Throttle	¼ open
Fuel pump	on
Mixture	rich for 1 sec then I.C.O.
Fuel pump	off
Area	clear
Mags	start (max 30 sec)
When engine starts	
Mags	both
Mixture	full rich
Throttle	reduce

After starting

Alternator	Off
Gen light	check on
Voltmeter	Yellow sector
Alternator	On
Gen light	check out
Voltmeter	green sector
Turn coordinator	on
Suction	check
Strobes	on
Alarm panel	test
Landing gear	three greens
Radio/radio aids	on
Flaps	up
Mixture	lean for taxi (x of “mixture”)

Taxiing

Park brake	release
Brakes	check
Flight instruments	check

(avoid rpm above 2000 if oil pressure is in yellow sector)

ENGINE RUN-UP

Park brake	on
Throttle friction	adjusted
Ts and Ps	green
Mixture	full rich
Fuel	fullest tank
Throttle	2000prm
Prop	cycle (max 500rpm drop)
Mags	check (max drop 175 max diff 50)
Throttle	idle, check rpm
Throttle	1200

BEFORE TAKEOFF

Seats, seat belts	secure
Doors	locked
Controls	full and free
Pitch trim	take off
Rudder trim	take off
Flaps	take off
Mags	both
Prop	full forward
Mixture	Full rich
Fuel selector	check fullest tank
Fuel pump	on
Ts and Ps	green sector
Volts	green sector
Altimeter/DI	set
Park brake	release
ATPL	check

TAKEOFF AND CLIMB

Line up	Check DI against runway and compass
Throttle	Smoothly increase to full
Rotate	65-70
Initial climb	75-80
Positive ROC	touch brakes, retract gear
At 300ft	
Flaps	Retract
Lights	as required
At 1000ft	
Fuel pump	off
Climb speed	92kt

CLIMB

Mixture	Full rich
Throttle	24 or full power
Prop	full fwd or 2400
Climb speed	92 kt

Cruise 65% power

2000ft	22/2300
5000ft	21.5/2300
8000ft	21/2300
Mixture	65% approx. 12gph

Adjust mixture to rich of peak using egt

APPROACH AND LANDING

Setup

Throttle	reduce as required
Flaps	Take off
Airspeed	85kt
Landing gear	Check down and confirm
Fuel pump	on
Mixture	rich
Prop	fwd
Brakes	check
Seats seatbelts	check
Lights	as required

Short final

Flaps	Landing
Airspeed	75kt

AFTER LANDING

Fuel pump	off
Flaps	up
Lights	as required
Trims	take off
Radios/transponder	as required
Pitot heat	off

SHUT DOWN

Park brake	on
Turn coordinator	off
Anti col/strobes	off
Radios	off
Throttle	1200
Mags	check
Mixture	I.C.O
After engine stops	
Mags	off
Alternator	off
Main switch	off
Fuel	off

Lock aircraft, cover, chocks, pitot cover, static port covers on.

TB20 EMERGENCY Procedures

ENGINE FAILURE DURING TAKE OFF RUN

Throttle …….. IDLE
Brakes …… APPLY
Mixture I.C.O
Mags …….. Off
Main switch Off
Fuel Off

ENGINE FAILURE AFTER TAKE OFF

Airspeed …… 70/76 KNOTS
Mixture Full rich
Fuel Change tanks
Fuel pump on
If no restart
Flaps …….. AS NECESSARY
Mixture I.C.O
Fuel Selector …… OFF
Fuel pump OFF
Gear as necessary
Mags ……. OFF
Main switch OFF – BEFORE LANDING
Land straight ahead, turning only to avoid obstacles

LOSS OF ENGINE POWER IN FLIGHT

Speed ……..	92 KIAS
Main switch	**on**
Fuel pump	**on**
Mixture	**I.C.O**
Fuel gauges	**check**
Fuel selector	**change tanks**
Mags	**both**
Starter	**engage (if prop stopped)**
After engine start	**slowly enrich mixture**
(windmilling)	**until restart**

OR PERFORM EMERGENCY LANDING

Glide distance is 1.62 NM per 1000ft

Low oil pressure

Oil warning light	**on**
Pressure indicator	**in red**
Throttle	**reduce as far as possible**
Oil temp	**check**
If oil temp in red	**reduce throttle**

Perform emergency landing

TB20 EMERGENCY Procedures

LOW FUEL FLOW

Fuel pump	**on and operating**
Fuel gauges	**check**
Fuel selector	**change tanks**

ENGINE VIBRATION

Vibration is usually due defective spark plugs or too rich mixture

Mixture	**reset**

If vibration persists

RPM	**set for min. vibration**

Land as soon as possible

PROP GOVERNOR FAILURE

If oil pressure drops in governor or pitch control fails prop will move to low pitch

Oil pressure	**check**
Oil temperature	**check**
Throttle	**as required**
Airspeed	**reduce**

Avoid rapid application of power

CAUTION MAX RPM 2575

EMERGENCY LANDINGS

Note:

It is recommended that the wheels be up for an emergency landing on an unprepared surface

EMERGENCY LANDINGS

EMERGENCY LANDING WITHOUT POWER

Glide speed	92kt
Radio	Transmit MAYDAY
Landing gear	as required
Mixture	I.C.O.
Fuel	off
Mags	off
Flaps	landing
Seatbelts	secure
Main switch	off

PRECAUTIONARY LANDING WITH POWER

Flaps	Landing
Approach speed	70/76kt
Radio	Advise of intentions
Seatbelts	Secure
Field	Low pass to check suitable
Landing gear	As suitable
Main switch	off
Touchdown	Keep nose high
Mags	Off
Brakes	As required

DITCHING

Radio	Transmit MAYDAY
Landing gear	Up
Flaps	Landing
Seatbelts	Secure
Airspeed	70-76kt

Flight path	Parallel to swell
Before touch down	
Main switch	Off
Mixture	I.C.O.
Fuel	Off
Touch down	Keep nose high

EMERGENCY DESCENT

Throttle	Idle as required
Airspeed	130kt
Landing gear	down
Descend at V_{le}	139kt

Apply occasional power cautiously to prevent shock cooling

FIRES:-
ENGINE FIRE DURING START

Mixture	I.C.O
Starter	Continue cranking
Throttle	Full open
Fuel	Off
If fire continues	
Main switch	Off

Evacuate passengers and fight fire if safe to do so

ENGINE FIRE IN FLIGHT

Visual detection	Smoke/flames
Fuel	Off
Mixture	I.C.O
Fuel pump	Off
Throttle	Full open
Cabin air and demisting	Fire cut off
After engine stops	

Mags	Off
Alternator	Off
Main switch	Off

PERFORM EMERGENCY LANDING

DO NOT ATTEMPT TO RESTART ENGINE AFTER A FIRE

ELECTRICAL FIRE IN FLIGHT

If fire in engine compartment

Main switch	Off
Cabin air and demist	Fire cut off

Land as soon as possible

If fire in cabin

Main switch	Off
Alternator	Off
All electrical switches (except mags)	Off
Cabin air and demist	Fire cut off
Fire extinguisher	Activate

If fire appears to be out and electrical power is required to continue flight

Main switch	On
Circuit breakers	Check for fault do not reset
Radio, electrical	On one at a time
Cabin air demist	open when fire out

CABIN FIRE

Main switch	Off
Cabin air demist	Fire cut off
Fire extinguisher	Activate

FIRE EXTINGUISHER IS HALON. AFTER DISCHARGING WITHIN CLOSED CABIN AND FIRE IS OUT VENTILATE TO PREVENT SUFFOCATION

TB20 EMERGENCY Procedures

WING FIRE

Nav and landing lights Off
Strobes Off
Recognition lights Off
Pitot heat Off
Land as soon as possible

ICING

FLIGHT INTO KNOWN ICING IS PROHIBITED

Cabin temp. Full hot
Pitot heat On
Demist Open
Alt air On
Engine ***Increase power without exceeding red line and periodically change RPM to minimise ice build up on prop***
Turn back or change altitude to obtain conditions less likely to cause Icing.
If icing continues plan landing at nearest airport. If ice build up rapid perform precautionary landing
Ice build up on leading edges increase stall speed. Plan all manoeuvres accordingly.

LANDING GEAR FAILS TO RETRACT

Three greens still on:-
Landing gear lever Check up
LDG gear circuit breaker Check in
Emergency gear control Check pushed
If gear fails to retract
Landing gear lever Down
Gear lights Three greens
Continue flight with gear down if appropriate max a/s 139kt

RED WARNING LIGHT REMAINS ON (WITH OR WITHOUT GREENS)

Ldg gear circuit breaker	**Off**
Gear	**Down**
LDG gear circuit breaker	**On**
Gear lights	**Check three greens and red off**

Continue flight with gear down if appropriate max a/s 139kt

A GREEN REMAINS ON, RED OFF

Flaps	**Take off**
Airspeed	**97kt**
LDG gear circuit breaker	**Off**
Gear	**Down**
Emergency gear knob	**Pull**
Gear lights	**Check three greens**

Continue flight with gear down if appropriate max a/s 139kt, as a precaution proceed as in "landing with gear not locked"

LANDING GEAR FAILS TO EXTEND (ONE OR MORE GREENS DO NOT ILLUMINATE)

Main switch	**On**
Gear	**Down**
Circuit breakers	**Check LDG gear and warning CBs in**
Gear lights	**test**
Flaps	**Take off**
Airspeed	**97kt**

If gear does not extend and lock

Gear	**Up**
LDG gear circuit breaker	**Off**
Gear	**Down**
Emergency gear knob	**Pull**

Three greens	**Check**
Gear transit red light	**Off**

Normal landing

If not three greens

Yaw/slip to help lock gear

Gear in transit light	**Off, test to check Illumination**

If one green appears burnt out

Check gear position with tower

Precautionary landing

LANDING WITH GEAR NOT LOCKED

Gear position	**Check with tower**

Gear appears down

LDG gear CB	**In**
Gear	**Down**
Emergency gear knob	**Push**

GEAR UP OR PARTIALLY UP

Nose wheel not locked

Flaps	**Landing**
Airspeed	**65/70kt**
Seatbelts	**Secure**
Short final	**Cut off engine**
Main switch	**Off**
Mixture	**I.C.O**

After touchdown on main gear

Keep nose up no braking.

Brake smoothly as soon as nose touches

Main gear not locked

Emergency gear knob	**Push**
LDG gear CB	**In**
Gear	**Up**

Land on grass if possible

Flaps	**Landing**
Airspeed	**65/70kt**
Seatbelts	**Secure**
Before touchdown	
Main switch	**Off**
Mixture	**I.C.O**

LANDING WITHOUT STABILATOR CONTROL

Fly using pitch trim and throttle

Long final

Airspeed	**80kt**
Flaps	**Landing**
Gear	**Down**
Fuel pump	**On**
Mixture	**Rich**
Prop	**Fwd**
Throttle and pitch trim	**Adjust to R.O.D less than 500fpm**
Landing	**Use pitch trim to round out and hold off**

ELECTRICAL FAILURE

ALTERNATOR FAILURE

Low volts light	**On**
Voltmeter	
Green sector	**Continue**
Red/yellow sector	**Alt off then on**
Low volts light	**Remains on**
Alt	**Off**
Non essential electrics	**Off**

Battery life approx. 50 minutes

ELECTRICAL EQUIPMENT FAILURE

Circuit breakers	**Check**
If CB out	**Reset once only**
If trips again	**Do not reset, proceed without equipment if appropriate**

ASI FAILURE

If erroneous indications in flight

Pitot heat	**On**
Alt static	**On**

If persists, carry out precautionary approach using normal power flap and pitch attitude settings

INVOLUNTARY SPIN

INTENTIONAL SPINS ARE PROHIBITED

If inadvertent spin occurs:

Rapid and simultaneous action:

Throttle	**Idle**
Rudder	**Full opposite and hold**
Stabilator	**Full forward**
Ailerons	**Neutral**
If flaps down	**Retract**

When spin stops:

Centralise rudder, level wings and ease out of dive

JAMMED DOORS

If case of jammed doors in an emergency jettison rear window kicking upper part.

RADIO FAILURE

Radio	**Check on, volume and station, request radio check**
Radio	**Switch to box 2 and check as above**
Headset	**Check plugs in**
Intercom	**check on, squelch set**
CBs	**check in**
If radio failed	
Transponder	**Squawk 7600**
Radio	**Make blind calls**

Proceed to destination or turn back as appropriate.

AIRCRAFT LIMITATIONS

V_{NE}	189 KIAS
V_A manoeuvring	127 KIAS
V_{fe}	100 KIAS
V_{NO} max level	151 KIAS
V_X best angle climb	82 KIAS
V_Y best rate climb	92 KIAS
V_{LO} max gear operating	130 KIAS
V_{LE} max gear extended	140 KIAS
V_s stall clean	64 KIAS
V_{so} full flaps	53 KIAS
Best glide speed	92 KIAS
Max. demonstrated crosswind	25 KNOTS
Nose tyre pressure	49.3 psi 3.4 bar
Main tyre pressures	63.9 psi 4.4 bar