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## PART B: SPECIFIC AIRCRAFT OPERATING PROCEDURES

### B1 - AIRCRAFT OPERATIONS

#### B1.16 Diamond DA40CS

##### B1.16.1 General

The purpose of the Flight Crew Operating Manuals (FCOM) is to:

- a. Provide the necessary operating limitations, procedures, performance, and systems information the pilot needs to safely and efficiently operate the DA40C aircraft during all anticipated operations;
- b. Serve as a comprehensive reference for use during conversion training, recurrent training and proficiency checks for the Diamond DA40C;
- c. Provide necessary data from the CASA approved Airplane Flight Manual (AFM) to ensure that legal requirements are satisfied;
- d. Establish standardised procedures and practices for operating the Diamond DA40C in Flight Training Adelaide.

##### B1.16.2 FCOM structure

FCOM 1 contains the systems description and information. This is the Diamond DA40C Airplane Flight Manual – Refer AFM

FCOM 2 contains performance data. This is the Diamond DA40C Airplane Flight Manual – Refer AFM

FCOM 3 contains Bulletins, Operational Limitations, Normal Procedures and Supplementary Procedures.

The manuals are periodically revised to incorporate pertinent procedural and systems information. Items of a more critical nature will be incorporated in operational bulletins and issued in a timely manner.

##### B1.16.3 Organisation

The Flight Crew Operating Manuals are organised in the following manner:

###### B1.16.3.1 FCOM 1

FCOM 1 covers general aircraft and systems information. These chapters are generally subdivided into sections covering controls and indicators, systems descriptions and engine indicating and crew alerting system (EIS) messages.

###### B1.16.3.2 FCOM 3

- a. General Information – contains information regarding the manual's purpose, structure and content. It also contains lists of abbreviations, bulletins and list of effective sections;

- b. Bulletins – Temporary or supplementary information;
- c. Limitations – contains all certification limitations applying to the aircraft systems operation;
- d. Normal Procedures – discusses and summarises procedures and manoeuvres to be used during normal operations on a routine basis;
- e. Supplementary Procedures – discusses and summarises procedures and manoeuvres used during normal and/or abnormal operations on an as required basis, rather than routinely on each flight.

#### B1.16.3.3 Page Description

The manuals are automatically produced to a standard layout for electronic and paper distribution.

### B1.16.4 Operations Manual Revision and Control policy

#### B1.16.4.1 Manual Revision Policy

Refer QAL-D.001

#### B1.16.4.2 Revision Status and Tracking

Refer QAL-D.001

#### B1.16.4.3 Manual Control Policy

Refer QAL-D.001

### B1.16.5 Warnings, Cautions and Notes

The following levels of written advisories are used throughout the manual and are not to be confused with EICAS messages, which are separately identified in the text:

#### **WARNING:**

**An operating procedure, technique, etc, that may result in personal injury or loss of life if not carefully followed.**

#### **Caution:**

**An operating procedure, technique, etc, that may result in damage to equipment if not carefully followed.**

**Note:**

An operating procedure, technique, etc., considered essential to emphasize. Information contained in notes may also be safety related.

**B1.16.5 Abbreviations**

Abbreviations may be found in the AFM. Some abbreviations may also appear in lowercase letters. Abbreviations having very limited use are explained in the chapter where they are used.

## BULLETINS

### B1.16.7 General

The Diamond Company issues operations manual bulletins as required. Bulletins transmit temporary information which must be issued before the next formal revision to the Flight Crew Operating Manual (FCOM), or is of interest to Flight Training Adelaide.

Temporary information is normally incorporated into the manual at the next formal revision.

Items other than of an advisory nature will be incorporated by NOTAC or manual amendment.

Bulletin status is defined as follows:

- a. In Effect (IE) - the bulletin contains pertinent information not otherwise covered in the operations manual. The bulletin is to be recorded and filed in this section and whilst in effect remains in the manual;
- b. Incorporated (INC) - the bulletin material is incorporated into the manual pages and remains in effect; and
- c. Cancelled (CANC) - the bulletin is no longer in effect and should be removed from the manual. The bulletin record should be modified to include the CANC bulletin status.

The record below should be accomplished by the person revising the material:

Number	Subject	Date	Status
HC-C2YR-1BFP-F7497	Hartzell two-bladed Propeller	October 27, 2006	IE
190-00492-11	Garmin G1000	September 21, 2010	IE

#### B1.16.7.1 Hartzell Two-bladed Propeller HC-C2YR-1BFP-F7497 supplement

Refer to complete supplement, contained within the AFM. Differences have been incorporated into this FCOM.

#### B1.16.7.2 Garmin G1000 190-00492-11 supplement

Refer to complete supplement, contained within the AFM. Differences have been incorporated into this FCOM.

## LIMITATIONS

### B1.16.8 General

This chapter contains Airplane Flight Manual (AFM) limitations and Diamond recommended non-AFM operating limitations. Limitations that are obvious, shown on displays or placards, or incorporated within an operating procedure are not contained in this chapter.

#### Note:

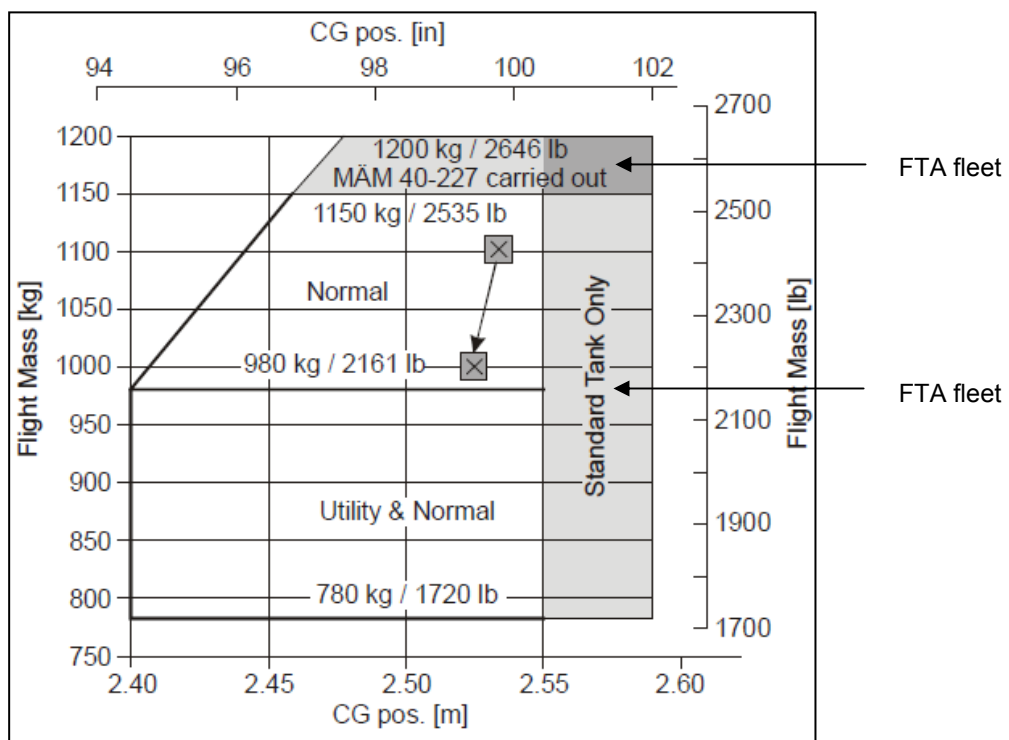
The symbol (#) indicates recall limitations. Recall limitations are those operationally significant AFM limitations that must be committed to memory. Memorization is necessary because there are no placards, display indications, or markings' indicating a limitation exists.

### B1.16.9 Aircraft General

#### B1.16.9.1 Operational Limitations

# Maximum Takeoff - Tailwind Component	5 knots
# Maximum Crosswind Component – Takeoff and Landing	20 knots
# Maximum Operating Altitude	16400 feet PA

Centre of Gravity Limits



**B1.16.9.2 Maximum Airspeed Limits**

# V <sub>A</sub> (Manoeuvring Speed) > 1036 kg	111 knots
# V <sub>A</sub> (Manoeuvring Speed) < 1036 kg	94 knots
V <sub>FE</sub> (Max Flaps extended speed) Takeoff	108 knots
V <sub>FE</sub> (Max Flaps extended speed) Landing	91 knots
V <sub>NO</sub> (Max structural cruising speed)	129 knots
V <sub>NE</sub> (Never exceed speed)	178 knots

**B1.16.9.3 Flight Manoeuvring Load Acceleration Limits (at V<sub>NE</sub>)**

Positive	+3.8g +2.0g with Flap
Negative	0g

**B1.16.9.4 Weight Limitations**

MTOW (Max Takeoff Weight)	1200 kg
MLW (Max Landing Weight)	1150 kg
MZFW (Max Zero Fuel Weight)	1150 kg

**B1.16.9.5 Minimum Cockpit Crew**

# The minimum Cockpit Crew is 1 pilot.

**B1.16.9.6 Maximum number of occupants**

# The maximum number of occupants is four persons.

**B1.16.10 Flight Controls**

# Avoid rapid and large alternating control inputs, especially in combination with large changes in pitch, roll, or yaw (e.g. large side slip angles) as they may result in structural failure at any speed, including below V<sub>A</sub>.

**B1.16.10.1 Flap Operation**

# Caution must be exercised when making flap selection changes, to not exceed Flap Limiting Speeds. The process of Aviate (control aircraft and configure), Navigate and Communicate, must be adopted accordingly, when making flap changes during the Go-Around procedure.

**B1.16.11 Fuel Systems****B1.16.11.1 Fuel Grade**

AVGAS 100LL, AVGAS 100

**B1.16.11.2 Fuel Quantity**

Total Useable Fuel	40.2 US GAL (2 x 20.1 US GAL)
*Maximum Indicated Fuel Quantity	2 x 17 US GAL
Maximum permissible difference between tanks	10 US GAL

**Note:**

Actual fuel on board is to be determined by visual inspection of the tanks, crosschecked with the fuel gauges and fuel records in the maintenance release.

\*The maximum quantity that can be indicated in each tank is 17 US GAL. Fuel Quantity must be determined using the Fuel Quantity Measuring Device for flights which have a Fuel Margin of 6 US Gallons or less. If this measurement is not carried out, the fuel quantity available for flight planning is 34 US Gal (2 x 17 US Gal).

Example:

Fuel Plan				
	Min	US Ga	Min	US Ga
Climb	14	3	12	2
Cruise	144	20	118	17
SubTot	158	23	130	19
Altn				
Var Res	24	3	20	3
Fix Res	45	7	45	7
Holding				
Taxi		2		2
Total	226	36	195	31
Margin	32	5	64	9
Endur	258	40	259	40
From	YPPF		YMLA	

Fuel Margin = FOB – (Trip Fuel + Reserves)

**B1.16.11.3 Standard Fuel Values****a. Consumption:**

- i. Taxi: 2 US GAL, for Start, Taxi and Run-ups.
- ii. Climb: 14 US GAL/Hr, Maximum Power.
- iii. Cruise: 9.5 US GAL/Hr, based on 65%, using the recommended leaning technique for best power.
- iv. Holding: 7.5 US GAL/Hr is based on the power setting for 45%, using the recommended leaning technique for best power.



- b. Fixed Reserve:
  - i. 7 US GAL.
- c. Variable Reserve:
  - i. 15% of Trip Fuel.

**B1.16.11.4 Fuel Planning**

- a. Manual:
  - i. An addition of 1 minute for each 2000 feet of climb, is to be added to the leg time interval and placed in the ETI column of the flight plan;
  - ii. In the fuel calculation column of the flight plan, fuel required for the climb will be the climb time in minutes at a rate of 0.3 Gallons per minute;
  - iii. Cruise fuel is then calculated at the consumption rate specified above; and
  - iv. The sub-total in minutes in the fuel column must equal the total time of the ETI column.
- b. Electronic:
  - i. Utilise the Flight Planner 3000 software only.

**B1.16.12 Oil Requirement**

The minimum oil quantity is 6.0 qts and the maximum is 8.0 qts. During pre-flight check, the oil level must fall between the minimum and maximum levels previously discussed.

**B1.16.13 Ice Protection**

Flight into known icing conditions is not permitted.

**B1.16.13.1 Pitot Anti-Ice**

# The Pitot Heat must be ON during all flight operations.

**# Note:**

Icing conditions exist when the OAT is 0°C (32°F) or below and visible moisture in any form is present (such as clouds, fog with visibility of one mile or less, rain, snow, sleet and ice crystals).

**B1.16.14 Doors**

# Do not keep doors open when wind speed is more than 15 knots. Strong winds can cause damage to the structure of the airplane.

The Front Canopy is to be in the CLOSED or COOLING GAP position and the Rear Door is to be CLOSED, when the engine is running.

### # WARNING

**Entry to the cockpit is from the leading edge of the wing root. The engine must be shutdown prior to entry/egress to/from the cockpit, for example Dual/Solo circuit training.**

## B1.16.15 Engines

### B1.16.15.1 Engine Configuration

Textron Lycoming IO-360 M1-A

### B1.16.15.2 Engine Limit Display Markings

Maximum and minimum limits are red.

Caution limits are yellow.

The engine limit display markings on EIS must be used to determine compliance with the maximum and minimum limits and precautionary ranges. If EIS markings show more conservative limits than those specified below, the limits markings shown on EIS must be observed.

### B1.16.15.3 Engine RPM

Indication	Green Bar	Red Bar
Manifold Pressure	13-30 in Hg	
RPM	500-2700 RPM	> 2700 RPM
CHT	150-475°F	> 500°F

### B1.16.15.4 Engine Oil System

Indication	Green Bar	Red Bar
Oil Temperature	149-230°F	>245°F
Oil Pressure	65-95 PSI	> 97 PSI

## NORMAL PROCEDURES

### B1.16.16 INTRODUCTION

#### B1.16.16.1 General

Standard company practices within the framework of operating procedures are described in the Normal Procedures chapter of FCOM 3. Normal Procedures are those that are performed on every flight.

Normal Procedures provide the recommended actions necessary to operate the aircraft for each phase of flight.

Normal Procedures are used by the pilot to ensure that the aircraft condition is acceptable for flight and that the flight deck is correctly configured for each phase of flight. These procedures assume that all systems are operating normally and that applicable features are fully utilised.

The panel illustration in this section describes the scan flow pattern. A normal scan flow is encouraged; however, certain items may be handled in the most logical sequence for existing conditions.

#### B1.16.16.2 FMS Procedures

Reserved

#### B1.16.16.3 Communication Procedures

Guidance on Radio Procedures and terminology is provided in OM-Part E and documentation from the English Language Department.

#### B1.16.16.4 COM 1

Set ATC frequencies.

#### B1.16.16.5 COM 2

Set OPS, ATIS and/or CTAF frequencies.

#### B1.16.16.6 Configuration Changes

When making configuration changes, the pilot shall first check that the correct parameters exist.

- a. The pilot shall callout a confirmatory (e.g. "speed checks") response; and
- b. The pilot should then observe the correct annunciation, after the change has been made.

**B1.16.16.7    Controls and Indicator Panels – Nomenclature**

Controls and indications appear in all UPPERCASE type to correspond to the words on the control panel or display. For example, the following items have UPPERCASE words to match what is found on the panel:

Flaps.....UP

**B1.16.16.8    Crew Baggage**

The pilot is responsible for ensuring that personal carry on baggage is stowed securely.

**B1.16.16.9    Crew Responsibilities**

- a. The Student will be referred to as the Pilot Flying (PF): The PF is the pilot, who operates or commands the operation of the flight controls during flight;
- b. Flight Instructor (PIC) is referred to as the Pilot Monitoring (PM): The PM is the pilot who monitors and supports the pilot flying (PF); and
- c. Transfer of Control: When control of the aircraft is transferred from one pilot to the other, the calls will be "I have Control" and "You have Control".

**B1.16.16.10    Displays and Instruments**

All display units and flight instruments on the flight deck are of the liquid crystal type.

The surface has a special optical coating which requires a specialised cleaning procedure detailed in the maintenance manual.

**Note:**

DO NOT touch any LCD unit surface with fingers or your skin.

Maintenance personnel will routinely clean the displays in the approved manner. However, if the displays do require cleaning, enter this requirement in the Maintenance Log.

**B1.16.16.11    Exterior Lights**

- a. The normal use of landing and taxi lights are detailed in the relevant NP;
- b. The use of exterior lights in reduced visibility should be carefully evaluated as the reflected glare from mist or fog may obscure visual cues;
- c. Exterior lights may be used at any time where it is deemed necessary for safety purposes;
- d. Crew should avoid unnecessary use of landing lights in the cruise;
- e. During night operations, the strobe lights should only be turned ON, when entering the active runway.;
- f. Strobe lights shall be used when crossing or entering any runway; and

- g. Navigation lights shall be selected ON at all times.

#### B1.16.16.12 Altitude Alerting Window (AAW)

Selection of any altitude by the pilot shall be confirmed.

Normally, all altitude restrictions should be set in the Altitude Alerting Window. Notwithstanding, the following exceptions are permitted:

- a. When compliance with an altitude restriction is assured, the next altitude restriction may be set;
- b. When established on a published arrival/approach which has been selected from the FMS database and all procedural altitudes appear in large font on the FMS LEGS pages, a lower altitude restriction may be set;
- c. During a procedural ILS, to ensure G/S capture, the altitude shall not be set below the FAF altitude or normal G/S intercept altitude, whichever is higher. The missed approach altitude shall be set after G/S capture; and

**Note:**

If G/S capture is not achieved by the FAF or normal G/S intercept point, a lower altitude not below 1000 ft. AAL may be set on the AAW.

- d. When established on a non-precision approach, the MDA may initially be set on the AAW. When more than 300 ft below the missed approach altitude and prior to leaving 1000 ft. AAL, the missed approach altitude shall be set.

**WARNING:**

**When cleared for an instrument approach and not on a published segment of the approach, the last ATC assigned altitude shall be maintained until established on a published segment of that approach.**

#### B1.16.16.13 Phraseology

Standard calls shall be used by all crew and are listed in FCOM 3. During early modules of flight training, standard calls need not be done.

#### B1.16.16.14 Radio Navigation Procedures

VOR's, DME's and ILS's are normally auto tuned.

Tuning of NDB's, other than for an NDB approach, is optional.

Manual tuning of radio navigational aids is permitted to facilitate increased situational awareness. Example includes:

- a. A navigational aid required to ensure compliance with an ATC restriction.

A positive check of ANP must be made prior to the commencement of an RNP procedure, for example the RAIM check prior to a RNAV GNSS approach.

B1.16.16.15 EIS Annunciations**WARNING**

Warnings are time-critical and require immediate attention;

A flashing WARNING Soft-key annunciation and aural tone (single chime every two seconds) indicate the presence of a warning; and

The aural tone and flashing WARNING Soft-key annunciation continue until pressing the WARNING Soft-key.

**CAUTION**

Caution indicates the existence of abnormal conditions on the aircraft that may require pilot intervention;

A flashing CAUTION Soft-key annunciation and single aural tone (one chime) indicate the presence of a caution; and

The flashing CAUTION Soft-key annunciation continues to flash until acknowledged by pressing the CAUTION Soft-key.

**ADVISORY**

Annunciation alert text is shown in white in the Annunciation Window; no aural tone is generated;

An annunciation alert is accompanied by a flashing ADVISORY Soft-key annunciation; and

Pressing the ADVISORY Soft-key acknowledges the presence of the annunciation alert.

**B1.16.16.16 Traffic Advisory System (TAS)**

Actions by aircrew in the event of a Traffic Advisory (TA), if operating under the following (not limited to) conditions:

Uncontrolled Airspace





- a. If manoeuvring, roll wings level and maintain altitude and heading; and
- b. Visually identify threat before continuing exercises.

Controlled Airspace:

- a. Query Traffic Advisory with ATC.

**WARNING**

**The TAS is not to be selected OFF.**

TAS Symbol	Description
	Non-Threat Traffic
	Proximity Advisory (PA)
	Traffic Advisory (TA)
	Traffic Advisory Off Scale

**B1.16.16.17 Terrain Awareness**

- a. Terrain Clearance

During departures and arrivals that do not follow published procedures, crews must take account of:

- i. MRA,
- ii. Grid MORA if not on track,
- iii. 25nm MSA where valid, and
- iv. Minimum vectoring altitudes when under radar control.

**Caution:**

**Relevant terrain may exist outside the 25NM MSA coverage.**

Crews are not to assume that ATC instructions will ensure terrain clearance. If ATC issue an instruction that conflicts with the crew's assessment of terrain clearance, it shall be questioned and any confusion resolved before the instruction is accepted.

**WARNING:**

**If any doubt exists regarding aircraft position or terrain clearance, immediately climb to a known safe altitude.**

b. Terrain Display

The use of the MAP TERRAIN function is recommended only when operating to/from unfamiliar aerodromes.

The MAP TERRAIN function is not recommended for student training.



### B1.16.17 Pre-flight Briefing

The briefing shall be in sufficient detail to ensure that all crew members are familiar with the requirements of the flight and that factors such as weather, NOTAMs, NOTACs, etc, are included in the overall flight planning. All crew members are encouraged to make comments or ask questions concerning the flight, and to review any late revisions to operating procedures, limitations, or flight data. Any uncertainties shall be clarified at the briefing stage.

#### B1.16.17.1 Crew Duties

- a. **The Pilot in Command will be referred to as the - Commander:**  
And must ensure the aircraft documentation is correct and valid.
  - i. Check that the Maintenance Release has satisfactorily been actioned and signed by a licensed engineer;
  - ii. Check the acceptability of the deferred defects;
  - iii. Sign the Commander's Acceptance in the Maintenance Release, if required;
  - iv. Check the load sheet; and
  - v. Confirm refuelling procedures complete.
- b. **PF (Student):**
  - i. Perform an external inspection for all departures;
  - ii. Carry out a flow pattern;
  - iii. Carry out checklist; and
  - iv. Cross check the take-off data calculations.
- c. **PM (Instructor):** Monitor PF actions for correctness and completeness.

#### B1.16.17.2 Refuelling

The Instructor (PIC) is responsible for ensuring that the fuel quantity, type and distribution are correct for any departure prior GFPT. Post GFPT and after CASA "Authorisation to Perform Maintenance" approval has been granted to the student. He or she can then act as PIC and will accept this responsibility. An Authorised Refueller will normally carry out the actual refuelling operation.

If an Authorised Refueller is not available refer to the abbreviated refuelling method procedures located in the Supplementary Procedures.

**B1.16.18 External Inspection**

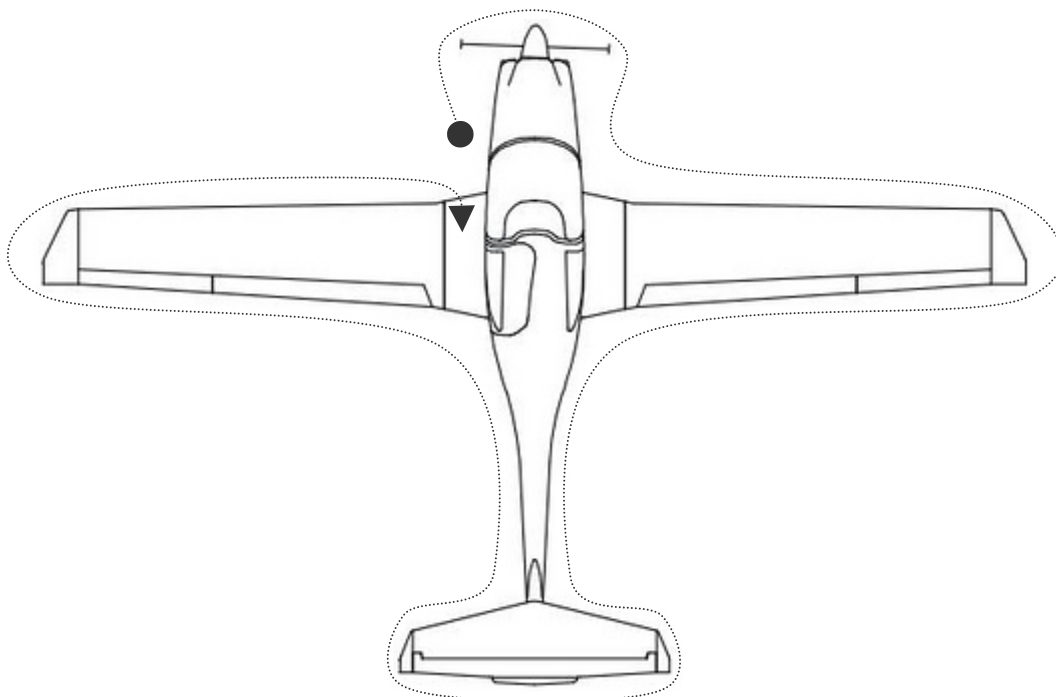
This inspection is performed by the PF (Student) to ensure the aircraft is in an acceptable condition for flight. The instructor (PIC) must verify the inspection has been done correctly.

Considerations:

- a. The high visibility vest is to be worn; and
- b. Exercise caution near all ground servicing equipment.

**B1.16.18.1 Daily/External Inspection Procedure**

Flow

**Note:**

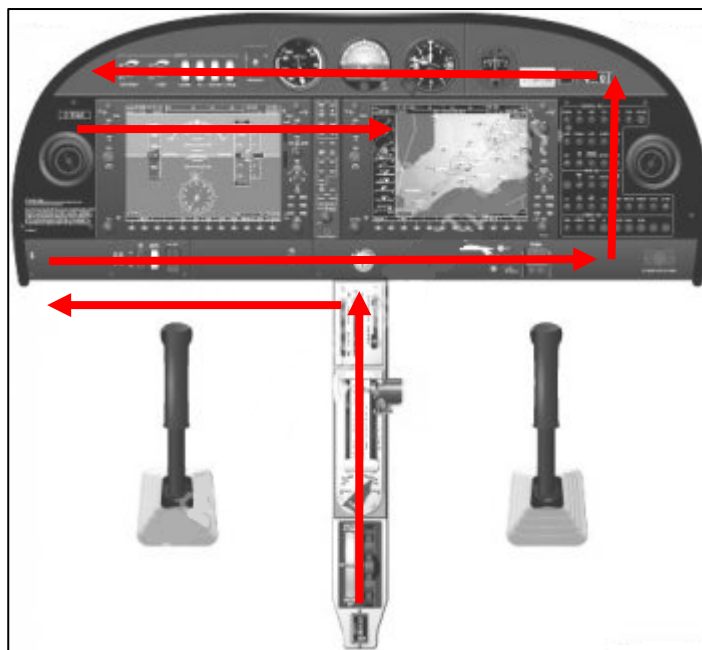
Refer DA 40 AFM, page 4A – 3, for DA40 inspection procedure

Refer Hartzell Two-bladed Propeller HC-C2YR-1BFP-F7497 supplement, for Inspection procedure.

Refer Garmin G1000 190-00492-11 supplement, for inspection procedure.

**B1.16.19 Cockpit Preparation****B1.16.19.1 Before Start Procedure**

## Flow Pattern



Security Cable/Ropes .....	REMOVED	Stowed in rear baggage compartment
Pitot/Stall Cover .....	REMOVED	Stowed in rear baggage compartment
Maintenance Release .....	CHECKED & ON BOARD	Must have: The pilot, crew, and passengers names entered. The sortie details, fuel, oil and certification of the daily inspection entered. The previous day's part 2 white pages removed and passed to operations.
Flight Manual .....	ON BOARD	Stowed in the rear right seat pocket.
Departure Brief .....	GIVEN	CTWO
Approach Brief .....	IF REQUIRED	CTWO
Passenger Brief .....	IF REQUIRED	Briefed on all areas of CAO 20.11 No mobile phones or unapproved digital devices allowed.

Rear Door.....	CLOSED	Must be closed and latched. (Not Locked)
Front Canopy .....	CLOSED/COOLING GAP	May be in cooling gap position for start-up taxi and run-up
Rudder Pedals .....	ADJUSTED	
Fuel Tank Selector .....	ON LOWEST TANK	Lowest or Left tank
Mixture .....	CHECKED & ICO	Checked for FULL and FREE movement and then set to IDLE CUT OFF
Pitch .....	CHECKED & FULL FINE	Checked for FULL and FREE movement and then set to FULL FINE
Throttle .....	CHECKED & IDLE	Checked for FULL and FREE movement and then set to IDLE
Parking Brake.....	SET	
ALTERNATE AIR .....	CLOSED	
Alternate Static Valve .....	CLOSED	
ESS BUS switch.....	OFF	
AVIONICS MASTER .....	OFF	
Master switch BAT/ALT .....	ON	Select Battery Master switches to ON.
Ignition Switch .....	OFF	
FUEL PUMP.....	OFF	
PITOT.....	OFF	
FLAPS .....	UP	
Circuit Breakers.....	IN	
ELT.....	ARMED	
CO Detector .....	TESTED	Press to test, serviceable if indicator flashes twice.
Emergency Switch .....	OFF & GUARDED	Ensure switch off, cover

Position Lights .....	ON	down and wire-locked. IFR Flight not permitted if switch is not wire-locked.
Flood, Instrument lights .....	AS REQUIRED	
G1000 Database .....	ACKNOWLEDGED	Check database version is current
FMS Setup - AUX page 4 .....	COMPLETED	Check compulsory settings and MFD Data bar fields as required
PFD/MFD .....	BACKUP MODE	This will duplicate the PFD on the MFD
MFD .....	ENGINE/SYSTEMS	This will display the SYSTEMS page on the EICAS
Fuel Quantity .....	CHECKED AND RESET	
Strobe lights .....	ON, AS REQUIRED	
Area .....	CLEAR	

**B1.16.19.2**    Before Start Checklist

The Checklist is called and read by the PF (Student), verifying the Before Start Procedure was completed and no items have been omitted.

**B1.16.20 Engine Start****B1.16.20.1**    Engine Start Procedure

FUEL PUMP .....	ON	Pump noise audible, for serviceability.
Throttle .....	SET	3cm forward from IDLE.
Mixture Control Lever .....	PRIMED	COLD START Mixture RICH for 5 seconds then back to ICO. WARM START Mixture RICH for 2 seconds then back to ICO.

**Caution:**

**Do not operate the start motor for more than 10 seconds. After operating the**

**starter motor, let it cool off for 20 seconds. After 6 attempts to start, let the starter cool off for 30 minutes.**

Ignition Switch ..... START

*When Engine Fires:*

Mixture Control Lever ..... RICH

Oil Pressure .....CHECK    Green    Bar    within    15  
seconds

**WARNING:**

**If the oil pressure has not moved into the green sector within 15 seconds after starting, switch OFF Engine, investigate problem.**

FUEL PUMP ..... OFF

Fuel Pressure .....CHECK    Green Bar

Ammeter .....CHECK    Positive charge

Annunciation Window .....CHECK    CAUTION PITOT HT OFF,  
should be the only alert

#### B1.16.20.2    Engine Start Checklist

The checklist is called and read by the PF (Student), verifying the procedure was completed and no items have been omitted.

#### B1.16.20.3    After Start Procedure

Avionics Master .....ON

Pitot Heat .....CHECKED    Pitot Heat ON  
Note rise in amps.  
“PITOT    HT    OFF”  
Annunciations Extinguished  
Pitot Heat OFF  
Note drop in amps.  
“PITOT    HT    OFF”  
Annunciation will illuminate.

Radios, Nav Aids .....SET, SET & IDENTIFIED    Frequencies programmed.  
Consideration should be  
given to each of the nav-  
aids fitted. It is standard  
procedure to identify and  
test all of the aids that it is  
possible to at this stage.  
Maximum use should also

	be made of the STBY functions. Stations on standby cannot be identified.
ATIS.....	RECEIVED Copied and written down.
Altimeters (2) .....	QNH SET AND CHECKED VFR tolerance = +/- 100' (+/- 110' elevation > 3300') IFR tolerance = +/- 60'
PFD/MFD.....	NORMAL MODE This will display the EICAS and map on the MFD.
ANN TEST (Aux pg.5) .....	TESTED
Flight Plan.....	ACTIVATED Cross check data on FPL Page 2 against the manual flight plan. If there are any discrepancies then conventional radio aids and methods should be used for enroute navigation.
Standby AI .....	CHECKED
Taxi Light.....	ON

**B1.16.20.4    After Start Checklist**

The Checklist is called and read by the PF (Student), verifying the Procedure was completed and no items have been omitted

**B1.16.21 Taxi and Take-off****B1.16.21.1    Taxi General**

Airport ground manoeuvring areas are high threat environments that require close monitoring by the crew at all times. Prioritisation is essential, and completion of tasks during taxi is secondary to maintaining a high degree of situational awareness. Activities that require prolonged attention inside the cockpit should be carried out when the aircraft is stationary.

All cockpit crew should monitor ATC instructions to other aircraft and maintain a good lookout for aircraft, vehicles and obstacles.

Correct taxi routing is to be confirmed by reference to airport diagrams and airport signage. Particular attention shall be paid to taxing near runway incursion hot spots or when crossing active runways. If any doubt exists as to the correct taxi route, the aircraft should be stopped and confirmation sought from ATC before continuing.

**B1.16.21.2 Taxi Policy**

Taxi clearance shall not be requested until the AFTER START Checklist is completed.

The Parking Brake may only be released and taxi commenced after ATC taxi clearance has been received and understood by the crew and have confirmed "clear left/right" as appropriate.

**B1.16.21.3 Taxi Procedure**

Brakes .....	CHECKED	<i>This is done by applying sufficient power to start the aircraft rolling, then gently applying the brakes to check that they retard the aircraft. It is not necessary to stop the aircraft or reduce the power during the check. Brakes on both sides are checked</i>
Rudder .....	CHECKED	<i>Freedom of movement should be checked during taxi.</i>
Flight Instruments.....	CHECKED	<i>This is to check that all of the instruments that respond to a turn are working and indicating in the correct sense. It should include the compass, HSI, Attitude Indicator and Slip/Skid indicator on the PFD, Standby attitude indicator and balance ball. The AI's should stay level, the slip/skid indicator and balance ball should skid in the opposite direction to the turn. As per Ops Manual Part E2.4.5.1</i>
Nav Aids .....	TRACKING	

**B1.16.21.4 Run-Up Procedure**

**CAUTION**

**THE OIL TEMPERATURE MUST BE AT LEAST 100 °F (38 °C) FOR THE RUN-UP CHECKS, HOWEVER IT IS TO BE IN THE GREEN SECTOR PRIOR TO TAKE-OFF.**



FUEL .....	CHANGE TANKS	<p><i>With the power set at 1500 RPM: Change tank to fullest and run for a least 1 minute. Use PFD TMR/REF for timing.</i></p>
Pitch.....	CYCLED 3 TIMES	<p><i>Set Throttle to 2000 RPM. Move Pitch Levers aft until a decrease in RPM is observed, then return the levers to the full fine position. Maximum allowable drop is 500RPM. Expect 200-300RPM drop. This check serves to:</i></p> <ul style="list-style-type: none"> <li><i>a. Ensure propeller blade angle will change, causing an increase in drag and a drop in RPM</i></li> <li><i>b. To force a reasonable quantity of oil through the unit.</i></li> </ul>
Magnetos.....	CHECKED	<p><i>With the power set at 2000 RPM. Select L switch position and note RPM drop then return the switch to BOTH. Then select R switch position and note change and then return the switch back to BOTH. The drop in RPM on either magneto must not be greater than 175 RPM referenced from the original 2000 RPM. The difference in RPM drop between magnetos must be less than 50 RPM. Rough running is unacceptable. If spark plug fouling is suspected slowly lean the mixture until the RPM peaks. Then adjust the throttle to 2000 RPM for the magneto check and repeat the check</i></p>
Idle.....	CHECKED	<p><i>The engine should idle between 600 and 800 RPM.</i></p>

#### B1.16.21.5 Run-Up Checklist

The Checklist is called and read by the PF (Student), verifying the Procedure was completed and no items have been omitted.

B1.16.21.6 Before Take-off Procedure

Complete the flow sequence and request clearance prior to reading aloud the checklist.

Trims .....	CHECKED & SET	<i>Check operation of electric trim. Pitch trim set to Take-Off.</i>
Fuel Selectors .....	ON	
Mixture .....	RICH	
Pitch .....	FULL FINE	
Magnetos .....	BOTH	
Fuel Pumps.....	ON	
Controls.....	CHECKED	<i>Check for full, free and correct operation. Rudder movement should be checked during taxi, and is NOT to be checked while the aircraft is stationary.</i>
Flight Instruments .....	CHECKED & SET	<i>Check Primary and Standby Instruments CRS – Usually on the initial outbound track. HDG – Set on runway magnetic direction with the appropriate allowance for any crosswind.</i>
Engine Parameters .....	IN LIMITS	
Altimeters (2).....	QNH SET & CHECKED	<i>Check that the correct QNH is set on the PFD and crosschecked with the standby altimeter.</i>
Flaps .....	SET	<i>Set T/O flap for normal Take-off</i>
Circuit Breakers .....	CHECKED	
Harnesses.....	SECURE	
Clearance.....	RECEIVED/NOT REQUIRED	
Transponder.....	SET	<i>Set assigned code or set 3000 for CTR. Transponder will switch automatically to ALT mode when airborne.</i>

B1.16.21.7 EFIS brief

The PF will announce the EFIS check, and confirm:

- Type of departure (Visual/LNAV);
- Display setting of PFD (360 HSI);
- Heading/Track displayed on PFD;

- d. Display setting of MFD e.g. MAP mode, Track UP;
- e. Range setting of MFD e.g. 5 miles in YPPF zone;
- f. Nav aids tuned and selected for departure; and
- g. Altitude clearance limit displayed on PFD.

**Example**

*"This will be a visual departure, PFD set to 360 HSI, Heading Bug 205, BRG 1 set to VOR1 course 200, MFD range 5NM, NAV 1 set AD, NAV 2 set ARS, Assigned Altitude 1000"*

**B1.16.21.8 EFIS Brief Procedure**

EFIS .....SET FOR DEPARTURE, BRIEFED .

**B1.16.21.9 Take-off Safety Brief**

Brief and consider the following:

- a. Any Abnormality before Liftoff, close the Throttle and ABORT;
- b. Any Abnormality after Liftoff, LAND, using Land Flap;
- c. Any Abnormality after Liftoff, insufficient runway available, INFLIGHT DECISION; and
- d. Engine Failure with insufficient runway available; LAND within the Field of View.

**B1.16.21.10 Take-off Safety Brief Procedure**

TOSB.....GIVEN

**B1.16.21.11 Before Takeoff Checklist**

The Checklist is called and read by the PF (Student), verifying the Procedure was completed and no items have been omitted

**B1.16.21.12 Holding Point Procedure**

Rear Door .....SECURE    *Closed and Latched*

Front Canopy .....SECURE    *Closed and Latched*

Door Warning Annunciation..... OUT

The Checklist is called and read by the PF (Student), verifying the Procedure was completed and no items have been omitted

Before entering the departure runway, both pilots should:

- Confirm that the runway and runway entry point are correct,
- Confirm that the approach path is clear, and
- Confirm there is no conflicting TAS traffic.

Departure Instructions ..... REVIEWED

Pitot heat.....	ON / As Required	<i>PITOT</i>	<i>HT</i>	<i>OFF</i>
		<i>annunciation</i>		<i>should</i>
		<i>extinguish.</i>		

Strobe Lights ..... ON

Landing Light.....	ON	On receipt of take-off clearance, switch landing light on. Landing light ON is the reminder that the take-off clearance has been received.
--------------------	----	--

Runway Alignment .....	CHECKED	Check HSI and compass indicating correct runway direction, and heading bug represents a heading that will maintain runway direction after takeoff.
------------------------	---------	--

Throttle Levers should be advanced to maximum power smoothly. The PF (Student) will monitor the power setting and confirm power is set satisfactorily (engine indications within limits), by announcing "Power Set". Ensure Max Power is set by 45 kts.

#### B1.16.21.16 Standard Call-outs during Take-off

CONDITION	CALLOUT
After Power set on runway and Engine T's & P's in limits	Power set
At 45 kts	45 kts

At $V_R$	Rotate
At FLAP retraction ALT and desired speed (200' AGL).	Flap Up

**B1.16.21.17**    Normal Take-off

- a. Brakes release, select Max Power smoothly;
- b. Confirm Engine parameters within limits;
- c. Rotate at  $V_R$  60 kts;
- d. Positive Rate of Climb, accelerate to climb at 80 kts;
- e. At or above 200 ft AGL (depending obstacles), select Flaps UP;
- f. At or above 500 ft AGL, start turn (maximum bank 15°); and
- g. Above 1000 ft AGL, complete After Takeoff Procedure (Not applicable during circuits operations).

**B1.16.21.18**    Short-Field Take-off

- a. Select Max Power smoothly, against brakes.
- b. Confirm Engine parameters within limits;
- c. Brakes Release;
- d. Rotate at  $V_R$  60 kts;
- e. Positive Rate of Climb, Accelerate to climb at 70 kts ( $V_Y$ )
- f. At or above 200 ft AGL (depending obstacles), reduce attitude and accelerate to 80kts;
- g. Select Flaps UP;
- h. At or above 500 ft AGL, start turn (maximum bank 15°); and
- i. Above 1000 ft AGL, complete After Takeoff Procedure (Not applicable during circuits operations).

**B1.16.21.19**    After Take-off Procedure

BRAKES .....	APPLIED	<i>Brake applied to stop main wheels rotating</i>
FLAPS .....	UP	<i>Passing 200' AGL flaps up</i>
CLIMB POWER .....	SET	<i>Full Power</i>
Landing Light .....	OFF	<i>Turn landing light off passing 1000'AGL</i>

**B1.16.22 Climb Policy****B1.16.22.1 Climb Procedure**

Manifold Pressure .....	CHECKED	<i>Full Power</i>
OAT .....	CHECKED	<i>Check to see if approaching the freezing level in the presence of visible moisture. Consider the possibility of icing.</i>
Annunciations.....	CHECKED	<i>Check PDF alert window for any warnings or cautions.</i>
T's & P's .....	GREEN	Engine Temperatures and Pressures are indicating in the green sector.
Altimetry .....	CHECKED	<i>Check the correct QNH (area/terminal forecast / actual) set. Standard altitude callouts apply. Assigned altitude on PFD</i>

**B1.16.22.2 Standard Call-outs during Climb**

CONDITION	CALLOUT
1000 ft. below each assigned altitude	One to go

**B1.16.23 Cruise Policy****B1.16.23.1 Cruise Power and Speed**

Company Policy is to cruise at 65% power, approximately 110 kts TAS.

Use the AFM recommended setting for 2400 RPM and associated Manifold Pressure depending on altitude.

For training area sorties and short sectors use 23"/2400 RPM.

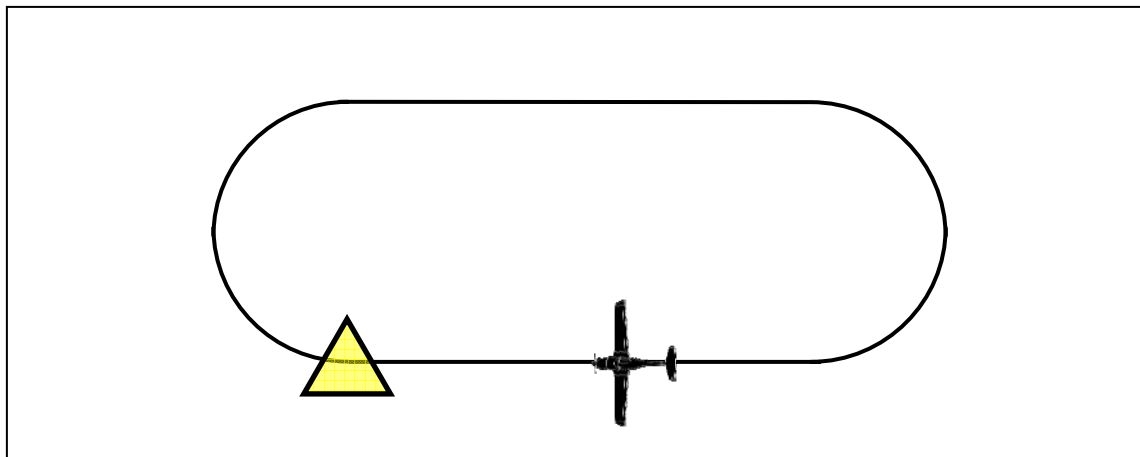
Leaning shall be 50° rich of peak using the lean assist function.

On short sectors where time does not permit the use of lean assist, leaning to expected fuel flow for best power as per AFM is permitted.

B1.16.23.2 Cruise Procedure

Compass & HSI .....	ALIGN.	<i>HSI aligned to Standby Compass</i>
Log.....	COMPLETE / NOT REQUIRED	<i>Revise ETA's, check SARTIME and EOD.</i>
Engine T's & P's .....	GREEN	<i>This is to include the temperature and pressures and electrical indications on the systems page.</i>
Altimetry.....	CHECKED	<i>This is to include consideration of QNH setting and airspace requirements.</i>
Radios/Systems.....	SET	<i>Make sure that you are monitoring the correct frequencies and that the volume is sufficiently loud. Standby frequencies should be set.</i>
Orientation .....	CHECKED	<i>Ensure that you are going in the direction that you want to, and that the appropriate Nav-Aids have been selected. Full use should be made of the MFD map display.</i>
Fuel.....	SUFFICIENT	<i>Compare indicated contents with expectations and ensure that sufficient remains for the intended sortie (Fuel Margin). Change tanks as required.</i>
Fuel Pump .....	OFF	

B1.16.23.3 Holding

**B1.16.23.4**    Normal Holding

- a.    Within 5 NM of Holding Fix::
  - i.    Holding Power:                    21"/2400rpm.
- b.    Flying the Hold:
  - i.    Holding Power:                    21"/2400rpm (100 kts).
  - ii.   See the Jeppesen Terminal AU-5 for holding pattern procedures.
- c.    Exiting the En-route Hold (on the outbound leg):
  - i.    Set power as required.
- d.    Exiting the Approach Hold (on the outbound leg):
  - i.    Before Landing Procedure            Complete

**B1.16.23.5**    Fuel Management

Fuel Contents, Fuel Flow and Fuel Balance should be monitored regularly. The first Fuel Tank change should be after 30 minutes, thereafter every hour. Compare actual performance with the planned performance.

**Caution**

**LOW FUEL PRESS** indications may occur at altitude, with the **FUEL PUMP** selected to **OFF**.

**Note:**

While switching from one tank to the other, the **FUEL PUMP** should be switched **ON**.

**Note:**

Maximum difference between tanks is 10 US gal.

**B1.16.23.6**    Mixture Adjustment

For engine life preservation, mixture leaning is to be carried out during the cruise phase, using the best power mixture technique as stated in the AFM.



Mixture control is to be set to RICH before commencement of the descent.

If using Lean Assist use the following procedure:

- a. First Mixture Leaning event:
  - i. Slowly lean MIXTURE, till Peak Temperature Difference reaches zero;  
and
  - ii. Slowly enrich MIXTURE, till Peak Temperature Difference indicates 50.
- b. Subsequent leaning events:
  - i. Slowly lean MIXTURE, till Peak Temperature Difference indicates 50.

Quick leaning method for short sectors

**B1.16.23.7 Before Top of Descent**

Confirm that the expected approach procedure, Star and transition, if applicable, have been entered into the FMS.

Landing Performance considered.

**B1.16.23.8 Descent / Arrival Procedure**

Compass .....	ALIGNED	<i>HSI aligned with Standby Compass.</i>
Altimeters (2) .....	QNH SET	<i>Set to area, terminal forecast or actual aerodrome QNH (as available) and airspace requirements considered.</i>
Aids .....	SET & IDENTIFIED	<i>All required nav aids should be Tuned, Tested and Identified.</i>
Mixture .....	RICH	
Radios/Systems .....	SET	<i>This should include consideration of the calls that will be required and any subsequent or alternate frequencies that may be required.</i>
Approach Brief .....	GIVEN	CTWO

**B1.16.24 Descent Policy****B1.16.24.1 Descent Speed**

Descent speed is normally 110 kts

- a. Comply with all ATC and published speed controls.

**B1.16.24.2 Descent Profile**

- a. Determine the Altitude to be lost;
- b. Height loss required divided by 1000 multiplied by 4 plus 2;
- c. Additional factors to consider when calculating TOD are; winds, approach procedures, potential radar vectors, speed profile, terrain and weather;
- d. Power 14"MP/2400RPM, adjust as required to maintain constant IAS and ROD of 500' / min.

Standard Call-outs during Descent

CONDITION	CALLOUT
1000 ft. above each assigned altitude	One to go
Following Altimeter x-check	QNH ____ set, and cross-checked

**B1.16.25 Approach and Landing Policy****B1.16.25.1 Approach Types**

Approach types in order of preference are normally:

- a. Visual approach;
- b. Precision approach; and
- c. Non-precision approach.

**B1.16.25.2 Standard Callouts during Flap Extension**

CONDITION	CALLOUT
On each flap extension	Speed checks, Flaps ____

**B1.16.25.3 Stabilised Approach Procedures**

An approach is stabilised only if all the criteria within this Operations Manual are met before or when reaching the applicable minimum stabilised height.

**B1.16.25.4 Stabilised Approach Criteria:**

- a. Aircraft is on correct flight path;
- b. Small changes (only) in heading/pitch are required to maintain the correct flight path;
- c. Airspeed is not more than  $V_{REF} + 10$  IAS ( $V_{REF} + 20$  IAS for DA40 Instrument Approaches), and not less than  $V_{REF}$  IAS;
- d. The aircraft is in the correct landing configuration;
- e. Sink rate is not greater than 1000 fpm (glide approaches excluded);
- f. Briefings and Checklists have been conducted;
- g. Specific types of approaches are stabilised if they also fulfil the following:
  - i. Instrument Landing System (ILS) approaches must be flown within half-scale deflection of the glide slope and localiser;

- ii. During a circling approach or low level circuit, wings should be level on final approach when the aircraft reaches 300 ft above airport elevation;
- h. Unique approach procedures or abnormal conditions requiring a deviation from the mentioned Stabilised Approach criteria require a special briefing if multi-crew and/or if operating as single pilot requires contingency planning as part of pre-flight and in-flight preparation.

**Note:**

Flying a stabilised approach that meets the criteria above does not preclude flying a delayed flaps approach (decelerated approach) to comply with ATC instruction.

**B1.16.25.5    Minimum Stabilised Approach Heights and Go-around procedure:**

A Go-Around must be executed, if an aircraft is not stabilised at, or becomes Un-Stabilised below the following minimum heights:

- a. VMC:        200 feet above airport elevation (must be on final approach at 500 ft above airport elevation); and
- b. IMC:        1000 feet above airport elevation.

**B1.16.25.6    Runway Aim Points**

For aerodromes which have visual approach path guidance i.e. PAPI/T-VASI, the aim point will be in line with the 300 metre (1000 foot) markers. The approach path guidance indications should be utilised to assist in maintaining a constant glide slope.

For aerodromes without any approach path guidance i.e. Parafield, the Runway Numbers (just past the landing threshold) must be used as the aim point.

Adjustments may be made to the aim point for runways with short landing distances i.e. Parafield runways 26 and 08, and/or runways which do not have runway markings.

**B1.16.25.7    Before Landing Procedure**

Brakes .....	CHECKED	<i>Adequate pressure exists in both of the brakes.</i>
Park Brake .....	OFF	
Gear .....	FIXED	
Mixtures.....	RICH	
Fuel Pump.....	ON	
Fuel Tank .....	FULLEST	
Fuel Quantity .....	SUFFICIENT	<i>Contents are sufficient for the approach, and possible</i>

*go-round and subsequent approach.*

Landing Light ..... ON

Harnesses ..... SECURE

#### B1.16.25.8 Landing Procedure

Park Brake ..... FWD, RELEASE

Gear ..... FIXED

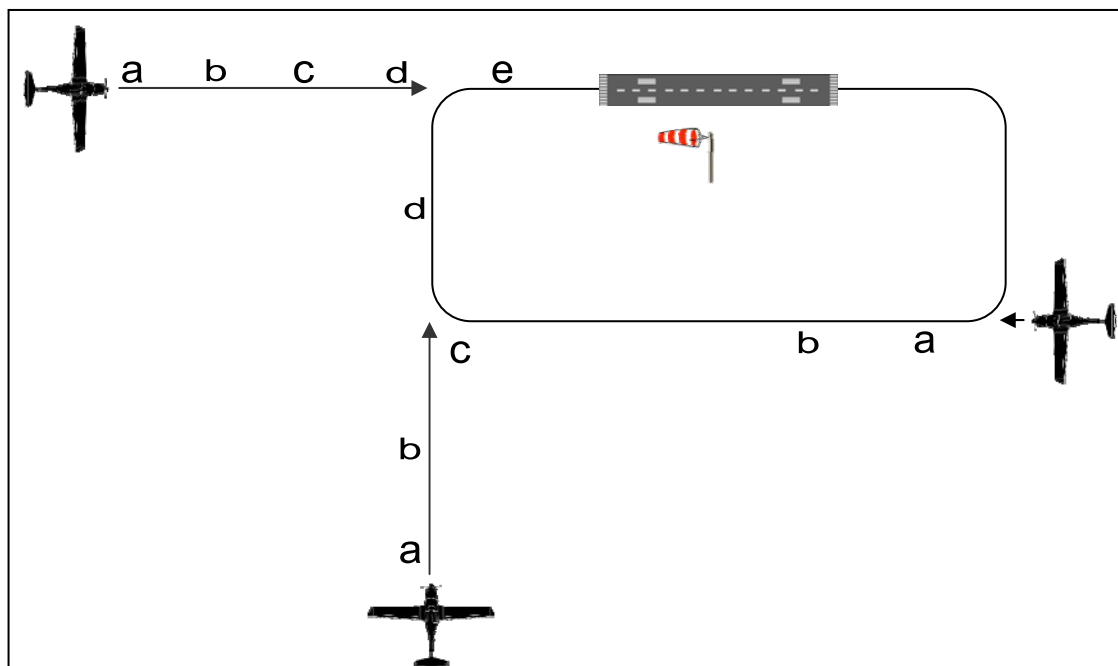
Pitch ..... FULL FINE

Flaps ..... SET

Landing Clearance ..... RECEIVED

Runway ..... CLEAR

#### B1.16.25.9 Visual Approach



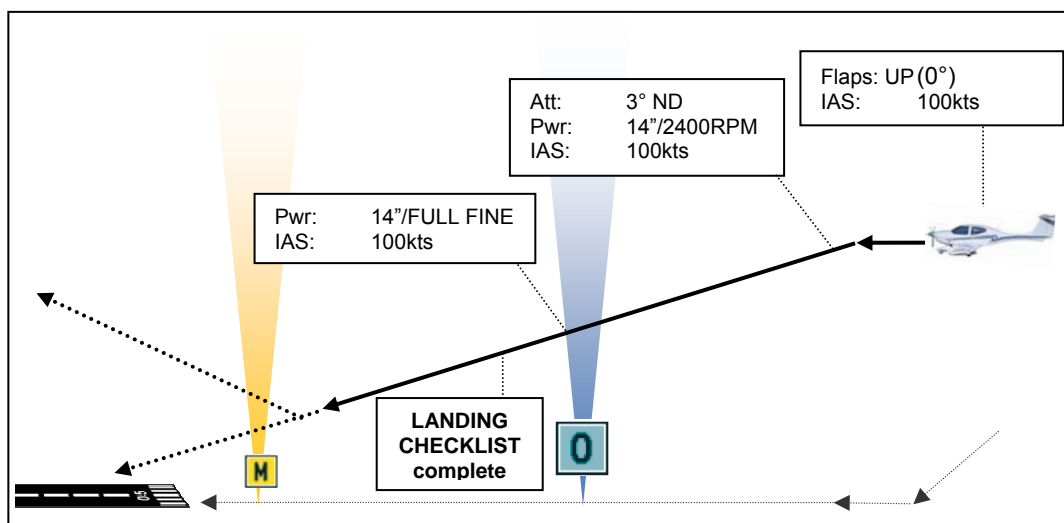
#### B1.16.25.10 Normal Approach

- a. Power: 21" 2400RPM;
- b. Before Landing Procedure:
- c. Power: 10" 2400RPM; Speed 90kts, flaps T/O

- d. Speed: 80 knots; and
- e. Landing Checklist:
  - i. Flaps: LAND, below 91 knots
  - ii. Speed:  $V_{APP}$  75 knots,  $V_{REF}$  70 knots.

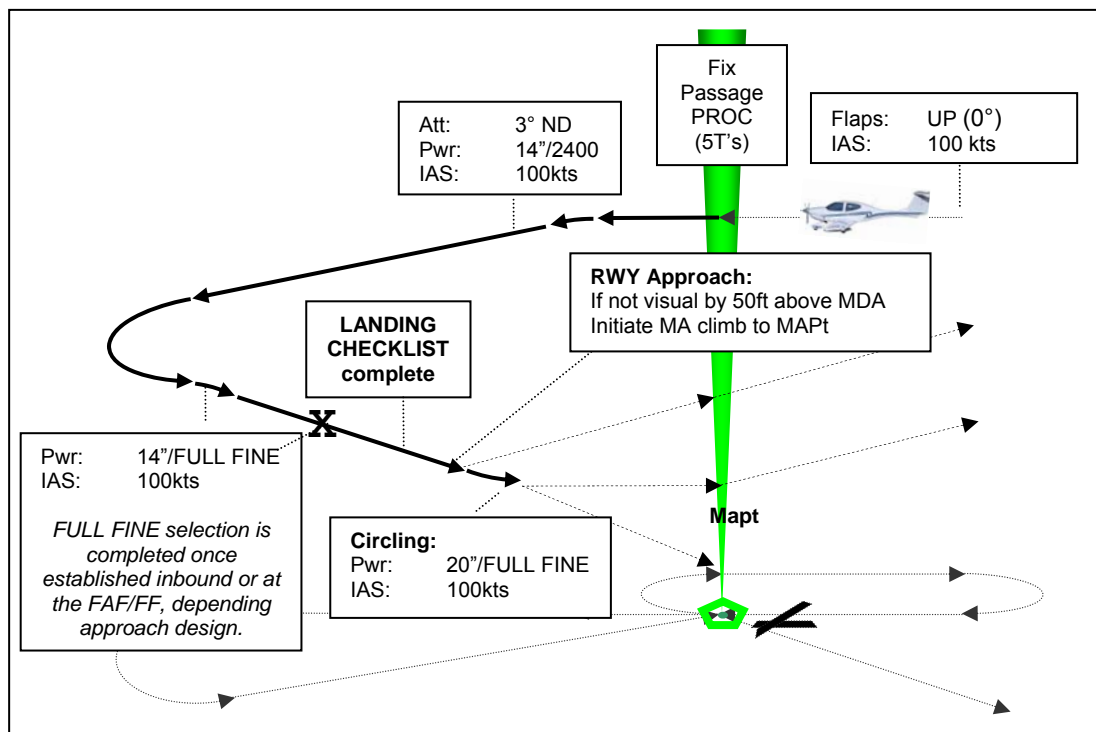
**B1.16.25.11 Short Field Approach**

Same as for Normal Approach.

**B1.16.25.12 Instrument Approach****B1.16.25.13 Precision Approach (ILS)**

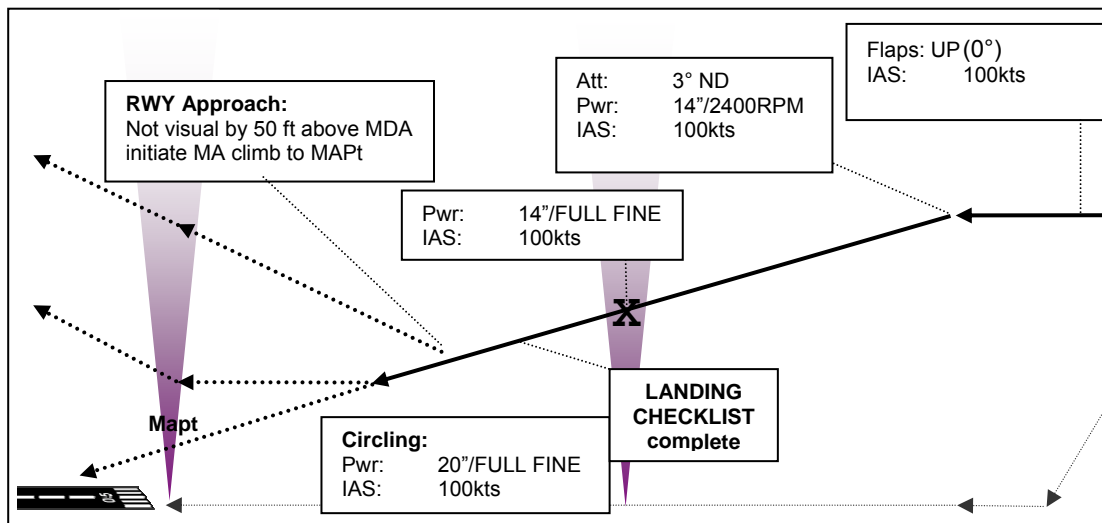
Procedure:

- a. LOAD or ACTIVATE (depending on NAV AIDS facilities) the Approach during the Arrival Stage;
- b. Confirm Nav Aid for distance measurement, is in active Flight Plan (if loaded approach only);
- c. Complete **PRE DESCENT Procedure** (incorporating CTWO) at a suitable position during the Intermediate Stage;
- d. Complete **PRE LANDING Procedure** at a suitable position prior to the approach (Basel Leg).
- e. Complete **PRE-ILS Procedure** on localiser intercept heading:
  - i. **Flags** None.
  - ii. **Marker Beacons** ON.
  - iii. **Clearance** received / to go.
  - iv. **QNH** current and set

B1.16.25.14 Non-precision Approach (VOR/NDB)

## Procedure:

- LOAD the Approach during the Arrival Stage;
- Confirm Nav Aid for distance measurement, is in active Flight Plan;
- Complete **PRE DESCENT Procedure** (incorporating CTWO) at a suitable position during the Intermediate Stage; and
- Complete **PRE LANDING Procedure** at a suitable position prior to the approach.

B1.16.25.15 Non-precision Approach (RNAV GNSS)

Procedure:

- ACTIVATE* the Approach during the Arrival Stage;
- Complete **PRE DESCENT Procedure** (incorporating CTWO) at a suitable position during the Intermediate Stage; and
- Complete **PRE LANDING Procedure** at a suitable position prior to the approach.

B1.16.25.16 Standard Callouts during Instrument Approach

CONDITION	CALLOUT
First positive movement of Localiser / Radial	Localiser / Radial moving
First positive movement of Glideslope	Glideslope moving
Final Approach Altitude Check (OM, FAF, DME)	e.g. *OM, Altitude Checks, Missed Approach Altitude set and Aids set/to be set
1000 ft AAL	Landing Checklist Complete
100 FT above DA / MDA	Plus 100
DA / MDA /Mapt	Minimums Land/Go-around

\*If the Missed Approach Altitude was set and cross checked at Glideslope capture, the words "Missed Approach Altitude" may be omitted from this call.



**B1.16.25.17 Landing Roll Procedure**

After landing, smoothly and progressively apply brakes as speed reduces below 50 kts.

**B1.16.25.18 Go-around Procedure**

- a. Ensure the Pitch Lever and Throttle Lever advance for Max Power;
- b. Select the Flaps to T/O;
- c. Simultaneously raise the nose attitude, to climb initially at 70kts;
- d. When a positive rate of climb and flap retraction altitude is achieved, select Flap to UP; and
- e. Accelerate to and climb at 80 kts.

**B1.16.25.19 Standard Callouts on Go-around**

CONDITION	CALLOUT
If a Go-around is required	Go-around, Max Power, Flaps T/O
Positive rate of climb and at flap retraction altitude	Flap UP
Final Approach Altitude Check (OM, FAF, DME)	e.g. *OM, Altitude Checks, Missed Approach Altitude set and Aids set/to be set
1000 ft AAL	Landing Checklist Complete
100 FT above DA / MDA	Plus 100
DA / MDA / Mapt	Minimums Land/Go-around

**B1.16.26 After Landing****B1.16.26.1 After Landing Procedure**

When Clear of the active runway:

PITOT HEAT .....OFF

FUEL PUMP .....OFF

Flaps..... UP

Strobe Lights ..... AS REQUIRED    *OFF during Night Ops.*

Landing Light.....OFF

B1.16.26.2 Shutdown

Park Brake .....	SET	<i>Set to the ON position.</i>
Throttle .....	1000 RPM	
Engine/System Page.....	TIME/FUEL CHECKED	<i>Check fuel remaining</i>
Avionics Master .....	OFF	
Magnetos .....	CHECKED	<i>A dead cut is preformed at idle RPM ensures that both magnetos are both grounded with the switch to the "OFF" position. It is achieved by momentarily and smoothly switching each magneto switch to OFF and observing a sharp decrease in RPM and promptly returning the switch to BOTH</i>
Mixture .....	ICO	
Ignition Switch .....	OFF	<i>When the propeller has stopped</i>
Start Key .....	REMOVED	
Strobe Lights .....	OFF	
Position Lights .....	OFF	
Taxi Light.....	OFF	
Electric Master .....	OFF	
Interior/Instrument Lights .....	CHECKED OFF	<i>Check overhead lights and instrument lighting OFF. Failure to select Instrument Lighting OFF may lead to next crew having no indication of u/c position.</i>

B1.16.26.3 Post Flight Duties

Control Lock .....	FITTED
Doors.....	LOCKED
Pitot & Stall Cover .....	ON

Tie Down ..... SECURE

Security Cable ..... FITTED

After Flight Inspection ..... COMPLETED

*Tyres and propellers should be checked for damage. Fuel remaining should be visually checked and compared to fuel log.*

## B1.16.27 Checklists and Procedures

### B1.16.27.1 Execution

#### a. Checklist:

- i. Complete flow of checklist (silent);
- ii. Call Checklist (aloud), e.g. "*LANDING CHECKLIST*";
- iii. Using Checklist, verify flow items executed (aloud);
- iv. Call Checklist complete, e.g. "*LANDING CHECKLIST COMPLETE*";  
*and*
- v. Indicated by: ■■■■

#### b. Procedure:

- i. Call Procedure (aloud), e.g. "*BEFORE LANDING*"; *and*
- ii. Complete Procedure (aloud).

### B1.16.27.2 Abbreviated Checklist and Procedures

Refer to following page.

**BEFORE START**

Security Cable..... REMOVED  
 Pitot/Stall cover..... REMOVED  
 Maint. Release..... CHECKED & ON BOARD  
 Flight Manual..... ON BOARD  
 Departure Brief..... GIVEN  
 Approach Brief..... GIVEN  
 Passenger Brief..... IF REQUIRED  
 Rear Door..... SECURE  
 Front canopy..... SECURE/COOLING GAP  
 Rudder Pedals..... ADJUSTED  
 Fuel Selector..... ON LOWEST TANK  
 Mixture..... CHECKED & ICO  
 Pitch..... CHECKED & FULL FINE  
 Throttle..... CHECKED & IDLE  
 Parking Brake..... SET  
 Alternate Air..... CLOSED  
 Alternate Static..... CLOSED  
 ESS BUS Switch..... OFF  
 Avionics Master..... OFF  
 Master Switch BAT/ALT..... ON  
 Magnetos..... OFF  
 Fuel Pump..... OFF  
 Pitot Heat..... OFF  
 Flaps..... UP  
 Circuit Breakers..... IN  
 ELT..... ARMED  
 CO Detector..... TESTED  
 Emergency Switch..... OFF & GUARDED  
 Position Lights..... ON  
 Flood, Instrument Lights..... AS REQUIRED  
 G1000 Database..... ACKNOWLEDGED  
 FMS Setup-AUX 4..... COMPLETED  
 PFD/MFD..... BACKUP MODE  
 MFD..... ENGINE/SYSTEMS  
 Fuel Quantity..... CHECKED AND RESET  
 Strobe Lights..... ON, AS REQUIRED  
 Area..... CLEAR

**ENGINE START**

START ENGINE, THEN:

Oil Pressure..... CHECKED  
 Ammeter..... CHECKED  
 Annunciation Panel..... CHECKED  
 Fuel Pump..... OFF  
 Fuel Pressure..... CHECKED

**AFTER START**

Avionics Master..... ON  
 Pitot Heat..... CHECKED  
 Radios, Nav Aids..... SET, SET & IDENTIFIED  
 ATIS..... RECEIVED  
 Altimeters (2)..... QNH SET, CHECKED  
 PFD/MFD..... NORMAL MODE  
 ANN TEST(Aux 5)..... CHECKED  
 Flight Plan..... ACTIVATED  
 Standby AI..... CHECKED  
 Taxi Light..... ON

**TAXI**

Brakes.....	CHECKED
Rudder.....	CHECKED
Flight Instruments.....	CHECKED
Nav Aids.....	TRACKING

**RUN UP**

\*Oil Temperature..... ABOVE 100°F\*  
 \*Fuel..... Change Tanks\*

Pitch..... CYCLED 3 TIMES  
 Magnetos..... CHECKED  
 Idle..... CHECKED

\* Indicates a procedure within the checklist

**BEFORE TAKE-OFF**

Trim..... CHECKED & SET  
 Fuel Selector..... ON  
 Mixture..... RICH  
 Pitch..... FULL FINE  
 Magnetos..... BOTH  
 Fuel Pump..... ON  
 Controls..... CHECKED  
 Flight Instruments..... SET & CHECKED  
 Engine Parameters..... IN LIMITS  
 Altimeters (2)..... QNH SET & CHECKED  
 Flaps..... SET  
 Circuit Breakers..... CHECKED  
 Harnesses..... SECURE  
 Clearance..... RECEIVED  
 Transponder..... SET  
 EFIS..... SET FOR DEP, BRIEFED



TOSB..... GIVEN

**HOLDING POINT**

Rear Door..... SECURE  
 Front Canopy..... SECURE  
 Door Annunciations..... OUT



**ENTERING RWY**

Departure Instructions.....	ACKNOWLEDGED
Pitot Heat .....	ON / As Required
Strobe Lights .....	ON
Landing Light .....	ON

**TAKE-OFF**

Power .....	MAX
T's and P's .....	GREEN
Airspeed .....	INCREASING

**AFTER TAKE-OFF**

Brakes .....	APPLIED
Flaps .....	UP
Climb Power .....	SET
Landing Light .....	OFF

**CLIMB**

Manifold Pressure .....	CHECKED
OAT .....	CHECKED
Annunciations .....	CHECKED
T's and P's .....	GREEN
Altimetry .....	CHECKED

**CRUISE**

Compass & HSI.....	ALIGNED
Log .....	COMPLETE / NOT REQUIRED
Engine T's & P's.....	GREEN
Altimetry .....	CHECKED
Radios .....	SET
Orientation.....	CHECKED
Fuel .....	SUFFICIENT
Fuel pumps .....	OFF

**PRE MANOEUVRE**

Height.....	RECOVER BY 3000' AGL
Airframe.....	CHECKED
Security .....	CHECKED
Engine T's & P's.....	GREEN
Location.....	CHECKED
Lookout .....	COMPLETED

**DESCENT**

Compass & HSI.....	ALIGNED
Altimeters (2).....	QNH SET & CHECKED
Auto Pilot BARO QNH .....	QNH SET & CHECKED
Aids .....	SET & IDENTIFIED
Mixture .....	RICH
Radios .....	SET
Approach Brief .....	GIVEN

**BEFORE LANDING**

Brakes .....	CHECKED
Park Brake .....	OFF
Gear .....	FIXED
Mixture .....	RICH
Fuel Pumps .....	ON
Fuel Tank .....	FULLEST
Fuel Quantity.....	SUFFICIENT
Landing Light .....	ON
Harnesses .....	SECURE

**LANDING**

Park Brake.....	RELEASE
Gear .....	FIXED
Pitch .....	FULL FINE
Flaps.....	SET
Landing Clearance .....	OBTAINED
Runway .....	CLEAR

**AFTER LANDING**

Pitot Heat.....	OFF
Fuel Pump .....	OFF
Flaps.....	UP
Strobe Lights .....	ON, AS REQUIRED
Landing Light.....	OFF

**SHUTDOWN**

Park Brake.....	SET
Throttles .....	1000RPM
Engine/System Page.....	TIME/FUEL CHECKED
Avionics Master .....	OFF
Magnetos.....	CHECKED
Mixture.....	ICO
Magnetos.....	OFF
Start Key.....	REMOVED
Strobe Lights .....	OFF
Position Lights .....	OFF
Taxi Light.....	OFF
Electric Master.....	OFF
Interior/Instrument Lights.....	CHECKED OFF

**POST FLIGHT DUTIES**

Control Lock .....	FITTED
Doors.....	LATCHED
Pitot Cover.....	ON
Security Cable .....	FITTED
After Flight Inspection.....	COMPLETED

**B1.16.28 Normal Operations****B1.16.28.1 Aircraft Speeds (KIAS)**

VNE .....	178
VNO .....	129
VA (1200 kg).....	111
(1036 kg).....	94
VFE (T/O) .....	108
(LDG).....	91
VS .....	53
VSO .....	52
Best Glide .....	75
V rotate .....	60
Normal Climb .....	80
Cruise Climb .....	90
Best RoC (0 Flap) (Vy) .....	76
Best RoC (T/O Flap) .....	67
Best AoC (Vx) .....	64
Turbulence.....	129
Max. Cross wind .....	20
Max. Tail wind (T/O) .....	5

## SUPPLEMENTARY PROCEDURES

### B1.16.29 Flight Operations

#### B1.16.29.1 Takeoff and landing at Night

#### B1.16.29.2 Pre-Manoeuvre Procedure

Height ..... RECOVER BY 3000' AGL

Airframe ..... CHECKED      Flaps as required. Hatches closed.

Security..... CHECKED      No loose articles.      Seat belts secure.

Engine T's & P's ..... GREEN      Temperatures      and pressures green

Location ..... CHECKED      Not over built up areas, in suitable airspace, and within gliding distance of a suitable forced landing area.

Lookout..... COMPLETED      Carry out an inspection turn with 30° bank angle for 360°. Before each manoeuvre resulting in a loss of height carry out a clearing turn to ensure the area below the aircraft is clear.

#### B1.16.29.3 Stalling

#### B1.16.29.4 General

During the practice of intentional stalls, the objective is not to learn how to stall an aircraft, but to learn how to recognize an incipient stall and take prompt corrective action.

- a. Incipient Stall - Activation of stall warning devices or a perceptible buffet or other control response; and
- b. Full Stall - Sudden or complete loss of control effectiveness or uncontrollable pitching.

Recovery from the stall should be accomplished by reducing the angle of attack, releasing back elevator pressure, and advancing the throttle to maximum power.

B1.16.29.5 Full Stall

Procedure: For power-off stall from straight and level flight;

- a. Pre-manoeuvre Procedure; H.A.S.E.L.L.
- b. Lookout turn;
- c. Entry: From wings level attitude
  - i. Throttle Levers IDLE.
  - ii. Pitch Levers passing 80kts, FULL FINE.
- d. Recovery (full stall symptoms):
  - i. Control Column Forward - Use opposite rudder for any wing drop
  - ii. Throttle Levers - FULL Power smoothly.
  - iii. Select Climb attitude. - Once positive control regained
  - iv. Accelerate to 80 kts. - Climb to safe height
  - v. Power as required.
- e. Complete After-Takeoff Procedure

B1.16.29.6 Approach Stall

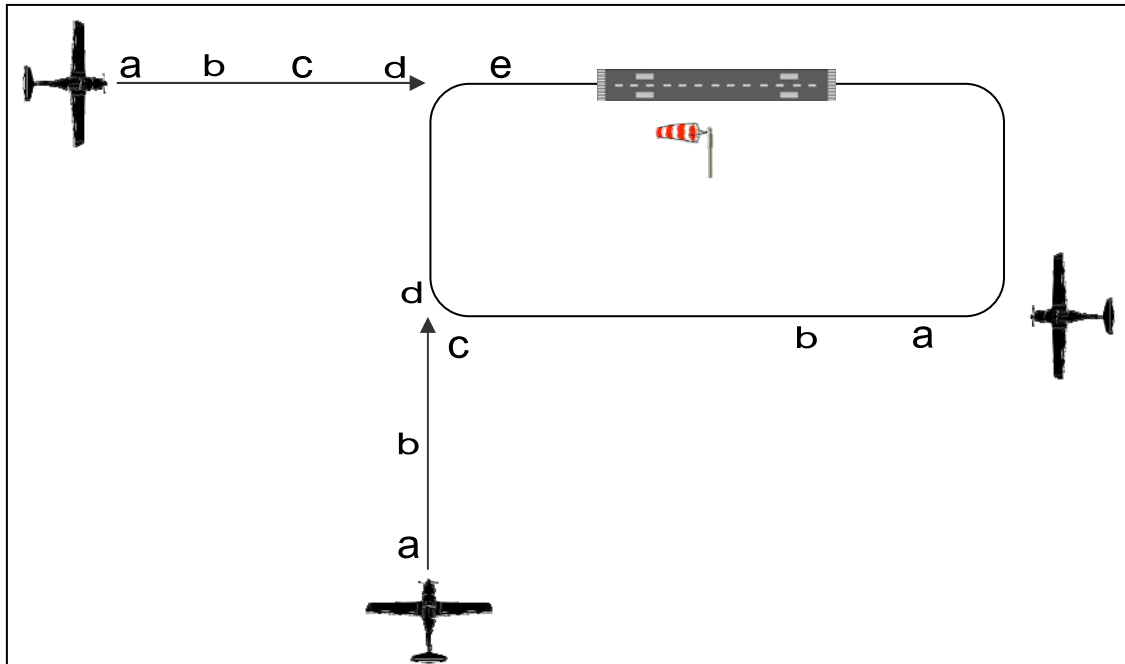
Procedure:

- a. Pre-manoeuvre Procedure;
- b. Lookout turn;
- c. Before Landing Procedure:
  - i. Flaps to Takeoff
- d. Entry:
  - i. Throttle Levers IDLE.
  - ii. Pitch Levers passing 80kts, FULL FINE.
- e. Recovery (incipient stall symptoms):
  - i. Nose Attitude Maintain.
  - ii. Throttle Levers FULL Power smoothly.
  - iii. Flaps UP.
  - iv. Accelerate to 80 kts.
  - v. Power as required, aircraft should maintain altitude during exercise.
- f. Complete After-Takeoff Procedure.



B1.16.29.7    Upset Recovery

- a.    Nose High and Decreasing Airspeed:
  - i.     Move control column forward, push nose towards horizon;
  - ii.    Simultaneously select Maximum Power; and
  - iii.   Roll wings level.
- b.    Nose Low and Increasing Airspeed
  - i.     Reduce Power to Idle;
  - ii.    Roll wings level;
  - iii.   Ease out of dive; once nose attitude above the horizon and
  - iv.    Airspeed below 129 kts, select Maximum Power.

B1.16.29.8 Abnormal Approach and LandingB1.16.29.9 Flapless Approach and Landing

- a. Power: 10" 2400RPM;
- b. Before Landing Procedure:
  - i. Flaps, remain UP
  - ii. Speed 90 kts
- c. Power: Idle;
- d. Speed: 80 knots, power as required;
- e. Landing Checklist; and
- f. Speed:  $V_{APP}$  75 knots,  $V_{REF}$  70 knots.

B1.16.29.10 Practise Glide Approach and Landing

- a. Power: on down wind 20" 2400RPM;
- b. Before Landing Procedure:
  - i. Flaps, remain UP
  - ii. Speed 90 kts;
- c. Power: Idle;
- d. Speed: 75 knots Flap: T/O;
- e. Landing Checklist:

- i. When Landing assured, Flaps: LAND, below 91 knots; and
- ii. Speed:  $V_{APP}$  75 knots,  $V_{REF}$  70 knots.

**Note:**

For practise Glide Approaches from circuit altitude, Power should be reduced to idle abeam Landing Threshold.

For practise Glide Approaches from circuit altitude plus 500', Power should be reduced to idle abeam Initial Aiming Point (1/3<sup>rd</sup> of runway).

**B1.16.29.11 Forced Landings**

- a. Recommended Gliding Airspeed: 75 kts, for all configurations.
- b. Engine Failure after Take-off:
  - i. Set Glide Attitude, achieve Glide Airspeed and Trim; and
  - ii. Land ahead.
- c. Engine Failure in Cruise:

Engine as much of the following actions, height permitting:

- i. Convert excess Airspeed to maintain height;
- ii. Set Glide Attitude, achieve Glide Airspeed and Trim;
- iii. Immediate Actions "AF M":
  - Alternate Air ON
  - Fuel Tanks Selector CHANGE
  - Fuel Pump ON
  - Mixture RICH
- iv. Select suitable field for landing;
- v. Trouble Actions "AF MOST":
  - Alternate Air ON
  - Fuel Tanks Selector CHANGE
  - Fuel Pump ON
  - Mixture RICH
  - Oil Temperature/Pressure CHECK
  - Switches (Ignition) CYCLE THEN BOTH
  - Throttle CHECK RESPONSE
- vi. Make a Distress radio broadcast;

## vii. Passenger Briefing:

- What has happened?
- What will PIC do?
- What are PAX to do?

## viii. Shutdown Actions "BSH":

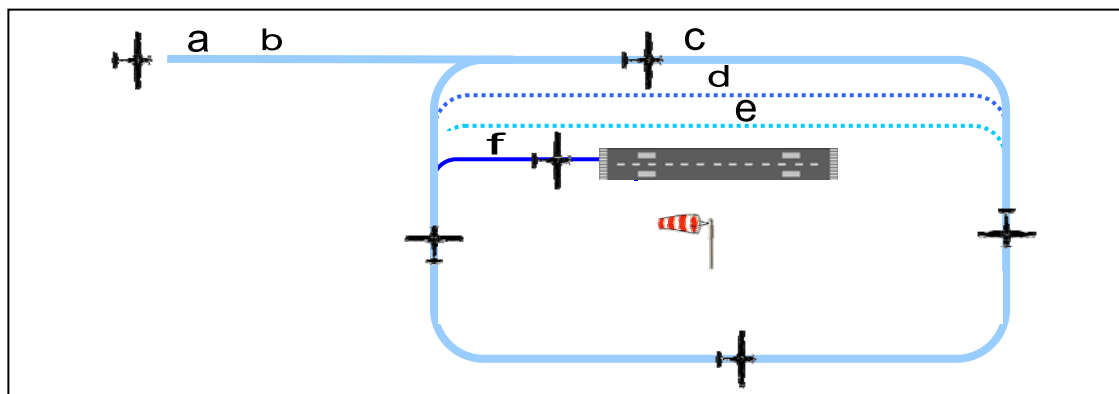
- Brakes OFF
- SHUTOFF FUEL  
MIXTURE
- MAGNETO
- MASTER
- HARNESS SECURE

B1.16.29.12 Low Level Flight

PIC is to maintain an enhanced lookout during Low Flight Operations. Prior to descending Low Level the Low Level Procedure must be completed.

B1.16.29.13 Low Level Procedure "FREHA"

- a. Fuel: CHECK
  - i. Fuel ON and sufficient.
  - ii. Mixture selected to RICH.
  - iii. Fuel Pup selected to ON;
- b. Radio: CHECK
  - i. Correct Frequency, Volume.
  - ii. Radio Calls as required;
- c. Engine: CHECK
  - i. Temperature and Pressure in limits.
- d. Heading: CHECK
  - i. HIS aligned with Standby Compass, position checked
- e. Altitude: CHECK
  - i. Area QNH set.

B1.16.29.14 Precautionary Search and Landing

- a. Complete LOW Level Procedure;
- b. Configure aircraft for Slow Flight:
  - i. Power: 17" 2400 RPM;
  - ii. Flaps: T/O, below 108 kts; and
  - iii. Airspeed: 80 Kts.
- c. First Inspection:
  - i. 500' AGL;
  - ii. Runway Direction;
  - iii. Runway Length;
  - iv. Ground Speed / 2 = metres per second; and
  - v. Obstacles
- d. Second Inspection:
  - i. 200' AGL;
  - ii. Undershoot / Overshoot;
  - iii. Power lines; and
  - iv. Climb 500' AGL
- e. Third Inspection:
  - i. 50' AGL;
  - ii. Strip Condition; and
  - iii. Climb 500' AGL
- f. Approach and Landing.

**B1.16.30 Aircraft General****B1.16.30.1 Observation Flight Policy**

An observation Flight is defined as the carrying of additional crew on any training flight where student syllabus instruction, student or staff testing and surveillance flights are conducted.

a. Observation by a student

The following conditions apply:

- i. Dual flights only;
- ii. Only one student permitted to observe;
- iii. The observing student is at a comparable stage of training;
- iv. The computer authorisation screen should show the observer as crew;  
and
- v. Weight and balance must be checked, and within limits for the flight.

b. Observation by a qualified pilot

The following conditions apply:

- i. Approved pilots only;
- ii. The computer authorisation screen should show the observer as crew;  
and
- iii. That the carriage of an additional person is of a training benefit.

**B1.16.30.2 Carrying of Passengers**

Refer OM TRG-D.022 Part E2.48, page 73.

**B1.16.31 Fuel****B1.16.31.1 Self Service Procedure**

Approved pilots may refuel the aircraft manually following the forthcoming procedures:

- a. Check fuel grade suitable;
- b. Check Fire extinguishers, static lead are serviceable;
- c. Note location of Emergency Stop Button;
- d. Connect Static Lead to Nose Wheel bonding point;
- e. Follow Service Provider refuelling and payment procedure;

- f. Record:
  - i. Amount of fuel taken; and
  - ii. Total price for fuel.
- g. Input data into Flight Program on completion of flight.

**Note:**

Refer to CAO 20.9 for safety precautions.

**B1.16.32 Adverse Weather****B1.16.32.1 General**

Aircraft operation in adverse weather conditions may require additional considerations due to effects of extreme temperatures, precipitation, turbulence, and windshear. Procedures in this section supplement normal procedures and should be observed when applicable.

**B1.16.32.2 Takeoff - Wet or Contaminated Runways**

For wet runways, exercise caution and consider effect on Takeoff performance.

For runways contaminated by slush, snow, standing water, or ice, Takeoff is not recommended.

**B1.16.32.3 Cold Weather Operation****a. Exterior Inspection**

The PIC or Student should carefully inspect areas where surface frost could change or affect normal system operations. Take-off with coatings of frost/ice on wing surfaces is not permitted.

Do the normal Exterior Inspection with the following additional steps:

- i. Aircraft Surfaces.....Check
  - Verify that all surfaces are free of ice
- ii. Pitot probes and static ports.....Check
  - Verify that all pitot probes and static ports are free of ice.
- iii. Engine inlets.....Check
  - Verify that the inlet cowling is free of ice.

## b. Oil Temperature

Prior to the Run-up procedure, the Oil Temperature must be greater than 100°F.

Additional warm-up time may be needed to allow the Oil Temperature to reach the normal Operating range in cold conditions.

Power may be increased to 1500RPM, to achieve quicker warm-up times.

B1.16.32.4 Hot Weather Operation

Temperature Limitations:

- a. Dual operations up to and including 40.0 °c; and
- b. Solo operations up to and including 35.0 °c.

B1.16.32.5 Turbulence

Severe turbulence is to be avoided. The turbulent air penetration speed provides protection from stalling, while also providing protection from exceeding the structural limit.

## a. Structural Considerations

Flap extension in an area of known turbulence should be delayed as long as possible because the airplane can withstand higher gust loads in the clean configuration. Diversion to another airfield is recommended if severe turbulence persists in the area.

## b. Flight in Severe Turbulence

Trim the airplane for the turbulent air penetration speed. Control the airplane pitch attitude with the elevators using the attitude indicator as the primary instrument. In extreme drafts, large altitude changes may occur. Do not make sudden large control inputs. Corrective actions to regain the desired attitude should be smooth and deliberate. Altitude variations are likely in severe turbulence and should be allowed to occur if terrain clearance is adequate. Control airplane attitude first, then make corrections for airspeed, altitude, and heading.

B1.16.32.6 Windshear

Windshear is a change of wind speed and/or direction over a short distance along the flight path

## a. Avoidance

The flight crew should search for any clues to the presence of windshear along the intended flight path. Presence of windshear may be indicated by:

- i. Thunderstorm activity;
- ii. Virga (rain that evaporates before reaching the ground);
- iii. Pilot reports; and
- iv. Low level windshear alerting (LLWAS) warnings.



Stay clear of thunderstorm cells and heavy precipitation and areas of known windshear. If the presence of windshear is confirmed, delay takeoff or do not continue an approach.

#### **B1.16.29.7      Precautions - Takeoff**

If windshear is suspected, be alert to any of the danger signals and be prepared for the possibility of an inadvertent encounter. The following precautionary actions are recommended if windshear is suspected:

- a. Use flap UP unless limited by obstacle clearance and/or climb gradient;
- b. Use the longest suitable runway provided it is clear of areas of known windshear;
- c. Be alert for any airspeed fluctuations during takeoff and initial climb. Such fluctuations may be the first indication of windshear; and
- d. Know the initial climb pitch attitude. Rotate at the normal rate to this attitude. Minimize reductions from the initial climb pitch attitude until terrain and obstruction clearance is assured, unless stall warning activates.

Develop an awareness of normal values of airspeed, attitude, vertical speed and airspeed build-up. Closely monitor vertical flight path instruments such as vertical speed and altimeters.

#### **B1.16.29.8      Precautions - Approach and Landing**

- a. Use flaps TO for landing;
- b. Establish a stabilized approach no lower than 500 feet above the airport to improve windshear recognition capability;
- c. Use the longest suitable runway provided it is clear of areas of known windshear;
- d. Use the most suitable runway that avoids the areas of suspected windshear and is compatible with the crosswind or tailwind limitations;
- e. Add an appropriate airspeed correction (correction applied in the same manner as gust);
- f. Avoid large power reductions or trim changes in response to sudden airspeed increases as these may be followed by airspeed decreases; and
- g. Coordination and awareness are very important, particularly at night or in marginal weather conditions. Closely monitor the vertical flight path instruments such as vertical speed, altimeters and glide slope displacement.