TUCANO T MK 1

FLIGHT REFERENCE CARDS
AND
AIRCREW LANDAWAY
FLIGHT SERVICING SCHEDULE

Amendment Information

Note: This is an electronic version of the publication and not a direct duplicate of the hard copy version. The hard copy is the master copy and is the only one to be used in flight and for flight planning. This electronic publication represents the extant version of the publication and is for reference use only.

Issue Initial (Jan 14)

AL 2 (Apr 17)

AIL No extant AIL

ANA No extant ANA

TUCANO T Mk 1

FLIGHT REFERENCE CARDS

NORMAL DRILLS

AND

AIRCREW LANDAWAY FLIGHT SERVICING SCHEDULE

AIRCRAFT SAFE FOR PARKING

The aircraft is safe for parking when the following are correctly inserted:

Both ejection seat firing handle safety pins
Both canopy fracture handle safety pins

Proposals for Change

Proposals for change to these FRCs are to be sent on Form 765X to the User Authenticator, Standards Flight, RAF Linton-on-Ouse, York, YO30 2AJ, for onward transmission to DES UKMFTS TA and the Publication Organisation (Officer Commanding, Handling Squadron, RAF Boscombe Down, Salisbury, SP4 0JE).

These FRCs are only valid when used in support of a current MOD AFD Release to Service.

Prepared by Handling Squadron

NOTES TO USERS

1. These Flight Reference Cards are complementary to the Tucano T Mk 1 Aircrew Manual and Operating Data Manual (AP 101B-4901-15 & 16) and the same conventions are used.

2. **Bold-Face.** In some drills, there are initial action steps that need to be performed immediately following identification of the problem, without reference to the FRC, and while continuing to fly the aircraft safely. These steps are printed in bold-face and aircrew are to commit them to memory.

3. **'As Required' Response.** Where the response 'As required' is listed, the pilot should respond by stating the condition or setting of the system/equipment.

◆4. **Challenge and Response.** Where a response is required from the non-handling crew member, the handling pilot should not continue with the checklist until that response has been articulated. ◆

5. **Urgency of the Need to Land.** Following a system failure, it may be necessary to land for safety reasons. The degree of urgency depends on the failure and the prevailing conditions. The following terms are used to give guidance but are not intended to be precise definitions nor preclude relevant airmanship actions such as performing a low speed handling check when the integrity of the airframe is suspect.

a. **Land ASAP.** Land at the nearest airfield with a runway suitable for a safe landing.

b. **Land As Soon As Practicable.** Land at the nearest airfield where you can land safely and expect practical assistance for your particular aircraft type.

6. **Amendments.** New or amended information may be indicated by symbols positioned outside the text thus ◆ ... ◆. Deleted information will be indicated by ◆ ◆ .

LIST OF CARDS AT ISSUE 1 AL 2

CARD	AL	CARD	AL	CARD	AL	CARD	AL
N-1	2	N-19	2	S-9	Initial	E-11	2
N-3	2	N-21	2	S-11	Initial	E-13	2
N-5	2	N-23	2	S-13	Initial	E-15	2
N-7	2	N-25	2	S-15	Initial	E-17	2
N-9	2	N-27	2	E-1	2	E-19	2
N-11	2	S-1	2	E-3	2	E-21	2
N-13	2	S-3	2	E-5	2	E-23	2
N-15	2	S-5	2	E-7	2	E-25	2
N-17	2	S-7	Initial	E-9	2	E-27	2

ANA INCORPORATED

ANA No.							
Card No.							

ANA 1 through 7 incorporated

APPROACHING THE AIRCRAFT

Initial External

1. Safe direction
2. Chocks in
3. Extinguisher present
4. No pools of fluid
5. Ground power available

INITIAL

Carry out the **Safe for Parking** checks and ensure two MOR pins are stowed.

Check for loose articles then:

1. External power . . . . . Off

Front Cockpit

2. BATTERY switches (2). . . . Both OFF
3. ESSENTIAL BUS switch . . ISOLATE

Rear Cockpit

4. BATTERY switches (2). . . . Both FRONT
5. ESSENTIAL BUS switch . . FRONT

EXTERNAL

Systematically check the aircraft for signs of damage, leaks and loose fairings, while specifically checking:

1. All covers and blanks . . . . Removed
2. Intake. . . . . Clear
3. Propeller . . . . . Turn through 90°, check for compressor rub and for damage to compressor blades, note blade pitch angle. Check propeller hub and rear of blades for abnormal grease/oil leakage
4. Lifting surfaces and engine intake . . . . . Clear of ice
5. Pitot tubes and static vents . . . . . Clear
6. Panels and filler caps . . . . Secure
7. Landing gear:
   a. Nosewheel steering. . . . Engaged
   b. Ground locks . . . . . Removed
   c. Main landing gear . . . . . Inner doors up
   d. Ground locks . . . . . Removed
   e. Oleo extensions. . . . . Equal and normal
   f. Tyres . . . . . No cuts
   g. Brakes . . . . . Leads secure, no hydraulic leaks
8. Canopy . . . . . Clean and undamaged

COCKPIT

Rear Cockpit

1. COMMAND FIRING lever. . As required
2. LDG GEAR STBY LOWER lever . . . . . NORMAL (forward)
3. TRIM switch. . . . . NORM
4. STALL WNG switch. . . . . NORM
5. Start switch . . . . . RUN
6. MASTER ENG SWitch . . . FRONT
7. HYD switch . . . . . NORMAL
8. Normal LDG GEAR lever. . Fully DOWN
9. GND UP ENABLE switch. . OFF
10. CCS U/STBY switch . . . . . OFF
11. PARKING BRAKE handle. . Off
12. Transponder . . . ◆◆. . . . . Off
13. FUEL PUMPS (PORT and STB) . . . . . MAIN (2) FRONT AUX (2) FRONT
14. FUEL CUT OFF switch . . . FRONT (cover down)
15. Wander lamp . . . . . Secure
16. ELECTRICS panel . . . . . All 5 switches FRONT
17. ICE PROTECTION panel. . All 6 switches FRONT
18. EXT IN'COM switch. . . . . OFF
19. C/B panels. . . . . All C/Bs made
20. OXY SUPPLY . . . . . ON dual, OFF solo
21. PEC dust cover . . . . . As required

Solo flying additional checks

22. Ejection seat . . . . . Apron fitted. Straps secure and stowed, no obstructions. PEC dust cover fitted
23. Punkah louvres . . . . . Closed
24. TCAS. . . . . OFF

Front Cockpit

1. OXY SUPPLY . . . . . ON
2. PEC dust cover . . . . . Remove & stow

EJECTION SEAT CHECKS

Cockpit/ Ejection Seat

1. Seat firing handle safety pin . . . . . Fitted through housing and firing handle
2. MOR . . . . . Handle locked down, safety pin removed
3. BTRU static trip rod . . . . . Secured to cross beam
4. Command ejection pipe(s) . . Visually confirm not disconnected
5. Command/BTRU telescopic tubes . . . . . Pip pin fitted, white telltale flush
6. BTRU capsule . . . . . Check operating altitude
7. Ejection gun firing unit . . . . Latch plunger in, pip pin fitted
8. Drogue link shackle . . . . . Secured, tie intact
9. Parachute container . . . . . Closed, 2 ties intact
10. Drogue gun piston . . . . . Attached to drogue withdrawal line, shear pin fitted
11. Top latch:
    a. Indicator spigot . . . . . Flush with, or slightly protruding from, plunger
    b. Plunger . . . . . Flush with, or slightly recessed into, housing face
12. Drogue gun static trip rod . . . Secured to cross beam
13. Emergency oxygen
    a. Contents . . . . . Full
    b. Pip pin . . . . . Fitted
    c. Trip lever . . . . . Horizontal
    d. Striker . . . . . Extended
    e. Operating handle . . . . . Fully down
14. Oxygen regulator . . . . . Selector to AM (forward)
15. Go forward mechanism . . . Check HPRU operates and locks
16. PSP:
    a. Suspension strap . . . . . Routeing correct
    b. Lowering line . . . . . Connector in spring clip
17. Combined Harness:
    a. Straps . . . . . Secure in locks
    b. Parachute lift webs . . . . Inboard of retraction straps
    c. Retention strap . . . . . In front of lift webs, in top locks
    d. Sticker straps . . . . . Outside lap straps, in spring clips
    e. Leg restraints . . . . . Attached to floor, routeing correct

Note: For solo flying leave the rear seat firing handle safety pin and internal canopy fracture handle pin correctly fitted.

PRE-START

Note: Minimum voltage for internal start is 24V and for external start is 22V. An external power supply should be used if the aircraft has been cold soaked below 0°C for more than 2 hours.

1. PEC . . . . . Insert
2. PSP . . . . . Connect
3. Leg restraint lines . . . . . Connect
4. Straps . . . . . Correctly routed, insert into QRF, tighten
5. Oxygen hose . . . . . Connected
6. Mic/tel lead . . . . . Connect and tether
7. Go forward mechanism . . . Check function
8. C/B panels. . . . . All C/Bs made
9. ELECTRICS panel:
   a. BATTERY switches (2) . Both OFF
   b. ESSENTIAL BUS switch . NORM, CWP captions lit; ISOLATE, CWP captions out
   c. BATTERY switches (2) . Both ON, CWP captions lit
   d. BATTERY 1 switch . . . . OFF, check bus volts, ON
   e. BATTERY 2 switch . . . . OFF, check bus volts, ON

If external power is required:

   f. BATTERY switches (2) . OFF
   g. External power . . . . . Connected and switched on, GPU ON LINE lit, check voltage (25V min)
10. ELECTRICS panel . . . . . All 5 switches forward
11. CCS station box:
    a. FAIL/NORM. . . . . NORM
    b. I/C volume . . . . . Set
    c. Rotary switch. . . . . V/UHF
    d. U/STBY selector . . . . . OFF
    e. V/UHF toggle switch . . . Up
    f. U/STBY toggle switch . . Up
12. Seat height . . . . . As required
13. Controls (both cockpits if Captain occupies rear) . . Clear. Unlocked, elevators and ailerons full, free and correct movement.
14. PARKING BRAKE. . . . . On, front PARK BRAKE light out

Pre-Start

Left Console

1. AIRBRAKE STBY UP handle. Down
2. ESDL . . . . . NORMAL
3. FLAPS selector . . . . . Clear. UP
4. Throttle . . . . . Full and free movement. Adjust friction. GND IDLE
5. TRIM switch. . . . . NORM
6. STALL WNG switch. . . . . NORM
7. ALT TX switch . . . . . OFF
8. STROBES switch . . . . . OFF
9. NAV lights . . . . . As required
10. LANDING lamps . . . . . OFF
11. TAXI lamp . . . . . OFF
12. ENGINE SPEED switch . . Select 70% momentarily
13. EEC switch . . . . . NORMAL, EEC caption out
14. FUEL/IGN switch. . . . . NORMAL
15. Start switch . . . . . STOP
16. ENGINE START panel indicators (3). . . . . All out

Below the Instrument Panel

1. HYD switch . . . . . NORMAL
2. Normal LDG GEAR lever. . DOWN, 3 greens
3. GND UP ENABLE switch. . OFF
4. NAV. . . . . OFF
5. TACAN . . . . . OFF
6. Transponder . ◆◆. . . . . Off
7. INTERIOR LIGHTS . . . . . As required
8. EMERGency lights . . . . . Test if required. Pointing at instrument panel
9. TPDR. . . . . SEL lit
10. U/VHF . . . . . SEL lit
11. COMPASS . . . . . SEL lit
12. Compass control . . . . . SLAVE
13. CWP . . . . . Night screen as required. TEST. **CANOPY**, **OIL P**, **HYD** (**EMER HYD**), **FUEL P** and **GEN** captions lit
14. Fuel:
    a. Contents . . . . . Sufficient and balanced
    b. Flowmeter . . . . . Zero. Detotalizer set
    c. Pumps (4) . . . . . Test each pump against associated indicator and **FUEL P** caption. Set all pumps OFF

continued

Below the Instrument Panel - *continued*

15. OAT gauge . . . . . Condition
16. ADR indicator . . . . . ADR OFF lit
17. FIRE DET test switch:
    a. FIRE TEST . . . . . Press, **FIRE** caption lit, audio, attention getters
    b. FAULT TEST. . . . . Press, **F DET** caption lit, attention getters

Right Console

1. Wander lamp. . . . . Secure
2. AIR CONDitioning panel:
    a. BLEED switch . . . . . OFF/RESET
    b. NORM/BOOST switch. . NORM
    c. RAM lever . . . . . SHUT
    d. Temperature . . . . . Set
    e. AUTO/MAN switch . . . . AUTO
3. ELECTRICS panel . . . . . All 5 switches forward
4. ICE PROTECTION panel . . .All 6 switches OFF
5. AOA/STALL indicator . . . . Press to test.
    ◆ Post-mod 109 (FLARM): Audio tone / rear cockpit AOA indications as required ◆
6. EXT IN'COM switch. . . . . As required

Instrument Panel

1. U/VHF controller . . . . . TR+G, VOLume max, frequency set
2. CCS station box:
    a. Standby UHF. . . . . Test if req'd
    b. VHF . . . . . Test if req'd
    c. Rx volume . . . . . Set
    d. FAIL/NORM switch . . . . FAIL, test intercom, NORM
3. Clock . . . . . Set
4. FLAP indicator. . . . . Agrees with flap position
5. Trim indicators (3) . . . . . Condition
6. Stopwatch . . . . . Tested, reset
7. TCAS. . . . . OFF
8. CSI . . . . . Condition
9. Standby attitude indicator. . Erect, warning flag retracted
10. HSI . . . . . HDG clear, NAV and VERT showing. HDG and CRS knobs free to rotate, heading constant
11. Compass controller . . . . . FAST ERECT

continued

Instrument Panel - *continued*

12. Main attitude indicator . . . . Erect, warning flag retracted
13. Turn-and-slip indicator. . . . OFF flag retracted
14. Accelerometer . . . . . Reset
15. Standby compass . . . . . Condition
16. Standby altimeter . . . . . VIB clear, set as required
17. Main altimeter . . . . . Condition, warning flag retracted, set as required
18. VSI. . . . . Zero, condition
19. EGT gauge . . . . . Condition, note temperature
20. RPM gauge . . . . . Zero

Pre-Start *(contd)*

21. TORQUE gauge . . . . . Zero
22. Oxygen . . . . . Mask donned. Confirm AM (forward), check flow. Press test. Select 100% (aft), check flow and MI function. Contents sufficient
23. Oil temperature gauge. . . . Condition
24. Oil pressure gauge . . . . . Zero
25. FUEL CUT OFF switch . . . Cover down
26. FUEL OFF light . . . . . Out
27. Visor(s) . . . . . Down
28. Canopy . . . . . Locked, caption out, strut pin stowed

◆*Post-mod 109 (FLARM):*

29. FLARM cover . . . . . Remove and stow in map stowage bin
30. FLARM unit . . . . . Secure in mount ◆

Propeller

If propeller is feathered:

1. Throttle . . . . . REV
2. EEC switch . . . . . MAN
3. Start switch . . . . . START until locks engage, then STOP
4. Throttle . . . . . GND IDLE
5. EEC switch . . . . . NORMAL, EEC caption out
6. ENGINE SPEED switch . . Select 70% momentarily

ENGINE START

Starting Limitations

1. If starter is inadvertently disengaged, allow propeller to stop completely before re-engaging starter.
2. A maximum of 3 start/dry crank cycles is permitted (each of no more than 60 seconds duration) at 2 minute intervals. 15 minutes must then elapse before a further 3-start sequence.
3. Only 3 start/dry crank cycles may be made using internal batteries and, before each start cycle, battery voltage must be above the minimum for engine starting.
4. Wait 10 minutes if starting after a period of sustained running. Ensure propeller is turned through 90° prior to start.
5. Maximum wind components: head/cross 40 kts, tail 15 kts.

Starting Procedure

1. Propeller . . . . . On start locks. Clear
2. EGT . . . . . Below 200°C

Note: If EGT is above 200°C, carry out **Dry Crank** (Card **N-11**).

3. Start switch . . . . . START for 2 sec
4. STARTER ON light . . . . . Ensure lit
5. * Propeller . . . . . Turning
6. * RPM . . . . . 5% within 10 sec
7. IGNITER ON light . . . . . Ensure lit
8. * EGT. . . . . Rising within 5 sec of IGNITER ON lighting (10 sec after cold soak). 770°C (maximum)
9. * RPM . . . . . 30% within 35 sec, not stagnating
10. * OIL pressure . . . . . Rising
11. * STARTER ON and IGNITER ON lights . . . . Out at 60 to 65% RPM and within 60 sec

◆ **CAUTION:** Abort engine start if any of the following occur:

The start does not comply with the starred checks.
EGT is rising rapidly through 730°C or is likely to exceed 770°C.
There is any unusual noise or vibration.

To abort Engine Start

1. ESDL . . . . . OFF/FEATHER
2. Start switch . . . . . STOP

If further start is intended:

3. Ensure that EGT stops rising and fuel flow reduces to zero.

When EGT is below 200°C or 60 sec has elapsed:

4. Start switch.....STOP ◆

◆ **Dry Crank**

To reduce EGT below 200°C or to ventilate engine of unburnt fuel:

1. ESDL . . . . . NORMAL
2. EEC switch . . . . . CRANK
3. Start switch . . . . . Select and hold at START for a maximum of 30 sec
4. STARTER ON light . . . . . Ensure lit

Note: RPM should stabilize at 13 to 15%.

When EGT is below 200°C or 30 sec has elapsed:

5. Start switch . . . . . STOP
6. EEC switch . . . . . NORMAL, EEC caption out
7. ENGINE SPEED switch . . Select 70% momentarily
8. Wait 2 minutes for starter to cool before further start attempt ◆

Eng Start/ After Start

Further Start Attempt

Note: Consider using a different power supply.

If external power is required:

1. BATTERY switches (2) . . . Both OFF
2. ESSENTIAL BUS switch . . ISOLATE
3. External power . . . . . Connected and switched on. GPU ON LINE lit, check voltage (min 25V)
4. ELECTRICS panel . . . . . All 5 switches forward
5. ESDL . . . . . NORMAL
6. EEC switch . . . . . NORMAL, EEC caption out
7. ENGINE SPEED switch . . Select 70% momentarily
8. AIR COND BLEED switch. . OFF/RESET
9. ICE PROTECTION panel. . All 6 switches OFF
10. MASTER ENG SWitch (rear cockpit) . . . . . As required
11. Carry out **ENGINE START (N-10)**

AFTER START

1. RPM . . . . . 72 to 73%
2. EGT . . . . . 560°C (maximum)
3. FUEL MAIN PUMPS (2) . . Both ON
4. CWP . . . . . All captions out
5. External supply . . . . . GPU ON LINE out, signal 'Disconnect'
6. ELECTRICS panel:
   a. GEN and BUS VOLTS . 27 to 29V
   b. VOLTS switch . . . . . Select BAT 1 and BAT 2 in turn, ensure BUS VOLTS remains 27 to 29V
7. AIR CONDitioning panel:
   a. BLEED switch . . . . . ON
   b. NORM/BOOST switch. . BOOST
8. NAV . . . . . ON, frequencies set, TEST if req'd
9. TACAN . . . . . T/R, channel set, TST if req'd
10. TCAS . . . . . On, brightness set, TEST if req'd
11. FLAPS . . . . . Check operation, leave at MID
12. Airbrake . . . . . Check operation, select in
13. Trims . . . . . Check operation
14. TRIM switch. . . . . ISOL, ensure no trim operation
15. RUDDER trim . . . . . Set 3 divisions right
16. AILeron and ELEVator trim. . Set neutral
◆17. FLARM (post-mod 109). . . On, acknowledge screen. Off for night flying. ◆
18. Transponder ◆◆. . . . . On, set/check FID and Emerg Sqwk
19. ADR indicator . . . . . Out
20. ICE PROTECTION panel:
    a. ICE DET switch . . . . . ON
    b. ICE indicator . . . . . Press and release

Then check:

    c. ICE indicator . . . . . Lit (blue)
    d. EGT . . . . . Slight rise
    e. CWP . . . . . **PSV HEAT** caption lit
    f. INTAKE ON indicator . . Lit (blue)
    g. PROP 1 or 2 indicator . . Lit (blue), note if 1 or 2
    h. STALL indicator. . . . . Lit (amber)
    i. AOA indicator . . . . . Out
    j. PITOT 1 and 2 indicators. . Both out
    k. ICE DET switch . . . . . OFF
    l. PROP switch . . . . . ON, observe PROP 1 / 2 indicator changeover, then OFF

continued

AFTER START - *continued*

21. PIE button (front cockpit) . . Press momentarily
22. Oxygen regulator. . . . . Select AM (forward)
23. Harness. . . . . Secure, correctly routed
24. PSP and leg restraint lines. . Secure, correctly routed
25. External panels . . . . . Confirm secure
26. Seat firing handle . . . . . Clear of obstructions
27. Seat pin(s). . . . . Remove and stow

TAXY

Note: For crew comfort, consider using 100% RPM if OAT is minus 10°C to +5°C or +20°C to +30°C. If OAT is at or below 8°C with RVR less than 1000 metres and/or a wet runway surface select INTAKE and PROP icing protection ◆ON. Pre and post-flight ground running at OAT above +20°C should be limited to 20 minutes for crew comfort and oil cooling reasons. ◆

1. Throttle . . . . . Select REV then GND IDLE
2. Chocks . . . . . Remove
3. TAXI lamp . . . . . AUTO
4. PARKING BRAKE. . . . . Release, light out

Taxy

Whilst moving, check brakes, reverse thrust, nosewheel steering, full rudder travel and flight instruments

Take-Off

TAKE-OFF

Checks Before Take-Off

1. COMMAND FIRING lever. . As required
2. EXTERIOR LIGHTING . . . As required
3. FLAPS. . . . . MID
4. Trim:
   a. AILeron and ELEVator . Neutral
   b. RUDDER. . . . . 3 divisions right
5. Airbrake. . . . . In, light out
6. Instruments:
   a. Warning flags (6)... . . . . All clear (VERT and NAV flags may still be visible)
   b. Attitude indicators . . . . . Erect
   c. HSI . . . . . Synchronized, check against standby
   d. Altimeters . . . . . Set, within limits
7. NAV and TACAN. . . . . Set as required
◆8. FLARM (post-mod 109). . . Set as required ◆
9. Oxygen . . . . . Contents, connections, flow
10. Fuel . . . . . Contents sufficient/balanced. Detotalizer functioning. One pump ON each side
11. CWP . . . . . All captions out

continued

Checks Before Take-Off - *continued*

12. AMPS . . . . . Below 100 (with LANDING lamp OFF)
13. AIR CONDitioning panel:
    a. BLEED switch . . . . . ON
    b. NORM/BOOST switch. . BOOST
14. ELECTRICS panel . . . . . All 5 switches forward
15. ICE PROTECTION panel. . PITOT 1 and 2 switches ON
16. Harness . . . . . Locked and tight, PSP connected, leg restraints connected, visor(s) lowered
17. Controls . . . . . Elevators and ailerons full and free
18. Seat pins . . . . . Stowed (3 solo/4 dual)
19. Take-off emergencies. . . . . Brief complete

Runway Checks

◆ *When cleared to enter runway:* ◆

1. STROBES . . . . . ON
2. LANDING lamps . . . . . ON
3. ◆ Transponder . . . . . Set as required

When cleared to Take-off:

4. ENGINE SPEED switch . . 100% momentarily, RPM rise above 94% ◆
5. Brakes . . . . . Holding at 20% torque
6. RPM . . . . . 100 ± 1%
7. EGT . . . . . Below 650°C
8. OIL temp and pressure . . . Green sectors

Checks During Take-Off

1. TORQUE . . . . . 100% (max) (max over-swing 115%)
2. EGT . . . . . 650°C (max) (max over-swing 660°C for 5 sec)

Checks After Take-Off

1. Normal LDG GEAR lever . .UP
2. FLAPS . . . . . Selected UP
3. TORQUE . . . . . 100% (maximum)
4. RPM . . . . . 101% (maximum)
5. EGT . . . . . 650°C (maximum)
6. OIL temp and pressure . . . Green sectors
7. Landing gear indicators . . . Out by 145 kts
8. FLAPS . . . . . UP by 175 kts

Transition Altitude/Airfield Departure

1. Altimeters . . . . . 1013 hPa/RPS set
2. Transponder . . . . . Set
3. Nav aids . . . . . Identify

IN FLIGHT

Routine Airmanship Checks (FOEEL)

1. **F**uel . . . . . Contents, balance
2. **O**xygen . . . . . Contents, connections, flow
3. **E**ngine . . . . . TORQUE, RPM , EGT, OIL temp and pressure
4. **E**lectrics . . . . . GEN and BUS VOLTS 27 to 29V. AMPS approx 80 with LANDING lamps ON and INTAKE and PROP switches OFF
5. **L**ocation . . . . . Check, pigeons to nearest suitable airfield

Pre-Stalling, Spinning and Aerobatic Checks (HASLLG)

1. **H**eight . . . . . Sufficient for recovery. Calculate min abandon height
2. **A**irframe . . . . . Landing gear, flaps and airbrake as required. Note g limits
3. **S**ecurity . . . . . Harness tight. Check for loose articles. Pockets fastened. Map stowage lids locked
4. **L**ocation . . . . . Clear of active airfields, built-up areas and controlled airspace
5. **L**ookout . . . . . Clear of aircraft and cloud
6. **G** warm-up/Inv flt check . . . As required

Pre-Joining/Descent Checks (FIRACIS)

1. **F**uel . . . . . Contents and balance
2. **I**nstruments . . . . . Erect and synchronized
3. **R**adio . . . . . Frequency set, transponder as required
4. **A**ltimeters . . . . . Set as required, cross-checked
5. **C**onditioning . . . . . As required
6. **I**ce protection . . . . . As required
7. **S**afe height/altitude for descent

APPROACH

Instrument Approach Settings

Position	*Configuration*	*Torque (%)*	*Speed (kts)*
Initial descent	Airbrake OUT	FLT IDLE	180
Slow rate descent	Airbrake IN	20	180
		10	140
Configured descent	Gear DOWN Flaps MID Airbrake IN	15	115
Pattern and base leg	Gear DOWN Flaps MID	30	Reducing to 115
Glidepath	Gear DOWN Flaps DOWN	30	110

Approximately 25 kg of fuel is used during descent and instrument approach

Approach Category

Aircraft category for approaches is B

LANDING

Pre-Landing Checks

1. Speed . . . . . Below 145 kts
2. Airbrake . . . . . IN, caption out
3. Normal LDG GEAR lever . .DOWN
4. FLAPS . . . . . Select as required
5. Fuel . . . . . Contents. At least one PUMP on each side. Calculate threshold speed
6. Harness . . . . . Locked and tight
7. PARKING BRAKE . . . . . Off, light out
8. Landing gear indicators . . . 3 greens
9. FLAPS . . . . . Indicate as required

Short Final

1. Landing gear indicators . . . 3 greens
2. FLAPS . . . . . Indicate as required
3. Brakes . . . . . Toes clear

Circuit Speeds (kts)

	Downwind	*Final Turn*	*Approach*	*Threshold*
Powered approach	140 reducing to 115	110	Reducing to threshold speed	90*
Glide approach			110	95*
Flapless approach				

* Add 1 kt per 100 kg of fuel (round up to nearest 100 kg) and if landing with ice accretion on the wing leading edges, add 15 kts to calculated threshold speeds.

AFTER LANDING

1. COMMAND FIRING lever . . . OFF
2. Seat firing handle
   safety pin(s) . . . . . Insert
3. FLAPS . . . . . MID
4. EXTERIOR LIGHTING panel:
   a. STROBES . . . . . OFF
   b. LANDING lamps . . . . . OFF

Approach
Landing
After Ldg

5. ENGINE SPEED switch . . . Select 70% momentarily
6. NAV . . . . . OFF
7. TACAN . . . . . OFF
8. TCAS . . . . . OFF
9. Transponder . . . . . Off
10. ◆FLARM (post-mod 109) . . . . Off. Refit cover to unit ◆
11. FIRE DET test switch:
    FAULT TEST . . . . . Press, **F DET** caption lit.
    Release, F DET caption out.
12. ICE PROTECTION panel:
    a. PITOT 1 and 2 switches . . Both OFF
    b. INTAKE switch . . . . . As required
    c. PROP switch . . . . . As required
    d. AOA/STALL switch . . . . . OFF

SHUTDOWN

Front Cockpit

1. Throttle . . . . . REV
2. PARKING BRAKE. . . . . On
3. Flying controls . . . . . Locked
4. Start switch . . . . . STOP (see **Note**)
5. Oxygen mask . . . . . Donned
6. Visor(s) . . . . . Down
7. Seat firing handle safety pin(s) . . . . . Fitted through housing(s) and firing handle(s)
8. Canopy . . . . . Open
9. U/VHF . . . . . OFF
10. Fuel . . . . . Note contents
11. FUEL PUMPS (4) . . . . . All OFF
12. AIR CONDitioning panel:
    a. BLEED switch . . . . . OFF/RESET
    b. NORM/BOOST switch. . NORM
13. ICE PROTECTION panel. . All 6 switches OFF
14. Propeller . . . . . Stopped
15. EXTERIOR LIGHTING (4). . All OFF
16. GENerator switch . . . . . OFF
17. ESSENTIAL BUS switch . . ISOLATE
18. INTERIOR LIGHTS (2) . . . Both OFF
19. BATTERY switches (2) . . . Both OFF
20. Chocks . . . . . In position
21. PARKING BRAKE. . . . . Off
22. PEC. . . . . Disconnect
23. PEC dust cover . . . . . Fit to seat
24. OXY SUPPLY . . . . . OFF
25. Oxygen regulator. . . . . 100% (aft)
26. Harness. . . . . Unstrap. Stow shoulder straps in headbox stowages
27. QRF. . . . . Return to locked position

Note: Before RPM and EGT decrease there is a minor increase as the engine is purged.

Rear Cockpit

1. Harness. . . . . Unstrap as required
2. Start switch . . . . . STOP
3. Transponder . . . . . Off
4. PEC dust cover . . . . . Fitted to seat
5. OXY SUPPLY . . . . . OFF
6. Oxygen regulator. 100%

Before leaving aircraft, confirm aircraft is Safe for Parking

LIMITATIONS

Note: The limitations are taken from the MOD AFD Release to Service document which should be consulted for the latest release standard.

Shutdown Limits

Max **Mass** for T/O and Landing	3000 kg
Max **Altitude**	25,000 ft
Speed	
Clean	300 kts / 0.54 M
Severe Turbulence	230 kts
FLAPS:	
UP to MID / MID	175 kts
MID to DOWN / DOWN	145 kts
Landing Gear:	
Operating/Locked Down	145 kts
Emergency lowering	120 kts
Airbrake - operation / extension	As per clean a/c
G Limits	
Never exceed	-3.3 to +7g
Normal operating	-2.5 to +6g
Gear or flaps extended:	
>2900 kg	0 to +1.8g
<2900 kg	0 to +2g
During LDG GEAR retraction (With SEM 057 (camera in rear cockpit))	0 to +1.7g (+0.5 to +3g)
WARNING: All flight at less than +0.5g depletes the propeller oil accumulator. Excessive throttle movement or large speed changes at, or whilst recovering from, flight at less than +0.5g increases the demand from the accumulator, accelerating oil loss and delaying recharge respectively. Only count recovery time when oil pressure is in the green.	
Non-manoeuvering inverted flight	30 sec then 3 min recovery time.
Manoeuvering below +0.5g	Max 20 sec.
For less than 10 sec	Unrestricted but see **WARNING**.
For 10 to 20 sec	Recovery time of twice exposure time.
After 3 excursions below +0.5g	Additional 1 min recovery time.
Flight at or close to 0g	Max 15 sec.

continued

Limitations - *continued*

Rolling Manoeuvres	<280 kts
Full aileron	-1g to +4g
Spinning	
Inverted	up to 4 turns
Erect (at idle power)	up to 6 turns
Erect (up to 30% Tq)	to the **LEFT** only, up to 4 turns
Maximum wind speeds	
Canopy opening/closing	40 kts
External assistance is required when the component exceeds:	
Head/tailwind	25 kts
Crosswind from Left	20 kts
Crosswind from Right	15 kts
Taxying	40 kts
Take-off and landing component:	
Headwind	40 kts
Crosswind	30 kts
Tailwind	10 kts
Tyre Limiting Speed	
Tyre groundspeed	110 kts
Aircraft Arresting Barriers	Not cleared for use

◆ **Aircraft Arresting Gear**
Cleared to cross tensioned arrester gear cables which are unsupported and in contact with the runway.
Cleared to taxy across rigged and supported arrester gear cables at slow walking pace with the brakes off and the aircraft nose aimed centrally between supporting discs, providing the gear doors are closed.
Note: Cleared to cross retracted BAK 14 RHAG cables without restriction.
CAUTION: Taxying over supported arrester gear cables is prohibited with a deflated nosewheel tyre and/or following lowering of the gear using the standby system. ◆

Oil System	
Approved Oil	OX27
Fuel System	
Max fuel asymmetry	100 kg
Approved Fuels:	
Standard	Avtur / FSII (F-34)
Alternative	Avtur (F-35) (See **Note**)

◆ **Note:** With AL48 (FSII and lubricity additive) there are no restrictions. Without AL48 use only with fuel temperature above 0°C. ◆

ENGINE

Garrett TPE 331-12B Engine

Operating Condition	*EGT (°C)*	*Tq(%) (Note 1)*	*Prop Speed(%)*	*Oil Temp (°C)*	*Oil Press (Bar)*
Starting ESS to 70%	770	-	80	minus 40 (low amber)	0 to 8.3 (black/ amber/ green)
Ground Operation at 70%	560	100	72 to 73	110 (low amber/ green)	2.8 to 8.3 (amber/ green)
Ground Operation at 100%	650	100	101	110 (low amber/ green)	4.8 to 8.3 (green)
Transient	660 (5 sec)	-	101 to 104 (30 sec)	127 (upper amber) (**Note 2**)	2.8 to 8.3 (amber/ green)
Reverse at 70%	560	81.8	-	110 (low amber/ green)	4.8 to 8.3 (green)
Reverse at 100%	650	81.8	-	110 (low amber/ green)	4.8 to 8.3 (green)
All flight conditions unless otherwise stated	650 (560 in manual)	100	101	55 to 110 (green)	4.8 to 8.3 (green) (3.4 to 8.3 > FL230)

Limits *(contd)*

Note 1: Selections to maximum power may cause a torque overshoot beyond 100% which is quickly recovered. Any overshoot above 115% or that does not rapidly return to 100% requires torque to be reduced immediately; return to base as soon as practicable.

Note 2: When oil temperature in range 110°C to 127°C reduce torque to less than 70%. Maximum time above 110°C is 5 mins.

OPERATING DATA

Note 1: ISA, still air and air conditioning bleed BOOST are assumed.
Note 2: Start climb mass 2900 kg, maximum continuous power (MCP) 650°C EGT.
Note 3: Climb speeds: 150 kts to FL 100, 140 kts to FL 200, 130 kts above.
Note 4: Range and endurance figures are to 70 kg at chosen altitude and include climb but not descent.
Note 5: Add 12 kg for start-up, taxy, take-off and acceleration to climb speed.

Climb

Sea Level to FL	Fuel (kg)	Distance (NM)	Time (mins)
50	8	6	2.2
100	17	14	5.0
150	27	23	8.0
200	39	37	12.5
250	52	58	18.7

Descent

Instrument - 180 kts, Airbrake OUT

To 1000ft from FL	Fuel (kg)	Distance (NM)	Time (mins)
250	11	29	8.5
200	10	23	7.0
150	8	17	5.3
100	6	11	3.6
50	3	5	1.7

Normal - 200 kts, Airbrake OUT *IN*

To 1000ft from FL	Fuel (kg)		Distance (NM)		Time (mins)	
250	9	12	25	34	6.4	8.7
200	8	10	19	26	5.2	7.1
150	6	9	14	19	4.0	5.4
100	5	6	9	12	2.6	3.6
50	3	3	4	5	1.2	1.7

Cruise - 240 kts TAS

FL		Fuel (kg)					
		525	500	400	300	200	100
SL	IAS (kts) / Mach No	236 / 0.36					
	Fuel Flow (kg/min)	3.95					
	SAR (NM/100 kg)	101.2					
	Range (NM)	460	435	334	233	132	30
50	IAS (kts) / Mach No	219 / 0.37					
	Fuel Flow (kg/min)	3.40					
	SAR (NM/100 kg)	117.6					
	Range (NM)	533	504	387	270	153	35
100	IAS (kts) / Mach No	203 / 0.38					
	Fuel Flow (kg/min)	2.94					
	SAR (NM/100 kg)	136.0					
	Range (NM)	618	584	449	314	178	41
150	IAS (kts) / Mach No	188 / 0.38					
	Fuel Flow (kg/min)	2.54					
	SAR (NM/100 kg)	157.4					
	Range (NM)	716	677	521	364	206	48
200	IAS (kts) / Mach No	173 / 0.39					
	Fuel Flow (kg/min)	2.20					
	SAR (NM/100 kg)	181.8					
	Range (NM)	825	780	601	420	238	55
250	IAS (kts) / Mach No	159 / 0.4					
	Fuel Flow (kg/min)	1.92					
	SAR (NM/100 kg)	208.3					
	Range (NM)	943	892	688	482	274	63

Operating Data

Maximum Range

Fuel state 200-525 kg

Climb to and maintain FL250 / 142 kts IAS
TAS: 215 kts
Mach No: 0·36
Fuel flow: 1·68 kg/min
SAR : 211 NM/100 kg

Range available:

Start FL	Fuel (kg)				
	200	*300*	*400*	*500*	*525*
SL	238	448	657	863	914
50	247	458	667	874	925
100	256	468	677	884	935
150	265	477	686	893	945
200	273	485	695	902	953
250	280	492	702	909	961

Fuel state below 200 kg (figures quoted are for 100 kg)

	Start FL					
	SL	50	100	150	200	250
Climb to FL	100	150	200	250	250	250
IAS (kts)	171	160	152	142	142	142
TAS (kts)	203	206	211	215	215	215
Mach No	0.32	0.33	0.34	0.36	0.36	0.36
Fuel flow (kg/min)	2.36	2.07	1.85	1.68	1.68	1.68
SAR (NM/100 kg)	145	168	190	211	211	211
Range available (NM)	34	39	45	51	58	65

MAXIMUM RANGE FOR GIVEN HEIGHT

FL			SL	50	100	150	200	250
IAS			195	183	172	161	152	142
TAS			199	200	203	206	211	215
Mach No			0.30	0.31	0.32	0.33	0.34	0.36
Fuel Flow			3.05	2.66	2.36	2.07	1.85	1.68
SAR (NM/100 kg)			109	125	143	166	190	213
FUEL (kg)	525	RANGE (NM)	495	572	661	763	874	961
	500		468	541	625	721	826	909
	400		359	415	479	553	634	702
	300		250	289	334	385	442	492
	200		141	163	189	218	249	280
	100		32	37	43	50	57	65

ENDURANCE

Fly at 118 kts
Climb to high level, unless fuel state lower than 200 kg.
The following endurance is obtained, (hrs/mins):

		Fuel (kg)					Fuel Flow (kg/hr)
		100	200	300	400	500	
FL	SL	0:12	0:54	1:34	2:15	2:55	150
	50	0:14	1:01	1:47	2:33	3:19	131
	100	0:16	1:09	2:02	2:54	3:45	118
	150	0:18	1:17	2:16	3:13	4:09	108
	200	0:20	1:24	2:28	3:30	4:31	99
	250	0:21	1:31	2:39	3:46	4:50	95

Operating Data *(Cont)*

NAVIGATION EQUIPMENT CHECKS

TACAN

1. TACAN control unit . . . . . Select MODE
2. NAV mode selector . . . . . TACAN
3. HSI selector. . . . . SEL
4. HSI course pointer. . . . . Set 180°, check digital track reads 180º ± 1
5. Test/transfer switch . . . . . Select TST and release, check:
   a. HSI nav flag. . . . . Away for 3 sec then reappears
   b. Digital distance . . . . . 0 to 0·5 NM
   c. TAC pointer . . . . . 180º ± 2°
   d. TO flag. . . . . Displayed
   e. CDI bar . . . . . Central
   f. Course pointer. . . . . Select 170° and 190° and check CDI full scale deflection. Move through 090° or 270° to check TO/FROM flag change. Set 360°; check CDI central
6. Other cockpit . . . . . Repeat check if required

VOR

1. VHF nav control unit . . . . . ON. Set any out-of-range VOR freq
2. NAV mode selector . . . . . VOR/ ILS
3. HSI Selector . . . . . SEL
4. HSI course pointer. . . . . Set 360°
5. VOR test button. . . . . Press and hold, check:
   a. HSI nav flag. . . . . Away after 2 sec
   b. VOR pointer. . . . . 360°
   c. TO flag. . . . . Displayed
   d. CDI bar . . . . . Central
   e. Marker lights . . . . . Flicker
   f. VOR control unit . . . . . Displays 00 (Record any other number)
6. VOR test button . . . . . Release, check:
   a. VOR pointer . . . . . Parks horizontally
   b. HSI NAV flag . . . . . Displayed
7. Other cockpit . . . . . Repeat check if required

ILS/Markers

1. VHF nav control unit . . . . . ON. Set any ILS frequency
2. NAV mode selector . . . . . VOR ILS
3. MKR audio switch . . . . . Up
4. TEST button . . . . . Press and hold, check:
   a. Both HSIs . . . . . NAV and VERT flags in view. After 3 sec NAV and VERT flags away, track deviation bar approx ⅔ fly right, glidepath pointer ⅔ down
   b. Marker lights . . . . . Flicker, 30 Hz tone
   c. VHF nav control unit . . . '00'. Record any other number
5. TEST button . . . . . Release
6. Both HSIs . . . . . NAV and VERT flags showing
7. Marker lights . . . . . Out. 30 Hz tone ceases

Nav Checks

Intentionally Blank

AIRCREW LANDAWAY FLIGHT SERVICING SCHEDULE (ALFSS)

AIRCRAFT SAFE FOR PARKING

The aircraft is Safe for Parking when the following are correctly inserted:

Both ejection seat firing handle safety pins
Both canopy fracture handle safety pins

This Aircrew Landaway Flight Servicing Schedule (ALFSS) combines Turnround (TR), Before Flight (BF) and After Flight (AF) servicings, as detailed in the Flight Servicing Schedule (AP101B-4901-5B1), and is complementary to the Tucano T Mk1 Aircraft Maintenance Manual (AP101B-4901-1A), Ground Handling Notes (AP 101B-4901-12A), Tucano T Mk1 Aircrew Manual (AP101B-4901-15), and Flight Reference Cards (AP101B-4901-14). When any flight servicing is undertaken, the appropriate Hazard and Maintenance Information (AP101B-4901-5A2) is to be followed.

IMPORTANT

If any problems or faults are encountered whilst undertaking any servicing, advice/assistance is to be sought from a qualified Tucano tradesman. (For RAF Linton-on-Ouse, the Rects Manager or Flight Line Manager 95871 - 7355 or 01347 - 847355). Aircrew are not to carry out any replenishments or tyre inflations, but whilst away from maintenance support are to supervise these operations and give guidance.

Servicing

TURNROUND (TR), AFTER FLIGHT (AF) AND BEFORE FLIGHT (BF) COMBINED SCHEDULE

Validity

Turnround (TR)	12 hours
After Flight (AF)	72 hours
Before Flight (BF)	12 hours (but not beyond end of previous AF)

◆ **Preliminaries - Front Cockpit**

AOA Heater C/B (Panel 5, CB66).. Trip/Pull ◆

Preliminaries - Rear Cockpit

D Gyro C/B (Panel 13, CB117)..... Trip/Pull

Within 15 Minutes of Engine Shutdown (*AF & TR only)* or Cold Engine *(AF only)*

Engine oil	Check oil level with reference to card S-16
Engine oil filler cap	Ensure refitted with cam lock lever butterfly folded inboard away from cowling rail

Front Ejection Seat

PEC dust cover	Ensure fitted
PEC mic/tel lead and socket	Look for damage
Main oxygen flexible hose	Look for damage
Oxygen regulator cover plate	Look for damage
Leg restraint lines (2)	Extend. Look for damage. Connect. Ensure secure to anchor bracket
Negative g strap assembly	Look for damage and contamination. Ensure QRF locked

continued

Front Ejection Seat - *continued*

Single handed release strap	Ensure connected
Lap straps	Look for damage and contamination
Extender straps	
PSP assembly	
Parachute harness	
Seat back pad	Look for damage
Shoulder harness tension cord	Look for damage
Harness power retraction unit	Extend straps. Look for damage and contamination. Set go-forward lever aft and ensure straps lock
Command firing quick disconnect (2) (***BF & TR only***)	Lower seat fully. Ensure connected to ballistic manifold and locked, with red witness mark flush with top face of quick disconnect, or not visible. Raise seat as required
Closure flap safety ties (2)	Ensure intact
Drogue assembly shackle tie	Ensure intact
Drogue withdrawal line	Look for damage and contamination
Emergency oxygen contents	Green/1800 psi
◆ Emergency oxygen operating lever	Ensure cocked (horizontal) ◆

Front Cockpit

Canopy	Ensure clean
LCC	Look for damage, separation or contamination
TLX train	Look for damage
Control column gaiter	Look for damage
Brake master cylinders (2)	Look for signs of leaks
Cockpit floor	Ensure clean and dry
Accelerometer	Reset
Clock	Ensure wound and set
AI covers (2)	Ensure stowed
BATTERY switches (2)	Both ON, check voltages indicate minimum of 22V
◆ CWP (both cockpits) (***BF & TR only***)	Ensure EEC captions out ◆

continued

Front Cockpit - *continued*

ESDL (***BF & TR only***)	Set to OFF/FEATHER, ensure both cockpit **EEC** captions lit. Set to NORMAL, ensure both cockpit EEC captions out
Landing gear position indicators (both cockpits).... (***BF & TR only***)	Ensure all filaments (12 in each cockpit) lit when CWP test switch is held to TEST
LANDING and TAXI lamps..	Operate
If night flying:	
NAV lights	Operate
INTERIOR LIGHTS panel:	
NORMAL (both cockpits) ..	Operate
EMERG (4 in each cockpit).	Operate
In baggage bay (***AF & TR only***):	
Exceedance lamps (8)	Ensure not lit
Lamp test	Select LAMP TEST, ensure all lamps illuminate. Release and ensure all lamps except ADR BIT go out
BITE check.....	Select ADR RUN and hold. Ensure ADR BIT lamp goes out after approx 5 sec. Release and ensure ADR BIT lamp illuminates
DAPU	Dump to DEU (every third sortie) (Card **S-15**)
BATTERY switches (2).....	Both OFF
ESSENTIAL BUS switch	Ensure set to ISOLATE
◆ AOA Heater C/B (Panel 5, CB66).....	Reset
Frequency cards (2)	Ensure fitted and tape secure
FLARM (post-mod 109).....	Remove unit from aircraft. Replace batteries as required. Refit to aircraft ◆

Rear Ejection Seat

PEC dust cover.....	Ensure fitted
PEC mic/tel lead & socket ..	Look for damage
Main oxygen flexible hose ..	Look for damage
Oxygen regulator cover plate.....	Look for damage
Leg restraint lines (2).....	Extend. Look for damage. Connect. Ensure secure to anchor bracket

continued

Rear Ejection Seat - *continued*

Negative g strap assembly	Look for damage and contamination. Ensure QRF locked
Single handed release strap	Ensure connected
Lap straps, Extender straps, PSP assembly, Parachute harness	Look for damage and contamination
Seat back pad	Look for damage
Shoulder harness tension cord	Look for damage
Harness power retraction unit	Extend straps. Look for damage and contamination. Set go-forward lever aft and ensure straps lock
Command firing quick disconnect (2) (***BF & TR only***)	Lower seat fully. Ensure connected to ballistic manifold and locked, with red witness mark flush with top face of quick disconnect, or not visible. Raise seat as required
Closure flap safety ties (2)	Ensure intact
Drogue assembly shackle tie	Ensure intact
Drogue withdrawal line	Look for damage and contamination
Emergency oxygen contents	Green/1800 psi
◆ Emergency oxygen operating lever	Ensure cocked (horizontal) ◆

If flying solo:

Seat restraint apron	Ensure fitted correctly

Rear Cockpit

Canopy	Ensure clean
MDC	Look for damage, contamination and separation
TLX train	Look for damage
Control column gaiter	Look for damage
Brake master cylinders (2)	Look for signs of leaks
Cockpit floor	Ensure clean and dry
Accelerometer	Reset
AI covers (2)	Ensure stowed

continued

Rear Cockpit (*continued*)

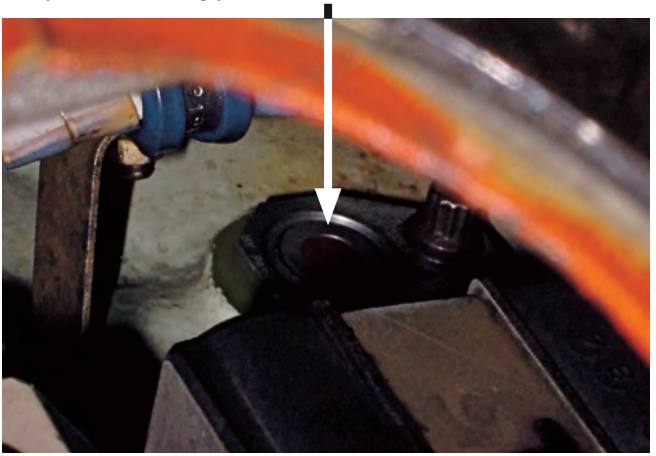
ESSENTIAL BUS switch	Ensure set to ISOLATE
D Gyro C/B (Panel 13, CB117).	Reset
◆ Frequency cards (2)	Ensure fitted and tape secure ◆

Airframe General

External areas, probes, aerials, intakes and exhaust ducts	Look for damage and signs of leaks
Intakes	Ensure clear
External lights	Look for damage
Static dischargers (14).....	Ensure intact

Front Fuselage

Oil filter bypass indicator (***AF & TR only***)	Check flush



Spinner	Ensure secure. Look for damage
Propeller	Look on both faces for damage and signs of oil leaks.
Engine (***BF only***).....	Ensure freedom of rotation
Engine intake & impeller.....	Look for damage
NACA intake	Ensure clear
Exhaust eductors.....	Look for damage

Nose Landing Gear

Taxy lamp drain hole.....	Ensure clear

continued

Nose gear bay Nose gear assembly	Look for damage and signs of leaks
Nose gear shock absorber strut	Check extension appears normal. Clean exposed inner strut
Nosewheel	Look for damage and signs of tyre wear.
Nosewheel (***BF only***)	Check tyre pressure: 8.2 to 8.6 bar (119 to 125 psi)

Left Main Landing Gear (MLG)

MLG compartment MLG assembly Brake unit pipelines and hoses (2)	Look for damage and signs of leaks
Rib 5 and doubler, including cutouts and flanges (***AF & TR only***)	Look for cracks or damaged, cracked or flaking paint work
Landing gear uplock mechanism (***AF only***)	Look for damage, including witness marks on red 'No Go' zone. If any damage **seek assistance**
MLG shock absorber strut	Check extension appears normal. Clean exposed inner strut
Brake unit	Look for damage and signs of leaks. Ensure pad wear indicator pins (3) protruding
Mainwheel	Look for damage and signs of tyre wear.
Mainwheel (***BF only***)	Check tyre pressure: 6.1 to 6.5 bar (89 to 95 psi)

Left Wing

Ice detector	Look for damage
Pitot tube	Look for damage and misalignment. Ensure drain hole clear
AOA vane	Look for damage

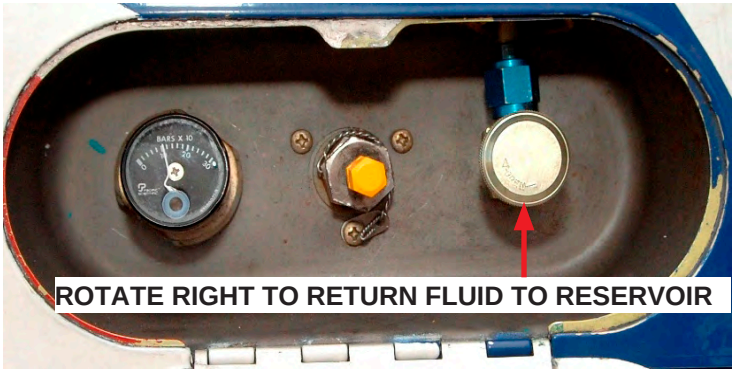
continued

Left Wing *(continued)*

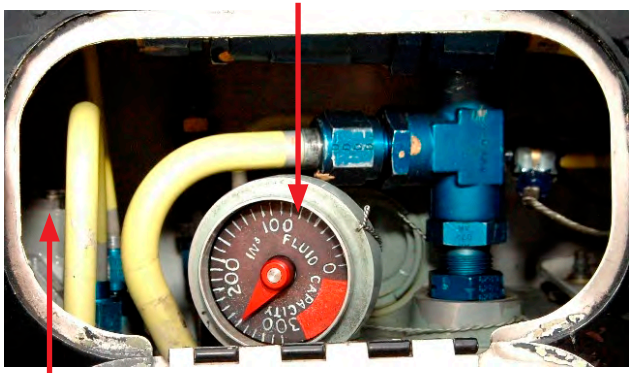
Landing lamp anti-erosion tape (Post-SEM/Tuc/059) ... Look for signs of degradation

Left Rear Fuselage

Landing gear emgcy accumulator (***BF only***) ..... Operate bleed valve to release hydraulic pressure



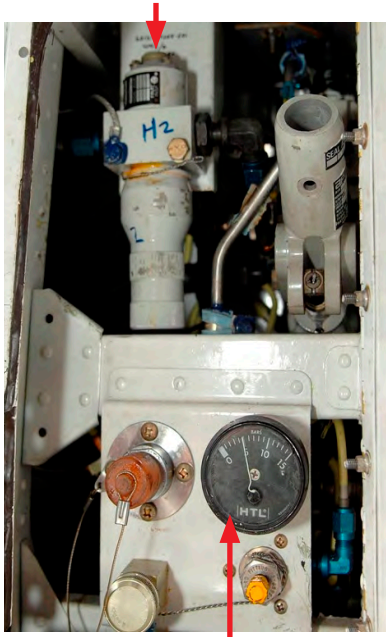
Hydraulic reservoir oil contents gauge (***BF only***) .. Ensure reading 275 ±15 cu in



LP filter indicator ..... Check flush. If indicator has popped on 5 occasions (F700 Sect 4 QPR 27 refers (RAF Linton-on-Ouse Aircraft only)) **seek assistance**

In baggage bay:

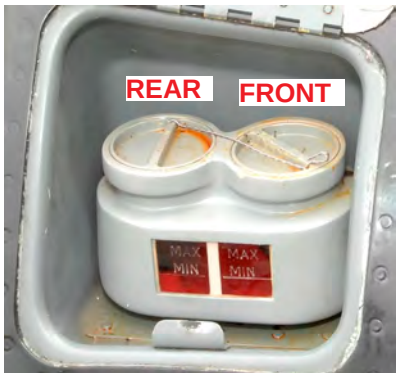
HP filter indicator ..... Check flush. If popped **seek assistance**



Hydraulic reservoir nitrogen pressure ..... **(BF only)** Ensure correct pressure (Card **S-12, Table 1**)

Landing gear emgcy accumulator (**BF only**) ..... Ensure correct pressure (Card **S-12, Table 2**)

Brake reservoir ..... Check contents



Right Rear Fuselage

Main oxygen system.....	Check contents. Ensure replenished as necessary

Right Wing

Pitot tube	Look for damage and misalignment. Ensure drain hole clear
Landing lamp anti-erosion tape (Post-SEM/Tuc/059) ...	Look for signs of degradation

Right Main Landing Gear

MLG compartment.....	Look for damage and signs of leaks
MLG assembly.....	
Brake unit pipelines and hoses (2).....	
Rib 5 and doubler, including cutouts and flanges (***AF & TR only***)	Look for cracks or damaged, cracked or flaking paint work
Landing gear uplock mechanism (***AF only***).....	Look for damage, including witness marks on red 'No Go' zone. If any damage **seek assistance**
MLG shock absorber strut ..	Check extension appears normal. Clean exposed inner strut
Brake unit	Look for damage and signs of leaks. Ensure pad wear indicator pins (3) protruding
Mainwheel	Look for damage and signs of tyre wear.
Mainwheel (***BF only***).....	Check tyre pressure: 6.1 to 6.5 bar (89 to 95 psi)

Supplementary Servicing

Carry out servicing required by Supplementary Servicing Reister (MOD Form 705 (SSR)) and sign Supplementary Servicing Certificate (MOD Form 705 (SSC)).

Form 700

Complete MOD Form 705(Tucano) - see example extracts on the following cards:

Turnround (TR)	-	Card **S-13**
After Flight (AF)	-	Card **S-14**
Before Flight (BF)	-	Card **S-14**

MOVEMENT OF PINS

To make seats Safe for Maintenance:

Generate a SNOW on the 707A
(Work required: “EJECTION SEAT PINS MOVEMENT TO SEATS “SAFE FOR MAINTENANCE” POSITION)

Complete F707B (Maintenance Work Order):

Transfer the SNOW, ac serial no (ZFXXX), time/date, when/how found code (616) and work centre (AB), aircraft type (TC) and airframe hours to the 707B.

Move pins to “Safe for Maintenance” position, annotate man hours/date/time and sign as both Tradesman and Supervisor on the reverse of the form.

To make seats Safe for Parking:

Move pins to “Safe for Parking” position, annotate man hours/date/time and sign as both Tradesman and Supervisor on the reverse of the Form 707B.

Fill in Section 6 on the 707B: Trade (58) and total manhours consumed.

Complete Section 8 on the 707B

Annotate the SNOW “EJECTION SEAT PINS RETURNED TO “SAFE FOR PARKING” under Action Taken and print your name.

Table 1: Hydraulic Reservoir Nitrogen Pressures

Air Temperature	Pressure	
^{0}C	Bar	psi
-20	5.0	72
0	5.0	72
5	5.5	80
10	5.5	80
15	5.5	80
20	5.5	80
40	6.0	87

Table 2: Landing Gear Emergency Lowering Accumulator Pressures

Air Temperature	Pressure	
^{0}C	Bar	psi
-20	110	1600
-10	110	1600
0	120	1740
5	120	1740
10	120	1740
15	120	1740
20	130	1885
30	130	1885

Extract from Flight Servicing Certificate MOD Form 705(Tucano)

Aircraft Serial No: ZFXXX

AFS Valid Until TDM			17·30		17	06								
						Name					Sig			
After Flight Declaration	Aceeptec Faults					IF APPLICABLE – SNOW								
	Signature					SIGN – PILOT								
	TDM					10	00	16	06		13	00	16	06
Flight Servicing Requirement						T/R					T/R TIA*			
Commenced TDM						11	30	16	06		13	30	16	06
Man A (Cockpit)						SIGN-PILOT								
Man B (External)						SIGN-PILOT								
Airframe														
Electrical											AS ALTER-			
Propulsion											NATIVE THE			
Air Comms											T/R MAY			
Air Radar											BE DONE			
Weapons											ON F716			
DAPU Data Dump						SIGN-PILOT								
Oxygen					7 M	SIGN-PILOT								
Seat Apron					F/R	SIGN-PILOT								
Oil						ENTER ON F737 AIR								
FSOC														
Canopy Clean														
Tool Control Check														
Flight Servicing Co-ordinator						SIGN – PILOT								
Valid Until TDM						23	30	16	06		01	30	17	06
MOD Form 705 / 706 Sheet / Item						A								
Last SNOW						SNOW 1234								
MOD Form 700C Co-ordinator						SIGN – PILOT								
Co-ordinated TDM						12	00	16	06		14	00	16	06
Flying Requirement														
Aircrew Acceptance Certificate	Aircrew Accepted Faults					IF APPLICABLE – SNOW								
	Signature					SIGN – PILOT								
	TDM					13	00	16	06		15	00	16	06

*Trade or Area Flight Servicing, delete as required

Extract from Flight Servicing Certificate MOD Form 705(Tucano)

Aircraft Serial No: ZF-XXX

AFS Valid Until TDM	17.30 17 06		
		Name	Sig
After Flight Declaration	Accepted Faults	IF APPLICABLE - SNOW	
	Signature	SIGN-PILOT	
	TDM	10 00 16 06	
Flight Servicing Requirement		A/F	B/F T/A*
Commenced TDM		10 30 16 06	14 00 16 06
Man A (Cockpit)		SIGN-	PILOT
Man B (External)		SIGN-	PILOT
Airframe			
Electrical			
Propulsion			
Air Comms			
Air Radar			
Weapons			
DAPU Data Dump		SIGN-PILOT	
Oxygen	7/8	SIGN-PILOT	SIGN-PILOT
Seat Apron	F/R	SIGN-PILOT	SIGN-PILOT
Oil		ENTER ON F737 A/R	
FSQC			
Canopy Clean			
Tool Control Check			
Flight Servicing Co-ordinator		SIGN-PILOT	SIGN-PILOT
Valid Until TDM		10 30 19 06	02 00 17 06
MOD Form 705 / 706 Sheet / Item		A	
Last SNOW			SNOW 1234
MOD Form 700C Co-ordinator			SIGN-PILOT
Co-ordinated TDM			14 30 16 06
Flying Requirement			
Aircrew Acceptance Certificate	Aircrew Accepted Faults		IF APPLICABLE - SNOW
	Signature		SIGN-PILOT
	TDM		15 00 16 06

*Trade or Area Flight Servicing, delete as required

HUSKY OPERATING INSTRUCTIONS

Notes

- The ✳ key turns the display backlight on and off.
- The ⇑ ↑ and ⇓ ↓ keys adjust the display contrast after power up.
- 'Press any key' means any key except ✳ and ⇑.

AIRCRAFT DATA DUMP TO DEU

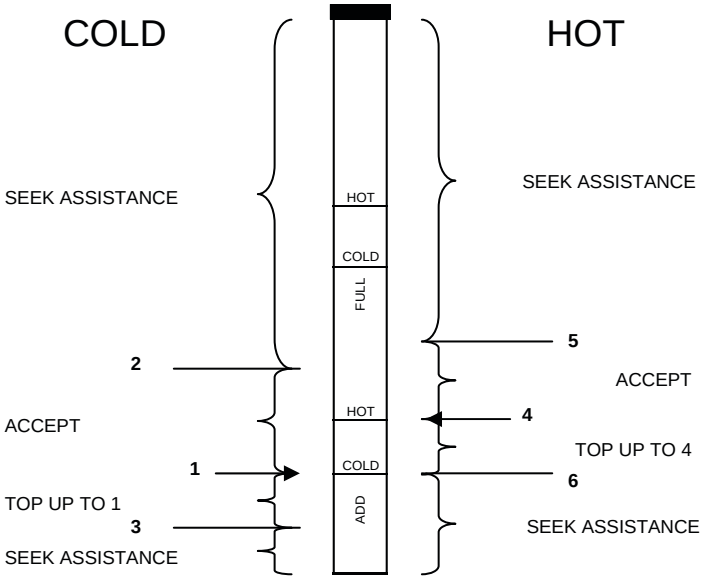
DAPU display panel (baggage bay)	Open
DEU cable	Connect to data extraction socket
CB38 (ADR).....	Check reset
Batteries 1 and 2	ON
DEU power switch	Press and release to on
DEU display.....	Ensure display indicates:

DEU keyboard	Press any key. Wait for display to indicate:

DEU keyboard	Press any key; display lists main menu Select **Dump from Aircraft** Press ↵ key and allow to run through automatic program
DEU display.....	Ensure '**dump complete'** indicated. Press ESC to return to main menu
DEU power switch	Press and release to off
DEU cable	Disconnect
DAPU display panel.....	Close and secure
Batteries 1 and 2	OFF

Engine Oil Check (AF & TR only)

Ensure oil level is within the acceptance criteria given below. Record replenishment (F737). **Seek assistance** if oil levels are outside the acceptance criteria. **Within 15 minutes of normal engine shutdown use HOT procedure.**



1 = TARGET OIL LEVEL **COLD.**
OIL LEVEL BETWEEN 1 AND 2:-
ACCEPT.
OIL LEVEL BETWEEN 1 AND 3:-
REPLENISH TO TARGET OIL LEVEL (1).
OIL LEVEL ABOVE 2 OR BELOW 3:-
SEEK ASSISTANCE.

NOTE:- DISTANCE BETWEEN LEVELS 1 AND 3 EQUATES TO THAT BETWEEN THE LOWER **HOT** AND **COLD** LEVEL MARKINGS. (APPROX 0.5 IMP. PINT). THE SAME SEPARATION IS TO BE USED BETWEEN THE LOWER **HOT** MARK ON THE DIPSTICK AND LEVEL 2.

SUPPLEMENTARY CHECK: TURN PROPELLER BY HAND UNTIL AN OIL LEVEL OF **COLD FULL** IS ACHIEVED. RECORD (F737 REMARKS) THE NUMBER OF TURNS REQUIRED.

4 = TARGET OIL LEVEL **HOT.**
OIL LEVEL BETWEEN 4 AND 5:-
ACCEPT.
OIL LEVEL BETWEEN 4 AND 6:-
REPLENISH TO TARGET OIL LEVEL (4).
OIL LEVEL ABOVE 5 OR BELOW 6:-
SEEK ASSISTANCE.

NOTE:- LEVEL 5 IS MIDWAY BETWEEN THE LOWER **HOT** AND UPPER **COLD** MARKS ON THE DIPSTICK.

TUCANO T Mk 1

EMERGENCY DRILLS

ABANDONING
EMERGENCY GROUND EGRESS, EJECTION

TAKE OFF
ABORT, EFATO

ENGINE SHUTDOWN
EMERGENCY SHUTDOWN DRILL

FORCED LANDING
HOMING, FIRACIS, EMERG PRE-LANDING

FIRES — FIRE
ENGINE FIRE, SMOKE/FUMES, FIRE DETECTION — FDET

ENGINE MALFUNCTIONS
ENGINE CONTROL — EEC
ICING
ENGINE MECHANICAL FAILURE
BOGDOWN, INADVERTENT ESDL, FLAMEOUT
RELIGHT, EEC NORMAL RELIGHT, EEC MANUAL RELIGHT
OIL PRESSURE, OIL TEMPERATURE — OIL P

PROPELLER MALFUNCTIONS
PROP VIBRATION, UNDEMANDED ROTATION, BETA-BAULK

ELECTRICAL MALFUNCTIONS
GENERATOR FAILURE — GEN
INVERTER FAILURE — INV
CIRCUIT BREAKERS, CONT STALL WARNING — C/B
PSV HEAT — PSV HEAT
TRIM RUNAWAY, FLAP FAIL, ◆AIRBRAKE FAIL, ◆COMMS

OXYGEN MALFUNCTIONS — OXY
SUSPECTED HYPOXIA, BREATHING DIFFICULTIES

CANOPY — CANOPY
AIR CONDITIONING MALFUNCTIONS — AIR COND

FUEL MALFUNCTIONS
LOW PRESSURE/PUMP FAIL — FUEL P, FUEL FLTR
LOW FUEL, FUEL FILTER, FUEL ASYMMETRY — LOW FUEL

HYDRAULIC MALFUNCTIONS
HYDRAULIC FAILURE — HYD
EMERGENCY HYDRAULIC, AIRBRAKE — EMERG HYD

LOW SPEED HANDLING CHECK

GEAR MALFUNCTIONS, HAZARDOUS LANDINGS

ABANDONING

EMERGENCY GROUND EGRESS

1. **ESDL. . . . . OFF/FEATHER**
2. **Seat Firing Handle**
   safety pin. . . . . Insert correctly
3. **Canopy . . . . . Open** (if unable, see below)
4. **Unstrap completely:**
   a. QRF. . . . . Release
   b. PEC & PSP . . . . . Release
   c. Leg restraints. . . . . Pull through/release garters
5. **Aircraft . . . . . Vacate and move clear upwind**

If unable to open canopy normally:

WARNING: Do not use MOR Handle.

6. **Other occupant . . . . . Warn**
7. **Oxygen mask. . . . . Don**
8. **Visors . . . . . Lower**
9. **Canopy fracture handle**
   safety pin. . . . . Remove
10. **Sit erect and close eyes tightly**
11. **Canopy fracture handle . Operate**
12. **Aircraft . . . . . Vacate and move clear upwind**

Abandon
Egress
E-3

PREMEDITATED EJECTION

WARNING 1: To avoid possible seat collision, simultaneous or near simultaneous ejections should not be made.

WARNING 2: To avoid an increased likelihood of serious back injury, do not tighten the shoulder harness straps with the go-forward lever in the forward position.

If time and conditions permit:

1. Consider . . . . . Area of parachute landing and area of aircraft impact
2. Other occupant . . . . . Warn
3. Height . . . . . Ideally between 2000 and 9000 ft AGL
4. Airspeed . . . . . Ideally 115 kts
5. Transponder . ◆◆ . . . . . ACS, press Emergency button
6. Harness . . . . . Locked and tight, leg restraints and PSP lowering line connected
7. Oxygen mask . . . . . Tight
8. Visors . . . . . Down
9. Aircraft . . . . . Trim as required, consider the use of aileron trim (max one half). Head towards desired impact area
10. Radio . . . . . Call as required
11. Throttle . . . . . FLT IDLE
12. Eyes . . . . . Tightly closed
13. Ejection position . . . . . Assume
14. Seat firing handle . . . . . Pull, eject rear seat first

FAILURE TO EJECT

1. **Seat firing handle safety pin . . . . . Ensure removed**
2. **Seat firing handle . . . . . Pull again**

AUTOMATIC SEQUENCE FAILS AFTER EJECTION

1. **Seat firing handle . . . . . Check pulled fully up**
2. **MOR handle . . . . . Operate**

TAKE-OFF

ABORT

1. **Throttle . . . . . FLT IDLE/REV as required**
2. **Brakes . . . . . Apply**

If practicable:

3. **FLAPS . . . . . DOWN**

If aircraft about to leave runway in an uncontrolled condition, consider:

4. **ESDL . . . . . OFF/FEATHER**
5. **EMERGENCY GEAR RETRACTION ON GROUND (E-26)**

◆*Once stopped:*

6. **EMERGENCY GROUND EGRESS (E-2)** ◆

EFATO

WARNING: Do not turn back below 130 kts and 500 ft agl.

1. **EJECT, or**

1. **ESDL . . . . . OFF/FEATHER**
2. **Radio . . . . . Distress Call**
3. **Attempt landing**

◆*If practicable:*

4. Carry out **Emergency Pre-Landing Checks (E-5)** ◆

ENGINE SHUTDOWN

EMERGENCY SHUTDOWN

1. **ESDL . . . . . OFF/FEATHER**
◆2. **FUEL CUT OFF switch . . . CUT OFF**
3. **FUEL PUMPS (4). . . . . All OFF**
4. **AIR COND BLEED switch. . OFF/RESET**
5. **GENerator switch . . . . . OFF** ◆
6. Continue with **HOMING & FORCED LANDING CHECKS** below:

HOMING CHECKS

Turn towards nearest suitable airfield and establish glide

Abort, EFATO

1. ESDL . . . . . OFF/FEATHER (if engine shutdown)
2. Normal LDG GEAR lever . . UP
3. FLAPS . . . . . UP
4. Airbrake . . . . . IN

Em S'down

5. Transponder . . . . . ◆◆ ACS, press Emergency button

Homing Fcd Ldg E-5

6. Radio . . . . . Distress call

Note: Glide at 115 kts - gliding range still air is approx 2nm per 1000ft; rate of descent is approx 900ft/min.

FORCED LANDING CHECKS

WARNING: If no suitable landing area is available **- EJECT.**

Pre-joining/Descent Checks (FIRACIS)

1. **F**uel . . . . . Contents and balance
2. **I**nstruments. . . . . Erect and synchronized
3. **R**adio . . . . . Frequency set, press transponder Emergency button
4. **A**ltimeters . . . . . Set as required, cross checked
5. **C**onditioning . . . . . As required
6. **I**ce protection . . . . . As required
7. **S**afe height/altitude for descent

Emergency Pre-Landing Checks

WARNING: If it is not safe to land **- EJECT by 300 ft agl.**

1. Speed . . . . . Below 120 kts
2. Airbrake . . . . . IN
3. LDG GEAR STBY LOWER lever . . . . . Hold DOWN until 3 greens obtained
4. Normal LDG GEAR lever . . DOWN
5. FLAPS . . . . . Select as required
6. ESDL . . . . . Confirm OFF/FEATHER

◆7. Fuel . . . . . Calculate threshold speed

8. Harness . . . . . Locked and tight ◆
9. PARKING BRAKE . . . . . Off, light out
10. Landing gear indicators . . . 3 greens
11. FLAPS . . . . . Indicate as required

FIRES

ENGINE FIRE ON GROUND *with or without* **FIRE**

1. **Carry out EMERGENCY SHUTDOWN DRILL** (**E-4**)
2. **ESSENTIAL BUS switch. . ISOLATE**
3. **BATTERY switches (2). . . Both OFF**
4. **PARKING BRAKE . . . . . Release, if practicable**
5. **EMERGENCY GROUND EGRESS (E-2)**

ENGINE FIRE IN FLIGHT **FIRE**

1. **Throttle . . . . . Set 10% to 20% torque, if practicable**
2. **Check for confirmatory signs of fire**

If definite signs of fire:

3. **Carry out EMERGENCY SHUTDOWN DRILL** (**E-4**)
4. **Stopwatch . . . . . Start**
5. Transponder . . . . . ◆◆ ACS, press Emergency button

Note: If necessary, carry out **SMOKE OR FUMES** drill (**E-7**).

30 seconds after stopwatch start:

If **FIRE** *caption still lit:*

6. EJECT

If FIRE caption out:

6. Carry out **HOMING & FORCED LANDING CHECKS (E-5)**

If no definite signs of fire with or without **FIRE** *caption:*

3. Throttle . . . . . Minimum practicable
4. Land . . . . . ASAP
5. Carry out '*If definite signs of fire*' drill from step 3 above, if appropriate

---

SMOKE OR FUMES

1. Oxygen regulator . . . . . 100% (aft)
2. Mask toggle. . . . . Down
3. Defective equipment . . . . Switch off if positively identified
4. Air conditioning . . . . . As required
5. Land . . . . . ASAP

If smoke or fumes remain and present a danger:

6. **EJECT**

Fires
Smk fumes ◆
FDET
E-7

After landing and once clear of the runway:

6. Consider **EMERGENCY GROUND EGRESS (E-2)** or complete normal **SHUTDOWN (N-18)** ◆

FIRE DETECTION FDET

Following FIRE *caption:*

1. Repeat **ENGINE FIRE DRILL (E-6)**

No FIRE caption:

◆1. FIRE DET test switch . . . . . Select FIRE TEST

If normal:

2. Land . . . . . As soon as practicable

NOTE: Assume FDET caption is spurious.

If no FIRE caption on FIRE TEST:

2. Land . . . . . ASAP

NOTE: Fire detection facility is lost. ◆

ENGINE MALFUNCTIONS

ENGINE MALFUNCTION DIAGNOSIS

Symptoms	*Possible causes*
EEC	ENGINE CONTROL MALFUNCTION (Below)
Any abnormal engine response or indication, RPM stable, no EEC caption	ENGINE CONTROL MALFUNCTION (Below) INTAKE ICING (**E-9**)
RPM reducing	ENG MECH FAIL (**E-9**) BOGDOWN (**E-10**) INADVERTENT ESDL (**E-10**) FLAME OUT (**E-10**)

ENGINE CONTROL MALFUNCTION

Symptoms: Any abnormal engine response or indication, with or without **EEC**. *RPM stable.*

1. **Throttle . . . . . Set 30% torque if practicable** (or mid-quadrant, if torque gauge unreliable)
2. **EEC switch . . . . . MAN**
3. **Throttle . . . . . Advance to restore power** (EGT maximum 560°C or approx ⅔ travel, if EGT gauge unreliable)

If abnormal symptoms persist and full throttle fails to restore power:

4. **FUEL/IGN switch . . . . . Hold at EM'GY**

Note: Selection of FUEL/IGN switch to EM'GY uses start fuel enrichment to increase power output by 10% to 20% torque, depending on altitude. However, prolonged use will overheat the unfeathering pump. When time permits, trip C/B 3 (UNFEATHER PUMP).

5. AIR COND BLEED switch . . OFF (if not required)
6. ICE PROTECTION
   INTAKE switch . . . . . OFF (if not required)

If unable to restore sufficient power to eliminate prop drag, gliding range will be improved by shutting down engine:

7. Carry out **EMERGENCY SHUTDOWN DRILL (E-4)**

continued

ENGINE CONTROL MALFUNCTION - *continued*

If abnormal symptoms disappear and power is restored, or if abnormal indications persist and a gauge/sensor failure is diagnosed:

◆4. Do not reselect EEC to NORMAL

Considerations for operations with EEC in MAN:

a. Max power available is approx 75% of that with EEC in NORMAL.
b. Use throttle to control EGT; maximum 560°C. ◆
c. Land as soon as practicable.
d. Do not select REV on landing or shutdown.
e. Shutdown when clear of runway to prevent brake or engine overheat.

EEC Icing Mech Fail E-9

INTAKE ICING

Any or all of the following symptoms:

Loss of power
Reduction in max obtainable torque
Increase in EGT for a given throttle position
High oil temperature
NTS operation with throttle forward of flight idle

◆1. ICE PROTECTION panel:
   a. INTAKE switch . . . . . ON, INTAKE ON lit
   b. PROP switch . . . . . ON, PROP 1 or 2 lit
2. Climb or descend to clear icing conditions ◆

ENGINE MECHANICAL FAILURE

Symptoms: RPM reducing
Torque reducing
Possible noise and vibration

1. Do not attempt a relight
2. Carry out **EMERGENCY SHUTDOWN DRILL** (**E-4**)

BOGDOWN

◆Symptoms: Change in engine note
RPM reducing
Torque reducing
High EGT
} ◆ during flight at less than +0.5g

1. **Throttle . . . . . FLT IDLE**
2. **Positive g . . . . . Restore**
3. Land . . . . . ASAP, using minimum practicable power

CAUTION: If EGT limits exceeded, engine may be seriously damaged.

INADVERTENT ESDL OPERATION

1. **ESDL . . . . . Reselect NORMAL**
2. **Throttle . . . . . Mid-quadrant**
3. **FUEL/IGN switch . . . . . EM'GY for 2 sec**

If the engine does not respond or EGT is likely to exceed 770°C:

4. ESDL . . . . . OFF/FEATHER
5. Carry out **HOMING CHECKS** (**E-5**)
6. Attempt appropriate **RELIGHT** (**E-11**) if practicable

If forced landing inevitable:

7. Carry out **EMERGENCY SHUTDOWN DRILL (E-4)**

Note: The FUEL/IGN switch in the rear cockpit is inoperative if the MASTER ENG SWitch is selected to FRONT.

FLAME OUT

The NTS system provides an immediate relight capability.

If the engine does not respond and return to normal:

Symptoms : RPM reducing
Torque reducing
EGT reducing

1. **ESDL . . . . . OFF/FEATHER**
2. Check for Intake icing **(E-9)**, check fuel contents
3. Carry out **HOMING CHECKS (E-5)**
4. Attempt appropriate **RELIGHT (E-11)** if practicable

If forced landing inevitable:

5. Carry out **EMERGENCY SHUTDOWN DRILL (E-4)**

RELIGHT PARAMETERS

1. Altitude . . . . . Below 20,000 ft
2. Speed . . . . . 115 to 200 kts
3. Throttle . . . . . Mid-quadrant
4. ESDL . . . . . NORMAL
5. FUEL CUT OFF switch. . . . Cover down
6. Fuel . . . . . At least one pump ON. Contents sufficient for selected pump(s)
7. GENerator switch . . . . . ON/RESET
8. Continue with **EEC NORMAL / MANUAL RELIGHT** below

EEC NORMAL RELIGHT

1. EEC switch . . . . . NORMAL
2. Start switch . . . . . STOP then RUN. Select START for 2 sec
3. *CWP . . . . . EEC caption out
4. *Propeller . . . . . Turning
5. *EGT. . . . . Rising within 20 sec

Bogdown Inad ESDL Relight E-11

If EGT is likely to exceed 770°C - abort the relight:

To abort relight:

6. ESDL . . . . . OFF/FEATHER

Note: If the start does not comply with the starred (*) checks, abort the relight and attempt **EEC MANUAL RELIGHT** (below).

EEC MANUAL RELIGHT

1. EEC switch . . . . . MAN
2. ESDL . . . . . NORMAL
3. Start switch . . . . . START until 10% RPM achieved
4. FUEL/IGN switch . . . . . EM'GY for 2 sec

If the start is slow or stagnates with a low EGT:

5. FUEL/IGN switch . . . . . .EM'GY for 1 sec at a time

If EGT is likely to exceed 770°C - abort the relight:

To abort relight:

6. ESDL . . . . . OFF/FEATHER

If no relight:

7. Carry out **EMERGENCY SHUTDOWN DRILL (E-4)**

If relight successful:

7. Do not reselect EEC to NORMAL
8. Comply with **EEC IN MAN CONSIDERATIONS (E-9)**

OIL PRESSURE

OIL P and **OIL PRESSURE BELOW THE AMBER**
or
OIL PRESSURE BELOW 4.8 BARS (at/below 23,000 ft)
or
OIL PRESSURE BELOW 3.4 BARS (above 23,000 ft)
or
OIL PRESSURE FLUCTUATING
or
OIL PRESSURE ABOVE 8.3 BARS

1. Throttle . . . . . Minimum practicable torque
2. Negative g . . . . . Avoid
3. OIL temperature . . . . . Monitor
4. Land . . . . . ASAP

If propeller pitch control lost:

5. Carry out **EMERGENCY SHUTDOWN DRILL** (**E-4**)

Note: Complete loss of oil pressure results in propeller pitch control failure; the symptoms are a change in engine note, reducing RPM and a rapidly rising EGT.

OIL TEMPERATURE

OIL TEMPERATURE IN THE HIGH AMBER

1. Throttle . . . . . Less than 70% torque
2. Land . . . . . ASAP

OIL TEMPERATURE ABOVE THE HIGH AMBER

1. Throttle . . . . . Minimum practicable torque
2. Engine instruments. . . . . Monitor
3. Land . . . . . ASAP

If propeller pitch control lost:

4. Carry out **EMERGENCY SHUTDOWN DRILL** (**E-4**)

Note: Oil temperatures above 150°C may result in propeller pitch control failure; the symptoms are a change in engine note, reducing RPM and a rapidly rising EGT.

OIL TEMPERATURE BELOW THE GREEN

1. Throttle . . . . . Avoid high power settings
2. Land . . . . . As soon as practicable

PROPELLER MALFUNCTIONS

SEVERE PROP VIBRATION

Sudden or abnormal propeller vibration may be a symptom of imminent blade separation

1. Attitude . . . . . Straight and level
2. Throttle . . . . . Minimum power
3. Speed . . . . . As low as practicable
4. Minimize manoeuvres, especially sideslip
5. Land . . . . . ASAP
6. Throttle . . . . . Do not use REV on landing
7. Engine . . . . . Shutdown when clear of the runway

UNDEMANDED PROP ROTATION

Oil
Propeller
Beta Blk
E-13

Propeller rotates instantaneously when batteries switched on, or stabilizes at about 15% RPM on shutdown

1. **BATTERY switches (2). . . Both OFF**
2. **External power . . . . . Switch off and disconnect**
3. Do not re-apply power

BETA BAULK MALFUNCTION

If in the air:

WARNING: Selecting throttle aft of flight idle will cause a considerable increase in drag.

If throttle can be selected aft of flight idle:

1. **Throttle . . . . . Maintain a minimum of 10% torque until touchdown**

If on the ground:

If unable to select reverse and normal braking is insufficient:

1. **ESDL. . . . . OFF/FEATHER**

ELECTRICAL MALFUNCTIONS

GENERATOR FAILURE GEN

1. GENerator switch . . . . . OFF, then ON/RESET

If GEN caption out:

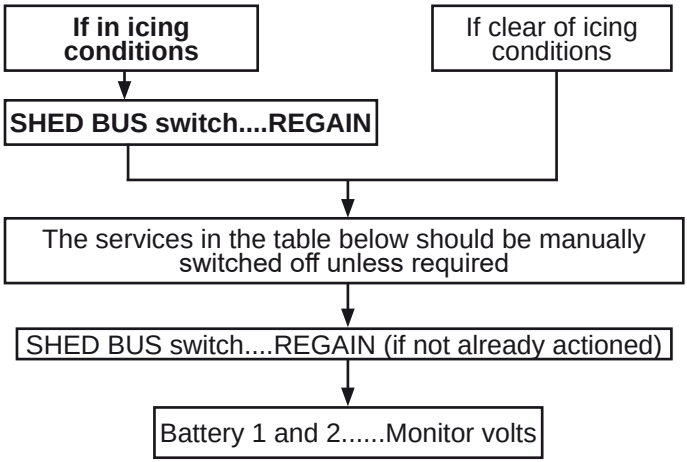
◆**2. Land. . . . . As soon as practicable** ◆

If* GEN *is still lit:

2. GENerator switch . . . . . OFF

3. Land. . . . . ASAP

◆4. Engine . . . . . Shutdown when clear of the runway ◆



Service	Amps
LANDING Lamps	32
TAXI Lamp	16
PROPeller Heater	12
AOA/STALL Heater	8
No 2 PITOT Heater	4.5
STROBES	4.5
Air Conditioning	2
Engine INTAKE Anti-ice	0.5

Note: Battery operation of essential loads cannot be guaranteed for more than 30 minutes. If any of the above services are used, battery life may be further reduced.

INVERTER FAILURE INV

1. C/B 5 (INVERTER). . . . . Check

If C/B 5 not tripped:

2. C/B 5 . . . . . Pull and reset

◆*If C/B 5 tripped:*

2. C/B 5 . . . . . Wait 10 sec, then reset

If **INV** *remains lit:* ◆

3. C/B 5 . . . . . Pull and do not attempt further reset

The following services are lost:

Cockpit lighting
Electroluminescent panels
Servo altimeters
◆ Traffic Alert and Collision Avoidance System (TCAS)◆
Navigation and heading reference as follows:

Functions Lost	Functions Remaining
All heading reference except E2C	TACAN range
HSI bearing needles	ILS indications
	HSI track pointer and its digital display

Gen
Inv
E-15

◆*If IMC recovery required:*

4. Request "no compass" recovery

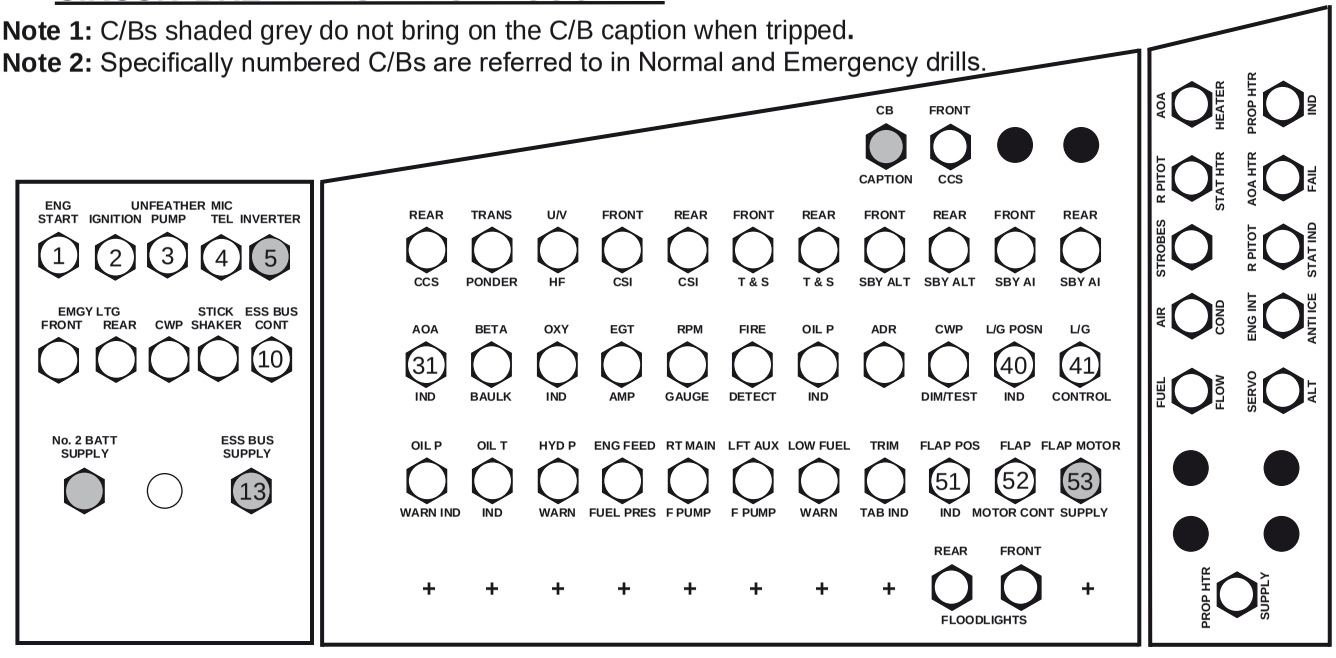
If ILS required for recovery:

5. Selected track pointer. . . . . Rotate to align ILS indications correctly ◆

CIRCUIT BREAKERS - FRONT COCKPIT

Note 1: C/Bs shaded grey do not bring on the C/B caption when tripped**.**

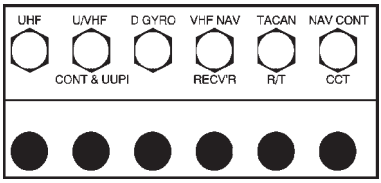
Note 2: Specifically numbered C/Bs are referred to in Normal and Emergency drills.



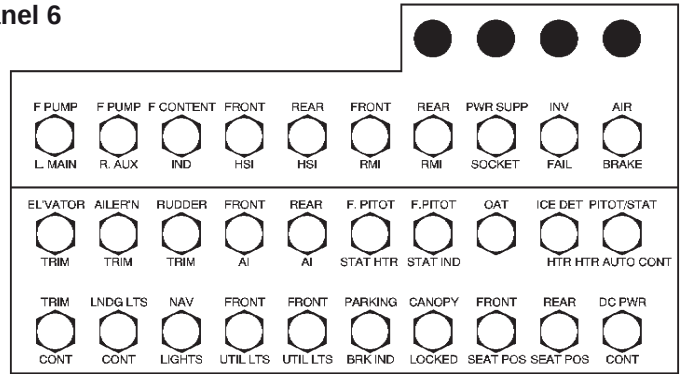
E-16

CIRCUIT BREAKERS - REAR COCKPIT

Panel 13



Panel 6



MULTIPLE C/Bs TRIPPED C/B

WARNING: The tripping of various unrelated C/Bs, with or without the C/B caption, may indicate a wiring loom overheat or fire.

C/B E-17

1. **C/Bs . . . . . Do not reset**
2. Land . . . . . ASAP
3. Carry out **SMOKE OR FUMES** drill if necessary (**E-7**)

SINGLE C/B TRIPPED C/B

◆**Note:** See card E-16 Note 1. ◆

1. Wait 10 sec
2. Attempt reset (once only)

If C/B cannot be reset:

3. Attempt to identify services lost

If service lost is critical, or caption remains on and the cause cannot be positively identified:

4. Land . . . . . As soon as practicable

CONTINUOUS STALL WARNING

1. C/B 31 . . . . . Trip

Note: Services lost: Audio stall warning and all AoA information.

PSV HEAT FAILURE PSV HEAT

1. ICE PROTECTION panel . . Check

If PITOT 1 or 2 lit:

2. Associated system . . . . . OFF

If AOA/STALL lit:

2. Wait 3 minutes
3. AOA/STALL switch. . . . . OFF, then ON

If AOA/STALL still lit:

4. AOA/STALL switch. . . . . OFF

Note 1: Warning may recur if ICE DET switch is ON.

If no warnings indicated:

2. Treat all associated systems as failed

Note 2: With AOA/STALL switch selected ON, compression of nosewheel microswitch may cause PSV caption to illuminate during landings and touch-and-goes.

TRIM RUNAWAY

1. TRIM switch . . . . . ISOL
2. Power and speed . . . . . Adjust to reduce control loads

If trim is at full scale deflection:

3. TRIM switch . . . . . NORM
4. Affected trim . . . . . Attempt to motor to neutral
5. TRIM switch . . . . . ISOL
6. Land . . . . . As soon as practicable

FLAPS FAIL TO RESPOND TO SELECTION

◆ 1. FLAPS lever . . . . . Place in a detent closest to the indicated position ◆
2. Aileron trim . . . . . As required
3. C/Bs . . . . . Check C/B 51, 52 and 53 **(E-16)**

◆AIRBRAKE FAILS TO RESPOND TO SELECTION

If it is suspected that the airbrake has failed to respond:

1. To prevent damage, avoid repeated selection of the Airbrake switch ◆

LOSS OF INTERCOM

1. Helmet and PEC connections . . . . . Check
2. CCS station box . . . . . Check

Note: If PEC adjusted, reconnect leg restraints.

If services not restored:

3. CCS amplifier selector switch . . . . . FAIL
4. CCS function selector switch . . . . . V/UHF

LOSS OF RADIO TRANSMIT OR RECEIVE

1. CCS station box . . . . . Check
2. U/VHF selections . . . . . Check
3. C/B 4 . . . . . Check made
4. ALT TX switch . . . . . Try
5. U/VHF. . . . . Select OFF for 10 sec, then select TR
6. If UHF inoperative, try VHF and vice versa

If fault persists:

7. U/STBY . . . . . Use on GRD

If UHF, VHF and standby UHF are all lost:

8. Transponder. . . . . ◆◆ ACS, code 7600
9. ILS . . . . . Tune to appropriate frequency
10. CCS NAV toggle. . . . . Up
11. Continue to transmit blind ◆

PSV Heat
Trims, Flaps
Comms
E-19

OXYGEN MALFUNCTIONS

WARNING: When emergency oxygen is operated no cockpit indications show system is operating or contents remaining.

Note: If PEC adjusted, reconnect leg restraints.

SUSPECTED HYPOXIA

1. **Connections/mask seal . . Check**

If oxygen supply not restored:

2. **Emergency oxy handle . . Pull**
3. **Altitude . . . . . Descend below 10,000 ft**

If oxygen contamination suspected:

4. **Main OXY SUPPLY . . . . . OFF**
5. Land . . . . . ASAP

When emergency oxygen is exhausted:

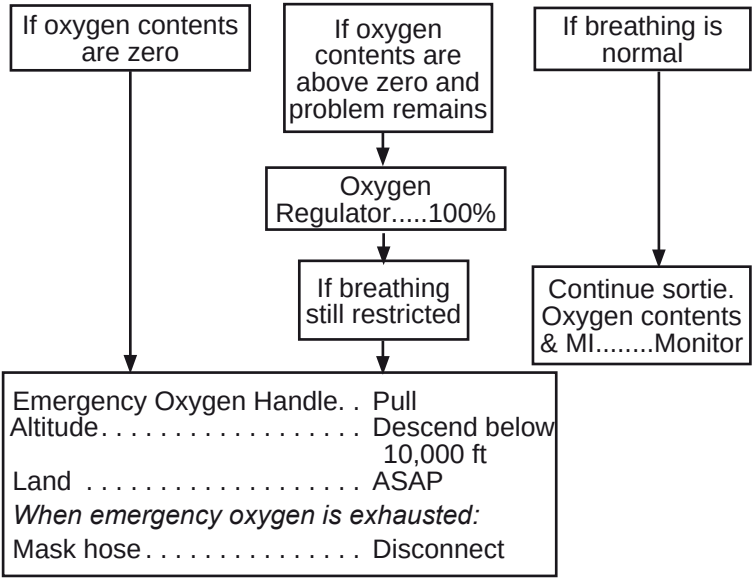
6. Mask hose . . . . . Disconnect

OXYGEN SYSTEM FAILURE

OXY or **MI CONTINUOUS WHITE OR BLACK** or **DIFFICULTY BREATHING IN**

WARNING: If hypoxia is suspected at any time, carry out SUSPECTED HYPOXIA drill (above).

1. Connections/mask seal . . . Check
2. OXYgen SUPPLY. . . . . Ensure ON
3. Oxygen contents . . . . . Check



DIFFICULTY BREATHING OUT

1. Mask . . . . . Lift off face
2. Test button . . . . . Press

If difficulty persists:

3. Breathe in through mask and exhale with mask away from face
4. Altitude . . . . . Descend below 10,000 ft

CANOPY / AIR CONDITIONING MALFUNCTIONS

CANOPY CANOPY

1. Speed . . . . . Reduce (if practicable)
2. Locking handle . . . . . Check fully forward
   <u>Do not</u> attempt to unlock then lock

◆3. Land . . . . . As soon as practicable ◆

Note: If the canopy is lost, a safe landing can be made. Carry out low speed handling check (**E-25**) and fly circuit at 115 kts or less.

Oxy

Canopy
E-21

MISTING OF CANOPY

1. AIR CONDitioning panel:
   a. AUTO / MAN switch . . . AUTO
   b. NORM / BOOST switch. . BOOST
   c. HOT / COLD switch . . . . COLD
2. Punkah louvres. . . . . Closed

If satisfactory clearance not obtained in under 2 mins:

3. HOT / COLD switch . . . . . HOT

When canopy is clear:

4. Temperature control rotary switch . . . . . Set for cockpit comfort
5. Punkah louvres. . . . . As required

AIR CONDITIONING FAILURE

System Malfunction with or without AIR COND

1. AIR COND BLEED switch. . OFF/RESET, then ON

If **AIR COND** *remains lit or malfunction persists:*

2. AUTO / MAN switch . . . . . MAN
3. HOT / COLD switch . . . . . COLD for 10 sec

Note 1: Mist may enter cockpit.

Then without delay:

4. HOT / COLD switch . . . . . HOT for 4 sec
5. Allow 3 to 5 mins for air delivery temperature to stabilize
6. Further momentary adjustments of HOT / COLD switch may then be made, allowing 3 to 5 mins after each selection

Note 2: Repeated overheat shutdown is likely.

If repeated overheat shutdown occurs:

7. HOT / COLD switch . . . . . COLD for 4 sec
8. AIR COND BLEED switch. . OFF/RESET, then ON

If **AIR COND** *remains lit or malfunction persists:*

9. AIR COND BLEED switch. . OFF/RESET for rest of flight
10. RAM lever. . . . . OPEN (if necessary for canopy demisting)

FUEL MALFUNCTIONS

LOW FUEL PRESSURE/PUMP FAILURE FUEL P

◆*If all MAIN and AUX indicators out:*

1. **Power. . . . . Reduce to minimum practicable**
2. **FUEL PUMPS (PORT and STB) . . . . . All 4 ON**
3. **Negative g . . . . . Avoid**
4. **Fuel contents . . . . . Check**
5. Land . . . . . ASAP

If any MAIN or AUX indicator lit:

1. Other pump on failure side . ON
2. Failed pump . . . . . OFF

If FUEL P *caption remains lit:*

3. Carry out ***If all MAIN and AUX indicators out drill*** (above) ◆

If FUEL P caption out:

3. Continue sortie monitoring fuel balance

LOW FUEL CONTENTS LOW FUEL

1. **Contents . . . . . Check**

If more than 35 kg indicated on both sides:

Assume only 35 kg in each side usable

2. Land . . . . . ASAP

If one side is indicating 35 kg and there is more in the other side:

2. Consider cause of imbalance
3. Fuel . . . . . Balance
4. Land . . . . . As soon as practicable

Cpy Mist Air Cond

Fuel E-23

FUEL FILTER FUEL FLTR

1. Power . . . . . Avoid high settings
2. Land . . . . . As soon as practicable

FUEL ASYMMETRY

WARNING: Maximum acceptable asymmetry is 100 kg.

If this cannot be remedied by selective use of fuel pumps:

1. Land . . . . . ASAP

HYDRAULIC MALFUNCTIONS

HYDRAULIC FAILURE HYD

◆**1. HYD switch . . . . . CUTOFF**
2. Land . . . . . ASAP

When ready to configure: ◆
3. Speed . . . . . Below 120 kts
4. LDG GEAR STBY
   LOWER lever . . . . . Hold DOWN until 3 greens obtained
5. Normal LDG GEAR lever . . DOWN
◆6. Carry out **LANDING** checks (**N-16**)

After landing:
7. Engine . . . . . Shutdown when clear of runway
8. Do not taxy ◆

EMERGENCY HYDRAULICS EMER HYD

As soon as practicable:
1. Airbrake . . . . . IN, light out
2. Speed . . . . . Below 145 kts
◆3. Normal LDG GEAR lever . . DOWN. Once 3 greens obtained, do not reselect UP ◆
4. Land . . . . . As soon as practicable

AIRBRAKE FAILS TO RETRACT (HYD caption out)

1. AIRBRAKE STBY
   UP selector . . . . . .PULL & TURN TO LOCK

LOW SPEED HANDLING CHECK - GUIDE

1. Radio . . . . . Distress call. Consider agency, intentions, airborne inspection
2. Setup . . . . . Consider height, VMC
3. Position. . . . . Consider proximity to airfield and habitation
4. Speed . . . . . Decrease slowly to downwind speed. Use height to regain speed/ control if necessary
5. Attitude . . . . . Straight and level
6. Normal LDG GEAR lever . . DOWN
7. Flap . . . . . Consider runway/wind and the need for flap. Not more than MID, unless DOWN necessary
8. Speed . . . . . Reduce to 110 kts
9. AOB . . . . . Check satisfactory handling up to 30° AOB
10. Speed . . . . . Check handling at calculated threshold speed
11. Configuration . . . . . Maintain tested configuration
12. Approach . . . . . Plan most suitable approach to remain within tested speed and AOB limits
13. Carry out **LANDING** checks (**N-16**)

Note 1: If handling problems encountered due to deceleration, note speed and fly approach at problem speed plus 10 kts. Do not flare to less than problem speed.
Note 2: If handling problems encountered due to flap selection, reverse selection.
Note 3: If control cannot be regained **- EJECT**.

Hyd
Em Hyd

LSHC
E-25

GEAR MALFUNCTIONS

◆ LDG GEAR LEVER CANNOT BE MOVED ON UP SELECTION

1. Speed . . . . . Below 145 kts
2. Throttle . . . . . Do not move aft of FLT IDLE until touchdown

If normal LDG GEAR lever cannot be moved to UP with one further attempt:

3. Landing gear . . . . . Confirm lever DOWN, check 3 greens and land

---

LDG GEAR SELECTED UP BUT GREENS/REDS REMAIN

1. Speed . . . . . Below 145 kts
2. Normal LDG GEAR lever . . Select and leave DOWN, check 3 greens. Make no further UP selection

If 3 greens not obtained, see below:

LDG GEAR SELECTED DOWN BUT 3 GREENS NOT OBTAINED

Note: The only positive indication that the landing gear is locked down is 3 greens and no reds.

1. Check selection in other cockpit
2. C/Bs 40 and 41. . . . . Check **(E-16)**
3. CWP TEST switch . . . . . Press and hold, confirm gear position indicators are working ◆
4. DAY/NIGHT switch. . . . . Check position

If 3 greens not obtained:

5. Speed . . . . . Below 120 kts
6. Airbrake . . . . . IN
7. Normal LDG GEAR lever . . DOWN
8. LDG GEAR STBY LOWER lever . . . . . Hold DOWN until 3 greens obtained

If 3 greens still not obtained:

9. Obtain a visual inspection
10. Carry out **HAZARDOUS LANDINGS** drill (**E-27**)

EMERGENCY GEAR RETRACTION ON GROUND

1. **GND UP ENABLE switch . . ON**
2. **Normal LDG GEAR lever . . UP**

HAZARDOUS LANDINGS

CAUTION: When ESDL is selected to OFF/FEATHER there may be a pitch up.

1. Carry out **Pre-Landing Checks** (**N-16**) and fly a normal powered approach. FLAPS DOWN, airbrake IN

When landing assured:

2. ESDL . . . . . OFF/FEATHER

If nosewheel not locked down:

3. A/c nose . . . . . Lower onto runway by 50 kts
4. Use brakes to keep straight

If one mainwheel not locked down:

3. Choose runway with maximum clear area in direction of anticipated swing
4. Nosewheel . . . . . Lower after touchdown
5. Wings . . . . . Hold level as long as possible
6. Use opposite brake to keep straight after the wing drops

◆ **After Hazardous Landing Checks**

If the landing was abnormal and a hazard still exists:

1. ESSENTIAL BUS switch . . ISOLATE
2. BATTERY switches (2). . . . Both OFF
3. Carry out **EMERGENCY GROUND EGRESS** (**E-2**)

If the Hazardous Landing was due to a faulty undercarriage indication that resolved itself on touchdown (hazard no longer exists):

1. Carry out normal **AFTER LANDING** and **SHUTDOWN** checks (**N-17/18**) ◆

Intentionally blank