# CHECK FLIGHT CERTIFICATE

**Boeing 747-400**
(RR RB211-524G and 524H2)

**CFS 244 Issue 1, April 2006**

| Date: | Crew: | Observer: | Registration: |
|---|---|---|---|

| **Performance** | Climb #1 | Climb #2 | |
|---|---|---|---|
| Average Weight | | | |
| Average Altitude | | | ft |
| Average Temp. | | | °C |
| Speed | | | KIAS |
| Achieved Rate | | | fpm |
| Scheduled Rate | | | fpm |
| Margin | | | fpm |
| Permitted Margin | -80 | -120 | fpm |

Airfield:

Start Weight Kg/Lbs*:

Takeoff cg:

Performance:

SATIS/UNSATIS/NOT APPLICABLE*

*(delete as applicable)**

**Defects**

| No. | Defect | -/R/FT | Action? |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

(use a continuation sheet as necessary)

**Conclusions/Comments**

I CERTIFY that I have tested the above aircraft and have detailed the deficiencies and unsatisfactory features above. Those items annotated R or FT must be dealt with as shown in the notes on the reverse side.

| Name: | Signed: | Date: | Licence No.: |
|---|---|---|---|
| For CAA Use only | Report Logged by: | Date: | Report No.: |

## NOTES

### General

Only CAA personnel or pilots specifically briefed to carry out CAA check flights may conduct the test.
General notes on test conduct can be found in the CAA Check Flight Handbook.
This sheet replaces any check flight certificate given in the schedule.
*Registration:* If the aircraft is not on the UK register, add the manufacturer's serial number and expected UK registration (if known).
*Crew:* Captain, Co-pilot, Flight Engineer (where applicable).
*Airfield:* Departure airfield.
*Start Weight:* Actual all up weight at first engine start. Also delete Kg or Lbs as appropriate.
*Takeoff cg:* Actual cg at lift-off, preferably as a % of the Mean Aerodynamic Chord.

### Performance

A full description of climb analysis is given in the CAA Check Flight Handbook.
*Climb#1/Climb#2:* Enter in these columns data from the first and second climbs.
*Average Weight:* The aircraft all up weight at the midpoint of the measured climb.
*Average Altitude:* The altitude at which the line drawn to average the measured points passes through at the mid time.
*Average Temp:* The temperature at which the line drawn to average the measured points passes through at the mid time.
*Speed:* The target climb speed (Indicated Airspeed.)
*Achieved Rate:* The climb rate as given by the slope of the line drawn to average the measured altitude points in feet per minute.
*Scheduled Rate:* The expected gross rate of climb read from the appropriate graph in the Flight Manual with any adjustments for configuration differences. For large aircraft, the basic gross data are normally to be found in a separate supplement labelled 'Additional Flight Test Data'.
*Margin:* The difference between the Scheduled and Achieved rates of climb (negative if achieved is lower than scheduled).

### Defects

Enter all defects from the flight. All defects must also be entered in the Technical Log. Procedural items entered in the Technical Log (such as re-stowing oxygen masks) need not be entered here. Items affecting flight safety which were known before the flight, whether or not they were deferred should be entered. In the latter case, the defect should be annotated accordingly after the details.
*No.:* The first column is to allow the items to be numbered.
*Defect:* Enter details of the defect.
*-/R/FT:* Classify each defect according to its impact on safety, regardless of whether it can be deferred according to the MEL. Any deferrals should be dealt with in the normal way in the Technical Log. Items requiring rectification (or deferral under the MEL) before further flight for hire or reward or before the issue of the CofA should be marked 'R'. Additionally, items that require re-checking in-flight following rectification (such as inadequate climb performance) should be marked 'FT'. Items requiring both should be marked 'R/FT'.
*Action?:* This column should be left blank unless further information is required from the engineers or the item is considered to be of sufficient import that CAA action is considered necessary, then the person/department/agency from whom further action is required should be noted in this column. Annotate accordingly if an MOR or similar report is to be raised.

### Conclusions/Comments

Any conclusions, notes or comments useful for tracking defects may be entered.
*Name:* Only the pilot who carried out the test may sign this sheet.

## CAA Check Flight Schedules

All CAA Check Flight Schedules (CFSs) are prepared based on a design standard which, before September 2003, was the UK Type Certificate. Following the creation of EASA there may be different design standards in service within the European Union (EU) - this may include modifications approved in any EU country.

It is the responsibility of the flight crew to ensure that the exercises and limitations in the CFS are correct for the aircraft under test.

The prime source of information will be the aircraft flight manual and in the event of conflict the flight manual should be taken as overriding.

CAA policy is that pilots who conduct check flights on behalf of the Authority must be acceptable to the Authority, must have been briefed on techniques and safety considerations before carrying out the tests in these schedules and must have carried out a check flight within the last 4 years.

The CAA does not accept responsibility for the use of a CAA CFS on a test flight not directly under their control.

| | |
|---|---|
| Registration: | |
| Flight Date: | |

INTRODUCTION

This schedule is applicable only to Boeing 747-400 aircraft with RR RB211-524G and 524H2 engines. It is based on the assumption that the everyday operation of the aircraft serves as a continuous check on the functioning of all normal services. On these test flights, however, the crew are expected generally to monitor the behaviour of all equipment and report any unserviceable items. In addition to completing all the required tests in this schedule, any characteristics which are considered unsafe or undesirable must be recorded.

MINIMUM CREW

The minimum flight crew shall be increased by one flight observer to record the results of the tests. The pilot conducting the tests shall be specifically approved by the CAA (SRG) for airworthiness flight testing of Boeing 747 aircraft.

PASSENGERS

Commanders are reminded that it is illegal to carry passengers on a test flight made under 'A' conditions, except where they are required to perform duties in the aircraft in connection with the flight. While it is legal to carry passengers on a test flight of an aircraft with a valid Certificate of Airworthiness, the practice is not recommended. If passengers are carried, however, they should be informed that the risk is greater than on an ordinary flight.

TEST SCHEDULE

The pilot conducting the tests must be familiar with the contents of this schedule before flight. All members of the required minimum crew must be provided with copies of the schedule for use in flight.

The data contained in this schedule is correct at the time of writing, but might not be in agreement with subsequent Flight Manual amendments; in cases of conflict, the Flight Manual is overriding, and CAA (SRG) Flight Department must be informed. The altitude conditions in the schedule must be observed to ensure adequate safety and validity of the test results. The tests should, if possible, be carried out in the sequence as written.

LOADING

The aircraft should be loaded with not less than 50000 kg of fuel. This will result in an estimated minimum ramp loading of around 230,000 kg and 23% MAC c of g. The aircraft should not be loaded above MLW. The flight time is estimated at 3 hours. Accurate weights will be required to be recorded at specific points during the flight.

PRE-FLIGHT INFORMATION

| | | | |
|---|---|---|---|
| Aircraft Registration | | Operator | |
| Location | | Date | |
| Flight number | | | |

| Crew | | |
|---|---|---|
| | 1st Pilot | |
| | 2nd Pilot | |
| | Observer | |

| Loading: | | |
|---|---|---|
| | Zero Fuel Weight | kg |
| | Ramp Weight | kg |

Fuel Contents:

| CENTRE | | | |
|---|---|---|---|
| | | | |

| MAIN 1 | MAIN 2 | MAIN 3 | MAIN 4 |
|---|---|---|---|
| | | | |

| RES 2 | RES 3 |
|---|---|
| | |

| | |
|---|---|
| Stabiliser fuel | kg |
| Total Fuel Weight | kg |
| CG | % MAC |

## TEST SCHEDULE

## 1. PRE-FLIGHT CHECKS

### 1.1 Before Engine Start

1.1.1 Flight deck markings and placards

Check for presence, accuracy and legibility. SAT/UNSAT

**Record any deficiencies:**

### 1.2 After Engine Start

1.2.1 Engine idle settings (for aircraft registrations G-BNLA to G-BNLZ and G-CIVA to G-CIVG)

With flaps set to 25°, record the engine N1 values. Trip the CB's for primary and alternate landing gear control and display (Panel P7, F22 and F23).

**Note engine N1's increase. Record the stabilised values:**

| Engine | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| Idle N1 - original value | | | | |
| Idle N1 - increased value | | | | |

Confirm increase on each engine is approx. 10% $N_1$ SAT/UNSAT

(**Note:** Primary LG Circuit Breaker controls engines 1 and 2, and the alternate LG Circuit Breaker controls engines 3 and 4)

Reset both CB's.

Check $N_1$'s return to original values SAT/UNSAT

**Leave flaps at 25° for the next test**

1.2.2 Take-off configuration warning.

Hydraulic pumps ON

Parking brakes off (Feet on Brakes)

Using the take-off warning test on the CMC Confidence Tests page, check that the take-off configuration warning (aural, master warning light and appropriate EICAS message) operates in each of the following cases:

- Flaps more than 20° — SAT/UNSAT

  Set flaps to 20°

- Stabiliser set nose down beyond green band (limits : edge of green band plus 0.5 div.) — SAT/UNSAT

- Stabiliser set nose up beyond green band (limits: edge of green band plus 0.5 div.) — SAT/UNSAT

- Flaps less than 10° — SAT/UNSAT

- Parking brake set

**Reset flaps, stabiliser trim and hydraulic pumps as required**

1.2.3 Take-off configuration warning body gear steering.

With stabiliser, speed brakes and flaps set for take-off and at a low groundspeed, initiate a significant turn to function the body gear steering. Using the take-off warning test on the CMC Confidence Tests page to confirm operation of the TO configuration warning. — SAT/UNSAT

1.2.4 Take-off configuration warning : speed brakes and thrust lever setting.

With the aircraft positioned so that a high thrust can be set and with the flaps and stabiliser trim set for take-off and parking brake released, set the speedbrake lever slightly out of the down detent.

Advance each inboard thrust lever in turn and record the N1's when the T.O. configuration warning operates:-

| | **No.2** | **No.3** |
|---|---|---|
| **N1%** | | |

(Limit : not less than 70% $N_1$) — SAT/UNSAT

**Restow speed brakes and confirm configuration set for take-off**

## 2. TAKE OFF

Carry out a normal full thrust take-off. Record any unusual characteristics.

| | |
|---|---|
| | SAT/UNSAT |

After take-off set pressurisation LDG ALT to MAXIMUM and select a cruise altitude of 18000 ft on FMC.

## 3. FUNCTIONING - RELIGHTS / PRESSURISATION / FUEL JETTISON

3.1 Crew oxygen masks and microphones

Check each crew oxygen mask for satisfactory oxygen flow and intercom:

| | CAPT | F/O | 1st OBS | 2nd OBS |
|---|---|---|---|---|
| **Oxygen** | SAT/UNSAT | SAT/UNSAT | SAT/UNSAT | SAT/UNSAT |
| **Intercom** | SAT/UNSAT | SAT/UNSAT | SAT/UNSAT | SAT/UNSAT |

**Note:** No Mask Mic at 2nd Obs Stn

3.2 Cabin Altitude Limiting, Altitude Warning and Oxygen Dropout FL180

Confirm - AUTO pressurisation control
- LDG ALT MAXM
- Select MANUAL L and Manual R
- Adjust outflow valves to de-pressurise cabin

**Record:**

Cabin altitude when warning occurs ____ ft

(limits 9,000 -11000 feet) SAT/UNSAT

Select - outflow valves OPEN slowly to achieve a cabin rate of climb of 1000 to 2000ft/min.

**Record:**

Cabin altitude when passenger oxygen dropout occurs ____ ft

(limits 13,250 to 15000 feet) SAT/UNSAT

Reduce cabin altitude in manual mode to below 8000 ft.
With cabin altitude stabilised, reset outflow valves to AUTO.
Set LDG ALT to sea level.
When convenient, inspect cabin and record positions of any oxygen stowages that failed to open.

| | |
|---|---|
| | SAT/UNSAT |

**Reset passenger oxygen system and FMC cruise level as required**

3.3 No.4 Engine Relight | 18000 ft

Shutdown No.4 engine after 5 minutes at idle. Following a 3 minute shutdown period, relight No.4 engine using the starter assist procedure at 160 KIAS at 18000ft, using an appropriate flap setting.

| | | | | | | |
|---|---|---|---|---|---|---|
| Altitude: | ft | IAS | KIAS | TAT | °C | |
| Windmilling: | N1 % | N2 | % | N3 | % | |
| Time from fuel on to EGT rise | sec | (limit 30 sec) | | | | |
| Maximum EGT during relight | °C | | | | | |
| Time from fuel on to stabilised idle | sec | SAT/UNSAT | | | | |

**Leave No. 4 engine at idle for 5 minutes after relighting**

3.4 Fuel Jettison

Confirm flaps UP
Switch Override Fuel pumps to ON

Select
- FUEL page on EICAS
- FUEL JETTISON rotary switch to A
- FUEL TO REMAIN to 2000 kg above total fuel remaining
- L and R NOZZLE P/B's to ON

Check - no fuel jettison occurs — SAT/UNSAT

Select
- L and R NOZZLE P/B's to OFF
- FUEL TO REMAIN to 1000 kg below total fuel remaining
- L and R NOZZLE P/B's to ON

Check - fuel jettison from each nozzle — SAT/UNSAT

Select - FUEL JETTISON rotary switch to B

Check - fuel jettison from each nozzle continues — SAT/UNSAT

Select - FUEL TO REMAIN to above total fuel remaining

Check - fuel jettison from each nozzle ceases — SAT/UNSAT

Select
- FUEL JETTISON rotary switch OFF
- L and R NOZZLE P/B's OFF

**Resume normal fuel management**

**Idle engines 1 and 2 for 5 minutes**

3.5 No.1 Engine Relight | FL200

Shut down No.1 engine after 5 minutes at idle. After a 3 minute shutdown, carry out a windmill relight on No.1 engine at 240 KIAS.

| | | | | | | |
|---|---|---|---|---|---|---|
| Altitude | ft | IAS | kts | TAT | °C | |
| Windmilling | N1 % | N2 | % | N3 | % | |
| Time from fuel on to EGT rise | sec | (limit 30 sec) | | | | |
| Maximum EGT during relight | °C | | | | | |
| Time from fuel on to stabilised idle | sec | SAT/UNSAT | | | | |

**Leave No. 1 engine at idle for 5 minutes after relighting**

3.6 No.2 Engine Relight | FL200

Shut down No. 2 engine after 5 minutes at idle. After a 3 minute shutdown period, carry out a windmill relight on No.2 engine at 240 KIAS using STBY IGNITION 1. (Continuous ignition off – trip CBs IGN 1 Eng 2 P6-1 F2 and IGN 2 Eng 2 P6-3 K20)

| | | | | | | |
|---|---|---|---|---|---|---|
| Altitude | ft | IAS | kts | TAT | °C | |
| Windmilling | N1 % | N2 | % | N3 | % | |
| Time from fuel on to EGT rise | sec | (limit 30 sec) | | | | |
| Maximum EGT during relight | °C | | | | | |
| Time from fuel on to stabilised idle | sec | SAT/UNSAT | | | | |

**Leave No. 2 engine at idle for 5 minutes after relighting**

**Select STBY IGNITION to NORM, reset CBs. and balance fuel by crossfeeding as necessary**

## 4. AIRCRAFT CONTROLS AND TRIMMERS

In climb to FL350

Establish a normal climb and trim the aircraft accurately about all axes with symmetric thrust set.

Record trim settings:

| | | | |
|---|---|---|---|
| Rudder | | (limit ± ½ div) | SAT/UNSAT |
| Aileron | | (limit ± ¼ div) | SAT/UNSAT |

| | |
|---|---|
| Check - primary controls for normal characteristics | SAT/UNSAT |
| - operation of flying control trimmers | SAT/UNSAT |
| - operation of stabiliser alternate trim | SAT/UNSAT |
| - operation of stabiliser trim cut out switches | SAT/UNSAT |
| - operation of upper yaw damper | SAT/UNSAT |
| - operation of lower yaw damper | SAT/UNSAT |

## 5. PRESSURISATION

FL350

5.1 Normal Maximum Pressure Differential

With LDG ALT set to sea level, and pressurisation control in AUTO record:

| | | | |
|---|---|---|---|
| Cabin altitude | ft | | |
| Aircraft altitude | ft | | |
| Indicated Cabin Differential Pressure | psi | (limits 8.5 to 9.1 psi) | SAT/UNSAT |

Select 2 AC packs OFF (each permutation in turn)

Check - remaining pack goes to HI FLOW (EICAS ECS synoptic page) SAT/UNSAT

- maximum cabin differential is maintained on a single pack

No. 1 pack only: SAT/UNSAT No. 2 pack only: SAT/UNSAT No. 3 pack only: SAT/UNSAT

**Reset all packs ON**

5.2 Equipment Cooling

Conditions
- MAN pressurisation control
- autothrottles OFF
- zero cabin rate of climb with cabin differential not less than 8.0 psi

Select EQUIP COOLING rotary switch to OVRD.

Check that cabin climbs at approx 500 feet/min — SAT/UNSAT

Select EQUIP COOLING rotary switch to NORM

Check that cabin rate returns to zero — SAT/UNSAT

5.3 Safety Relief Valve Operation

Conditions
- 3 packs ON and HI FLOW
- MAN pressurisation control

Select outflow valves closed. When safety relief occurs, as indicated by inability to increase cabin differential further, record:

| | | | |
|---|---|---|---|
| Cabin altitude | ft | | |
| Aircraft altitude | ft | | |
| Indicated Cabin Differential Pressure | psi | (limits 9.1 to 9.6 psi) | SAT/UNSAT |

CAUTION : DO NOT EXCEED 9.8 psi

Check that No. 2 pack has tripped OFF (EICAS ECS synoptic page) — SAT/UNSAT

Reduce differential pressure in manual mode to the normal limit recorded in item 5.1. Reset to AUTO control with HI FLOW and LDG ALT as required.

Restore No. 2 pack using PACK RESET.

**6. HIGH MACH WARNING**

Recommended starting FL350. Minimum recovery FL300

This test is to be performed clear of cloud and in smooth air. Using maximum continuous thrust accelerate in a shallow dive to a maximum of Mach 0.92. Record Mach No from each pilot's PFD when high Mach warning occurs:

| | | | |
|---|---|---|---|
| CAPT | IMN | F/O | IMN |

(limits 0.905 to 0.92 IMN) — SAT/UNSAT

Retard thrust levers and extend speedbrakes to recover to normal speeds. Confirm normal handling characteristics of gentle pitch up and no significant roll input on extending speedbrakes. — SAT/UNSAT

**Leave No 3 engine at idle in preparation for item 7**

## 7. ENGINE RELIGHTING

FL300

Shutdown No 3 engine after idling for 5 minutes. Following a 3 minute shutdown period, carry out a windmill relight on no 3 engine at FL300, 280 KIAS, using STBY IGNITION 2 (Continuous Ignition OFF – trip CBs IGN 1 Eng 3 P6-1 F3 and IGN 2 Eng 3 P6-3 K21)

Altitude: ____ ft IAS ____ kts TAT ____ °C

Windmilling: N1 ____ % N2 ____ % N3 ____ %

Time from fuel on to EGT rise ____ sec (limit 30 sec)

Maximum EGT during relight ____ °C

Time from fuel on to stabilised idle ____ sec SAT/UNSAT

**Leave No. 3 engine at idle for 5 minutes after relighting**

**Select STBY IGNITION to NORM. Reset CBs**

## 8. HIGH SPEED WARNING

Recommended starting FL190 (Limit FL190 to FL150)

This test should be made clear of cloud and in smooth air. Using maximum continuous thrust accelerate to a maximum of 385 KIAS. Record IAS from each pilot's PFD when high speed warning occurs:

CAPT: ____ KIAS F/O: ____ KIAS

(limits 365 to 375 KIAS) SAT/UNSAT

Retard thrust levers and extend speedbrakes to recover to normal speeds. Confirm normal handling characteristics of gentle pitch up and no significant roll input on extending speedbrakes. SAT/UNSAT

## 9. STALL WARNING

Recommended FL150 (Limit FL180 to FL120)

**NOTE:** Aircraft weight not to exceed maximum landing weight for these tests.

The stall approaches are to be carried out clear of cloud and turbulence. For each test the aircraft is to be trimmed in a power off straight descent at the scheduled trim speed. The speed should then be reduced smoothly at approximately 1 knot per second until operation of the stall warning (stick shaker) or, in the absence of stall warning, the scheduled warning (stick shaker) speed minus 5 knots.

Recover by lowering the nose and applying thrust smoothly as the speed increases away from the stall. There is no emphasis on minimising height loss during these test stalls and recoveries; clearance should be obtained from ATC to operate in an altitude block of not less than 5000 feet.

Scheduled trim and stall warning (stick shaker) speeds are given in Table 1

9.1 Clean Configuration

**Record:**

| | | | |
|---|---|---|---|
| **Aircraft Weight:** | kg | | |
| **Trim Speed:** | | **Elevator Trim:** | |

| | **SCHEDULED** | **ACHIEVED** | |
|---|---|---|---|
| **Stick Shake:** | | | Limits ± 8 KIAS |
| | | | SAT/UNSAT |

9.2 Flaps 10°, Gear Up

**Record:**

| | | | |
|---|---|---|---|
| **Aircraft Weight:** | kg | | |
| **Trim Speed:** | | **Elevator Trim:** | |

| | **SCHEDULED** | **ACHIEVED** | |
|---|---|---|---|
| **Stick Shake:** | | | Limits ± 4 KIAS |
| | | | SAT/UNSAT |

9.3 Flaps 30°, Gear Down

**Record:**

| | | | |
|---|---|---|---|
| **Aircraft Weight:** | kg | | |
| **Trim Speed:** | | **Elevator Trim:** | |

| | **SCHEDULED** | **ACHIEVED** | |
|---|---|---|---|
| **Stick Shake:** | | | Limits ± 4 KIAS |
| | | | SAT/UNSAT |

**10. ENGINE ACCELERATION TIMES** Recommended FL110 (Limit FL80 to FL115

Configuration - 160 KIAS
- 3 AC packs ON
- Gear up
- Flaps 25°

Check siren sounds, Master and Configuration warning lights illuminate and CONFIG GEAR message displayed on EICAS. SAT/UNSAT

Push either Master Warning/Caution light. Check:
Master Warning / Caution lights cancel.

Aural warning and Configuration Gear Message not cancelled SAT/UNSAT

Push the GND PROX/GEAR OVRD switch

The aural configuration warnings above are inhibited. SAT/UNSAT

**Record:**

Altitude [ ft ] TAT [ °C ]

H Rating: Scheduled EPR =1.769 if press altitude above 6000ft and TAT below +15ºC
Subtract 0.0018 EPR per deg C above 15ºC TAT

G Rating: Scheduled EPR. See Table 2

In-flight take-off Scheduled EPR [ ]

On each engine in turn, close the thrust lever and allow engine to stabilise at idle then rapidly open the thrust lever to achieve GA thrust. Time the acceleration from idle to the in-flight take-off EPR.

| **ENGINE** | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| **IDLE N1%** | | | | |
| **IDLE N2%** | | | | |
| **IDLE N3%** | | | | |
| **Accel. Time sec (Limit 8 sec.)** | | | | |

SAT/UNSAT

After completion, accelerate, retract flaps.
Reset GND PROX/ GEAR OVRD switch only if next exercise is not carried out.

11. ALTERNATE FLAP AND GEAR OPERATION Recommended FL100

11.1 Flaps

| | |
|---|---|
| Airspeed | 230KIAS |
| GND PROX/GEAR OVRD | OVRD |
| ALT FLAP | ARM |
| ALT FLAPS | EXT to 25◦ |

As the flaps extend reduce airspeed so as to remain within flap speed limits.

Record flap operating times:-

| | OPERATING TIME | LIMIT | |
|---|---|---|---|
| LEADING EDGE | sec | 100 sec | SAT/UNSAT |
| TRAILING EDGE TO 25° | sec | 5½ min | SAT/UNSAT |

Select - normal flap lever to 20°

- ALTN FLAPS to RET and confirm flaps retract SAT/UNSAT

When flaps reach 20° select -ALTN FLAPS to OFF and disarm
-Reset GND PROX/GEAR OVRD switch
-Retract the flaps to 5° then 1° on the normal system

11.2 Gear

Configuration - 220 KIAS, Flaps 1
- Normal gear lever OFF

Select WING ALTN GEAR EXTEND switch to EXTEND

Record wing gear extension time | sec |

(limit 40 sec.) | SAT/UNSAT |

Select NOSE/BODY ALTN GEAR EXTEND switch to EXTEND and record gear extension times:

| | | | |
|---|---|---|---|
| BODY GEAR | | (limit 30 sec) | SAT/UNSAT |
| NOSE GEAR | | (limit 60 sec) | SAT/UNSAT |

Leaving both ALTN GEAR EXTEND switches at EXTEND, wait 90 sec, then select the normal gear lever to DN. Monitor gear door operation on the EICAS gear synoptic page.

Confirm gear doors close normally | SAT/UNSAT |

When all gear doors have closed:
- select ALT GEAR EXTEND switches OFF
- retract the gear on the normal system

Retract flaps as required on normal system

## 12. LANDING

Carry out a normal landing using maximum reverse thrust if conditions permit.

**Record any abnormal characteristics:**

| |
|---|
| |

SAT/UNSAT

Maximum Reverser $N_1$%

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| | | | |

## 13 WHEEL BRAKES

The following checks should be carried out at a low taxy speed and clear of obstacles.

| | |
|---|---|
| Confirm satisfactory wheel braking with all hydraulic systems pressurised and that the BRAKE SOURCE light remains extinguished. | SAT/UNSAT |

Depressurise No 4 hydraulic system.

| | |
|---|---|
| Check brake operation with pressure supplied by No 1 hydraulic system (BRAKE SOURCE light remains extinguished and NORMAL BRAKE ACCUMULATOR pressure does not reduce). | SAT/UNSAT |

Depressurise No 1 hydraulic system.

**Note:** Depressurizing the No 1 system disables the nosewheel steering.

| | |
|---|---|
| Check brake operation with pressure supplied by No 2 hydraulic system (BRAKE SOURCE light remains extinguished and NORMAL BRAKE ACCUMULATOR pressure does not reduce). | SAT/UNSAT |

Depressurise No 2 hydraulic system.

| | | |
|---|---|---|
| Check | - BRAKE SOURCE light illumination. | SAT/UNSAT |
| | - brake operation with pressure supplied by the accumulator. | SAT/UNSAT |

**Restore all hydraulic systems to normal**

**Table 1**

**Trim and Stall Warning Speeds - KIAS**

**CG 24 % MAC**

| | Flaps Up | | Flaps 10 Gear Up | | Flaps 30 Gear Down | |
|---|---|---|---|---|---|---|
| Weight 1000kg | Trim | Stick Shake ** | Trim | Stick Shake | Trim | Stick Shake |
| 280 | 224 | 189 | 170 | 144 | 150 | 128 |
| 275 | 222 | 187 | 168 | 143 | 149 | 127 |
| 270 | 219 | 185 | 166 | 141 | 147 | 126 |
| 265 | 217 | 184 | 165 | 140 | 146 | 124 |
| 260 | 214 | 182 | 163 | 139 | 144 | 123 |
| 255 | 212 | 180 | 161 | 137 | 143 | 122 |
| 250 | 209 | 178 | 159 | 136 | 141 | 120 |
| 245 | 207 | 176 | 157 | 134 | 140 | 119 |
| 240 | 204 | 175 | 155 | 133 | 138 | 118 |
| 235 | 201 | 173 | 154 | 131 | 136 | 117 |
| 230 | 198 | 171 | 152 | 129 | 135 | 115 |
| 225 | 196 | 169 | 150 | 128 | 133 | 114 |
| 220 | 193 | 167 | 148 | 127 | 131 | 112 |
| 215 | 192 | 165 | 145 | 124 | 128 | 111 |
| 210 | 189 | 163 | 144 | 123 | 127 | 110 |
| 205 | 185 | 161 | 141 | 121 | 126 | 108 |
| 200 | 183 | 159 | 138 | 120 | 123 | 107 |
| Tol | | ±8 kt | | ±4 kt | | ±4 kt |

****** Decrease shake speed by 1 kt per 5% cg change aft of 24% MAC
Increase shake speed by 1 kt per 5% cg change forward of 24% MAC

**Table 2**

**Go-Around Power Setting G Rating**

**3 Packs ON**

| | TAT | | | | |
|---|---|---|---|---|---|
| Altitude ft | +3ºC | +6ºC | +9ºC | +12ºC | +15ºC |
| 7000 | 1.710 | 1.710 | 1.710 | 1.710 | 1.707 |
| 8000 | 1.710 | 1.710 | 1.710 | 1.710 | 1.701 |
| 9000 | 1.710 | 1.710 | 1.710 | 1.704 | 1.694 |
| 10000 | 1.710 | 1.710 | 1.710 | 1.698 | 1.687 |
| 11000 | 1.710 | 1.710 | 1.707 | 1.691 | 1.681 |
| 12000 | 1.710 | 1.704 | 1.694 | 1.685 | 1.674 |