



EMERGENCY AIRWORTHINESS DIRECTIVE

This Airworthiness Directive (AD) is issued pursuant to Canadian Aviation Regulation (CAR) 521.427. No person shall conduct a take-off or permit a take-off to be conducted in an aircraft that is in their legal custody and control, unless the requirements of CAR 605.84 pertaining to ADs are met. Standard 625 - Aircraft Equipment and Maintenance Standards Appendix H provides information concerning alternative means of compliance (AMOC) to ADs.

Number:	Effective Date:
CF-2019-37	26 October 2019
ATA:	Type Certificate:
72	A-236

Subject:
Engine - Aircraft Flight Manual – Operating Limitations

Applicability:
Airbus Canada Limited Partnership (formerly C Series Aircraft Limited Partnership (CSALP), Bombardier Inc.) aeroplanes:
Model BD-500-1A10, serial numbers 50001 and subsequent for aeroplanes with PW1524G engines,
Model BD-500-1A11, serial numbers 55001 and subsequent for aeroplanes with PW1521G-3 or PW1524G-3 engines.

Compliance:
Within 7 days from the effective date of this AD, unless already accomplished.

Background:
Several occurrences of engine in-flight shutdowns (IFSDs) were reported on Airbus Canada Limited Partnership BD-500 family aeroplanes. Investigations are ongoing to determine the root cause. Preliminary investigation results indicate high altitude climbs at higher thrust settings for engines with certain thrust ratings may be a contributor. This condition, if not corrected, could lead to an uncontained failure of the engine and damage to the aeroplane.

To address this potentially unsafe condition, this AD introduces a new Aircraft Flight Manual (AFM) limitation and normal procedure to limit the engine N1 setting to 94% while above 29000 feet.

This AD is considered an interim action and further AD action may follow.

Corrective Actions:

- A. Amend the applicable AFM, section Limitations, to incorporate the limitation as specified in Figure 1 of this AD, and section Normal Procedures, to replace the “High altitude climb check (before reaching 35000 ft.)” as specified in Figure 2 of this AD.

Figure 1 Limitation

Engine operating limits

Above 29000 feet, the maximum N1 setting is 94% N1.

Any exceedance of more than 20 continuous seconds must be reported.

Figure 2 Normal Procedure**High altitude climb check****CAUTION**

Before initiation of step climbs above 29000 feet, the autothrottle must be selected off to respect the 94% N1 limitation.

Before reaching 29000 feet:

- (1) Autothrottle..... Select off
 (2) N1Not above 94%

CAUTION

If still in icing conditions, climb must be stopped at 35000 feet. Failure to select WING ANTI-ICE to OFF above 35000 feet could result in engine nacelle overheating, and trigger engine fire warnings.

Before reaching 35000 feet:

- (3) ANTI-ICE, WING..... OFF
 (4) Avoid icing conditions.

When stabilized in cruise:

- (5) AutothrottleAs required
 (6) N1..... Monitor, not above 94%

B. Inform all flight crews of the new procedure and thereafter operate the aeroplane accordingly.

Authorization:

For the Minister of Transport,

ORIGINAL SIGNED BY

Rémy Knoerr
 Chief, Continuing Airworthiness
 Issued on 25 October 2019

Contact:

Brian Daly, Continuing Airworthiness, Ottawa, telephone 888-663-3639, facsimile 613-996-9178 or e-mail AD-CN@tc.gc.ca or any Transport Canada Centre.

This is the EgyptAir Airplane Flight Manual, Issue No. 013.

To bring this manual up to date, remove old pages and insert revised pages as follows:

Chapter / Section	Remove page(s):	Insert page(s):
Title page	00-00-All	00-00-All
Change record	00-02-43 to 00-02-44	00-02-43 to 00-02-44
List of effective pages	00-03-1 to 00-03-14	00-03-1 to 00-03-14
Option list	00-04-1 to 00-04-2	00-04-1 to 00-04-2
Non-normal procedures	04-00-14 to 04-00-15	04-00-14 to 04-00-15
	04-04-3 to 04-04-4	04-04-3 to 04-04-4
	04-08-10	04-08-10
	04-08-12	04-08-12
	04-08-14	04-08-14
	04-15-21 to 04-15-22	04-15-21 to 04-15-22
	04-18-4 to 04-18-5	04-18-4 to 04-18-5
	04-18-8 to 04-18-10	04-18-8 to 04-18-10
	04-21-1	04-21-1
	04-21-9 to 04-21-11	04-21-9 to 04-21-11
	04-21-14 to 04-21-24	04-21-14 to 04-21-24
Supplements	06-00-00-1	06-00-00-1
	06-06-01-5	06-06-01-5
		06-07-00-1 to 06-07-00-2
		06-07-01-1 to 06-07-01-6

Chapter / Section	Remove page(s):	Insert page(s):
	06-19-00-1	06-19-00-1
	06-19-01-1 to 06-19-01-4	06-19-01-1 to 06-19-01-6

Model BD-500-1A11

EgyptAir

Airplane Flight Manual

AFM

BD500-3AB48-32200-00 (309)

Issue No. 013

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Manufacturer:

BOMBARDIER

Bombardier Inc.
Bombardier Aerospace Commercial Aircraft
Customer Services
123 Garratt Blvd., Toronto, Ontario
Canada M3K 1Y5

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Airplane Flight Manual

Model BD-500-1A11

Registration number:

Manufacturer's serial no:

ORIGINAL SIGNED

W. Istchenko

Approved by the Chief, Flight Test for the
Director, National Aircraft Certification, Transport
Canada. <TC>

Date of approval: Jul 08/2016

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The Airplane Flight Manual is valid only when all the issued revisions are incorporated. Record the date you insert each revision in your manual.

Issue / DOT approval	Description of change	Signature / Date incorporated
Issue 001 Jul 08/2016 W. Istchenko	Description of change: Initial issue.	Signature on file Jul 08/2016
	Sections affected: All	
Issue 002 Sep 06/2016 W. Istchenko	Description of change: Introduces the changes that follow: <ul style="list-style-type: none"> • Update the aircraft weights, APU bleed limits, and noise data. • Update avionics information to lift some limitations. • Extensive revision to include CAFM and the PW1521G engine. <RS-001>	Signature on file Sep 06/2016
	Sections affected: Front matter – Option list Chapter 1 – Introduction <ul style="list-style-type: none"> • Definitions • Abbreviations Chapter 2 – Limitations <ul style="list-style-type: none"> • Structural weight limitation • Center of gravity limits • Electronic checklist (ECL) • Demonstrated crosswind (takeoff and landing) 	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none">• Operation in icing conditions• Operation on contaminated runways• Obstacle clearance• Runway slopes• Tailwind conditions• Runway width• APU bleed• Displays• Flight Management System (FMS)• Engine types• Thrust management data• Engine operating procedure limits due to wind <p>Chapter 3 – Normal procedures</p> <ul style="list-style-type: none">• Before taxi• After takeoff• Before landing <p>Chapter 4 – Non-normal procedures</p> <ul style="list-style-type: none">• Landing and go-around speeds• Landing distance factors• Unreliable airspeed <p>Chapter 5 – Performance</p> <ul style="list-style-type: none">• All sections affected	

Issue / DOT approval	Description of change	Signature / Date incorporated
	Chapter 6 – Supplements List of supplements Supplement 1 – Noise characteristics <TC> or <EASA> <ul style="list-style-type: none"> • Certificated noise levels Supplement 1A – Noise characteristics <FAA> <ul style="list-style-type: none"> • Certificated noise levels Supplement 2 – Operation on contaminated run-ways	
Issue 003 Oct 12/2016 W. Istchenko	Description of change: Introduces the changes that follow: <ul style="list-style-type: none"> • Update structural weight and center of gravity limits. • Update limitations APU bleed limits and fuel data. • Update avionics information to lift some limitations. • Update procedures to add new steps. <RS-002> • Update structural weight and center of gravity limits. • Include changes due to new wing anti-ice limitations • <RS-003> Sections affected:	Signature on file Oct 12/2016

Issue / DOT approval	Description of change	Signature / Date incorporated
	<p>Chapter 2– Limitations</p> <ul style="list-style-type: none">• Kind of airplane operation• Structural weight limitation• Center of gravity limits• Flap extended speed• Altitude and speed operating limits• Operation in icing conditions• Occupant limits• Electronic Checklist (ECL)• Autopilot engagement• Autothrottle• APU bleed• Flight spoilers• Fuel grades• Fuel additives• Flight Management System (FMS) <p>Chapter 3 – Normal procedures</p> <ul style="list-style-type: none">• Introduction• Power-on• Before takeoff• Shutdown <p>Chapter 4 – Non-normal procedures</p> <ul style="list-style-type: none">• Landing distance factors	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none"> • RUDDER FAIL (warning) • GROUND SPOILER FAIL (caution) • Rudder pedal jammed • GROUND SPOILER FAIL (caution) • HYD 1 LO PRESS (caution) • HYD PUMP 2B FAIL (caution) • HYD PUMP 3B FAIL (caution) • ICE (caution) • FMS OEI PERF ACTIVE (caution) • FMS PERF DEP VSPEEDS (caution) • ENG SETTING MISMATCH (caution) <p>Chapter 5 – Performance</p> <ul style="list-style-type: none"> • Demonstrated runway width • Demonstrated crosswind (takeoff and landing) • Takeoff performance calculations <p>Chapter 6 – Supplements</p> <p>List of supplements</p> <p>Supplement 6 – Operational capability</p> <ul style="list-style-type: none"> • RVSM • Automatic Surveillance Dependant Broadcast (ADS-B) <p>Supplement 8 – Category II operations</p> <p>Supplement 12 – Derated thrust and reduced thrust takeoff</p>	

Issue / DOT approval	Description of change	Signature / Date incorporated
	Supplement 16 – Head Up Display (HUD) system <ul style="list-style-type: none"> • Introduction • Limitations • Non-normal procedures 	
Issue 004 Nov 10/2016 W. Istchenko	<p>Description of change: Introduces the changes that follow:</p> <ul style="list-style-type: none"> • Removal of the FAA fuel loads limitation. <RS-009> • Reinstated structural weights and CG charts from previous issue. <RS-010> • Add new abbreviations for Configuration deviation list. • Add new Appendix – Configuration deviation list. <RS-013> • Add new Supplement 5 – Operation with airplane systems inoperative. <RS-014> • Editorial. Updates to the option list, Supplement 1, Supplement 6, and Supplement 16 to align with content applicability. <RS-024> <p>Sections affected: Option list</p>	Signature on file Nov 10/2016

Issue / DOT approval	Description of change	Signature / Date incorporated
	Chapter 1 – Introduction <ul style="list-style-type: none"> • Abbreviations Chapter 2– Limitations <ul style="list-style-type: none"> • Structural weight limitation • Center of gravity limits • Fuel load Chapter 6 – Supplements List of supplements Supplement 1 – Noise characteristics <ul style="list-style-type: none"> • Certification airplane configuration Supplement 5 – Operation with airplane systems inoperative Supplement 6 – Operational capabilities <ul style="list-style-type: none"> • Communications Supplement 16 – Head Up Display (HUD) system Chapter 7 – Appendix – Configuration deviation list	

Issue / DOT approval	Description of change	Signature / Date incorporated
Issue 005 Dec 08/2016 W. Istchenko	Description of change: Introduces the changes that follow: <ul style="list-style-type: none"> • Revised zones for takeoff in CG figures. • Add warning for the single engine flight director/autopilot disconnect. 	Signature on file Dec 08/2016

Issue / DOT approval	Description of change	Signature / Date incorporated
	<p><RS-004></p> <ul style="list-style-type: none"> <li>• Update electronic checklist verification. <li>• Add new Dual FMS failure procedure and modify 2 FMS procedures. <p><RS-005></p> <ul style="list-style-type: none"> <li>• Revise a restricted takeoff procedural footnote. <p><RS-011></p> <ul style="list-style-type: none"> <li>• Update limitations and procedures to cover the new engine reight limits. <p><RS-012></p> <ul style="list-style-type: none"> <li>• Update fuel temperature limitation. <li>• Add the takeoff and landing awareness function. <li>• Update the ditching and forced landing procedures to add SMS runway option. <p><34360001C></p> <ul style="list-style-type: none"> <li>• Editorial changes to the performance conditions and configurations, and noise characteristics (FAA). <p><RS-015></p> <p>Sections affected:</p> <p>Front matter – Option list</p> <p>Chapter 2 – Limitations</p> <ul style="list-style-type: none"> <li>• Center of gravity limits <li>• Altitude and speed operating limits 	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none"> • Electronic checklist • Flight director • Fuel temperature • Engine operating procedure limits due to wind <p>Chapter 3 – Normal procedures</p> <ul style="list-style-type: none"> • Takeoff and landing awareness function <p>Chapter 4 – Non-normal procedures</p> <ul style="list-style-type: none"> • Ditching • Forced landing • FMS 1 FAIL (Caution) • FMS 2 FAIL (Caution) • Dual FMS failure • DUAL ENG FAIL (Warning) • L ENG FAIL (Caution) • R ENG FAIL (Caution) • Relight – Left engine • Relight – Right engine <p>Chapter 5 – Performance</p> <ul style="list-style-type: none"> • Performance conditions and configuration <p>Chapter 6 – Supplements</p> <p>Supplement 1A – Noise characteristics <FAA></p> <ul style="list-style-type: none"> • Certification airplane configuration 	

Issue / DOT approval	Description of change	Signature / Date incorporated
<p>Issue 006 Apr 12/2017 W. Istchenko</p>	<p>Description of change: Introduces the changes that follow:</p> <ul style="list-style-type: none"> • Update of the fuel load and fuel additive limitations. • Removal of the airspeed note in procedures. <RS-006> • Editorial changes to add the -3 suffix to the PW1521G engine nomenclature. <RS-007> • Add FAA limitations for the use of autopilot or flight director. <RS-020> • Revision to the windmill relight envelope and applicable non-normal procedures. <RS-027> • Extensive revision to include new CAFM version 4.3.0 data and the PW1524G-3 engine. <RS-030> <p>Sections affected: Front matter – Option list Chapter 1 – Introduction</p> <ul style="list-style-type: none"> • Definitions <p>Chapter 2 – Limitations</p> <ul style="list-style-type: none"> • Kinds of airplane operation • Structural weight limitation 	<p>Signature on file Apr 12/2017</p>

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none"> • Center of gravity limits • Altitude and speed operating limits • Flight in icing conditions • Wing anti-ice • Approach and landing in icing conditions • Runway slopes • Tailwind conditions • Automatic Flight Control System (AFCS) • APU bleed air • Slats/flaps • Fuel load • Fuel additives • Displays • Flight Management System (FMS) • Engine types • Thrust management data • Engine operating procedure limits due to wind <p>Chapter 3 – Normal procedures</p> <ul style="list-style-type: none"> • Before taxi • Before takeoff • After takeoff • Before landing 	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<p>Chapter 4 – Non-normal procedures</p> <ul style="list-style-type: none">• Landing distance factors• GND SPOILER FAIL (Caution)• HYD 1 LO PRESS (Caution)• DUAL ENG FAIL (Warning)• L ENG FAIL (Caution)• R ENG FAIL (Caution)• Relight – Left engine• Relight – Right engine <p>Chapter 5 – Performance</p> <ul style="list-style-type: none">• Complete revision includes all sections <p>Chapter 6 – Supplements List of supplements</p> <p>Supplement 1 – Noise characteristics <TC> or <EASA></p> <ul style="list-style-type: none">• Certification airplane configuration• Certificated noise levels <p>Supplement 1A – Noise characteristics <FAA></p> <ul style="list-style-type: none">• Certification airplane configuration• Certificated noise levels <p>Supplement 2 – Operation on contaminated runways</p> <p>Supplement 3 – Landing on wet grooved or porous friction course runways <EASA></p>	

Issue / DOT approval	Description of change	Signature / Date incorporated
	Supplement 5 – Operation with airplane systems inoperative <ul style="list-style-type: none"> • Introduction • Limitations • Non-normal procedures • Performance Supplement 8 – Category II operations Supplement 12 – Derated thrust and reduced thrust takeoff <ul style="list-style-type: none"> • Limitations • Normal procedures • Performance • Supplements 	

Issue / DOT approval	Description of change	Signature / Date incorporated
Issue 007 Aug 31/2017 W. Istchenko	Description of change: Introduces the changes that follow: <ul style="list-style-type: none"> • Remove autothrottle limitation on approach. • Define new V_{APP} and V_{REF} parameters. <RS-008> • Add structural weights, center of gravity limits and noise data. 	Signature on file Aug 31/2017

Issue / DOT approval	Description of change	Signature / Date incorporated
	<p><RS-016></p> <ul style="list-style-type: none"> <li>• Extensive revision of the Appendix chapter to include revised and new CDL items. <p><RS-017></p> <ul style="list-style-type: none"> <li>• Add new Supplement 18 – Operation with tailwinds up to 15 kts. <10409001C> <li>• Add new Supplement 20 – Alternate forward center of gravity. <13000701C> <p><RS-018></p> <ul style="list-style-type: none"> <li>• Update crosswind and restricted takeoff information. <li>• Add new limitations to Supplement 5. <p><RS-022></p> <ul style="list-style-type: none"> <li>• Various updates to normal and non-normal procedures. <li>• Add applicable abbreviations to operation speed titles. <p><RS-028></p> <ul style="list-style-type: none"> <li>• Add new Supplement for approaches with glidepath angles greater than 3.5 degrees, up to 3.8 degrees inclusively. <p><RS-038></p> <p> Sections affected: Front matter – Option list Chapter 1 – Introduction <ul style="list-style-type: none"> <li>• Definitions </p>	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none"> • Distances • Abbreviations <p>Chapter 2 – Limitations</p> <ul style="list-style-type: none"> • Structural weight limitation • Center of gravity limits • Flaps extended speed (VFE) • Maximum landing gear operating speed (VLO) • Maximum landing gear extended speed (VLE) • Turbulence penetration speed (VRA) • Speed corrections for approach and landing in icing conditions with FLAP 5 • Autothrottle • Engine shutdown • Engine operating procedure limits due to wind <p>Chapter 3 – Normal procedures</p> <ul style="list-style-type: none"> • Power-on • Before taxi • Before takeoff • Descent and approach <p>Chapter 4 – Non-normal procedures</p> <ul style="list-style-type: none"> • Landing and go-around speeds 	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none">• Landing distance factors• Spoiler levers jammed• XPDR 1 FAIL (Caution)• XPDR 2 FAIL (Caution)• FMS 1 FAIL (Caution)• FMS 2 FAIL (Caution)• L ENG FIRE (Warning)• Shutdown - Left engine• Shutdown - Right engine <p>Chapter 5 – Performance</p> <ul style="list-style-type: none">• Demonstrated crosswind (takeoff and landing)• Takeoff performance calculations• Landing distance and speed <p>Chapter 6 – Supplements</p> <p>List of supplements</p> <p>Supplement 1 – Noise characteristics <TC> or <EASA></p> <ul style="list-style-type: none">• Certification airplane configuration• Certificated noise levels <p>Supplement 1A – Noise characteristics <FAA></p> <ul style="list-style-type: none">• Certification airplane configuration• Certificated noise levels	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<p>Supplement 2 – Operation on contaminated runways</p> <ul style="list-style-type: none"> • Performance <p>Supplement 3 – Landing on wet grooved or porous friction course runways <EASA></p> <ul style="list-style-type: none"> • Dispatch landing performance <p>Supplement 5 – Operation with airplane systems inoperative</p> <ul style="list-style-type: none"> • Limitations • Non-normal procedures • Performance <p>Supplement 8 – Category II operations</p> <ul style="list-style-type: none"> • Autothrottle <p>Supplement 9 – Approaches with glidepath angles greater than 3.5 degrees, up to 3.8 degrees <10300002C></p> <p>Supplement 18 – Operation with tailwinds up to 15 kts <10409001C></p> <p>Supplement 20 – Alternate forward center of gravity <13000701C></p> <p>Chapter 7 – Appendix</p> <ul style="list-style-type: none"> • Configuration Deviation List 	

Issue / DOT approval	Description of change	Signature / Date incorporated
<p>Issue 008 Jan 16/2018 W. Istchenko</p>	<p>Description of change: Introduces the changes that follow:</p> <ul style="list-style-type: none"> • Extensive revision of non-normal procedures to update and align OLD factors. <RS-019> • Update runway width information. <RS-021> • Removal of altitude limitation for operation of the APU generator. • Simplification of electrical non-normal procedures to allow MMEL dispatch with a failed generator. <RS-023> • Update to supplement 16 Head Up Display (HUD) system. <RS-025> • Add structural weights, center of gravity limits and noise data. <RS-031> • Various updates to all sections. <RS-037> • Change a switch label. <RS-053> 	<p>Signature on file Jan 16/2018</p>
	<p>Sections affected:</p>	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<p>Front matter</p> <ul style="list-style-type: none"> • Option list • Service bulletin list • Modification list <p>Chapter 1 – Introduction</p> <ul style="list-style-type: none"> • Service bulletins • Modifications <p>Chapter 2 – Limitations</p> <ul style="list-style-type: none"> • Structural weight limitation • Center of gravity limits • Autothrottle • APU operation • APU electrical • APU bleed air • Flight management system (FMS) • Takeoff and Landing Awareness Function (TLAF) • Engine shutdown <p>Chapter 4 – Non-normal procedures</p> <ul style="list-style-type: none"> • EMERGENCY DESCENT (Warning) • EQUIP BAY OVHT (Warning) • EMERGENCY DESCENT (Caution) • L BLEED OVHT (Caution) 	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none">• L PACK FAIL (Caution)• R BLEED OVHT (Caution)• R PACK FAIL (Caution)• RAM AIR FAIL (Caution)• XBLEED FAIL (Caution)• Emergency descent• Unpressurized flight procedure• Ditching• Forced landing• EMER PWR ONLY (Warning)• AC BUS 1 (Caution)• AC BUS 2 (Caution)• APU GEN FAIL (Caution)• DC ESS BUS 1 (Caution)• DC ESS BUS 2 (Caution)• L GEN FAIL (Caution)• L GEN OIL (Caution)• R GEN FAIL (Caution)• R GEN OIL (Caution)• FLT CTRL DIRECT (Warning)• RUDDER FAIL (Warning)• FLAP FAIL (Caution)• FLT CTRL DIRECT (Caution)	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none"> • FLT CTRL DIRECT ADS (Caution) • FLT CTRL DIRECT IRS (Caution) • SLAT FAIL (Caution) • SLAT SKEW (Caution) • SLAT-FLAP FAIL (Caution) • SLAT-FLAP LEVER FAIL (Caution) • Rudder pedal jammed • Slat-flap lever jammed • HYD 1 HI TEMP (Caution) • HYD 1 LO PRESS (Caution) • HYD 1-2 LO PRESS (Caution) • HYD 1-3 LO PRESS (Caution) • HYD 2 HI TEMP (Caution) • HYD 2 LO PRESS (Caution) • HYD 2-3 LO PRESS (Caution) • HYD EDP 1A FAIL (Caution) • HYD EDP 2A FAIL (Caution) • HYD RAT PUMP FAIL (Caution) • L WING A/ICE OVHT (Caution) • R WING A/ICE OVHT (Caution) • ENG DSPL MISCOMPARE (Caution) • Unreliable airspeed • BRAKE FAIL (Caution) 	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none">• L BRAKE FAIL (Caution)• NORM BRAKE FAIL (Caution)• R BRAKE FAIL (Caution)• WOW FAIL (Caution)• FMS 1 FAIL (Caution)• FMS 2 FAIL (Caution)• FMS FUEL (Caution)• UNABLE RNP (Caution)• DUAL ENG FAIL (Warning)• L REVERSER FAIL (Caution)• L THROTTLE FAIL (Caution)• R REVERSER FAIL (Caution)• R THROTTLE FAIL (Caution)• Relight – Left engine• Relight – Right engine• Shutdown – Left engine• Shutdown – Right engine• Smoke/fire/fumes procedure <p>Chapter 5 – Performance</p> <ul style="list-style-type: none">• Introduction <p>Chapter 6 – Supplements</p> <p>List of supplements</p>	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<p>Supplement 1 – Noise characteristics <TC> or <EASA></p> <ul style="list-style-type: none"> • Certification airplane configuration • Certificated noise levels <p>Supplement 1A – Noise characteristics <FAA></p> <ul style="list-style-type: none"> • Certification airplane configuration • Certificated noise levels <p>Supplement 3 – Landing on wet grooved or porous friction course runways <10000002C></p> <ul style="list-style-type: none"> • Performance <p>Supplement 5 – Operation with airplane systems inoperative</p> <ul style="list-style-type: none"> • Limitations • Non-normal procedures • Performance <p>Supplement 16 – Head Up Display (HUD) system <34329001C></p> <ul style="list-style-type: none"> • Introduction • Limitations • Non-normal procedures <p>Supplement 18 – Operation with tailwinds up to 15 kts <10409001C></p>	

Issue / DOT approval	Description of change	Signature / Date incorporated
<p>Issue 009 Aug 06/2018 W. Istchenko</p>	<p>Description of change: Introduces the changes that follow:</p> <ul style="list-style-type: none"> • Remove FAA limitation on maximum occupants. <RS-026> • Add Category III and autoland operational capabilities to Supplement 8. <RS-032> • Revise limitations, procedures, performance and supplements to include Build 8.0A avionic updates. <RS-034> • Add new performance data for BTMS inoperative. <RS-036> • Editorial change to non-normal procedures. <RS-040> • Updates to performance text. <RS-050> <p>Sections affected: Front matter</p> <ul style="list-style-type: none"> • Option list • Service bulletin list • Modification list 	<p>Signature on file Aug 06/2018</p>

Issue / DOT approval	Description of change	Signature / Date incorporated
	<p>Chapter 1 – Introduction</p> <ul style="list-style-type: none"> • Distances • Abbreviations <p>Chapter 2 – Limitations</p> <ul style="list-style-type: none"> • Center of gravity limits • Maximum occupants • Autopilot engagement • Emergency descent mode • ILS approach • Flight director • Displays • Flight management system (FMS) • Thrust management data <p>Chapter 4 – Non-normal procedures</p> <ul style="list-style-type: none"> • AIR SYS ESS CTLR FAIL (Caution) • L AIR SYS CTLR FAIL (Caution) • L BLEED OVHT (Caution) • L PACK FAIL (Caution) • R AIR SYS CTLR FAIL (Caution) • R BLEED OVHT (Caution) • R PACK FAIL (Caution) • XBLEED FAIL (Caution) • EMER PWR ONLY (Warning) 	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none">• DC ESS BUS 1 (Caution)• DC ESS BUS 2 (Caution)• EQUIP BAY SMOKE FAIL (Caution)• FLT CTRL DIRECT (Warning)• FLT CTRL DIRECT (Caution)• SPOILER DEGRADED (Caution)• SPOILER FAIL (Caution)• HYD 1 LO PRESS (Caution)• L WING A/ICE OVHT (Caution)• R WING A/ICE OVHT (Caution)• Arcing, delaminated, shattered, or cracked window or windshield• IPC 1 FAIL (Caution)• IPC 2 FAIL (Caution)• GEAR FAIL (Caution)• L BRAKE FAIL (Caution)• R BRAKE FAIL (Caution)• WOW FAIL (Caution)• Low tire pressure landing procedure• > CABIN PRIORITY (Caution)• KU BAND ON (Caution) <44301201C>• FMS 1 FAIL (Caution)• FMS 2 FAIL (Caution)	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none"> • L ENG FAIL (Caution) • R ENG FAIL (Caution) • Smoke/fire/fumes procedure <p>Chapter 5 – Performance</p> <ul style="list-style-type: none"> • Introduction • Thrust settings • Takeoff performance • Approach and landing <p>Chapter 6 – Supplements</p> <p>List of supplements</p> <p>Supplement 3 – Landing on wet grooved or porous friction course runways <EASA></p> <ul style="list-style-type: none"> • Performance <p>Supplement 5 – Operation with airplane systems inoperative</p> <ul style="list-style-type: none"> • Non-normal procedures • Performance <p>Supplement 6 – Operational capabilities</p> <ul style="list-style-type: none"> • Limitations • Performance <p>Supplement 8 – Category II and Category III, autoland operations</p> <p>Supplement 12 – Derated thrust and reduced thrust takeoff</p> <ul style="list-style-type: none"> • Normal procedures 	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none"> • Performance <p>Supplement 16 – Head Up Display (HUD) system <34329001C></p> <ul style="list-style-type: none"> • Limitations <p>Supplement 20 – Alternate forward center of gravity <13000701C></p> <ul style="list-style-type: none"> • Limitations 	

Issue / DOT approval	Description of change	Signature / Date incorporated
<p>Issue 010 Oct 11/2018 W. Istchenko</p>	<p>Description of change: Introduces the changes that follow:</p> <ul style="list-style-type: none"> • Revise limitations to include FADEC v2.11 update. <p><RS-057></p> <p>Sections affected: Front matter</p> <ul style="list-style-type: none"> • Service bulletin list • Modification list <p>Chapter 2 – Limitations</p> <ul style="list-style-type: none"> • Engine operating limits 	<p>Signature on file Oct 11/2018</p>

Issue / DOT approval	Description of change	Signature / Date incorporated
Issue 011 Jan 11/2019 W. Istchenko	<p>Description of change: Introduces the changes that follow:</p> <ul style="list-style-type: none"> • Updates for the installation of new IASC 5.0 software change. <RS-029> • Various updates to all sections. <RS-033> • Updates for the replacement of hydraulic systems 2 and 3 ACMPs. <RS-035> • Revise limitations, procedures and performance to include FADEC v2.10 and v2.11 update. <RS-039> • Add new Supplement 19 – ETOPS <10109100C>. <RS-041> • Add structural weights, center of gravity limits and noise data. <RS-042> • Add nacelle seals to Configuration Deviation List (CDL). <RS-043> • Update to non-normal procedures. <RS-049> 	Signature on file Jan 11/2019

Issue / DOT approval	Description of change	Signature / Date incorporated
	<p>Sections affected: Front matter</p> <ul style="list-style-type: none"> • Option list • Service bulletin list • Modification list <p>Chapter 2 – Limitations</p> <ul style="list-style-type: none"> • Kinds of airplane operations • Structural weight limitation • Center of gravity limits • Altitude and speed operating limits • Wing anti-ice system • Flight Management System (FMS) • Engine relight • Engine operating procedure limits due to wind <p>Chapter 3 – Normal procedures</p> <ul style="list-style-type: none"> • Before taxi • Before start • Shutdown <p>Chapter 4 – Non-normal procedures</p> <ul style="list-style-type: none"> • Non-normal procedure format • EMERGENCY DESCENT (Warning) • CABIN ALT (Caution) • EMERGENCY DESCENT (Caution) 	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none"> • L BLEED OVHT (Caution) • L PACK FAIL (Caution) • R AIR SYS CTRLR FAIL (Caution) • R BLEED OVHT (Caution) • R PACK FAIL (Caution) • XBLEED FAIL (Caution) • Emergency descent • Ditching • Forced landing • DC BUS 1 (Caution) • DC BUS 2 (Caution) • DC ESS BUS 2 (Caution) • DC ESS BUS 3 (Caution) • EQUIP BAY SMOKE FAIL (Caution) • FLT CTRL DIRECT (Warning) • L ELEVATOR FAIL (Warning) • R ELEVATOR FAIL (Warning) • RUDDER FAIL (Warning) • ADS DEGRADED (Caution) • FLAP FAIL (Caution) • FLT CTRL DIRECT (Caution) • FLT CTRL DIRECT ADS (Caution) • FLT CTRL DIRECT IRS (Caution) 	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none">• GND SPOILER FAIL (Caution)• L ELEVATOR FAIL (Caution)• PITCH AUTHORITY (Caution)• R ELEVATOR FAIL (Caution)• SLAT FAIL (Caution)• SLAT SKEW (Caution)• SLAT-FLAP FAIL (Caution)• SLAT-FLAP LEVER FAIL (Caution)• STAB DEGRADED (Caution)• STAB TRIM FAIL (Caution)• Rudder pedal jammed• Slat-flap lever jammed• FUEL CTR XFR FAIL (Caution)• FUEL IMBALANCE (Caution)• HYD 1 HI TEMP (Caution)• HYD 1 LO PRESS (Caution)• HYD 1-2 LO PRESS (Caution)• HYD 1-3 LO PRESS (Caution)• HYD 2 HI TEMP (Caution)• HYD 2 LO PRESS (Caution)• HYD 2-3 LO PRESS (Caution)• HYD 3 HI TEMP (Caution)• HYD 3 LO PRESS (Caution)	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none"> • HYD PUMP 2B FAIL (Caution) • HYD PUMP 3B FAIL (Caution) • ICE (Caution) • L WING A/ICE OVHT (Caution) • R WING A/ICE OVHT (Caution) • Arcing, delaminated, shattered or cracked window or windshield • DUAL ADS FAIL (Caution) • EFIS COMPARATOR FAIL (Caution) • IPC 1 FAIL (Caution) • IPC 2 FAIL (Caution) • Gear up or unsafe landing procedure • FMS 1 FAIL (Caution) • FMS 2 FAIL (Caution) • DUAL ENG FAIL (Warning) • ENG VIBRATION (Caution) • L ENG OPER DEGRADED (Caution) • L REVERSER FAIL (Caution) • L THROTTLE FAIL (Caution) • R ENG OPER DEGRADED (Caution) • R REVERSER FAIL (Caution) • R THROTTLE FAIL (Caution) • Relight – Left engine 	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none">• Relight – Right engine• Shutdown – Left engine• Shutdown – Right engine• EQUIP BAY SMOKE (Warning) Chapter 5 – Performance <ul style="list-style-type: none">• Takeoff performance Chapter 6 – Supplements List of supplements Supplement 1 – Noise characteristics <ul style="list-style-type: none">• Certification airplane configuration• Certificated noise levels Supplement 1A – Noise characteristics <ul style="list-style-type: none">• Certification airplane configuration• Certificated noise levels Supplement 5 – Operation with airplane systems inoperative <ul style="list-style-type: none">• Non-normal procedures Supplement 6 – Operational capabilities <ul style="list-style-type: none">• Navigation Supplement 8 – Category II, Category III autoland operations <ul style="list-style-type: none">• Limitations• Supplements	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<p>Supplement 9 – Approaches with glidepath angles greater than 3.5 degrees, up to 3.8 degrees <10300002C></p> <ul style="list-style-type: none"> • Supplements <p>Supplement 12 – Derated thrust and reduce thrust takeoff</p> <ul style="list-style-type: none"> • Limitations • Normal procedures • Performance <p>Supplement 16 – Head-Up Display (HUD) system <34329001C></p> <ul style="list-style-type: none"> • Non-normal procedures <p>Supplement 18 – Takeoff and landing with tailwinds greater than 10 kts <10400001C></p> <ul style="list-style-type: none"> • Limitations • Performance <p>Supplement 19 – ETOPS <10109100C> Supplement 20 – Alternate forward center of gravity <13000701C></p> <ul style="list-style-type: none"> • Limitations <p>Chapter 7 – Appendix – Configuration deviation list</p> <ul style="list-style-type: none"> • 54 – Nacelles/pylons • 57 – Wing • 71 – Power plant 	

Issue / DOT approval	Description of change	Signature / Date incorporated
<p>Issue 012 Jul 22/2019 W. Istchenko</p>	<p>Description of change: Introduces the changes that follow:</p> <ul style="list-style-type: none"> • Add structural weights, center of gravity limits and noise data. <RS-044> • Editorial. Various updates to limitations and procedures. <RS-054> • Editorial. Various updates to limitations and procedures. <RS-055> • Configuration deviation list revised. <RS-059> • Update to crosswind limitations. <RS-060> • Add new AFIRST™ Iridium SATCOM system capability. <RS-063> • Editorial. Update to align with SB incorporation status: Remove Pre-SB content for BD500-314001, BD500-314002, and BD500-316001. <RS-066> • Add alternative for wing anti-ice test. <RS-067> 	<p>Signature on file Jul 22/2019</p>

Issue / DOT approval	Description of change	Signature / Date incorporated
	<p>Sections affected: Front matter</p> <ul style="list-style-type: none"> • Option list • Service bulletin list • Modification list <p>Chapter 1 – Introduction</p> <ul style="list-style-type: none"> • Distances <p>Chapter 2 – Limitations</p> <ul style="list-style-type: none"> • Structural weight limitation • Center of gravity limits • Design maneuvering speed • Air-conditioning • Autopilot engagement • Autothrottle • Flight director • APU start • APU operation • Displays • Flight Management System (FMS) • Takeoff and Landing Awareness Function (TLAF) • Engine operating procedure limits due to wind 	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<p>Chapter 3 – Normal procedures</p> <ul style="list-style-type: none">• Before taxi• Takeoff and landing awareness function <34360001C> <p>Chapter 4 – Non-normal procedures</p> <ul style="list-style-type: none">• L BLEED LEAK (Caution)• R BLEED LEAK (Caution)• APU (Caution)• APU BLEED FAIL (Caution)• EMER PWR ONLY (Warning)• FLT CTRL DIRECT (Warning)• FLT CTRL DIRECT (Caution)• PITCH AUTHORITY (Caution)• ROLL AUTHORITY (Caution)• YAW AUTHORITY (Caution)• APU FUEL SOV FAIL (Caution)• FUEL CTR XFR FAIL (Caution)• FUEL TANK LO TEMP (Caution)• HYD 1 LO PRESS (Caution)• HYD 1-2 LO PRESS (Caution)• HYD 1-3 LO PRESS (Caution)• HYD 2 SOV FAIL (Caution)• HYD 2-3 LO PRESS (Caution)	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none"> • HYD RAT PUMP FAIL (Caution) • ADS 1 PROBE HEAT FAIL (Caution) • ADS 1 SLIPCOMP FAIL (Caution) • ADS 2 PROBE HEAT FAIL (Caution) • ADS 2 SLIPCOMP FAIL (Caution) • ADS 3 PROBE HEAT FAIL (Caution) • ADS 3 SLIPCOMP FAIL (Caution) • ADS 4 PROBE HEAT FAIL (Caution) • ADS 4 SLIPCOMP FAIL (Caution) • ADS ISI PROBE HEAT (Caution) • ADS ISI SLIPCOMP FAIL (Caution) • DMC 1 FAIL (Caution) • EFIS MISCOMPARE (Caution) • ENG DSPL MISCOMPARE (Caution) • L CTP TUNING FAIL (Caution) • L-R RADIO TUNING (Caution) • BRAKE OVHT (Warning) • GEAR FAIL (Caution) • NOSE STEER FAIL (Caution) • NOSE TIRE LO PRESS (Caution) • WOW FAIL (Caution) • Low tire pressure landing procedure • > CABIN PRIORITY (Caution) 	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none"> • KU BAND ON (Caution) • APPROACH NOT AVAIL (Caution) • GNSS NOT AVAIL (Caution) • L ENG EXCEEDANCE (Caution) • L ENG FAIL (Caution) • R ENG EXCEEDANCE (Caution) • R ENG FAIL (Caution) • Smoke/fire/fumes procedure <p>Chapter 5 – Performance</p> <ul style="list-style-type: none"> • Demonstrated crosswind (takeoff and landing) <p>Chapter 6 – Supplements</p> <p>Supplement 1 – Noise characteristics <TC> or <EASA></p> <ul style="list-style-type: none"> • Certification airplane configuration • Certificated noise levels <p>Supplement 1A – Noise characteristics <FAA></p> <ul style="list-style-type: none"> • Certification airplane configuration • Certificated noise levels <p>Supplement 2 – Operation on contaminated runways</p> <ul style="list-style-type: none"> • Performance <p>Supplement 5 – Operation with airplane systems inoperative</p> <ul style="list-style-type: none"> • Limitations 	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none"> • Non-normal procedures • Performance <p>Supplement 6 – Operational capabilities</p> <ul style="list-style-type: none"> • Surveillance • Communications <p>Supplement 8 – Category II and Category III, autoland operations</p> <ul style="list-style-type: none"> • Limitations • Performance <p>Supplement 9 – Approaches with glidepath angles greater than 3.5 degrees, up to 3.8 degrees</p> <ul style="list-style-type: none"> • Introduction • Supplements <p>Supplement 12 – Derated thrust and reduced thrust takeoff</p> <ul style="list-style-type: none"> • Limitations • Normal procedures <p>Supplement 16 – Head Up Display <34329001C></p> <ul style="list-style-type: none"> • Limitations • Non-normal procedures <p>Supplement 18 – Takeoff and landing with tailwinds greater than 10 kts <10400001C></p> <ul style="list-style-type: none"> • Introduction • Limitations 	

Issue / DOT approval	Description of change	Signature / Date incorporated
	<p>Supplement 20 – Alternate forward center of gravity <13000701C></p> <ul style="list-style-type: none"> • Limitations <p>Chapter 7 – Appendix - Configuration deviation list</p> <ul style="list-style-type: none"> • Introduction • 32 – Landing gear • 33 – Lights • 51 – Structures • 52 – Doors • 53 – Fuselage • 54 – Nacelles/pylons • 55 – Stabilizers • 57 – Wing • 78 – Exhaust 	
Issue 012A	<p>Description of change: Introduces the changes that follow:</p> <ul style="list-style-type: none"> • Provide previously approved data: ETOPS <10109100C> Improved calculated in-flight performance <10100200C> <p>Sections affected: Front matter – Option list Chapter 2 – Limitations</p> <ul style="list-style-type: none"> • Kinds of airplane operations 	Signature on file Aug 20/2019

Issue / DOT approval	Description of change	Signature / Date incorporated
	Chapter 6 – Supplements Supplement 5 – Operation with airplane systems inoperative <ul style="list-style-type: none"> • Performance Supplement 19 – ETOPS <10109100C>	

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Issue 013 Sep 23/2019 W. Istchenko	<p>Description of change: Introduces the changes that follow:</p> <ul style="list-style-type: none"> • Add new Supplement 7 for RNP – Authorization required operations. <RS-048> • Update the ETOPS supplement. <RS-051> <p>Sections affected: Front matter – Option list Chapter 4 – Non-normal procedures</p> <ul style="list-style-type: none"> • FD FAIL (Caution) • DC BUS 1 (Caution) • DC ESS BUS 2 (Caution) • DC ESS BUS 3 (Caution) • IPC 1 FAIL (Caution) • IPC 2 FAIL (Caution) • FMS 1 FAIL (Caution) 	Signature on file Sep 23/2019

Issue / DOT approval	Description of change	Signature / Date incorporated
	<ul style="list-style-type: none">• FMS 2 FAIL (Caution)• GNSS NOT AVAIL (Caution)• Dual FMS failure• Smoke/fire/fumes procedure Chapter 6 – Supplements List of supplements Supplement 6 – Operational capabilities <ul style="list-style-type: none">• Navigation – FMS Supplement 7 – RNP – Authorization required operations Supplement 19 – ETOPS <10109100C> <ul style="list-style-type: none">• Introduction• Limitations• Normal procedures	

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	-5 Jul 22/2019		-5 Jan 11/2019
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	-12 * Sep 23/2019		-12 Jan 11/2019
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	-14 * Sep 23/2019		-14 Jan 11/2019
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-44	Jan 11/2019		-3 Jul 22/2019
-45	Jan 11/2019		-4 Jul 22/2019
-46	Jan 11/2019		-5 Jul 22/2019
-47	Jan 11/2019		-6 Jul 22/2019
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-56	Jan 11/2019	04-13	-1 Jul 22/2019
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-58	Jan 11/2019		-3 Jan 11/2019
-59	Jan 11/2019		-4 Jul 22/2019
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-62	Jan 11/2019		-7 Jul 22/2019
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-65	Jan 11/2019		-10 Jul 22/2019
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	-18 Jan 11/2019		-18 Jan 11/2019
	-19 Jan 11/2019		-19 Jan 11/2019
	-20 Jul 22/2019		-20 Jan 11/2019
	-21 Jul 22/2019		
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	-26 Jul 22/2019		-5 Jul 22/2019
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	-35 Jul 22/2019		-8 * Sep 23/2019
	-36 Jul 22/2019		-9 * Sep 23/2019
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	-4 Jul 22/2019		-3 Jan 11/2019
	-5 Jan 11/2019		-4 Jan 11/2019
	-6 Jan 11/2019		-5 Jan 11/2019
	-7 Jan 11/2019		-6 Jan 11/2019
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	-16 Jan 11/2019		-15 Jan 11/2019
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The option codes that follow appear adjacent to the applicable text.

Absence of an option code means that the data are applicable to all.

Option code	Description
<TC>	ON A/C ALL Type certification – Transport Canada (TC) registered airplanes
<10100101C>	ON A/C ALL Extended operations (ETOPS) capability – 120-minute diversion – APU on demand
<10109100C>	ON A/C ALL Combined options: Authorities and ETOPS (<10100100C> or <10100101C> or <10100102C> or <10100103C>) and (<TC> or <FAA>)
<10100200C>	ON A/C ALL Improved level of calculated in-flight performance
<13000701C>	ON A/C ALL Alternate CG envelope
<13001061C>	ON A/C ALL Maximum Takeoff Weight (MTOW) limitations – 134482 lb / 61000 kg
<13001131C>	ON A/C ALL Maximum Takeoff Weight (MTOW) limitations – 141096 lb / 64000 kg
<13001176C>	ON A/C ALL Maximum Takeoff Weight (MTOW) limitations – 145500 lb / 65997 kg
<13001290C>	ON A/C ALL Maximum Zero Fuel Weight (MZFW) and Maximum Landing Weight (MLW) limitations – 123000 lb / 55792 kg and 129500 lb / 58740 kg

Option code	Description
<13001310C>	ON A/C ALL Maximum Takeoff Weight (MTOW) limitations – 149000 lb / 67585 kg
<21710001D>	ON A/C ALL Ozone converters – Not installed
<23150004C>	ON A/C 55058–55059 SATCOM Iridium system – Installed
<23150006C>	ON A/C ALL AFIRS™ Iridium SATCOM system – Installed
<23159006C>	ON A/C ALL Combined options: Authorities and AFIRS™ Iridium SATCOM system <TC> and <23150006C>
<23240001C>	ON A/C ALL CPDLC – Aeronautical Telecommunication Network (Link 2000+)
<23249001C>	ON A/C ALL Combined options: CPDLC <23240001C> or <23240002C>
<26240002C>	ON A/C ALL Cargo FIREX – 120 minute diversion capability
<44301201C>	ON A/C ALL Ku-band connectivity system (Panasonic eXConnect®)
<44309202C>	ON A/C ALL Combined options: Ku-band connectivity system <44301201C> or <44301202C> or <44301211C> or <44300212C>
<72211001D>	ON A/C ALL Standard thrust rating – PW1521G-3
<90000003C>	ON A/C ALL Combined options: <EASA> or <10300002C> or <10400001C> or <13000701C>

A reference to the service bulletins that follow appears above applicable boxed text.

Service bulletin	Description
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A reference to the modifications that follow appears above applicable boxed text.

Modification	Description
219001	ON A/C ALL Integrated Air System Controller (IASC) Software (5.0) – Installed in production
291002	ON A/C ALL Hydraulic Systems #2 and #3 Alternating Current Motor Pumps (ACMP)(-1004) – Installed in production
732002	ON A/C ALL Full Authority Digital Engine Control (FADEC) software v2.10 – Installed in production
732003	ON A/C ALL Full Authority Digital Engine Control (FADEC) software v2.11 – Installed in production

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CHAPTER 1 – INTRODUCTION

GENERAL

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INTRODUCTION

This Airplane Flight Manual contains limitations, procedures and performance data for the operation of the BD-500-1A11 airplane model, manufactured by Bombardier Inc., Montreal, Quebec, Canada.

It is the responsibility of pilots who are qualified to operate the airplane to be entirely familiar with the information contained in this publication to ensure that the airplane is operated at all times within the approved flight envelope.

For clarity and simplicity, the manual is written in the imperative, in order that the information and operating instructions may be presented in a positive sense and require no interpretation by the user.

Specific items requiring emphasis are expanded upon and ranked in increasing order of importance in the form of a NOTE, CAUTION, or WARNING.

NOTE

Expands on information which is considered essential to emphasize. Information contained in notes may also be safety-related.



Provides information that can result in damage to equipment if not followed.



Emphasizes information that can result in personal injury or loss of life if not followed.

SCOPE OF THE AIRPLANE FLIGHT MANUAL

A. Limitations

Observance of the limitations contained in the Limitations chapter of this Airplane Flight Manual is mandatory.

B. Status of Airplane Flight Manual information

In the Normal Procedures, Non-normal Procedures and Performance chapters of this Airplane Flight Manual, checks and procedures written in the imperative or qualified by “shall” or “must” are defined as those actions which, if not observed, could result in a significant adverse effect on the safety of the airplane.

C. Normal procedures

The Normal procedures chapter of this Airplane Flight Manual contains procedures and checks peculiar to the airplane and are supplementary to normal procedures common to the operation of modern transport category jet airplanes.

D. Non-normal procedures

The Non-normal procedures chapter of this Airplane Flight Manual contains procedures for all EICAS warning and caution messages, and non-EICAS related conditions. These are the result of a component failure or situation, in which the use of the normal or alternate systems can be expected to maintain an acceptable level of airplane operation.

E. Performance

The Performance chapter of this Airplane Flight Manual contains details pertinent to the airplane configurations and conditions for operation in compliance with the applicable airworthiness performance requirements.

F. Supplements

The Supplements chapter of this Airplane Flight Manual consists of information which supersedes or is in addition to the basic Airplane Flight Manual. This information may be a result of the issuance of a Supplemental Type Certificate, or approved changes to AFM limitations, procedures, or performance without a Supplemental Type Certificate.

G. Appendices

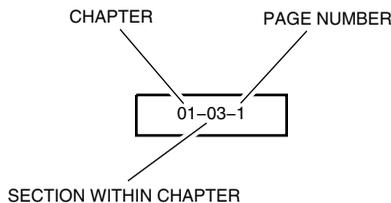
The Appendices chapter of this Airplane Flight Manual includes additions to the manual that are required by the installation of optional equipment or for specific operations (Configuration Deviation List, etc.).

PAGINATION

Each chapter of this manual is subdivided into sections categorized by the subject or type of material presented.

This permits issuance of small blocks of revision pages without renumbering and reprinting complete sections of the manual.

The volume is paginated with a Chapter/Section/Page numbering system as follows:



Additional identification data in the margin of the page includes the date of issue or revision date printed below the page number and the chapter title and subject shown in the masthead.

Blank pages that must be arranged as facing pages at the end of a section are defined by “This Page Intentionally Left Blank”. In the List of Effective Pages, these blank pages are included in the total page count of each affected chapter.

AIRWORTHINESS AUTHORITY CODES

Applicable pages of this manual contain Airworthiness authority codes adjacent to the applicable text when a specific paragraph, procedure, or illustration is unique to the specified Authority. Example: <TC>, <FAA>, <EASA>, etc.

DEFINITIONS

A. Airspeeds

The following definitions are commonly used terms. Items not commonly used are defined in the respective sections where they apply.

IAS	Indicated airspeed – Airspeed indicator reading corrected for instrument error. Values in this manual assume zero instrument error.
CAS	Calibrated airspeed – Indicated airspeed corrected for static source position error.
Corrected V_{REF}	Corrected reference landing speed – The reference landing speed (V_{REF}) to be used during an approach in icing conditions (as given in Chapter 2) or after a system failure (ΔV_{REF} as provided in Chapter 4).
EAS	Equivalent airspeed – Calibrated airspeed corrected for compressibility.
TAS	True airspeed – Equivalent airspeed corrected for density.
M_I	Indicated Mach number – Machmeter reading corrected for instrument error.
M_T	True Mach number – Machmeter reading corrected for both instrument and static source position errors.

V_1	Takeoff decision speed – The speed used as a reference at which, due to engine failure or other causes, the pilot may elect to stop or continue the takeoff.
V_{1MBE}	Maximum V_1 for brake energy – The maximum speed on the ground from which a stop can be accomplished within the energy capabilities of the brakes.
V_{1MCG}	Minimum V_1 limited by control on the ground – The takeoff decision speed following an engine failure at V_{MCG} . V_1 may not be less than V_{1MCG} .
V_2	Takeoff safety speed – Target climb speed to be attained at or before a height of 35 feet above the runway during a continued takeoff, following an engine failure.
V_A	Design maneuvering speed – The maximum speed at which application of full available aileron, rudder or elevator will not overstress the airplane.
V_{AC}	Approach climb speed (also known as V_{2GA} or $V_{2GO-AROUND}$) – Target climb speed to be attained during a go-around with one engine inoperative.
V_{APP}	Approach speed – The airspeed to be maintained down to 50 feet over the runway threshold. It is the speed targeted by either the pilot flying, or by any automated system including the autothrottle. The approach speed is V_{REF} plus any increment for use of autothrottle (including auto-land) or wind gust factor.
V_{EF}	Critical engine failure speed – The speed at which, if the critical engine fails, the engine failure is recognized at V_1 .
V_{ENR}	Enroute climb speed (green dot).
V_{FE}	Maximum flap extended speed – The highest speed permissible with the wing flaps in a prescribed extended position.

V_{FTO}	Final takeoff climb speed – The speed attained at the end of the flight path acceleration segment during a continued takeoff following an engine failure, and is the climb speed scheduled for the final takeoff climb.
V_{GA}	Climb speed for all engines go-around.
V_{LC}	Initial climb speed in the landing configuration. Is equivalent to V_{REF} .
V_{LE}	Maximum landing gear extended speed – The maximum speed at which the airplane can be safely flown with the landing gear extended.
V_{LO}	Maximum landing gear operating speed – The maximum speed at which the landing gear can be safely extended or retracted.
V_{MO}/M_{MO}	Maximum operating limit speed / Mach number – The maximum operating limit speed (airspeed or Mach number) is the speed that must not be deliberately exceeded in any regime of flight (climb, cruise, or descent) unless a higher speed is authorized for flight test or pilot training operations.
V_{MCA}	Minimum control speed, air – Minimum flight speed at which the airplane is controllable with a maximum of 5-degree bank, when the critical engine suddenly becomes inoperative, with the remaining engine at maximum takeoff thrust.
V_{MCG}	Minimum control speed, ground – Minimum speed on the ground at which control can be maintained and the takeoff continued using aerodynamic controls alone, when the critical engine suddenly becomes inoperative, with the remaining engine at maximum takeoff thrust.

V_{MCL}	Minimum control speed during landing approach – Minimum flight speed at which the airplane is controllable with a maximum of 5-degree bank, when the critical engine suddenly becomes inoperative, with the remaining engine at go around thrust.
V_R	Rotation speed – Speed at which rotation is initiated during takeoff.
V_{RA}	Rough air speed – Turbulence penetration speed.
V_{REF}	Reference landing speed – The minimum speed at a height of 50 feet above the runway threshold for the flap selected.
V_{S1G}	Reference stall speed based on 1.0 g criteria.
V_{SR}	Reference stalling speed.

B. Temperature

The following definitions are commonly used terms. Items not commonly used are defined in the respective sections where they apply.

ISA	International standard atmospheric conditions.
OAT	Outside air temperature – The free air temperature, obtained either from in-flight temperature indications or ground meteorological sources.
SAT	Static air temperature (In-flight, SAT = OAT).
TAT	Total air temperature – Static air temperature plus adiabatic compression (ram) rise.

C. Distances

The following definitions are commonly used terms. Items not commonly used are defined in the respective sections where they apply.

Takeoff distance	<p>The takeoff distance on dry runways is the longer of (1) and (2), defined as follows: The takeoff distance on wet and contaminated runways is the longer of (3) or the takeoff distance on dry runways as established from (1) or (2).</p> <p>(1) The distance from the start of the takeoff roll to the point where the airplane attains a height of 35 feet above the takeoff surface, with a failure of the critical engine at V_{EF}.</p> <p>(2) 115% of the distance from the start of the takeoff roll to the point where the airplane attains a height of 35 feet above the takeoff surface, with all engines operating.</p> <p>(3) The distance from the start of the takeoff roll to the point where the airplane attains a height of 15 feet above the takeoff surface, with a failure of the critical engine at V_{EF}.</p>
Takeoff run (with clearway)	<p>The takeoff run on dry runways is the longer of the two distances defined below:</p> <p>1. The distance from start of the takeoff roll to the mid point between liftoff and the point where the airplane attains a height of 35 feet above the takeoff surface, with a failure of the critical engine at V_{EF}.</p> <p>2. 115% of the distance from the start of the takeoff roll to the mid point between liftoff and the point where the airplane attains a height of 35 feet above the takeoff surface, with all engines operating.</p>

	<p>The takeoff run on wet and contaminated runways is the longer of the two distances defined below:</p> <ol style="list-style-type: none"> 1. The distance from start of the takeoff roll to the point where the airplane attains a height of 15 feet above the takeoff surface, with a failure of the critical engine at V_{EF}. 2. 115% of the distance from the start of the takeoff roll to the mid point between liftoff and the point where the airplane attains a height of 35 feet above the takeoff surface, with all engines operating.
<p>Takeoff run (without clearway)</p>	<p>If the takeoff distance does not include a clearway, the takeoff run is equal to the takeoff distance.</p>
<p>Accelerate-stop distance (applicable to dry, wet and contaminated runways)</p>	<p>The accelerate-stop distance is the longer of (1) and (2), defined as follows:</p> <ol style="list-style-type: none"> (1) The sum of the distances necessary to: <ol style="list-style-type: none"> (a) Accelerate the airplane from a standing start to V_{EF} with all engines operating; (b) Accelerate the airplane from V_{EF} to V_1 assuming the critical engine fails at V_{EF}; and (c) Come to a full stop from the point reached at the end of the acceleration period prescribed in paragraph (1)(b), assuming that the pilot does not apply any means of retarding the airplane until that point is reached; plus (d) A distance equivalent to 2 seconds at constant V_1. (2) The sum of the distances necessary to: <ol style="list-style-type: none"> (a) Accelerate the airplane from a standing start to V_1 with all engines operating;

	<p>(b) Come to a full stop at the end of the period prescribed in paragraph (2)(a), assuming that the pilot does not apply any means of retarding the airplane until that point is reached; plus</p> <p>(c) A distance equivalent to 2 second at constant V_1.</p>
Clearway	An area beyond the runway, not less than 500 feet wide, centrally located about the extended centerline of the runway, and under the control of the airport authorities. The clearway is expressed in terms of a clearway plane, extending from the end of the runway with an upward slope not exceeding 1.25% above which no object nor any terrain protrudes. However, threshold lights may protrude above the plane if their height above the end of the runway is 26 inches or less and if they are located to each side of the runway.
Stopway	An area beyond the takeoff runway at least as wide as the runway and centered upon the extended centerline of the runway, able to support the airplane during an aborted takeoff without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff.
Actual landing distance	<p>The actual landing distance is the distance from a 50 feet height with the flaps in the normal landing configuration, to a full stop on a smooth, level, hard-surfaced runway and ISA temperature.</p> <p>For dispatch on a dry or wet runway, the Actual Landing Distance (ALD) is calculated using VREF. On a wet runway, the CAFM will not give the ALD.</p> <p>For dispatch on a contaminated runway, the VAPP is used to calculate the Actual Landing Distance (ALD).</p>
Factored landing distance	This value is calculated by the CAFM for dispatch. Autoland off:

	<p>The factored landing distance is equal to the landing field length for dispatch on dry or wet runway. The factored landing distance is equal to the actual landing distance multiplied by 1.15 for dispatch on a contaminated runway. Autoland on: The factored landing distance is equal to the actual landing distance multiplied by 1.15 on all surfaces.</p>
<p>Landing field length</p>	<p>The landing field length is only calculated for dispatch on dry and wet runways with autoland off. The landing field length data provided by the CAFM include factors for operational rules which require the use of 60% of the available runway in determining landing field length requirements. The required landing field length on a dry runway is the actual landing distance divided by 0.6. The landing field length required under wet runway conditions is equal to 115% of the dry runway landing field length.</p>
<p>Operational landing distance</p>	<p>The operational landing distance is the distance from a 50-foot height at the selected approach speed with the flaps in the normal landing configuration, to a full stop on a runway surface with a specific braking action at the actual conditions of temperature, wind, runway slope, pressure altitude and increment on V_{REF}. OLD data can be determined with the autobrake system on or off.</p>

D. Takeoff path

The following definitions are commonly used terms. Items not commonly used are defined in the respective sections where they apply.

<p>Takeoff path</p>	<p>The takeoff path begins from a standing start and ends at 1500 feet above the takeoff surface or at the point where transition from takeoff to enroute configuration is completed, whichever is higher.</p>
---------------------	--

Takeoff flight path	The takeoff flight path begins at the end of the takeoff distance and at a height of 35 feet above the takeoff surface, and ends at 1500 feet above the takeoff surface, or at the point where transition from takeoff to enroute configuration is completed, whichever is higher. This is also known as the Gross takeoff flight path.
Net takeoff flight path	The net takeoff flight path is the gross takeoff flight path diminished by 0.8% climb gradient capability (or equivalent reduction in acceleration along that part of the takeoff flight path at which the airplane is accelerated in level flight). The net takeoff flight path must clear all obstacles in the takeoff area by at least 35 feet vertically.

E. Climb gradient

The following definitions are commonly used terms. Items not commonly used are defined in the respective sections where they apply.

Climb gradient	The ratio of the change in height, during a portion of a climb, to the horizontal distance traversed in the same time interval.
Gross gradient	Climb gradient expressed as a percentage ratio, obtained using the following formula: (Change in height ÷ Horizontal distance travelled) × 100 The gradients provided by the CAFM are based on true (not pressure) rates of climb.
Net gradient	The gross gradient reduced by the required margins.
First segment	The first segment starts at the liftoff point and ends at the point where landing gear retraction is completed, at a speed increasing from V_{LO} at liftoff to V_2 .
Second segment	The second segment starts at the point where the landing gear is fully retracted up to at least 400 feet above the runway, flown at V_2 speed and flaps in the takeoff position.

Acceleration segment	The acceleration segment is the part of the takeoff flight path that begins at the end of the second segment and extends horizontally over the distance required to retract flaps to zero, and accelerated to the final takeoff climb speed.
Final segment	The final segment starts from the end of the acceleration segment and extends to the end of the takeoff flight path, flown at the final segment climb speed (V_{FTO}), flaps up.

F. Miscellaneous

The following definitions are commonly used terms. Items not commonly used are defined in the respective sections where they apply.

APR	Automatic power reserve – In the event of an engine failure during takeoff, the APR function will increase the thrust rating of the remaining engine.
Center of Gravity (CG)	The point at which the airplane would balance if suspended. The CG distance from the reference datum is found by dividing the total moment by the total weight of the airplane.
MLW	Maximum landing weight – The maximum airplane weight approved for the landing touchdown.
MRW	Maximum ramp weight – The maximum possible airplane weight allowed for ground handling and taxiing.
MTOW	Maximum takeoff weight – The maximum airplane weight approved for the start of takeoff.
MZFW	Maximum zero fuel weight – The maximum weight allowed before usable fuel is loaded into the airplane.

NOTE

The following ICAO weight conversion factor is used throughout this manual:

- 1 kilogram (kg) = 2.20462262185 pounds (lbs)

As much as possible, these numbers are rounded off to the nearest multiple of 5, except when operational requirements dictate otherwise. These weights correspond to the weights given in the Weight and Balance Manual (BD500-3AB48-22100-00).

ABBREVIATIONS

The abbreviations that follow are found throughout the manual. Some abbreviations can also appear in lowercase letters. Abbreviations that have very limited usage are explained in the chapters where they are used.

A

A/C	Air-conditioning
A/ICE	Anti-ice
AC	Advisory Circular, Alternating Current
ACARS	Aircraft Communications Addressing and Reporting System
ACMP	Alternating Current Motor Pump (electric hydraulic pump)
ADS	Air Data System
ADS-B	Automatic Dependent Surveillance Broadcast
AFCS	Automatic Flight Control System
AFM	Airplane Flight Manual
AGL	Above Ground Level
ALT	Altimeter, Altitude, Altitude Hold (PFD/FD)
ALTN	Alternate
ALTS	Altitude Selected
AMP	Aircraft Maintenance Publication

AP	Autopilot
APR	Automatic Power Reserve
APU	Auxiliary Power Unit
ARR	Arrival
ASRP	Aircraft Structural Repair Publication
AT	Autothrottle
ATC	Air Traffic Control
ATIS	Automatic Terminal Information System
ATS	Air Turbine Start
AUTO	Automatic
AVAIL	Available

B

BATT	Battery
BTL	Bottle
BRG	Bearing
BTMS	Brake Temperature Monitoring System

C

CAFM	Computerized Airplane Flight Manual
CAS	Calibrated Airspeed
CCP	Cursor Control Panel
CDL	Configuration Deviation List
CG	Center of Gravity
CIFP	Computerized In-Flight Planning
CKPT	Cockpit
CLB	Climb
CLSD	Closed
CNCL	Cancel
CPLT	Copilot
CONFIG	Configuration

CPDLC	Controller Pilot Data Link Communication
CRT	Cathode Ray Tube
CTRL	Control
CTP	Control Tuning Panel

D

DA	Decision Altitude
DC	Direct Current
DCU	Data Concentration Unit
DDG	Dispatch Deviation Guide
DEP	Departure
DEST	Destination
DET	Detection
DH	Decision Height
DIFF	Differential
DISA	Delta ISA
DIST	Distance
DMC	DCU Module Cabinet
DN	Down
DPLY	Deploy
DSPL	Display
DU	Display Unit

E

EAS	Equivalent Airspeed
EASA	European Aviation Safety Agency
ECL	Electronic Checklist
ECS	Environmental Control System
EDM	Emergency Descent Mode
EDP	Engine Driven Pump
EFB	Electronic Flight Bag

EGT	Exhaust Gas Temperature (°C)
EICAS	Engine Indication and Crew Alerting System
ELEV	Elevation
ELT	Emergency Locator Transmitter
EMER	Emergency
ENG	Engine
EPC	Electrical Power Center
EQUIP	Equipment
ESS	Essential
ETP	Equal Time Point
EVAC	Evacuation
EXT	Exterior

F

FAA	Federal Aviation Administration (USA)
FANS	Future Area Navigation System
FCOM	Flight Crew Operating Manual
FCP	Flight Control Panel
FD	Flight Director
FDRAS	Flight Deck Remote Access System
FLT	Flight
FMS	Flight Management System
FOD	Foreign Object Damage
FPLN	Flight Plan
fpm	Foot (feet) per minute
FPV	Flight Path Vector
FWD	Forward

G

GA	Go-around
GEN	Generator
GND	Ground
GNSS	Global Navigation Satellite System

H

HI	High
HPGC	High Pressure Ground Connection
HYD	Hydraulic

I

IAS	Indicated Airspeed
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
IMAA	Integrated Modular Avionic Application
IMC	Instrument Meteorological Conditions
INHIB	Inhibit
INIT	Initialization
IPC	Integrated Processing Cabinet
IRS	Inertial Reference System
ISA	International Standard Atmospheric conditions
ISI	Integrated Standby Instruments

K

kg	Kilogram(s)
KIAS	Knots Indicated Airspeed
kVA	Kilovolt-ampere(s)

L

L	Left
LAV	Lavatory
lb	Pound(s)
LCD	Liquid Crystal Display
LDG	Landing
LO	Low
LPGC	Low Pressure Ground Connection
LPV	Localizer Performance with Vertical guidance
L-R	Left and Right
LTS	Lights
LVL	Level
LVTO	Low Visibility Takeoff
LW	Landing Weight
LWD	Left Wing Down

M

M_I	Indicated Mach number
M_T	True Mach number
MAN	Manual
MAX	Maximum
MCL	Maximum Climb Thrust
MCT	Maximum Continuous Thrust
MDA	Minimum Descent Altitude
MEL	Minimum Equipment List
MFD	Multi-function Display(s)
MFS	Multi-function Spoilers
MFW	Minimum Flight Weight
MISALIGN	Misalignment
MISCONFIG	Misconfiguration
MKP	Multi-function Keyboard Panel

MLG	Main Landing Gear
MLW	Maximum Landing Weight
M MEL	Master Minimum Equipment List
M _{MO}	Maximum operating Mach
MRW	Maximum Ramp Weight
MTOW	Maximum Takeoff Weight
MZFW	Maximum Zero Fuel Weight

Miscellaneous

%	Percent
°C	Degree(s) Celsius
°F	Degree(s) Fahrenheit

N

N/A	Not Applicable
N ₁	Low pressure rotor speed
N ₂	High pressure rotor speed
NADP	Noise Abatement Departure Procedure
ND	Nose Down
NLG	Nose Landing Gear
nm	Nautical Miles
No.	Number
NORM	Normal
NU	Nose Up

O

OAT	Outside Air Temperature
OEI	One Engine Inoperative
OLD	Operational Landing Distance
OVHT	Overheat
OXY	Oxygen

P

P/N	Part Number
PA	Passenger Address
PARK	Parking
PAX	Passenger
PCE	Pre-cooler Exhaust
PED	Personal Electronic Device
PERF	Performance
PIC	Pilot-in-Command
PFCC	Primary Flight Control Computer
PLT	Pilot
PRESS	Pressure
psi	Pound(s) per Square Inch
psi-A	Pound(s) per Square Inch – Absolute
PTU	Power Transfer Unit
PWR	Power

Q

QNH	Barometric pressure adjusted to sea level
QRH	Quick Reference Handbook
QTY	Quantity

R

R	Right
RA	Resolution Advisory
RAT	Ram Air Turbine
RECIRC	Recirculation
REQ	Request
RET	Retract
RNP	Required Navigation Performance
rpm	Revolutions Per Minute

RT	Receiver-Transmitter
RTA	Required Time of Arrival
RTE	Route
RTO	Rejected Takeoff
RVSM	Reduced Vertical Separation Minimum
RWD	Right Wing Down
RWY	Runway

S

SAT	Static Air Temperature
SBAS	Satellite-Based Augmentation System
SEQ	Sequence
SLIPCOMP	Sideslip Compensation
SLS	Sea Level Standard
SOV	Shutoff Valve
SPD	Speed
STAB	Stabilizer
SSEC	Static Source Error Correction

T

TAS	True Airspeed
TAT	Total Air Temperature
TAWS	Terrain Awareness Warning System
TC	Transport Canada
TCAS	Traffic Alert and Collision Avoidance System
TEMP	Temperature
TGL	Temporary Guidance Leaflet
TOGA	Takeoff/Go-around
TRU	Transformer Rectifier Unit

U

US gal	United States gallon(s)
UTC	Universal Time Coordinated

V

V_{-}	V-speed (refer to 5. DEFINITIONS – Airspeeds, in this section.)
V_1	Takeoff decision speed
V_{1MBE}	Maximum V_1 limited by brake energy
V_{1MCG}	Minimum V_1 limited by control on the ground
V_2	Takeoff safety speed
V_A	Design maneuvering speed
V_{AC}	Approach climb speed (Also known as V_{2GA} and $V_{2GO-AROUND}$)
V_{APP}	Approach speed
V_{EF}	Critical engine failure speed
V_{ENR}	Climb speed during the enroute phase for one engine inoperative
V_{FE}	Maximum flap extended speed
V_{FTO}	Final takeoff speed
V_{GA}	Climb speed for all engines go-around
V_{LC}	Landing climb speed
V_{LE}	Maximum landing gear extended speed
V_{LO}	Maximum landing gear operating speed
V_{MC}	Minimum control speed
V_{MCA}	Minimum control speed, air
V_{MCG}	Minimum control speed, ground
V_{MCL}	Minimum control speed, landing
V_{MO}	Maximum operating speed in knots
V_R	Rotation speed
V_{REF}	Reference landing speed

V _{S1G}	Reference stall speed based on 1.0 g criteria
V _{SR}	Reference stall speed
VFR	Visual Flight Rules
VSPDS	V-speeds
VLV	Valve
VSD	Vertical Situation Display

W

WBM	Weight and Balance Manual
WDW	Window
WOW	Weight On Wheels
WSHLD	Windshield
WTBF	Wing-to-belly Fairing
WX	Weather radar
WXR	Weather radar system

X

XBLEED	Cross bleed
XFR	Transfer

OPTION CODES

A complete list of applicable option codes is available in section 00-04, at the beginning of this manual.

Option codes appear adjacent to the applicable text, to indicate an optional configuration component.

Absence of an option code means that the data are applicable to all.

SERVICE BULLETINS

A complete list of applicable service bulletins is available in section 00–05, at the beginning of this manual.

A reference to a service bulletin condition appears above applicable boxed text. A Pre–SB condition is applicable to aircraft that have not incorporated the service bulletin. A Post–SB condition is applicable to aircraft that have incorporated the service bulletin.

MODIFICATIONS

A complete list of applicable modifications is available in section 00–06, at the beginning of this manual.

A reference to a modification appears above applicable boxed text. These modifications are incorporated in production and do not require a service bulletin.

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CHAPTER 2 – LIMITATIONS

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INTRODUCTION

Observance of the limitations included in this chapter is mandatory.

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KINDS OF AIRPLANE OPERATION

The airplane is certified in the transport category for day and night operations in the following conditions when the equipment and instruments required by the airworthiness and operating regulations are approved, installed, and in an operable condition:

- VFR and IFR
- Extended range operations <10109100C>
- Flight in icing conditions up to 35000 feet
- Landings with approach path angles no greater than 3.5 degrees

STRUCTURAL WEIGHT LIMITATION

A. Structural weight limitation

Weight	kg	lb	Option code
Maximum Ramp Weight (MRW)	61454	135482	<13001061C>
Maximum Takeoff Weight (MTOW)	61000	134482	<13001061C>
Maximum Landing Weight (MLW)	58740	129500	<13001290C>
Maximum Zero Fuel Weight (MZFW)	55792	123000	<13001290C>
Minimum Flight Weight (MFW)	36287	80000	

Weight	kg	lb	Option code
Maximum Ramp Weight (MRW)	64454	142096	<13001131C>
Maximum Takeoff Weight (MTOW)	64000	141096	<13001131C>

Weight	kg	lb	Option code
Maximum Landing Weight (MLW)	58740	129500	<13001290C>
Maximum Zero Fuel Weight (MZFW)	55792	123000	<13001290C>
Minimum Flight Weight (MFW)	36287	80000	

Weight	kg	lb	Option code
Maximum Ramp Weight (MRW)	66451	146500	<13001176C>
Maximum Takeoff Weight (MTOW)	65997	145500	<13001176C>
Maximum Landing Weight (MLW)	58740	129500	<13001290C>
Maximum Zero Fuel Weight (MZFW)	55792	123000	<13001290C>
Minimum Flight Weight (MFW)	36287	80000	

Weight	kg	lb	Option code
Maximum Ramp Weight (MRW)	68039	150000	<13001310C>
Maximum Takeoff Weight (MTOW)	67585	149000	<13001310C>
Maximum Landing Weight (MLW)	58740	129500	<13001290C>
Maximum Zero Fuel Weight (MZFW)	55792	123000	<13001290C>

Weight	kg	lb	Option code
Minimum Flight Weight (MFW)	36287	80000	

NOTE

The Maximum Takeoff Weight (MTOW) and/or Maximum Landing Weight (MLW) may be further limited due to performance considerations.

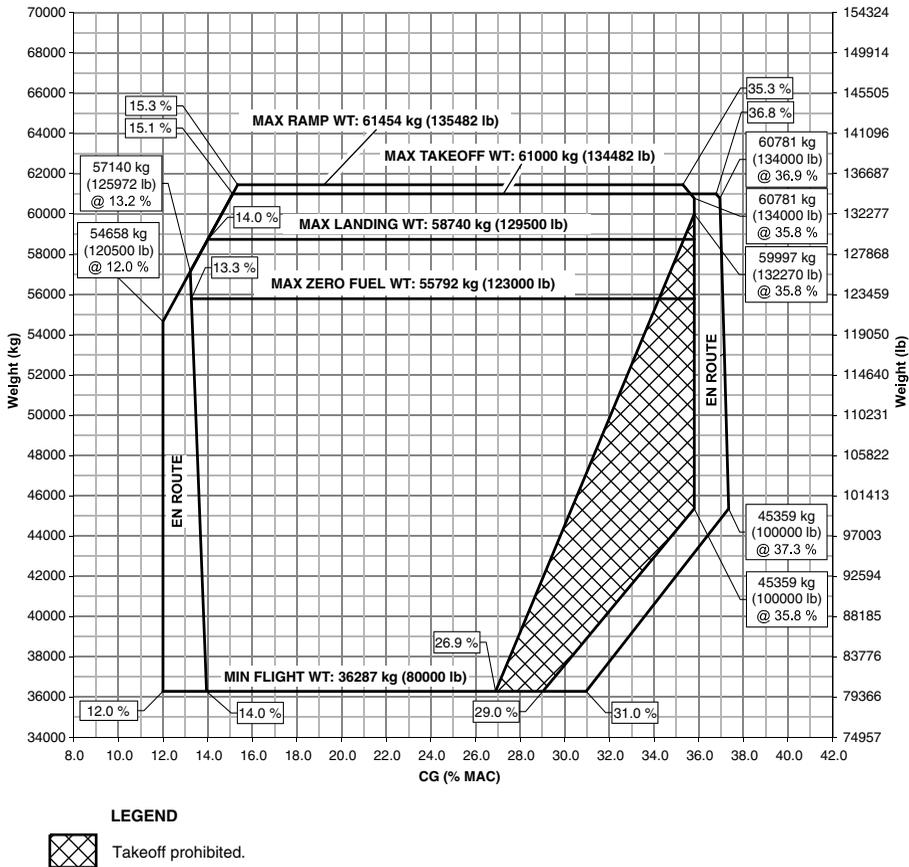
CENTER OF GRAVITY LIMITS

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

A. Center of gravity limits

The maximum permissible Center of Gravity (CG) range with the landing gear extended is/are shown on the page(s) that follow(s).

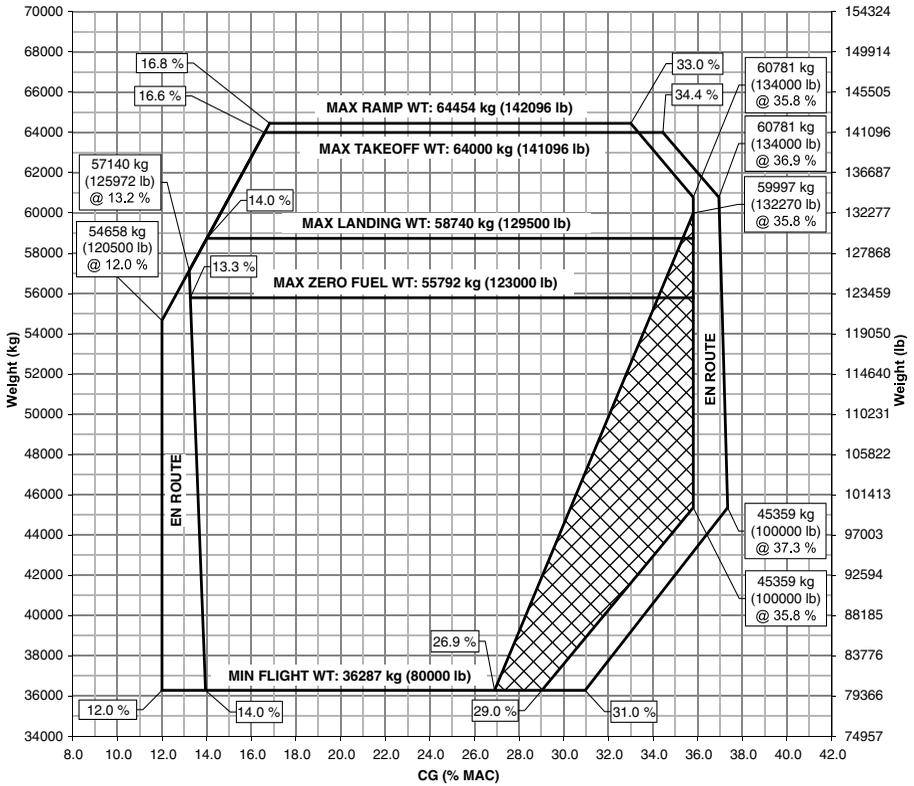
The airplane must be loaded in accordance with the loading instructions associated with the Weight and Balance Manual (WBM) (BD500-3AB48-32100-00). The effect of landing gear retraction on CG position is negligible.



Center of gravity limits <13001061C> and <13001290C>
Figure 02-02-1

LIMITATIONS General limitations

CS300

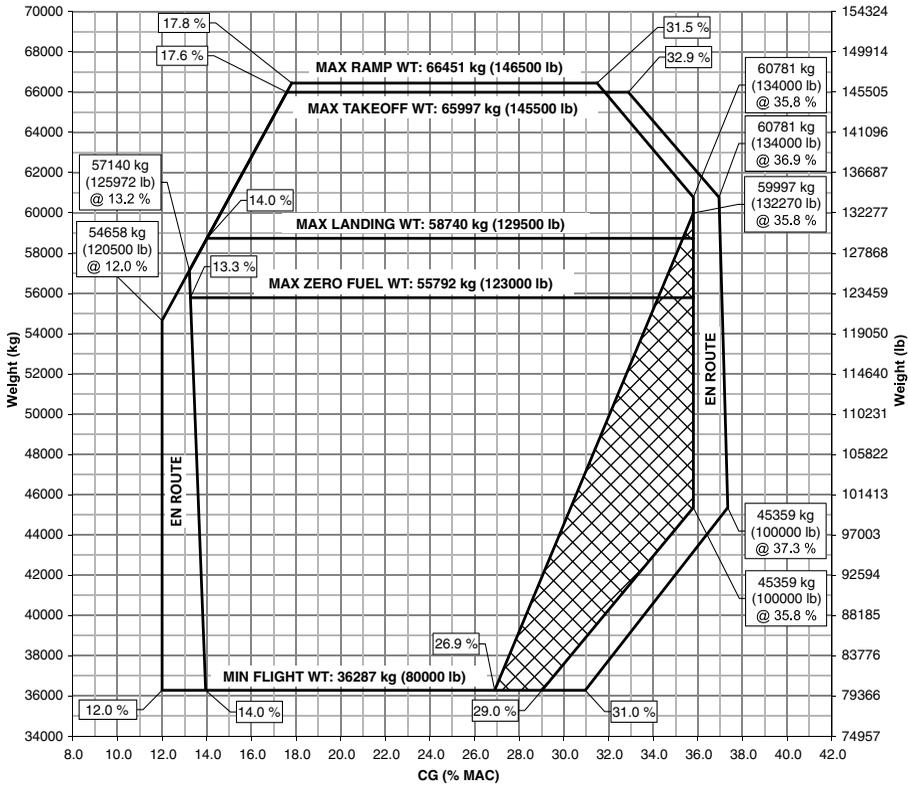


LEGEND



Takeoff prohibited.

Center of gravity limits <13001131C> and <13001290C>
Figure 02-02-2



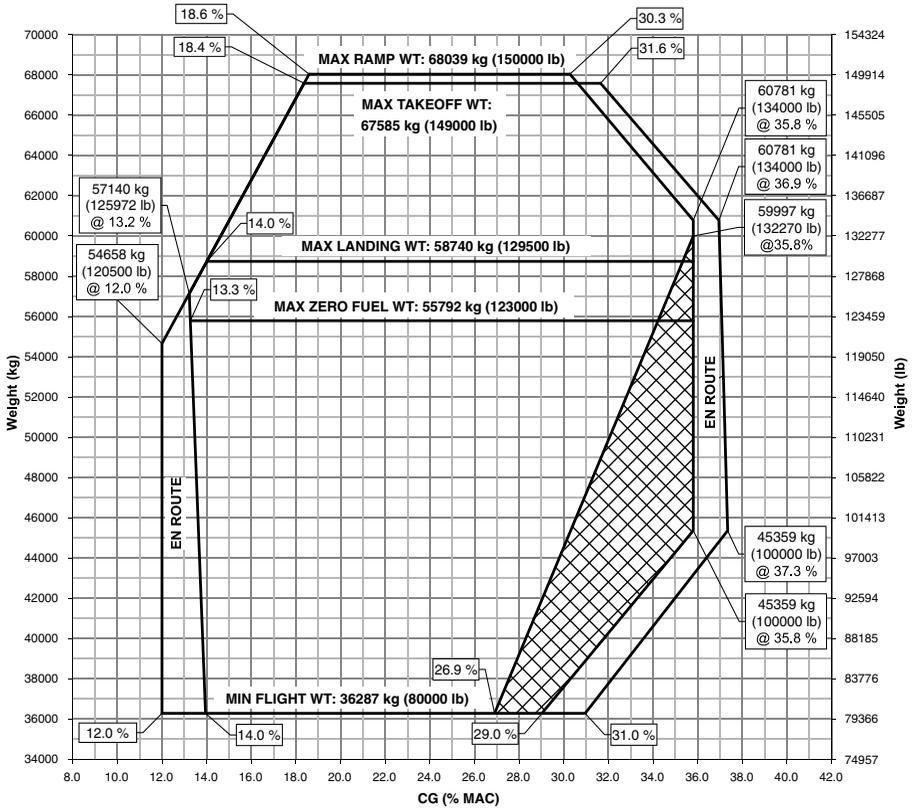
LEGEND

 Takeoff prohibited.

Center of gravity limits <13001176C> and <13001290C>
Figure 02-02-3

LIMITATIONS General limitations

CS300



LEGEND



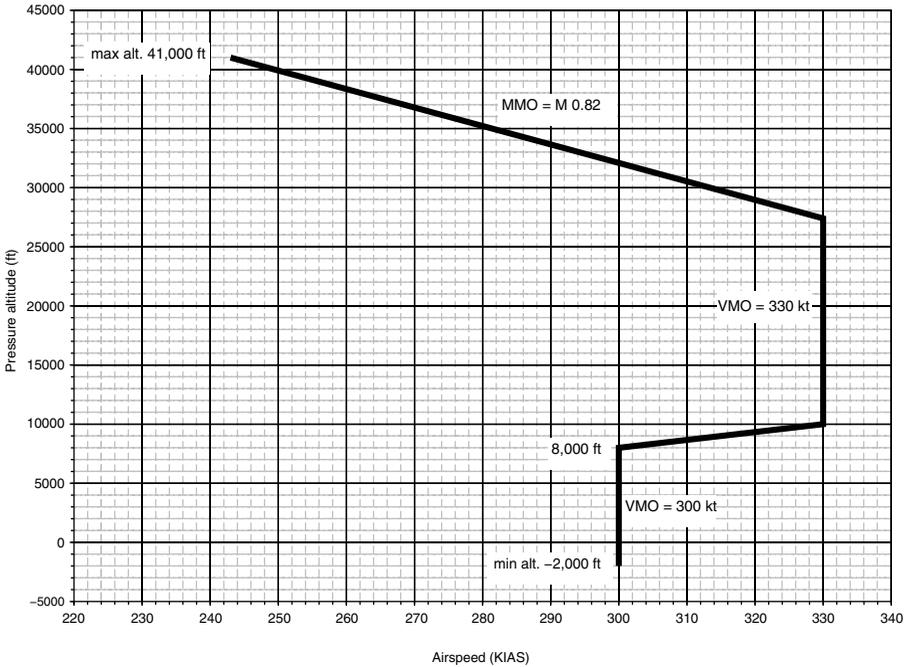
Takeoff prohibited.

Center of gravity limits <13001310C> and <13001290C>
Figure 02-02-4

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MAXIMUM OPERATING SPEED AND MACH NUMBER

Maximum operating limit speeds as given in [Figure 02-03-1](#) must not be deliberately exceeded in any regime of flight (climb, cruise or descent) unless a higher speed is authorized for flight test or pilot training.



Maximum operating speed and Mach number
Figure 02-03-1

DESIGN MANEUVERING SPEED (V_A)

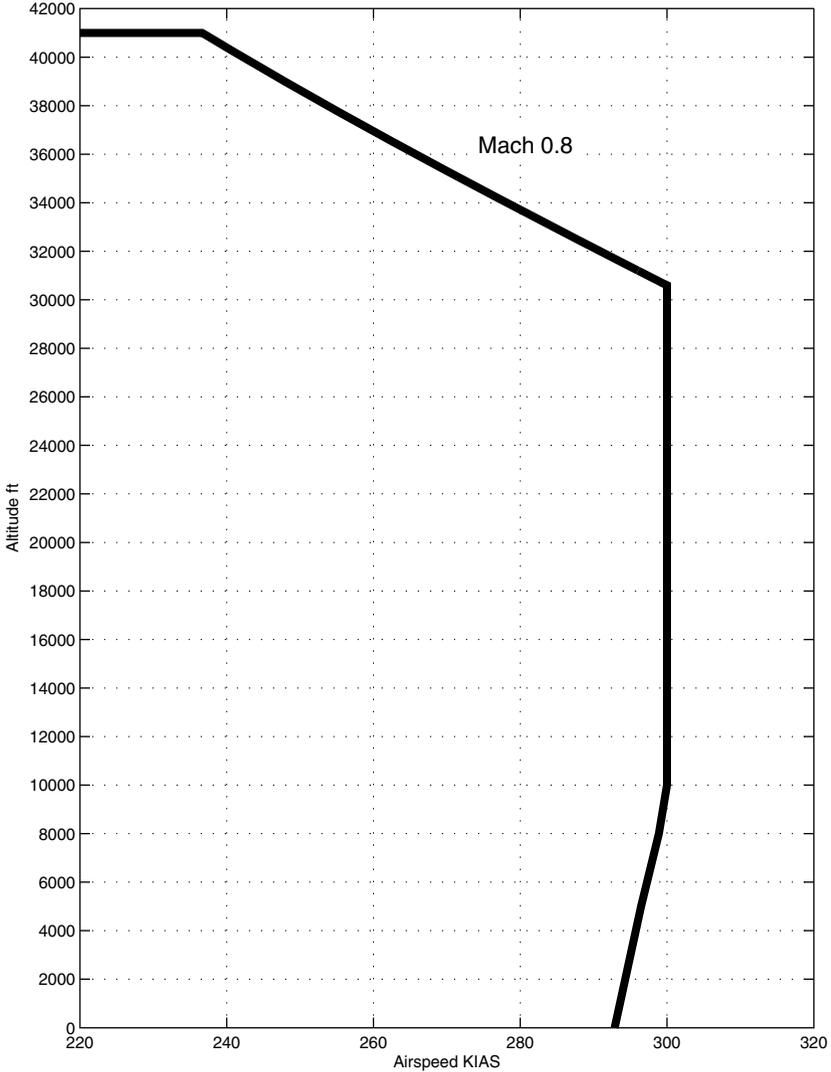


Avoid rapid and large alternating control inputs, especially in combination with large changes in pitch, roll, or yaw (e.g. large side-slip angles) as they may be cause for structural failure at any speed, including below V_A , and in any active flight control mode.

When in direct mode, full application of elevator, rudder and aileron controls as well as maneuvers that involve angles of attack near the stall, must be confined to speeds below V_A . Values of V_A are given in [Figure 02-03-2](#), for varying pressure altitudes.

NOTE

When in normal mode, control laws provide automatic protection against any full application of elevator, aileron and rudder as well as maneuvers that involve angles of attack near the stall at any speed.



Maximum Design Maneuvering speeds (VA) in direct mode only
Figure 02-03-2

FLAPS EXTENDED SPEED (VFE)

The maximum speed with flap extended is:

- FLAP 1: 230 KIAS
- FLAP 2: 210 KIAS
- FLAP 3: 210 KIAS
- FLAP 4: 190 KIAS
- FLAP 5: 170 KIAS

MAXIMUM LANDING GEAR OPERATING SPEED (VLO)

The maximum speed for landing gear extension is 250 KIAS.

The maximum speed for landing gear retraction is 220 KIAS.

MAXIMUM LANDING GEAR EXTENDED SPEED (VLE)

The maximum speed with landing gear extended is 250 KIAS.

TURBULENCE PENETRATION SPEED (VRA)

Recommended airspeed for turbulence penetration in moderate to severe turbulence is 265 KIAS (10000 feet and below) or 280 KIAS (above 10000 feet) or 0.75 Mach, whichever is lower.

WINDSHIELD WIPER OPERATION

The windshield wiper must not be operated at more than 250 KIAS.

TIRE LIMIT SPEED

The tire limit speed is 195 knots ground speed.

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ALTITUDE AND TEMPERATURE OPERATING LIMITS

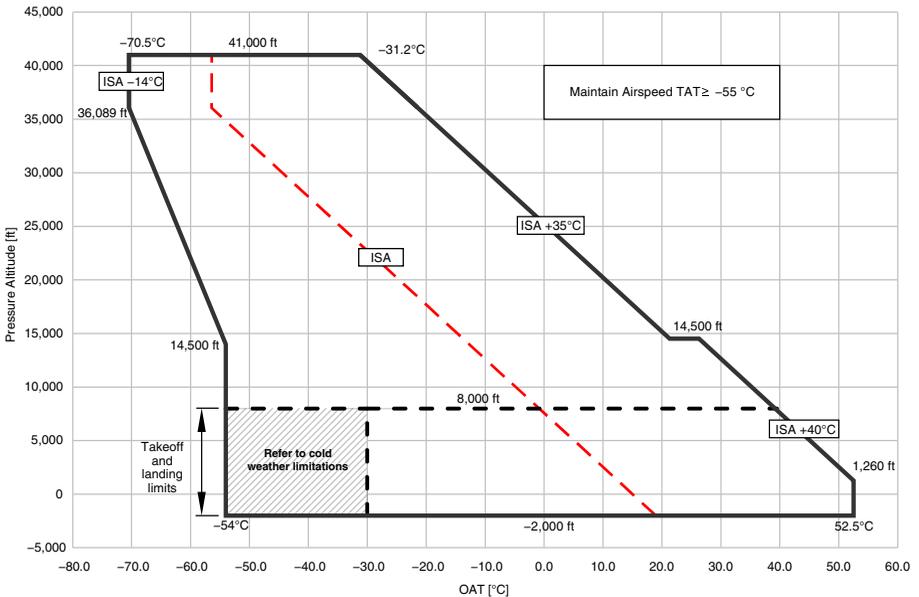
Maximum airport pressure altitude for takeoff and landing is 8000 feet.

Maximum operating altitude is 41000 feet.

Maximum ambient temperature approved for takeoff and landing is 52.5°C (126.5°F).

Minimum ambient temperature approved for takeoff is -54°C (-65°F).

Minimum ambient temperature approved for landing is -54°C (-65°F).

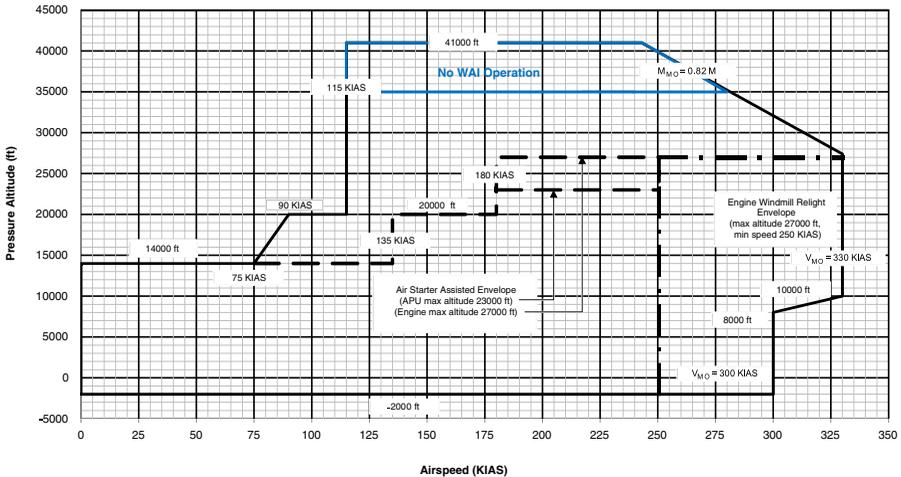


Altitude and temperature operating limits
Figure 02-04-1

ALTITUDE AND SPEED OPERATING LIMITS

(<Mod 219001> or <Post-SB BD500-219001>) and (<Post-SB BD500-732002> or Mod <732002> or <Post-SB BD500-732003> or <Mod 732003>)

The airplane altitude and speed envelope is given in [Figure 02-04-2](#).



Altitude and speed operating limits
Figure 02-04-2

MANEUVERING LIMIT LOAD FACTORS

The maneuvering limit load factors are:

- Flaps up: -1.0 g to 2.5 g
- Flaps down: 0.0 g to 2.0 g

COLD WEATHER OPERATIONS

WARNING

Even small amounts of frost, ice, snow or slush on the wing leading edges and forward upper wing surface may adversely change the stall speeds and stall characteristics, which may result in loss of control on takeoff.

Takeoff is prohibited with frost, ice, snow or slush adhering to any critical surface (wings, horizontal stabilizer, vertical stabilizer, control surfaces and engine inlets). Refer to Flight Crew Operating Manual (FCOM), Volume 2 (BD500-3AB48-32600-02), Operational guidance – Cold weather operations – External safety inspection, for instructions.

Operation of the airplane is prohibited if the airplane, with the engines shut down, has been exposed to a ground ambient temperature below -30°C (-22°F) for a period exceeding two hours in the preceding 12 hours. Refer to Flight Crew Operating Manual (FCOM), Volume 2 (BD500-3AB48-32600-02), Operational guidance – Cold weather operations.

Engine operation is prohibited in ground fog conditions with OAT below -18°C (0°F).

Infrared deicing is prohibited.

OPERATION IN ICING CONDITIONS

A. Cowl anti-ice system

(1) Ground operations

The cowl anti-ice system must be ON when the OAT is 10°C (50°F) or below and visible moisture in any form is present (such as fog with visibility of 1500 meters [one mile] or less, rain, snow, sleet and ice crystals).

The cowl anti-ice system must be ON when the OAT is 10°C (50°F) or below when operating on runways, ramps, or taxiways where surface snow, ice, standing water, or slush is present.

(2) Flight operations

NOTE

Icing conditions exist in flight at a TAT of 10°C (50°F) or below, and visible moisture in any form is present (such as clouds, rain, snow, sleet, and ice crystals), except when the SAT is -40°C (-40°F) or below.

The cowl anti-ice system must be AUTO or ON:

- When in icing conditions, or
- When ICE is annunciated by the ice detection system.

B. Wing anti-ice system

(1) Ground operations

The wing anti-ice system must be selected ON for takeoff when OAT is 5°C (41°F) or below and visible moisture in any form is present (such as fog with visibility of 1500 meters [one mile] or less, rain, snow and ice crystals).

The wing anti-ice system must be selected ON for takeoff when the OAT is 5°C (41°F) or below when operating on runways where surface snow, ice, standing water, or slush is present.

(2) Flight operations

NOTE

Icing conditions exist in flight at a TAT of 10°C (50°F) or below, and visible moisture in any form is present (such as clouds, rain, snow, sleet, and ice crystals), except when the SAT is -40°C (-40°F) or below.

The wing anti-ice system must be selected AUTO or ON:

- When in icing conditions, or
- When ICE is annunciated by the ice detection system.

Do not hold in icing conditions with the flaps/slats extended.

Wing anti-ice must be selected OFF when above 35000 feet.

Wing anti-ice ON is prohibited when TAT is above 15°C (59°F).

C. Super-cooled Large Droplet (SLD) icing

Continued operation in areas where Super-cooled Large Droplet (SLD) icing conditions exist is prohibited.

SLD icing conditions are indicated by ice accretion on the flight compartment side windows:

- The wing anti-icing system must be ON in SLD icing conditions.
- The cowl anti-icing system must be ON in SLD icing conditions.
- Leave icing conditions when side window icing occurs.

D. Engine ice shedding (ground)

Engine ice shedding must be performed when the OAT is 3°C (37°F) or below and visible moisture in any form is present such as fog, rain, snow, sleet or ice crystals. Engine run-ups must be, momentarily, to a minimum of 60% N1 at intervals no greater than 30 minutes. Takeoff must be initiated within the 30-minute interval, otherwise a final ice shedding run-up must be done immediately before takeoff to ensure normal engine operation.

E. Engine ice shedding (in flight)

When operating for extended periods in icing conditions, engine vibrations may be encountered, even with the anti-ice on. A momentary increase in thrust, up to CLB thrust, should stop undesirable vibrations.

F. Speed corrections for approach and landing in icing conditions with FLAP 5

During an approach and landing in icing conditions, or if there is evidence of ice accretion, V_{REF} , V_{AC} and V_{GA} speeds must be increased by 5 KIAS.

NOTE

V_{REF} and V_{AC} speeds calculated with the CAFM include the 5 KIAS increment specified above when ice accumulation is selected to Yes in the aircraft data menu of each of the landing calculators (for dispatch or operational).

RUNWAY SLOPES

Maximum runway slopes approved for takeoff and landing are: $\pm 2\%$

TAILWIND CONDITIONS

The maximum tailwind component approved for takeoff is 10 knots.

The maximum tailwind component approved for landing is 10 knots.

OCCUPANT LIMITS**A. Minimum flight crew**

The minimum flight crew is two pilots.

B. Maximum occupants

The maximum number of cabin occupants is 150, consisting of 145 passengers maximum, and up to 5 cabin crewmembers.

OZONE CONCENTRATION <21710001D>

Airplane operations are prohibited on routes where ozone concentrations will exceed the following limits:

- 0.25 parts per million by volume, sea level equivalent, at any time above flight level 320, and

-
- 0.1 parts per million by volume, sea level equivalent, time-weighted average during any 3-hour interval above flight level 270.

NOTE

Sea level equivalent refers to conditions of 25°C and 760 mm of mercury pressure.

Data to determine flight altitudes and/or duration at altitude in compliance with these requirements are given the Flight Crew Operating Manual (FCOM), Volume 2 – Performance – Flight planning – Ozone tables.

ELECTRONIC CHECKLIST (ECL)

A. Database version

Installation of the ECL does not constitute an operational approval to use the ECL. An alternate source of required documentation must be carried on the airplane. The QRH must be used for the Smoke/fire/fumes procedure.

If used, the ECL part numbers ECL_BACS300AAAQQQ-YY must be verified to make sure that the code QQQ is the same as the latest available AFM issue.

NOTE

“AAA” represents the variant code (000 = BA master variant, 001 to 999 = customer variant).

“QQQ” represents the latest available Airplane Flight Manual (AFM) issue number (001 to 999).

“YY” represents the file version number and is incremented numerically with any issue number (01 to 99).

B. Non-EICAS procedures

Non-EICAS procedures can only be restarted from the Summary page.

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PRESSURIZATION DIFFERENTIAL

The maximum positive differential pressure is 8.8 psid.

The maximum negative differential pressure is -0.5 psid.

During initial landing (at touchdown) the pressure differential must not exceed 1.0 psid.

AIR-CONDITIONING

■ The doors should not be closed for more than 15 minutes when passengers are on board and the packs are off and no ground ventilation (LPGC), except for deicing operations, during which time with the packs off should be kept to a minimum.

When OAT is above 40°C (104°F) operation without ECS or external cooling (LPGC) is limited to 30 minutes.

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AUTOPILOT ENGAGEMENT

The minimum height for engagement of autopilot is 400 feet AGL.

The minimum height for use of autopilot is 80 feet AGL.

AUTOTHROTTLE

The autothrottle must be disconnected before touchdown for touch and go procedures.

During an approach and landing with autothrottle, the approach speed must be increased by 5 kts.

FLIGHT DIRECTOR

NOTE

During the (V) ALTS CAP mode the flight guidance/autopilot may not maintain the selected airspeed. Crew intervention may be required to maintain the selected airspeed.

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APU TYPE

Honeywell 131-9(C)

APU START

- The minimum oil temperature for an APU start is -40°C (-40°F).
Do not perform more than three starts / start attempts in one hour.
A two-minute delay must be observed between start attempts.

APU OPERATION

- APU starting and operation is permitted within the operating envelopes shown in Operating limitations – [Altitude and temperature operating limits](#) and [Altitude and speed operating limits](#).

The altitude limit for APU bleed air extraction is 23000 feet.

NOTE

Air-conditioning pack operation affects the altitude limit for bleed air extraction based on the number of cabin occupants and outside air temperature. Refer to APU BLEED AIR for limitations.

APU BLEED AIR

CS300 - APU bleed, dual pack - All Engines Operative (AEO) - In flight Cabin occupants (passengers and cabin crew)																	
Pressure Altitude	Outside Air Temperature (OAT)																
	ft	OAT of -54°C	ISA-20°C	ISA-15°C	ISA-10°C	ISA-5°C	ISA	ISA+5°C	ISA+10°C	ISA+15°C	ISA+20°C	ISA+25°C	ISA+30°C	ISA+35°C	ISA+37.5°C	ISA+40°C	
-2000	0																
1000																	
6000																	
7000																	
8000																	
9000																	148
10000																	143
11000														144			135
12000														140			130
13000														145			124
14000														139			119
15000														147			114
16000														143			109
17000								146	138	132	124	118	111	103			
18000								142	135	129	121	114	107	100			
19000								142	131	125	119	113	106	99			
20000								148	142	137	131	125	119	113			
21000	149	146	144	142	140	135	131	127	123	119	115	110	104	97			
22000	142	140	138	134	129	126	123	119	116	111	105	97	79				
23000								130	126	123	120	118	115	113	111	84	76

No limitation
Altitude limit based on cabin occupants
Engine bleed only

Altitude limit for APU bleed air extraction – APU bleed, dual pack – AEO – In flight

Figure 02-07-1

CS300 - APU bleed, dual pack - One Engine Inoperative (OEI) - in flight Cabin occupants (passengers and cabin crew)												
Pressure Altitude	Outside Air Temperature (OAT)											
	OAT of -54°C	ISA-15°C	ISA-10°C	ISA+5°C	ISA+10°C	ISA+15°C	ISA+20°C	ISA+25°C	ISA+30°C	ISA+35°C	ISA+37.5°C	ISA+40°C
-2000	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
0	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
1000	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
13000	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
14000	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
15000	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
16000	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
17000	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
18000	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
19000	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
20000	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
21000	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
22000	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
23000	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red

	No limitation
	Altitude limit based on cabin occupants
	Engine bleed only

Altitude limit for APU bleed air extraction – APU bleed, dual pack – OEI – In flight

Figure 02-07-2

CS300 – APU bleed, single pack – All Engine Operative (AEO) – In flight
Cabin occupants (passengers and cabin crew)

Pressure Altitude	Outside Air Temperature (OAT)														
	OAT of -54°C	ISA-20°C	ISA-15°C	ISA-10°C	ISA-5°C	ISA	ISA+5°C	ISA+10°C	ISA+15°C	ISA+20°C	ISA+30°C	ISA+25°C	ISA+35°C	ISA+37.5°C	ISA+40°C
-2000													149	147	144
0													149	147	144
1000													147	145	140
2000													143	141	136
3000													139	137	132
4000										146	146	135	133	131	128
5000										141	130	128	127	123	120
6000										138	126	124	123	119	116
7000										134	122	120	119	115	112
8000										130	120	118	116	114	111
9000										124	114	112	111	107	104
10000								145	145	135	124	114	112	111	107
11000								142	131	121	110	108	107	104	101
12000								149	138	127	117	107	105	104	98
13000								145	135	124	114	104	102	101	97
14000								143	135	125	118	100	98	97	94
15000								149	141	133	124	116	98	96	94
16000								146	138	131	122	114	95	93	91
17000								143	135	128	120	113	93	89	85
18000								149	140	133	126	118	111	97	84
19000								146	137	130	123	116	109	108	93
20000								143	134	127	121	114	108	106	90
21000								140	131	125	119	112	106	103	87
22000								148	137	128	122	116	110	104	84
23000								142	133	125	119	114	108	103	86
24000	148	146	140	134	128	123	117	112	106	101	96	77	58		

No limitationAltitude limit based on cabin occupantsEngine bleed only

Altitude limit for APU bleed air extraction – APU bleed, single pack – AEO – In flight

Figure 02-07-3

PERMISSIBLE LOADS ON AC SYSTEMS

Maximum AC generator load must not exceed 75 kVA continuous.

PERMISSIBLE LOADS ON DC SYSTEMS

The maximum permissible continuous load on TRU 1 and 2 is 350 amp.

The maximum permissible continuous load on TRU 3 is 225 amp.

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SLATS/FLAPS

Maximum altitude with slats/flaps extended is 20000 feet.

FLIGHT SPOILERS

Minimum height with flight spoilers manually extended is 300 feet AGL.

Minimum speed with flight spoilers manually extended is $V_{REF} + 10$ KIAS.

Use of MAX spoilers is prohibited except in an emergency.

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FUEL LOAD

The maximum permissible fuel imbalance between the contents of the left and right tank is 363 kg (800 lb).

Fuel remaining in a tank when the appropriate fuel quantity indicator reads zero is not usable.

The maximum usable fuel load for each fuel tank is as follows:

Maximum usable fuel load				
Tank	Tank volume		Fuel mass ^[1]	
	L	US gal	kg	lb
Left main tank	3770	996	3050	6725
Right main tank	3770	996	3050	6725
Center tank	13968	3689	11300	24900
Total	21508	5681	17400	38350

[1] Based on a fuel density of 0.809 kg/L (6.75 lb/US gal), rounded to the nearest 10 kg or 25 lb. Fuel mass is provided for reference only and should not be considered limiting.

The minimum fuel quantity for go-around is 442 kg (975 lb) per wing (with the airplane level) and at a maximum airplane climb attitude of 10 degrees nose up.

FUEL TEMPERATURE

Maximum bulk fuel temperature for starting and operating is 52.5°C (126.5°F).

Takeoff with bulk fuel temperature indications below -37°C (-35°F) is prohibited.

FUEL GRADES

Fuels conforming to any of the following specifications are approved for use. Mixing of fuels is permitted.

Australian	Canadian	American	British	Other
1QTA K/1/80	CAN/CGSB-3.23 [2]	ASTM D1655 – JET A [2]	Defence Standard 91-91 [2]	GOST 10227 – TS-1 ^[1] , RT ^[1]
1QTA K/1/80		ASTM D1655 – JET A1 [2]	---	GB6537-2006 – Jet No. 3
---	---	MIL-DTL-83133 – JP-8	---	---

[1] Fuel quantity gauging inaccuracy when using TS-1 or RT fuel will be up to 0.8% higher (over indicating) than when using the other fuels listed in the table.

[2] ASTM D1655, Defence standards 91-91, and CAN/CGSB-3-23 jet fuels whose origin was as ASTM D7566 (Aviation turbine fuel containing synthesized hydrocarbons) and are re-identified as Jet A, Jet A1 fuels are considered equivalent to fossil-based fuels.

FUEL ADDITIVES

Refer to Aircraft Maintenance Publication (AMP), (BD500-3AB48-10200-00), System 12 – Servicing, for the list of approved fuel additives.

FUEL CROSSFLOW

Manual transfer and gravity crossflow must be off for takeoff.

FUEL TRANSFER

Operation of the APU in an unattended mode is prohibited if either wing tank quantity is greater than 2830 kg (6225 lb). If the **FUEL LEAK SUSPECT** caution message is shown, follow the associated non-normal procedure.

When operating on ground the left engine must be started first if either wing tank fuel quantity is greater than 2830 kg (6225 lb).

When operating on ground a manual fuel transfer must be done from the affected wing to the center tank to reduce affected wing quantity to less than 2830 kg (6225 lb) when:

- Either wing tank fuel quantity is greater than 2830 kg (6225 lb), and
- Center tank fuel quantity is less than 10670 kg (23525 lb).

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TOWING OPERATIONS

Use of aircraft brakes during towing operations done with towbarless vehicles is prohibited.

WHEEL BRAKE COOLING LIMITATIONS

The maximum allowable brake temperature for takeoff specified in Chapter 5 – Performance must be observed.

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DISPLAYS

Use of the Vertical Situation Display (VSD) is for advisory purposes only.

Do not print WT & BAL in flight.

Do not print enroute charts and NOTAM chart.

FLIGHT MANAGEMENT SYSTEM (FMS)

Selection of TACAN from the navigation database are prohibited.

Entry of Place/Bearing/Distance (PBD) waypoints that use an airport identifier is prohibited.

The flight crew must verify any altitude constraint on the last waypoint of any entered STAR procedure and/or the first waypoint of any entered approach procedure. The flight crew may correct any such altitude constraint(s) as required to agree with current chart procedures.

Use of the FPLN UPLINK function in flight is prohibited. Any REQUEST PENDING must be cleared before takeoff.

Uplink flight plans must not contain Place/Bearing/Distance (PBD) Waypoints.

Use of FMS waypoint INFO dialog box in flight is prohibited.

Use of FMS ROUTE page – POS REPORT tab is prohibited in terminal area.

Selection of flight plan waypoints using the cursor on the map display is prohibited.

Display of the FMS pages FPLN – INIT or FPLN – WIND/TEMP during takeoff and approach is prohibited.

Localizer approaches must be flown with NAV mode selected before the Final Approach Fix (FAF).

Other than automatic FMS temperature compensation, changes to altitudes in the final approach segment (included FAF and step-down fixes) for any FMS approach procedures are prohibited.

The individual flight plan leg or between aircraft position and the TO waypoint must not exceed:

- RNAV-1/RNP-1 – 200 nm
- RNAV-2/RNP-2 – 400 nm
- RNP-4 – 500 nm
- RNP-10 – 500 nm

FMS navigation at latitudes north of 73°N and south of 60°S is prohibited.

Use of the FMS as a primary navigation source beyond the FAF for ILS, LOC, LOC-BC, LDA, SDF and IGS approaches is prohibited.

MAN SPD must be set and used when flying V_{APP} in the final landing configuration.

Use of OPT ALT and MAX ALT on FMS, PERF – CLB and on FMS, PERF – CRZ pages for flight planning is prohibited.

True headings must be entered in the xxxT format.

NAVIGATION

Operation using QFE altimeter setting is prohibited.

TERRAIN AWARENESS WARNING SYSTEM (TAWS)

Airplane navigation must not be predicated upon the use of the terrain display.

To avoid giving unwanted alerts, the TAWS, TERR switch must be selected to INHIB for takeoff or landing within 15 nm of an airport not contained in the TAWS database.

ENGINES

A. Engine types

Type: PurePower™ PW1521G-3, quantity two. <72211001D>

B. Engine warm-up

Oil temperature	Maximum N1 setting
Below -40°C (-40°F)	Engine start prohibited
Below -6°C (21°F)	Idle
Between -6°C (21°F) and 21°C (70°F)	30% N1
From 21°C (70°F) and above, to 49°C (120°F)	50% N1
49°C (120°F) and above	No limit

ENGINE OPERATING LIMITS

A. Engine operating limits

<Post-SB BD500-732003> or <Mod 732003>

Operating conditions		Operating limits			
Thrust setting	Time limit	Max. EGT	Oil pressure min/max	Oil temp [4]	N1/N2
	(Minutes)	°C (°F)	PSIG [2]	°C (°F)	
Max takeoff	5 ^[1]	1054°C (1929°F)	50.3 / 175.3	49°C to 163°C [3] (120°F to 325°F)	100%
Max continuous	Continuous	1016°C (1861°F)	50.3 / 175.3	49°C to 163°C [3] (120°F to 325°F)	100%
Reverse thrust	As required	1054°C (1929°F)	50.3 / 175.3	49°C to 163°C [3] (120°F to 325°F)	100%

Operating conditions		Operating limits			
Thrust setting	Time limit	Max. EGT	Oil pressure min/max	Oil temp ^[4]	N1/N2
	(Minutes)	°C (°F)	PSIG ^[2]	°C (°F)	
Ground idle (SLS)	Continuous	–	50.3 / 175.3	–40°C to 163°C (–40°F to 325°F)	100%
Flight idle	Continuous	–	50.3 / 175.3	–40°C to 163°C (–40°F to 325°F)	100%
Starting	–	1054°C (1929°F)	–	–40°C to 163°C (–40°F to 325°F)	100%

[1] Time limit may be extended to 10 minutes for One Engine Inoperative (OEI) contingency.

[2] Minimum oil pressure is a function of N2 where the minimum oil pressure ranges from 50.3 psig to 97.0 psig.

[3] Minimum oil temperature for takeoff is 49°C (120°F).

[4] Maximum oil temperature of 174°C (345°F) for up to 20 minutes. Total operation between 163°C (325°F) up to 174°C (345°F) must not exceed 20 minutes.

B. Engine indications

The engine limit display markings on the EICAS must be used to determine compliance with the maximum/minimum limits and precautionary ranges.

C. Airplane cold soak

When the airplane is cold-soaked at an ambient temperature of –20°C (–4°F) or below for more than 8 hours, the thrust reversers must be cycled a minimum of 2 times before takeoff on wet or contaminated runway.

ENGINE START

After three start attempts, or after four minutes continuous cranking, a 30-minute cooling period is required.

Do not engage the starter on ground if indicated N2 rpm exceeds 20%.

ENGINE RELIGHT

Engine starting and operation is permitted within the operating envelopes shown in Operating limitations – [Altitude and temperature operating limits](#) and [Altitude and speed operating limits](#).

ENGINE SHUTDOWN

The engine must be operated at or near idle for at least 3 minutes (cumulative) before shutdown. Taxi time may be counted when thrust is at or near idle. This does not apply to non-normal shutdowns. Near idle is defined as up to 40% N1. An additional period equal to or greater than the time spent above 40% N1 must be accounted for.

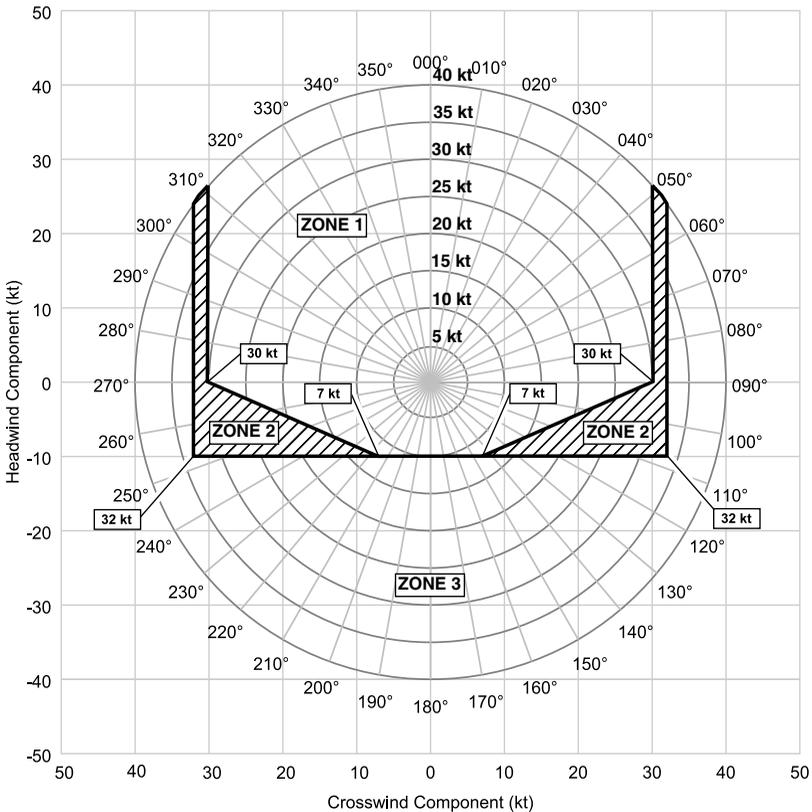
The affected engine must not be re-started after a high power shutdown (from greater than 40% N1), unless the procedures in Flight Crew Operating Manual (FCOM), Volume 2 (BD500-3AB48-32600-02), Operational guidance – Power plant – Engine shutdown procedure, are followed. No restriction on emergency in-flight restarts is intended.

ENGINE OPERATING PROCEDURE LIMITS DUE TO WIND

The maximum crosswind and tailwind components for ground operations, at 10 meters (33 feet) tower height are as follows:

Condition	Maximum crosswind component	Maximum tailwind component
Starting on ground	43 kts	18 kts
Taxi	Unlimited	Unlimited
Ice shedding at 60% N1	43 kts	18 kts
High power ground runs (>60% N1): Maintenance runs must be done with aircraft headed into wind.		

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>



Engine operating takeoff limits due to wind
Figure 02-13-1

Engine operating takeoff limits due to wind		
Zone	Limitation	
Zone 1	Normal takeoff ^[1] or High wind takeoff ^[2] must be used.	
	Airport altitude above 7000 feet	High wind takeoff ^[2] must be used if crosswind component exceeds 22 kt.
Zone 2	High wind takeoff ^[2] must be used.	

Engine operating takeoff limits due to wind	
Zone	Limitation
Zone 3	Takeoff prohibited.

[1] Refer to the Flight Crew Operating Manual (FCOM), Volume 2 (BD500-3AB48-32600-02), Normal procedures – Normal takeoff.

[2] Refer to the Flight Crew Operating Manual (FCOM), Volume 2 (BD500-3AB48-32600-02), Normal procedures – High wind takeoff.

OIL

A. Oil grades

Refer to Aircraft maintenance publication.

B. Oil consumption

The maximum allowable oil consumption is 0.38 l/hr (0.4 qt/hr).

THRUST REVERSERS

Thrust reversers are approved for ground use only. Activation of the reverse thrust levers in flight is prohibited.

Use of thrust reversers for backing up is prohibited.

Go-around maneuver and touch-and-go are prohibited after deployment of the thrust reversers.

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CHAPTER 3 – NORMAL PROCEDURES

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INTRODUCTION

The consolidated normal operating procedures included in this chapter are defined as being fundamental to the normal safe operation of the airplane and are supplementary to normal procedures common to the operation of any modern transport jet airplane.

These normal procedures have been developed and recommended by Bombardier and approved by Transport Canada for use in the operation of the airplane. These procedures are provided as guidance and should not be construed as prohibiting the development of equivalent Regulatory Authority approved procedures.

SUPER-COOLED LARGE DROPLET (SLD) ICING

The supplementary data for Super-cooled Large Droplet (SLD) icing conditions are given in the Flight Crew Operating Manual, Volume 2 (BD500-3AB48-32600-02), Operational guidance – Super-cooled Large Droplet (SLD) icing.

FLIGHT IN TURBULENCE

The recommended procedures for flight in turbulence are given in the Flight Crew Operating Manual, Volume 2 (BD500-3AB48-32600-02), Operational guidance – Flight in turbulence.

OPERATION IN VOLCANIC ASH/DUST

The recommended procedures for operation in volcanic ash/dust are given in the Flight Crew Operating Manual, Volume 2 (BD500-3AB48-32600-02), Operational guidance – Operation in volcanic ash/dust.

WINDSHEAR

When windshear is encountered:

- Immediately set maximum thrust,
- Select TOGA,
- Follow escape guidance (if available), or pull sidestick to aft soft stop (respect the stick shaker),

- Ensure flight spoilers are retracted, and
- Do not change landing gear or flap configuration until the vertical flight path is under control.

The detailed recommended procedures for windshear detection and recovery are given in the Flight Crew Operating Manual, Volume 2 (BD500-3AB48-32600-02), Operational guidance – Windshear.

TERRAIN AWARENESS

The terrain display provides situational awareness only, and may not provide the accuracy and/or fidelity upon which to solely base terrain avoidance maneuvering.

When a terrain awareness warning occurs (identified by an aural including the words TERRAIN or OBSTACLE and PULL UP accompanied by a red PULL UP warning on the PFD):

- Disengage the autopilot,
- Immediately initiate a pull up and advance thrust levers to maximum thrust,
- Ensure flight spoilers are retracted, and
- Climb at the best climb angle, respecting stick shaker, until all alerts cease and it is confirmed that a safe ground clearance exists.

When a terrain awareness caution occurs (identified by an aural including the words TERRAIN or OBSTACLE accompanied by an amber GND PROX caution on the PFD):

- Adjust airplane flight path until alert ceases.

INTRODUCTION

The normal procedures are grouped, as follows:

- 1. Before flight
- 2. In flight
- 3. After flight

◆ indicates an action that must be done at the first flight of the day.

◆◆ indicates an action that must be done once a day.

Refer to the Flight Crew Operating Manual, Volume 2 (BD500-3AB48-32600-02), Normal procedures, for the expanded procedures.

BEFORE FLIGHT

A. Power-on

This is a check to determine if airplane systems are in a configuration to safely place AC electrical power on the airplane buses. These steps should be done on through-flights (enroute stops) if AC electrical power is removed from the airplane, or if there is any doubt that all safety aspects of the prevailing situation can be covered. Completion of this check ensures that there will be no danger to the airplane and/or personnel when the systems are powered.

Before batteries are turned ON, as the ECL is not available, steps (1) to (4) must be done by memory.

- (1) PARK BRAKE ON
- (2) BATT 1 AUTO
- (3) BATT 2 AUTO
- (4) ECL DU 2
- (5) PTU AUTO
- (6) HYD 3A OFF
- (7) HYD 3B OFF

A. Power-on (Cont'd)

- (8) HYD 2B OFF
- (9) Landing gear lever DN
- (10) Thrust levers IDLE
- (11) L ENG run OFF
- (12) R ENG run OFF
- (13) APU or external power As required
- (14) EQUIP COOLING, INLET Select auto

- COMPLETE -

B. Cabin inspection

- (1) Cabin inspection If required, accomplish.
Refer to the Flight Crew Operating Manual (FCOM), Volume 2 (BD500-3AB48-32600-02), Normal procedures – Before flight – Cabin inspection.

- COMPLETE -

C. External walkaround

- (1) Walkaround inspection If required, accomplish.
Refer to the Flight Crew Operating Manual (FCOM), Volume 2 (BD500-3AB48-32600-02), Normal procedures – Before flight – External walkaround.

- COMPLETE -

D. Preflight

- (1) Airplane documents On board and checked
- (2) Emergency equipment Checked
- (3) Gear pins On board
- (4) Overhead panel Checked

D. Preflight (Cont'd)

- (5) Glareshield Checked
- (6) Displays Checked
- (7) ♦ Ice detector test Complete
- (8) ♦ Circuit breakers Checked
- (9) EICAS and INFO Checked
- (10) Altimeters () Set and cross-checked
- (11) Center panel Checked
- (12) Pedestal Checked
- (13) ♦ Rudder trim Checked
- (14) Sidesticks Checked
- (15) ♦ Oxygen masks <TC> or <EASA> Checked
- (16) ♦ FDRAS test Complete

- COMPLETE -

E. Before start

- (1) Takeoff briefing Complete
- (2) APU and/or external power As required
- (3) SEAT BELTS ON
- (4) Doors Closed and locked
- (5) BEACON ON
- (6) PARK BRAKE As required

E. Before start (Cont'd)

NOTE

1. The messages that follow may be shown temporarily during engine start and can be ignored if they go out within 10 seconds of engine start completion:
 - **L ELEVATOR FAIL** (Warning)
 - **R ELEVATOR FAIL** (Warning)
 - **RUDDER FAIL** (Warning)
 - **RUDDER DEGRADED** (Caution)
 - **AILERON FAIL** (Caution)
 - **FLT CTRL FAULT** (Advisory)
2. The **HYD 3 LO PRESS** caution message may be shown when engines are started.

- COMPLETE -

F. Before taxi



On ground, do not move the flight controls until all hydraulic systems are powered.

(1) HYD 3A AUTO

<Mod 291002> or <Post-SB BD500-291002>

(2) HYD 3B AUTO

F. Before taxi (Cont'd)

<Mod 291002> or <Post-SB BD500-291002>

- (3) HYD 2B AUTO
- (4) APU As required
- (5) FLAP () selected

NOTE

It is acceptable to momentarily activate the wing anti-ice in flight instead of doing the test on the ground when aircraft operational requirements do not allow to do the test on the ground. Refer to the Flight Crew Operating Manual (FCOM), Volume 2 (BD500-3AB48-32600-02), Normal procedures – Wing anti-ice check in flight for guidelines.

- (6) ♦♦ Wing anti-ice test Complete
- (7) ANTI-ICE, COWL AUTO or ON
- (8) ANTI-ICE, WING AUTO or ON
- (9) Flight controls Checked
- (10) NOSE STEER Select on
- (11) EICAS and INFO Checked

- COMPLETE -

G. Before takeoff

- (1) FMS Set
- (2) Trims Set
- (3) FLAP Set
- (4) Anti-ice As required
- (5) AUTOBRAKE As required

G. Before takeoff (Cont'd)

- (6) EICAS and INFO Checked
- (7) Cabin Ready
- (8) Runway () confirmed

- COMPLETE -

IN FLIGHT

A. After takeoff

- (1) Landing gear UP
- (2) FLAP 0
- (3) ANTI-ICE, L COWL AUTO
- (4) ANTI-ICE, WING AUTO
- (5) ANTI-ICE, R COWL AUTO
- (6) EICAS Checked

- COMPLETE -

B. High altitude climb check (before reaching 35000 feet)



If still in icing conditions, climb must be stopped at 35000 feet. Failure to select WING ANTI-ICE to OFF above 35000 feet could result in engine nacelle overheating, and trigger engine fire warnings.

- (1) ANTI-ICE, WING OFF
- (2) Avoid icing conditions.

- COMPLETE -

C. Descent and approach

- (1) ANTI-ICE, WING (below 35000 feet) AUTO
- (2) FMS Set
- (3) Minima Set
- (4) AUTOBRAKE As required
- (5) EICAS Checked
- (6) Approach briefing Complete

- COMPLETE -

D. Before landing

- (1) Altimeters () Set and cross-checked
- (2) Landing gear DN
- (3) FLAP () indicating
- (4) Cabin Ready

- COMPLETE -

E. Go-around procedure

- (1) TOGA Select
- (2) Thrust levers Advance to go-around thrust
- (3) Rotate to follow FD.
- (4) FLAP Set for go-around

Landing FLAP	Go-around FLAP
4	2
5	4

When a positive rate of climb is indicated:

- (5) Landing gear UP

E. Go-around procedure (Cont'd)

- (6) SpeedSet V_{AC} or V_{GA}
- (7) FD modes As required
- (8) Autopilot As required
- (9) FLAP Retract on schedule
- (10) After go-aroundAccomplish [Refer to Normal procedures – After go-around.](#)

– COMPLETE –

F. After go-around

- (1) Landing gear UP
- (2) FLAP 0
- (3) EICAS Checked

– COMPLETE –

AFTER FLIGHT

A. After landing

- (1) FLAP 0

– COMPLETE –

B. Shutdown

- (1) PARK BRAKE ON
- (2) NOSE STEER OFF
- (3) APU and/or external power As required
- (4) L ENG run OFF
- (5) R ENG run OFF
- (6) SEAT BELTS OFF
- (7) BEACON OFF

B. Shutdown (Cont'd)

- (8) ♦♦ Flight control test Complete
- (9) HYD 3A OFF
- (10) HYD 3B OFF
- (11) HYD 2B OFF

- COMPLETE -

C. Power-off

- (1) ECL DU 2
- (2) EQUIP COOLING, INLET OFF
- (3) EMER LTS OFF
- (4) APU OFF
- (5) EXT PWR (if connected) AVAIL
- (6) DOME Select off
- (7) BATT 1 OFF
- (8) BATT 2 OFF

- COMPLETE -

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INTRODUCTION

The non-normal procedures contained in this chapter describe actions which are necessary to protect the airplane and its occupants from impending serious or critical harm, and to cope with an impending or effective failure of any system or component or any other situation, determined by the flight crew, to present significant adverse effect on safety.

Unless otherwise specified, the titles of the procedures given in this chapter reflect the display of the corresponding EICAS warning (red) or caution (amber) messages. In addition, the master warning or caution system operates where applicable.

These procedures have been developed and recommended by Bombardier and approved by Transport Canada for use in the operation of the airplane. These procedures are provided as guidance and should not be construed as prohibiting the development of equivalent Regulatory Authority-approved procedures.

LANDING AND GO-AROUND SPEEDS

For failures where a ΔV_{REF} is given, crews should use the speeds that follow for landing and in the event of a go-around:

- Corrected $V_{REF} = V_{REF}$ (without failure) + ΔV_{REF}
- V_{AC} (with failure) = V_{AC} (without failure) + ΔV_{REF}
- V_{GA} (with failure) = V_{GA} (without failure) + ΔV_{REF}

LANDING DISTANCE FACTORS

For each non-normal procedure where they are provided, the landing distance factors must be applied on the reference Operational Landing Distance (OLD) without failure. The published factors are applicable for all runway surfaces and conditions and account for the impact of the failure on the Operational Landing Distance.

This reference Operational Landing Distance is determined using the CAFM and can be calculated either with both thrust reversers operating or with both thrust reversers not deployed. The reference OLD can be increased by an operational distance factor in the CAFM as required (see Chapter 5 – Performance).

The OLD must be determined at the reference flap angle for each failure and with the normal V_{REF} speed.

MULTIPLE FAILURES

In the event of multiple failures that have a ΔV_{REF} addition, use the highest ΔV_{REF} only.

In the unlikely event of multiple unrelated failures that have OLD factors, multiply the OLD factors. In the case of multiple related failures, use the highest OLD factor.

NON-NORMAL PROCEDURE FORMAT

The procedures in this chapter assume that certain actions are accomplished by the crew, as follows:

- Automatic systems are functioning correctly.
- Normal procedures have been properly accomplished.
- MASTER WARNING / MASTER CAUTION switches are reset.
- Obvious corrective action (if any) is taken for crew awareness items.
- SEAT BELTS are selected ON as required.

DIVERSION TERMINOLOGY

The diversion terms used within this chapter are as follows:

- Plan to land at the nearest suitable airport – Intended for the flight crew to plan a landing while working through a non-normal checklist.
- Land at the nearest suitable airport – Landing airport and duration of the flight are at the discretion of the PIC. Extended flight beyond the nearest suitable airport is not recommended.
- Land immediately at the nearest suitable airport – Land without delay at the nearest airport where a safe approach and landing is reasonably assured.
- Suitable airport – Suitable airport is defined as the airport where a safe approach and landing is assured.

AIR-CONDITIONING, BLEED AND PRESSURIZATION

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DITCHING MISCONFIG (Caution)	04-02-12
EMER DEPRESS ON (Caution)	04-02-12
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ENG BLEED MISCONFIG (Caution)	04-02-14
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L BLEED LEAK (Caution)	04-02-18
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R BLEED OVHT (Caution)	04-02-26
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CABIN ALT (Warning)

- (1) Oxygen masks On, 100%
- (2) Crew communication Establish
- (3) Emergency descent procedure Accomplish [Refer to Air-conditioning, bleed and pressurization – Emergency descent.](#)

- COMPLETE -

CABIN DIFF PRESS (Warning)

- (1) AUTO PRESS MAN
- (2) MAN RATE UP
- (3) **CABIN DIFF PRESS** warning message goes out:
 - ➔ **Yes** – [Go to \(4\)](#)
 - ➔ **No** – [Go to \(8\)](#)
- (4) **CABIN DIFF PRESS** warning message goes out:
- (5) MAN RATE Closely monitor and adjust as required to control pressurization. Refer to cabin altitude table.
 - (a) Set cabin altitude from the table or landing elevation, whichever is higher.

NOTE

Maximum value is 7800 feet.

Airplane pressure altitude (feet)	Cabin altitude (feet)
8000	500

CABIN DIFF PRESS (Warning) (Cont'd)

Airplane pressure altitude (feet)	Cabin altitude (feet)
10000	800
15000	1400
20000	2200
25000	3200
30000	4600
35000	5900
40000	7500

On approach:

(6) Cabin altitudeAdjust to landing field elevation.

After landing:

(7) MAN RATE UP

- COMPLETE -

(8) **CABIN DIFF PRESS** warning message stays on:

(9) L PACK OFF

(10) R PACK OFF

(11) Descent 10000 feet or lowest safe altitude, whichever is higher.

(12) RAM AIR OPEN

(13) RECIRC AIR OFF

(14) EMER DEPRESS ON

(15) Land at the nearest suitable airport.

- COMPLETE -

EMERGENCY DESCENT (Warning)

(1) EDM required:

- ➔ **Yes** – Go to (2)
- ➔ **No** – Go to (29)

(2) EDM required:

- (3) Oxygen masks If required, on, 100%
- (4) SEAT BELTS ON
- (5) Cabin Advise
- (6) PAX OXY (if required) DPLY

When thrust levers at IDLE:

(7) SPOILER lever FULL then MAX



If the **SPOILER MISMATCH** advisory message comes on after the pilot has initiated descent, set IDLE and cycle the SPOILER lever to deploy spoilers.

- (8) Altitude selection As required
- (9) HDG As required
- (10) Structural damage:
 - ➔ **Yes** – Go to (11)
 - ➔ **No** – Go to (20)

(11) Structural damage:

(12) Airspeed Do not exceed the speed at which the damage occurred.

EMERGENCY DESCENT (Warning) (Cont'd)

At a safe altitude:

- (13) SPOILER lever RET
- (14) Oxygen masks As required
- (15) EDM Select off
- (16) Transponder As required
- (17) FCP modes As required
- (18) Land at the nearest suitable airport.
- (19) Unpressurized flight procedure Accomplish [Refer to Air-conditioning, bleed and pressurization – Unpressurized flight procedure.](#)

– COMPLETE –

(20) No structural damage:

- (21) Airspeed Do not exceed V_{MO}/M_{MO} .

At a safe altitude:

- (22) SPOILER lever RET
- (23) Oxygen masks As required
- (24) EDM Select off
- (25) Transponder As required
- (26) FCP modes As required
- (27) Land at the nearest suitable airport.
- (28) Unpressurized flight procedure Accomplish [Refer to Air-conditioning, bleed and pressurization – Unpressurized flight procedure.](#)

– COMPLETE –

EMERGENCY DESCENT (Warning) (Cont'd)

(29) EDM not required:

- (30) EDM Select off
- (31) FCP modes As required

- COMPLETE -

EQUIP BAY OVHT (Warning)

- (1) EQUIP COOLING, EXHAUST ON

NOTE

Minimize time below 10000 feet.

- (2) Land immediately at the nearest suitable airport.

- COMPLETE -

AIR SYS ESS CTLR FAIL (Caution)

- (1) EQUIP COOLING, EXHAUST ON
- (2) CABIN PWR (if galley chiller installed) OFF
- (3) EQUIP COOLING, INLET OFF
- (4) RECIRC AIR OFF
- (5) ANTI-ICE, WING OFF
- (6) Leave/avoid icing conditions.
- (7) Descent 10000 feet or lowest safe altitude, whichever is higher.

At 10000 feet or lowest safe altitude:

- (8) L BLEED OFF

AIR SYS ESS CTLR FAIL (Caution) (Cont'd)

- (9) R BLEED OFF
- (10) APU BLEED OFF
- (11) EMER DEPRESS ON
- (12) AIR, CARGO FWD VENT
- (13) Consider live cargo.

When cabin is depressurized:

- (14) RAM AIR OPEN
- (15) Land at the nearest suitable airport.
- (16) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice
dispersal procedure.

– COMPLETE –

APU BLEED LEAK (Caution)

- (1) APU BLEED OFF
- (2) **APU BLEED LEAK** caution message goes out:
 - ➔ Yes – Go to (3)
 - ➔ No – Go to (5)
- (3) **APU BLEED LEAK** caution message goes out:
- (4) No further action required.

– COMPLETE –

- (5) **APU BLEED LEAK** caution message stays on:
- (6) APU OFF
- (7) L BLEED OFF
- (8) L PACK OFF

APU BLEED LEAK (Caution) (Cont'd)

- (9) XBLEEDMAN CLSD
- (10) Altitude Not above 31000 feet
- (11) ANTI-ICE, WING OFF
- (12) Leave/avoid icing conditions.

- COMPLETE -

AUTO PRESS FAIL (Caution)

- (1) AUTO PRESS MAN
- (2) MAN RATE Closely monitor and adjust as required to control pressurization. Refer to cabin altitude table.
 - (a) Set cabin altitude from the table or landing elevation, whichever is higher.

NOTE

Maximum value is 7800 feet.

Airplane pressure altitude (feet)	Cabin altitude (feet)
8000	500
10000	800
15000	1400
20000	2200
25000	3200
30000	4600
35000	5900

AUTO PRESS FAIL (Caution) (Cont'd)

Airplane pressure altitude (feet)	Cabin altitude (feet)
40000	7500

On approach:

(3) Cabin altitudeAdjust to landing field elevation.

After landing:

(4) MAN RATE UP

– COMPLETE –

CABIN ALT (Caution)

(1) **CABIN ALT LEVEL HI** advisory message is also shown:

➔ Yes – Go to (2)

➔ No – Go to (5)

(2) **CABIN ALT LEVEL HI** advisory message is also shown:

(3) Oxygen masksON, 100%

(4) Crew communicationEstablish

– COMPLETE –

(5) **CABIN ALT LEVEL HI** advisory message is not shown:

(6) AUTO PRESS MAN

(7) AUTO PRESS Select auto

(8) **CABIN ALT** caution message goes out:

➔ Yes – Go to (9)

➔ No – Go to (11)

CABIN ALT (Caution) (Cont'd)

(9) **CABIN ALT** caution message goes out:

(10) No further action required.

- COMPLETE -

(11) **CABIN ALT** caution message stays on:

(12) AUTO PRESS MAN

(13) MAN RATE Closely monitor and adjust as required to control pressurization. Refer to cabin altitude table.

(a) Set cabin altitude from the table or landing elevation, whichever is higher.

NOTE

Maximum value is 7800 feet.

Airplane pressure altitude (feet)	Cabin altitude (feet)
8000	500
10000	800
15000	1400
20000	2200
25000	3200
30000	4600
35000	5900
40000	7500

On approach:

(14) Cabin altitude Adjust to landing field elevation.

CABIN ALT (Caution) (Cont'd)

After landing:

(15) MAN RATE UP

– COMPLETE –

DITCHING MISCONFIG (Caution)

(1) RAM AIR Select closed

– COMPLETE –

EMER DEPRESS ON (Caution)

(1) EMER DEPRESS required:

➔ Yes – Go to (2)

➔ No – Go to (4)

(2) EMER DEPRESS required:

(3) Pressurization Monitor

– COMPLETE –

(4) EMER DEPRESS not required:

(5) EMER DEPRESS OFF

– COMPLETE –

EMERGENCY DESCENT (Caution)

(1) Oxygen masks If required, on, 100%

(2) SEAT BELTS ON

(3) Cabin Advise

(4) PAX OXY (if required) DPLY

EMERGENCY DESCENT (Caution) (Cont'd)

When thrust levers at IDLE:

- (5) SPOILER lever FULL then MAX



If the **SPOILER MISMATCH** advisory message comes on after the pilot has initiated descent, set IDLE and cycle the SPOILER lever to deploy the spoilers.

- (6) Altitude selection As required

- (7) HDG As required

- (8) Structural damage:

➔ **Yes** – Go to (9)

➔ **No** – Go to (17)

- (9) **Structural damage:**

- (10) Airspeed Do not exceed the speed at which the damage occurred.

At a safe altitude:

- (11) SPOILER lever RET

- (12) Oxygen masks As required

- (13) EDM Select off

- (14) FCP modes As required

- (15) Land at the nearest suitable airport.

EMERGENCY DESCENT (Caution) (Cont'd)

- (16) Unpressurized flight procedure Accomplish [Refer to Air-conditioning, bleed and pressurization – Unpressurized flight procedure.](#)

– COMPLETE –

(17) No structural damage:

- (18) Airspeed Do not exceed V_{MO}/M_{MO} .

At a safe altitude:

- (19) SPOILER lever RET
- (20) Oxygen masks As required
- (21) EDM Select off
- (22) FCP modes As required
- (23) Land at the nearest suitable airport.
- (24) Unpressurized flight procedure Accomplish [Refer to Air-conditioning, bleed and pressurization – Unpressurized flight procedure.](#)

– COMPLETE –

ENG BLEED MISCONFIG (Caution)

- (1) AIR synoptic page Select
- (2) Determine bleed source:
- ➔ **Engine** – [Go to \(3\)](#)
 - ➔ **APU** – [Go to \(5\)](#)

ENG BLEED MISCONFIG (Caution) (Cont'd)

(3) **Engine is bleed source:**

(4) XBLEED AUTO

- COMPLETE -

(5) **APU is bleed source:**

(6) L BLEED Select auto

(7) R BLEED Select auto

(8) XBLEED AUTO

(9) **ENG BLEED MISCONFIG** caution message goes out:

➔ **Yes – Go to (10)**

➔ **No – Go to (12)**

(10) **ENG BLEED MISCONFIG** caution message goes out:

(11) No further action required.

- COMPLETE -

(12) **ENG BLEED MISCONFIG** caution message stays on:

(13) APU BLEED OFF

- COMPLETE -

EQUIP BAY COOL FAIL (Caution)

(1) EQUIP COOLING, EXHAUST ON

NOTE

Minimize time below 10000 feet.

(2) CABIN PWR (if galley chiller installed) OFF

EQUIP BAY COOL FAIL (Caution) (Cont'd)

(3) Land at the nearest suitable airport.

– COMPLETE –

FWD CARGO HEAT FAIL (Caution)

(1) FWD CARGO VENT

– COMPLETE –

FWD CARGO LO TEMP (Caution)

(1) FWD CARGO HI HEAT

(2) **FWD CARGO LO TEMP** caution message goes out:

➔ **Yes** – Go to (3)

➔ **No** – Go to (5)

(3) **FWD CARGO LO TEMP** caution message goes out:

(4) No further action required.

– COMPLETE –

(5) **FWD CARGO LO TEMP** caution message stays on:

(6) Consider live cargo.

– COMPLETE –

L AIR SYS CTLR FAIL (Caution)

(1) L PACK OFF

(2) TRIM AIR OFF

(3) AIR, CARGO FWD VENT

(4) Consider live cargo.

L AIR SYS CTLR FAIL (Caution) (Cont'd)

- (5) L BLEED OFF
- (6) XBLEEDMAN CLSD
- (7) APU BLEED OFF
- (8) ANTI-ICE, WING OFF
- (9) Altitude Not above 31000 feet
- (10) Leave/avoid icing conditions.
- (11) Land at the nearest suitable airport.
- (12) Ice dispersal procedure Accomplish, if required. [Refer to Ice and rain protection – Ice dispersal procedure.](#)

- COMPLETE -

L BLEED FAIL (Caution)

- (1) XBLEEDMAN CLSD
- (2) L BLEED OFF
- (3) ANTI-ICE, WING OFF
- (4) APU BLEED OFF
- (5) L PACK OFF
- (6) Altitude Not above 31000 feet
- (7) Leave/avoid icing conditions.
- (8) Ice dispersal procedure Accomplish, if required. [Refer to Ice and rain protection – Ice dispersal procedure.](#)

- COMPLETE -

L BLEED LEAK (Caution)

- (1) L BLEED OFF
- (2) APU BLEED OFF
- (3) L PACK OFF
- (4) Altitude Not above 31000 feet
- (5) XBLEEDMAN CLSD
- (6) ANTI-ICE, WING OFF
- (7) Leave/avoid icing conditions.
- (8) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice
dispersal procedure.

(9) **L BLEED LEAK** caution message goes out:

➔ Yes – Go to (10)

➔ No – Go to (12)

(10) **L BLEED LEAK** caution message goes out:

(11) No further action required.

– COMPLETE –

(12) **L BLEED LEAK** caution message stays on:

(13) Left thrust lever Confirm and reduce towards
IDLE.

(14) **L BLEED LEAK** caution message goes out:

➔ Yes – Go to (15)

➔ No – Go to (17)

(15) **L BLEED LEAK** caution message goes out:

(16) No further action required.

– COMPLETE –

L BLEED LEAK (Caution) (Cont'd)

(17) L BLEED LEAK caution message stays on:

(18) Shutdown – Left engine procedure Accomplish Refer to Power plant – Shutdown – Left engine.

– COMPLETE –

L BLEED OVHT (Caution)

(1) R BLEED auto:

➔ **Yes – Go to (2)**

➔ **No – Go to (13)**

(2) R BLEED auto:

(3) L BLEED OFF

(4) Altitude Not above 31000 feet

(5) All engines operating landing in icing conditions expected:

➔ **Yes – Go to (6)**

➔ **No – Go to (11)**

(6) All engines operating landing in icing conditions expected:

On approach:

(7) FMS, PERF – ARR – SLAT/FLAP 5

(8) FMS, PERF – ARR – VREF $V_{REF(FLAP 5)} + 10$

(9) OLD factor Multiply by 1.50

Before landing:

(10) SLAT/FLAP lever 5

– COMPLETE –

(11) All engines operating landing in icing conditions not expected:

L BLEED OVHT (Caution) (Cont'd)

(12) No further action required.

– COMPLETE –

(13) R BLEED OFF:

(14) L BLEED OFF

(15) ANTI-ICE, WING OFF

(16) Leave/avoid icing conditions.

(17) L BLEED Select auto

(18) **L BLEED OVHT** caution message stays out:

➔ Yes – Go to (19)

➔ No – Go to (21)

(19) **L BLEED OVHT** caution message stays out:

(20) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice
dispersal procedure.

– COMPLETE –

(21) **L BLEED OVHT** caution message comes on:

(22) L BLEED OFF

(23) L PACK OFF

(24) Descent 10000 feet or lowest safe
altitude, whichever is higher.

(25) RAM AIR OPEN

(26) RECIRC AIR OFF

(27) EMER DEPRESS ON

– COMPLETE –

<Mod 219001> or <Post-SB BD500-219001>

L PACK FAIL (Caution)

- (1) L PACK OFF
- (2) **L PACK FAIL** caution message goes out:
 - ➔ **Yes** – Go to (3)
 - ➔ **No** – Go to (11)
- (3) **L PACK FAIL** caution message goes out:
- (4) L PACK Select auto
- (5) **L PACK FAIL** caution message stays out:
 - ➔ **Yes** – Go to (6)
 - ➔ **No** – Go to (8)
- (6) **L PACK FAIL** caution message stays out:
- (7) No further action required.

- COMPLETE -
- (8) **L PACK FAIL** caution message comes on:
- (9) L PACK OFF
- (10) Altitude Not above 31000 feet

- COMPLETE -
- (11) **L PACK FAIL** caution message stays on:
- (12) Altitude Not above 31000 feet
- (13) L BLEED OFF
- (14) APU BLEED OFF
- (15) ANTI-ICE, WING OFF
- (16) XBLEED MAN CLSD
- (17) Leave/avoid icing conditions.

L PACK FAIL (Caution) (Cont'd)

- (18) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice
dispersal procedure.

- COMPLETE -

L PACK LEAK (Caution)

- (1) L PACK OFF
(2) Altitude Not above 31000 feet

- COMPLETE -

L PACK OVHT (Caution)

- (1) L PACK OFF
(2) Altitude Not above 31000 feet

- COMPLETE -

LDG ELEV MISCONFIG (Caution)

- (1) FMS, PERF – ARR or CTP MAN LDG
ELEV Confirm correct landing
elevation and BARO setting is
computed.

- COMPLETE -

LEAK DET FAIL (Caution)

- (1) Descent 10000 feet or lowest safe
altitude, whichever is higher.

LEAK DET FAIL (Caution) (Cont'd)

At 10000 feet or lowest safe altitude:

- (2) L BLEED OFF
- (3) R BLEED OFF
- (4) APU BLEED OFF
- (5) ANTI-ICE, WING OFF
- (6) RAM AIR OPEN
- (7) RECIRC AIR OFF
- (8) EMER DEPRESS ON
- (9) Leave/avoid icing conditions.
- (10) Land at the nearest suitable airport.
- (11) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice
dispersal procedure.

- COMPLETE -

R AIR SYS CTLR FAIL (Caution)

- (1) R PACK OFF
- (2) TRIM AIR OFF
- (3) AIR, CARGO FWD VENT
- (4) Consider live cargo.
- (5) R BLEED OFF
- (6) CABIN PWR (if IFE installed) OFF
- (7) Altitude Not above 31000 feet
- (8) Land at the nearest suitable airport.

R AIR SYS CTLR FAIL (Caution) (Cont'd)

(9) All engines operating landing in icing conditions expected:

- ➔ Yes – Go to (10)
- ➔ No – Go to (15)

(10) All engines operating landing in icing conditions expected:

On approach:

- (11) FMS, PERF – ARR – SLAT/FLAP 5
- (12) FMS, PERF – ARR – VREF $V_{REF(FLAP 5)} + 10$
- (13) OLD factor Multiply by 1.50

Before landing:

- (14) SLAT/FLAP lever 5

– COMPLETE –

(15) All engines operating landing in icing conditions not expected:

- (16) No further action required.

– COMPLETE –

R BLEED FAIL (Caution)

- (1) XBLEED MAN CLSD
- (2) R BLEED OFF
- (3) ANTI-ICE, WING OFF
- (4) R PACK OFF
- (5) Altitude Not above 31000 feet
- (6) Leave/avoid icing conditions.

R BLEED FAIL (Caution) (Cont'd)

- (7) Ice dispersal procedure Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

- COMPLETE -

R BLEED LEAK (Caution)

- (1) R BLEED OFF
- (2) R PACK OFF
- (3) Altitude Not above 31000 feet
- (4) XBLEED MAN CLSD
- (5) ANTI-ICE, WING OFF
- (6) Leave/avoid icing conditions.
- (7) Ice dispersal procedure Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

- (8) **R BLEED LEAK** caution message goes out:

- ➔ Yes – Go to (9)

- ➔ No – Go to (11)

- (9) **R BLEED LEAK** caution message goes out:

- (10) No further action required.

- COMPLETE -

- (11) **R BLEED LEAK** caution message stays on:

- (12) Right thrust lever Confirm and reduce towards IDLE.

R BLEED LEAK (Caution) (Cont'd)

(13) **R BLEED LEAK** caution message goes out:

➔ **Yes** – Go to (14)

➔ **No** – Go to (16)

(14) **R BLEED LEAK** caution message goes out:

(15) No further action required.

– COMPLETE –

(16) **R BLEED LEAK** caution message stays on:

(17) Shutdown – Right engine procedure Accomplish [Refer to Power plant – Shutdown – Right engine.](#)

– COMPLETE –

R BLEED OVHT (Caution)

(1) L BLEED auto:

➔ **Yes** – Go to (2)

➔ **No** – Go to (13)

(2) L BLEED auto:

(3) R BLEED OFF

(4) Altitude Not above 31000 feet

(5) All engines operating landing in icing conditions expected:

➔ **Yes** – Go to (6)

➔ **No** – Go to (11)

(6) All engines operating landing in icing conditions expected:

On approach:

(7) FMS, PERF – ARR – SLAT/FLAP 5

R BLEED OVHT (Caution) (Cont'd)

- (8) FMS, PERF – ARR – VREF $V_{REF(FLAP 5)} + 10$
(9) OLD factor Multiply by 1.50

Before landing:

- (10) SLAT/FLAP lever 5

– COMPLETE –

(11) All engines operating landing in icing conditions not expected:

- (12) No further action required.

– COMPLETE –

(13) L BLEED OFF:

- (14) R BLEED OFF
(15) ANTI-ICE, WING OFF
(16) Leave/avoid icing conditions.
(17) R BLEED Select auto

- (18) **R BLEED OVHT** caution message stays out:

- ➔ **Yes** – Go to (19)
- ➔ **No** – Go to (21)

- (19) **R BLEED OVHT** caution message stays out:

- (20) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

- (21) **R BLEED OVHT** caution message comes on:

- (22) R BLEED OFF
(23) R PACK OFF

R BLEED OVHT (Caution) (Cont'd)

- (24) Descent 10000 feet or lowest safe altitude, whichever is higher.
- (25) RAM AIR OPEN
- (26) RECIRC AIR OFF
- (27) EMER DEPRESS ON

- COMPLETE -

<Mod 219001> or <Post-SB BD500-219001>

R PACK FAIL (Caution)

- (1) R PACK OFF
 - (2) **R PACK FAIL** caution message goes out:
 - ➔ **Yes** – Go to (3)
 - ➔ **No** – Go to (11)
 - (3) **R PACK FAIL** caution message goes out:
 - (4) R PACK Select auto
 - (5) **R PACK FAIL** caution message stays out:
 - ➔ **Yes** – Go to (6)
 - ➔ **No** – Go to (8)
 - (6) **R PACK FAIL** caution message stays out:
 - (7) No further action required.
- COMPLETE -**
- (8) **R PACK FAIL** caution message comes on:
 - (9) R PACK OFF

R PACK FAIL (Caution) (Cont'd)

(10) Altitude Not above 31000 feet

- COMPLETE -

(11) R PACK FAIL caution message stays on:

(12) Altitude Not above 31000 feet

(13) R BLEED OFF

(14) ANTI-ICE, WING OFF

(15) XBLEED MAN CLSD

(16) Leave/avoid icing conditions.

(17) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice
dispersal procedure.

- COMPLETE -

R PACK LEAK (Caution)

(1) R PACK OFF

(2) Altitude Not above 31000 feet

- COMPLETE -

R PACK OVHT (Caution)

(1) R PACK OFF

(2) Altitude Not above 31000 feet

- COMPLETE -

RAM AIR FAIL (Caution)

- (1) RAM AIR selected open:
 - ➔ Yes – Go to (2)
 - ➔ No – Go to (4)
- (2) RAM AIR selected open:

NOTE

- 1. Fresh air flow is not available.
 - 2. Crew and passenger oxygen is available if required.
 - 3. Equipment bay overheat is possible.
- (3) Land immediately at the nearest suitable airport.
- COMPLETE –**
- (4) **RAM AIR selected closed:**
- (5) Cabin pressure Monitor
 - (6) R PACK OFF
 - (7) Altitude Not above 31000 feet
 - (8) Land at the nearest suitable airport.
 - (9) Unpressurized flight procedure Accomplish, if required. Refer to
[Air-conditioning, bleed and pressurization – Unpressurized flight procedure.](#)

– COMPLETE –

RECIRC AIR FAIL (Caution)

- (1) RECIRC AIR OFF
- COMPLETE –**

TRIM AIR FAIL (Caution)

- (1) TRIM AIR OFF
- (2) **TRIM AIR FAIL** caution message goes out:
 - ➔ **Yes** – Go to (3)
 - ➔ **No** – Go to (15)
- (3) **TRIM AIR FAIL** caution message goes out:
- (4) TRIM AIR Select auto
- (5) **TRIM AIR FAIL** caution message stays out:
 - ➔ **Yes** – Go to (6)
 - ➔ **No** – Go to (8)
- (6) **TRIM AIR FAIL** caution message stays out:
- (7) No further action required.

– COMPLETE –
- (8) **TRIM AIR FAIL** caution message comes on:
- (9) AIR, CARGO FWD VENT
- (10) Consider live cargo.
- (11) TRIM AIR OFF
- (12) **TRIM AIR FAIL** caution message goes out:
 - ➔ **Yes** – Go to (13)
 - ➔ **No** – Go to (15)
- (13) **TRIM AIR FAIL** caution message goes out:
- (14) No further action required.

– COMPLETE –
- (15) **TRIM AIR FAIL** caution message stays on:
- (16) AIR synoptic page Select

TRIM AIR FAIL (Caution) (Cont'd)

- (17) Affected side Check
- (18) Select affected side:
 - ➔ **Left side** – [Go to \(19\)](#)
 - ➔ **Right side** – [Go to \(28\)](#)
- (19) Left side affected:**
 - (20) L BLEED OFF
 - (21) APU BLEED OFF
 - (22) L PACK OFF
 - (23) Altitude Not above 31000 feet
 - (24) XBLEED MAN CLSD
 - (25) ANTI-ICE, WING OFF
 - (26) Leave/avoid icing conditions.
 - (27) Ice dispersal procedure Accomplish, if required. [Refer to Ice and rain protection – Ice dispersal procedure.](#)

– COMPLETE –

- (28) Right side affected:**
 - (29) R BLEED OFF
 - (30) R PACK OFF
 - (31) Altitude Not above 31000 feet
 - (32) XBLEED MAN CLSD
 - (33) ANTI-ICE, WING OFF
 - (34) Leave/avoid icing conditions.

TRIM AIR FAIL (Caution) (Cont'd)

- (35) Ice dispersal procedure Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

- COMPLETE -

TRIM AIR LEAK (Caution)

- (1) TRIM AIR OFF
- (2) **TRIM AIR LEAK** caution message goes out:
- ➔ **Yes** – Go to (3)
 - ➔ **No** – Go to (6)
- (3) **TRIM AIR LEAK** caution message goes out:
- (4) AIR, CARGO FWD VENT
- (5) Consider live cargo.

- COMPLETE -

- (6) **TRIM AIR LEAK** caution message stays on:
- (7) AIR synoptic page Select
- (8) Affected side Check
- (9) Select affected side:
- ➔ **Left side:** – Go to (10)
 - ➔ **Right side:** – Go to (19)
- (10) **Left side affected:**
- (11) L BLEED OFF
- (12) APU BLEED OFF
- (13) L PACK OFF
- (14) Altitude Not above 31000 feet

TRIM AIR LEAK (Caution) (Cont'd)

- (15) XBLEEDMAN CLSD
- (16) ANTI-ICE, WING OFF
- (17) Leave/avoid icing conditions.
- (18) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice
dispersal procedure.

– COMPLETE –

(19) Right side affected:

- (20) R BLEED OFF
- (21) R PACK OFF
- (22) Altitude Not above 31000 feet
- (23) XBLEEDMAN CLSD
- (24) ANTI-ICE, WING OFF
- (25) Leave/avoid icing conditions.
- (26) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice
dispersal procedure.

– COMPLETE –

WING A/ICE LEAK (Caution)

- (1) ANTI-ICE, WING OFF
- (2) Leave/avoid icing conditions.
- (3) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice
dispersal procedure.

– COMPLETE –

XBLEED FAIL (Caution)

- (1) AIR synoptic page Select
- (2) Determine position of XBLEED valve:
 - ➔ **Failed open** – Go to (3)
 - ➔ **Failed closed** – Go to (15)
- (3) Valve is failed open:**
- (4) XBLEED MAN OPEN
- (5) Either L BLEED or R BLEED OFF
- (6) Altitude Not above 31000 feet
- (7) All engines operating landing in icing conditions expected:
 - ➔ **Yes** – Go to (8)
 - ➔ **No** – Go to (13)
- (8) All engines operating landing in icing conditions expected:**
On approach:
 - (9) FMS, PERF – ARR – SLAT/FLAP 5
 - (10) FMS, PERF – ARR – VREF $V_{REF(FLAP 5)} + 10$
 - (11) OLD factor Multiply by 1.50**Before landing:**
 - (12) SLAT/FLAP lever 5

– COMPLETE –
- (13) All engines operating landing in icing conditions not expected:**
 - (14) No further action required.

– COMPLETE –

XBLEED FAIL (Caution) (Cont'd)

(15) Valve is failed closed:

(16) XBLEEDMAN CLSD

- COMPLETE -

Emergency descent

(1) Oxygen masks If required, on, 100%

(2) EDM Select on

(3) SEAT BELTS ON

(4) Cabin Advise

(5) PAX OXY (if required) DPLY

When thrust levers at IDLE:

(6) SPOILER lever FULL then MAX



If the **SPOILER MISMATCH** advisory message comes on after the pilot has initiated descent, set IDLE and cycle the SPOILER lever to deploy the spoilers.

(7) Altitude selection As required

(8) HDG As required

(9) Structural damage:

➔ **Yes** – Go to (10)

➔ **No** – Go to (18)

Emergency descent (Cont'd)

(10) Structural damage:

(11) Airspeed Do not exceed the speed at which the damage occurred.

At a safe altitude:

(12) SPOILER lever RET

(13) Oxygen masks As required

(14) EDM Select off

(15) FCP modes As required

(16) Land at the nearest suitable airport.

(17) Unpressurized flight procedure Accomplish [Refer to Air-conditioning, bleed and pressurization – Unpressurized flight procedure.](#)

- COMPLETE -

(18) No structural damage:

(19) Airspeed Do not exceed V_{MO}/M_{MO} .

At a safe altitude:

(20) SPOILER lever RET

(21) Oxygen masks As required

(22) EDM Select off

(23) FCP modes As required

(24) Land at the nearest suitable airport.

Emergency descent (Cont'd)

- (25) Unpressurized flight procedure Accomplish [Refer to Air-conditioning, bleed and pressurization – Unpressurized flight procedure.](#)

– COMPLETE –

Unpressurized flight procedure

- (1) Packs on:
➔ **Yes** – [Go to \(2\)](#)
➔ **No** – [Go to \(5\)](#)
- (2) **Packs on:**
- (3) Altitude 10000 feet or lowest safe altitude, whichever is higher.
- (4) EMER DEPRESS ON

– COMPLETE –

- (5) **Packs off:**
- (6) Altitude 10000 feet or lowest safe altitude, whichever is higher.
- (7) L PACK OFF
- (8) R PACK OFF
- (9) RAM AIR OPEN
- (10) RECIRC AIR OFF
- (11) EMER DEPRESS ON

– COMPLETE –

AURAL/VISUAL WARNING SYSTEM

AURAL WARN FAIL (Caution) 04-03-3
Aural warnings failed on 04-03-3

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AURAL WARN FAIL (Caution)

(1) Aural warnings failed on:

- ➔ **Yes** – Go to (2)
- ➔ **No** – Go to (5)

(2) **Aural warnings failed on:**

(3) AURAL WARNINHIB

NOTE

Two crew members required in flight deck at all times.

(4) EICAS and PFDsClosely monitor

– COMPLETE –

(5) **Aural warnings failed off:**

NOTE

Two crew members required in flight deck at all times.

(6) EICAS and PFDsClosely monitor

– COMPLETE –

Aural warnings failed on

(1) AURAL WARNINHIB

NOTE

Two crew members required in flight deck at all times.

(2) EICAS and PFDsClosely monitor

– COMPLETE –

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AUTOMATIC FLIGHT CONTROL SYSTEM (AFCS)

CONFIG AP (Warning) 04-04-3

FD FAIL (Caution) 04-04-3

FD MODE CHANGE (Caution) 04-04-3

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CONFIG AP (Warning)

- (1) TakeoffDiscontinue
- COMPLETE -

FD FAIL (Caution)

- (1) In flight:
➔ Yes – Go to (2)
➔ No – Go to (4)
- (2) In flight:
- (3) XFR Select

NOTE

RNP AR approaches are prohibited.

- COMPLETE -

- (4) On ground:
- (5) Departure data Confirm complete
- COMPLETE -

FD MODE CHANGE (Caution)

- (1) FD modes Confirm and re-select FCP modes
- (2) **FD MODE CHANGE** caution message stays out:
➔ Yes – Go to (3)
➔ No – Go to (5)

FD MODE CHANGE (Caution) (Cont'd)

- (3) **FD MODE CHANGE** caution message stays out:
- (4) No further action required.

– COMPLETE –
- (5) **FD MODE CHANGE** caution message comes on:
- (6) Reversion panel, FD/AT ALTN
- (7) XFR Select
- (8) FD modes Confirm and re-select FCP modes

modes

– COMPLETE –

AUXILIARY POWER UNIT (APU)

APU FIRE (Warning) 04-05-3

APU OVERSPEED (Warning) 04-05-4

APU (Caution) 04-05-4

APU BLEED FAIL (Caution) 04-05-4

APU DOOR OPEN (Caution) 04-05-5

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APU FIRE (Warning)

- (1) In flight:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (12)
- (2) In flight:**
- (3) Plan to land at the nearest suitable airport.
- (4) APU OFF
- (5) APU, FIRE Confirm and select
- (6) After 10 seconds, **APU FIRE** warning message goes out:
 - ➔ **Yes** – Go to (7)
 - ➔ **No** – Go to (9)
- (7) After 10 seconds, APU FIRE warning message goes out:**
- (8) Land immediately at the nearest suitable airport.

– COMPLETE –
- (9) After 10 seconds, APU FIRE warning message stays on or there are other indications of fire:**
- (10) APU, BTL Select
- (11) Land immediately at the nearest suitable airport.

– COMPLETE –
- (12) On ground:**
- (13) APU OFF
- (14) APU, FIRE Select
- (15) APU, BTL Select
- (16) Emergency evacuation procedure As required [Refer to Evacuation](#)
— [Emergency evacuation.](#)

– COMPLETE –

APU OVERSPEED (Warning)

- (1) APU OFF
- (2) APU, FIRE Confirm and select
- (3) APU Do not restart.

– COMPLETE –

APU (Caution)

- (1) APU required:
 - ➔ Yes – Go to (2)
 - ➔ No – Go to (5)
- (2) APU required:
- (3) STATUS synoptic page Select
- (4) APU Monitor

– COMPLETE –

- (5) APU not required:
- (6) APU OFF

– COMPLETE –

APU BLEED FAIL (Caution)

- (1) APU BLEED OFF
- (2) APU BLEED Select auto
- (3) **APU BLEED FAIL** caution message goes out:
 - ➔ Yes – Go to (4)
 - ➔ No – Go to (6)

APU BLEED FAIL (Caution) (Cont'd)

(4) **APU BLEED FAIL** caution message goes out:

(5) No further action required.

– COMPLETE –

(6) **APU BLEED FAIL** caution message comes on:

(7) APU BLEED OFF

(8) APU required for electrical power:

➔ **Yes** – Go to (9)

➔ **No** – Go to (12)

(9) **APU required for electrical power:**

(10) STATUS synoptic page Select

(11) APU Monitor

– COMPLETE –

(12) **APU not required for electrical power:**

(13) APU OFF

– COMPLETE –

APU DOOR OPEN (Caution)

(1) APU (if available)START

(2) APU starts:

➔ **Yes** – Go to (3)

➔ **No** – Go to (5)

(3) **APU starts:**

(4) No further action required.

– COMPLETE –

APU DOOR OPEN (Caution) (Cont'd)

- (5) **APU does not start:**
- (6) APU OFF
- (7) Airspeed Not more than 250 KIAS

- COMPLETE -

DITCHING AND FORCED LANDING

Ditching 04-06-3
Forced landing 04-06-4

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Ditching

Preparation:

- (1) Cabin crew Brief
- (2) ECL DU 2
- (3) ELT ON
- (4) SEAT BELTS ON
- (5) Cockpit door Latch open
- (6) TAWS, GEAR INHIB
- (7) TAWS, TERR INHIB
- (8) TAWS, FLAP INHIB
- (9) AVIONIC synoptic page Select
- (10) AVIO, SMS RUNWAY (if installed) INHIB

Approach:

- (11) RAM AIR Check closed
- (12) DITCHING ON
- (13) ANTI-ICE, WING OFF

NOTE

- 1. Plan to land parallel to swells and wings level.
- 2. Aim to touch down with minimum airspeed and vertical rate, at a higher than normal landing attitude (approximately 11 degrees).
- 3. The **GEAR** warning message and aural will activate and cannot be muted.

- (14) LDG LTS ON
- (15) Landing gear UP

Ditching (Cont'd)

(16) FlapsMaximum available

NOTE

Flap extension may take approximately 3 minutes to reach landing flap.

(17) Harness Tighten and lock

Just before contact:

(18) EMER LTS ON

(19) PA Give the brace command.

(20) L ENG, FIRE Select

(21) APU, FIRE Select

(22) R ENG, FIRE Select

After water contact:

(23) Evacuation Initiate

(24) BATT 1 OFF

(25) BATT 2 OFF

- COMPLETE -

Forced landing

Preparation:

(1) Cabin crew Brief

(2) ECL DU 2

(3) ELT ON

(4) SEAT BELTS ON

Forced landing (Cont'd)

- (5) Cockpit doorLatch open
- (6) TAWS, GEARINHIB
- (7) TAWS, TERRINHIB
- (8) TAWS, FLAPINHIB
- (9) AVIONIC synoptic page Select
- (10) AVIO, SMS RUNWAY (if installed)INHIB

Approach:

- (11) EMER DEPRESS ON
- (12) LDG LTS ON
- (13) Landing gear As required
- (14) ALTN GEAR As required
- (15) FlapsMaximum available

NOTE

Flap extension can take approximately 3 minutes to reach landing flap.

- (16) HarnessTighten and lock

Before contact:

NOTE

If any gear is down:

Land at a normal landing attitude and minimum vertical rate.

Forced landing (Cont'd)

If all gear are up:

1. Aim to touch down with minimum vertical rate at V_{REF} , at a lower than normal landing attitude (approximately 5 degrees).
2. The **GEAR** warning message and aural will activate and cannot be muted.

- (17) EMER LTS ON
- (18) PA Give the brace command.
- (19) L ENG, FIRE Select
- (20) APU, FIRE Select
- (21) R ENG, FIRE Select

After contact:

- (22) SPOILER lever FULL
- (23) L ENG BTL 1 Select
- (24) APU BTL Select
- (25) R ENG BTL 2 Select
- (26) Evacuation Initiate
- (27) BATT 1 OFF
- (28) BATT 2 OFF

- COMPLETE -

DOORS

CKPT DOOR EMER ACCESS (Warning) 04-07-3

AFT DOOR (Caution) 04-07-3

AFT SLIDE (Caution) 04-07-3

CARGO DOOR (Caution) 04-07-4

CKPT DOOR LOCK FAIL (Caution) 04-07-5

DOOR SLIDE DISARMED (Caution) 04-07-5

EQUIP BAY DOOR (Caution) 04-07-5

FWD DOOR (Caution) 04-07-6

FWD SLIDE (Caution) 04-07-7

OVERWING DOOR (Caution) 04-07-7

WING SLIDE (Caution) 04-07-8

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CKPT DOOR EMER ACCESS (Warning)

- (1) COCKPIT DOOR, EMER ACCESS DENY
- COMPLETE -

AFT DOOR (Caution)

- (1) SEAT BELTS ON
(2) DOOR synoptic page Select
(3) Affected door Determine
(4) Cabin crew Advise
(5) Cabin pressure normal:
 ➔ Yes – Go to (6)
 ➔ No – Go to (8)
(6) Cabin pressure normal:
(7) No further action required.

- COMPLETE -

- (8) Cabin pressure not normal:
(9) Descent 10000 feet or lowest safe
altitude, whichever is higher.

- COMPLETE -

AFT SLIDE (Caution)

- (1) DOOR synoptic page Select
(2) Affected slide Determine
(3) Cabin crew Check visual indicators and
ARM if able.

AFT SLIDE (Caution) (Cont'd)

- (4) **AFT SLIDE** caution message goes out:
 - ➔ **Yes** – Go to (5)
 - ➔ **No** – Go to (7)
- (5) **AFT SLIDE** caution message goes out:
- (6) No further action required.

– COMPLETE –
- (7) **AFT SLIDE** caution message stays on:
- (8) Cabin crewAdvise

– COMPLETE –

CARGO DOOR (Caution)

- (1) SEAT BELTS ON
- (2) Cabin pressure normal:
 - ➔ **Yes** – Go to (3)
 - ➔ **No** – Go to (5)
- (3) **Cabin pressure normal:**
- (4) No further action required.

– COMPLETE –
- (5) **Cabin pressure not normal:**
- (6) Descent 10000 feet or lowest safe altitude, whichever is higher.

– COMPLETE –

CKPT DOOR LOCK FAIL (Caution)

- (1) Cockpit door Lock manually
- COMPLETE -

DOOR SLIDE DISARMED (Caution)

- (1) DOOR synoptic page Select
(2) Affected slide Determine
(3) Cabin crew Check visual indicators and
ARM if able.
(4) **DOOR SLIDE DISARMED** caution message goes out:
➔ Yes – Go to (5)
➔ No – Go to (7)
(5) **DOOR SLIDE DISARMED** caution message goes out:
(6) No further action required.
- COMPLETE -
(7) **DOOR SLIDE DISARMED** caution message stays on:
(8) Cabin crew Advise
- COMPLETE -

EQUIP BAY DOOR (Caution)

- (1) SEAT BELTS ON
(2) Cabin pressure normal:
➔ Yes – Go to (3)
➔ No – Go to (5)

EQUIP BAY DOOR (Caution) (Cont'd)

(3) **Cabin pressure normal:**

(4) No further action required.

– COMPLETE –

(5) **Cabin pressure not normal:**

(6) Descent 10000 feet or lowest safe altitude, whichever is higher.

– COMPLETE –

FWD DOOR (Caution)

(1) SEAT BELTS ON

(2) DOOR synoptic page Select

(3) Affected door Determine

(4) Cabin crew Advise

(5) Cabin pressure normal:

➔ **Yes** – Go to (6)

➔ **No** – Go to (8)

(6) **Cabin pressure normal:**

(7) No further action required.

– COMPLETE –

(8) **Cabin pressure not normal:**

(9) Descent 10000 feet or lowest safe altitude, whichever is higher.

– COMPLETE –

FWD SLIDE (Caution)

- (1) DOOR synoptic page Select
- (2) Affected slide Determine
- (3) Cabin crew Check visual indicators and
ARM if able.
- (4) **FWD SLIDE** caution message goes out:
 - ➔ **Yes** – Go to (5)
 - ➔ **No** – Go to (7)
- (5) **FWD SLIDE** caution message goes out:
- (6) No further action required.
– COMPLETE –
- (7) **FWD SLIDE** caution message stays on:
- (8) Cabin crew Advise
– COMPLETE –

OVERWING DOOR (Caution)

- (1) SEAT BELTS ON
- (2) DOOR synoptic page Select
- (3) Affected door Determine
- (4) Cabin crew Advise
- (5) Cabin pressure normal:
 - ➔ **Yes** – Go to (6)
 - ➔ **No** – Go to (8)

OVERWING DOOR (Caution) (Cont'd)

(6) Cabin pressure normal:

(7) No further action required.

- COMPLETE -

(8) Cabin pressure not normal:

(9) Descent 10000 feet or lowest safe altitude, whichever is higher.

- COMPLETE -

WING SLIDE (Caution)

(1) DOOR synoptic page Select

(2) Affected slide Determine

(3) Cabin crew Advise

- COMPLETE -

ELECTRICAL

EMER PWR ONLY (Warning) 04-08-3

AC BUS 1 (Caution) 04-08-6

AC BUS 2 (Caution) 04-08-6

AC ESS BUS (Caution) 04-08-7

APU GEN FAIL (Caution) 04-08-7

BATT 1 FAIL (Caution) 04-08-8

BATT 1 OVERTEMP (Caution) 04-08-8

BATT 2 FAIL (Caution) 04-08-8

BATT 2 OVERTEMP (Caution) 04-08-9

BATT DISCHARGING (Caution) 04-08-9

DC BUS 1 (Caution) 04-08-10

DC BUS 2 (Caution) 04-08-10

DC EMER BUS (Caution) 04-08-10

DC ESS BUS 1 (Caution) 04-08-11

DC ESS BUS 2 (Caution) 04-08-12

DC ESS BUS 3 (Caution) 04-08-13

L GEN FAIL (Caution) 04-08-15

L GEN OIL (Caution) 04-08-16

R GEN FAIL (Caution) 04-08-16

R GEN OIL (Caution) 04-08-17

RAT GEN FAIL (Caution) 04-08-18

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EMER PWR ONLY (Warning)

- (1) Airspeed Not more than 300 KIAS/0.80 M
- (2) XFR If required, select to left side.
- (3) CTP, XPDR/TCAS If required, select XPDR 1
- (4) Plan to land at the nearest suitable airport.
- (5) RAT GEN ON
- (6) CABIN PWR OFF
- (7) APU (if available) START
- (8) L GEN OFF
- (9) L GEN Select on
- (10) R GEN OFF
- (11) R GEN Select on
- (12) **EMER PWR ONLY** warning message goes out:
 - ➔ **Yes** – Go to (13)
 - ➔ **No** – Go to (15)
- (13) **EMER PWR ONLY** warning message goes out:
- (14) Land at the nearest suitable airport.

– COMPLETE –
- (15) **EMER PWR ONLY** warning message stays on:
- (16) Confirm which EICAS message shown:
 - ➔ **RAT GEN ON** advisory message – Go to (17)
 - ➔ **BATT EMER PWR ON** advisory message – Go to (28)
- (17) **RAT GEN ON** advisory message:
- (18) EQUIP COOLING, EXHAUST ON
- (19) Leave/avoid icing conditions.

EMER PWR ONLY (Warning) (Cont'd)

(20) Land immediately at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

(21) AirspeedNot less than 155 KIAS until landing assured.



1. Below 148 KIAS the RAT generator may be inoperative and the airplane will be operating on battery power only.
2. Do not land on contaminated runway.

(22) Affected systemsReview

On approach:

(23) AirspeedNot less than 155 KIAS until landing assured.



1. Below 148 KIAS the batteries may be the only source of electrical power, and last for at least 5 minutes. Batteries will recharge above 148 KIAS if go-around is required.
2. Brakes are not available when batteries are depleted.
3. Do not land on contaminated runway.

EMER PWR ONLY (Warning) (Cont'd)

- (24) Approach speed V_{REF}
- (25) OLD factor Multiply by 1.30

After landing:

- (26) Do not taxi.
- (27) PARK BRAKE ON

- COMPLETE -

(28) BATT EMER PWR ON advisory message:



Batteries are the only source of electrical power and last for at least 5 minutes.

- (29) EQUIP COOLING, EXHAUST ON
- (30) Land immediately at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

- (31) Affected systems Review

On approach:

- (32) Approach speed V_{REF}
- (33) OLD factor Multiply by 1.30



- 1. Brakes are not available when batteries are depleted.

EMER PWR ONLY (Warning) (Cont'd)

2. Do not land on contaminated runway.

After landing:

(34) Do not taxi.

(35) PARK BRAKE ON

- COMPLETE -

AC BUS 1 (Caution)

(1) HYD 2B OFF

(2) Anti-ice system Operate manually in icing conditions

(3) Leave/avoid icing conditions.

(4) Affected systems Review

- COMPLETE -

AC BUS 2 (Caution)

(1) HYD 3A OFF

(2) HYD 3B OFF

(3) Anti-ice system Operate manually in icing conditions

(4) Leave/avoid icing conditions.

(5) Affected systems Review

- COMPLETE -

AC ESS BUS (Caution)

- (1) Affected systemsReview
- COMPLETE -

APU GEN FAIL (Caution)

- (1) APU GEN OFF
- (2) APU GEN Select on
- (3) **APU GEN FAIL** caution message stays out:
- ➔ Yes – Go to (4)
 - ➔ No – Go to (6)
- (4) **APU GEN FAIL** caution message stays out:
- (5) No further action required.
- COMPLETE -
- (6) **APU GEN FAIL** caution message comes on:
- (7) APU GEN OFF
- (8) **L GEN OFF** or **R GEN OFF** status message is also shown:
- ➔ Yes – Go to (9)
 - ➔ No – Go to (11)
- (9) **L GEN OFF** or **R GEN OFF** status message is also shown:
- (10) Land at the nearest suitable airport.
- COMPLETE -
- (11) **L GEN OFF** or **R GEN OFF** status message is not shown:
- (12) No further action required
- COMPLETE -

BATT 1 FAIL (Caution)

- (1) BATT 1 OFF
- (2) BATT 1 AUTO
- (3) **BATT 1 FAIL** caution message stays out:
 - ➔ **Yes** – Go to (4)
 - ➔ **No** – Go to (6)
- (4) **BATT 1 FAIL** caution message stays out:
- (5) No further action required.

– COMPLETE –
- (6) **BATT 1 FAIL** caution message comes on:
- (7) BATT 1 OFF

– COMPLETE –

BATT 1 OVERTEMP (Caution)

- (1) BATT 1 OFF
- (2) Land at nearest suitable airport.

– COMPLETE –

BATT 2 FAIL (Caution)

- (1) BATT 2 OFF
- (2) BATT 2 AUTO
- (3) **BATT 2 FAIL** caution message stays out:
 - ➔ **Yes** – Go to (4)
 - ➔ **No** – Go to (6)

DC BUS 1 (Caution)

(1) Land at the nearest suitable airport.

If time and conditions permit:

- (2) PTU OFF
- (3) Leave/avoid icing conditions.

NOTE

RNP AR approaches are prohibited.

(4) Affected systemsReview

- COMPLETE -

DC BUS 2 (Caution)

(1) Land at the nearest suitable airport.

If time and conditions permit:

- (2) Affected systemsReview

- COMPLETE -

DC EMER BUS (Caution)

(1) Land at the nearest suitable airport.

- (2) Affected systemsReview

- COMPLETE -

DC ESS BUS 1 (Caution)

NOTE

The **L BRAKE FAIL** and **R BRAKE FAIL** caution messages come on with the **DC ESS BUS 1** caution message when the landing gear is extended. The steps in these caution messages are included in this procedure and do not need to be done separately. The OLD factor in this procedure must be applied and already includes the affected systems.

- (1) Cockpit door Lock manually
- (2) Cabin crewAdvise

NOTE

Forward lavatory smoke detection is inoperative.

- (3) AUTOBRAKE OFF
- (4) Land at the nearest suitable airport.
- (5) Affected systemsReview

On approach:

- (6) OLD factor Multiply by 1.50
- (7) BrakesAfter landing, apply with caution.

NOTE

Anti-skid may not be available on left and right brakes.

- (8) Thrust reversersAfter landing, apply as required.

- COMPLETE -

DC ESS BUS 2 (Caution)

(1) SPD mode MAN

NOTE

Do not re-select FMS SPD mode.

(2) NAV SRC FMS 1

(3) XFR Select to left side.

(4) ANTI-ICE, WING OFF

(5) Leave/avoid icing conditions.

(6) Land at the nearest suitable airport.

(7) Cabin crew Advise

NOTE

Aft lavatory smoke detection is inoperative.

(8) AUTOBRAKE OFF

(9) Use AVIONIC, CTP tab for R CTP functions.

NOTE

- 1. LPV and RNP AR approaches are prohibited with single FMS operative.
- 2. With single FMS operation, auto tuning for a NAV to NAV transfer will not occur on the cross-side PFD. Manual tuning is required.

(10) Affected systems Review

DC ESS BUS 2 (Caution) (Cont'd)

NOTE

The **L BRAKE FAIL** and **R BRAKE FAIL** caution messages come on with the **DC ESS BUS 2** caution message when the landing gear is extended. The steps in these caution messages are included in this procedure and do not need to be done separately. The OLD factor in this procedure must be applied and already includes the affected systems.

- (11) Go-around procedure Accomplish, if required. Refer to [Normal procedures – Go-around procedure](#).

On approach:

- (12) OLD factor Multiply by 1.50
- (13) BrakesAfter landing, apply with caution.

NOTE

Anti-skid may not be available on left and right brakes.

- (14) Thrust reversersAfter landing, apply as required.

– COMPLETE –

DC ESS BUS 3 (Caution)

- (1) SPD mode MAN

NOTE

Do not re-select FMS SPD mode.

- (2) NAV SRCFMS 2
- (3) XFRSelect to right side.

DC ESS BUS 3 (Caution) (Cont'd)

- (4) Altitude Not above 37000 feet
- (5) EQUIP COOLING, EXHAUST ON
- (6) Leave/avoid icing conditions.
- (7) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

- (8) CTP 2, XPDR/TCAS Select XPDR 2
- (9) Use AVIONIC, CTP tab for L CTP functions.

NOTE

- 1. LPV and RNP AR approaches are prohibited with single FMS operative.
- 2. With single FMS operation, auto tuning for a NAV to NAV transfer will not occur on the cross-side PFD. Manual tuning is required.

- (10) Affected systemsReview
- (11) Go-around procedure Accomplish, if required. [Refer to Normal procedures – Go-around procedure.](#)

On approach:

- (12) FMS, PERF – ARR – SLAT/FLAP 4
- (13) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)}$
- (14) OLD factor Multiply by 1.15

DC ESS BUS 3 (Caution) (Cont'd)

Before landing:

- (15) SLAT/FLAP lever 4

- COMPLETE -

L GEN FAIL (Caution)

- (1) L GEN OFF

- (2) L GEN Select on

- (3) **L GEN FAIL** caution message stays out:

➔ **Yes** – Go to (4)

➔ **No** – Go to (6)

- (4) **L GEN FAIL** caution message stays out:

- (5) No further action required.

- COMPLETE -

- (6) **L GEN FAIL** caution message comes on:

- (7) L GEN OFF

- (8) APU (if available)START

- (9) **R GEN OFF** or **APU GEN OFF** status message is also shown:

➔ **Yes** – Go to (10)

➔ **No** – Go to (12)

- (10) **R GEN OFF** or **APU GEN OFF** status message is also shown:

- (11) Land at the nearest suitable airport.

- COMPLETE -

L GEN FAIL (Caution) (Cont'd)

(12) **R GEN OFF or APU GEN OFF status message is not shown:**

(13) No further action required

– COMPLETE –

L GEN OIL (Caution)

(1) APU (if available)START

(2) L GENConfirm and OFF

(3) L DISC Confirm and DISC

(4) **R GEN OFF or APU GEN OFF status message is also shown:**

➔ **Yes – Go to (5)**

➔ **No – Go to (7)**

(5) **R GEN OFF or APU GEN OFF status message is also shown:**

(6) Land at the nearest suitable airport.

– COMPLETE –

(7) **R GEN OFF or APU GEN OFF status message is not shown:**

(8) No further action required

– COMPLETE –

R GEN FAIL (Caution)

(1) R GEN OFF

(2) R GEN Select on

(3) **R GEN FAIL** caution message stays out:

➔ **Yes – Go to (4)**

➔ **No – Go to (6)**

R GEN FAIL (Caution) (Cont'd)

(4) **R GEN FAIL** caution message stays out:

(5) No further action required.

– COMPLETE –

(6) **R GEN FAIL** caution message comes on:

(7) R GEN OFF

(8) APU (if available)START

(9) **L GEN OFF** or **APU GEN OFF** status message is also shown:

➔ **Yes** – Go to (10)

➔ **No** – Go to (12)

(10) **L GEN OFF** or **APU GEN OFF** status message is also shown:

(11) Land at the nearest suitable airport.

– COMPLETE –

(12) **L GEN OFF** or **APU GEN OFF** status message is not shown:

(13) No further action required

– COMPLETE –

R GEN OIL (Caution)

(1) APU (if available)START

(2) R GENConfirm and OFF

(3) R DISC Confirm and DISC

(4) **L GEN OFF** or **APU GEN OFF** status message is also shown:

➔ **Yes** – Go to (5)

➔ **No** – Go to (7)

R GEN OIL (Caution) (Cont'd)

- (5) **L GEN OFF or APU GEN OFF status message is also shown:**
- (6) Land at the nearest suitable airport.
– COMPLETE –
- (7) **L GEN OFF or APU GEN OFF status message is not shown:**
- (8) No further action required
– COMPLETE –

RAT GEN FAIL (Caution)

In use and in flight:

- (1) RAT GEN ON
– COMPLETE –

EVACUATION

Emergency evacuation 04-09-3

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Emergency evacuation

- (1) DOME ON
- (2) ATC Advise
- (3) PARK BRAKE ON
- (4) ECL DU 2 and DU 3
- (5) SPOILER lever Ensure RET
- (6) Thrust levers IDLE
- (7) L ENG run OFF
- (8) R ENG run OFF
- (9) APU OFF
- (10) L ENG FIRE Select
- (11) APU FIRE Select
- (12) R ENG FIRE Select
- (13) EMER DEPRESS ON
- (14) EMER LTS ON
- (15) Evacuation Initiate
- (16) BATT 1 OFF
- (17) BATT 2 OFF

- COMPLETE -

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FIRE PROTECTION

AFT CARGO BTL FAIL (Caution)	04-10-3
AFT CARGO SMOKE FAIL (Caution)	04-10-3
APU BTL FAIL (Caution)	04-10-4
APU FIRE DET FAIL (Caution)	04-10-4
CARGO BTL FAIL (Caution)	04-10-5
EQUIP BAY SMOKE FAIL (Caution)	04-10-5
FIRE SYSTEM FAIL (Caution)	04-10-6
FWD CARGO BTL FAIL (Caution)	04-10-6
FWD CARGO SMOKE FAIL (Caution)	04-10-7
L ENG BTL FAIL (Caution)	04-10-7
L ENG FIRE DET FAIL (Caution)	04-10-7
LAV SMOKE FAIL (Caution)	04-10-8
L-R ENG BTL FAIL (Caution)	04-10-8
MLG BAY OVHT DET FAIL (Caution)	04-10-8
R ENG BTL FAIL (Caution)	04-10-9
R ENG FIRE DET FAIL (Caution)	04-10-9

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AFT CARGO BTL FAIL (Caution)

- (1) Cargo in aft cargo bay:
 - ➔ **Yes** – [Go to \(2\)](#)
 - ➔ **No** – [Go to \(4\)](#)
- (2) **Cargo in aft cargo bay:**
- (3) Land at the nearest suitable airport.
– **COMPLETE** –
- (4) **No cargo in aft cargo bay:**
- (5) No further action required.
– **COMPLETE** –

AFT CARGO SMOKE FAIL (Caution)

- (1) Cargo in aft cargo bay:
 - ➔ **Yes** – [Go to \(2\)](#)
 - ➔ **No** – [Go to \(5\)](#)
- (2) **Cargo in aft cargo bay:**
- (3) AIR, CARGO AFT OFF
- (4) Land at the nearest suitable airport.
– **COMPLETE** –
- (5) **No cargo in aft cargo bay:**
- (6) No further action required.
– **COMPLETE** –

APU BTL FAIL (Caution)

- (1) APU required for flight:
 - ➔ **Yes** – [Go to \(2\)](#)
 - ➔ **No** – [Go to \(4\)](#)
- (2) **APU required for flight:**
- (3) Land at the nearest suitable airport.
– COMPLETE –
- (4) **APU not required for flight:**
- (5) APU OFF
– COMPLETE –

APU FIRE DET FAIL (Caution)

- (1) APU required for flight:
 - ➔ **Yes** – [Go to \(2\)](#)
 - ➔ **No** – [Go to \(4\)](#)
- (2) **APU required for flight:**
- (3) Land at the nearest suitable airport.
– COMPLETE –
- (4) **APU not required for flight:**
- (5) APU OFF
– COMPLETE –

CARGO BTL FAIL (Caution)

- (1) Cargo in either cargo bay:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (4)
- (2) **Cargo in either cargo bay:**
- (3) Land at the nearest suitable airport.
– COMPLETE –
- (4) **No cargo in either cargo bay:**
- (5) No further action required.
– COMPLETE –

EQUIP BAY SMOKE FAIL (Caution)

- (1) **EMER PWR ONLY** warning message or **AIR SYS ESS CTLR FAIL** caution message is also shown:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (4)
- (2) **EMER PWR ONLY** warning message or **AIR SYS ESS CTLR FAIL** caution message is also shown:
- (3) No further action required.
– COMPLETE –
- (4) **EMER PWR ONLY** warning message or **AIR SYS ESS CTLR FAIL** caution message is not shown:
- (5) RECIRC AIR OFF
- (6) CABIN PWR (if galley chiller installed) OFF
- (7) EQUIP COOLING, INLET OFF

EQUIP BAY SMOKE FAIL (Caution) (Cont'd)

- (8) **EQUIP BAY COOL FAIL** caution message is also shown:
- ➔ Yes – Go to (9)
 - ➔ No – Go to (12)
- (9) **EQUIP BAY COOL FAIL** caution message is also shown:
- (10) EQUIP COOLING, EXHAUST ON
- (11) Land at the nearest suitable airport.
- COMPLETE –
- (12) **EQUIP BAY COOL FAIL** caution message is not shown:
- (13) EQUIP COOLING, EXHAUST VLV ONLY
- (14) Land at the nearest suitable airport.
- COMPLETE –

FIRE SYSTEM FAIL (Caution)

- (1) Land immediately at the nearest suitable airport.
- COMPLETE –

FWD CARGO BTL FAIL (Caution)

- (1) Cargo in forward cargo bay:
- ➔ Yes – Go to (2)
 - ➔ No – Go to (4)
- (2) **Cargo in forward cargo bay:**
- (3) Land at the nearest suitable airport.
- COMPLETE –

FWD CARGO BTL FAIL (Caution) (Cont'd)

- (4) **No cargo in forward cargo bay:**
- (5) No further action required.

- COMPLETE -

FWD CARGO SMOKE FAIL (Caution)

- (1) Cargo in forward cargo bay:
 - ➔ **Yes – Go to (2)**
 - ➔ **No – Go to (5)**
- (2) **Cargo in forward cargo bay:**
- (3) AIR, CARGO FWD OFF
- (4) Land at the nearest suitable airport.

- COMPLETE -

- (5) **No cargo in forward cargo bay:**
- (6) No further action required.

- COMPLETE -

L ENG BTL FAIL (Caution)

- (1) Land at the nearest suitable airport.

- COMPLETE -

L ENG FIRE DET FAIL (Caution)

- (1) Land at the nearest suitable airport.

- COMPLETE -

LAV SMOKE FAIL (Caution)

- (1) Cabin crewAdvise
- COMPLETE -

L-R ENG BTL FAIL (Caution)

- (1) Land at the nearest suitable airport.
- COMPLETE -

MLG BAY OVHT DET FAIL (Caution)

- (1) STATUS synoptic page Select
(2) Brake temperature is green:
 ➔ Yes – Go to (3)
 ➔ No – Go to (5)
(3) Brake temperature is green:
(4) No further action required.
- COMPLETE -

- (5) Brake temperature is not green:
(6) Airspeed Not more than 250 KIAS
(7) Landing gear DN

When brake temperature is within normal range:

- (8) Landing gear As required
- COMPLETE -

R ENG BTL FAIL (Caution)

(1) Land at the nearest suitable airport.

- COMPLETE -

R ENG FIRE DET FAIL (Caution)

(1) Land at the nearest suitable airport.

- COMPLETE -

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FLIGHT CONTROLS

CONFIG FLAP (Warning)	04-11-3
CONFIG RUDDER TRIM (Warning)	04-11-3
CONFIG SIDESTICK (Warning)	04-11-3
CONFIG SPOILER (Warning)	04-11-3
CONFIG STAB TRIM (Warning)	04-11-3
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R ELEVATOR FAIL (Warning)	04-11-7
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ADS DEGRADED (Caution)	04-11-9
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STAB DEGRADED (Caution)	04-11-69
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Rudder pedal jammed	04-11-71
Slat-flap lever jammed	04-11-72
Spoiler lever jammed	04-11-73
Stall recovery	04-11-74

CONFIG FLAP (Warning)

- (1) TakeoffDiscontinue
- COMPLETE -

CONFIG RUDDER TRIM (Warning)

- (1) TakeoffDiscontinue
- COMPLETE -

CONFIG SIDESTICK (Warning)

- (1) TakeoffDiscontinue
- COMPLETE -

CONFIG SPOILER (Warning)

- (1) TakeoffDiscontinue
- COMPLETE -

CONFIG STAB TRIM (Warning)

- (1) TakeoffDiscontinue
- COMPLETE -

FLT CTRL DIRECT (Warning)

WARNING

Controllability is reduced and fly-by-wire envelope protection is not available. Minimize control inputs.

FLT CTRL DIRECT (Warning) (Cont'd)

- (1) Assume manual control.
- (2) Airspeed Not more than 300 KIAS/0.80 M
- (3) Plan to land at the nearest suitable airport.

Significant systems affected:

- Autopilot
- Flight director may not be available
- Roll authority reduced
- Flight spoilers
- Sidestick priority
- Ground lift dumping
- Nosewheel steering may not be available



- 1. Do not attempt this reset procedure more than once.
- 2. Do not attempt reset:
 - If there were significant flight control induced aircraft transients immediately before the reversion to direct mode.
 - Unless the aircraft is stable, straight, level and trimmed.

- (4) PFCC 1 OFF
- (5) PFCC 1 Select on

FLT CTRL DIRECT (Warning) (Cont'd)

After 30 seconds:

- (6) PFCC 2 OFF
- (7) PFCC 2 Select on

After 30 seconds:

- (8) PFCC 3 OFF
- (9) PFCC 3 Select on

(10) **FLT CTRL DIRECT** warning message goes out:

- ➔ **Yes – Go to (11)**
- ➔ **No – Go to (13)**

(11) **FLT CTRL DIRECT** warning message goes out:

(12) Land at the nearest suitable airport.

– COMPLETE –

(13) **FLT CTRL DIRECT** warning message stays on:

- (14) Altitude Not above 31000 feet
- (15) Land immediately at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

On approach:



Control authority is reduced. Minimize control inputs.

- (16) FMS, PERF – ARR – SLAT/FLAP 4

FLT CTRL DIRECT (Warning) (Cont'd)

- (17) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 10$
- (18) OLD factor Multiply by 1.45

Before landing:

- (19) SLAT/FLAP lever 4

After touchdown:

- (20) SPOILER lever FULL

– COMPLETE –

L ELEVATOR FAIL (Warning)

- (1) Airspeed Not more than 200 KIAS
- (2) Do not retract flaps.
- (3) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

On approach:

- (4) FMS, PERF – ARR – SLAT/FLAP 4
- (5) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 10$
- (6) OLD factor Multiply by 1.30

Before landing:

- (7) SLAT/FLAP lever 4

– COMPLETE –

R ELEVATOR FAIL (Warning)

- (1) Airspeed Not more than 200 KIAS
- (2) Do not retract flaps.
- (3) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

On approach:

- (4) FMS, PERF – ARR – SLAT/FLAP 4
- (5) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 10$
- (6) OLD factor Multiply by 1.30

Before landing:

- (7) SLAT/FLAP lever 4

– COMPLETE –

RUDDER FAIL (Warning)

- (1) FLT CTRL synoptic page Select
- (2) Rudder position Check
- (3) Airspeed Not more than 200 KIAS or the speed at which the failure occurred, whichever is higher.
- (4) Do not retract flaps.
- (5) Land immediately at the nearest suitable airport.

NOTE

1. Select the longest runway with minimal crosswind.

RUDDER FAIL (Warning) (Cont'd)

2. If rudder has failed out of neutral position use lateral control and differential thrust as required to maintain straight flight until touchdown.

On approach:

- (6) FMS, PERF – ARR – SLAT/FLAP 5
- (7) FMS, PERF – ARR – VREF $V_{REF(FLAP 5)} + 5$
- (8) OLD factor Multiply by 1.85

Before landing:

- (9) SLAT/FLAP lever 5



If the rudder has failed out of neutral position, maintain differential thrust until directional control is established on the runway.



1. Do not prolong the flare or delay the derotation.
2. Use prompt differential braking as required to assist in directional control.

Immediately after touchdown:

- (10) SPOILER lever FULL

– COMPLETE –

ADS DEGRADED (Caution)

NOTE

1. Avoid abrupt maneuvering.
2. Avoid use of the spoiler lever until airspeed is less than 300 KIAS/0.80 M and altitude is below 35000 feet.

- (1) Airspeed Not more than 300 KIAS/0.80 M
- (2) Altitude Not above 35000 feet
- (3) Land at the nearest suitable airport.

On approach:

- (4) FMS, PERF – ARR – SLAT/FLAP 4
- (5) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 10$
- (6) OLD factor Multiply by 1.30

Before landing:

- (7) SLAT/FLAP lever 4

– COMPLETE –

AILERON FAIL (Caution)

- (1) Failure occurs at speed less than or equal to 200 KIAS:
 - ➔ **Yes** – [Go to \(2\)](#)
 - ➔ **No** – [Go to \(6\)](#)
- (2) **Failure occurs at speed less than or equal to 200 KIAS:**
- (3) Airspeed Not more than 200 KIAS
- (4) OLD factor Multiply by 1.15
- (5) Land at the nearest suitable airport.

AILERON FAIL (Caution) (Cont'd)

NOTE

Select the longest runway with minimal crosswind.

– COMPLETE –

(6) **Failure occurs at speed more than 200 KIAS:**

- (7) Airspeed Not more than 300 KIAS or the speed at which the failure occurred, whichever is lower.
- (8) OLD factor Multiply by 1.15
- (9) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

– COMPLETE –

ALPHA LIMIT (Caution)

On approach:

- (1) FMS, PERF – ARR – VREF $V_{REF} + 5$
- (2) OLD factor Multiply by 1.20

– COMPLETE –

FLAP FAIL (Caution)

- (1) **SLAT-FLAP FAIL** caution message is also shown:
- ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (4)

FLAP FAIL (Caution) (Cont'd)

(2) **SLAT-FLAP FAIL** caution message is also shown:

(3) SLAT-FLAP FAIL procedure Accomplish [Refer to Flight controls – SLAT-FLAP FAIL.](#)

– COMPLETE –

(4) **SLAT-FLAP FAIL** caution message is not shown:

(5) SLAT/FLAP lever Select previous position.

(6) SLAT/FLAP lever Re-select desired position.

(7) **FLAP FAIL** caution message goes out:

➔ Yes – Go to (8)

➔ No – Go to (10)

(8) **FLAP FAIL** caution message goes out:

(9) No further action required.

– COMPLETE –

(10) **FLAP FAIL** caution message stays on:

(11) Altitude Not above 20000 feet

(12) Airspeed Not more than V_{FE} .

NOTE

1. If slat/flap are confirmed 0, reduction of cruise airspeed/altitude are not required.
2. High alpha protection setting is adjusted to account for the failure.

(13) Anti-ice system Operate manually in icing conditions.

(14) Land at the nearest suitable airport.

FLAP FAIL (Caution) (Cont'd)

NOTE

Select the longest runway with minimal crosswind.

(15) **SLAT SKEW** caution message is also shown:

- ➔ **Yes** – [Go to \(16\)](#)
- ➔ **No** – [Go to \(47\)](#)

(16) **SLAT SKEW** caution message is also shown:

(17) Check FLAP position:

- ➔ **FLAP position is 0-1** – [Go to \(18\)](#)
- ➔ **FLAP position is 2** – [Go to \(24\)](#)
- ➔ **FLAP position is 3** – [Go to \(30\)](#)
- ➔ **FLAP position is 4** – [Go to \(36\)](#)
- ➔ **FLAP position is 5** – [Go to \(42\)](#)

(18) **FLAP position is 0-1:**

(19) Maximum landing weight Use the table to determine the value and correct for wind and slope.

FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V _{REF} +54KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	69580 (153400)	64090 (141300)	58780 (129600)	54060 (119200)	49710 (109600)	45580 (100500)
0	32	63180 (139300)	57920 (127700)	53290 (117500)	48980 (108000)	44900 (99000)	41050 (90500)
20	68	57560 (126900)	52970 (116800)	48670 (107300)	44580 (98300)	40770 (89900)	37140 (81900)
30	86	55150 (121600)	50750 (111900)	46530 (102600)	42590 (93900)	38910 (85800)	35420 (78100)
40 AND ABOVE	104 AND ABOVE	52970 (116800)	48620 (107200)	44580 (98300)	40680 (89700)	37190 (82000)	33700 (74300)

CS300_LW_ATA27_DVREF54_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 25% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 54 kt
Figure 04–11–1

FLAP FAIL (Caution) (Cont'd)

On approach:

- (20) TAWS, FLAPINHIB
- (21) FMS, PERF – ARR – SLAT/FLAP 4
- (22) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 54$
- (23) OLD factorMultiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.85	2.10

- COMPLETE -

(24) FLAP position is 2:

- (25) Maximum landing weight Use the table to determine the value and correct for wind and slope.

FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+33KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	78330 (172700)	75740 (167000)	73160 (161300)	70620 (155700)	66310 (146200)	61140 (134800)
0	32	75380 (166200)	72800 (160500)	70300 (155000)	65490 (144400)	60410 (133200)	55740 (122900)
20	68	72660 (160200)	70170 (154700)	65220 (143800)	60140 (132600)	55510 (122400)	51300 (113100)
30	86	71440 (157500)	67900 (149700)	62680 (138200)	57740 (127300)	53380 (117700)	49350 (108800)
40 AND ABOVE	104 AND ABOVE	70260 (154900)	65360 (144100)	60280 (132900)	55610 (122600)	51430 (113400)	47440 (104600)

CS300_LW_ATA27_DVREF33_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 20% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 33 kt
Figure 04–11–2

FLAP FAIL (Caution) (Cont'd)

On approach:

- (26) TAWS, FLAPINHIB
- (27) FMS, PERF – ARR – SLAT/FLAP 4
- (28) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 33$
- (29) OLD factorMultiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.60	1.80

– COMPLETE –

(30) FLAP position is 3:

- (31) Maximum landing weight Use the table to determine the value and correct for wind and slope.

FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+22KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	82960 (182900)	80370 (177200)	77740 (171400)	75110 (165600)	72480 (159800)	69620 (153500)
0	32	80010 (176400)	77380 (170600)	74790 (164900)	72160 (159100)	69620 (153500)	64720 (142700)
20	68	77290 (170400)	74700 (164700)	72120 (159000)	69580 (153400)	64540 (142300)	59640 (131500)
30	86	75970 (167500)	73430 (161900)	70890 (156300)	67130 (148000)	62090 (136900)	57370 (126500)
40 AND ABOVE	104 AND ABOVE	74790 (164900)	72210 (159200)	69710 (153700)	64720 (142700)	59820 (131900)	55380 (122100)

CS300_LW_ATA27_DVREF22_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 19% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 22 kt
Figure 04–11–3

FLAP FAIL (Caution) (Cont'd)

On approach:

- (32) TAWS, FLAPINHIB
- (33) FMS, PERF – ARR – SLAT/FLAP 4
- (34) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 22$
- (35) OLD factorMultiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.45	1.55

- COMPLETE -

(36) FLAP position is 4:

- (37) Maximum landing weight Use the table to determine the value and correct for wind and slope.

FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+15KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	85230 (187900)	82680 (182300)	80010 (176400)	77380 (170600)	74750 (164800)	71840 (158400)
0	32	82280 (181400)	79690 (175700)	77060 (169900)	74430 (164100)	71840 (158400)	68990 (152100)
20	68	79600 (175500)	77010 (169800)	74380 (164000)	71800 (158300)	69260 (152700)	65540 (144500)
30	86	78330 (172700)	75740 (167000)	73160 (161300)	70530 (155500)	68030 (150000)	63140 (139200)
40 AND ABOVE	104 AND ABOVE	77110 (170000)	74520 (164300)	71930 (158600)	69350 (152900)	65770 (145000)	60910 (134300)

CS300_LW_ATA27_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 15 kt
Figure 04–11–4

FLAP FAIL (Caution) (Cont'd)

On approach:

- (38) TAWS, FLAPINHIB
- (39) FMS, PERF – ARR – SLAT/FLAP 4
- (40) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 15$
- (41) OLD factor Multiply by 1.40

– COMPLETE –

(42) FLAP position is 5:

On approach:

- (43) TAWS, FLAPINHIB
- (44) FMS, PERF – ARR – SLAT/FLAP 4
- (45) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 9$
- (46) OLD factor Multiply by 1.40

– COMPLETE –

(47) **SLAT SKEW** caution message is not shown:

(48) Check FLAP position:

- ➔ FLAP position is 0-1 – [Go to \(49\)](#)
- ➔ FLAP position is 2 – [Go to \(56\)](#)
- ➔ FLAP position is 3, 4 or 5 – [Go to \(63\)](#)

(49) FLAP position is 0-1:

- (50) Maximum landing weightUse the table to determine value and correct for wind and slope.

FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+41KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	75340 (166100)	72750 (160400)	69980 (154300)	64630 (142500)	59510 (131200)	54830 (120900)
0	32	72390 (159600)	69170 (152500)	63820 (140700)	58690 (129400)	54150 (119400)	49940 (110100)
20	68	68850 (151800)	63500 (140000)	58420 (128800)	53880 (118800)	49660 (109500)	45720 (100800)
30	86	66130 (145800)	60870 (134200)	56060 (123600)	51750 (114100)	47670 (105100)	43810 (96600)
40 AND ABOVE	104 AND ABOVE	63540 (140100)	58460 (128900)	53930 (118900)	49750 (109700)	45760 (100900)	42040 (92700)

CS300_LW_ATA27_DVREF41_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 21% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 41 kt
Figure 04–11–5

FLAP FAIL (Caution) (Cont'd)

On approach:

- (51) TAWS, FLAPINHIB
- (52) FMS, PERF – ARR – SLAT/FLAP 4
- (53) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 41$
- (54) OLD factorMultiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.65	1.80

Before landing:

- (55) SLAT/FLAP lever 4

- COMPLETE -

(56) FLAP position is 2:

- (57) Maximum landing weightUse the table to determine value
and correct for wind and slope.

FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+15KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	85230 (187900)	82680 (182300)	80010 (176400)	77380 (170600)	74750 (164800)	71840 (158400)
0	32	82280 (181400)	79690 (175700)	77060 (169900)	74430 (164100)	71840 (158400)	68990 (152100)
20	68	79600 (175500)	77010 (169800)	74380 (164000)	71800 (158300)	69260 (152700)	65540 (144500)
30	86	78330 (172700)	75740 (167000)	73160 (161300)	70530 (155500)	68030 (150000)	63140 (139200)
40 AND ABOVE	104 AND ABOVE	77110 (170000)	74520 (164300)	71930 (158600)	69350 (152900)	65770 (145000)	60910 (134300)

CS300_LW_ATA27_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 15 kt
Figure 04–11–6

FLAP FAIL (Caution) (Cont'd)

On approach:

- (58) TAWS, FLAPINHIB
- (59) FMS, PERF – ARR – SLAT/FLAP 4
- (60) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 15$
- (61) OLD factor Multiply by 1.45

Before landing:

- (62) SLAT/FLAP lever 4

– COMPLETE –

(63) FLAP position is 3, 4 or 5:

On approach:

- (64) TAWS, FLAPINHIB
- (65) FMS, PERF – ARR – SLAT/FLAP 4
- (66) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + \Delta V_{REF}$. Set value from table.
- (67) OLD factor Multiply by value from table.

FLAP	$\Delta V_{REF(FLAP 4)}$	OLD factor
3	5	1.25
4	5	1.20
5	5	1.20

Before landing:

- (68) SLAT/FLAP lever 4

– COMPLETE –

FLAP SLOW (Caution)

- (1) Flap movement Monitor
- COMPLETE -

FLT CTRL DIRECT (Caution)



Fly-by-wire envelope protection is not available.
Minimize control inputs.

- (1) Assume manual control.
(2) Airspeed Not more than 300 KIAS/0.80 M
(3) Plan to land at the nearest suitable airport.

Significant systems affected:

- Autopilot
- Flight director may not be available
- Sidestick priority may not be available
- Automatic ground lift dumping may not be available (manual control available)
- Nosewheel steering may not be available



1. Do not attempt this reset procedure more than once.

FLT CTRL DIRECT (Caution) (Cont'd)

2. Do not attempt reset:

- If there were significant flight control induced aircraft transients immediately before the reversion to direct mode.
- Unless the aircraft is stable, straight, level and trimmed.

(4) PFCC 1 OFF

(5) PFCC 1 Select on

After 30 seconds:

(6) PFCC 2 OFF

(7) PFCC 2 Select on

After 30 seconds:

(8) PFCC 3 OFF

(9) PFCC 3 Select on

(10) **FLT CTRL DIRECT** caution message goes out:

➔ **Yes** – Go to (11)

➔ **No** – Go to (13)

(11) **FLT CTRL DIRECT** caution message goes out:

(12) Land at the nearest suitable airport.

– COMPLETE –

(13) **FLT CTRL DIRECT** caution message stays on:

(14) Altitude Not above 31000 feet

(15) Land at the nearest suitable airport.

FLT CTRL DIRECT (Caution) (Cont'd)

NOTE

Select the longest runway with minimal crosswind.

On approach:



Control authority is reduced. Minimize control inputs.

- (16) FMS, PERF – ARR – SLAT/FLAP 4
- (17) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 10$
- (18) OLD factor Multiply by 1.45

Before landing:

- (19) SLAT/FLAP lever 4

After touchdown:

- (20) SPOILER lever FULL

– COMPLETE –

FLT CTRL DIRECT ADS (Caution)



Fly-by-wire envelope protection is not available.
Minimize control inputs.

- (1) Assume manual control.

FLT CTRL DIRECT ADS (Caution) (Cont'd)

- (2) Airspeed reliable:
- ➔ **Yes** – Go to (3)
 - ➔ **No** – Go to (27)
- (3) **Airspeed reliable:**
- (4) Airspeed Not more than 300 KIAS/0.80 M
- (5) Plan to land at the nearest suitable airport.
- Significant systems affected:
- Autopilot
 - Flight director may not be available
 - Stick shaker may not be available
- (6) At least two valid ADSP sources become available:
- ➔ **Yes** – Go to (7)
 - ➔ **No** – Go to (25)
- (7) **At least two valid ADSP sources become available:**



1. Do not attempt this reset procedure more than once.
2. Do not attempt reset:
 - If there were significant flight control induced aircraft transients immediately before the reversion to direct mode.
 - Unless the aircraft is stable, straight, level and trimmed.

FLT CTRL DIRECT ADS (Caution) (Cont'd)

- (8) PFCC 1 OFF
- (9) PFCC 1 Select on

After 30 seconds:

- (10) PFCC 2 OFF
- (11) PFCC 2 Select on

After 30 seconds:

- (12) PFCC 3 OFF
- (13) PFCC 3 Select on
- (14) **FLT CTRL DIRECT ADS** caution message goes out:

- ➔ **Yes** – Go to (15)
- ➔ **No** – Go to (17)

(15) FLT CTRL DIRECT ADS caution message goes out:

- (16) Land at the nearest suitable airport.

– COMPLETE –

(17) FLT CTRL DIRECT ADS caution message stays on:

- (18) Altitude Not above 31000 feet
- (19) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

FLT CTRL DIRECT ADS (Caution) (Cont'd)

On approach:



Control authority is reduced. Minimize control inputs.

- (20) FMS, PERF – ARR – SLAT/FLAP 4
- (21) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 10$
- (22) OLD factor Multiply by 1.45

Before landing:

- (23) SLAT/FLAP lever 4

After touchdown:

- (24) SPOILER lever FULL

– COMPLETE –

(25) At least two ADSP sources do not become available:

- (26) Unreliable airspeed procedure Accomplish [Refer to Instruments system – Unreliable airspeed.](#)

– COMPLETE –

(27) Airspeed unreliable:

- (28) Unreliable airspeed procedure Accomplish [Refer to Instruments system – Unreliable airspeed.](#)

– COMPLETE –

FLT CTRL DIRECT IRS (Caution)



Fly-by-wire envelope protection is not available.
Minimize control inputs.

- (1) Assume manual control.
- (2) Airspeed Not more than 300 KIAS/0.80 M
- (3) Plan to land at the nearest suitable airport.

Significant systems affected:

- Autopilot
 - Flight director may not be available
- (4) FMS, POS – IRS SET IRS HDG, if required.
 - (5) At least one IRS becomes available:
 - ➔ **Yes** – [Go to \(6\)](#)
 - ➔ **No** – [Go to \(24\)](#)

(6) At least one IRS becomes available:



- 1. Do not attempt this reset procedure more than once.
- 2. Do not attempt reset:
 - If there were significant flight control induced aircraft transients immediately before the reversion to direct mode.

FLT CTRL DIRECT IRS (Caution) (Cont'd)

- Unless the aircraft is stable, straight, level and trimmed.

(7) PFCC 1 OFF

(8) PFCC 1 Select on

After 30 seconds:

(9) PFCC 2 OFF

(10) PFCC 2 Select on

After 30 seconds:

(11) PFCC 3 OFF

(12) PFCC 3 Select on

(13) **FLT CTRL DIRECT IRS** caution message goes out:

➔ **Yes** – Go to (14)

➔ **No** – Go to (16)

(14) **FLT CTRL DIRECT IRS** caution message goes out:

(15) Land at the nearest suitable airport.

– COMPLETE –

(16) **FLT CTRL DIRECT IRS** caution message stays on:

(17) Altitude Not above 31000 feet

(18) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

FLT CTRL DIRECT IRS (Caution) (Cont'd)

On approach:



Control authority is reduced. Minimize control inputs.

- (19) FMS, PERF – ARR – SLAT/FLAP 4
- (20) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 10$
- (21) OLD factor Multiply by 1.45

Before landing:

- (22) SLAT/FLAP lever 4

After touchdown:

- (23) SPOILER lever FULL

– COMPLETE –

(24) No IRS becomes available:

- (25) Altitude Not above 31000 feet
- (26) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

On approach:



Control authority is reduced. Minimize control inputs.

- (27) FMS, PERF – ARR – SLAT/FLAP 4

FLT CTRL DIRECT IRS (Caution) (Cont'd)

- (28) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 10$
- (29) OLD factor Multiply by 1.45

Before landing:

- (30) SLAT/FLAP lever 4

After touchdown:

- (31) SPOILER lever FULL

– COMPLETE –

GND LIFT DUMP FAIL (Caution)

On approach:

- (1) OLD factor Multiply by 1.55

After touchdown:

- (2) SPOILER lever FULL

– COMPLETE –

GND SPOILER FAIL (Caution)

On approach:

- (1) FMS, PERF – ARR – SLAT/FLAP 4
- (2) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)}$
- (3) OLD factor Multiply by 1.20

Before landing:

- (4) SLAT/FLAP lever 4

– COMPLETE –

L ELEVATOR FAIL (Caution)

- (1) Airspeed Not more than 200 KIAS or the speed at which the failure occurred, whichever is higher.
- (2) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

On approach:

- (3) FMS, PERF – ARR – SLAT/FLAP 4
- (4) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 10$
- (5) OLD factor Multiply by 1.30

Before landing:

- (6) SLAT/FLAP lever 4

- COMPLETE -

L SIDESTICK (Caution)

- (1) Right seat pilot becomes flying pilot.
- (2) Right glareshield, SIDESTICK PTY
- (3) Navigation modes Confirm

- COMPLETE -

PITCH AUTHORITY (Caution)



Pitch is approaching maximum available authority.

- █ (1) FLT CTRL synoptic page Select
- █ (2) Flight controls Monitor
- (3) Airspeed Not more than 250 KIAS
- (4) Land immediately at the nearest suitable airport.

NOTE

1. Select the longest runway with minimal crosswind.
2. If elevator(s) is/are close to nose up limit: Pitch up and flare authority are limited. Higher airspeed gives better pitch up authority. Do not extend flaps further until on approach.
3. If elevator(s) is/are close to nose down limit: Pitch down authority is limited. Slower airspeed gives better pitch down authority. Avoid spoiler use and rapid thrust increases.

On approach:

- (5) FMS, PERF – ARR – SLAT/FLAP 4
- (6) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 10$
- (7) OLD factor Multiply by 1.30

Before landing:

- (8) SLAT/FLAP lever 4

– COMPLETE –

R ELEVATOR FAIL (Caution)

- (1) Airspeed Not more than 200 KIAS or the speed at which the failure occurred, whichever is higher.
- (2) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

On approach:

- (3) FMS, PERF – ARR – SLAT/FLAP 4
- (4) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 10$
- (5) OLD factor Multiply by 1.30

Before landing:

- (6) SLAT/FLAP lever 4

- COMPLETE -

R SIDESTICK (Caution)

- (1) Left seat pilot becomes flying pilot.
- (2) Left glareshield, SIDESTICK PTY
- (3) Navigation modes Confirm

- COMPLETE -

ROLL AUTHORITY (Caution)



Roll is approaching maximum available authority. Flight control system is compensating for an airplane asymmetry. Minimize control inputs.

- I (1) FLT CTRL synoptic page Select
- I (2) Flight controls Monitor
- (3) Land immediately at the nearest suitable airport.

NOTE

- 1. Select the longest runway with minimal crosswind.
- 2. Drag may be higher than normal. Do not rely on FMS fuel predictions.

- COMPLETE -

RUDDER DEGRADED (Caution)

- (1) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

- COMPLETE -

SLAT FAIL (Caution)

- (1) **SLAT-FLAP FAIL** caution message is also shown:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (4)
- (2) **SLAT-FLAP FAIL** caution message is also shown:
- (3) SLAT-FLAP FAIL procedure Accomplish [Refer to Flight controls – SLAT-FLAP FAIL.](#)

– COMPLETE –
- (4) **SLAT-FLAP FAIL** caution message is not shown:
- (5) SLAT/FLAP lever Select previous position.
- (6) SLAT/FLAP lever Re-select desired position.
- (7) **SLAT FAIL** caution message goes out:
 - ➔ **Yes** – Go to (8)
 - ➔ **No** – Go to (10)
- (8) **SLAT FAIL** caution message goes out:
- (9) No further action required.

– COMPLETE –
- (10) **SLAT FAIL** caution message stays on:
- (11) Altitude Not above 20000 feet
- (12) Airspeed Not more than V_{FE} .

NOTE

1. If slat/flap are confirmed 0, reduction of cruise airspeed/altitude are not required.
2. High alpha protection setting is adjusted to account for the failure.

SLAT FAIL (Caution) (Cont'd)

- (13) Anti-ice system Operate manually in icing conditions.
- (14) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

On approach:

- (15) SLAT position Check
- (16) FMS, PERF – ARR – SLAT/FLAP 4
- (17) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + \Delta V_{REF}$. Set value from table.
- (18) OLD factor Multiply by value from table.

SLAT	$\Delta V_{REF (FLAP 4)}$	OLD factor
IN	15	1.40
OUT/MID/FULL	5	1.20

Before landing:

- (19) SLAT/FLAP lever 4

– COMPLETE –

SLAT SKEW (Caution)

- (1) Altitude Not above 20000 feet
- (2) Airspeed Not more than V_{FE} .

SLAT SKEW (Caution) (Cont'd)

NOTE

1. If slat/flap are confirmed 0, reduction of cruise airspeed/altitude are not required.
 2. High alpha protection setting is adjusted to account for the failure.
- (3) Anti-ice system Operate manually in icing conditions.
- (4) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

- (5) **FLAP FAIL** caution message is also shown:
- ➔ Yes – Go to (6)
 - ➔ No – Go to (47)
- (6) **FLAP FAIL** caution message is also shown:
- (7) SLAT/FLAP lever Select previous position.
- (8) SLAT/FLAP lever Re-select desired position.
- (9) **FLAP FAIL** caution message goes out:
- ➔ Yes – Go to (10)
 - ➔ No – Go to (16)
- (10) **FLAP FAIL** caution message goes out:
- (11) Maximum landing weight Use the table to determine the value and correct for wind and slope.

SLAT SKEW (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V _{REF} +15KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	85230 (187900)	82680 (182300)	80010 (176400)	77380 (170600)	74750 (164800)	71840 (158400)
0	32	82280 (181400)	79690 (175700)	77060 (169900)	74430 (164100)	71840 (158400)	68990 (152100)
20	68	79600 (175500)	77010 (169800)	74380 (164000)	71800 (158300)	69260 (152700)	65540 (144500)
30	86	78330 (172700)	75740 (167000)	73160 (161300)	70530 (155500)	68030 (150000)	63140 (139200)
40 AND ABOVE	104 AND ABOVE	77110 (170000)	74520 (164300)	71930 (158600)	69350 (152900)	65770 (145000)	60910 (134300)

CS300_LW_ATA27_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 15 kt
Figure 04–11–7

SLAT SKEW (Caution) (Cont'd)

On approach:

- (12) FMS, PERF – ARR – SLAT/FLAP 4
- (13) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 15$
- (14) OLD factor Multiply by 1.40

Before landing:

- (15) SLAT/FLAP lever 4

– COMPLETE –

(16) FLAP FAIL caution message stays on:

- (17) Check FLAP position:
 - ➔ **FLAP position is 0-1 – Go to (18)**
 - ➔ **FLAP position is 2 – Go to (24)**
 - ➔ **FLAP position is 3 – Go to (30)**
 - ➔ **FLAP position is 4 – Go to (36)**
 - ➔ **FLAP position is 5 – Go to (42)**

(18) FLAP position is 0-1:

- (19) Maximum landing weight Use the table to determine the value and correct for wind and slope.

SLAT SKEW (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V _{REF} +54KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	69580 (153400)	64090 (141300)	58780 (129600)	54060 (119200)	49710 (109600)	45580 (100500)
0	32	63180 (139300)	57920 (127700)	53290 (117500)	48980 (108000)	44900 (99000)	41050 (90500)
20	68	57560 (126900)	52970 (116800)	48670 (107300)	44580 (98300)	40770 (89900)	37140 (81900)
30	86	55150 (121600)	50750 (111900)	46530 (102600)	42590 (93900)	38910 (85800)	35420 (78100)
40 AND ABOVE	104 AND ABOVE	52970 (116800)	48620 (107200)	44580 (98300)	40680 (89700)	37190 (82000)	33700 (74300)

CS300_LW_ATA27_DVREF54_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 25% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 54 kt
Figure 04–11–8

SLAT SKEW (Caution) (Cont'd)

On approach:

- (20) TAWS, FLAPINHIB
- (21) FMS, PERF – ARR – SLAT/FLAP 4
- (22) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 54$
- (23) OLD factorMultiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.85	2.10

– COMPLETE –

(24) FLAP position is 2:

- (25) Maximum landing weight Use the table to determine the value and correct for wind and slope.

SLAT SKEW (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V _{REF} +33KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	78330 (172700)	75740 (167000)	73160 (161300)	70620 (155700)	66310 (146200)	61140 (134800)
0	32	75380 (166200)	72800 (160500)	70300 (155000)	65490 (144400)	60410 (133200)	55740 (122900)
20	68	72660 (160200)	70170 (154700)	65220 (143800)	60140 (132600)	55510 (122400)	51300 (113100)
30	86	71440 (157500)	67900 (149700)	62680 (138200)	57740 (127300)	53380 (117700)	49350 (108800)
40 AND ABOVE	104 AND ABOVE	70260 (154900)	65360 (144100)	60280 (132900)	55610 (122600)	51430 (113400)	47440 (104600)

CS300_LW_ATA27_DVREF33_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 20% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 33 kt
Figure 04–11–9

SLAT SKEW (Caution) (Cont'd)

On approach:

- (26) TAWS, FLAPINHIB
- (27) FMS, PERF – ARR – SLAT/FLAP 4
- (28) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 33$
- (29) OLD factorMultiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.60	1.80

– COMPLETE –

(30) FLAP position is 3:

- (31) Maximum landing weight Use the table to determine the value and correct for wind and slope.

SLAT SKEW (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V _{REF} +22KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	82960 (182900)	80370 (177200)	77740 (171400)	75110 (165600)	72480 (159800)	69620 (153500)
0	32	80010 (176400)	77380 (170600)	74790 (164900)	72160 (159100)	69620 (153500)	64720 (142700)
20	68	77290 (170400)	74700 (164700)	72120 (159000)	69580 (153400)	64540 (142300)	59640 (131500)
30	86	75970 (167500)	73430 (161900)	70890 (156300)	67130 (148000)	62090 (136900)	57370 (126500)
40 AND ABOVE	104 AND ABOVE	74790 (164900)	72210 (159200)	69710 (153700)	64720 (142700)	59820 (131900)	55380 (122100)

CS300_LW_ATA27_DVREF22_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 19% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 22 kt
Figure 04–11–10

SLAT SKEW (Caution) (Cont'd)

On approach:

- (32) TAWS, FLAPINHIB
- (33) FMS, PERF – ARR – SLAT/FLAP 4
- (34) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 22$
- (35) OLD factorMultiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.45	1.55

– COMPLETE –

(36) FLAP position is 4:

- (37) Maximum landing weight Use the table to determine the value and correct for wind and slope.

SLAT SKEW (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V _{REF} +15KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	85230 (187900)	82680 (182300)	80010 (176400)	77380 (170600)	74750 (164800)	71840 (158400)
0	32	82280 (181400)	79690 (175700)	77060 (169900)	74430 (164100)	71840 (158400)	68990 (152100)
20	68	79600 (175500)	77010 (169800)	74380 (164000)	71800 (158300)	69260 (152700)	65540 (144500)
30	86	78330 (172700)	75740 (167000)	73160 (161300)	70530 (155500)	68030 (150000)	63140 (139200)
40 AND ABOVE	104 AND ABOVE	77110 (170000)	74520 (164300)	71930 (158600)	69350 (152900)	65770 (145000)	60910 (134300)

CS300_LW_ATA27_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 15 kt
Figure 04–11–11

SLAT SKEW (Caution) (Cont'd)

On approach:

- (38) TAWS, FLAPINHIB
- (39) FMS, PERF – ARR – SLAT/FLAP 4
- (40) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 15$
- (41) OLD factor Multiply by 1.40

– COMPLETE –

(42) FLAP position is 5:

On approach:

- (43) TAWS, FLAPINHIB
- (44) FMS, PERF – ARR – SLAT/FLAP 4
- (45) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 9$
- (46) OLD factor Multiply by 1.40

– COMPLETE –

(47) FLAP FAIL caution message is not shown:

- (48) Maximum landing weight Use the table to determine the value and correct for wind and slope.

SLAT SKEW (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V _{REF} +15KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	85230 (187900)	82680 (182300)	80010 (176400)	77380 (170600)	74750 (164800)	71840 (158400)
0	32	82280 (181400)	79690 (175700)	77060 (169900)	74430 (164100)	71840 (158400)	68990 (152100)
20	68	79600 (175500)	77010 (169800)	74380 (164000)	71800 (158300)	69260 (152700)	65540 (144500)
30	86	78330 (172700)	75740 (167000)	73160 (161300)	70530 (155500)	68030 (150000)	63140 (139200)
40 AND ABOVE	104 AND ABOVE	77110 (170000)	74520 (164300)	71930 (158600)	69350 (152900)	65770 (145000)	60910 (134300)

CS300_LW_ATA27_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 15 kt
Figure 04–11–12

SLAT SKEW (Caution) (Cont'd)

On approach:

- (49) FMS, PERF – ARR – SLAT/FLAP 4
- (50) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 15$
- (51) OLD factor Multiply by 1.40

Before landing:

- (52) SLAT/FLAP lever 4

– COMPLETE –

SLAT SLOW (Caution)

- (1) Slat movement Monitor

– COMPLETE –

SLAT-FLAP FAIL (Caution)

- (1) SLAT/FLAP lever Select previous position.
- (2) SLAT/FLAP lever Re-select desired position.
- (3) **SLAT-FLAP FAIL** caution message goes out:

➔ **Yes** – Go to (4)

➔ **No** – Go to (6)

- (4) **SLAT-FLAP FAIL** caution message goes out:

- (5) No further action required.

– COMPLETE –

- (6) **SLAT-FLAP FAIL** caution message stays on:

- (7) Altitude Not above 20000 feet

- (8) Airspeed Not more than V_{FE} .

SLAT-FLAP FAIL (Caution) (Cont'd)

NOTE

1. If slat/flap are confirmed 0, reduction of cruise airspeed/altitude are not required.
2. High alpha protection setting is adjusted to account for the failure.

(9) Anti-ice system Operate manually in icing conditions.

(10) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

(11) Check FLAP position:

- ➔ **FLAP position is 0-1** – [Go to \(12\)](#)
- ➔ **FLAP position is 2** – [Go to \(26\)](#)
- ➔ **FLAP position is 3** – [Go to \(40\)](#)
- ➔ **FLAP position is 4** – [Go to \(53\)](#)
- ➔ **FLAP position is 5** – [Go to \(66\)](#)

(12) **FLAP position is 0-1:**

(13) Check SLAT position:

- ➔ **SLAT position IN** – [Go to \(14\)](#)
- ➔ **SLAT position OUT/MID/FULL** – [Go to \(20\)](#)

(14) **SLAT position IN:**

(15) Maximum landing weight Use the table to determine the value and correct for wind and slope.

SLAT-FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+54KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	69580 (153400)	64090 (141300)	58780 (129600)	54060 (119200)	49710 (109600)	45580 (100500)
0	32	63180 (139300)	57920 (127700)	53290 (117500)	48980 (108000)	44900 (99000)	41050 (90500)
20	68	57560 (126900)	52970 (116800)	48670 (107300)	44580 (98300)	40770 (89900)	37140 (81900)
30	86	55150 (121600)	50750 (111900)	46530 (102600)	42590 (93900)	38910 (85800)	35420 (78100)
40 AND ABOVE	104 AND ABOVE	52970 (116800)	48620 (107200)	44580 (98300)	40680 (89700)	37190 (82000)	33700 (74300)

CS300_LW_ATA27_DVREF54_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 25% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 54 kt
Figure 04–11–13

SLAT-FLAP FAIL (Caution) (Cont'd)

On approach:

- (16) TAWS, FLAPINHIB
- (17) FMS, PERF – ARR – SLAT/FLAP 4
- (18) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 54$
- (19) OLD factorMultiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.85	2.10

– COMPLETE –

(20) SLAT position OUT/MID/FULL:

- (21) Maximum landing weight Use the table to determine the value and correct for wind and slope.

SLAT-FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+41KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	75340 (166100)	72750 (160400)	69980 (154300)	64630 (142500)	59510 (131200)	54830 (120900)
0	32	72390 (159600)	69170 (152500)	63820 (140700)	58690 (129400)	54150 (119400)	49940 (110100)
20	68	68850 (151800)	63500 (140000)	58420 (128800)	53880 (118800)	49660 (109500)	45720 (100800)
30	86	66130 (145800)	60870 (134200)	56060 (123600)	51750 (114100)	47670 (105100)	43810 (96600)
40 AND ABOVE	104 AND ABOVE	63540 (140100)	58460 (128900)	53930 (118900)	49750 (109700)	45760 (100900)	42040 (92700)

CS300_LW_ATA27_DVREF41_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 21% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 41 kt
Figure 04–11–14

SLAT-FLAP FAIL (Caution) (Cont'd)

On approach:

- (22) TAWS, FLAPINHIB
- (23) FMS, PERF – ARR – SLAT/FLAP 4
- (24) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 41$
- (25) OLD factorMultiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.65	1.80

– COMPLETE –

(26) FLAP position is 2:

(27) Check SLAT position:

- ➔ SLAT position IN – [Go to \(28\)](#)
- ➔ SLAT position OUT/MID/FULL – [Go to \(34\)](#)

(28) SLAT position IN:

(29) Maximum landing weight Use the table to determine the value and correct for wind and slope.

SLAT-FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+33KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	78330 (172700)	75740 (167000)	73160 (161300)	70620 (155700)	66310 (146200)	61140 (134800)
0	32	75380 (166200)	72800 (160500)	70300 (155000)	65490 (144400)	60410 (133200)	55740 (122900)
20	68	72660 (160200)	70170 (154700)	65220 (143800)	60140 (132600)	55510 (122400)	51300 (113100)
30	86	71440 (157500)	67900 (149700)	62680 (138200)	57740 (127300)	53380 (117700)	49350 (108800)
40 AND ABOVE	104 AND ABOVE	70260 (154900)	65360 (144100)	60280 (132900)	55610 (122600)	51430 (113400)	47440 (104600)

CS300_LW_ATA27_DVREF33_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 20% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 33 kt
Figure 04–11–15

SLAT-FLAP FAIL (Caution) (Cont'd)

On approach:

- (30) TAWS, FLAPINHIB
- (31) FMS, PERF – ARR – SLAT/FLAP 4
- (32) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 33$
- (33) OLD factorMultiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.60	1.80

– COMPLETE –

(34) SLAT position OUT/MID/FULL:

- (35) Maximum landing weight Use the table to determine the value and correct for wind and slope.

SLAT-FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+15KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	85230 (187900)	82680 (182300)	80010 (176400)	77380 (170600)	74750 (164800)	71840 (158400)
0	32	82280 (181400)	79690 (175700)	77060 (169900)	74430 (164100)	71840 (158400)	68990 (152100)
20	68	79600 (175500)	77010 (169800)	74380 (164000)	71800 (158300)	69260 (152700)	65540 (144500)
30	86	78330 (172700)	75740 (167000)	73160 (161300)	70530 (155500)	68030 (150000)	63140 (139200)
40 AND ABOVE	104 AND ABOVE	77110 (170000)	74520 (164300)	71930 (158600)	69350 (152900)	65770 (145000)	60910 (134300)

CS300_LW_ATA27_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 15 kt
Figure 04–11–16

SLAT-FLAP FAIL (Caution) (Cont'd)

On approach:

- (36) TAWS, FLAPINHIB
- (37) FMS, PERF – ARR – SLAT/FLAP 4
- (38) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 15$
- (39) OLD factor Multiply by 1.45

– COMPLETE –

(40) FLAP position is 3:

(41) Check SLAT position:

- ➔ SLAT position IN – [Go to \(42\)](#)
- ➔ SLAT position OUT/MID/FULL – [Go to \(48\)](#)

(42) SLAT position IN:

- (43) Maximum landing weight Use the table to determine the value and correct for wind and slope.

SLAT-FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+22KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	82960 (182900)	80370 (177200)	77740 (171400)	75110 (165600)	72480 (159800)	69620 (153500)
0	32	80010 (176400)	77380 (170600)	74790 (164900)	72160 (159100)	69620 (153500)	64720 (142700)
20	68	77290 (170400)	74700 (164700)	72120 (159000)	69580 (153400)	64540 (142300)	59640 (131500)
30	86	75970 (167500)	73430 (161900)	70890 (156300)	67130 (148000)	62090 (136900)	57370 (126500)
40 AND ABOVE	104 AND ABOVE	74790 (164900)	72210 (159200)	69710 (153700)	64720 (142700)	59820 (131900)	55380 (122100)

CS300_LW_ATA27_DVREF22_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 19% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 22 kt
Figure 04–11–17

SLAT-FLAP FAIL (Caution) (Cont'd)

On approach:

- (44) TAWS, FLAPINHIB
- (45) FMS, PERF – ARR – SLAT/FLAP 4
- (46) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 22$
- (47) OLD factorMultiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.45	1.55

– COMPLETE –

(48) SLAT position OUT/MID/FULL:

On approach:

- (49) TAWS, FLAPINHIB
- (50) FMS, PERF – ARR – SLAT/FLAP 4
- (51) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 5$
- (52) OLD factor Multiply by 1.25

(53) FLAP position is 4:

(54) Check SLAT position:

- ➔ SLAT position IN – [Go to \(55\)](#)
- ➔ SLAT position OUT/MID/FULL – [Go to \(61\)](#)

(55) SLAT position IN:

- (56) Maximum landing weight Use the table to determine the value and correct for wind and slope.

SLAT-FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+15KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	85230 (187900)	82680 (182300)	80010 (176400)	77380 (170600)	74750 (164800)	71840 (158400)
0	32	82280 (181400)	79690 (175700)	77060 (169900)	74430 (164100)	71840 (158400)	68990 (152100)
20	68	79600 (175500)	77010 (169800)	74380 (164000)	71800 (158300)	69260 (152700)	65540 (144500)
30	86	78330 (172700)	75740 (167000)	73160 (161300)	70530 (155500)	68030 (150000)	63140 (139200)
40 AND ABOVE	104 AND ABOVE	77110 (170000)	74520 (164300)	71930 (158600)	69350 (152900)	65770 (145000)	60910 (134300)

CS300_LW_ATA27_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 15 kt
Figure 04–11–18

SLAT-FLAP FAIL (Caution) (Cont'd)

On approach:

- (57) TAWS, FLAPINHIB
- (58) FMS, PERF – ARR – SLAT/FLAP 4
- (59) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 15$
- (60) OLD factor Multiply by 1.40

– COMPLETE –

(61) SLAT position OUT/MID/FULL:

On approach:

- (62) TAWS, FLAPINHIB
- (63) FMS, PERF – ARR – SLAT/FLAP 4
- (64) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 5$
- (65) OLD factor Multiply by 1.20

(66) FLAP position is 5:

- (67) SLAT position Check

On approach:

- (68) TAWS, FLAPINHIB
- (69) FMS, PERF – ARR – SLAT/FLAP 4
- (70) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + \Delta V_{REF}$
- (71) OLD factor Multiply by value from table.

SLAT	$\Delta V_{REF (FLAP 4)}$	OLD factor
IN	9	1.40
OUT/MID/FULL	5	1.20

– COMPLETE –

SLAT-FLAP LEVER FAIL (Caution)

- (1) Altitude Not above 20000 feet
- (2) Airspeed Not more than V_{FE} .

NOTE

If slat/flap are confirmed 0, reduction of cruise
airspeed/altitude are not required.

- (3) Anti-ice system Operate manually in icing
conditions.
- (4) Land at the nearest suitable airport.

On approach:

- (5) Airspeed Not more than 200 KIAS
- (6) TAWS, FLAPINHIB
- (7) PTU ON
- (8) HYD 3B ON
- (9) HYD 2B ON
- (10) FMS, PERF – ARR – SLAT/FLAP 4
- (11) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 5$
- (12) OLD factor Multiply by 1.25

Before landing:

- (13) SLAT/FLAP lever 3
- (14) ALTN FLAP DPLY

- COMPLETE -

SPOILER DEGRADED (Caution)

- (1) Altitude Not above 37000 feet

SPOILER DEGRADED (Caution) (Cont'd)

NOTE

Select the longest runway with minimal crosswind.

- (2) OLD factor Multiply by 1.20

– COMPLETE –

SPOILER DPLY (Caution)

- (1) SPOILER lever RET

– COMPLETE –

SPOILER FAIL (Caution)

- (1) Altitude Not above 33000 feet

NOTE

Select the longest runway with minimal crosswind.

- (2) OLD factor Multiply by 1.30

– COMPLETE –

SPOILER LEVER FAIL (Caution)

- (1) SPOILER lever RET

- (2) Spoiler lever failed in the RET position:

➔ **Yes** – Go to (3)

➔ **No** – Go to (5)

SPOILER LEVER FAIL (Caution) (Cont'd)

(3) Spoiler lever failed in the RET position:

(4) Altitude Not above 33000 feet

- COMPLETE -

(5) Spoiler lever not failed in the RET position:

(6) Thrust levers Advance momentarily until
spoilers retract.

(7) Altitude Not above 33000 feet

- COMPLETE -

STAB DEGRADED (Caution)

On approach:

(1) FMS, PERF – ARR – SLAT/FLAP 4

(2) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 10$

(3) OLD factor Multiply by 1.30

Before landing:

(4) SLAT/FLAP lever 4

- COMPLETE -

STAB TRIM FAIL (Caution)

(1) Airspeed Not more than 250 KIAS

(2) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

STAB TRIM FAIL (Caution) (Cont'd)

On approach:

- (3) FMS, PERF – ARR – SLAT/FLAP 4
- (4) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 10$
- (5) OLD factor Multiply by 1.30

Before landing:

- (6) SLAT/FLAP lever 4

– COMPLETE –

YAW AUTHORITY (Caution)



Rudder is approaching maximum available authority. Flight control system is compensating for an airplane asymmetry. Minimize control inputs.

- █ (1) FLT CTRL synoptic page Select
- █ (2) Flight controls Monitor
- (3) Land immediately at the nearest suitable airport.

NOTE

- 1. Select the longest runway with minimal crosswind.
- 2. Drag may be higher than normal. Do not rely on FMS fuel predictions.

– COMPLETE –

Rudder pedal jammed

- (1) FLT CTRL synoptic page Select
- (2) Airspeed Not more than 200 KIAS or the speed at which the failure occurred, whichever is higher.
- (3) Rudder position Check
- (4) Rudder trim Adjust, if required, to center lateral stick.

NOTE

Rudder trim should be applied in the direction of the failed pedal.

- (5) NOSE STEER OFF
- (6) Land immediately at the nearest suitable airport.

NOTE

- 1. Select the longest runway with minimal crosswind.
- 2. If rudder has failed out of neutral position use lateral control and differential thrust as required to maintain straight flight until touchdown.

On approach:

- (7) FMS, PERF – ARR – SLAT/FLAP 5
- (8) FMS, PERF – ARR – VREF $V_{REF(FLAP 5)} + 5$
- (9) OLD factor Multiply by 1.85

Before landing:

- (10) SLAT/FLAP lever 5

Rudder pedal jammed (Cont'd)



If the rudder has failed out of neutral position, maintain differential thrust until directional control is established on the runway.



1. Do not prolong the flare or delay the derotation.
2. Use prompt differential braking as required to assist in directional control.

Immediately after touchdown:

(11) SPOILER leverFULL

When stopped:

(12) NOSE STEER Select on

- COMPLETE -

Slat-flap lever jammed

(1) Altitude Not above 20000 feet

(2) Airspeed Not more than V_{FE} .

NOTE

If slat/flap are confirmed 0, reduction of cruise airspeed/altitude are not required.

(3) Anti-ice systemOperate manually in icing conditions.

Slat-flap lever jammed (Cont'd)

(4) Land at the nearest suitable airport.

On approach:

- (5) Airspeed Not more than 200 KIAS
- (6) TAWS, FLAPINHIB
- (7) PTU ON
- (8) HYD 3B ON
- (9) HYD 2B ON
- (10) FMS, PERF – ARR – SLAT/FLAP 4
- (11) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 5$
- (12) OLD factor Multiply by 1.25

Before landing:

(13) ALTN FLAP DPLY

- COMPLETE -

Spoiler lever jammed

(1) Spoiler lever jammed in RET position:

- ➔ **Yes – Go to (2)**
- ➔ **No – Go to (4)**

(2) Spoiler lever jammed in RET position:

(3) Altitude Not above 33000 feet

- COMPLETE -

(4) Spoiler lever not in RET position:

(5) Thrust levers Advance momentarily until
spoilers retract.

Spoiler lever jammed (Cont'd)**NOTE**

The **SPOILER MISMATCH** advisory message comes on when spoilers are retracted.

- (6) Altitude Not above 33000 feet

- COMPLETE -

Stall recovery

- (1) Autopilot Disengage
 (2) Autothrottle Select off
 (3) Pitch attitude Lower nose to reduce angle of attack.
 (4) Roll attitude Wings level
 (5) Thrust levers As required
 (6) SPOILER lever RET
 (7) Return to the desired flight path.

NOTE

During recovery always control pitch attitude in a smooth steady manner, respecting stick shaker.

- COMPLETE -

FUEL

APU FUEL SOV FAIL (Caution) 04-12-3

FUEL COLLECTOR LO LVL (Caution) 04-12-3

FUEL CTR XFR FAIL (Caution) 04-12-4

FUEL IMBALANCE (Caution) 04-12-4

FUEL LEAK SUSPECT (Caution) 04-12-6

FUEL MAN XFR FAIL (Caution) 04-12-9

FUEL TANK HI TEMP (Caution) 04-12-9

FUEL TANK LO TEMP (Caution) 04-12-10

L ENG FUEL LO PRESS (Caution) 04-12-10

L ENG FUEL SOV FAIL (Caution) 04-12-11

L FUEL LO QTY (Caution) 04-12-11

R ENG FUEL LO PRESS (Caution) 04-12-12

R ENG FUEL SOV FAIL (Caution) 04-12-13

R FUEL LO QTY (Caution) 04-12-14

Fuel quantity indication failure 04-12-14

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APU FUEL SOV FAIL (Caution)

- (1) APU required:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (5)
- (2) **APU required:**
- █ (3) STATUS synoptic page Select
- (4) APU Monitor
- COMPLETE –
- (5) **APU not required:**
- (6) APU OFF
- COMPLETE –

FUEL COLLECTOR LO LVL (Caution)

- (1) L BOOST PUMP AUTO
- (2) R BOOST PUMP AUTO
- (3) Aircraft attitude Reduce pitch to 10 degrees nose up or less and maintain coordinated flight.
- (4) Land at the nearest suitable airport.
- (5) Fuel quantity/balance Monitor
- If necessary to balance fuel:**
- (6) GRAV XFR ON and monitor
- COMPLETE –

FUEL CTR XFR FAIL (Caution)

- (1) FUEL synoptic page Select

NOTE

Reduction of pitch attitude can be necessary if in climb.
Unless terrain is a factor, reduce pitch attitude.

- (2) Center tank quantity decreasing:

- ➔ **Yes** – Go to (3)
- ➔ **No** – Go to (6)

- (3) **Center tank quantity decreasing:**

- (4) Fuel quantity/balance Monitor

If necessary to balance fuel:

- (5) GRAV XFR ON

– COMPLETE –

- (6) **Center tank quantity not decreasing:**

- (7) Land at the nearest suitable airport.

- (8) Fuel quantity/balance Monitor

If necessary to balance fuel:

- (9) GRAV XFR ON and monitor

– COMPLETE –

FUEL IMBALANCE (Caution)

- (1) FUEL synoptic page Select

NOTE

Consider potential fuel leak.

FUEL IMBALANCE (Caution) (Cont'd)

- (2) Fuel quantity/balance Monitor
- (3) MAN XFR Select to side with low quantity
- (4) Wait for the **FUEL MAN XFR COMPLETE** advisory message to be shown.
- (5) MAN XFR OFF

NOTE

It is acceptable to do repetitive, pre-emptive manual transfers to the lower quantity side.

- (6) **FUEL IMBALANCE** caution message goes out:

- ➔ Yes – Go to (7)
- ➔ No – Go to (9)

- (7) **FUEL IMBALANCE** caution message goes out:

When fuel is balanced:

- (8) Fuel quantity/balance Monitor

– COMPLETE –

- (9) **FUEL IMBALANCE** caution message stays on:

- (10) GRAV XFR ON

NOTE

A steady heading sideslip will accelerate gravity crossflow operation. Fly one wing low slip (on the side with less fuel) to ensure proper operation and to accelerate gravity crossflow.

When fuel is balanced:

- (11) GRAV XFR Select off

FUEL IMBALANCE (Caution) (Cont'd)

(12) Fuel quantity/balance Monitor

- COMPLETE -

FUEL LEAK SUSPECT (Caution)

(1) In flight:

➔ **Yes** – Go to (2)

➔ **No** – Go to (19)

(2) In flight:

(3) Plan to land at the nearest suitable airport.

(4) FUEL synoptic page Select

(5) Fuel quantity/balance Monitor

(6) GRAV XFR Select off

(7) L BOOST PUMP OFF

(8) R BOOST PUMP OFF

(9) MAN XFR OFF

(10) Engine fuel leak is visually confirmed:

➔ **Yes** – Go to (11)

➔ **No** – Go to (17)

(11) Engine fuel leak is visually confirmed:

(12) Select affected engine:

➔ **Left engine** – Go to (13)

➔ **Right engine** – Go to (15)

FUEL LEAK SUSPECT (Caution) (Cont'd)

(13) Left engine affected:

(14) Shutdown – Left engine procedure Accomplish [Refer to Power plant – Shutdown – Left engine.](#)

– COMPLETE –

(15) Right engine affected:

(16) Shutdown – Right engine procedure Accomplish [Refer to Power plant – Shutdown – Right engine.](#)

– COMPLETE –

(17) Engine fuel leak is not visually confirmed:

(18) Land immediately at the nearest suitable airport.

– COMPLETE –

(19) On ground:

(20) Engines are on:

- ➔ **Yes** – [Go to \(21\)](#)
- ➔ **No** – [Go to \(24\)](#)

(21) Engines are on:

(22) AC external power Establish

(23) APU and engine(s) OFF

– COMPLETE –

(24) Engines are off:

(25) APU is on:

- ➔ **Yes** – [Go to \(26\)](#)
- ➔ **No** – [Go to \(39\)](#)

FUEL LEAK SUSPECT (Caution) (Cont'd)

(26) APU is on:

(27) Right tank quantity above 2830 kg (6225 lb):

➔ Yes – Go to (28)

➔ No – Go to (37)

(28) Right tank quantity above 2830 kg (6225 lb):

(29) MAN XFR L

When **FUEL MAN XFR COMPLETE** advisory message comes on:

(30) MAN XFR OFF

(31) After 5 minutes, **FUEL LEAK SUSPECT** caution message goes out:

➔ Yes – Go to (32)

➔ No – Go to (34)

(32) After 5 minutes, **FUEL LEAK SUSPECT** caution message goes out:

(33) No further action required.

– COMPLETE –

(34) After 5 minutes, **FUEL LEAK SUSPECT** caution message stays on:

(35) AC external power Establish

(36) APU and engine(s) OFF

– COMPLETE –

(37) Right tank quantity below 2830 kg (6225 lb):

(38) FMS, FPLN – FUEL Confirm BLOCK fuel entry.

– COMPLETE –

FUEL LEAK SUSPECT (Caution) (Cont'd)

(39) APU is off:

(40) Right tank quantity above 2830 kg (6225 lb):

- ➔ **Yes** – Go to (41)
- ➔ **No** – Go to (43)

(41) Right tank quantity above 2830 kg (6225 lb):

(42) Do not start APU.

– COMPLETE –

(43) Right tank quantity below 2830 kg (6225 lb):

(44) FMS, FPLN – FUEL Confirm BLOCK fuel entry.

– COMPLETE –

FUEL MAN XFR FAIL (Caution)

- (1) MAN XFR OFF
- (2) L BOOST PUMP AUTO
- (3) R BOOST PUMP AUTO
- (4) GRAV XFR ON
- (5) Fuel quantity/balance Monitor

– COMPLETE –

FUEL TANK HI TEMP (Caution)

(1) Land at the nearest suitable airport.

– COMPLETE –

FUEL TANK LO TEMP (Caution)

- (1) Altitude Descend or deviate to a warmer air mass.
- (2) FUEL synoptic page Select
- (3) Fuel temperature Monitor

– COMPLETE –

L ENG FUEL LO PRESS (Caution)

- (1) L BOOST PUMP ON
- (2) R BOOST PUMP ON
- (3) **L ENG FUEL LO PRESS** caution message goes out:
 - ➔ Yes – Go to (4)
 - ➔ No – Go to (6)
- (4) **L ENG FUEL LO PRESS** caution message goes out:
- (5) Land at the nearest suitable airport.

– COMPLETE –

- (6) **L ENG FUEL LO PRESS** caution message stays on:
- (7) Left thrust lever Avoid abrupt changes.
- (8) Left engine instruments Monitor
- (9) Left engine fuel flow normal:
 - ➔ Yes – Go to (10)
 - ➔ No – Go to (12)
- (10) **Left engine fuel flow normal:**
- (11) Land at the nearest suitable airport.

– COMPLETE –

L ENG FUEL LO PRESS (Caution) (Cont'd)

(12) Left engine fuel flow not normal:

- (13) L BOOST PUMP AUTO
- (14) R BOOST PUMP AUTO
- (15) Shutdown – Left engine procedure Accomplish [Refer to Power plant – Shutdown – Left engine.](#)

– COMPLETE –

L ENG FUEL SOV FAIL (Caution)

(1) Indicated after an engine fire procedure:

- ➔ **Yes – Go to (2)**
- ➔ **No – Go to (5)**

(2) Indicated after an engine fire procedure:

- (3) L BOOST PUMP OFF
- (4) R BOOST PUMP OFF

– COMPLETE –

(5) Message not due to engine fire procedure:

- (6) Engine instruments Monitor

– COMPLETE –

L FUEL LO QTY (Caution)

- (1) L BOOST PUMP AUTO
- (2) R BOOST PUMP AUTO
- (3) Fuel quantity Check
- (4) Land immediately at the nearest suitable airport.

L FUEL LO QTY (Caution) (Cont'd)

NOTE

Minimum fuel to conduct a go-around is 442 kg (975 lbs) in each wing and assumes a maximum airplane climb attitude of 10 degrees nose up.

- (5) Fuel imbalance procedure Accomplish, if required. Refer to [Fuel – FUEL IMBALANCE](#).

– COMPLETE –

R ENG FUEL LO PRESS (Caution)

- (1) L BOOST PUMP ON
(2) R BOOST PUMP ON
(3) **R ENG FUEL LO PRESS** caution message goes out:

- ➔ Yes – Go to (4)
- ➔ No – Go to (6)

- (4) **R ENG FUEL LO PRESS** caution message goes out:
(5) Land at the nearest suitable airport.

– COMPLETE –

- (6) **R ENG FUEL LO PRESS** caution message stays on:
(7) Right thrust lever Avoid abrupt changes.
(8) Right engine instruments Monitor
(9) Right engine fuel flow normal:
➔ Yes – Go to (10)
➔ No – Go to (12)

R ENG FUEL LO PRESS (Caution) (Cont'd)

(10) Right engine fuel flow normal:

(11) Land at the nearest suitable airport.

- COMPLETE -

(12) Right engine fuel flow not normal:

(13) L BOOST PUMP AUTO

(14) R BOOST PUMP AUTO

(15) Shutdown – Right engine procedure Accomplish [Refer to Power plant – Shutdown – Right engine.](#)

- COMPLETE -

R ENG FUEL SOV FAIL (Caution)

(1) Indicated after an engine fire procedure:

➔ **Yes** – [Go to \(2\)](#)

➔ **No** – [Go to \(5\)](#)

(2) Indicated after an engine fire procedure:

(3) L BOOST PUMP OFF

(4) R BOOST PUMP OFF

- COMPLETE -

(5) Message not due to engine fire procedure:

(6) Engine instruments Monitor

- COMPLETE -

R FUEL LO QTY (Caution)

- (1) L BOOST PUMP AUTO
- (2) R BOOST PUMP AUTO
- (3) Fuel quantity Check
- (4) Land immediately at the nearest suitable airport.

NOTE

Minimum fuel to conduct a go-around is 442 kg (975 lbs) in each wing and assumes a maximum airplane climb attitude of 10 degrees nose up.

- (5) Fuel imbalance procedure Accomplish, if required. [Refer to Fuel – FUEL IMBALANCE.](#)

– COMPLETE –

Fuel quantity indication failure

- (1) L BOOST PUMP OFF
- (2) R BOOST PUMP OFF
- (3) Land at the nearest suitable airport.

– COMPLETE –

HYDRAULIC POWER

HYD 1 HI TEMP (Caution) 04–13–3

HYD 1 LO PRESS (Caution) 04–13–4

HYD 1 SOV FAIL (Caution) 04–13–7

HYD 1-2 LO PRESS (Caution) 04–13–8

HYD 1-3 LO PRESS (Caution) 04–13–9

HYD 2 HI TEMP (Caution) 04–13–16

HYD 2 LO PRESS (Caution) 04–13–18

HYD 2 SOV FAIL (Caution) 04–13–20

HYD 2-3 LO PRESS (Caution) 04–13–21

HYD 3 HI TEMP (Caution) 04–13–26

HYD 3 LO PRESS (Caution) 04–13–27

HYD EDP 1A FAIL (Caution) 04–13–30

HYD EDP 2A FAIL (Caution) 04–13–31

HYD PTU FAIL (Caution) 04–13–32

HYD PUMP 2B FAIL (Caution) <Mod 291002> or <Post-SB
BD500-291002> 04–13–32

HYD PUMP 3A FAIL (Caution) 04–13–33

HYD PUMP 3B FAIL (Caution) <Mod 291002> or <Post-SB
BD500-291002> 04–13–33

HYD RAT PUMP FAIL (Caution) 04–13–33

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HYD 1 HI TEMP (Caution)

- (1) HYD synoptic page Select
 - (2) PTU OFF
 - (3) HYD 1 temperature less than 120°C:
 - ➔ **Yes** – Go to (4)
 - ➔ **No** – Go to (6)
 - (4) **HYD 1 temperature less than 120°C:**
 - (5) HYD 1 system temperature Monitor
- COMPLETE –**
- (6) **HYD 1 temperature more than 120°C:**
 - (7) HYD 1 SOVCLSD

NOTE

The **HYD 1 LO PRESS** caution message appears with this step but does not need to be done separately. The OLD factor in this procedure must be applied and includes the affected systems.

- (8) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

- (9) Altitude Not above 33000 feet
- (10) Affected systemsReview

On approach:

- (11) FMS, PERF – ARR –SLAT/FLAP 4
- (12) FMS, PERF – ARR – VREFV_{REF(FLAP 4)}

HYD 1 HI TEMP (Caution) (Cont'd)

(13) OLD factor Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.30	1.40

Before landing:

(14) SLAT/FLAP lever 4

(15) Landing gear DN

(16) ALTN GEAR DN

After go-around:

If gear retraction is required:

(17) PTU ON

(18) ALTN GEAR NORM

(19) Landing gear UP

(20) PTU AUTO

– COMPLETE –

HYD 1 LO PRESS (Caution)

(1) **HYD 1 HI TEMP** caution message previously shown:

➔ Yes – Go to (2)

➔ No – Go to (4)

(2) **HYD 1 HI TEMP** caution message previously shown:

(3) No further action required.

– COMPLETE –

HYD 1 LO PRESS (Caution) (Cont'd)

- (4) **HYD 1 HI TEMP caution message not previously shown:**
 - (5) HYD synoptic page Select
 - (6) HYD 1 fluid quantity indication is more than 5% or is invalid:
 - ➔ **Yes – Go to (7)**
 - ➔ **No – Go to (24)**
 - (7) **HYD 1 fluid quantity indication is more than 5% or is invalid:**
 - (8) PTU ON
 - (9) **HYD 1 LO PRESS** caution message goes out:
 - ➔ **Yes – Go to (10)**
 - ➔ **No – Go to (12)**
 - (10) **HYD 1 LO PRESS** caution message goes out:
 - (11) No further action required.
- COMPLETE –**
- (12) **HYD 1 LO PRESS** caution message stays on:
 - (13) HYD 1 SOV CLSD
 - (14) PTU OFF
 - (15) Altitude Not above 33000 feet
 - (16) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

- (17) Affected systems Review

On approach:

- (18) FMS, PERF– ARR – SLAT/FLAP 4

HYD 1 LO PRESS (Caution) (Cont'd)

- (19) FMS, PERF– ARR – VREF $V_{REF(FLAP 4)}$
- (20) OLD factor Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.30	1.40

Before landing:

- (21) SLAT/FLAP lever 4
- (22) Landing gear DN
- (23) ALTN GEAR DN

– COMPLETE –

(24) HYD 1 fluid quantity indication is less than 5%:

- (25) HYD 1 SOV CLSD
- (26) PTU OFF
- (27) Altitude Not above 33000 feet
- (28) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

- (29) Affected systems Review

On approach:

- (30) FMS, PERF– ARR – SLAT/FLAP 4
- (31) FMS, PERF– ARR – VREF $V_{REF(FLAP 4)}$
- (32) OLD factor Multiply by value from table.

HYD 1 LO PRESS (Caution) (Cont'd)

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.30	1.40

Before landing:

- (33) SLAT/FLAP lever 4
- (34) Landing gear DN
- (35) ALTN GEAR DN

- COMPLETE -

HYD 1 SOV FAIL (Caution)

- (1) SOV required closed for any other non-normal procedure:
 - ➔ Yes – Go to (2)
 - ➔ No – Go to (4)
- (2) SOV required closed for any other non-normal procedure:
- (3) HYD 1 SOVCLSD

- COMPLETE -

- (4) SOV not required closed for any other non-normal procedure:
- (5) HYD synoptic page Select
- (6) HYD 1A flow line is green:
 - ➔ Yes – Go to (7)
 - ➔ No – Go to (9)
- (7) HYD 1A flow line is green:
- (8) No further action required.

- COMPLETE -

HYD 1 SOV FAIL (Caution) (Cont'd)

(9) **HYD 1A flow line is white:**

- (10) HYD 1 SOV CLSD
- (11) HYD 1 SOV Select open
- (12) Hydraulic system 1 Monitor

- COMPLETE -

HYD 1-2 LO PRESS (Caution)

- (1) Plan to land at the nearest suitable airport.
- (2) HYD 3B ON
- (3) HYD 2B ON
- (4) PTU OFF
- (5) **HYD 1-2 LO PRESS** caution message goes out:

- ➔ **Yes** – Go to (6)
- ➔ **No** – Go to (10)

(6) **HYD 1-2 LO PRESS** caution message goes out:

- (7) HYD synoptic page Select
- (8) Hydraulic pressure and temperature Monitor
- (9) Land immediately at the nearest suitable airport.

- COMPLETE -

(10) **HYD 1-2 LO PRESS** caution message stays on:

- (11) Land immediately at the nearest suitable airport.
- (12) HYD 1 SOV CLSD
- (13) HYD 3A ON
- (14) HYD 2 SOV CLSD

HYD 1-2 LO PRESS (Caution) (Cont'd)

- (15) HYD 2B OFF
- (16) NOSE STEER OFF

NOTE

Select the longest runway with minimal crosswind.

- (17) Altitude Not above 33000 feet



Do not land on contaminated runway.

- (18) Affected systemsReview

On approach:

- (19) FMS, PERF – ARR – SLAT/FLAP 4
- (20) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 10$
- (21) OLD factor Multiply by 1.85

Before landing:

- (22) SLAT/FLAP lever 4
- (23) Landing gear DN
- (24) ALTN GEAR DN

– COMPLETE –

HYD 1-3 LO PRESS (Caution)

- (1) Plan to land at the nearest suitable airport.
- (2) PTU OFF

HYD 1-3 LO PRESS (Caution) (Cont'd)

- (3) HYD 3A ON
- (4) HYD 3B ON
- (5) HYD 2B ON

(6) **HYD 1-3 LO PRESS** caution message goes out:

- ➔ **Yes** – Go to (7)
- ➔ **No** – Go to (11)

(7) **HYD 1-3 LO PRESS** caution message goes out:

- (8) HYD synoptic page Select
- (9) Hydraulic pressure and temperature Monitor
- (10) Land immediately at the nearest suitable airport.

– COMPLETE –

(11) **HYD 1-3 LO PRESS** caution message stays on:

- (12) Land immediately at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

- (13) Airspeed Not more than V_{FE} .

NOTE

1. If slat/flap are confirmed 0, reduction of cruise airspeed is not required.
2. High alpha protection setting is adjusted to account for the failure.

- (14) HYD 1 SOV CLSD
- (15) HYD 3A OFF

HYD 1-3 LO PRESS (Caution) (Cont'd)

- (16) HYD 3B OFF
- (17) Altitude Not above 33000 feet
- (18) Affected systemsReview
- (19) Check FLAP position:
 - ➔ **FLAP position is 0-1** – [Go to \(20\)](#)
 - ➔ **FLAP position is 2** – [Go to \(29\)](#)
 - ➔ **FLAP position is 3, 4 or 5** – [Go to \(38\)](#)
- (20) FLAP position is 0-1:**
- (21) Maximum landing weight Use the table to determine the value and correct for wind and slope.

HYD 1-3 LO PRESS (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		HYD 1-3 V _{REF} +41KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	74570 (164400)	72030 (158800)	69530 (153300)	64630 (142500)	59510 (131200)	54830 (120900)
0	32	71660 (158000)	69170 (152500)	63820 (140700)	58690 (129400)	54150 (119400)	49940 (110100)
20	68	68850 (151800)	63500 (140000)	58420 (128800)	53880 (118800)	49660 (109500)	45720 (100800)
30	86	66130 (145800)	60870 (134200)	56060 (123600)	51750 (114100)	47670 (105100)	43810 (96600)
40 AND ABOVE	104 AND ABOVE	63540 (140100)	58460 (128900)	53930 (118900)	49750 (109700)	45760 (100900)	42040 (92700)

CS300_LW_ATA29_HYD13_DVREF41_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 21% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – HYD 1–3 – ΔVREF
41 kt

Figure 04–13–1

HYD 1-3 LO PRESS (Caution) (Cont'd)

On approach:

- (22) TAWS, FLAPINHIB
- (23) FMS, PERF – ARR – SLAT/FLAP 4
- (24) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} +41$
- (25) OLD factorMultiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.85	2.20

Before landing:

- (26) SLAT/FLAP lever 4
- (27) Landing gear DN
- (28) ALTN GEAR DN

– COMPLETE –

(29) FLAP position is 2:

- (30) Maximum landing weight Use the table to determine the value and correct for wind and slope.

HYD 1-3 LO PRESS (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		HYD 1-3 V _{REF} +15KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	84050 (185300)	81510 (179700)	78830 (173800)	76200 (168000)	73570 (162200)	70570 (155600)
0	32	81100 (178800)	78510 (173100)	75930 (167400)	73250 (161500)	70660 (155800)	67720 (149300)
20	68	78420 (172900)	75840 (167200)	73250 (161500)	70620 (155700)	68080 (150100)	65090 (143500)
30	86	77150 (170100)	74570 (164400)	71980 (158700)	69390 (153000)	66850 (147400)	63140 (139200)
40 AND ABOVE	104 AND ABOVE	75930 (167400)	73340 (161700)	70800 (156100)	68260 (150500)	65680 (144800)	60910 (134300)

CS300_LW_ATA29_HYD13_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – HYD 1–3 – ΔVREF
15 kt
Figure 04–13–2

HYD 1-3 LO PRESS (Caution) (Cont'd)

On approach:

- (31) TAWS, FLAPINHIB
- (32) FMS, PERF – ARR – SLAT/FLAP 4
- (33) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 15$
- (34) OLD factorMultiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.50	1.80

Before landing:

- (35) SLAT/FLAP lever 4
- (36) Landing gear DN
- (37) ALTN GEAR DN

- COMPLETE -

(38) FLAP position is 3, 4 or 5:

On approach:

- (39) TAWS, FLAPINHIB
- (40) FMS, PERF – ARR – SLAT/FLAP 4
- (41) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + \Delta V_{REF}$. Set value from table.
- (42) OLD factorMultiply by value from table.

FLAP	$\Delta V_{REF(FLAP 4)}$	OLD factor Dry runway	OLD factor Wet runway
3	10	1.40	1.60
4	10	1.45	1.65

HYD 1-3 LO PRESS (Caution) (Cont'd)

FLAP	$\Delta V_{REF(FLAP 4)}$	OLD factor Dry runway	OLD factor Wet runway
5	10	1.55	1.70

Before landing:

- (43) SLAT/FLAP lever 4
- (44) Landing gear DN
- (45) ALTN GEAR DN

- COMPLETE -

HYD 2 HI TEMP (Caution)

- (1) HYD synoptic page Select
- (2) HYD 2B OFF
- (3) HYD 2 temperature less than 120°C:
 - ➔ **Yes** – [Go to \(4\)](#)
 - ➔ **No** – [Go to \(6\)](#)
- (4) **HYD 2 temperature less than 120°C:**
- (5) HYD 2 system temperature Monitor

- COMPLETE -

- (6) **HYD 2 temperature more than 120°C:**
- (7) HYD 2 SOV CLSD

HYD 2 HI TEMP (Caution) (Cont'd)

NOTE

The **HYD 2 LO PRESS** caution message appears with this step but does not need to be done separately. The OLD factor in this procedure must be applied and includes the affected systems.

- (8) PTU OFF
- (9) NOSE STEER OFF

NOTE

Select the longest runway with minimal crosswind.

- (10) Land at the nearest suitable airport.
- (11) Altitude Not above 37000 feet
- (12) Affected systems Review

On approach:

- (13) FMS, PERF – ARR – SLAT/FLAP 4
- (14) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)}$
- (15) OLD factor Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

- (16) SLAT/FLAP lever 4

– COMPLETE –

HYD 2 LO PRESS (Caution)

- (1) **HYD 2 HI TEMP** caution message previously shown:
 - ➔ Yes – Go to (2)
 - ➔ No – Go to (4)
- (2) **HYD 2 HI TEMP** caution message previously shown:
- (3) No further action required.

– COMPLETE –
- (4) **HYD 2 HI TEMP** caution message not previously shown:
- (5) HYD synoptic page Select
- (6) HYD 2 fluid quantity indication is more than 5% or is invalid:
 - ➔ Yes – Go to (7)
 - ➔ No – Go to (23)
- (7) **HYD 2 fluid quantity indication is more than 5% or is invalid:**
- (8) HYD 2B ON
- (9) **HYD 2 LO PRESS** caution message goes out:
 - ➔ Yes – Go to (10)
 - ➔ No – Go to (12)
- (10) **HYD 2 LO PRESS** caution message goes out:
- (11) No further action required.

– COMPLETE –
- (12) **HYD 2 LO PRESS** caution message stays on:
- (13) HYD 2 SOV CLSD
- (14) HYD 2B OFF
- (15) PTU OFF
- (16) NOSE STEER OFF

HYD 2 LO PRESS (Caution) (Cont'd)

NOTE

Select the longest runway with minimal crosswind.

- (17) Altitude Not above 37000 feet
 (18) Affected systemsReview

On approach:

- (19) FMS, PERF – ARR – SLAT/FLAP 4
 (20) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)}$
 (21) OLD factor Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

- (22) SLAT/FLAP lever 4

- COMPLETE -

(23) HYD 2 fluid quantity indication is less than 5%:

- (24) HYD 2 SOV CLSD
 (25) HYD 2B OFF
 (26) PTU OFF
 (27) NOSE STEER OFF

NOTE

Select the longest runway with minimal crosswind.

- (28) Altitude Not above 37000 feet

HYD 2 LO PRESS (Caution) (Cont'd)

(29) Affected systemsReview

On approach:

(30) FMS, PERF – ARR – SLAT/FLAP 4

(31) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)}$

(32) OLD factor Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

(33) SLAT/FLAP lever 4

– COMPLETE –

HYD 2 SOV FAIL (Caution)

(1) SOV required closed for any other non-normal procedure:

➔ **Yes** – [Go to \(2\)](#)

➔ **No** – [Go to \(4\)](#)

(2) **SOV required closed for any other non-normal procedure:**

(3) HYD 2 SOVCLSD

– COMPLETE –

(4) **SOV not required closed for any other non-normal procedure:**

(5) HYD synoptic page Select

(6) HYD 2A flow line is green:

➔ **Yes** – [Go to \(7\)](#)

➔ **No** – [Go to \(9\)](#)

HYD 2 SOV FAIL (Caution) (Cont'd)

(7) **HYD 2A flow line is green:**

(8) No further action required.

– COMPLETE –

(9) **HYD 2A flow line is white:**

(10) HYD 2 SOVCLSD

(11) HYD 2 SOV Select open

(12) Hydraulic system 2 Monitor

– COMPLETE –

HYD 2-3 LO PRESS (Caution)



Control authority is reduced. Minimize control inputs.

(1) Plan to land at the nearest suitable airport.

(2) PTU OFF

(3) HYD 3A ON

(4) HYD 3B ON

(5) HYD 2B ON

(6) **HYD 2-3 LO PRESS** caution message goes out:

➔ **Yes** – Go to (7)

➔ **No** – Go to (11)

(7) **HYD 2-3 LO PRESS** caution message goes out:

(8) HYD synoptic page Select

HYD 2-3 LO PRESS (Caution) (Cont'd)

- (9) Hydraulic pressure and temperature Monitor
- (10) Land immediately at the nearest suitable airport.

- COMPLETE -

(11) HYD 2-3 LO PRESS caution message stays on:

- (12) Land immediately at the nearest suitable airport.
- (13) Airspeed Not more than V_{FE} .

NOTE

1. If slat/flap are confirmed 0, reduction of cruise airspeed is not required.
2. High alpha protection setting is adjusted to account for the failure.

- (14) HYD 3A OFF
- (15) HYD 3B OFF
- (16) HYD 2 SOV CLSD
- (17) HYD 2B OFF
- (18) NOSE STEER OFF

NOTE

Select the longest runway with minimal crosswind.

- (19) Altitude Not above 33000 feet
- (20) Affected systems Review
- (21) Check SLAT position:
 - ➔ **SLAT position IN** – [Go to \(22\)](#)
 - ➔ **SLAT position OUT/MID/FULL** – [Go to \(29\)](#)

HYD 2-3 LO PRESS (Caution) (Cont'd)

(22) SLAT position IN:

(23) Maximum landing weight Use the table to determine the value and correct for wind and slope.

HYD 2-3 LO PRESS (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		HYD 2-3 V _{REF} +20KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	82550 (182000)	79960 (176300)	77330 (170500)	74700 (164700)	72070 (158900)	69210 (152600)
0	32	79560 (175400)	76970 (169700)	74380 (164000)	71800 (158300)	69260 (152700)	66360 (146300)
20	68	76880 (169500)	74290 (163800)	71750 (158200)	69170 (152500)	66260 (146100)	61320 (135200)
30	86	75610 (166700)	73020 (161000)	70480 (155400)	67940 (149800)	63820 (140700)	59010 (130100)
40 AND ABOVE	104 AND ABOVE	74380 (164000)	71840 (158400)	69350 (152900)	66450 (146500)	61500 (135600)	56880 (125400)

CS300_LW_ATA29_HYD23_DVREF20_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – HYD 2–3 – ΔVREF
20 kt

Figure 04–13–3

HYD 2-3 LO PRESS (Caution) (Cont'd)

On approach:

(24) Rudder trimSet ½ a triangle width of RIGHT trim

NOTE

The triangle refers to the inverted triangular rudder trim pointer.

(25) FMS, PERF – ARR – SLAT/FLAP 4

(26) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 20$

(27) OLD factorMultiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.45	1.55

Before landing:

(28) SLAT/FLAP lever 4

– COMPLETE –

(29) SLAT position OUT/MID/FULL:

On approach:

(30) Rudder trimSet ½ a triangle width of RIGHT trim

NOTE

The triangle refers to the inverted triangular rudder trim pointer.

(31) FMS, PERF – ARR – SLAT/FLAP 4

(32) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)} + 10$

HYD 2-3 LO PRESS (Caution) (Cont'd)

(33) OLD factor Multiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.30	1.35

Before landing:

(34) SLAT/FLAP lever 4

- COMPLETE -

HYD 3 HI TEMP (Caution)

(1) HYD synoptic page Select

(2) HYD 3B AUTO

(3) HYD 3A OFF

(4) HYD 3 temperature less than 120°C:

➔ **Yes** – Go to (5)

➔ **No** – Go to (7)

(5) **HYD 3 temperature less than 120°C:**

(6) HYD 3 system temperature Monitor

- COMPLETE -

(7) **HYD 3 temperature more than 120°C:**

(8) HYD 3B OFF

HYD 3 HI TEMP (Caution) (Cont'd)

NOTE

The **HYD 3 LO PRESS** caution message appears with this step but does not need to be done separately. The OLD factor in this procedure must be applied and includes the affected systems.

- (9) Land at the nearest suitable airport.
- (10) Altitude Not above 37000 feet
- (11) Affected systemsReview

On approach:

- (12) FMS, PERF – ARR – SLAT/FLAP 4
- (13) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)}$
- (14) OLD factor Multiply by 1.15

Before landing:

- (15) SLAT/FLAP lever 4

– COMPLETE –

HYD 3 LO PRESS (Caution)

- (1) **HYD 3 HI TEMP** caution message previously shown:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (4)
- (2) **HYD 3 HI TEMP** caution message previously shown:
- (3) No further action required.

– COMPLETE –

HYD 3 LO PRESS (Caution) (Cont'd)

- (4) **HYD 3 HI TEMP** caution message not previously shown:
- (5) **AC BUS 2** caution message is also shown:
 - ➔ **Yes** – Go to (6)
 - ➔ **No** – Go to (15)
- (6) **AC BUS 2** caution message is also shown:
- (7) HYD 3A OFF
- (8) HYD 3B OFF
- (9) Altitude Not above 37000 feet
- (10) Affected systems Review

On approach:

- (11) FMS, PERF – ARR – SLAT/FLAP 4
- (12) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)}$
- (13) OLD factor Multiply by 1.15

Before landing:

- (14) SLAT/FLAP lever 4

– COMPLETE –

- (15) **AC BUS 2** caution message is not shown:
- (16) HYD synoptic page Select
- (17) HYD 3 fluid quantity indication is more than 5% or is invalid:
 - ➔ **Yes** – Go to (18)
 - ➔ **No** – Go to (33)
- (18) **HYD 3 fluid quantity indication is more than 5% or is invalid:**
- (19) HYD 3A ON
- (20) HYD 3B ON

HYD 3 LO PRESS (Caution) (Cont'd)

(21) **HYD 3 LO PRESS** caution message goes out:

- ➔ **Yes** – Go to (22)
- ➔ **No** – Go to (24)

(22) **HYD 3 LO PRESS** caution message goes out:

(23) No further action required.

– COMPLETE –

(24) **HYD 3 LO PRESS** caution message stays on:

- (25) HYD 3A OFF
- (26) HYD 3B OFF
- (27) Altitude Not above 37000 feet
- (28) Affected systems Review

On approach:

- (29) FMS, PERF – ARR – SLAT/FLAP 4
- (30) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)}$
- (31) OLD factor Multiply by 1.15

Before landing:

- (32) SLAT/FLAP lever 4

– COMPLETE –

(33) **HYD 3 fluid quantity indication is less than 5%:**

- (34) HYD 3A OFF
- (35) HYD 3B OFF
- (36) Altitude Not above 37000 feet
- (37) Affected systems Review

HYD 3 LO PRESS (Caution) (Cont'd)

On approach:

- (38) FMS, PERF – ARR – SLAT/FLAP 4
- (39) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)}$
- (40) OLD factor Multiply by 1.15

Before landing:

- (41) SLAT/FLAP lever 4

– COMPLETE –

HYD EDP 1A FAIL (Caution)

- (1) HYD synoptic page Select
- (2) PTU OFF
- (3) System pressure stays normal:
 - ➔ Yes – Go to (4)
 - ➔ No – Go to (6)

(4) System pressure stays normal:

- (5) PTU AUTO

– COMPLETE –

(6) System pressure does not stay normal:

- (7) PTU ON
- (8) HYD 1 SOV CLSD
- (9) Hydraulic system 1 Monitor

On approach:

- (10) OLD factor Multiply by value from table.

HYD EDP 1A FAIL (Caution) (Cont'd)

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

On landing:

(11) Do not use left thrust reverser.

- COMPLETE -

HYD EDP 2A FAIL (Caution)

- (1) HYD synoptic page Select
- (2) HYD 2B OFF
- (3) System pressure stays normal:
 - ➔ Yes – Go to (4)
 - ➔ No – Go to (6)
- (4) **System pressure stays normal:**
- (5) HYD 2B AUTO

- COMPLETE -

- (6) **System pressure does not stay normal:**
- (7) HYD 2B ON
- (8) HYD 2 SOV CLSD
- (9) Hydraulic system 2 Monitor

On approach:

(10) OLD factor Multiply by value from table.

HYD EDP 2A FAIL (Caution) (Cont'd)

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

On landing:

(11) Do not use right thrust reverser.

– COMPLETE –

HYD PTU FAIL (Caution)

(1) PTU OFF

– COMPLETE –

<Mod 291002> or <Post-SB BD500-291002>

HYD PUMP 2B FAIL (Caution)

(1) HYD 2B ON

(2) **HYD PUMP 2B FAIL** caution message goes out:

➔ **Yes** – Go to (3)

➔ **No** – Go to (5)

(3) **HYD PUMP 2B FAIL** caution message goes out:

(4) No further action required.

– COMPLETE –

(5) **HYD PUMP 2B FAIL** caution message stays on:

(6) HYD 2B OFF

– COMPLETE –

HYD PUMP 3A FAIL (Caution)

- (1) HYD 3A OFF
- COMPLETE -

<Mod 291002> or <Post-SB BD500-291002>

HYD PUMP 3B FAIL (Caution)

- (1) HYD 3B ON
(2) **HYD PUMP 3B FAIL** caution message goes out:
 ➔ Yes – Go to (3)
 ➔ No – Go to (5)
(3) **HYD PUMP 3B FAIL** caution message goes out:
(4) No further action required.
 - COMPLETE -
(5) **HYD PUMP 3B FAIL** caution message stays on:
(6) HYD 3B OFF
 - COMPLETE -

HYD RAT PUMP FAIL (Caution)

- (1) Land immediately at the nearest suitable airport.
(2) APU (if available)START
(3) HYD 3A ON
(4) HYD 3B ON
(5) HYD 2B ON
(6) HYD synoptic page Select

HYD RAT PUMP FAIL (Caution) (Cont'd)

(7) Hydraulic systems Monitor

- COMPLETE -

ICE AND RAIN PROTECTION

L WING A/ICE FAIL (Warning)	04-14-3
R WING A/ICE FAIL (Warning)	04-14-4
COWL A/ICE ON (Caution)	04-14-5
ICE (Caution)	04-14-5
L COWL A/ICE FAIL (Caution)	04-14-6
L COWL A/ICE FAIL ON (Caution)	04-14-7
L ICE DET FAIL (Caution)	04-14-7
L SIDE WDW HEAT FAIL (Caution)	04-14-7
L WING A/ICE LO HEAT (Caution)	04-14-7
L WING A/ICE OVHT (Caution)	04-14-8
L WSHLD HEAT FAIL (Caution)	04-14-10
R COWL A/ICE FAIL (Caution)	04-14-10
R COWL A/ICE FAIL ON (Caution)	04-14-11
R ICE DET FAIL (Caution)	04-14-11
R SIDE WDW HEAT FAIL (Caution)	04-14-11
R WING A/ICE LO HEAT (Caution)	04-14-11
R WING A/ICE OVHT (Caution)	04-14-12
R WSHLD HEAT FAIL (Caution)	04-14-14
WING A/ICE FAIL (Caution)	04-14-14
WING A/ICE MISCONFIG (Caution)	04-14-16
WING A/ICE ON (Caution)	04-14-17
Arcing, delaminated, shattered, or cracked window or windshield	04-14-17
Ice dispersal procedure	04-14-18

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L WING A/ICE FAIL (Warning)

- (1) In flight:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (15)
- (2) In flight:
- (3) ANTI-ICE, WING OFF
- (4) Leave/avoid icing conditions.
- (5) **L WING A/ICE FAIL** warning message goes out:
 - ➔ **Yes** – Go to (6)
 - ➔ **No** – Go to (8)
- (6) **L WING A/ICE FAIL** warning message goes out:
- (7) No further action required.

– COMPLETE –

- (8) **L WING A/ICE FAIL** warning message stays on:
- (9) APU BLEED OFF
- (10) L BLEED OFF
- (11) XBLEEDMAN CLSD
- (12) L PACK OFF
- (13) Altitude Not above 31000 feet
- (14) Ice dispersal procedure Accomplish, if required. [Refer to Ice and rain protection – Ice dispersal procedure.](#)

– COMPLETE –

- (15) On ground:
- (16) ANTI-ICE, WING OFF
- (17) APU BLEED OFF

L WING A/ICE FAIL (Warning) (Cont'd)

- (18) L BLEED OFF
- (19) XBLEED MAN CLSD
- (20) L PACK OFF

– COMPLETE –

R WING A/ICE FAIL (Warning)

- (1) In flight:
 - ➔ Yes – Go to (2)
 - ➔ No – Go to (14)
- (2) In flight:
- (3) ANTI-ICE, WING OFF
- (4) Leave/avoid icing conditions.
- (5) **R WING A/ICE FAIL** warning message goes out:
 - ➔ Yes – Go to (6)
 - ➔ No – Go to (8)
- (6) **R WING A/ICE FAIL** warning message goes out:
- (7) No further action required.

– COMPLETE –

- (8) **R WING A/ICE FAIL** warning message stays on:
- (9) R BLEED OFF
- (10) XBLEED MAN CLSD
- (11) R PACK OFF
- (12) Altitude Not above 31000 feet

R WING A/ICE FAIL (Warning) (Cont'd)

(13) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice
dispersal procedure.

- COMPLETE -

(14) On ground:

(15) ANTI-ICE, WING OFF

(16) R BLEED OFF

(17) XBLEEDMAN CLSD

(18) R PACK OFF

- COMPLETE -

COWL A/ICE ON (Caution)

(1) ANTI-ICE, L COWL AUTO

(2) ANTI-ICE, R COWL AUTO

- COMPLETE -

ICE (Caution)

(1) ANTI-ICE, L COWL ON

(2) ANTI-ICE, R COWL ON

(3) Below 35000 feet (both bleeds available) or 31000 feet (single bleed):

➔ **Yes – Go to (4)**

➔ **No – Go to (12)**

(4) Below 35000 feet (both bleeds available) or 31000 feet (single bleed):

(5) ANTI-ICE, WING ON

L COWL A/ICE FAIL ON (Caution)

- (1) ANTI-ICE, L COWL OFF, if not required.
- (2) Leave/avoid icing conditions.

– COMPLETE –

L ICE DET FAIL (Caution)

- (1) Anti-ice system Operate manually in icing conditions.

– COMPLETE –

L SIDE WDW HEAT FAIL (Caution)

- (1) WINDOW HEAT, L SIDE OFF
- (2) WINDOW HEAT, L SIDE Select auto
- (3) **L SIDE WDW HEAT FAIL** caution message goes out:
 - ➔ Yes – Go to (4)
 - ➔ No – Go to (6)
- (4) **L SIDE WDW HEAT FAIL** caution message goes out:
- (5) No further action required.

– COMPLETE –

- (6) **L SIDE WDW HEAT FAIL** caution message stays on:
- (7) WINDOW HEAT, L SIDE OFF

– COMPLETE –

L WING A/ICE LO HEAT (Caution)

- (1) Engine thrust Increase, as required.

L WING A/ICE LO HEAT (Caution) (Cont'd)

- (2) **L WING A/ICE LO HEAT** caution message goes out:
 - ➔ **Yes** – Go to (3)
 - ➔ **No** – Go to (5)
- (3) **L WING A/ICE LO HEAT** caution message goes out:
- (4) No further action required.
 - COMPLETE –
- (5) **L WING A/ICE LO HEAT** caution message stays on:
- (6) Leave/avoid icing conditions.
- (7) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice dispersal procedure.
 - COMPLETE –

L WING A/ICE OVHT (Caution)

- (1) L BLEED auto:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (20)
- (2) **L BLEED** auto:
- (3) L BLEED OFF
- (4) **L WING A/ICE OVHT** caution message goes out:
 - ➔ **Yes** – Go to (5)
 - ➔ **No** – Go to (15)
- (5) **L WING A/ICE OVHT** caution message goes out:
- (6) Altitude Not above 31000 feet

L WING A/ICE OVHT (Caution) (Cont'd)

(7) All engines operating landing in icing conditions expected:

- ➔ Yes – Go to (8)
- ➔ No – Go to (13)

(8) All engines operating landing in icing conditions expected:

On approach:

- (9) FMS, PERF – ARR – SLAT/FLAP 5
- (10) FMS, PERF – ARR – VREF $V_{REF(FLAP 5)} + 10$
- (11) OLD factor Multiply by 1.50

Before landing:

- (12) SLAT/FLAP lever 5

– COMPLETE –

(13) All engines operating landing in icing conditions not expected:

- (14) No further action required.

– COMPLETE –

(15) L WING A/ICE OVHT caution message stays on:

- (16) ANTI-ICE, WING OFF
- (17) Leave/avoid icing conditions.
- (18) L BLEED Select auto
- (19) Ice dispersal procedure Accomplish, if required. Refer to
[Ice and rain protection – Ice dispersal procedure.](#)

– COMPLETE –

(20) L BLEED OFF:

- (21) ANTI-ICE, WING OFF
- (22) Leave/avoid icing conditions.

L WING A/ICE OVHT (Caution) (Cont'd)

- (23) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice
dispersal procedure.

– COMPLETE –

L WSHLD HEAT FAIL (Caution)

- (1) L WSHLD OFF
(2) L WSHLD Select auto
(3) **L WSHLD HEAT FAIL** caution message goes out:
➔ Yes – Go to (4)
➔ No – Go to (6)
(4) **L WSHLD HEAT FAIL** caution message goes out:
(5) No further action required.

– COMPLETE –

- (6) **L WSHLD HEAT FAIL** caution message stays on:
(7) L WSHLD OFF
(8) Leave/avoid icing conditions.

– COMPLETE –

R COWL A/ICE FAIL (Caution)

- (1) ANTI-ICE, R COWL OFF
(2) Leave/avoid icing conditions.

– COMPLETE –

R COWL A/ICE FAIL ON (Caution)

- (1) ANTI-ICE, R COWL OFF, if not required.
- (2) Leave/avoid icing conditions.

– COMPLETE –

R ICE DET FAIL (Caution)

- (1) Anti-ice system Operate manually in icing conditions.

– COMPLETE –

R SIDE WDW HEAT FAIL (Caution)

- (1) WINDOW HEAT, R SIDE OFF
- (2) WINDOW HEAT, R SIDE Select auto
- (3) **R SIDE WDW HEAT FAIL** caution message goes out:
 - ➔ Yes – Go to (4)
 - ➔ No – Go to (6)
- (4) **R SIDE WDW HEAT FAIL** caution message goes out:
- (5) No further action required.

– COMPLETE –

- (6) **R SIDE WDW HEAT FAIL** caution message stays on:
- (7) WINDOW HEAT, R SIDE OFF

– COMPLETE –

R WING A/ICE LO HEAT (Caution)

- (1) Engine thrust Increase, as required.

R WING A/ICE LO HEAT (Caution) (Cont'd)

- (2) **R WING A/ICE LO HEAT** caution message goes out:
 - ➔ **Yes** – Go to (3)
 - ➔ **No** – Go to (5)
- (3) **R WING A/ICE LO HEAT** caution message goes out:
- (4) No further action required.

– COMPLETE –
- (5) **R WING A/ICE LO HEAT** caution message stays on:
- (6) Leave/avoid icing conditions.
- (7) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

R WING A/ICE OVHT (Caution)

- (1) R BLEED auto:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (20)
- (2) R BLEED auto:
- (3) R BLEED OFF
- (4) **R WING A/ICE OVHT** caution message goes out:
 - ➔ **Yes** – Go to (5)
 - ➔ **No** – Go to (15)
- (5) **R WING A/ICE OVHT** caution message goes out:
- (6) Altitude Not above 31000 feet

R WING A/ICE OVHT (Caution) (Cont'd)

(7) All engines operating landing in icing conditions expected:

- ➔ Yes – Go to (8)
- ➔ No – Go to (13)

(8) All engines operating landing in icing conditions expected:

On approach:

- (9) FMS, PERF – ARR – SLAT/FLAP 5
- (10) FMS, PERF – ARR – VREF $V_{REF(FLAP 5)} + 10$
- (11) OLD factor Multiply by 1.50

Before landing:

- (12) SLAT/FLAP lever 5

– COMPLETE –

(13) All engines operating landing in icing conditions not expected:

- (14) No further action required.

– COMPLETE –

(15) R WING A/ICE OVHT caution message stays on:

- (16) ANTI-ICE, WING OFF
- (17) Leave/avoid icing conditions.
- (18) R BLEED Select auto
- (19) Ice dispersal procedure Accomplish, if required. Refer to
[Ice and rain protection – Ice dispersal procedure.](#)

– COMPLETE –

(20) R BLEED OFF:

- (21) ANTI-ICE, WING OFF
- (22) Leave/avoid icing conditions.

R WING A/ICE OVHT (Caution) (Cont'd)

- (23) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice
dispersal procedure.

– COMPLETE –

R WSHLD HEAT FAIL (Caution)

- (1) R WSHLD OFF
(2) R WSHLD Select auto
(3) **R WSHLD HEAT FAIL** caution message goes out:
➔ **Yes** – Go to (4)
➔ **No** – Go to (6)
(4) **R WSHLD HEAT FAIL** caution message goes out:
(5) No further action required.

– COMPLETE –

- (6) **R WSHLD HEAT FAIL** caution message stays on:
(7) R WSHLD OFF
(8) Leave/avoid icing conditions.

– COMPLETE –

WING A/ICE FAIL (Caution)

- (1) ANTI-ICE, WING OFF
(2) Leave/avoid icing conditions.
(3) **WING A/ICE FAIL** caution message goes out:
➔ **Yes** – Go to (4)
➔ **No** – Go to (6)

WING A/ICE FAIL (Caution) (Cont'd)

(4) WING A/ICE FAIL caution message goes out:

- (5) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice
dispersal procedure.

– COMPLETE –

(6) WING A/ICE FAIL caution message stays on:

- (7) AIR synoptic page Select
- (8) Identify failed L WAIV or R WAIV (amber and open):
- ➔ L WAIV – Go to (9)
 - ➔ R WAIV – Go to (16)
 - ➔ No valve is amber – Go to (22)

(9) L WAIV failed:

- (10) APU BLEED OFF
- (11) L BLEED OFF
- (12) XBLEED MAN CLSD
- (13) L PACK OFF
- (14) Altitude Not above 31000 feet
- (15) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice
dispersal procedure.

– COMPLETE –

(16) R WAIV failed:

- (17) R BLEED OFF
- (18) XBLEED MAN CLSD
- (19) R PACK OFF

WING A/ICE FAIL (Caution) (Cont'd)

- (20) Altitude Not above 31000 feet
- (21) Ice dispersal procedure Accomplish, if required. [Refer to Ice and rain protection – Ice dispersal procedure.](#)

– COMPLETE –

(22) No valve is amber:

- (23) L BLEED OFF
- (24) R BLEED OFF
- (25) Descent 10000 feet or lowest safe altitude, whichever is higher.
- (26) RAM AIR OPEN
- (27) RECIRC AIR OFF
- (28) EMER DEPRESS ON
- (29) Ice dispersal procedure Accomplish, if required. [Refer to Ice and rain protection – Ice dispersal procedure.](#)

– COMPLETE –

WING A/ICE MISCONFIG (Caution)

- (1) L BLEED and/or R BLEED If available, select auto.

Only one bleed is available:

- (2) Altitude Not above 31000 feet
- (3) **WING A/ICE MISCONFIG** caution message goes out:
 - ➔ **Yes** – [Go to \(4\)](#)
 - ➔ **No** – [Go to \(6\)](#)

WING A/ICE MISCONFIG (Caution) (Cont'd)

(4) **WING A/ICE MISCONFIG** caution message goes out:

(5) No further action required.

– COMPLETE –

(6) **WING A/ICE MISCONFIG** caution message stays on:

(7) Leave/avoid icing conditions.

(8) Ice dispersal procedure Accomplish, if required. Refer to
Ice and rain protection – Ice
dispersal procedure.

– COMPLETE –

WING A/ICE ON (Caution)

(1) ANTI-ICE, WING AUTO or OFF

– COMPLETE –

Arcing, delaminated, shattered, or cracked window or windshield

(1) Affected WSHLD or WINDOW HEAT OFF

(2) AUTO PRESS MAN

(3) MAN RATE UP, to achieve differential
pressure (ΔP) of 7.2 psid or less

(4) Crew and passenger oxygen On, if required

(5) Descent Initiate, if required

(6) Windshield core ply or inboard ply is shattered:

➔ **Yes** – Go to (7)

➔ **No** – Go to (11)

Arcing, delaminated, shattered, or cracked window or windshield (Cont'd)

(7) Windshield core ply or inboard ply is shattered:

When operating below 8000 feet:

- (8) Airspeed Reduce to minimum practical.
- (9) Cabin altitude Set to destination airport elevation.
- (10) Land at the nearest suitable airport.

– COMPLETE –

(11) Windshield core ply or inboard ply is not shattered:

When operating below 8000 feet:

- (12) Airspeed Reduce to minimum practical.

– COMPLETE –

Ice dispersal procedure

- (1) Airspeed Increase to V_{MO}/M_{MO} , if possible.
- (2) Ice remains on wing leading edge:
 - ➔ Yes – Go to (3)
 - ➔ No – Go to (8)
- (3) Ice remains on wing leading edge:

- (4) Maneuvering speed Not less than 200 KIAS

On approach:

- (5) FMS, PERF – ARR – VREF $V_{REF} + 10$
- (6) OLD factor Multiply by 1.30

Ice dispersal procedure (Cont'd)

Before landing:

(7) Do not prolong the flare.

– COMPLETE –

(8) Ice does not remain on wing leading edge:

(9) No further action required.

– COMPLETE –

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INSTRUMENTS SYSTEM

ADS 1 PROBE HEAT FAIL (Caution)	04-15-3
ADS 1 SLIPCOMP FAIL (Caution)	04-15-4
ADS 2 PROBE HEAT FAIL (Caution)	04-15-4
ADS 2 SLIPCOMP FAIL (Caution)	04-15-5
ADS 3 FAIL (Caution)	04-15-6
ADS 3 PROBE HEAT FAIL (Caution)	04-15-6
ADS 3 SLIPCOMP FAIL (Caution)	04-15-8
ADS 4 PROBE HEAT FAIL (Caution)	04-15-8
ADS 4 SLIPCOMP FAIL (Caution)	04-15-10
ADS ISI PROBE HEAT (Caution)	04-15-12
ADS ISI SLIPCOMP FAIL (Caution)	04-15-13
ADS-B OUT FAIL (Caution)	04-15-15
ADS-B 1 OUT FAIL (Caution)	04-15-15
ADS-B 2 OUT FAIL (Caution)	04-15-15
DMC 1 FAIL (Caution)	04-15-15
DMC 2 FAIL (Caution)	04-15-15
DUAL ADS FAIL (Caution)	04-15-16
EFIS COMPARATOR FAIL (Caution)	04-15-17
EFIS MISCOMPARE (Caution)	04-15-18
ENG DSPL MISCOMPARE (Caution)	04-15-20
IPC 1 FAIL (Caution)	04-15-20
IPC 2 FAIL (Caution)	04-15-21
IPC 3 FAIL (Caution)	04-15-22
IPC 4 FAIL (Caution)	04-15-23
IRS SAME SOURCE (Caution)	04-15-23

IRS SET HEADING (Caution)	04-15-23
L CTP TUNING FAIL (Caution)	04-15-23
L-R RADIO TUNING FAIL (Caution)	04-15-24
R CTP TUNING FAIL (Caution)	04-15-24
RAD ALT FAIL (Caution)	04-15-24
WXR ON (Caution)	04-15-24
XPDR 1 FAIL (Caution)	04-15-25
XPDR 2 FAIL (Caution)	04-15-25
Display unit failure procedure	04-15-25
Unreliable airspeed	04-15-25

ADS 1 PROBE HEAT FAIL (Caution)

(1) **ADS 2 FAIL** advisory message is also shown:

- ➔ **Yes** – Go to (2)
- ➔ **No** – Go to (4)

(2) **ADS 2 FAIL** advisory message is also shown:

(3) Reversion panel, L PFD Select ADS until ADS 3 is shown.

NOTE

L PFD and ISI have the same ADS source.

– COMPLETE –

(4) **ADS 2 FAIL** advisory message is not shown:

(5) Reversion panel, L PFD Select ADS until ADS 4 is shown.

(6) XFR Select to left side.

NOTE

1. Use L PFD (or L HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. Airspeed and altitude data from ADS 2 may be degraded in sideslip.
4. Touch and go procedures are prohibited.

– COMPLETE –

ADS 1 SLIPCOMP FAIL (Caution)

- (1) **ADS 2 FAIL** advisory message is also shown:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (4)
- (2) **ADS 2 FAIL** advisory message is also shown:
- (3) XFR Select to right side.

NOTE

- 1. Use R PFD (or R HUD, if installed) for approach.
- 2. Minimize crosswind for approach.
- 3. Touch and go procedures are prohibited.

– COMPLETE –

- (4) **ADS 2 FAIL** advisory message is not shown:
- (5) Reversion panel, L PFD Select ADS until ADS 4 is shown.

– COMPLETE –

ADS 2 PROBE HEAT FAIL (Caution)

- (1) **ADS 1 FAIL** advisory message is also shown:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (4)
- (2) **ADS 1 FAIL** advisory message is also shown:
- (3) Reversion panel, R PFD Select ADS until ADS 3 is shown.

ADS 2 PROBE HEAT FAIL (Caution) (Cont'd)

NOTE

R PFD and ISI have the same ADS source.

- COMPLETE -

(4) **ADS 1 FAIL** advisory message is not shown:

(5) Reversion panel, R PFD Select ADS until ADS 4 is shown.

(6) XFR Select to right side.

NOTE

1. Use R PFD (or R HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. Airspeed and altitude data from ADS 1 may be degraded in sideslip.
4. Touch and go procedures are prohibited.

- COMPLETE -

ADS 2 SLIPCOMP FAIL (Caution)

(1) **ADS 1 FAIL** advisory message is also shown:

➔ **Yes** – Go to (2)

➔ **No** – Go to (4)

(2) **ADS 1 FAIL** advisory message is also shown:

(3) XFR Select to left side.

NOTE

1. Use L PFD (or L HUD, if installed) for approach.

ADS 2 SLIPCOMP FAIL (Caution) (Cont'd)

2. Minimize crosswind for approach.
3. Touch and go procedures are prohibited.

– COMPLETE –

(4) **ADS 1 FAIL** advisory message is not shown:

- (5) Reversion panel, R PFD Select ADS until ADS 4 is shown.

– COMPLETE –

ADS 3 FAIL (Caution)

- (1) Reversion panel, ISI Select ADS until ADSREV is shown vertically.

– COMPLETE –

ADS 3 PROBE HEAT FAIL (Caution)

- (1) Reversion panel, ISI Select ADS until ADSREV is shown vertically.

(2) **ADS 1 FAIL** or **ADS 2 FAIL** advisory message is also shown:

- ➔ **Yes** – Go to (3)
- ➔ **No** – Go to (9)

(3) **ADS 1 FAIL** or **ADS 2 FAIL** advisory message is also shown:

(4) Confirm which EICAS message is also shown:

- ➔ **ADS 1 FAIL** advisory message – Go to (5)
- ➔ **ADS 2 FAIL** advisory message – Go to (7)

ADS 3 PROBE HEAT FAIL (Caution) (Cont'd)

(5) **ADS 1 FAIL** advisory message is also shown:

(6) XFR Select to right side.

NOTE

1. Use R PFD (or R HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. L PFD and ISI have the same ADS source.
4. Airspeed and altitude data from ADS 4 are degraded in sideslip.
5. Touch and go procedures are prohibited.

- COMPLETE -

(7) **ADS 2 FAIL** advisory message is also shown:

(8) XFR Select to left side.

NOTE

1. Use L PFD (or L HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. R PFD and ISI have the same ADS source.
4. Airspeed and altitude data from ADS 4 are degraded in sideslip.
5. Touch and go procedures are prohibited.

- COMPLETE -

ADS 3 PROBE HEAT FAIL (Caution) (Cont'd)

(9) **ADS 1 FAIL** and **ADS 2 FAIL** advisory message are not shown:

NOTE

Airspeed and altitude data from ADS 4 are degraded in sideslip.

– COMPLETE –

ADS 3 SLIPCOMP FAIL (Caution)

(1) **ADS 1 FAIL** or **ADS 2 FAIL** advisory message is also shown:

➔ Yes – Go to (2)

➔ No – Go to (3)

(2) **ADS 1 FAIL** or **ADS 2 FAIL** advisory message is also shown:

NOTE

Airspeed and altitude data on ISI and from ADS 3 are degraded in sideslip.

– COMPLETE –

(3) **ADS 1 FAIL** and **ADS 2 FAIL** advisory message are not shown:

(4) Reversion panel, ISI Select ADS until ADSREV is shown vertically.

– COMPLETE –

ADS 4 PROBE HEAT FAIL (Caution)

(1) **ADS 1 FAIL** or **ADS 2 FAIL** advisory message is also shown:

➔ Yes – Go to (2)

➔ No – Go to (10)

ADS 4 PROBE HEAT FAIL (Caution) (Cont'd)

(2) **ADS 1 FAIL** or **ADS 2 FAIL** advisory message is also shown:

(3) Confirm which EICAS message is also shown:

➔ **ADS 1 FAIL** advisory message – Go to (4)

➔ **ADS 2 FAIL** advisory message – Go to (7)

(4) **ADS 1 FAIL** advisory message is also shown:

(5) Reversion panel, L PFD Select ADS until ADS 3 is shown.

(6) XFR Select to right side.

NOTE

1. Use R PFD (or R HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. L PFD and ISI have the same ADS source.
4. Airspeed and altitude data from ADS 3 are degraded in sideslip.
5. Touch and go procedures are prohibited.

– COMPLETE –

(7) **ADS 2 FAIL** advisory message is also shown:

(8) Reversion panel, R PFD Select ADS until ADS 3 is shown.

(9) XFR Select to left side.

NOTE

1. Use L PFD (or L HUD, if installed) for approach.
2. Minimize crosswind for approach.

ADS 4 PROBE HEAT FAIL (Caution) (Cont'd)

3. R PFD and ISI have the same ADS source.
4. Airspeed and altitude data from ADS 3 are degraded in sideslip.
5. Touch and go procedures are prohibited.

– COMPLETE –

(10) **ADS 1 FAIL** and **ADS 2 FAIL** advisory message are not shown:

NOTE

Airspeed and altitude data from ADS 3 are degraded in sideslip.

– COMPLETE –

ADS 4 SLIPCOMP FAIL (Caution)

(1) **ADS 1 FAIL** or **ADS 2 FAIL** advisory message is also shown:

- ➔ Yes – Go to (2)
- ➔ No – Go to (8)

(2) **ADS 1 FAIL** or **ADS 2 FAIL** advisory message is also shown:

(3) Confirm which EICAS message is also shown:

- ➔ **ADS 1 FAIL** advisory message – Go to (4)
- ➔ **ADS 2 FAIL** advisory message – Go to (6)

(4) **ADS 1 FAIL** advisory message is also shown:

(5) XFRSelect to right side.

NOTE

1. Use R PFD (or R HUD, if installed) for approach.

ADS 4 SLIPCOMP FAIL (Caution) (Cont'd)

- 2. Minimize crosswind for approach.
- 3. Airspeed and altitude data from ADS 4 are degraded in sideslip.
- 4. Touch and go procedures are prohibited.

– COMPLETE –

(6) ADS 2 FAIL advisory message is also shown:

(7) XFR Select to left side.

NOTE

- 1. Use L PFD (or L HUD, if installed) for approach.
- 2. Minimize crosswind for approach.
- 3. Airspeed and altitude data from ADS 4 are degraded in sideslip.
- 4. Touch and go procedures are prohibited.

– COMPLETE –

(8) ADS 1 FAIL and ADS 2 FAIL advisory message are not shown:

NOTE

Airspeed and altitude data from ADS 4 are degraded in sideslip.

– COMPLETE –

ADS ISI PROBE HEAT (Caution)

- (1) **ADS 1 FAIL** or **ADS 2 FAIL** advisory message is also shown:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (10)
- (2) **ADS 1 FAIL** or **ADS 2 FAIL** advisory message is also shown:
- (3) Confirm which EICAS message is also shown:
 - ➔ **ADS 1 FAIL** advisory message – Go to (4)
 - ➔ **ADS 2 FAIL** advisory message – Go to (7)
- (4) **ADS 1 FAIL** advisory message is also shown:
- (5) Reversion panel, L PFD Select ADS until ADS 2 is shown.
- (6) Land at the nearest suitable airport.

NOTE

1. L PFD and R PFD have the same ADS source.
2. Airspeed and altitude data on ISI and from ADS 3 and ADS 4 are unreliable in icing conditions and degraded in sideslip.
3. The **FLT CTRL DIRECT ADS** caution message may be shown.

– COMPLETE –

- (7) **ADS 2 FAIL** advisory message is also shown:
- (8) Reversion panel, R PFD Select ADS until ADS 1 is shown.
- (9) Land at the nearest suitable airport.

ADS ISI PROBE HEAT (Caution) (Cont'd)

NOTE

1. L PFD and R PFD have the same ADS source.
2. Airspeed and altitude data on ISI and from ADS 3 and ADS 4 are unreliable in icing conditions and degraded in sideslip.
3. The **FLT CTRL DIRECT ADS** caution message may be shown.

– COMPLETE –

(10) **ADS 1 FAIL** and **ADS 2 FAIL** advisory message are not shown:

NOTE

Airspeed and altitude data on the ISI and from ADS 3 and ADS 4 are unreliable in icing conditions.

– COMPLETE –

ADS ISI SLIPCOMP FAIL (Caution)

(1) **ADS 1 FAIL** or **ADS 2 FAIL** advisory message is also shown:

➔ **Yes** – [Go to \(2\)](#)

➔ **No** – [Go to \(10\)](#)

(2) **ADS 1 FAIL** or **ADS 2 FAIL** advisory message is also shown:

(3) Confirm which EICAS message is also shown:

➔ **ADS 1 FAIL** advisory message – [Go to \(4\)](#)

➔ **ADS 2 FAIL** advisory message – [Go to \(7\)](#)

(4) **ADS 1 FAIL** advisory message is also shown:

(5) XFRSelect to right side.

ADS ISI SLIPCOMP FAIL (Caution) (Cont'd)

(6) Land at the nearest suitable airport.

NOTE

1. Use R PFD (or R HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. Airspeed and altitude data on ISI and from ADS 3 and ADS 4 are degraded in sideslip.

– COMPLETE –

(7) **ADS 2 FAIL** advisory message is also shown:

(8) XFR Select to left side.

(9) Land at the nearest suitable airport.

NOTE

1. Use L PFD (or L HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. Airspeed and altitude data on ISI and from ADS 3 and ADS 4 are degraded in sideslip.

– COMPLETE –

(10) **ADS 1 FAIL** and **ADS 2 FAIL** advisory message are not shown:

NOTE

Airspeed and altitude data from ADS 3 and ADS 4 are degraded in sideslip.

– COMPLETE –

ADS-B OUT FAIL (Caution)

- (1) ATCAdvise
- COMPLETE -

ADS-B 1 OUT FAIL (Caution)

- (1) Other transponder Select
- COMPLETE -

ADS-B 2 OUT FAIL (Caution)

- (1) Other transponder Select
- COMPLETE -

DMC 1 FAIL (Caution)

- (1) CTP, XPDR/TCAS Select XPDR 2
(2) FD Couple to right side.
(3) ACP, SAT (if installed) Select on
(4) Anti-ice systemOperate manually in icing conditions.
(5) Affected systemsReview
- COMPLETE -

DMC 2 FAIL (Caution)

- (1) CTP, XPDR/TCAS Select XPDR 1
(2) FDCouple to left side.
(3) Anti-ice systemOperate manually in icing conditions

DMC 2 FAIL (Caution) (Cont'd)

- (4) Affected systemsReview
- COMPLETE -

DUAL ADS FAIL (Caution)

NOTE

The FPV red flag is shown on one of the PFD in the cases of ADS 3 and ADS 4 failure or ADS 1 and ADS 2 failure.

- (1) Land at the nearest suitable airport.
- (2) L and R PFD show ADS source data indication in amber:
- ➔ Yes – Go to (3)
 - ➔ No – Go to (10)
- (3) L and R PFD show ADS source data indication in amber:
- (4) Reversion panel, L or R PFD Select ADS until ADS source data indication is not amber on both PFDs.
- (5) Airspeed and altitude are shown on ISI:
- ➔ Yes – Go to (6)
 - ➔ No – Go to (8)
- (6) Airspeed and altitude are shown on ISI:
- (7) No further action required.
- COMPLETE -

DUAL ADS FAIL (Caution) (Cont'd)

(8) Airspeed and altitude are not shown on ISI:

NOTE

If ADS 3 and ADS 4 are failed, the ISI will not show
airspeed and altitude.

(9) Reversion panel, ISI Select ADS until ISI shows
airspeed and altitude.

- COMPLETE -

(10) L and R PFD show ADS source data indication not in amber:

(11) Airspeed and altitude are shown on ISI:

➔ **Yes – Go to (12)**

➔ **No – Go to (14)**

(12) Airspeed and altitude are shown on ISI:

(13) Review ADS sources shown.

- COMPLETE -

(14) Airspeed and altitude are not shown on ISI:

(15) Reversion panel, ISI Select ADS until ISI shows
airspeed and altitude.

NOTE

If ADS 3 and ADS 4 are failed, the ISI will not show
airspeed and altitude.

- COMPLETE -

EFIS COMPARATOR FAIL (Caution)

(1) Flight instruments Monitor

EFIS COMPARATOR FAIL (Caution) (Cont'd)

- (2) ISI If available, cross-check
- COMPLETE -

EFIS MISCOMPARE (Caution)

- (1) IAS and/or ALT amber flag(s) shown:
➔ Yes – Go to (2)
➔ No – Go to (5)
- (2) IAS and/or ALT amber flag(s) shown:
- (3) Flight instruments Cross-check
- (4) Reversion panel, L or R PFD Select ADS as required until flag(s) removed.

- COMPLETE -

- (5) IAS and/or ALT amber flag(s) not shown:
- (6) ROL or PIT or ATT or HDG amber flag(s) shown:
➔ Yes – Go to (7)
➔ No – Go to (10)
- (7) ROL or PIT or ATT or HDG amber flag(s) shown:
- (8) Flight instruments Cross-check
- (9) Reversion panel, L or R PFD Select IRS as required until flag(s) removed.

- COMPLETE -

- (10) ROL or PIT or ATT or HDG amber flag(s) not shown:
- (11) RAD amber flag shown:
➔ Yes – Go to (12)
➔ No – Go to (13)

EFIS MISCOMPARE (Caution) (Cont'd)

(12) RAD amber flag shown:

NOTE

Altitude call-outs may be degraded.

– COMPLETE –

(13) RAD amber flag not shown:

(14) FPV amber flag shown:

- ➔ **Yes – Go to (15)**
- ➔ **No – Go to (17)**

(15) FPV amber flag shown:

(16) Flight instruments Cross-check

NOTE

FPV from one or both PFD may be degraded.

– COMPLETE –

(17) FPV amber flag not shown:

(18) VSPD amber flag shown:

- ➔ **Yes – Go to (19)**
- ➔ **No – Go to (21)**

(19) VSPD amber flag shown:

(20) FMS, PERF – DEP/ARR SET VSPEEDS

– COMPLETE –

EFIS MISCOMPARE (Caution) (Cont'd)

(21) VSPD amber flag not shown:

(22) FMS or VNAV amber flag shown:

➔ Yes – [Go to \(23\)](#)

➔ No – [Go to \(25\)](#)

(23) FMS or VNAV amber flag shown:

(24) Select a different type of approach, if required.

– COMPLETE –

(25) Approach Status Annunciation (ASA) field in amber box:

(26) No further action required.

– COMPLETE –

ENG DSPL MISCOMPARE (Caution)

(1) Reversion panel, DISPLAYSWAP

(2) Engine instruments Monitor

– COMPLETE –

IPC 1 FAIL (Caution)

(1) SPD mode MAN

NOTE

Do not re-select FMS SPD mode.

(2) **FMS 2 FAIL** or **IPC 2 FAIL** caution message is also shown:

➔ Yes – [Go to \(3\)](#)

➔ No – [Go to \(5\)](#)

IPC 1 FAIL (Caution) (Cont'd)

(3) **FMS 2 FAIL** or **IPC 2 FAIL** caution message is also shown:

(4) Dual FMS failure procedure Accomplish. [Refer to Navigation – Dual FMS failure.](#)

– COMPLETE –

(5) **FMS 2 FAIL** or **IPC 2 FAIL** caution message not shown:

(6) NAV SRC FMS 2

(7) XFR Select to right side.

NOTE

- 1. LPV and RNP AR approaches are prohibited with single FMS operative.
- 2. With single FMS operation, auto tuning for a NAV to NAV transfer will not occur on the cross-side PFD. Manual tuning is required.

(8) Affected systems Review

(9) Go-around procedure Accomplish, if required. [Refer to Normal procedures – Go-around procedure.](#)

– COMPLETE –

IPC 2 FAIL (Caution)

(1) SPD mode MAN

NOTE

Do not re-select FMS SPD mode.

IPC 2 FAIL (Caution) (Cont'd)

- (2) **FMS 1 FAIL** or **IPC 1 FAIL** caution message is also shown:
 - ➔ **Yes** – Go to (3)
 - ➔ **No** – Go to (5)
- (3) **FMS 1 FAIL** or **IPC 1 FAIL** caution message is also shown:
- (4) Dual FMS failure procedure Accomplish. [Refer to Navigation – Dual FMS failure.](#)

– COMPLETE –

- (5) **FMS 1 FAIL** or **IPC 1 FAIL** caution message not shown:
- (6) NAV SRC FMS 1
- (7) XFR Select to left side.

NOTE

- 1. LPV and RNP AR approaches are prohibited with single FMS operative.
- 2. With single FMS operation, auto tuning for a NAV to NAV transfer will not occur on the cross-side PFD. Manual tuning is required.
- (8) Affected systems Review
- (9) Go-around procedure Accomplish, if required. [Refer to Normal procedures – Go-around procedure.](#)

– COMPLETE –

IPC 3 FAIL (Caution)

- (1) Terrain and aircraft configuration Monitor

IPC 3 FAIL (Caution) (Cont'd)

- (2) Affected systemsReview
- COMPLETE -

IPC 4 FAIL (Caution)

- (1) Affected systemsReview
- COMPLETE -

IRS SAME SOURCE (Caution)

- (1) Flight instruments Monitor
(2) Land at the nearest suitable airport.
- COMPLETE -

IRS SET HEADING (Caution)

- (1) FMS, POS – IRS – SET IRS HDG Enter Mag heading

NOTE

IRS SET HEADING caution message stays posted and affected IRS cannot be displayed on PFD until it is aligned.

- COMPLETE -

L CTP TUNING FAIL (Caution)

- (1) L CTP OFF
(2) Use AVIONIC, CTP tab for L CTP functions.

L CTP TUNING FAIL (Caution) (Cont'd)

- (3) ACP, SAT (if installed) Select on
- COMPLETE -

L-R RADIO TUNING (Caution)

- (1) L CTP OFF
- (2) R CTP OFF
- (3) CCP menu Select CNS
- (4) ACP, SAT (if installed) Select on
- COMPLETE -

R CTP TUNING FAIL (Caution)

- (1) R CTP OFF
- (2) Use AVIONIC, CTP tab for R CTP functions.
- COMPLETE -

RAD ALT FAIL (Caution)

- (1) Affected systems Review
- COMPLETE -

WXR ON (Caution)

- (1) WX Select
- (2) WXR STBY
- COMPLETE -

XPDR 1 FAIL (Caution)

- (1) CTP, XPDR/TCAS Select XPDR 2
- COMPLETE -

XPDR 2 FAIL (Caution)

- (1) CTP, XPDR/TCAS Select XPDR 1
- COMPLETE -

Display unit failure procedure

- (1) ECL If required, move to available MFW.
(2) Autopilot If required, select to operative side.
(3) Transponder If required, select to operative side.
- COMPLETE -

Unreliable airspeed

- (1) Autopilot Disengage
(2) Autothrottle Select off
(3) FD Select off

NOTE

Disregard FPV.

If below safe altitude:

(Max climb)

Unreliable airspeed (Cont'd)

- (4) PitchSet 12.5 degrees NU
- (5) Thrust leversAdvance to MAX
- (6) SLAT/FLAP configurationMaintain
- (7) SPOILER lever RET
- (8) Landing gear UP

When at a safe altitude:

(Climb)

- (9) PitchSet 5 degrees NU
- (10) Thrust levers Set CLB thrust
- (11) Flaps Retract in stages
- (12) AURAL WARNINHIB, if required.



Fly-by-wire envelope protection is not available.
Minimize control inputs.

NOTE

Select the longest runway available.

- (13) ADS reversion Review available ADS sources.

NOTE

- 1. Consider airspeed unreliable until at least two ADS sources agree and have been cross-checked with the N1/thrust data that follows.
- 2. Stick shaker may be unreliable.

Unreliable airspeed (Cont'd)

3. FPV and FD should be considered unreliable until confirmed otherwise.
4. Check all available data sources, including:
 - FMS, POS – GNSS for ground speed,
 - FMS, POS – GNSS INFORMATION for GNSS ALT (if required),
 - Acceleration cue (if available).
5. Wind vector may be unreliable.

(14) Aircraft weight:

- ➔ **Light (less than 45359 kg [100000 lb]) – Go to (15)**
- ➔ **Mid (45359 kg [100000 lb] to 54431 kg [120000 lb]) – Go to (29)**
- ➔ **Heavy (more than 54431 kg [120000 lb]) – Go to (43)**

(15) Aircraft at light weight (less than 45359 kg [100000 lb]):

(16) Use the appropriate procedure for required phase of flight.

Cruise:

(250 KIAS / 0.7 M / FLAP 0 / landing gear up)

(17) Airspeed Use N1/pitch table data

250 KIAS / 0.7 M cruise / FLAP 0 / landing gear up		
Altitude	Cruise N1 (%) [1]	Pitch (degrees NU)
30001 to 40000 ft	81	1.5
20001 to 30000 ft	74	0.5
10001 to 20000 ft	65	0.5

Unreliable airspeed (Cont'd)

250 KIAS / 0.7 M cruise / FLAP 0 / landing gear up		
Altitude	Cruise N1 (%) ^[1]	Pitch (degrees NU)
0 to 10000 ft	58	1.0

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

Descent:

(250 KIAS / 0.74 M / FLAP 0 / landing gear up)

(18) Thrust levers IDLE

(19) PitchSet 3.0 degrees ND

Level-off and slowdown:

(190 KIAS / FLAP 0-3 / landing gear up)

(20) AirspeedUse N1/pitch data

190 KIAS / level / FLAP 0 / landing gear up		
Altitude	Cruise N1 (%) ^[1]	Pitch (degrees NU)
15000 ft	53	3.5
10000 ft	49	3.5
5000 ft	46	3.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(21) SLAT/FLAP leverSelect in stages to achieve
FLAP 3

Unreliable airspeed (Cont'd)

Configure for approach:

(150 KIAS / FLAP 3 / landing gear up)

(22) Airspeed Use N1/pitch data

150 KIAS / level / FLAP 3 / landing gear up		
Altitude	Cruise N1 (%) ^[1]	Pitch (degrees NU)
15000 ft	57	2.5
10000 ft	53	2.5
5000 ft	49	2.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(23) SLAT/FLAP lever 4

(24) Landing gear DN

(25) Airspeed Use N1/pitch data to achieve 150 KIAS

Target: 150 KIAS / FLAP 4 / landing gear down	
Cruise N1 (%) ^[1]	Pitch (degrees NU)
65	1.0

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

Final approach descent:

NOTE

Vary N1 as required to maintain 3 degree glideslope.

Unreliable airspeed (Cont'd)

(26) Thrust Use data below for target $V_{REF(FLAP 4)}$

V _{REF} / 3 degree glideslope / FLAP 4 / landing gear down		
Altitude	Glideslope N1 (%) ^[1]	Pitch (degrees NU)
SL to 5000 ft	40	3.5
5001 to 10000 ft	43	3.0

^[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(27) OLD factor Multiply by 1.20

After touch down:

(28) SPOILER leverFULL

- COMPLETE -

(29) Aircraft at mid weight (45359 kg [100000 lb] to 54431 kg [120000 lb]):

(30) Use the appropriate procedure for required phase of flight.

Cruise:

(250 KIAS / 0.7 M / FLAP 0 / landing gear up)

(31) Airspeed Use N1/pitch table data

250 KIAS / 0.7 M cruise / FLAP 0 / landing gear up		
Altitude	Cruise N1 (%) ^[1]	Pitch (degrees NU)
30001 to 40000 ft	85	2.0
20001 to 30000 ft	77	1.5

Unreliable airspeed (Cont'd)

250 KIAS / 0.7 M cruise / FLAP 0 / landing gear up		
Altitude	Cruise N1 (%) ^[1]	Pitch (degrees NU)
10001 to 20000 ft	67	1.5
0 to 10000 ft	59	1.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

Descent:

(250 KIAS / 0.74 M / FLAP 0 / landing gear up)

(32) Thrust levers IDLE

(33) PitchSet 2.0 degrees ND

Level-off and slowdown:

(190 KIAS / FLAP 0-3 / landing gear up)

(34) AirspeedUse N1/pitch data

190 KIAS / level / FLAP 0 / landing gear up		
Altitude	Cruise N1 (%) ^[1]	Pitch (degrees NU)
15000 ft	57	4.5
10000 ft	53	4.5
5000 ft	49	4.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(35) SLAT/FLAP leverSelect in stages to achieve
FLAP 3

Unreliable airspeed (Cont'd)

Configure for approach:

(150 KIAS / FLAP 3 / landing gear up)

(36) Airspeed Use N1/pitch data

150 KIAS / level / FLAP 3 / landing gear up		
Altitude	Cruise N1 (%) ^[1]	Pitch (degrees NU)
15000 ft	61	4.5
10000 ft	57	4.5
5000 ft	53	4.5

^[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(37) SLAT/FLAP lever 4

(38) Landing gear DN

(39) Airspeed Use N1/pitch data to achieve 150 KIAS.

Target: 150 KIAS / FLAP 4 / landing gear down	
Cruise N1 (%) ^[1]	Pitch (degrees NU)
67	2.8

^[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

Final approach descent:

NOTE

Vary N1 as required to maintain 3 degree glideslope.

Unreliable airspeed (Cont'd)

(40) Thrust Use data below for target $V_{REF(FLAP 4)}$

V_{REF} / 3 degree glideslope / FLAP 4 / landing gear down		
Altitude	Glideslope N1 (%) [1]	Pitch (degrees NU)
SL to 5000 ft	45	3.5
5001 to 10000 ft	48	3.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(41) OLD factor Multiply by 1.20

After touch down:

(42) SPOILER leverFULL

- COMPLETE -

(43) Aircraft at heavy weight (more than 54431 kg [120000 lb]):

(44) Use the appropriate procedure for required phase of flight.

Cruise:

(250 KIAS / 0.7 M / FLAP 0 / landing gear up)

(45) Airspeed Use N1/pitch data

250 KIAS / 0.7 M cruise / FLAP 0 / landing gear up		
Altitude	Cruise N1 (%) [1]	Pitch (degrees NU)
30001 to 40000 ft	87	3.0
20001 to 30000 ft	78	2.0
10001 to 20000 ft	68	2.0

Unreliable airspeed (Cont'd)

250 KIAS / 0.7 M cruise / FLAP 0 / landing gear up		
Altitude	Cruise N1 (%) ^[1]	Pitch (degrees NU)
0 to 10000 ft	60	2.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

Descent:

(250 KIAS / 0.74 M / FLAP 0 / landing gear up)

(46) Thrust levers IDLE

(47) PitchSet 1.0 degree ND

Level-off and slowdown:

(190 KIAS / FLAP 0-3 / landing gear up)

(48) AirspeedUse N1/pitch data

190 KIAS / level / FLAP 0 / landing gear up		
Altitude	Cruise N1 (%) ^[1]	Pitch (degrees NU)
15000 ft	60	5.5
10000 ft	56	5.5
5000 ft	52	5.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(49) SLAT/FLAP leverSelect in stages to achieve
FLAP 3

Unreliable airspeed (Cont'd)

Configure for approach:

(150 KIAS / FLAP 3 / landing gear up)

(50) Airspeed Use N1/pitch data

150 KIAS / level / FLAP 3 / landing gear up		
Altitude	Cruise N1 (%) ^[1]	Pitch (degrees NU)
15000 ft	65	6.0
10000 ft	60	6.0
5000 ft	56	6.0

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(51) SLAT/FLAP lever 4

(52) Landing gear DN

(53) Airspeed Use N1/pitch data to achieve 150 KIAS.

Target: 150 KIAS / FLAP 4 / landing gear down	
Cruise N1 (%) ^[1]	Pitch (degrees NU)
69	4.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

Final approach descent:

NOTE

Vary N1 as required to maintain 3 degree glideslope.

Unreliable airspeed (Cont'd)

(54) Thrust Use data below for target $V_{REF(FLAP 4)}$

V _{REF} / 3 degree glideslope / FLAP 4 / landing gear down		
Altitude	Glideslope N1 (%) ^[1]	Pitch (degrees NU)
SL to 5000 ft	48	3.5
5001 to 10000 ft	52	3.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(55) OLD factor Multiply by 1.20

After touch down:

(56) SPOILER leverFULL

- COMPLETE -

LANDING GEAR, WHEEL, AND BRAKE SYSTEM

BRAKE OVHT (Warning)	04-16-3
CONFIG BRAKE (Warning)	04-16-4
GEAR (Warning)	04-16-4
AUTOBRAKE FAIL (Caution)	04-16-4
BRAKE FAIL (Caution)	04-16-4
BRAKE ON (Caution)	04-16-5
CPLT BRAKE PEDAL FAIL (Caution)	04-16-6
GEAR DISAGREE (Caution)	04-16-7
GEAR FAIL (Caution)	04-16-8
L BRAKE FAIL (Caution)	04-16-10
NORM BRAKE FAIL (Caution)	04-16-11
NOSE STEER FAIL (Caution)	04-16-13
NOSE STEER MISALIGN (Caution)	04-16-15
NOSE TIRE LO PRESS (Caution)	04-16-15
PARK BRAKE FAIL (Caution)	04-16-15
PLT BRAKE PEDAL FAIL (Caution)	04-16-15
R BRAKE FAIL (Caution)	04-16-15
WOW FAIL (Caution)	04-16-17
Gear up or unsafe landing procedure	04-16-17
Low tire pressure landing procedure	04-16-19

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BRAKE OVHT (Warning)

- (1) Airspeed Not more than 250 KIAS
- (2) Landing gear DN
- (3) STATUS synoptic page Select
- (4) Brake temperature Monitor
- (5) **BRAKE OVHT** warning message goes out and brake temperature is decreasing:
 - ➔ **Yes** – Go to (6)
 - ➔ **No** – Go to (8)
- (6) **BRAKE OVHT** warning message goes out and brake temperature is decreasing:
 - (7) Landing gear As required

– COMPLETE –

- (8) **BRAKE OVHT** warning message stays on:
- (9) Land at the nearest suitable airport.
- (10) Tire pressure Check
- (11) Tire pressure is normal or only one tire pressure is amber:
 - ➔ **Yes** – Go to (12)
 - ➔ **No** – Go to (14)
- (12) Tire pressure is normal or only one tire pressure is amber:
- (13) No further action required.

– COMPLETE –

BRAKE OVHT (Warning) (Cont'd)

- (14) Tire pressure is amber for both tires on the same side:
- (15) Low tire pressure landing procedure Accomplish [Refer to Landing gear, wheel, and brake system](#)
– Low tire pressure landing procedure.

– COMPLETE –

CONFIG BRAKE (Warning)

- (1) TakeoffDiscontinue

– COMPLETE –

GEAR (Warning)

- (1) Landing gear DN

– COMPLETE –

AUTOBRAKE FAIL (Caution)

- (1) Manual brakes Apply, as required.
- (2) AUTOBRAKE OFF

– COMPLETE –

BRAKE FAIL (Caution)

- (1) AUTOBRAKE OFF
- (2) In flight:
- ➔ Yes – [Go to \(3\)](#)
 - ➔ No – [Go to \(7\)](#)

BRAKE FAIL (Caution) (Cont'd)

(3) In flight:

On approach:

- (4) OLD factor Multiply by 2.90
- (5) Thrust reversersAfter landing, apply as required.



Park brake may not be available.

- (6) PARK BRAKE Apply during landing roll.

- COMPLETE -

(7) On ground:

- (8) Thrust reversers Apply as required.



Park brake may not be available.

- (9) PARK BRAKE Apply as required.

- COMPLETE -

BRAKE ON (Caution)

(1) In flight:

- ➔ Yes – Go to (2)
- ➔ No – Go to (9)

BRAKE ON (Caution) (Cont'd)

- (2) In flight:
- (3) PARK BRAKE OFF

NOTE

If message stays on in flight, uneven braking may occur during landing roll.

- (4) **BRAKE ON** caution message goes out:
 - ➔ Yes – Go to (5)
 - ➔ No – Go to (7)
- (5) **BRAKE ON** caution message goes out:
- (6) No further action required.
– COMPLETE –
- (7) **BRAKE ON** caution message stays on:
- (8) AUTOBRAKE OFF
– COMPLETE –
- (9) On ground:
- (10) Do not take off.
– COMPLETE –

CPLT BRAKE PEDAL FAIL (Caution)

NOTE

Braking not available with right side pedals. Left side braking available.

– COMPLETE –

GEAR DISAGREE (Caution)

- (1) Landing gear lever selected UP:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (15)
- (2) **Landing gear lever selected UP:**
- (3) Airspeed Not more than 250 KIAS
- (4) Landing gear lever DN
- (5) **GEAR DISAGREE** caution message goes out:
 - ➔ **Yes** – Go to (6)
 - ➔ **No** – Go to (8)
- (6) **GEAR DISAGREE** caution message goes out:
- (7) Land at the nearest suitable airport.

– COMPLETE –
- (8) **GEAR DISAGREE** caution message stays on:
- (9) ALTN GEAR DN
- (10) **GEAR DISAGREE** caution message goes out:
 - ➔ **Yes** – Go to (11)
 - ➔ **No** – Go to (13)
- (11) **GEAR DISAGREE** caution message goes out:
- (12) Land at the nearest suitable airport.

NOTE

Gear UP selection is not available.

– COMPLETE –

GEAR DISAGREE (Caution) (Cont'd)

(13) **GEAR DISAGREE** caution message stays on:

(14) Gear up or unsafe landing procedure Accomplish [Refer to Landing gear, wheel, and brake system](#)
– Gear up or unsafe landing procedure.

– COMPLETE –

(15) Landing gear lever selected DN:

(16) ALTN GEAR DN

(17) **GEAR DISAGREE** caution message goes out:

- ➔ Yes – [Go to \(18\)](#)
- ➔ No – [Go to \(20\)](#)

(18) **GEAR DISAGREE** caution message goes out:

(19) Land at the nearest suitable airport.

NOTE

Gear UP selection is not available.

– COMPLETE –

(20) **GEAR DISAGREE** caution message stays on:

(21) Gear up or unsafe landing procedure Accomplish [Refer to Landing gear, wheel, and brake system](#)
– Gear up or unsafe landing procedure.

– COMPLETE –

GEAR FAIL (Caution)

GEAR FAIL (Caution) (Cont'd)

- (1) Airspeed Not more than 250 KIAS
- (2) Landing gear DN
- (3) Landing gear confirmed down and locked (three greens):
 - ➔ **Yes** – Go to (4)
 - ➔ **No** – Go to (7)
- (4) Landing gear confirmed down and locked (three greens):**
- (5) Do not retract landing gear.
- (6) Land at the nearest suitable airport.

– COMPLETE –

- (7) Landing gear not confirmed down and locked:**
- (8) ALTN GEAR DN

NOTE

Gear UP selection is not available.

- (9) LDG LTS, TAXI NARROW
- (10) LDG LTS, NOSE ON
- (11) Landing gear confirmed down and locked (three greens):
 - ➔ **Yes** – Go to (12)
 - ➔ **No** – Go to (14)
- (12) Landing gear confirmed down and locked (three greens):**
- (13) Land at the nearest suitable airport.

NOTE

Gear UP selection is not available.

– COMPLETE –

GEAR FAIL (Caution) (Cont'd)

(14) Landing gear not confirmed down and locked:

- (15) Gear up or unsafe landing procedure Accomplish [Refer to Landing gear, wheel, and brake system](#)
– Gear up or unsafe landing procedure.

– COMPLETE –

L BRAKE FAIL (Caution)

(1) **DC ESS BUS 1** or **DC ESS BUS 2** caution message is also shown:

- ➔ Yes – Go to (2)
- ➔ No – Go to (4)

(2) **DC ESS BUS 1** or **DC ESS BUS 2** caution message is also shown:

(3) No further action required.

– COMPLETE –

(4) **DC ESS BUS 1** or **DC ESS BUS 2** caution message is not shown:

(5) AUTOBRAKE OFF

(6) In flight:

- ➔ Yes – Go to (7)
- ➔ No – Go to (11)

(7) In flight:

On approach:

(8) OLD factor Multiply by 1.50

(9) BrakesAfter landing, apply with caution.

L BRAKE FAIL (Caution) (Cont'd)

NOTE

Anti-skid may not be available on left brakes.

(10) Thrust reversersAfter landing, apply as required.

- COMPLETE -

(11) On ground:

(12) Brakes Apply with caution.

NOTE

Anti-skid may not be available on left brakes.

(13) Thrust reversers Apply as required.

- COMPLETE -

NORM BRAKE FAIL (Caution)

(1) ALTN BRAKE ON

(2) AUTOBRAKE OFF

(3) In flight:

➔ **Yes** – Go to (4)

➔ **No** – Go to (8)

(4) In flight:

On approach:

(5) OLD factor Multiply by 1.50

(6) Brakes After landing, apply light to moderate braking.

NORM BRAKE FAIL (Caution) (Cont'd)



Extreme caution is required during braking to avoid tire damage or blowout.

- (7) Thrust reversersAfter landing, apply to maximum extent.

NOTE

Park brake may not be available.

- COMPLETE -

- (8) **On ground:**
- (9) Brakes Apply with caution.



Extreme caution is required during braking to avoid tire damage or blowout.

- (10) Thrust reversersApply to maximum extent.

NOTE

Park brake may not be available.

- COMPLETE -

NOSE STEER FAIL (Caution)

- (1) In flight:
 - ➔ Yes – Go to (2)
 - ➔ No – Go to (16)
- (2) In flight:
- (3) FLT CTRL DIRECT warning or caution message also shown:
 - ➔ Yes – Go to (4)
 - ➔ No – Go to (6)
- (4) FLT CTRL DIRECT warning or caution message also shown:
Before landing:
- (5) During landing roll, use differential braking, rudder, and engine thrust as required to assist in directional control.

– COMPLETE –
- (6) FLT CTRL DIRECT warning or caution message not shown:
- (7) NOSE STEER OFF
- (8) NOSE STEER Select on
- (9) **NOSE STEER FAIL** caution message goes out:
 - ➔ Yes – Go to (10)
 - ➔ No – Go to (12)
- (10) **NOSE STEER FAIL** caution message goes out:
- (11) No further action required.

– COMPLETE –
- (12) **NOSE STEER FAIL** caution message stays on:
- (13) NOSE STEER OFF

NOSE STEER FAIL (Caution) (Cont'd)

NOTE

Select the longest runway with minimal crosswind.

On approach:

(14) OLD factor Multiply by 1.20

Before landing:

(15) During landing roll, use differential braking, rudder, and engine thrust as required to assist in directional control.

– COMPLETE –

(16) On ground:

(17) Stop the aircraft. Use differential braking, rudder, and engine thrust as required to assist in directional control.

(18) Nose steering tiller and rudderCenter

(19) NOSE STEER OFF

(20) NOSE STEER Select on

(21) **NOSE STEER FAIL** caution message goes out:

➔ Yes – Go to (22)

➔ No – Go to (24)

(22) **NOSE STEER FAIL** caution message goes out:

(23) No further action required.

– COMPLETE –

(24) **NOSE STEER FAIL** caution message stays on:

(25) NOSE STEER OFF

– COMPLETE –

NOSE STEER MISALIGN (Caution)

- (1) Do not taxi.
- (2) NOSE STEERConfirm OFF

- COMPLETE -

NOSE TIRE LO PRESS (Caution)

- (1) Use differential braking, rudder, and engine thrust as required to assist in directional control.

- COMPLETE -

PARK BRAKE FAIL (Caution)

- (1) Maintain braking until wheels are chocked.

- COMPLETE -

PLT BRAKE PEDAL FAIL (Caution)

NOTE

Braking not available with left side pedals. Right side braking available.

- COMPLETE -

R BRAKE FAIL (Caution)

- (1) **DC ESS BUS 1** or **DC ESS BUS 2** caution message is also shown:
 - ➔ **Yes** – [Go to \(2\)](#)
 - ➔ **No** – [Go to \(4\)](#)

R BRAKE FAIL (Caution) (Cont'd)

- (2) **DC ESS BUS 1 or DC ESS BUS 2 caution message is also shown:**
- (3) No further action required.

– COMPLETE –

- (4) **DC ESS BUS 1 or DC ESS BUS 2 caution message is not shown:**
- (5) AUTOBRAKE OFF
- (6) In flight:
 - ➔ **Yes** – Go to (7)
 - ➔ **No** – Go to (11)

(7) **In flight:**

On approach:

- (8) OLD factor Multiply by 1.50
- (9) BrakesAfter landing, apply with caution.

NOTE

Anti-skid may not be available on right brakes.

- (10) Thrust reversersAfter landing, apply as required.

– COMPLETE –

(11) **On ground:**

- (12) Brakes Apply with caution.

NOTE

Anti-skid may not be available on right brakes.

- (13) Thrust reversers Apply as required.

– COMPLETE –

WOW FAIL (Caution)



1. Touchdown protection is inoperative. Do not apply brakes until all landing gear are on the ground.
2. Nosewheel steering may not be available.
3. Do not land on contaminated runway.

- (1) EICAS and all synoptic pages Monitor
- (2) AUTOBRAKE OFF
- (3) OLD factor Multiply by 1.30

- COMPLETE -

Gear up or unsafe landing procedure

Preparation:

- (1) Cabin crew Brief
- (2) SEAT BELTS ON
- (3) TAWS, GEAR INHIB
- (4) Cockpit door Latch open
- (5) Harness Tighten and lock

On approach:

- (6) EMER DEPRESS ON
- (7) APU (if available) START
- (8) HYD 2B ON
- (9) PTU ON

Gear up or unsafe landing procedure (Cont'd)

- (10) AUTOBRAKE OFF
- (11) SLAT/FLAP lever 5

Before contact:

NOTE

If any gear is down:

Land at a normal landing attitude and minimum vertical rate.

If all gear are up:

Aim to touch down with minimum vertical rate at V_{REF} , at a lower than normal landing attitude (approximately 5 degrees).

- (12) EMER LTS ON
- (13) PA Give the brace command.

When stopped:

- (14) PARK BRAKE ON
- (15) L ENG run OFF
- (16) R ENG run OFF
- (17) Evacuation required:

- ➔ Yes – Go to (18)
- ➔ No – Go to (20)

(18) Evacuation required:

- (19) Emergency evacuation Accomplish [Refer to Evacuation](#)
– [Emergency evacuation](#).

– COMPLETE –

Gear up or unsafe landing procedure (Cont'd)

(20) Evacuation not required:

WARNING

The aircraft is not in a safe condition until the gear locking pins are installed.

- COMPLETE -

Low tire pressure landing procedure

- (1) Hold low pressure main gear off as long as possible.
- (2) Use differential braking, rudder, and engine thrust as required to assist in directional control.
- (3) OLD factor Multiply by 1.30

- COMPLETE -

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MISCELLANEOUS SYSTEMS

CREW OXY LO PRESS (Caution) 04-17-3

ELT ON (Caution) 04-17-3

EMER LTS OFF (Caution) 04-17-3

KU BAND ON (Caution) <44309202C>..... 04-17-3

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CREW OXY LO PRESS (Caution)

- (1) Descent 10000 feet or lowest safe altitude, whichever is higher.

- COMPLETE -

ELT ON (Caution)

- (1) ELT TEST/RESET
(2) ELT ARM

- COMPLETE -

EMER LTS OFF (Caution)

Emergency lights required on:

- (1) EMER LTS ARM

- COMPLETE -

KU BAND ON (Caution) <44309202C>

- (1) Discontinue deicing/anti-icing.
(2) Advise deicing operator to clear all deicing personnel from the aircraft.

- COMPLETE -

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NAVIGATION

APPROACH NOT AVAIL (Caution) 04-18-3

FMS 1 FAIL (Caution) 04-18-3

FMS 2 FAIL (Caution) 04-18-4

FMS FUEL (Caution) 04-18-5

FMS OEI PERF ACTIVE (Caution) 04-18-6

FMS PERF DEP CONFIG (Caution) 04-18-7

FMS PERF DEP VSPEEDS (Caution) 04-18-8

FMS POSITION (Caution) 04-18-8

GNSS NOT AVAIL (Caution) 04-18-8

LPV NOT AVAIL (Caution) 04-18-8

TAWS FAIL (Caution) 04-18-9

TCAS FAIL (Caution) 04-18-9

TCAS OFF (Caution) 04-18-9

UNABLE RNP (Caution) 04-18-9

Dual FMS failure 04-18-9

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APPROACH NOT AVAIL (Caution)

- (1) FMS, POS – GNSS Select
- (2) GNSS are selected:
 - ➔ **Yes** – [Go to \(3\)](#)
 - ➔ **No** – [Go to \(5\)](#)
- (3) **GNSS are selected:**
- █ (4) Select a non-GNSS type of approach, if required.

– COMPLETE –
- (5) **GNSS are not selected:**
- (6) GNSS 1 and 2 Select

– COMPLETE –

FMS 1 FAIL (Caution)

- (1) SPD mode MAN

NOTE

Do not re-select FMS SPD mode.

- (2) **FMS 2 FAIL** or **IPC 2 FAIL** caution message is also shown:
 - ➔ **Yes** – [Go to \(3\)](#)
 - ➔ **No** – [Go to \(5\)](#)
- (3) **FMS 2 FAIL** or **IPC 2 FAIL** caution message is also shown:
- (4) Dual FMS failure procedure Accomplish [Refer to Navigation – Dual FMS failure.](#)

– COMPLETE –

FMS 1 FAIL (Caution) (Cont'd)

- (5) **FMS 2 FAIL** or **IPC 2 FAIL** caution message not shown:
- (6) NAV SRC FMS 2
- (7) XFR Select to right side.

NOTE

- 1. LPV and RNP AR approaches are prohibited with single FMS operative.
 - 2. With single FMS operation, auto tuning for a NAV to NAV transfer will not occur on the cross-side PFD. Manual tuning is required.
- (8) Go-around procedure Accomplish, if required. [Refer to Normal procedures – Go-around procedure.](#)

– COMPLETE –

FMS 2 FAIL (Caution)

- (1) SPD mode MAN

NOTE

Do not re-select FMS SPD mode.

- (2) **FMS 1 FAIL** or **IPC 1 FAIL** caution message is also shown:
 - ➔ **Yes** – [Go to \(3\)](#)
 - ➔ **No** – [Go to \(5\)](#)
- (3) **FMS 1 FAIL** or **IPC 1 FAIL** caution message is also shown:
- (4) Dual FMS failure procedure Accomplish [Refer to Navigation – Dual FMS failure.](#)

– COMPLETE –

FMS 2 FAIL (Caution) (Cont'd)

- (5) **FMS 1 FAIL or IPC 1 FAIL caution message not shown:**
- (6) NAV SRCFMS 1
- (7) XFR Select to left side.

NOTE

- 1. LPV and RNP AR approaches are prohibited with single FMS operative.
 - 2. With single FMS operation, auto tuning for a NAV to NAV transfer will not occur on the cross-side PFD. Manual tuning is required.
- (8) Go-around procedure Accomplish, if required. [Refer to Normal procedures – Go-around procedure.](#)

- COMPLETE -

FMS FUEL (Caution)

- (1) Fuel quantity Check
- (2) Fuel leak suspected:
 - ➔ **Yes – Go to (3)**
 - ➔ **No – Go to (5)**
- (3) **Fuel leak suspected:**
- (4) Fuel leak suspect procedure Accomplish [Refer to Fuel – FUEL LEAK SUSPECT.](#)

- COMPLETE -

FMS FUEL (Caution) (Cont'd)

- (5) **Fuel leak not suspected:**
- (6) Re-plan flight as necessary.

– COMPLETE –

FMS OEI PERF ACTIVE (Caution)

- (1) Both engines operating:
 - ➔ **Yes** – [Go to \(2\)](#)
 - ➔ **No** – [Go to \(7\)](#)
- (2) **Both engines operating:**
- (3) Thrust leversMatched
- (4) FMS – THRUST – OEI FMS PERFCNCL
- (5) Autothrottle Select off
- (6) Autothrottle Select on then as required

– COMPLETE –

- (7) **One engine inoperative:**
- (8) Determine inoperative engine:
 - ➔ **Left engine** – [Go to \(9\)](#)
 - ➔ **Right engine** – [Go to \(15\)](#)
- (9) **Left engine inoperative:**
- (10) Left engine shutdown procedure previously accomplished:
 - ➔ **Yes** – [Go to \(11\)](#)
 - ➔ **No** – [Go to \(13\)](#)

FMS OEI PERF ACTIVE (Caution) (Cont'd)

(11) Left engine shutdown procedure previously accomplished:

(12) No further action required.

– COMPLETE –

(13) Left engine shutdown procedure not previously accomplished:

(14) Shutdown – Left engine procedure Accomplish [Refer to Power plant – Shutdown – Left engine.](#)

– COMPLETE –

(15) Right engine inoperative:

(16) Right engine shutdown procedure previously accomplished:

➔ **Yes** – [Go to \(17\)](#)

➔ **No** – [Go to \(19\)](#)

(17) Right engine shutdown procedure previously accomplished:

(18) No further action required.

– COMPLETE –

(19) Right engine shutdown procedure not previously accomplished:

(20) Shutdown – Right engine procedure Accomplish [Refer to Power plant – Shutdown – Right engine.](#)

– COMPLETE –

FMS PERF DEP CONFIG (Caution)

(1) FMS, PERF – DEPReview

– COMPLETE –

FMS PERF DEP VSPEEDS (Caution)

- (1) FMS, PERF – DEPReview

NOTE

Flight plan changes may require reselecting FMS PERF DEP page data including DERATED THRUST prior to re-posting VSPEEDS.

– COMPLETE –

FMS POSITION (Caution)

- (1) FMS, POS – FMSLOAD

– COMPLETE –

GNSS NOT AVAIL (Caution)

- (1) Select a non-GNSS type of approach, if required.

NOTE

RNP AR approaches are prohibited.

– COMPLETE –

LPV NOT AVAIL (Caution)

NOTE

SBAS guidance not available. LPV minima not authorized.

- (1) FMS, PERF – ARR – ARRIVAL DATA
– APPROACH MODESelect RNP

LPV NOT AVAIL (Caution) (Cont'd)

- (2) Approach minima Reset
- COMPLETE -

TAWS FAIL (Caution)

- (1) TAWS, TERRINHIB
(2) TERRAIN overlay De-select
(3) Terrain and aircraft configuration Monitor
- COMPLETE -

TCAS FAIL (Caution)

- (1) ATCAdvise
- COMPLETE -

TCAS OFF (Caution)

- (1) CTP, XPDR/TCAS Select AUTO
- COMPLETE -

UNABLE RNP (Caution)

- (1) ATCAdvise
(2) Discontinue approach.
- COMPLETE -

Dual FMS failure

- (1) Autopilot Disengage

Dual FMS failure (Cont'd)

- (2) Autothrottle Select off
- (3) NAV source VOR or LOC

NOTE

RNP AR approaches are prohibited.

- (4) SPD mode MAN
- (5) Autopilot As required
- (6) Autothrottle As required
- (7) ATC Advise
- (8) Fuel quantity Monitor
- (9) Affected systems Review
- (10) CTP, LDG ELEV – MAN Enter destination elevation

On approach:

- (11) Flap extension speeds Use $V_{FE} - 10$ KIAS
- (12) AVIONIC synoptic page Select
- (13) AVIO, VSPEEDS Enter VFTO, VREF, and VAC
- (14) AVIONIC synoptic page Set VSPEEDS

– COMPLETE –

POWER PLANT

DUAL ENG FAIL (Warning) 04-19-3

L ENG FIRE (Warning) 04-19-8

L ENG OIL PRESS (Warning) 04-19-10

R ENG FIRE (Warning) 04-19-11

R ENG OIL PRESS (Warning) 04-19-12

AT RETARD INHIBIT (Caution) 04-19-13

ENG OIL LO TEMP (Caution) 04-19-14

ENG SETTING MISMATCH (Caution) 04-19-14

ENG VIBRATION (Caution) <Post-SB BD500-732003> or <Mod 732003> 04-19-15

L ENG EXCEEDANCE (Caution) <Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003> 04-19-18

L ENG FAIL (Caution) 04-19-19

L ENG NACELLE OVHT (Caution) 04-19-19

L ENG OIL FILTER (Caution) 04-19-20

L ENG OPER DEGRADED (Caution) 04-19-21

L ENG START ABORT (Caution) 04-19-21

L ENG STARTER FAIL ON (Caution) 04-19-22

L REVERSER FAIL (Caution) 04-19-23

L REVERSER UNLOCK (Caution) 04-19-23

L THROTTLE FAIL (Caution) 04-19-24

L-R ENG FUEL FILTER (Caution) 04-19-25

R ENG EXCEEDANCE (Caution) <Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003> 04-19-25

R ENG FAIL (Caution) 04-19-26

R ENG NACELLE OVHT (Caution) 04-19-26

R ENG OIL FILTER (Caution)	04-19-27
R ENG OPER DEGRADED (Caution)	04-19-28
R ENG START ABORT (Caution)	04-19-28
R ENG STARTER FAIL ON (Caution)	04-19-29
R REVERSER FAIL (Caution)	04-19-30
R REVERSER UNLOCK (Caution)	04-19-30
R THROTTLE FAIL (Caution)	04-19-31
THROTTLE IN REVERSE (Caution)	04-19-32
Relight – Left engine	04-19-32
Relight – Right engine	04-19-34
Shutdown – Left engine	04-19-36
Shutdown – Right engine	04-19-38

DUAL ENG FAIL (Warning)

- (1) RAT GEN ON
- (2) Airspeed Green dot
- (3) Plan to land at the nearest suitable airport.
- (4) APU (if available) START
- (5) Thrust levers IDLE
- (6) L ENG run OFF
- (7) R ENG run OFF
- (8) Relight envelope Establish

Windmill envelope:

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

- Airspeed – Not less than 250 KIAS
- Altitude – Not above 27000 feet

ATS envelope:

- Use ATS envelope only if APU bleed air available.
- Start one engine at a time.
- Airspeed – Not more than 250 KIAS
- Altitude – Not above 23000 feet

(9) Windmill envelope available:

- ➔ **Yes** – [Go to \(10\)](#)
- ➔ **No** – [Go to \(35\)](#)

(10) Windmill envelope available:

- (11) L ENG run ON
- (12) R ENG run ON

DUAL ENG FAIL (Warning) (Cont'd)

(13) Monitor engine RELIGHT/START icon:

- ➔ **Both engines started** – Go to (14)
- ➔ **One engine started** – Go to (17)
- ➔ **No engine started** – Go to (25)

(14) Both engines started:

(15) Thrust levers As required

(16) Land at the nearest suitable airport.

– COMPLETE –

(17) One engine started:

(18) Thrust lever (operating engine) As required

(19) Autothrottle Select off

(20) Determine inoperative engine:

- ➔ **Left engine** – Go to (21)
- ➔ **Right engine** – Go to (23)

(21) Left engine inoperative:

(22) Shutdown – Left engine procedure Accomplish [Refer to Power plant – Shutdown – Left engine.](#)

– COMPLETE –

(23) Right engine inoperative:

(24) Shutdown – Right engine procedure Accomplish [Refer to Power plant – Shutdown – Right engine.](#)

– COMPLETE –

DUAL ENG FAIL (Warning) (Cont'd)

(25) No engine started:

(26) Time and altitude permit another relight attempt:

➔ **Yes** – [Go to \(27\)](#)

➔ **No** – [Go to \(29\)](#)

(27) Time and altitude permit another relight attempt:

(28) DUAL ENG FAIL procedureRepeat

– COMPLETE –

(29) Time and altitude do not permit another relight attempt:

(30) Determine forced landing or ditching:

➔ **Forced landing** – [Go to \(31\)](#)

➔ **Ditching** – [Go to \(33\)](#)

(31) Forced landing:

(32) Forced landing procedure Accomplish [Refer to Ditching and forced landing](#) – [Forced landing](#).

– COMPLETE –

(33) Ditching:

(34) Ditching procedure Accomplish [Refer to Ditching and forced landing](#) – [Ditching](#).

– COMPLETE –

(35) APU ATS envelope available:

(36) ANTI-ICE, WING OFF

(37) L ENG run ON

(38) Monitor engine RELIGHT/START icon.

DUAL ENG FAIL (Warning) (Cont'd)

(39) Left engine starts:

- ➔ Yes – Go to (40)
- ➔ No – Go to (53)

(40) Left engine starts:

(41) Left thrust lever As required

(42) R ENG run ON

(43) Monitor engine RELIGHT/START icon.

(44) Right engine starts:

- ➔ Yes – Go to (45)
- ➔ No – Go to (49)

(45) Both engines started:

(46) Thrust levers As required

(47) FMS – THRUST – OEI FMS PERFCNCL

(48) Land immediately at the nearest suitable airport.

– COMPLETE –

(49) Only left engine started:

(50) Left thrust lever As required

(51) Autothrottle Select off

(52) Shutdown – Right engine procedure Accomplish [Refer to Power plant – Shutdown – Right engine.](#)

– COMPLETE –

(53) Left engine does not start:

(54) L ENG run OFF

(55) R ENG run ON

DUAL ENG FAIL (Warning) (Cont'd)

(56) Monitor engine RELIGHT/START icon.

(57) Right engine starts:

➔ **Yes** – [Go to \(58\)](#)

➔ **No** – [Go to \(62\)](#)

(58) Only right engine started:

(59) Right thrust lever As required

(60) Autothrottle Select off

(61) Shutdown – Left engine procedure Accomplish [Refer to Power plant – Shutdown – Left engine.](#)

– COMPLETE –

(62) Right engine does not start (no engine started):

(63) R ENG run OFF

(64) Time and altitude permit another relight attempt:

➔ **Yes** – [Go to \(65\)](#)

➔ **No** – [Go to \(67\)](#)

(65) Time and altitude permit another relight attempt:

(66) DUAL ENG FAIL procedure Repeat

– COMPLETE –

(67) Time and altitude do not permit another relight attempt:

(68) Determine forced landing or ditching:

➔ **Forced landing** – [Go to \(69\)](#)

➔ **Ditching** – [Go to \(71\)](#)

DUAL ENG FAIL (Warning) (Cont'd)

(69) Forced landing:

(70) Forced landing procedure Accomplish [Refer to Ditching and forced landing – Forced landing.](#)

– COMPLETE –

(71) Ditching:

(72) Ditching procedure Accomplish [Refer to Ditching and forced landing – Ditching.](#)

– COMPLETE –

L ENG FIRE (Warning)

(1) In flight:

- ➔ **Yes** – [Go to \(2\)](#)
- ➔ **No** – [Go to \(26\)](#)

(2) In flight:

- (3) Autothrottle Select off
- (4) Left thrust lever Confirm and IDLE
- (5) L ENG run Confirm and OFF
- (6) L ENG FIRE Confirm and select

After 10 seconds:

(7) L ENG, BTL 1 Select

After 30 seconds:

(8) **L ENG FIRE** warning message goes out:

- ➔ **Yes** – [Go to \(9\)](#)
- ➔ **No** – [Go to \(17\)](#)

L ENG FIRE (Warning) (Cont'd)

(9) L ENG FIRE warning message goes out:

- (10) XBLEEDMAN CLSD
- (11) L PACK OFF
- (12) APU BLEED OFF
- (13) ANTI-ICE, WING OFF
- (14) Leave/avoid icing conditions.
- (15) Land immediately at the nearest suitable airport.
- (16) Shutdown – Left engine procedure Accomplish [Refer to Power plant – Shutdown – Left engine.](#)

– COMPLETE –

(17) L ENG FIRE warning message stays on:

- (18) L ENG, BTL 2 Select
- (19) XBLEEDMAN CLSD
- (20) L PACK OFF
- (21) APU BLEED OFF
- (22) ANTI-ICE, WING OFF
- (23) Leave/avoid icing conditions.
- (24) Land immediately at the nearest suitable airport.
- (25) Shutdown – Left engine procedure Accomplish [Refer to Power plant – Shutdown – Left engine.](#)

– COMPLETE –

(26) On ground:

- (27) PARK BRAKE ON
- (28) Thrust levers IDLE
- (29) L ENG run OFF

L ENG FIRE (Warning) (Cont'd)

- (30) R ENG run OFF
- (31) L ENG FIRE Select
- (32) L ENG, BTL 1 Select
- (33) L ENG, BTL 2 Select
- (34) Emergency evacuation procedure As required [Refer to Evacuation](#)
– [Emergency evacuation.](#)

– COMPLETE –

L ENG OIL PRESS (Warning)

- (1) Autothrottle Select off
- (2) Left thrust lever Confirm and reduce towards
IDLE.
- (3) **L ENG OIL PRESS** warning message goes out:
 - ➔ **Yes** – [Go to \(4\)](#)
 - ➔ **No** – [Go to \(8\)](#)
- (4) **L ENG OIL PRESS** warning message goes out:
- (5) Left thrust lever As required
- (6) Autothrottle As required
- (7) Oil pressure Monitor

– COMPLETE –

- (8) **L ENG OIL PRESS** warning message stays on:
- (9) Shutdown – Left engine procedure Accomplish [Refer to Power plant](#)
– [Shutdown – Left engine.](#)

– COMPLETE –

R ENG FIRE (Warning)

- (1) In flight:
 - ➔ **Yes** – [Go to \(2\)](#)
 - ➔ **No** – [Go to \(24\)](#)
- (2) **In flight:**
- (3) Autothrottle Select off
- (4) Right thrust lever Confirm and IDLE
- (5) R ENG run Confirm and OFF
- (6) R ENG FIRE Confirm and select
- After 10 seconds:**
- (7) R ENG, BTL 1 Select
- After 30 seconds:**
- (8) **R ENG FIRE** warning message goes out:
 - ➔ **Yes** – [Go to \(9\)](#)
 - ➔ **No** – [Go to \(16\)](#)
- (9) **R ENG FIRE** warning message goes out:
- (10) XBLEED MAN CLSD
- (11) R PACK OFF
- (12) ANTI-ICE, WING OFF
- (13) Leave/avoid icing conditions.
- (14) Land immediately at the nearest suitable airport.
- (15) Shutdown – Right engine procedure Accomplish [Refer to Power plant – Shutdown – Right engine.](#)

– COMPLETE –

R ENG FIRE (Warning) (Cont'd)

(16) R ENG FIRE warning message stays on:

- (17) R ENG, BTL 2 Select
- (18) XBLEEDMAN CLSD
- (19) R PACK OFF
- (20) ANTI-ICE, WING OFF
- (21) Leave/avoid icing conditions.
- (22) Land immediately at the nearest suitable airport.
- (23) Shutdown – Right engine procedure Accomplish [Refer to Power plant – Shutdown – Right engine.](#)

- COMPLETE -

(24) On ground:

- (25) PARK BRAKE ON
- (26) Thrust levers IDLE
- (27) R ENG run OFF
- (28) L ENG run OFF
- (29) R ENG FIRE Select
- (30) R ENG, BTL 1 Select
- (31) R ENG, BTL 2 Select
- (32) Emergency evacuation procedure As required [Refer to Evacuation – Emergency evacuation.](#)

- COMPLETE -

R ENG OIL PRESS (Warning)

- (1) Autothrottle Select off

R ENG OIL PRESS (Warning) (Cont'd)

- (2) Right thrust lever Confirm and reduce towards IDLE.
- (3) **R ENG OIL PRESS** warning message goes out:
- ➔ **Yes** – Go to (4)
 - ➔ **No** – Go to (8)
- (4) **R ENG OIL PRESS** warning message goes out:
- (5) Right thrust lever As required
- (6) Autothrottle As required
- (7) Oil pressure Monitor
- COMPLETE –
- (8) **R ENG OIL PRESS** warning message stays on:
- (9) Shutdown – Right engine procedure Accomplish [Refer to Power plant – Shutdown – Right engine.](#)

– COMPLETE –

AT RETARD INHIBIT (Caution)

Before landing:

- (1) Autothrottle Select off
- (2) Thrust levers Operate manually

– COMPLETE –

ENG OIL LO TEMP (Caution)

- (1) In flight:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (9)
- (2) **In flight:**
- (3) Autothrottle Select off
- (4) Thrust lever (affected engine) Confirm and reduce towards IDLE.
- (5) Engine oil temperatures Monitor

When **ENG OIL LO TEMP** caution message goes out:

- (6) Thrust lever (affected engine) As required
- (7) Autothrottle As required
- (8) Engine oil temperatures Monitor

– COMPLETE –

(9) **On ground:**

- (10) Do not take off until engine oil temperature indication is in the normal range.

– COMPLETE –

ENG SETTING MISMATCH (Caution)

- (1) FMS, PERF – DEP Cancel FLEX.
- (2) FMS, PERF – DEP, TO THRUST Select as required.
- (3) FMS, PERF – DEP, VSPEEDS Set VSPEEDS.
- (4) **ENG SETTING MISMATCH** caution message goes out:
 - ➔ **YES** – Go to (5)
 - ➔ **NO** – Go to (7)

ENG SETTING MISMATCH (Caution) (Cont'd)

(5) **ENG SETTING MISMATCH** caution message goes out:

(6) No further action required.

– COMPLETE –

(7) **ENG SETTING MISMATCH** caution message stays on:

(8) FMS, PERF – DEP, TO THRUST Use TO setting.

(9) FMS, PERF – DEP, VSPEEDS Set VSPEEDS.

– COMPLETE –

<Post-SB BD500-732003> or <Mod 732003>

ENG VIBRATION (Caution)

(1) Source of vibration:

- ➔ **FAN VIB** readout – [Go to \(2\)](#)
- ➔ **N₁ or N₂ VIB** icon – [Go to \(18\)](#)

(2) **Source of vibration — FAN VIB readout:**

(3) Airplane in icing conditions:

- ➔ **Yes** – [Go to \(4\)](#)
- ➔ **No** – [Go to \(14\)](#)

(4) **Airplane in icing conditions:**

(5) Autothrottle Select off

(6) Thrust lever (affected engine(s)) Advance (not more than climb thrust).

NOTE

Vibration may increase during ice shedding.

ENG VIBRATION (Caution) (Cont'd)

- (7) **ENG VIBRATION** caution message goes out:
- ➔ **Yes** – Go to (8)
 - ➔ **No** – Go to (11)
- (8) **ENG VIBRATION** caution message goes out:
- (9) Thrust levers As required
- (10) Autothrottle As required
- COMPLETE –
- (11) **ENG VIBRATION** caution message stays on:
- (12) Thrust lever (affected engine(s)) Confirm and reduce towards
IDLE.
- (13) Leave/avoid icing conditions.
- COMPLETE –
- (14) **Airplane not in icing conditions:**
- (15) Autothrottle Select off
- (16) Thrust lever (affected engine(s)) Confirm and reduce towards
IDLE.
- (17) Vibration controlled or **ENG VIBRATION** caution message goes out:
- ➔ **Yes** – Go to (22)
 - ➔ **No** – Go to (26)
- (18) **Source of vibration — N₁ or N₂ VIB icon:**
- (19) Autothrottle Select off
- (20) Thrust lever (affected engine) Confirm and reduce towards
IDLE.

ENG VIBRATION (Caution) (Cont'd)

(21) Vibration controlled or **ENG VIBRATION** caution message goes out:

- ➔ **Yes** – Go to (22)
- ➔ **No** – Go to (26)

(22) Vibration controlled or **ENG VIBRATION caution message goes out:**

- (23) Thrust lever (affected engine) As required
- (24) Autothrottle As required
- (25) Engine instruments Monitor

– COMPLETE –

(26) Vibration not controlled or **ENG VIBRATION caution message stays on:**

NOTE

It is not recommended that an engine be shut down unless there is another indication of a severe engine abnormality.

(27) Other engine indications are normal:

- ➔ **Yes** – Go to (28)
- ➔ **No** – Go to (31)

(28) Other engine indications are normal:

- (29) Thrust levers As required
- (30) Engine instruments Monitor

– COMPLETE –

ENG VIBRATION (Caution) (Cont'd)

(31) Other engine indications are not normal:

(32) Select affected engine:

- ➔ Left engine – Go to (33)
- ➔ Right engine – Go to (35)

(33) Left engine affected:

(34) Shutdown – Left engine procedure Accomplish Refer to Power plant – Shutdown – Left engine.

– COMPLETE –

(35) Right engine affected:

(36) Shutdown – Right engine procedure Accomplish Refer to Power plant – Shutdown – Right engine.

– COMPLETE –

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

L ENG EXCEEDANCE (Caution)

(1) Left engine indications normal:

- ➔ Yes – Go to (2)
- ➔ No – Go to (4)

(2) Left engine indications normal:

(3) Left engine instruments Monitor

– COMPLETE –

(4) Left engine indications not normal:

(5) Autothrottle Select off

L ENG EXCEEDANCE (Caution) (Cont'd)

- (6) Left thrust lever Confirm and reduce towards IDLE.
- (7) **L ENG EXCEEDANCE** caution message goes out:
- ➔ **Yes** – Go to (8)
 - ➔ **No** – Go to (11)
- (8) **L ENG EXCEEDANCE** caution message goes out:
- (9) Left thrust lever As required
- (10) Left engine instruments Monitor
- COMPLETE –
- (11) **L ENG EXCEEDANCE** caution message stays on:
- (12) Shutdown – Left engine procedure Accomplish [Refer to Power plant – Shutdown – Left engine.](#)
- COMPLETE –

L ENG FAIL (Caution)

- (1) Shutdown – Left engine procedure Accomplish [Refer to Power plant – Shutdown – Left engine.](#)
- COMPLETE –

L ENG NACELLE OVHT (Caution)

- (1) Autothrottle Select off
- (2) Left thrust lever Confirm and IDLE
- (3) ANTI-ICE, L COWL OFF
- (4) Leave/avoid icing conditions.

L ENG NACELLE OVHT (Caution) (Cont'd)

After 30 seconds:

- (5) **L ENG NACELLE OVHT** caution message goes out:
 - ➔ **Yes** – Go to (6)
 - ➔ **No** – Go to (9)
- (6) **L ENG NACELLE OVHT** caution message goes out:
 - (7) Left thrust lever As required
 - (8) Autothrottle As required

– COMPLETE –
- (9) **L ENG NACELLE OVHT** caution message stays on:
 - (10) Shutdown – Left engine procedure Accomplish [Refer to Power plant – Shutdown – Left engine.](#)

– COMPLETE –

L ENG OIL FILTER (Caution)

- (1) Left engine instruments Check
 - (2) Engine indications normal:
 - ➔ **Yes** – Go to (3)
 - ➔ **No** – Go to (5)
 - (3) **Engine indications normal:**
 - (4) Left engine instruments Monitor
- COMPLETE –
- (5) **Engine indications not normal:**
 - (6) Land at the nearest suitable airport.
- COMPLETE –

L ENG OPER DEGRADED (Caution)

- (1) **L THROTTLE FAIL** caution message is also shown:
- ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (4)
- (2) **L THROTTLE FAIL** caution message is also shown:
- (3) L THROTTLE FAIL procedure Accomplish [Refer to Power plant – L THROTTLE FAIL.](#)

– COMPLETE –

- (4) **L THROTTLE FAIL** caution message is not shown:
- (5) Autothrottle Select off
- (6) Left thrust lever Avoid abrupt changes.
- (7) L BLEED Select auto
- (8) APU BLEED OFF
- (9) Avoid icing conditions.
- (10) Left engine instruments Monitor
- (11) Land at the nearest suitable airport.

– COMPLETE –

L ENG START ABORT (Caution)

- (1) L ENG run OFF

– COMPLETE –

L ENG STARTER FAIL ON (Caution)

- (1) In flight:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (15)
- (2) **In flight:**
- (3) L BLEED OFF
- (4) L PACK OFF
- (5) APU BLEED OFF
- (6) XBLEED MAN CLSD
- (7) Altitude Not above 31000 feet
- (8) ANTI-ICE, WING OFF
- (9) Leave/avoid icing conditions.
- (10) **L ENG STARTER FAIL ON** caution message goes out:
 - ➔ **Yes** – Go to (11)
 - ➔ **No** – Go to (13)
- (11) **L ENG STARTER FAIL ON** caution message goes out:
- (12) No further action required.

– COMPLETE –
- (13) **L ENG STARTER FAIL ON** caution message stays on:
- (14) Land at the nearest suitable airport.

– COMPLETE –
- (15) **On ground:**
- (16) L ENG run OFF
- (17) L BLEED OFF
- (18) APU BLEED OFF

L ENG STARTER FAIL ON (Caution) (Cont'd)

- (19) XBLEEDMAN CLSD
- (20) External air supply Remove

- COMPLETE -

L REVERSER FAIL (Caution)

NOTE

The left thrust reverser is not available.

On approach:

- (1) FMS, PERF – ARR – SLAT/FLAP 4
- (2) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)}$
- (3) OLD factor Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

- (4) SLAT/FLAP lever 4

- COMPLETE -

L REVERSER UNLOCK (Caution)

- (1) Autothrottle Select off
- (2) Left thrust lever Confirm and IDLE
- (3) Land immediately at the nearest suitable airport.

L REVERSER UNLOCK (Caution) (Cont'd)

NOTE

Both thrust reversers available after landing.

– COMPLETE –

L THROTTLE FAIL (Caution)

- (1) Autothrottle Select off
- (2) Left thrust lever Confirm and IDLE

NOTE

The left thrust lever and thrust reverser are inoperative.

- (3) Engine thrust confirmed IDLE:

- ➔ Yes – Go to (4)
- ➔ No – Go to (10)

- (4) Engine thrust confirmed IDLE:

On approach:

- (5) FMS, PERF – ARR – SLAT/FLAP 4
- (6) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)}$
- (7) OLD factor Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

- (8) SLAT/FLAP lever 4

L THROTTLE FAIL (Caution) (Cont'd)

(9) Rudder trimCentered by 1000 feet AGL

- COMPLETE -

(10) Engine thrust not IDLE:

(11) Shutdown – Left engine procedureAccomplish [Refer to Power plant – Shutdown – Left engine.](#)

- COMPLETE -

L-R ENG FUEL FILTER (Caution)

(1) Fuel flow Monitor

(2) Thrust leversAvoid abrupt changes.

(3) Land immediately at the nearest suitable airport.

- COMPLETE -

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

R ENG EXCEEDANCE (Caution)

(1) Right engine indications normal:

➔ **Yes** – [Go to \(2\)](#)

➔ **No** – [Go to \(4\)](#)

(2) Right engine indications normal:

(3) Right engine instruments Monitor

- COMPLETE -

(4) Right engine indications not normal:

(5) Autothrottle Select off

(6) Right thrust lever Confirm and reduce towards IDLE.

R ENG EXCEEDANCE (Caution) (Cont'd)

- (7) **R ENG EXCEEDANCE** caution message goes out:
- ➔ **Yes** – Go to (8)
 - ➔ **No** – Go to (11)
- (8) **R ENG EXCEEDANCE** caution message goes out:
- (9) Right thrust lever As required
- (10) Right engine instruments Monitor
- COMPLETE –
- (11) **R ENG EXCEEDANCE** caution message stays on:
- (12) Shutdown – Right engine procedure Accomplish [Refer to Power plant – Shutdown – Right engine.](#)
- COMPLETE –

R ENG FAIL (Caution)

- (1) Shutdown – Right engine procedure Accomplish [Refer to Power plant – Shutdown – Right engine.](#)
- COMPLETE –

R ENG NACELLE OVHT (Caution)

- (1) Autothrottle Select off
- (2) Right thrust lever Confirm and IDLE
- (3) ANTI-ICE, R COWL OFF
- (4) Leave/avoid icing conditions.

R ENG NACELLE OVHT (Caution) (Cont'd)

After 30 seconds:

(5) **R ENG NACELLE OVHT** caution message goes out:

➔ **Yes** – Go to (6)

➔ **No** – Go to (9)

(6) **R ENG NACELLE OVHT** caution message goes out:

(7) Right thrust lever As required

(8) Autothrottle As required

– COMPLETE –

(9) **R ENG NACELLE OVHT** caution message stays on:

(10) Shutdown – Right engine procedure Accomplish [Refer to Power plant – Shutdown – Right engine.](#)

– COMPLETE –

R ENG OIL FILTER (Caution)

(1) Right engine instruments Check

(2) Engine indications normal:

➔ **Yes** – Go to (3)

➔ **No** – Go to (5)

(3) **Engine indications normal:**

(4) Right engine instruments Monitor

– COMPLETE –

(5) **Engine indications not normal:**

(6) Land at the nearest suitable airport.

– COMPLETE –

R ENG OPER DEGRADED (Caution)

- (1) **R THROTTLE FAIL** caution message is also shown:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (4)
- (2) **R THROTTLE FAIL** caution message is also shown:
- (3) R THROTTLE FAIL procedure Accomplish [Refer to Power plant – R THROTTLE FAIL.](#)

– COMPLETE –
- (4) **R THROTTLE FAIL** caution message is not shown:
- (5) Autothrottle Select off
- (6) Right thrust lever Avoid abrupt changes.
- (7) R BLEED Select auto
- (8) APU BLEED OFF
- (9) Avoid icing conditions.
- (10) Right engine instruments Monitor
- (11) Land at the nearest suitable airport.

– COMPLETE –

R ENG START ABORT (Caution)

- (1) R ENG run OFF

– COMPLETE –

R ENG STARTER FAIL ON (Caution)

- (1) In flight:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (14)
- (2) **In flight:**
- (3) R BLEED OFF
- (4) R PACK OFF
- (5) XBLEEDMAN CLSD
- (6) Altitude Not above 31000 feet
- (7) ANTI-ICE, WING OFF
- (8) Leave/avoid icing conditions.
- (9) **R ENG STARTER FAIL ON** caution message goes out:
 - ➔ **Yes** – Go to (10)
 - ➔ **No** – Go to (12)
- (10) **R ENG STARTER FAIL ON** caution message goes out:
- (11) No further action required.

– COMPLETE –
- (12) **R ENG STARTER FAIL ON** caution message stays on:
- (13) Land at the nearest suitable airport.

– COMPLETE –
- (14) **On ground:**
- (15) R ENG run OFF
- (16) R BLEED OFF
- (17) XBLEEDMAN CLSD

– COMPLETE –

R REVERSER FAIL (Caution)

NOTE

The right thrust reverser is not available.

On approach:

- (1) FMS, PERF – ARR – SLAT/FLAP 4
- (2) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)}$
- (3) OLD factor Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

- (4) SLAT/FLAP lever 4

- COMPLETE -

R REVERSER UNLOCK (Caution)

- (1) Autothrottle Select off
- (2) Right thrust lever Confirm and IDLE
- (3) Land immediately at the nearest suitable airport.

NOTE

Both thrust reversers available after landing.

- COMPLETE -

R THROTTLE FAIL (Caution)

- (1) Autothrottle Select off
- (2) Right thrust lever Confirm and IDLE

NOTE

The right thrust lever and thrust reverser are inoperative.

- (3) Engine thrust confirmed IDLE:

- ➔ **Yes** – Go to (4)
- ➔ **No** – Go to (10)

- (4) **Engine thrust confirmed IDLE:**

On approach:

- (5) FMS, PERF – ARR – SLAT/FLAP 4
- (6) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)}$
- (7) OLD factor Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

- (8) SLAT/FLAP lever 4
- (9) Rudder trim Centered by 1000 feet AGL

– COMPLETE –

R THROTTLE FAIL (Caution) (Cont'd)

(10) Engine thrust not IDLE:

- (11) Shutdown – Right engine procedure Accomplish [Refer to Power plant – Shutdown – Right engine.](#)

– COMPLETE –

THROTTLE IN REVERSE (Caution)

- (1) Thrust levers Advance to IDLE or greater.

– COMPLETE –

Relight – Left engine

- (1) APU (if available) START
(2) Autothrottle Select off
(3) Left thrust lever Confirm and IDLE
(4) L ENG run Confirm and OFF
(5) Relight envelope Establish

ATS envelope:

- Airspeed – Not more than 250 KIAS
- Altitude – Not above 27000 feet (crossbleed) or 23000 feet (APU)

Windmill envelope:

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

- Airspeed – Not less than 250 KIAS
- Altitude – Not above 27000 feet

- (6) ANTI-ICE, WING OFF

Relight – Left engine (Cont'd)



For crossbleed relights, ensure the operating engine EGT is less than 970°C before selecting the ENG run switch to ON.

- (7) L ENG run ON
- (8) Monitor engine RELIGHT/START icon.
- (9) Engine relights:
 - ➔ **Yes – Go to (10)**
 - ➔ **No – Go to (18)**
- (10) Engine relights:**
- (11) Left thrust lever As required
- (12) FMS – THRUST – OEI FMS PERFCNCL
- (13) Autothrottle As required
- (14) SPD mode As required
- (15) TCAS Select AUTO
- (16) ANTI-ICE, WING As required
- (17) Land at the nearest suitable airport.

– COMPLETE –

- (18) Engine does not relight:**
- (19) L ENG run Confirm and OFF
- (20) ANTI-ICE, WING AUTO
- (21) Autothrottle As required
- (22) Altitude Not above 31000 feet

Relight – Left engine (Cont'd)

(23) Land at the nearest suitable airport.

On approach:

(24) FMS, PERF – ARR – SLAT/FLAP 4

(25) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)}$

(26) OLD factor Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

(27) SLAT/FLAP lever 4

(28) Rudder trim Centered by 1000 feet AGL

- COMPLETE -

Relight – Right engine

(1) APU (if available) START

(2) Autothrottle Select off

(3) Right thrust lever Confirm and IDLE

(4) R ENG run Confirm and OFF

(5) Relight envelope Establish

ATS envelope:

- Airspeed – Not more than 250 KIAS
- Altitude – Not above 27000 feet (crossbleed) or 23000 feet (APU)

Relight – Right engine (Cont'd)

Windmill envelope:

- <Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>*
- Airspeed – Not less than 250 KIAS
 - Altitude – Not above 27000 feet

(6) ANTI-ICE, WING OFF



For crossbleed relights, ensure the operating engine EGT is less than 970°C before selecting the ENG run switch to ON.

(7) R ENG run ON

(8) Monitor engine RELIGHT/START icon.

(9) Engine relights:

- ➔ **Yes** – [Go to \(10\)](#)
- ➔ **No** – [Go to \(18\)](#)

(10) Engine relights:

(11) Right thrust lever As required

(12) FMS – THRUST – OEI FMS PERFCNCL

(13) Autothrottle As required

(14) SPD mode As required

(15) TCAS Select AUTO

(16) ANTI-ICE, WING As required

Relight – Right engine (Cont'd)

(17) Land at the nearest suitable airport.

– COMPLETE –

(18) Engine does not relight:

(19) R ENG run Confirm and OFF

(20) ANTI-ICE, WING AUTO

(21) Autothrottle As required

(22) Altitude Not above 31000 feet

(23) Land at the nearest suitable airport.

On approach:

(24) FMS, PERF – ARR – SLAT/FLAP 4

(25) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)}$

(26) OLD factor Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

(27) SLAT/FLAP lever 4

(28) Rudder trim Centered by 1000 feet AGL

– COMPLETE –

Shutdown – Left engine

(1) APU (if available) START

(2) Autothrottle Select off

(3) Left thrust lever Confirm and IDLE

Shutdown – Left engine (Cont'd)

- (4) L ENG run Confirm and OFF
- (5) SPD mode MAN

NOTE

Do not re-select FMS SPD mode.

- (6) TCAS TA ONLY
- (7) Engine damage suspected or precautionary shutdown:
 - ➔ **Yes – Go to (8)**
 - ➔ **No – Go to (17)**

(8) Engine damage suspected or precautionary shutdown:

- (9) Autothrottle As required
- (10) Altitude Not above 31000 feet
- (11) Land at the nearest suitable airport.

NOTE

Do not rely on FMS fuel predictions.

On approach:

- (12) FMS, PERF – ARR – SLAT/FLAP 4
- (13) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)}$
- (14) OLD factor Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Shutdown – Left engine (Cont'd)

Before landing:

- (15) SLAT/FLAP lever 4
- (16) Rudder trimCentered by 1000 feet AGL

– COMPLETE –

(17) Engine damage not suspected or not a precautionary shutdown:

- (18) Relight – Left engine procedureAccomplish [Refer to Power plant – Relight – Left engine.](#)

– COMPLETE –

Shutdown – Right engine

- (1) APU (if available)START
- (2) Autothrottle Select off
- (3) Right thrust leverConfirm and IDLE
- (4) R ENG runConfirm and OFF
- (5) SPD mode MAN

NOTE

Do not re-select FMS SPD mode.

- (6) TCAS TA ONLY
- (7) Engine damage suspected or precautionary shutdown:
 - ➔ **Yes** – [Go to \(8\)](#)
 - ➔ **No** – [Go to \(17\)](#)
- (8) Engine damage suspected or precautionary shutdown:
- (9) Autothrottle As required

Shutdown – Right engine (Cont'd)

(10) Altitude Not above 31000 feet

NOTE

With the APU generator ON, the center fuel tank empty of fuel and the left engine at power, the **FUEL IMBALANCE** caution message can post repeatedly. It is acceptable to do repetitive, preemptive manual transfers to reduce the frequency of the **FUEL IMBALANCE** caution message.

(11) Land at the nearest suitable airport.

NOTE

Do not rely on FMS fuel predictions.

On approach:

(12) FMS, PERF – ARR – SLAT/FLAP 4

(13) FMS, PERF – ARR – VREF $V_{REF(FLAP 4)}$

(14) OLD factor Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

(15) SLAT/FLAP lever 4

(16) Rudder trim Centered by 1000 feet AGL

– COMPLETE –

Shutdown – Right engine (Cont'd)

(17) Engine damage not suspected or not a precautionary shutdown:

(18) Relight – Right engine procedure Accomplish [Refer to Power plant – Relight – Right engine.](#)

– COMPLETE –

REJECTED TAKEOFF

Rejected takeoff 04-20-3

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Rejected takeoff

- (1) Thrust levers IDLE
- (2) Wheel brakes Maximum
- (3) Thrust reversers Maximum, consistent with
directional control.
- (4) ATC Advise

When stopped:

- (5) PARK BRAKE ON

(6) Evacuation required:

- ➔ **Yes** – Go to (7)
- ➔ **No** – Go to (9)

(7) Evacuation required:

- (8) Emergency evacuation procedure Accomplish [Refer to Evacuation](#)
– [Emergency evacuation](#).

– COMPLETE –

(9) Evacuation not required:

- (10) Passengers Advise

– COMPLETE –

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SMOKE, FIRE AND FUMES

Smoke/fire/fumes procedure 04-21-3

Smoke or fumes removal 04-21-17

AFT CARGO FIRE (Warning) 04-21-19

EQUIP BAY SMOKE (Warning) 04-21-19

FWD CARGO FIRE (Warning) 04-21-23

LAV SMOKE (Warning) 04-21-23

MLG BAY OVHT (Warning) 04-21-24

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Smoke/fire/fumes procedure

- (1) Oxygen masks If required, on, 100%, and EMERGENCY
- (2) Cabin and crew communication Establish
- (3) Plan to land at the nearest suitable airport.



During smoke/fire/fumes emergencies, prepare to land the aircraft without delay while conducting fire suppression and/or smoke evacuation procedures.



Passenger masks should not be deployed when performing smoke or fire procedures.

- (4) EQUIP COOLING, INLET OFF
- (5) CABIN PWR OFF
- (6) RECIRC AIR OFF



Any time smoke/fumes becomes the greatest threat accomplish the [Smoke or fumes removal](#) procedure.

Smoke/fire/fumes procedure (Cont'd)



Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.

- (7) Time permits and source of smoke/fire/fumes can be quickly identified and eliminated:
- ➔ Yes – [Go to \(11\)](#)
 - ➔ No – [Go to \(8\)](#)
- (8) Time does not permit and source of smoke/fire/fumes cannot be quickly identified:



The crew should consider an overweight landing, tailwind landing, ditching or off-airport landing.

- (9) Land immediately at the nearest suitable airport.
- (10) Smoke or fumes removal procedure Accomplish, if required. [Refer to Smoke, fire and fumes – Smoke or fumes removal.](#)

– COMPLETE –

Smoke/fire/fumes procedure (Cont'd)

(11) Time permits and source of smoke/fire/fumes can be quickly identified and eliminated:

(12) Select appropriate procedure for source of smoke/fire/fumes:

- ➔ **Air-conditioning** – [Go to \(13\)](#)
- ➔ **Electrical** – [Go to \(33\)](#)
- ➔ **Cabin** – [Go to \(107\)](#)

(13) Source is identified as coming from air-conditioning:

NOTE

Smoke may take a considerable amount of time to dissipate.

(14) XBLEEDMAN CLSD

(15) APU BLEED OFF

(16) L PACK OFF

(17) Altitude Not above 31000 feet

(18) Smoke/fire/fumes stops:

- ➔ **Yes** – [Go to \(19\)](#)
- ➔ **No** – [Go to \(22\)](#)

Smoke/fire/fumes procedure (Cont'd)

(19) Smoke/fire/fumes stops:



Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.

(20) Land immediately at the nearest suitable airport.

(21) Smoke or fumes removal procedure Accomplish, if required. [Refer to Smoke, fire and fumes – Smoke or fumes removal.](#)

– COMPLETE –

(22) Smoke/fire/fumes does not stop:

(23) L PACK Select auto

(24) R PACK OFF

(25) Smoke/fire/fumes stops:

➔ **Yes** – [Go to \(26\)](#)

➔ **No** – [Go to \(29\)](#)

Smoke/fire/fumes procedure (Cont'd)

(26) Smoke/fire/fumes stops:



Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.

(27) Land immediately at the nearest suitable airport.

(28) Smoke or fumes removal procedure Accomplish, if required. [Refer to Smoke, fire and fumes – Smoke or fumes removal.](#)

- COMPLETE -

(29) Smoke/fire/fumes does not stop:

(30) R PACK Select auto



The crew should consider an overweight landing, tailwind landing, ditching, or off-airport landing.

(31) Land immediately at the nearest suitable airport.

(32) Smoke or fumes removal procedure Accomplish, if required. [Refer to Smoke, fire and fumes – Smoke or fumes removal.](#)

- COMPLETE -

Smoke/fire/fumes procedure (Cont'd)

(33) Source is identified as coming from electrical:

NOTE

Smoke may take a considerable amount of time to dissipate.

The series of steps that follow isolate each channel of the electrical system, one at a time.

(34) ECL DU 5

(35) ELEC synoptic page Select

Channel 1 isolation:

(36) BUS ISOL MAIN

(37) Affected generator OFF

(38) BATT 1 OFF

(39) CTP, XPDR/TCAS Select XPDR 2

(40) FD Couple to left side.

NOTE

To recover the use of autopilot, ensure FD is coupled to left side and re-engage autopilot if necessary.

(41) Smoke/fire/fumes stops:

➔ **Yes** – Go to (42)

➔ **No** – Go to (47)

Smoke/fire/fumes procedure (Cont'd)

(42) Smoke/fire/fumes stops:



1. Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.
2. Do not land on contaminated runway.

(43) Land immediately at the nearest suitable airport.

(44) Reversion panel, L or R PFD Select ADS until ADS source data indication is not amber on both PFDs.

NOTE

RNP AR approaches are prohibited.

On approach:

(45) FMS, PERF – ARR – VREF V_{REF}

(46) OLD factor Multiply by 1.70

– COMPLETE –

(47) Smoke/fire/fumes does not stop:

Channel 2 isolation:

(48) BUS ISOL Confirm MAIN

(49) BATT 1 AUTO

(50) Affected generator Select on

Smoke/fire/fumes procedure (Cont'd)

After 30 seconds:

- (51) ECL DU 2
- (52) Affected generator OFF
- (53) BATT 2 OFF
- (54) CTP, XPDR/TCAS Select XPDR 1
- (55) CTP 2 Select off
- (56) CTP 1 ATC on VHF 1, if required
- (57) Smoke/fire/fumes stops:
 - ➔ **Yes** – Go to (58)
 - ➔ **No** – Go to (70)

(58) Smoke/fire/fumes stops:



1. Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.
2. Do not land on contaminated runway.

- (59) Land immediately at the nearest suitable airport.
- (60) Reversion panel, L or R PFD Select ADS until ADS source data indication is not amber on both PFDs.
- (61) Use AVIONIC, CTP tab for R CTP functions.

Smoke/fire/fumes procedure (Cont'd)

NOTE

RNP AR approaches are prohibited.

On approach:

(62) Check SLAT position:

- ➔ **SLAT position IN** – [Go to \(63\)](#)
- ➔ **SLAT position OUT/MID/FULL** – [Go to \(67\)](#)

(63) SLAT position IN:

(64) Maximum landing weight Use the table to determine the value and correct for wind and slope.

Smoke/fire/fumes procedure (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V _{REF} +15KT					
OAT		PRESSURE ALTITUDE (FT)					
°C	°F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	85230 (187900)	82680 (182300)	80010 (176400)	77380 (170600)	74750 (164800)	71840 (158400)
0	32	82280 (181400)	79690 (175700)	77060 (169900)	74430 (164100)	71840 (158400)	68990 (152100)
20	68	79600 (175500)	77010 (169800)	74380 (164000)	71800 (158300)	69260 (152700)	66540 (144500)
30	86	78330 (172700)	75740 (167000)	73160 (161300)	70530 (155500)	68030 (150000)	65140 (139200)
40 AND ABOVE	104 AND ABOVE	77110 (170000)	74520 (164300)	71930 (158600)	69350 (152900)	65770 (145000)	60910 (134300)

CS300_LW_ATA27_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 15 kt
Figure 04–21–1

Smoke/fire/fumes procedure (Cont'd)

- (65) FMS, PERF – ARR – VREF $V_{REF} + 15$
(66) OLD factor Multiply by 2.05

– COMPLETE –

(67) SLAT position OUT/MID/FULL:

- (68) FMS, PERF – ARR – VREF $V_{REF} + 5$
(69) OLD factor Multiply by 1.85

– COMPLETE –

(70) Smoke/fire/fumes does not stop:

Channel 3 isolation:

- (71) HYD 3A OFF
(72) BATT 2 AUTO
(73) Affected generator Select on
(74) CTP 2 Select on

After 30 seconds:

- (75) ECL DU 5
(76) BUS ISOL ESS
(77) CTP, XPDR/TCAS Select XPDR 2
(78) CTP 1 Select off
(79) CTP 2 ATC on VHF 2, if required
(80) Smoke/fire/fumes stops:

- ➔ **Yes – Go to (81)**
- ➔ **No – Go to (88)**

Smoke/fire/fumes procedure (Cont'd)

(81) Smoke/fire/fumes stops:



Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.

(82) Land immediately at the nearest suitable airport.

(83) FD Couple to right side.

(84) Reversion panel, L or R PFD Select ADS until ADS source data indication is not amber on both PFDs.

(85) Use AVIONIC, CTP tab for L CTP functions.

NOTE

RNP AR approaches are prohibited.

On approach:

(86) FMS, PERF – ARR – VREF V_{REF}

(87) OLD factor Multiply by 1.15

– COMPLETE –

(88) Smoke/fire/fumes does not stop:

These steps will deploy the RAT:

(89) BUS ISOL AUTO

(90) CTP 1 Select on, ATC on VHF 1

Smoke/fire/fumes procedure (Cont'd)

- (91) ECL DU 2
- (92) RAT GEN ON
- (93) CTP, XPDR/TCAS Select XPDR 1
- (94) FD Couple to left side.



The **EMER PWR ONLY** warning message will be shown after all generators are selected off. The steps are included in this procedure and do not need to be done separately.

- (95) L GEN OFF
- (96) R GEN OFF
- (97) APU GEN OFF
- (98) L PACK Confirm auto
- (99) R PACK Confirm auto
- (100) EQUIP COOLING, EXHAUST ON
- (101) Land immediately at the nearest suitable airport.
- (102) Leave/avoid icing conditions.



1. Below 148 KIAS the RAT generator may be inoperative and the airplane will be operating on battery power only.

Smoke/fire/fumes procedure (Cont'd)

- 2. Brakes are not available when batteries are depleted.
- 3. Do not land on contaminated runway.

(103) Airspeed Not less than 155 KIAS until landing assured.

NOTE

RNP AR approaches are prohibited.

On approach:

(104) Airspeed Not less than 155 KIAS until landing assured.



- 1. Below 148 KIAS the batteries may be the only source of electrical power, and last for at least 5 minutes. Batteries will recharge above 148 KIAS if go-around is required.
- 2. Brakes are not available when batteries are depleted.

(105) Approach speed V_{REF}

(106) OLD factor Multiply by 1.30

(107) Source is identified as coming from the cabin:

(108) Designated crew member Advise

- (a) To isolate and extinguish source of smoke or fire, and to secure the area.

Smoke/fire/fumes procedure (Cont'd)

- (b) To turn off all electrical sources via CMS.



Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.

(109) Land immediately at the nearest suitable airport.

(110) Smoke or fumes removal procedure Accomplish, if required. [Refer to Smoke, fire and fumes – Smoke or fumes removal.](#)

- COMPLETE -

Smoke or fumes removal

- (1) EMER DEPRESS ON
- (2) Descent 10000 feet or lowest safe altitude, whichever is higher.
- (3) PACK FLOW HI (if available)
- (4) AUTO PRESS Select auto
- (5) Smoke is evacuating at an acceptable rate:
 - ➔ **Yes** – [Go to \(6\)](#)
 - ➔ **No** – [Go to \(9\)](#)

Smoke or fumes removal (Cont'd)

(6) Smoke is evacuating at an acceptable rate:



Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.

(7) Land immediately at the nearest suitable airport.

(8) Smoke/fire/fumes procedure Continue, if required. [Refer to Smoke, fire and fumes – Smoke/fire/fumes procedure.](#)

- COMPLETE -

(9) Smoke is not evacuating at an acceptable rate:

(10) AUTO PRESS MAN



Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.

(11) Land immediately at the nearest suitable airport.

Smoke or fumes removal (Cont'd)

(12) Smoke/fire/fumes procedure Continue, if required. Refer to
Smoke, fire and fumes –
Smoke/fire/fumes procedure.

- COMPLETE -

AFT CARGO FIRE (Warning)

WARNING

During smoke/fire/fumes emergencies, prepare to land the aircraft without delay while conducting fire suppression and/or smoke evacuation procedures.

- (1) CARGO, AFT FIRE Select
- (2) RECIRC AIR OFF
- (3) AIR, CARGO, AFT OFF
- (4) CARGO BTL Select
- (5) Land immediately at the nearest suitable airport.

- COMPLETE -

EQUIP BAY SMOKE (Warning)

WARNING

During smoke/fire/fumes emergencies, prepare to land the aircraft without delay while conducting fire suppression and/or smoke evacuation procedures.

EQUIP BAY SMOKE (Warning) (Cont'd)

- (1) **EQUIP BAY OVHT** warning message is also shown:
 - ➔ **Yes** – Go to (2)
 - ➔ **No** – Go to (27)
- (2) **EQUIP BAY OVHT** warning message is also shown:
- (3) EQUIP COOLING, EXHAUST ON
- (4) RECIRC AIR OFF
- (5) CABIN PWR OFF
- (6) EQUIP COOLING, INLET OFF
- (7) All packs and bleeds available:
 - ➔ **Yes** – Go to (8)
 - ➔ **No** – Go to (10)
- (8) **All packs and bleeds available:**
- (9) Land immediately at the nearest suitable airport.

- COMPLETE -
- (10) **One or two pack(s) or one or two bleed(s) not available:**
- (11) Oxygen masks If required, on, 100%
- (12) EMER DEPRESS ON
- (13) EDM ON
- (14) SEAT BELTS ON
- (15) Cabin Advise
- (16) PAX OXY (if required) DPLY
- (17) SPOILER lever FULL then MAX
- (18) Descent 10000 feet or lowest safe altitude, whichever is higher.

EQUIP BAY SMOKE (Warning) (Cont'd)

(19) HDG As required

At a safe altitude:

(20) SPOILER lever RET

(21) Oxygen masks As required

(22) EDM Select off

(23) Transponder As required

(24) FCP modes As required

(25) Land immediately at the nearest suitable airport.

(26) Unpressurized flight procedure Accomplish [Refer to Air-conditioning, bleed and pressurization – Unpressurized flight procedure.](#)

– COMPLETE –

(27) EQUIP BAY OVHT warning message is not shown:

(28) RECIRC AIR OFF

(29) CABIN PWR OFF

(30) EQUIP COOLING, INLET OFF

(31) EQUIP COOLING, EXHAUST VLV ONLY

(32) All packs and bleeds available:

➔ **Yes** – [Go to \(33\)](#)

➔ **No** – [Go to \(35\)](#)

(33) All packs and bleeds available:

(34) Land immediately at the nearest suitable airport.

– COMPLETE –

EQUIP BAY SMOKE (Warning) (Cont'd)

(35) One or two pack(s) or one or two bleed(s) not available:

- (36) Oxygen masks If required, on, 100%
- (37) EMER DEPRESS ON
- (38) EDM ON
- (39) SEAT BELTS ON
- (40) Cabin Advise
- (41) PAX OXY (if required) DPLY
- (42) SPOILER lever FULL then MAX
- (43) Descent 10000 feet or lowest safe altitude, whichever is higher.
- (44) HDG As required

At a safe altitude:

- (45) SPOILER lever RET
- (46) Oxygen masks As required
- (47) EDM Select off
- (48) Transponder As required
- (49) FCP modes As required
- (50) Land immediately at the nearest suitable airport.
- (51) Unpressurized flight procedure Accomplish [Refer to Air-conditioning, bleed and pressurization – Unpressurized flight procedure.](#)

- COMPLETE -

FWD CARGO FIRE (Warning)

WARNING

During smoke/fire/fumes emergencies, prepare to land the aircraft without delay while conducting fire suppression and/or smoke evacuation procedures.

- (1) CARGO, FWD FIRE Select
- (2) RECIRC AIR OFF
- (3) AIR, CARGO, FWD OFF
- (4) CARGO BTL Select
- (5) Land immediately at the nearest suitable airport.

- COMPLETE -

LAV SMOKE (Warning)

WARNING

During smoke/fire/fumes emergencies, prepare to land the aircraft without delay while conducting fire suppression and/or smoke evacuation procedures.

- (1) SEAT BELTS ON
- (2) Cabin crew Advise
- (3) Smoke or fumes removal procedure Accomplish, if required. [Refer to Smoke, fire and fumes – Smoke or fumes removal.](#)

- COMPLETE -

MLG BAY OVHT (Warning)

- (1) Airspeed Not more than 250 KIAS
- (2) Landing gear DN
- (3) **MLG BAY OVHT** warning message goes out:
 - ➔ **Yes** – Go to (4)
 - ➔ **No** – Go to (6)
- (4) **MLG BAY OVHT** warning message goes out:
- (5) Landing gear As required
– COMPLETE –
- (6) **MLG BAY OVHT** warning message stays on:
- (7) Land at the nearest suitable airport.
- (8) STATUS synoptic page Select
- (9) Tire pressure Check
- (10) Tire pressure is normal or only one tire pressure is amber:
 - ➔ **Yes** – Go to (11)
 - ➔ **No** – Go to (13)
- (11) **Tire pressure is normal or only one tire pressure is amber:**
- (12) No further action required.
– COMPLETE –
- (13) **Tire pressure is amber for both tires on the same side:**
- (14) Low tire pressure landing procedure Accomplish [Refer to Landing gear, wheel, and brake system](#)
– [Low tire pressure landing procedure.](#)

– COMPLETE –

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INTRODUCTION

This section gives the general performance information that must be used when determining the airplane performance using the Computerized Airplane Flight Manual (CAFM).

The airspeeds and airplane configurations for takeoff, climb and landing, as given in this chapter, must be adhered to during the appropriate phase of flight.

All performance data are based on the conditions that follows:

- Minimum guaranteed engine thrust with allowance made for the installation effects, including bleed and mechanical horsepower extraction.
- All brakes operating normally, with anti-skid and automatic ground lift dumping operational.
- International Standard Atmosphere (ISA), with corrections for non-standard conditions, when applicable.
- Wind speed is measured at a height of 10 meters (33 feet) above the surface during the takeoff and landing phases.
- Enroute wind speed is based upon the reported wind at altitude.
- The performance data in this chapter are not valid when:
 - The weight exceeds the maximum weight as limited by climb requirements, or
 - Data are extrapolated from the values shown in the chart.
- For weight below 39009 kg (86000 lb) assume a weight of 39009 kg (86000 lb).

The CAFM is approved by Transport Canada to generate airplane performance information for Chapter 5 and Chapter 6. Any modification to the approved CAFM software application, or subsequent revision to the generated output, cancels the airworthiness approval of this information, unless the change was approved by Transport Canada. This provision remains applicable regardless of any approval statement printed on a generated output.

The most current approved version of the CAFM software and its corresponding database/data files must be confirmed applicable to the particular airplane model and configuration, as follows:

Certification basis – TC			
Option code	Engine model	Item	Part number
<72211001D>	PW1521G-3	CAFM software V4.4.0.2	FS0000001-00108
		Performance data file	FS0000004-00303
		Configuration file	FS0000003-00505

CONVERSION DATA

A. Temperature conversion

A table to convert air temperature at a given pressure altitude into a value of temperature above or below the Internal Standard atmosphere (ISA) is shown on [Figure 05–01–1](#).

Example:

[Figure 05–01–1](#) shows that at ISA + 10°C at an altitude of 29000 feet, the air temperature is –32°C.

Also given by [Figure 05–01–1](#) is a conversion of temperature from °C to °F, or vice versa.

Example:

59°F is equivalent to 15°C.

NOTE

In the CAFM calculator, temperature selection can be made in either the Outside Air Temperature (OAT) mode or Deviation from International Standard Atmosphere (DISA) mode.

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Alt. ft.	ISA -30C		ISA -20C		ISA -10C		ISA		ISA +10C		ISA +20C		ISA +30C	
	C	F	C	F	C	F	C	F	C	F	C	F	C	F
0	-15.0	5.0	-5.0	23.0	5.0	41.0	15.0	59.0	25.0	77.0	35.0	95.0	45.0	113.0
1000	-17.0	1.4	-7.0	19.4	3.0	37.4	13.0	55.4	23.0	73.4	33.0	91.4	43.0	109.4
2000	-18.9	-2.1	-8.9	15.9	1.1	33.9	11.1	51.9	21.1	69.9	31.1	87.9	41.1	105.9
3000	-20.9	-5.7	-10.9	12.3	-0.9	30.3	9.1	48.3	19.1	66.3	29.1	84.3	39.1	102.3
4000	-22.9	-9.3	-12.9	8.7	-2.9	26.7	7.1	44.7	17.1	62.7	27.1	80.7	37.1	98.7
5000	-24.9	-12.8	-14.9	5.2	-4.9	23.2	5.1	41.2	15.1	59.2	25.1	77.2	35.1	95.2
6000	-26.9	-16.4	-16.9	1.6	-6.9	19.6	3.1	37.6	13.1	55.6	23.1	73.6	33.1	91.6
7000	-28.9	-20.0	-18.9	-2.0	-8.9	16.0	1.1	34.0	11.1	52.0	21.1	70.0	31.1	88.0
8000	-30.8	-23.5	-20.8	-5.5	-10.8	12.5	-0.8	30.5	9.2	48.5	19.2	66.5	29.2	84.5
9000	-32.8	-27.1	-22.8	-9.1	-12.8	8.9	-2.8	26.9	7.2	44.9	17.2	62.9	27.2	80.9
10000	-34.8	-30.7	-24.8	-12.7	-14.8	5.3	-4.8	23.3	5.2	41.3	15.2	59.3	25.2	77.3
11000	-36.8	-34.2	-26.8	-16.2	-16.8	1.8	-6.8	19.8	3.2	37.8	13.2	55.8	23.2	73.8
12000	-38.8	-37.8	-28.8	-19.8	-18.8	-1.8	-8.8	16.2	1.2	34.2	11.2	52.2	21.2	70.2
13000	-40.8	-41.4	-30.8	-23.4	-20.8	-5.4	-10.8	12.6	-0.8	30.6	9.2	48.6	19.2	66.6
14000	-42.7	-44.9	-32.7	-26.9	-22.7	-8.9	-12.7	9.1	-2.7	27.1	7.3	45.1	17.3	63.1
15000	-44.7	-48.5	-34.7	-30.5	-24.7	-12.5	-14.7	5.5	-4.7	23.5	5.3	41.5	15.3	59.5
16000	-46.7	-52.1	-36.7	-34.1	-26.7	-16.1	-16.7	1.9	-6.7	19.9	3.3	37.9	13.3	55.9
17000	-48.6	-55.6	-38.6	-37.6	-28.6	-19.6	-18.6	-1.6	-8.6	16.4	1.4	34.4	11.4	52.4
18000	-50.7	-59.2	-40.7	-41.2	-30.7	-23.2	-20.7	-5.2	-10.7	12.8	-0.7	30.8	9.3	48.8
19000	-52.7	-62.8	-42.7	-44.8	-32.7	-26.8	-22.7	-8.8	-12.7	9.2	-2.7	27.2	7.3	45.2
20000	-54.6	-66.3	-44.6	-48.3	-34.6	-30.3	-24.6	-12.3	-14.6	5.7	-4.6	23.7	5.4	41.7
21000	-56.6	-69.9	-46.6	-51.9	-36.6	-33.9	-26.6	-15.9	-16.6	2.1	-6.6	20.1	3.4	38.1
22000	-58.6	-73.5	-48.6	-55.5	-38.6	-37.5	-28.6	-19.5	-18.6	-1.5	-8.6	16.5	1.4	34.5
23000	-60.5	-77.0	-50.5	-59.0	-40.5	-41.0	-30.5	-23.0	-20.5	-5.0	-10.5	13.0	-0.5	31.0
24000	-62.5	-80.6	-52.5	-62.6	-42.5	-44.6	-32.5	-26.6	-22.5	-8.6	-12.5	9.1	-2.5	27.4
25000	-64.5	-84.2	-54.5	-66.2	-44.5	-48.2	-34.5	-30.2	-24.5	-12.2	-14.5	5.8	-4.5	23.8
26000	-66.5	-87.7	-56.5	-69.7	-46.5	-51.7	-36.5	-33.7	-26.5	-15.7	-16.5	2.3	-6.5	20.3
27000	-68.5	-91.3	-58.5	-73.3	-48.5	-55.3	-38.5	-37.3	-28.5	-19.3	-18.5	-1.3	-8.5	16.7
28000	-70.5	-94.9	-60.5	-76.9	-50.5	-58.9	-40.5	-40.9	-30.5	-22.9	-20.5	-4.9	-10.5	13.1
29000	-72.4	-98.4	-62.4	-80.4	-52.4	-62.4	-42.4	-44.4	-32.4	-26.4	-22.4	-8.4	-12.4	9.6
30000	-74.4	-102.0	-64.4	-84.0	-54.4	-66.0	-44.4	-48.0	-34.4	-30.0	-24.4	-12.0	-14.4	6.0
31000	-76.4	-105.6	-66.4	-87.6	-56.4	-69.6	-46.4	-51.6	-36.4	-33.6	-26.4	-15.6	-16.4	2.4
32000	-78.4	-109.1	-68.4	-91.1	-58.4	-73.1	-48.4	-55.1	-38.4	-37.1	-28.4	-19.1	-18.4	-1.1
33000	-80.4	-112.7	-70.4	-94.7	-60.4	-76.7	-50.4	-58.7	-40.4	-40.7	-30.4	-22.7	-20.4	-4.7
34000	-82.4	-116.3	-72.4	-98.3	-62.4	-80.3	-52.4	-62.3	-42.4	-44.3	-32.4	-26.3	-22.4	-8.3
35000	-84.3	-119.8	-74.3	-101.8	-64.3	-83.8	-54.3	-65.8	-44.3	-47.8	-34.3	-29.8	-24.3	-11.8
36000	-86.3	-123.4	-76.3	-105.4	-66.3	-87.4	-56.3	-69.4	-46.3	-51.4	-36.3	-33.4	-26.3	-15.4
37000	-86.5	-123.7	-76.5	-105.7	-66.5	-87.7	-56.5	-69.7	-46.5	-51.7	-36.5	-33.7	-26.5	-15.7
38000	-86.5	-123.7	-76.5	-105.7	-66.5	-87.7	-56.5	-69.7	-46.5	-51.7	-36.5	-33.7	-26.5	-15.7
39000	-86.5	-123.7	-76.5	-105.7	-66.5	-87.7	-56.5	-69.7	-46.5	-51.7	-36.5	-33.7	-26.5	-15.7
40000	-86.5	-123.7	-76.5	-105.7	-66.5	-87.7	-56.5	-69.7	-46.5	-51.7	-36.5	-33.7	-26.5	-15.7
41000	-86.5	-123.7	-76.5	-105.7	-66.5	-87.7	-56.5	-69.7	-46.5	-51.7	-36.5	-33.7	-26.5	-15.7

Altitude ISA temperature conversion
Figure 05-01-1

B. Weight conversion

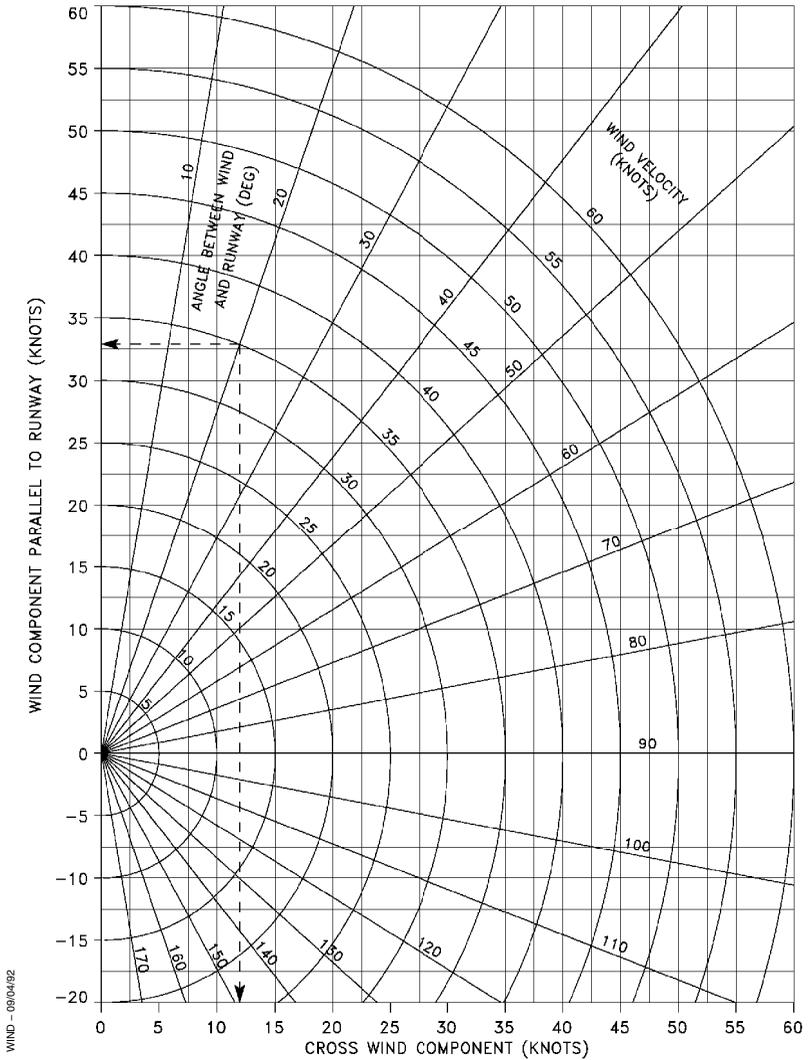
Weight conversion from imperial units (lb) to metric units (kg) and vice versa, is automatically accomplished in the CAFM upon selection of the desired unit of measure.

C. Wind component

A chart to convert wind velocity into a headwind or tailwind component is shown on [Figure 05-01-2](#).

Example:

[Figure 05-01-2](#) shows that for a wind velocity of 35 kt at an angle of 20 degrees to the runway centerline, the wind component parallel to the runway (headwind) is 33 kt, with a crosswind velocity of 12 kt.



Wind component
Figure 05-01-2

CALIBRATION

A. Description

The position error corrections for airspeed and altitude are negligible for all flap settings and all airplane airspeed and pressure altitudes, for both the primary flight displays and the integrated standby instrument.

The displayed Static Air Temperature (SAT) is unreliable on the ground since TAT probe gives inaccurate reading when the airplane is static or at a low forward speed. In flight, the difference between OAT and indicated SAT is negligible.

Ground airspeed position error for FLAP 2, 3 and 4 are negligible.

FLIGHT CAPABILITIES

A. Stall speeds

Stall speed calculations for various configurations (flap setting and landing gear position) without ice accretion are provided within the Stall Speed module of the CAFM.

B. Maneuvering capabilities

Maneuvering capability calculations are provided within the Maneuvering Capability module of the CAFM. These calculations determine the maneuvering margin for a given load factor, bank angle, weight, CG position, altitude and speed combination.

This module provides the sub-calculations that follow:

- Maximum angle,
- Maximum weight,
- Minimum and maximum Mach number, and
- Maximum load factor and bank angle.

C. Climb speeds

The climb speeds to be used for the various phases of flight are given in the CAFM as follows:

- The climb speed to be used during the final takeoff phase (V_{FTO} , also known as green dot) is found in the takeoff Performance module.
- The climb speed to be used during the enroute phase (V_{ENR} , also known as green dot) is found in the Enroute Performance module.
- The climb speed to be used during the approach climb phase (V_{AC}) is calculated in the Approach Climb module of the Approach and Landing Performance calculator.
- The climb speed to be used during the landing climb or initial phase of an all engine go-around with the airplane in FLAP 4 or FLAP 5 configuration (V_{LC}), is calculated in the Landing Climb module of the Approach and Landing Performance calculator.

PERFORMANCE CONDITIONS AND CONFIGURATIONS

Values below are defined for the maximum thrust rating.

A. Minimum Control Speed, Air (V_{MCA}) at sea level <72211001D>

- V_{MCA} at FLAP 2: 100 KIAS
- V_{MCA} at FLAP 3: 100 KIAS
- V_{MCA} at FLAP 4: 95 KIAS

B. Minimum Control Speed, Ground (V_{MCG}) <72211001D>

- V_{MCG} at FLAP 2: 92 KCAS
- V_{MCG} at FLAP 3: 92 KCAS
- V_{MCG} at FLAP 4: 92 KCAS

Values above can conservatively be assumed as KIAS.

C. Minimum Control Speed, Landing (V_{MCL}) at sea level <72211001D>

- V_{MCL} at FLAP 2 / gear up: 100 KIAS
- V_{MCL} at FLAP 4 / gear up: 95 KIAS
- V_{MCL} at FLAP 4 / gear down: 103 KIAS
- V_{MCL} at FLAP 5 / gear down: 102 KIAS

D. Demonstrated runway width

The capability of this airplane and compliance with the handling, performance and safety requirements of the certification basis has been demonstrated on a runway width of 30 m (100 ft) or more.

This does not constitute an operational approval to conduct operations on runways with a width of 30 m (100 ft).

E. Demonstrated crosswind (takeoff and landing)

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

The maximum crosswind component for takeoff at 10 m (33 ft) tower height is 32 kts and is considered limiting (due to engine limitation).

The maximum demonstrated crosswind component for landing at 10 m (33 ft) tower height is 29 kts and is not considered limiting.

F. Configuration and thrust settings

Phase of flight	Speed	Engine thrust setting	FLAP	Landing gear
Takeoff	Takeoff speeds (V_1 , V_R , V_2)	Maximum takeoff thrust, 2 engines or 1 engine	FLAP 2, 3, or 4	Down
First segment climb	V_{LO} to V_2	Maximum takeoff thrust, 1 engine	FLAP 2, 3, or 4	Down
Second segment climb	V_2		FLAP 2, 3, or 4	Up

Phase of flight	Speed	Engine thrust setting	FLAP	Landing gear
Level flight acceleration	Acceleration from V_2 to V_{FTO}	Maximum takeoff thrust, 1 engine	Retraction from FLAP 2, 3 or 4 to FLAP 0	Up
Final takeoff climb	Final takeoff climb speed (V_{FTO}) (Green dot)	Maximum continuous thrust, 1 engine	FLAP 0	Up
Enroute climb	Enroute speed (V_{ENR}) (Green dot)	Maximum continuous thrust, 1 engine	FLAP 0	Up
Approach climb	V_{AC}	Go-around thrust, 1 engine	FLAP 2 for go-around when landing at FLAP 4 FLAP 4 for go-around when landing at FLAP 5	Up
Landing climb	V_{LC}	Go-around thrust, 2 engines	FLAP 4 or 5	Down
Landing	V_{REF}	Idle, 2 engines	FLAP 4 or 5	Down

Performance data for all phases of flight are presented with the effects of engine bleeds.

NOTE

For NADP configuration and thrust setting refer to Flight Crew Operating Manual (FCOM), Volume 2 (BD500-3AB48-32600-02), Operational guidance – Noise Abatement Departure Procedure (NADP).

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THRUST SETTINGS

Takeoff (TO), go-around (GA) and maximum continuous thrust (MCT) settings are calculated in the Thrust Setting module of the CAFM. These correspond to the N1 thrust settings as calculated by the Full Authority Digital Engine Control (FADEC).

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INTRODUCTION

A. General

The Takeoff Performance module in the CAFM calculates all items in the takeoff segment, including the various takeoff distances (OEI and AEO), takeoff speeds, maximum tire speed, brake energy and climb limitations, in varying conditions of temperature, airport pressure altitude, and airplane weight for the specified takeoff configurations.

The maximum allowable takeoff weight is limited by the most restrictive of the following:

- Maximum approved takeoff weight ([Refer to Chapter 2 – Limitations – Structural weight – Structural weight limits.](#)),
- Takeoff field length requirements:
 - OEI and AEO takeoff distance,
 - OEI and AEO takeoff run, and
 - Accelerate–stop distance
- Climb requirements,
- Obstacle clearance requirements, or
- Maximum tire speed.

B. Runway conditions

(1) Dry

The first runway selection given in the drop-down menu of the Runway Condition section under Runway Data window of the CAFM is Dry and is used when operating in dry runway conditions. If operating in runway conditions other than dry, the dry runway calculation still needs to be run, for comparison purposes ([Refer to TAKEOFF PERFORMANCE CALCULATIONS](#)).

(2) Wet

A wet runway condition has a deteriorating effect on the stopping performance of the airplane and appropriate corrections should be made to compensate for this degradation.

A runway is considered to be wet when there is sufficient moisture on the runway surface to cause it to appear reflective, but without significant areas of standing water.

NOTE

A runway with standing water is a contaminated runway.

There are two wet runway selections given in the drop-down menu of the Runway Condition section under the Runway Data window. For wet smooth runways, Wet must be selected. For wet runways that have been grooved or treated with porous friction course material, select Wet Grooved.

If the takeoff weight obtained from the CAFM calculation for a wet runway is higher than the takeoff weight for a dry runway, use the takeoff weight for a dry runway but use the wet runway Vspeeds at the limiting weight.

TAKEOFF PERFORMANCE CALCULATIONS

The Takeoff Performance module in the CAFM includes the calculation scenarios that follow:

- Take-Off Field Length,
- Takeoff weight limited by tire speed, and
- Takeoff weight limited by climb requirements.

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

(1) Normal takeoff

When the Normal takeoff is used:

For a normal takeoff that is done without holding the brakes, select Rolling Take-Off to Yes in the CAFM.

(2) High wind takeoff

When the High wind takeoff is used:

1. Do not select the Restricted Take-Off option and select Rolling Take-Off to No in the CAFM to calculate all takeoff distances^[1].
2. Increase all takeoff distances^[1] calculated in the previous step by the values that follow:

Winds	Penalty
Tailwinds	265 ft
Headwind at or less than 10 kt	275 ft
Headwind greater than 10 kt	300 ft

3. For an uphill runway slope greater than +0.50%, increase all takeoff distances^[1] from the previous step by an additional 75 ft for each one percent of runway slope (this correction is not required for a runway slope between -2.0% and +0.50%).
4. When combined with a rolling takeoff, increase all takeoff distances^[1] from the previous step by an additional 100 ft.

^[1]The term all takeoff distances refers to all that follow:

- One engine inoperative takeoff distance
- One engine inoperative takeoff run
- All engine operating takeoff distance
- All engine operating takeoff run

- Accelerate-stop distance
-

MAXIMUM ALLOWABLE BRAKE TEMPERATURE FOR TAKEOFF

A. BTMS operative

- (1) Maximum kinetic energy for RTO and landing

The procedure that follows must be done 15 minutes after a stop or when the temperatures have peaked:

1. All BTMS digits within the GREEN band (digit 6 or lower):

No brake energy limitations.

2. BTMS reading in the WHITE band (7 to 14):

Allow the brakes to cool down within the green band.

3. BTMS reading in RED band:

No dispatch, cool down the brakes and do a wheel inspection.

- (2) Landing gear maximum BTMS temperature for gear retraction

Maximum brake temperature (BTMS) for gear retraction is BTMS digit 07 and decreasing.

INTRODUCTION

The gross and net takeoff path are determined through the Takeoff Path module of the CAFM.

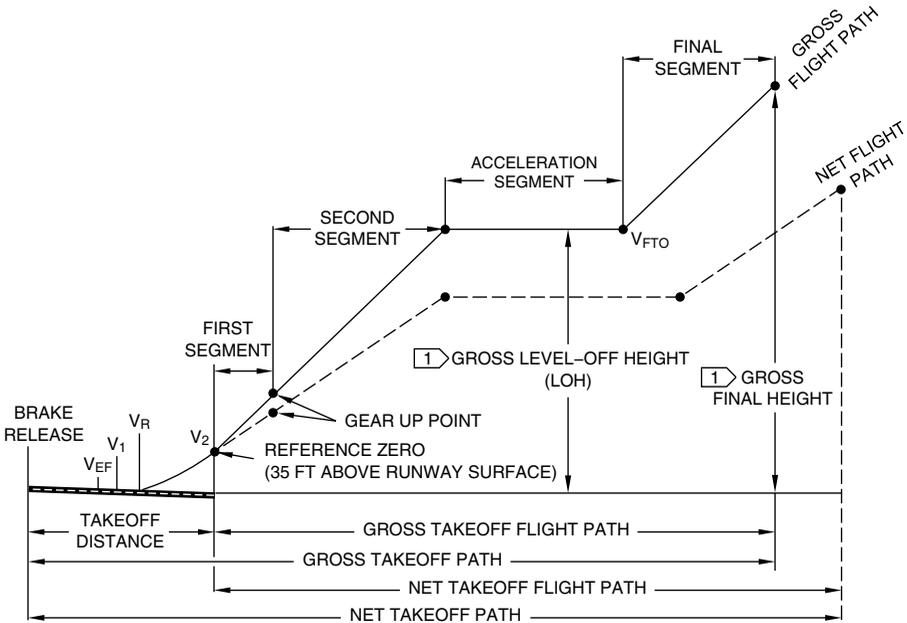
This module provides for the calculation of the takeoff path in either the fixed level-off height or the maximum level-off height scenario.

TAKEOFF PATH DETERMINATION

The takeoff path is determined using a segmental approach, including the takeoff distance, first, second, level-off acceleration and final segment (as applicable). The takeoff distance information is calculated in the Takeoff Performance module. The takeoff path extends up to a minimum gross height of 1500 feet above the runway surface. (Refer to [Figure 05-04-1](#)).

The takeoff path begins at the start of the takeoff distance and ends at 1500 feet above the takeoff surface, or at a point where transition from takeoff to enroute configuration is completed, whichever is higher.

The CAFM can calculate a takeoff path that includes an additional final segment extending beyond the takeoff path defined previously, up to a gross final height defined by the user. When determining the takeoff path, the airplane is assumed to be at a height of 35 feet above the takeoff surface at the end of the takeoff distance, irrespective of the runway surface condition. All flight path data are calculated relative to the runway surface at the end of the takeoff distance, irrespective of the runway slope value.



NOTE

① Height relative to the runway surface at the end of the takeoff distance.

Takeoff path
Figure 05-04-1

For the purpose of the obstacle clearance, the first segment is considered to start at the end of the takeoff distance.

GRADIENT LOSS IN A STEADY TURN

The gradient loss in a steady turn is given in the table that follows for a 15-degree bank angle. For bank angles less than 15 degrees, the gradient loss may be considered proportional to the bank angle.

FLAP	Gradient loss (%)
FLAP 0	0.25
FLAP 2	0.61
FLAP 3	0.63
FLAP 4	0.63

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INTRODUCTION

The CAFM Enroute Performance module is used to determine the single-engine net enroute climb gradient and net ceiling versus weight, as well as enroute climb speeds V_{ENR} (IAS), at FLAP 0, with the operating engine at maximum continuous thrust rating.

ENROUTE CLIMB GRADIENT AND NET CEILING

The net enroute climb gradient is calculated by reducing the gross enroute climb gradient by 1.1%. The CAFM calculator allows for the determination of wind effects (headwind or tailwind) on the climb gradient.

The net ceiling is determined for the specified weight input(s) by calculating the altitude at which a net enroute climb gradient of 0% is achieved. Wind is not accounted for the calculations of the net ceiling.

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INTRODUCTION

There are four separate modules available in the CAFM for approach and landing performance calculation, as follows:

- Approach climb performance,
- Landing climb performance,
- Landing weight limited by climb requirements, and
- Landing distance and speed (dispatch or operational).

NOTE

During an approach and landing in icing conditions, or if there is evidence of ice accretion, select ice accumulation to Yes in the Aircraft Data menu of each of the landing calculators (for dispatch or operational).

The maximum allowable landing weight is limited by the most restrictive of the following:

- Maximum approved landing weight,
- Runway length available, or
- Climb requirements.

APPROACH CLIMB PERFORMANCE

The Approach Climb performance module calculates the gross approach climb gradient and the approach climb speed (V_{AC} [IAS]) for a specified airport pressure altitude and other associated conditions.

LANDING CLIMB PERFORMANCE

The Landing Climb Performance module calculates the gross landing climb gradient and the landing climb speed (V_{LC} [IAS]) which is equal to V_{REF} , for a specified airport pressure altitude and other relevant conditions.

LANDING WEIGHT LIMITED BY CLIMB REQUIREMENTS

The Landing Weight Limited by Climb Requirements module determines the weight limitation to achieve the minimum climb gradient requirements and the limiting segment (approach or landing).

LANDING DISTANCE AND SPEED (DISPATCH OR OPERATIONAL)

The Landing Distance Performance module calculates the landing distance and landing speed V_{REF} (KIAS). For the applicable calculation modules, the approach speed V_{APP} (KIAS) is also calculated based on the inputs of autothrottle and wind gust factor. The landing distance is calculated considering the segments that follow:

- Airborne distance from 50 feet height point to touchdown,
- Delay distance from touchdown to full braking configuration including de-rotation, and
- Braking distance.

The Landing Distance and Speed module offers two types of distance calculation: Dispatch and Operational.

NOTE

Manual braking landing distance assumes maximum braking applied immediately after main landing gear touchdown.

(1) Dispatch

The Dispatch landing distance is calculated for ISA temperature only and assumes no runway slope. It provides the Actual Landing Distance (ALD) and Factored Landing Distance (FLD) also known as the Landing Field Length (LFL). The FLD must be used to determine the maximum allowable landing weight at dispatch.

When landing with autothrottle, landing performance must be re-assessed using the operational landing data in sub-section (2) for the actual approach speed and the actual conditions at destination. If the landing distance at dispatch is predicated on the use of autothrottle, increase the factored landing distance provided by the CAFM by 7%.

(2) Operational

The Operational Landing Distance (OLD) is calculated for the specified temperature and accounts for runway slope and V_{REF} increment for use of autothrottle and for wind gust factor. The OLD output can be increased by a distance factor in the CAFM (for example, a landing distance factor of 1.15 that may be applicable from an operational standpoint). This OLD is to be used for in-flight landing distance assessments or in conjunction with the landing distance factors presented in Chapter 4 – Non-normal procedures.

The runway surfaces that follow are selectable in the CAFM. Refer to Chapter 6, Supplement 2 for additional description of runway conditions.

NOTE

Selection of the CAFM Runway Code must be based on the runway surface condition description. The Equivalent Pilot-reported braking action must only be considered if it downgrades the runway condition (i.e. reduce the CAFM Runway Code).

CAFM Runway Code	Runway surface condition description	Equivalent pilot-reported braking action
6	Dry	Equivalent to dry
5	<ul style="list-style-type: none"> • Frost • Wet (includes damp and 3 mm (0.12 in.) depth or less of water) 3 mm (0.12 in.) depth or less of: <ul style="list-style-type: none"> • Slush • Dry snow • Wet snow 	Good

CAFM Runway Code	Runway surface condition description	Equivalent pilot-reported braking action
4	-15°C and colder outside air temperature: <ul style="list-style-type: none">• Compacted snow	Good to medium
3	<ul style="list-style-type: none">• Wet (“slippery when wet” runway)• Dry snow or wet snow (any depth) over compacted snow More than 3 mm (0.12 in.) depth, of: <ul style="list-style-type: none">• Dry snow• Wet snow Warmer than -15°C outside air: <ul style="list-style-type: none">• Compacted snow	Medium
2	More than 3 mm (0.12 in.) depth, of: <ul style="list-style-type: none">• Water• Slush	Medium to poor
1	<ul style="list-style-type: none">• Ice	Poor

When OLD is calculated, the CAFM allows the selection of three autobrake levels in addition to the full braking configuration (autobrake off):

- High
- Medium
- Low

NOTE

For each autobrake selection, the CAFM automatically limits the deceleration capability to the maximum value possible for the selected CAFM Runway Code.

MAXIMUM PERMISSIBLE QUICK TURN-AROUND LANDING WEIGHT

A. BTMS operative

- (1) Maximum kinetic energy for RTO and landing

The procedure that follows must be done 15 minutes after a stop or when the temperatures have peaked:

1. All BTMS digits within the GREEN band (digit 6 or lower):

No brake energy limitations.

2. BTMS reading in the WHITE band (7 to 14):

Allow the brakes to cool down within the green band.

3. BTMS reading in RED band:

No dispatch, cool down the brakes and do a wheel inspection.

- (2) Landing gear maximum BTMS temperature for gear retraction

Maximum brake temperature (BTMS) for gear retraction is BTMS digit 07 and decreasing.

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CHAPTER 6 – SUPPLEMENTS

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SUPPLEMENT 1 – NOISE CHARACTERISTICS <TC> OR <EASA>

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NOISE CHARACTERISTICS 06-01-01-1

 Certification airplane configuration 06-01-01-1

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INTRODUCTION

This supplement contains the noise characteristics data which comply with these regulations:

- AWM 516, Change 516-11
- ICAO Annex 16, Amendment 10, Volume 1, Chapter 4

LIMITATIONS

The limitations in Chapter 2 are applicable.

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable.

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable.

PERFORMANCE

The performance data in Chapter 5 are applicable.

NOISE CHARACTERISTICS

A. Certification airplane configuration

Compliance has been demonstrated in the configuration that follows:

- (1) Flyover and lateral noise levels

Flyover and lateral noise levels were established for the configuration that follows:

- Maximum takeoff weight

kg	lb	Option code
61000	134482	<13001061C>

kg	lb	Option code
64000	141096	<13001131C>

kg	lb	Option code
65997	145500	<13001176C>

kg	lb	Option code
67585	149000	<13001310C>

- Climb speed = $V_2 + 10$ KIAS
- Slat-flap lever position = 2
- Bleed valves = Auto
- APU = Off
- Air-conditioning packs (both) = Off
- Cowl and wing anti-ice = Off

(2) Approach noise levels

Landing approach noise levels were established for the configuration that follows:

- Glideslope = 3 degrees
- Landing gear = Down
- Landing weight:

kg	lb	Option code
58740	129500	<13001290C>

- Approach speed = $V_{REF} + 10$ KIAS
- Slat-flap lever setting = 5
- Bleed valves = Auto

- APU = On
- Air-conditioning packs (both) = On
- Cowl and wing anti-ice = Off

B. Certificated noise levels

The demonstrated effective perceived noise levels (EPNdB), noise limits and margins of compliance are given in the tables that follow:

PW1521G-3 <72211001D>					
Weight		Measured points			Margin
MTOW	MLW	Description	Noise limit	Measured level	
61000 kg (134482 lb) <13001061C>	58740 kg (129500 lb) <13001290C>	Approach	99.9	92.4	7.5
		Lateral	96.1	86.7	9.4
		Flyover	90.4	80.1	10.3
		Compliance with Chapter 4			

PW1521G-3 <72211001D>					
Weight		Measured points			Margin
MTOW	MLW	Description	Noise limit	Measured level	
64000 kg (141096 lb) <13001131C>	58740 kg (129500 lb) <13001290C>	Approach	100.0	92.4	7.6
		Lateral	96.2	86.6	9.6
		Flyover	90.7	81.4	9.3
		Compliance with Chapter 4			

PW1521G-3 <72211001D>					
Weight		Measured points			Margin
MTOW	MLW	Description	Noise limit	Measured level	
65997 kg (145500 lb) <13001176C>	58740 kg (129500 lb) <13001290C>	Approach	100.1	92.4	7.7
		Lateral	96.4	86.4	10.0
		Flyover	90.8	82.2	8.6
		Compliance with Chapter 4			

PW1521G-3 <72211001D>					
Weight		Measured points			Margin
MTOW	MLW	Description	Noise limit	Measured level	
67585 kg (149000 lb) <13001310C>	58740 kg (129500 lb) <13001290C>	Approach	100.2	92.4	7.8
		Lateral	96.4	86.4	10.0
		Flyover	91.0	83.3	7.7
		Compliance with Chapter 4			

ICAO Annex 16, Amendment 10, Volume 1, Chapter 4 compliance has been demonstrated with the previously mentioned margins.

No determination has been made such that the noise levels of this airplane are or should be, acceptable or unacceptable for operation at, into or out of, any airport.

The noise level values are stated for reference conditions of standard atmospheric pressure at sea level, 25°C (77°C) ambient temperature, 70% relative humidity and zero wind.

SUPPLEMENT 2 – OPERATION ON CONTAMINATED RUNWAYS

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INTRODUCTION

A. General

This supplement contains information and procedures for operation on runways contaminated by standing water, slush, wet snow, dry snow, compacted snow or ice.

This information has been prepared by the manufacturer and approved as guidance material, to assist operators in developing suitable guidance, recommendations or instructions for use by their flight crews when operating on contaminated runway surface conditions.

The data have been prepared using reasonable estimates of the effects of contaminated runway surface conditions on the accelerating ground roll and the braking ground roll. The effects of actual conditions may differ from those used to establish the data.

Contaminated runways are likely to have a significant effect on the performance. The main effects are:

- Additional drag – displacement drag and impingement drag which causes retardation effects on the wheels and increased skin friction,
- Possibility of power loss or system malfunction due to spray ingestion or impingement,
- Reduced braking performance – reduced wheel to runway friction and hydroplaning,
- Directional control problems, and
- Possibility of structural damage.

Contaminated runway performance data is an estimate assuming that the runway is completely contaminated, with the contaminant (standing water, slush or snow) to be of uniform depth and density.

The provision of performance data for contaminated runways should not be taken as implying that ground handling characteristics on these surfaces will be as good as can be achieved on dry or wet runways, in particular, in crosswinds and when using reverse thrust.

Performance calculations in the CAFM automatically take into account the runway surface condition as required, based upon the selection made in the drop-down list of the Runway Surface Condition section in the Runway Data pane of the CAFM calculator.

B. Runway conditions

- (1) Runway contaminated by standing water, slush, or snow

A runway is considered to be contaminated when more than 25% of the runway surface area (whether in isolated areas or not) within the required length and width being used is covered by more than the contaminant depth in the table that follows. Therefore the contaminated runway criteria apply.

A runway is not considered to be contaminated but only wet (only if braking action is considered good), if the layer of contaminant on the runway is less than or equal to the depths listed in the table that follows. In these conditions, use the wet runway performance data (Refer to Chapter 5 – Performance).

Standing water	Slush	Wet snow	Dry snow
3.0 mm (0.12 in.)	3.0 mm (0.12 in.)	3.0 mm (0.12 in.)	3.0 mm (0.12 in.)

Definitions:

Standing water is accumulated water on the runway surface caused by heavy rainfall or by poor drainage.

Slush is partly melted snow or ice with high water content, from which water can readily flow, with an assumed specific gravity of 0.85. Slush is normally a transient condition found only at temperatures close to 0°C (32°F).

The following table gives the equivalent depths of slush corresponding to various depths of standing water:

Depth of standing water	Equivalent depth of slush
3.2 mm (0.125 in.)	3.8 mm (0.15 in.)

Depth of standing water	Equivalent depth of slush
6.4 mm (0.25 in.)	7.4 mm (0.30 in.)
12.7 mm (0.50 in.)	15.0 mm (0.60 in.)

Wet snow is snow that will stick together to form a snowball when compressed, but will not readily allow water to flow from it when squeezed.

Dry snow is fresh snow that can be blown or, if compacted by hand, will fall apart upon release (also commonly referred to as loose snow).

(2) Runway contaminated by compacted snow

A runway is considered to be contaminated by compacted snow when covered by snow which has been compacted into a solid mass such that airplane wheels, at representative operating pressures and loading, will run on the surface without causing significant rutting (i.e. resists further compression).

(3) Runway contaminated by ice

A runway is considered to be contaminated for a surface condition where braking action is expected to be very low due to the presence of ice.

Definition:

Ice is water which has frozen on the runway surface, including the condition where compacted snow transitions to a polished ice surface.

LIMITATIONS

The limitations in Chapter 2 are applicable, except when modified as follows:

A. Maximum depth of contaminant

The maximum depths of runway contaminants covering more than 25% of the runway surface area, within the required length and width being used, are:

Contaminant	Takeoff	Landing
Standing water	12.7 mm (0.50 in.)	19.1 mm (0.75 in.)
Slush	15.0 mm (0.60 in.)	22.4 mm (0.88 in.)
Wet snow	19.1 mm (0.75 in.)	22.4 mm (0.88 in.)
Dry snow	76.2 mm (3.0 in.)	95.3 mm (3.75 in.)

B. Additional requirements

- During taxi, except in the interest of safety, avoid use of thrust reversers if movement area surfaces are covered with standing water, slush, snow, or ice.
- When operating on runways contaminated with ice, both thrust reversers must be operative before dispatch.
- Anti-skid must be operative.

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable.

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable.

PERFORMANCE

The performance data in Chapter 5 are applicable, except when modified as follows:

- Contaminated runway distances are calculated under the assumption that the runway is completely contaminated. However, selection of the type and amount of contaminant should be based on the runway conditions where the high speed portion of the takeoff will occur and, in the case of an ice covered runway, where braking would be used during a rejected takeoff or landing.
- The dispatch landing distance calculations on contaminated runways for landing at FLAP 4 or 5, with both engines operating, are predicated upon an approach speed at the runway threshold from V_{REF} to $V_{REF} + 10$ KIAS for considerations of the use of autothrottle and for wind gust factor, corrected for the effects of wind and usage of thrust reversers.
- V_1/V_R must be set to 1.0 for the runway conditions that follow:
 - 50.8 mm (2.0 in.) of dry snow
 - 76.2 mm (3.0 in.) of dry snow
 - 6.4 mm (0.25 in.) of standing water or equivalent
 - 12.7 mm (0.50 in.) of standing water or equivalent
 - 12.7 mm (0.50 in.) of wet snow
 - 19.1 mm (0.75 in.) of wet snow
- Cowl anti-ice or wing and cowl anti-ice must be set to ON in the CAFM for the runway conditions that follow:
 - Ice
 - Compacted snow
 - Dry snow

SUPPLEMENTS

The supplementary data in Chapter 6 are applicable.

**SUPPLEMENT 5 – OPERATION WITH AIRPLANE SYSTEMS
INOPERATIVE**

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 Ground spoiler system or multi-function spoiler
 system 1 inoperative 06-05-01-1

 Landing gear locked down 06-05-01-1

 Brake system Electro-Mechanical Actuator (EMA) or
 Electro-Mechanical Actuator Controller (EMAC)
 inoperative 06-05-01-2

 Air-conditioning pack or bleed source inoperative 06-05-01-2

 TOGA switches inoperative (thrust levers) 06-05-01-2

 Thrust reverser inoperative 06-05-01-2

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 TOGA switches inoperative (thrust levers) 06-05-01-3

NON-NORMAL PROCEDURES 06-05-01-4

 Hydraulic reservoir quantity level transducers
 inoperative – System 1, 2, or 3 06-05-01-4

 Main channel of air data system 1 (ADS 1) inoperative
 – **ADS 1 FAIL** (Advisory) 06-05-01-4

 Main channel of air data system 2 (ADS 2) inoperative
 – **ADS 2 FAIL** (Advisory) 06-05-01-4

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 Flap or slat channel inoperative 06-05-01-5

 Ground spoiler system or multi-function spoiler
 system 1 inoperative 06-05-01-6

 Landing gear locked down 06-05-01-6

Brake system Electro-Mechanical Actuator (EMA) or Electro-Mechanical Actuator Controller (EMAC) inoperative	06-05-01-6
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INTRODUCTION

The data in this supplement provides performance corrections to be applied when the airplane is dispatched with inoperative systems.

This supplement is only applicable when used in conjunction with the Minimum Equipment List (MEL) approved by the appropriate authority.

When applicable, the performance corrections to be used to dispatch with airplane systems inoperative can be calculated automatically in the CAFM when they are selected in the MMEL/CDL section of each CAFM calculator. The performance penalties are also given in the Performance section of this supplement and can be used as an alternative to the CAFM.

For items permitted by the MEL that are not available in the CAFM, the performance penalties in the Performance section of this supplement must be used.

This supplement complements or supersedes data contained in the basic Airplane Flight Manual (AFM), and must therefore be used in conjunction with the basic AFM, its supplements, and the CAFM.

LIMITATIONS

The limitations in Chapter 2 are applicable, except when modified as follows:

A. Ground spoiler system or multi-function spoiler system 1 inoperative

Dispatch with one pair of ground spoilers inoperative or multi-function spoiler system 1 inoperative:

Minimum landing runway width is 45 m (150 ft) if a pedal or rudder jam is encountered.

B. Landing gear locked down

Flight in known or forecasted icing conditions is prohibited.

C. Brake system Electro-Mechanical Actuator (EMA) or Electro-Mechanical Actuator Controller (EMAC) inoperative

Dispatch with one or more EMA inoperative or with one or more EMAC inoperative:

Minimum landing runway width is 45 m (150 ft) if a pedal or rudder jam is encountered.

D. Air-conditioning pack or bleed source inoperative

FLAP 4 landings are prohibited in icing conditions during single bleed operation with all engines operating due to the high idle thrust level affecting descent capability.

Reduced thrust (FLEX) operations are prohibited.

Derated thrust operations are prohibited with wing anti-ice on.

E. TOGA switches inoperative (thrust levers)

(1) Takeoff

Use of autothrottle during the takeoff phase is prohibited.

Use of FMS speeds during the takeoff phase is prohibited.

(2) Go-around

Use of autothrottle during go-around is prohibited.

Use of FMS speeds during go-around is prohibited.

F. Thrust reverser inoperative

Dispatch with one thrust reverser inoperative:

The maximum crosswind component for takeoff and landing on a wet runway is limited to 25 knots, measured at 10 m (33 ft) tower height.

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable, except when modified as follows:

A. TOGA switches inoperative (thrust levers)

- (1) Takeoff performance

The takeoff procedures apply except:

At V_R , rotate towards the target pitch angle determined from the table that follows and adjust pitch to capture V_2 (OEI) or a minimum of $V_2 + 10$ kt (AEO).

Target pitch angle at takeoff						
$\Delta V =$ $V_2 - V_R$ (kt)	FLAP 2		FLAP 3		FLAP 4	
	AEO	OEI	AEO	OEI	AEO	OEI
0	12	8	12	8	11	8
1	14	10	13	8	12	8
2	16	11	14	10	13	8
3	17	12	15	11	14	9
4	18	12	16	11	15	11
5	19	13	17	12	16	11
6	20	13	18	12	17	11
7	21	14	19	12	18	12
8	22	14	20	13	19	12
9	23	14	21	13	20	12
10 and above	23	15	22	13	21	13

(2) Go-around performance

The go-around procedures apply, except:

OEI: Rotate towards 8 degrees and adjust pitch to capture V_{AC} .

AEO: Rotate towards 11 degrees and adjust pitch to capture V_{GA} .

Do not exceed 22 degrees.

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable, except when modified as follows:

A. Hydraulic reservoir quantity level transducers inoperative – System 1, 2, or 3

The non-normal procedures in Chapter 4 are applicable.

B. Main channel of air data system 1 (ADS 1) inoperative – ADS 1 FAIL (Advisory)

The non-normal procedures in Chapter 4 are applicable.

C. Main channel of air data system 2 (ADS 2) inoperative – ADS 2 FAIL (Advisory)

The non-normal procedures in Chapter 4 are applicable.

PERFORMANCE

The performance data in Chapter 5 are applicable, except when modified as follows:

NOTE

The landing performance that follows applies to both dispatch and operational data.

A. Flap or slat channel inoperative

In the MMEL/CDL window of the CAFM, activate the MMEL calculations and select MMEL effect Slow Flap Retraction and/or Slow Slat Retraction as appropriate.

Alternative: Apply the corrections that follow to performance data calculated in Chapter 5:

(1) Takeoff flight path performance

The performance limited takeoff weights only need adjustment if obstacles are present in the takeoff flight path.

If one or more obstacles are present in the takeoff flight path, reduce the performance limited takeoff weight as specified in the tables that follow:

1. If the performance limited takeoff weight is calculated on the basis that all obstacles are cleared by the required vertical distance margin before the airplane reaches the level-off height (i.e., acceleration distance and final segment climb are not limiting):

Takeoff flaps	Effect of FLAPS HALFSPEED	Effect of SLAT HALFSPEED
All	5%	5%

2. If the performance limited takeoff weight is not calculated on the basis that all obstacles are cleared by the required vertical distance margin when the airplane reaches the level-off height (i.e., acceleration distance and final segment climb may be limiting):

Takeoff flaps	Effect of FLAPS HALFSPEED	Effect of SLAT HALFSPEED
All	6%	6%

B. Ground spoiler system or multi-function spoiler system 1 inoperative

(1) Takeoff performance

For one pair of ground spoilers inoperative or multi-function spoiler system 1 pair inoperative:

Multiply the accelerate-stop distance calculated by the CAFM by 1.20.

Alternative: Multiply the available accelerate-stop distance by 0.83.

(2) Landing performance

For one pair of ground spoilers inoperative or multi-function spoiler system 1 pair inoperative:

Multiply the required landing distance calculated by the CAFM by 1.30.

Alternative: Multiply the available landing distance by 0.76.

C. Landing gear locked down

In the MMEL/CDL window of the CAFM and Computerized In-Flight Planning (CIFP), activate the MMEL calculations and select MMEL effect Flight with Landing Gear Down.

D. Brake system Electro-Mechanical Actuator (EMA) or Electro-Mechanical Actuator Controller (EMAC) inoperative

(1) Takeoff performance

(a) For 1 or 2 EMA inoperative or 1 EMAC inoperative:

Multiply the required accelerate-stop distance by 1.04.

Alternative: Multiply the available accelerate-stop distance by 0.96.

(b) For 3 or 4 EMA inoperative or 2 EMAC inoperative:

Multiply the required accelerate-stop distance by 1.11.

Alternative: Multiply the available accelerate-stop distance by 0.90.

(2) Landing performance

(a) For 1 or 2 EMA inoperative or 1 EMAC inoperative:

Multiply the required landing distance by 1.03.

Alternative: Multiply the available landing distance by 0.97.

(b) For 3 or 4 EMA inoperative or 2 EMAC inoperative:

Multiply the required landing distance by 1.10.

Alternative: Multiply the available landing distance by 0.90.

E. BTMS inoperative

After a landing or rejected takeoff, the minimum brake cooling time at the ramp must be observed to ensure enough brake energy capability before the next takeoff.

The minimum cooling time is determined as follows:

1. Determine the reference brake energy.
2. Use the reference brake energy to determine the brake cooling time.

(1) Reference brake energy

The reference brake energy measures the energy actually absorbed by the brakes, in million foot-pounds (mfp). The value for brake energy is at the intersection of the brakes-on speed and airport pressure altitude, and the weight and airport outside air temperature (refer to [Figure 06-05-01-1 <Metric>](#)).

REFERENCE BRAKE ENERGY - MFP PER BRAKE													
BRAKES ON SPEED (KIAS)	ALT. (1000 FT)	WEIGHT (1000 KG)											
		40			50			60			70		
		OAT (°C)											
		0	25	50	0	25	50	0	25	50	0	25	50
80	0	11.9	12.9	13.9	14.9	16.1	17.3	18.2	19.7	21.2	21.9	23.7	25.4
	2	12.6	13.7	14.7	15.8	17.1	18.3	19.3	20.9	22.5	23.2	25.1	27.0
	4	13.3	14.4	15.5	16.7	18.0	19.4	20.4	22.1	23.7	24.5	26.5	28.5
	8	14.8	16.0	17.2	18.5	20.0	21.4	22.6	24.4	26.3	27.1	29.3	31.5
100	0	14.9	16.1	17.3	18.6	20.1	21.6	22.8	24.6	26.5	27.3	29.6	31.8
	2	15.8	17.1	18.4	19.7	21.3	22.9	24.2	26.1	28.1	29.0	31.3	33.7
	4	16.7	18.0	19.4	20.8	22.5	24.2	25.5	27.6	29.7	30.6	33.1	35.6
	8	18.5	20.0	21.5	23.1	24.9	26.8	28.3	30.6	32.9	33.9	36.7	39.4
120	0	18.7	20.2	21.8	22.1	23.9	25.7	27.4	29.6	31.8	32.8	35.5	38.1
	2	19.9	21.5	23.1	23.4	25.3	27.2	29.0	31.3	33.7	34.8	37.6	40.4
	4	21.0	22.7	24.4	24.7	26.7	28.8	30.6	33.1	35.6	36.8	39.7	42.7
	8	23.2	25.1	27.0	27.4	29.6	31.8	33.9	36.7	39.4	40.7	44.0	47.3
140	0	22.7	24.6	26.4	27.1	29.3	31.5	32.0	34.6	37.1	36.6	39.6	42.5
	2	24.1	26.1	28.0	28.8	31.1	33.4	33.9	36.6	39.4	38.8	41.9	45.1
	4	25.5	27.5	29.6	30.4	32.9	35.3	35.8	38.7	41.6	41.0	44.3	47.6
	8	28.2	30.5	32.8	33.6	36.4	39.1	39.6	42.8	46.1	45.4	49.1	52.7
160	0	26.8	28.9	31.1	32.2	34.8	37.4	38.3	41.5	44.6	44.3	47.8	51.4
	2	28.4	30.7	33.0	34.1	36.9	39.7	40.7	43.9	47.2	46.9	50.7	54.5
	4	30.0	32.4	34.8	36.1	39.0	41.9	43.0	46.4	49.9	49.6	53.6	57.6
	8	33.2	35.9	38.6	39.9	43.2	46.4	47.6	51.4	55.3	54.9	59.3	63.8

CS300_Ref_Brake_Energy_MET_20180112

NOTE

- Wind Correction: Enter table with the brakes-on speed minus 0.5 times the headwind or plus 2 times the tailwind.
- Slope Correction: Decrease brake energy by 3% for each percent of upslope. Increase brake energy by 3% for each percent of downslope.
- Ground speed can be used for brakes-on speed by entering the table at sea level, 15°C.

Reference brake energy <Metric>

Figure 06-05-01-1

(2) Brake cooling time

To determine the brake cooling times select the appropriate table based on thrust reverser use during the last braking event. Enter the table with the value determined for reference brake energy and the braking level applied during the last braking event (refer to [Figure 06-05-01-2 <Metric>](#) to [Figure 06-05-01-3 <Metric>](#)).

Two specific zones are identified in the tables. If the values are in these zones, these procedures must be done:

- Caution zone (shaded cells): The wheel fuse plugs can melt because of cumulative braking energy absorbed during taxi after a rejected takeoff event. A tire pressure check must be done after 40 minutes.
- Fuse plug melt zone: Clear runway immediately. Unless required, do not set the parking brake. Do not approach the gear or try to taxi. A tire pressure check must be done after 40 minutes.

COOLING TIME - MIN

ONE OR NO THRUST REVERSER
ALL RUNWAYS CONDITIONS

REFERENCE BRAKE ENERGY (MFP PER BRAKE)	REJECTED TAKEOFF	LANDING		
	MANUAL BRAKING / AUTOBRAKE RTO	MANUAL BRAKING / AUTOBRAKE HIGH	AUTOBRAKE MEDIUM	AUTOBRAKE LOW
10	30	No special procedure required - Dispatch allowed without further time delay		
12	36			
14	41	30		
16	46	36	31	28
18	51	42	37	33
20	56	47	42	39
22	61	53	47	44
24	66	58	53	48
26	70	63	57	53
28	75	68	62	58
30	79	73	67	62
32	83	78	71	67
34	Fuse Plug Melt Zone	82	76	71
36		87	80	75
38			84	79
40				83
42 AND ABOVE				

CS300_Brake_Cooling_Time_0REV_MET_20180115

NOTE

- Caution zone is represented by the grey shaded cells.
- Energy is assumed to be equally distributed over the operating brakes.

Brake cooling time – One or no thrust reverser <Metric>
Figure 06-05-01-2

COOLING TIME - MIN						
TWO THRUST REVERSERS						
ALL RUNWAYS CONDITIONS						
REFERENCE BRAKE ENERGY (MFP PER BRAKE)	REJECTED TAKEOFF	LANDING				
	MANUAL BRAKING / AUTOBRAKE RTO	MANUAL BRAKING / AUTOBRAKE HIGH	AUTOBRAKE MEDIUM	AUTOBRAKE LOW		
10	32	No special procedure required - Dispatch allowed without further time delay				
12	37					
14	42				27	
16	46				33	
18	51				38	
20	56				44	31
22	60				49	35
24	64				54	39
26	68				59	43
28	72				63	47
30	76	68	50	33		
32	80	73	54	35		
34	84	77	57	38		
36	Fuse Plug Melt Zone		61	41		
38			64	43		
40			68	46		
42			71	48		
42			81	61	41	

CS300_Brake_Cooling_Time_2REV_MET_20180115

NOTE

- Caution zone is represented by the grey shaded cells.
- Energy is assumed to be equally distributed over the operating brakes.

Brake cooling time – Two thrust reversers <Metric>
 Figure 06–05–01–3

F. Air-conditioning pack or bleed source inoperative

This section includes all items that lead to operation with a single pack or single bleed source configuration.

If in a single pack or single bleed configuration and wing anti-ice is selected OFF, activate the MMEL calculations and select MMEL effect Single PACK in the MMEL/CDL window of the CAFM.

NOTE

For Landing performance, when this message is on the CAFM:

(*) indicates no impact on calculation

Ignore the message. When the MMEL effect Single PACK is selected, the output data includes the impact of the selected MMEL effect.

If wing anti-ice is selected ON, or as an alternative to using the CAFM if wing anti-ice is selected OFF, apply the corrections that follow to performance data calculated in Chapter 5:

(1) Takeoff performance

Multiply the one engine inoperative takeoff distance and takeoff run, the all engine operating takeoff distance and takeoff run and the accelerate-stop distance calculated by the CAFM by 1.05.

Alternative: Multiply the takeoff distance and takeoff run available (TODA and TORA) and the accelerate-stop distance available by 0.95. In addition, if one or more obstacles are present in the takeoff flight path, multiply the distance of the obstacles from the reference point by a factor of 0.95 (obstacles moved closer to the reference point).

(2) Landing performance

Increase V_{REF} by 10 kts.

Multiply the required landing distance by the factors that follow:

- Dry or wet runway: 1.40

- Contaminated runway: 1.50

Alternative: Multiply the available landing distance by the factors that follow:

- Dry or wet runway: 0.71
- Contaminated runway: 0.67

Consider maximum use of thrust reversers, especially on contaminated runways.

(3) Thrust setting tables

Some thrust setting N1 verification tables in the CAFM/FCOM/QRH are affected by this item. The affected configurations are listed in the table that follows, with instructions on how to obtain the correct reference.

Power setting	Affected configuration	Effect on thrust setting table
Maximum takeoff	Packs on, anti-ice off (AEO)	Single pack or single bleed. Use CAFM MMEL effect Single PACK.
	Packs on, cowl anti-ice on (AEO)	Single pack or single bleed. Use CAFM MMEL effect Single PACK.
	Packs on, wing and cowl anti-ice on (AEO)	Thrust setting table is not valid, use the supplemental TO – Single source or single pack bleed – Pack(s) on, wing and cowl anti-ice on table.

CS300 **Operation with airplane systems inoperative**

SUPPLEMENT 5

Power setting	Affected configuration	Effect on thrust setting table
Derated thrust or reduced thrust takeoff	Packs on, anti-ice off (AEO)	Derate: Single pack or single bleed. Use CAFM MMEL effect Single PACK. FLEX prohibited. Use MTO or Derated TO.
	Packs on, cowl anti-ice on (AEO)	Derate: Single pack or single bleed. Use CAFM MMEL effect Single PACK. FLEX prohibited. Use MTO or Derated TO.
	Wing and cowl anti-ice on (AEO)	The configuration is prohibited. Use MTO.
	Packs on, wing and cowl anti-ice on (AEO)	The configuration is prohibited. Use MTO and supplemental tables.
Go-around	Packs on, anti-ice off (AEO)	Single pack or single bleed. Use CAFM MMEL effect Single PACK.
	Packs on, cowl anti-ice on (AEO)	Single pack or single bleed. Use CAFM MMEL effect Single PACK.
	Packs on, wing and cowl anti-ice on (AEO)	Use the OEI go-around tables.
Maximum climb and derated climb	Packs on, anti-ice off (AEO)	N1 may be up to approximately 1% lower.

Power setting	Affected configuration	Effect on thrust setting table
	Packs on, cowl anti-ice on (AEO)	Thrust setting table is not valid as a reference.
	Packs on, wing and cowl anti-ice on (AEO)	Thrust setting table is not valid as a reference.

THRUST SETTING – %N1
MAXIMUM TAKEOFF – STATIC to 30 KIAS
TO (SINGLE SOURCE BLEED)
PACK(S) ON, WING AND COWL ANTI-ICE ON
PW1521G-3

OAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	-2000	0	1000	2000	3000	4000	5000	6000	8000	10000	12000	14500
-54	-65	73.7	76.0	76.7	77.3	77.9	78.5	79.1	79.7	80.8	81.8	82.8	83.9
-50	-58	74.4	76.7	77.4	78.0	78.6	79.2	79.8	80.4	81.5	82.5	83.6	84.7
-45	-49	75.2	77.6	78.2	78.9	79.5	80.1	80.7	81.3	82.4	83.4	84.5	85.6
-40	-40	76.0	78.4	79.1	79.7	80.3	81.0	81.6	82.2	83.3	84.3	85.4	86.5
-35	-31	76.8	79.2	79.9	80.6	81.2	81.8	82.4	83.0	84.2	85.2	86.3	87.4
-30	-22	77.6	80.0	80.7	81.4	82.0	82.7	83.3	83.9	85.0	86.1	87.2	88.3
-25	-13	78.4	80.8	81.5	82.2	82.9	83.5	84.1	84.7	85.9	87.0	88.1	89.2
-20	-4	79.2	81.7	82.3	83.0	83.7	84.3	85.0	85.6	86.8	87.8	88.9	89.9
-15	5	79.9	82.4	83.1	83.8	84.5	85.1	85.8	86.4	87.6	88.7	89.8	90.7
-10	14	80.7	83.2	83.9	84.6	85.3	86.0	86.6	87.2	88.4	89.5	90.6	90.9
-5	23	81.5	84.0	84.7	85.4	86.1	86.8	87.4	88.1	89.2	90.3	90.6	89.5
0	32	82.2	84.8	85.5	86.2	86.9	87.6	88.2	88.9	90.0	90.0	89.0	87.8
5	41	83.0	85.6	86.3	87.0	87.7	88.4	89.0	89.4	89.0	88.5	87.4	85.2
10	50	83.7	86.3	87.1	87.8	88.3	88.3	88.3	88.1	87.5	86.8	84.9	82.7

cs300_pw1521G_v05r2_status_takeoff_to_avg_311.ch16

Maximum takeoff – Static to 30 KIAS – Single source/single pack bleed –
Packs on, wing and cowl anti-ice on <72211001D>
Figure 06-05-01-4

For all selections of wing anti-ice, apply the corrections that follow to the performance data calculated with the CIFP:

(1) Fuel flow performance

Increase all fuel flows by:

- Anti-ice off: 2% below Mach 0.70 only (Multiply all fuel flows calculated in the CIFP by 1.02).
- Anti-ice on: 5% (Multiply all fuel flows calculated in the CIFP by 1.05).

(2) AEO climb performance

Decrease the cruise altitude limited by the climb ceiling determined by the CIFP by:

- Anti-ice off: No impact.
- Anti-ice on: 8000 feet.

Alternative: Decrease the weight limited by climb ceiling by:

- Anti-ice off: No impact.
- Anti-ice on: 10886 kg (24000 lb).

G. RECIRC AIR selected OFF <10100200C>

This section includes the performance impact of a RECIRC AIR selected OFF with FWD CARGO selected LO HEAT or HI HEAT. For operations with FWD CARGO selected OFF or VENT, the impact of a RECIRC AIR selected OFF is negligible.

The fuel flow performance must be determined by the CIFP with the FWD CARGO selected LO HEAT or HI HEAT and RECIRC AIR selected OFF.

Alternative: Multiply all fuel flows calculated by the CIFP with the FWD CARGO selected LO HEAT or HI HEAT and RECIRC AIR selected on by 1.005.

H. Thrust reverser inoperative

Dispatch with one thrust reverser inoperative:

Select the actual number of operating thrust reversers in the Engine Data pane of each appropriate CAFM calculator.

I. Active Clearance Control (ACC) valve failed in the closed position

For loss of active clearance control function of left and/or right engine:

Multiply all fuel flows calculated by the CIFP by 1.03.

J. Pre-cooler Exit (PCE) doors in open position

(1) Takeoff performance

Multiply the one engine inoperative takeoff distance and takeoff run, the all engines operating takeoff distance and takeoff run and the accelerate-stop distance calculated by the CAFM by 1.05.

Alternative: Multiply the takeoff distance and takeoff run available (TODA and TORA) and the accelerate-stop distance available by 0.95.

(2) Takeoff weight limited by climb requirements

Reduce the takeoff weight limited by climb requirements by 544 kg (1200 lb).

(3) Obstacle clearance

If one or more obstacles are present in the takeoff flight path, multiply the distance of the obstacles from the reference point by a factor of 0.95 (obstacles moved closer to the reference point).

Additionally, reduce the takeoff weight limited by obstacle clearance by 680 kg (1500 lb).

(4) Enroute performance

Reduce the required net ceiling calculated by the CAFM by 800 feet.

Alternative: Decrease the weight limited by net ceiling by 1225 kg (2700 lb).

(5) Fuel flow performance

Multiply all fuel flows calculated with the CIFP by 1.02.

(6) AEO climb performance

Decrease the cruise altitude limited by the climb ceiling or the maximum cruise speed capability determined by the CIFP by 800 feet.

Alternative: Decrease the weight limited by climb ceiling by 2268 kg (5000 lb).

(7) Landing performance

Reduce the landing weight limited by climb requirements by 544 kg (1200 lb).

SUPPLEMENTS

The supplementary data in Chapter 6 are applicable.

SUPPLEMENT 6 – OPERATIONAL CAPABILITIES

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Iridium Satellite Communication (SATCOM) system <23150004C>	06-06-01-8
AFIRS™ Iridium Satellite Communication (SATCOM) system <23159006C>	06-06-01-8

INTRODUCTION

This supplement provides data for operational capabilities and the applicable standards of certain airplane systems.

Compliance with the standards in this supplement does not constitute an operational approval.

This supplement complements or supersedes data contained in the basic Airplane Flight Manual (AFM), and must therefore be used in conjunction with the basic AFM and its supplements.

LIMITATIONS

The limitations in Chapter 2 are applicable.

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable.

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable.

PERFORMANCE

The performance data in Chapter 5 are applicable.

SUPPLEMENTS

The supplementary data in Chapter 6 are applicable.

NAVIGATION

A. RVSM

The airplane is certified capable of RVSM operations in accordance with the FAA Advisory Circular 91-85 "Authorization of Aircraft and Operators for Flight in Reduced Vertical Separation Minimum Airspace", dated 8/21/09 and with the EASA Temporary Guidance Leaflet, TGL No. 6, Revision 1, RVSM.

RVSM operations must not be started or continued unless all required equipment, as specified in the table that follows, is operational.

RVSM – Required equipment list	
Equipment	Requirement
Autopilot	Must be operational
Altitude alerting system	Must be operational
Altitude reporting transponder	One (1) must be operational
Air data computers	Two (2) must be operational

B. Traffic alert and Collision Avoidance System (TCAS)

The TCAS installation is in accordance with AMC 20-15.

Pilots are authorized to deviate from their Air Traffic Control (ATC) clearance in order to comply with a TCAS Resolution Advisory (RA) command.

C. Flight Management System (FMS)

The FMS has been demonstrated capable of, and has been shown to meet the requirements for, the following operation:

(1) Oceanic and remote (Class II navigation)

Use of the FMS with GNSS has been found to comply with the requirements of AC 20-138D for GNSS primary means of navigation in oceanic and remote airspace, with two operational GNSS receivers and two operational FMS systems.

(2) North Atlantic High Level Airspace (NAT HLA)

The FMS installation has been demonstrated to meet the Lateral Navigation requirements of the North Atlantic Operations and Airspace Manual, NAT DOC 007.

(3) RNAV-1/PRNAV

The FMS installation has been demonstrated to meet the PRNAV requirements of JAA TGL 10 and AC 90-100A.

(4) RNAV-5/BRNAV

This FMS installation has been demonstrated capable of primary navigation in BRNAV requirements of AC 90-96A and AMC 20-4.

(5) RNP-1

The FMS has been demonstrated capable of primary navigation for RNP-1 operations in accordance with ICAO Doc 9613 PBN Volume II, Part C, Chapter 3 and AC 20-138D Chapter 9, if the FMS is receiving information from a GNSS sensor and operating in GNSS navigation or Precision Approach (PA) mode.

(6) RNP APCH

The FMS has been demonstrated capable of primary navigation for up to RNP APCH 0.3 operations in accordance with ICAO Doc 9613 PBN Volume II, Part C, Chapter 5, AC 20-138C for FAA RNP instrument approach with Baro-VNAV and AMC 20-27 for RNP APCH with Baro-VNAV and RF legs, if FMS is receiving information from a GNSS sensor and operating in:

- GNSS navigation mode, and
- RNP APPR annunciation is shown at the Final Approach Fix.

(7) RNP-2

The FMS has been demonstrated capable of primary navigation for RNP-2 operations in accordance with ICAO Doc 9613 PBN Volume II, Part C, Chapter 2 and AC 20-138D Chapter 9, if the FMS is receiving information from a GNSS sensor and operating in GNSS navigation mode.

(8) RNP-4

The FMS has been demonstrated capable of primary navigation for RNP-4 Oceanic and remote area operations in accordance with ICAO Doc 9613 PBN Volume II, Part C, Chapter 1 and AC 20-138D Chapter 10, if two FMS systems are available and receiving information from two independent GNSS sensors and operating in GNSS navigation mode.

Communication and Surveillance considerations: For RNP-4 operations in oceanic and remote airspace the airplane is equipped to support the ATC communications and surveillance requirements in such airspace.

NOTE

The FMS employs a Spherical Earth model as opposed to WGS-84 or equivalent geodetic model; this is mitigated by the appropriate leg length limitations.

(9) RNP-10 (RNAV 10)

The FMS has been demonstrated capable of primary navigation for RNP-10 Oceanic and remote area operations in accordance with ICAO Doc 9613 PBN Volume II, Part B, Chapter 1, and AC 20-138D Chapter 10, if two FMS systems are available and receiving information from any of the navigation sensors that follow:

- Two GNSS sensors operating in GNSS navigation mode (no time limitation),
- One GNSS operating in GNSS navigation mode and one IRS (no time limitation), or
- Two IRS (subject to a maximum duration of 1.5 hours after loss of GNSS).

(10) RF legs

The FMS has been demonstrated capable of and has been shown to meet the performance criteria for RF legs in accordance with AC 20-138D if the FMS is receiving information from a GNSS sensor and the aircraft uses the flight director or coupled autopilot to operate.

(11) VNAV

The FMS has been demonstrated capable of and has been shown to meet the accuracy requirements of: VFR/IFR en route, terminal and approach VNAV operation in accordance with the criteria of AC 20-138D Chapter 11. VNAV Temperature Compensation meets the requirements of TCCA AC 500.020 FMS Barometric VNAV Temperature Compensation and RTCA DO-236B MASPS RNP for Area Navigation, Appendix H.

Baro-VNAV vertical guidance deviation information is only an aid to help pilots comply with altitude restrictions. When Baro-VNAV vertical guidance is used, the pilot must use the primary barometric altimeter to ensure compliance with all altitude restrictions. These include step-down fix altitude restrictions, particularly during instrument approach operations.

(12) LPV

The FMS has been demonstrated capable of RNAV GNSS approaches to LPV minima in accordance with AC 20-138D and AMC 20-28, if the FMS is receiving information from a GNSS sensor operating in Navigation mode with SBAS available.

LPV approach operations to LPV minima must not be started unless two FMS and two SBAS GNSS sensors are fully operational and shown independently.

D. FM immunity

The VHF NAV radios installed comply with FM immunity requirements per ICAO Annex 10, and:

- ED-22B / DO-196 for VOR receivers

- ED-46B / DO-195 for LOC receivers

SURVEILLANCE

A. Mode S elementary surveillance

The Mode S transponder has been certified to meet the requirements of Elementary Mode S Surveillance as defined by JAA TGL 13.

B. Enhanced mode S surveillance

The Mode S transponder satisfies the data requirements of the ICAO doc 7030/4, Regional Supplementary Procedures for SSR Mode S Enhanced Surveillance

Parameter	Available
Magnetic heading	Yes
Indicated airspeed	Yes
Mach number	Yes
Vertical rate	Yes ^[1]
Roll angle	Yes
Track angle rate	Yes ^[2]
True track angle	Yes ^[2]
Groundspeed	Yes ^[2]
Selected altitude	Yes
Barometric pressure setting	Yes

[1] The rate of climb/descent is generated from a barometric source (not inertial).

[2] Aircraft must be equipped with at least one functioning FMS.

C. Automatic Dependent Surveillance Broadcast (ADS-B)

The installed ADS-B out system meets the equipment requirements of EASA CS.ACNS.D.ADSB (1090 MHz Extended Squitter ADS-B Out) and FAA AC 20-165A.

ADS-B operations must not be started or continued if any of these caution messages are shown:

- ADS-B 1 OUT FAIL
- ADS-B 2 OUT FAIL
- ADS-B FAIL
- XPDR 1 FAIL
- XPDR 2 FAIL

Compliance with the standards in this supplement does not constitute an operational approval to conduct ADS-B operations.

COMMUNICATIONS

A. Aircraft Communications Addressing and Reporting System (ACARS)

The ACARS is approved for the transmission and receipt of messages that will not create an unsafe condition if the message is improperly received. An unsafe condition can exist if:

- the message or part of the message is delayed or not received,
- the message is delivered to the wrong recipient, or
- the message content is corrupted.

Crew actions based on messages such as pre-departure clearance, digital automatic terminal information service, weight and balance, takeoff data (speeds, trim settings, runway distances), are prohibited, unless approved operational procedures are used to verify that the message is received by the intended recipient, that the message is valid and that the content is not corrupted.

B. Data link <23249001C>

(1) ATN B1 CPDLC (Controller-to-Pilot Data Link Communication)

The aircraft data link system has been demonstrated to comply with the applicable safety, performance and interoperability requirements for continental ATN B1 Data Link using VDL Mode-2.

The aircraft ATC Data Link system does support multi-frequency operation as defined in ARINC Spec 631-5.

ATN B1 CPDLC installation is limited to providing a supplementary means of communication; voice must remain the primary means of communication. Use of ATN B1 CPDLC should be avoided during periods of high pilot workload and critical phases of flight where pilot-ATC communications are time critical.

C. Iridium Satellite Communication (SATCOM) system <23150004C>

The Iridium SATCOM system is capable of:

- Aircraft Communications Addressing and Reporting System (ACARS) over Iridium SATCOM.

The Iridium SATCOM system installation does not support voice communication.

D. AFIRS™ Iridium Satellite Communication (SATCOM) system <23159006C>

The AFIRS™ Iridium SATCOM system is capable of:

- Aircraft Communications Addressing and Reporting System (ACARS) over Iridium SATCOM.
- Long range voice communications in accordance with AC 20-150B.

SUPPLEMENT 7 – RNP – AUTHORIZATION REQUIRED OPERATIONS

INTRODUCTION 06-07-01-1

LIMITATIONS 06-07-01-1

 Operational limitations 06-07-01-1

 System limitations 06-07-01-2

NORMAL PROCEDURES 06-07-01-2

 Approach 06-07-01-2

NON-NORMAL PROCEDURES 06-07-01-3

 NO APPR (amber PFD or HUD flag) 06-07-01-3

 Lateral deviation exceeds 1xRNP 06-07-01-4

 Vertical deviation exceeds 75 feet after the FAF 06-07-01-4

PERFORMANCE 06-07-01-4

SUPPLEMENTS 06-07-01-5

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INTRODUCTION

This supplement contains information and procedures to conduct Required Navigation Performance Authorization Required (RNP AR) operations. The airplane is capable of dual or single engine RNP AR approaches.

The airplane has been shown to meet the airworthiness requirements for Required Navigation Performance Authorization Required approach operations contained in EASA AMC 20-26; FAA AC 20-138D, Appendix 2 and ICAO Doc 9613 PBN Volume II, Part C, Chapter 6.

Compliance with the standards in this supplement does not constitute operational approval to conduct Authorization Required RNP approaches.

This supplement complements or supersedes data contained in the basic Airplane Flight Manual (AFM), and must therefore be used in conjunction with the basic AFM and its supplements.

LIMITATIONS

The limitations in Chapter 2 are applicable, except when modified as follows:

A. Operational limitations

RNP AR approaches are approved for approaches greater than or equal to RNP 0.3 and missed approaches of 1.0 nm accuracy.

RNP AR approaches are approved with autopilot engaged or flight director only.

RNP AR approaches must be flown in accordance with approach procedures that are retrieved from a current FMS navigation database.

MAN SPD must be set and used at or before the first waypoint of the approach or approach transition.

RNP AR APPR must be shown on PFD or HUD at first waypoint of the approach or approach transition and laterally within 1 dot (1/2 RNP) of published path.

Flaps must be set to FLAP 4 or FLAP 5 at or before the Final Approach Fix (FAF).

B. System limitations

A RNP AR approach must not be started unless all required equipment, as specified in the table that follows, is operational.

RNP AR approach – Operational equipment	
Equipment	Requirement
PFCC	Two (2) must be operational
Display Unit (DU)	Four (4) must be operational
FD	Two (2) must be operational
FMS	Two (2) must be operational
GNSS	Two (2) GNSS sensors must be operational
IRS	Two (2) must be operational
ADS (smart probes)	Three (3) must be operational
TAWS	Must be operational and displayed
Radio altimeter	Two (2) must be operational
TOGA switches	One (1) must be operational
Navigation database	One (1) must be valid

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable, except when modified as follows:

A. Approach

At the first waypoint of the approach or approach transition:

- (1) Speed mode MAN
- (2) Confirm RNP AR APPR flag shown on PFD or HUD when laterally within 1 dot (1/2 RNP) of published path.

A. Approach (Cont'd)

NOTE

1. Flight plan modification (direct to) cancels the RNP AR APPR. It is reactivated at the first unmodified waypoint.
2. If an underspeed (USPD) condition occurs after RNP AR APPR is annunciated, VGP will no longer arm. To continue the approach flight crews must reselect VNAV and deselect and reselect APPR.

At or before FAF:

(3) FLAP 4 or 5

– COMPLETE –

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable, except when modified as follows:

NO APPR (amber PFD or HUD flag)

- (1) Discontinue approach or continue if the required runway visual references are visible and identifiable and the approach and landing can safely be completed.

NOTE

During the missed approach, continue to follow the lateral track and speed constraints during the climb to the minimum safe altitude, to the MAP, unless clear of obstacles or otherwise specified by ATC.

– COMPLETE –

Lateral deviation exceeds 1xRNP

- (1) Discontinue approach or continue if the required runway visual references are visible and identifiable and the approach and landing can safely be completed.

NOTE

During the missed approach, continue to follow the lateral track and speed constraints during the climb to the minimum safe altitude, to the MAP, unless clear of obstacles or otherwise specified by ATC.

– COMPLETE –

Vertical deviation exceeds 75 feet after the FAF

- (1) Discontinue approach or continue if the required runway visual references are visible and identifiable and the approach and landing can safely be completed.

NOTE

During the missed approach, continue to follow the lateral track and speed constraints during the climb to the minimum safe altitude, to the MAP, unless clear of obstacles or otherwise specified by ATC.

– COMPLETE –

PERFORMANCE

The performance data in Chapter 5 are applicable.

SUPPLEMENTS

The supplementary data in Chapter 6 are applicable except when modified as follows:

The use of the supplements that follow in conjunction with Supplement 7 is prohibited:

- Supplement 8 – Category II and Category III, autoland operations

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**SUPPLEMENT 8 – CATEGORY II AND CATEGORY III, AUTOLAND
OPERATIONS**

INTRODUCTION	06-08-01-1
LIMITATIONS	06-08-01-2
System limitations	06-08-01-2
Operational requirements	06-08-01-3
Wind components	06-08-01-5
NORMAL PROCEDURES	06-08-01-5
Category II weather minima	06-08-01-6
Category III weather minima	06-08-01-6
NON-NORMAL PROCEDURES	06-08-01-6
FMS 2 FAIL (Caution) – Category III or autoland	06-08-01-6
NOSE STEER FAIL (Caution) – Category III or autoland	06-08-01-6
NO APPR2 (red PFD flag) – Category II	06-08-01-7
NO AUTOLAND (red PFD flag) – Category III or autoland	06-08-01-7
NO APPR2 (amber PFD flag) – Category II	06-08-01-7
NO AUTOLAND (amber PFD flag) – Category III or autoland	06-08-01-8
NO LAND3 (amber PFD flag) – Category III or autoland	06-08-01-8
Autopilot disengaged during rollout – Category III or autoland	06-08-01-8
Autothrottle failure – Category III or autoland	06-08-01-9
Engine failure – Category III or autoland	06-08-01-9

PERFORMANCE – CATEGORY II	06–08–01–10
Landing weight limited by climb requirements	06–08–01–10
PERFORMANCE – CATEGORY III AND AUTOLAND	06–08–01–11
Landing weight limited by climb requirements	06–08–01–11
Landing distance and speed	06–08–01–11
■ SUPPLEMENTS.	06–08–01–13
■ Category II	06–08–01–13
Category III and autoland <90000003C>	06–08–01–13

INTRODUCTION

This supplement contains the operational information necessary to conduct Category II, Category III and autoland approaches.

The airplane has been shown to meet the airworthiness requirements for Category II and III operations contained in Appendix 3 of AC 120-29A, AC 120-28D and Subpart 1, 2 and 3 of CS-AWO Book 1. LAND 2 fail passive automatic landing and rollout meets the requirements of CS-AWO 321(b)(2). LAND 3 fail operational automatic landing and rollout meets the requirements of CS-AWO 321(d).

(1) **Category II**

The airplane is capable of dual or single engine autopilot-coupled Category II approaches. The airplane is capable of dual or single engine flight director Category II approaches flown on the HUD.

(2) **Category III or autoland**

The airplane is capable of dual-engine autopilot-coupled approaches for Category III or autolandings.

LAND 2 is a fail passive autoland system and LAND 3 is a fail operational autoland system.

(3) **Autoland**

Autolandings have been demonstrated on:

- Type or class II and III (Category II or III) ILSs, and
- Dry and wet runways.

Type or class I ILS (Category I) may not be suitable for autoland operations. The operator must obtain approval for autoland on type or class I ILS beams if the localizer and glideslope meet the performance requirements of type or class II or III (Category II or III). These operations can be conducted in weather conditions suitable for training or recording of operational demonstration.

Autoland operations have not been demonstrated at greater than maximum landing weight. An automatic approach can be attempted, however the autopilot must be disengaged by 80 feet AGL and a manual landing must be done.

Compliance with the standards in this supplement does not constitute operational approval to conduct Category II, Category III, or autoland operations.

This supplement complements or supersedes data contained in the basic Airplane Flight Manual (AFM) and must therefore be used in conjunction with the basic AFM and its supplements.

LIMITATIONS

The limitations in Chapter 2 are applicable, except when modified as follows:

A. System limitations

(1) Operational limitations

Operational limitations		
System	APPR 2 (no autoland)	LAND 2 or LAND 3 (autoland)
AURAL WARN INHIB is selected on	Operation is prohibited	
Engines	Single or dual	Dual
Approach glideslope angle	2.5 to 3.5	2.5 to 3.25
Runway slope	2.0% upslope 2.0% downslope	0.8% upslope 1.0% downslope
Runway width	–	45 m (150 feet)
Autopilot	On or Off (HUD flight director must be used)	On
Autothrottle	On or Off	On
Autopilot minimum height	Applicable	Not applicable

(2) Alert height

The alert height is 200 feet AGL.

Alert height is the height above a runway for Category III fail operational systems at which the approach must be discontinued if a required aircraft system or ground system has failed at an altitude above the alert height.

(3) **RUDDER FAIL** warning message

If a **RUDDER FAIL** warning message is shown, the approach must be discontinued with a go-around for any LAND 2 or LAND 3 operations.

B. Operational requirements

An ILS approach to Category II and Category III minima or autoland must not be started unless all required equipment, as specified in the table that follows, is operational. Some equipment failures during the approach will cause the system to automatically down-mode to a different ASA (higher approach minima can apply) or to a NO AUTOLAND condition.

Category II and Category III (fail passive), autoland operations – Operational equipment		
Equipment	Category II – APPR 2	Category III (fail passive), autoland – LAND 2
PFCC normal mode	One (1) must be operational	Two (2) must be operational
PFD	Two (2) must be operational	Two (2) must be operational
FD	Two (2) must be operational	Two (2) must be operational
Autopilot	One (1) must be operational unless HUD flight director guidance is used [1]	Two (2) must be operational

Category II and Category III (fail passive), autoland operations – Operational equipment		
Equipment	Category II – APPR 2	Category III (fail passive), autoland – LAND 2
HUD	One (1) HUD using flight director guidance must be operational unless autopilot is used [1]	–
Autothrottle	–	One (1) must be operational [1]
TOGA switches	One (1) must be operational [1]	One (1) must be operational [1]
IRS	Two (2) must be operational	Three (3) must be operational
ADS (smart probes)	Two (2) must be operational	Four (4) must be operational
Radio altimeter	One (1) must be operational	Two (2) must be operational
VHF NAV	Two (2) must be operational	Two (2) must be operational
Nosewheel steering	–	Must be operational [1]
Multi-Function Spoilers (MFS)	–	Four (4) pairs must be operational
Hydraulics	All systems must be operational	All systems must be operational
Electrics	Two (2) generators must be on [2]	Two (2) generators must be on [2]
Windshield heat	Two (2) must be operational [1]	Two (2) must be operational [1]

Category II and Category III (fail passive), autoland operations – Operational equipment		
Equipment	Category II – APPR 2	Category III (fail passive), autoland – LAND 2
Windshield wiper	Two (2) must be operational ^[1]	Two (2) must be operational ^[1]

[1] Failure will not cause a system down-mode.

[2] Failure of one (1) will not cause a system down-mode, the approach can be continued with one (1) operational.

C. Wind components

The wind components measured at 10 m (33 ft) tower height are:

Maximum wind components	APPR 2		LAND 2 or LAND 3	
	HUD flight director	Autopilot coupled	Weather: CAT II or III	Weather: CAT I or better
Headwind	21 knots Demonstrated	25 knots Limit	25 knots Limit	29 knots Demonstrated
Crosswind	18 knots Demonstrated	15 knots Limit	15 knots Limit	24 knots Demonstrated
Tailwind	10 knots Demonstrated	10 knots Limit	10 knots Limit	10 knots Limit

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable, except when modified as follows:

A. Category II weather minima

ILS CAT II approaches can be flown in APPR 2, LAND 2 or LAND 3.

Autolands, LAND 2, or LAND 3 can be conducted when the localizer and glideslope are operating normally without restrictions.

B. Category III weather minima

CAT III (fail passive) approaches can be flown in LAND 2 or LAND 3.

The use of autobrake is recommended.

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable, except when modified as follows:

- **RUDDER FAIL** warning message:

An autoland approach must not be started or the approach must be discontinued with a go-around for any LAND 2 and LAND 3 operations.

FMS 2 FAIL (Caution) – Category III or autoland

- (1) NAV SRCFMS 1
- (2) NAV 1, NAV 2, NAV 3 Manually tune and set course.

– COMPLETE –

NOSE STEER FAIL (Caution) – Category III or autoland

- (1) Above alert height or 200 feet AGL, whichever is applicable:
 - ➔ Yes – Go to (2)
 - ➔ No – Go to (4)
- (2) Above alert height or 200 feet AGL, whichever is applicable:
- (3) Discontinue approach or disengage autopilot and continue if the required runway visual references are visible and identifiable.

– COMPLETE –

NOSE STEER FAIL (Caution) – Category III or autoland (Cont'd)

- (4) **Below alert height or 200 feet AGL, whichever is applicable:**
- (5) Continue approach.

NOTE

Autolandings with a nose steering failure below alert height have been satisfactorily demonstrated.

– COMPLETE –

NO APPR2 (red PFD flag) – Category II

- (1) Discontinue approach or disengage autopilot (if engaged) and continue if the required runway visual references are visible and identifiable.

– COMPLETE –

NO AUTOLAND (red PFD flag) – Category III or autoland

- (1) Discontinue approach or disengage autopilot and continue if the required runway visual references are visible and identifiable.

NOTE

Maximum altitude loss during all engine go-around is approximately 50 feet. Go-arounds below this altitude can result in touchdown.

– COMPLETE –

NO APPR2 (amber PFD flag) – Category II

- (1) Discontinue approach or continue to available Category I procedures.

– COMPLETE –

NO AUTOLAND (amber PFD flag) – Category III or autoland

- (1) Discontinue approach or continue to available Category (as shown in ASA) procedures or disengage autopilot and continue if the required runway visual references are visible and identifiable.

– COMPLETE –

NO LAND3 (amber PFD flag) – Category III or autoland**NOTE**

NO LAND3 can momentarily be shown during autoland approaches in non-CAT III weather conditions due to interference from other aircraft taking off or landing.

- (1) Discontinue approach or continue to available Category (as shown in ASA) procedures or disengage autopilot and continue if the required runway visual references are visible and identifiable.

– COMPLETE –

Autopilot disengaged during rollout – Category III or autoland

- (1) Use runway lights and markings as visual references for directional guidance.

NOTE

The autopilot ROLLOUT command bar is not a Flight Director Guidance but it may remain on the PFD (or HUD, if installed) during rollout for situational awareness regarding Autopilot yaw input. It will show directional information toward the localizer centerline (with the localizer deviation scale).

– COMPLETE –

Autothrottle failure – Category III or autoland

- (1) Above alert height or 200 feet AGL, whichever is applicable:
 - ➔ Yes – [Go to \(2\)](#)
 - ➔ No – [Go to \(9\)](#)
- (2) **Above alert height or 200 feet AGL, whichever is applicable:**
- (3) Autothrottle Select on
- (4) Autothrottle engages:
 - ➔ Yes – [Go to \(5\)](#)
 - ➔ No – [Go to \(7\)](#)
- (5) **Autothrottle engages:**
- (6) Continue approach.

– COMPLETE –

- (7) **Autothrottle does not engage:**
- (8) Discontinue approach or continue to available Category I or Category II procedures and disengage autopilot before landing.

– COMPLETE –

- (9) **Below alert height or 200 feet AGL, whichever is applicable:**
- (10) Thrust leversIDLE below 20 feet AGL or
RETARD active.

– COMPLETE –

Engine failure – Category III or autoland

- (1) Above alert height or 200 feet AGL, whichever is applicable:
 - ➔ Yes – [Go to \(2\)](#)
 - ➔ No – [Go to \(4\)](#)

Engine failure – Category III or autoland (Cont'd)

- (2) **Above alert height or 200 feet AGL, whichever is applicable:**
- (3) Discontinue approach or continue to available Category I or II procedures.

NOTE

Maximum altitude loss during single engine go-around is approximately 100 feet. Go-arounds below this altitude can result in touchdown.

– COMPLETE –

- (4) **Below alert height or 200 feet AGL, whichever is applicable:**
- (5) Continue approach.

NOTE

Autolandings with an engine failure below alert height have been satisfactorily demonstrated.

– COMPLETE –**PERFORMANCE – CATEGORY II**

The performance data in Chapter 5 are applicable, except when modified as follows:

A. Landing weight limited by climb requirements

The maximum allowable landing weight limited by climb requirements for Category II operations is determined in the CAFM Approach and Landing Performance module, using the Landing Weight Limited by Climb Requirements calculation scenario.

To add the Category II climb requirements to the CAFM calculator, select CAT II in the landing Category field of the Aircraft Data pane.

PERFORMANCE – CATEGORY III AND AUTOLAND

The performance data in Chapter 5 are applicable, except when modified as follows:

A. Landing weight limited by climb requirements

The maximum allowable landing weight limited by climb requirements for Category III operations is determined in the CAFM Approach and Landing Performance module, using the Landing Weight Limited by Climb Requirements calculation scenario.

To add the Category III climb requirements to the CAFM calculator, select CAT III in the landing Category field of the Aircraft Data pane.

B. Landing distance and speed

(1) Dispatch

The dispatch landing distance calculation for CAT III operation is activated when Autoland is selected to On in the Aircraft Systems pane of the Landing Distance and Speed calculation type in the CAFM.

The CAFM provides the Actual Landing Distance (ALD) and Factored Landing Distance (FLD). The FLD must be used to determine the maximum allowable landing weight at dispatch.

The ALD and the FLD are calculated for the specified temperature, runway slope and V_{REF} increment.

When Autoland is selected to On, Autothrottle must also be selected to On. Then, the V_{REF} increment for autothrottle is automatically added as shown in the Runway Data pane.

The CAFM allows the selection of one autobrake level as well as the full braking configuration (autobrake off):

- High

NOTE

Selection of autobrake levels medium and low are only available for operational calculation in the Landing Distance and Speed calculation module of the CAFM.

The actual ILS glideslope angle and the actual ILS threshold height can be entered in the Aircraft System pane.

The factored landing distance output from this supplement must be compared with the corresponding factored landing distance output from Chapter 5 (for dry or wet runways, as applicable) and the longer of the two values must be used.

(2) Operational

The Operational Landing Distance (OLD) calculation for CAT III operation is activated when Autoland is selected to On in the Aircraft Systems pane of the Landing Distance and Speed calculation type in the CAFM.

The OLD is calculated for the specified temperature, runway slope and V_{REF} increment.

The OLD output can be increased by a distance factor in the CAFM (for example, a landing distance factor of 1.15 that may be applicable from an operational standpoint).

The CAFM allows the selection of three autobrake levels as well as the full braking configuration (autobrake off):

- High
- Medium
- Low

The actual ILS glideslope angle and the actual ILS threshold height can be entered in the Aircraft System pane.

SUPPLEMENTS

A. Category II

The supplementary data in Chapter 6 are applicable.

B. Category III and autoland <90000003C>

The supplementary data in Chapter 6 are applicable except when modified as follows:

The use of the supplements that follow in conjunction with Supplement 8 is prohibited:

- Supplement 20 – Alternate forward center of gravity <13000701C>

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**SUPPLEMENT 12 – DERATED THRUST AND REDUCED THRUST
TAKEOFF**

INTRODUCTION 06-12-01-1

LIMITATIONS 06-12-01-2

NORMAL PROCEDURES 06-12-01-3

 Reduced engine thrust takeoff setting (FLEX)
 procedure with N1 verification 06-12-01-4

 Reduced engine thrust takeoff setting (FLEX)
 procedure with TO mode and FLEX temperature
 verification 06-12-01-5

 Derated thrust takeoff setting procedure with N1
 verification 06-12-01-6

 Derated thrust takeoff setting procedure with TO
 mode verification 06-12-01-6

NON-NORMAL PROCEDURES 06-12-01-7

PERFORMANCE 06-12-01-7

 Calculation of the assumed temperature
 (FLEX) <Post-SB BD500-732002> or <Mod 732002> or <Post-SB
 BD500-732003> or <Mod 732003> 06-12-01-8

 Derated thrust takeoff procedure 06-12-01-9

 Configuration and thrust settings 06-12-01-9

 Thrust setting tables 06-12-01-10

SUPPLEMENTS 06-12-01-10

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INTRODUCTION

This supplement contains the derated thrust and reduced thrust (also known as flex thrust) takeoff data and procedures.

This supplement provides alternate procedures to set the engine takeoff thrust level at less than takeoff (TO) thrust to prolong engine life. This can be done as follows:

- Set a derated takeoff thrust (e.g. TO-1, TO-2, TO-3) with APR ARMED or DISARMED,
- Set a reduced thrust takeoff (FLEX), or
- Set a combination of derate or flex.

Flex uses the assumed temperature method.

Derated thrust and reduced thrust takeoff N1 settings are given in the Thrust Setting module of the CAFM as a function of pressure altitudes, assumed temperature (required only for FLEX) and ambient temperatures, for various engine bleed configurations and APR status for OEI operation (APR ARMED and DISARMED).

The derated thrust and reduced thrust takeoff N1 setting is automatically calculated by the FADEC based on manual entry in the PERF – DEP TAB of the FMS, where the derated thrust (e.g. TO-1, TO-2, TO-3) and a valid assumed temperature (FLEX) are entered. The takeoff N1 setting is also calculated based on the APR selection (ARMED or DISARMED) for OEI operation. The reduced thrust N1 is then set when the autothrottle is engaged for takeoff. When derated thrust and reduced takeoff thrust are applied, it does not have an adverse affect on the airplane systems and functions, and is always applied at the discretion of the pilot.

The derated thrust and reduced engine thrust procedures can be used on wet runways, if wet runway performance data are used. If the takeoff weight calculated by the CAFM for a wet runway is higher than the takeoff weight for a dry runway, use the takeoff weight for a dry runway.

This supplement complements or supersedes data contained in the basic Airplane Flight Manual (AFM), and must therefore be used in conjunction with the basic AFM and its supplements.

LIMITATIONS

The limitations in Chapter 2 are applicable, except when modified as follows:

- The derated thrust and/or reduced engine thrust (FLEX) procedures must not be used:
 - with an engine that cannot achieve available full rated thrust.

The operator must make sure there is a procedure to confirm the availability of full takeoff thrust to ensure that engine deterioration does not exceed authorized limits.

NOTE

1. A takeoff at full rated thrust (TO) or Power Assurance test at full rated thrust must be accomplished every 100 flights.
 2. Trend monitoring can be used to verify the availability of full rated takeoff thrust with any approved trend monitoring program. On condition of an approved engine condition monitoring program this interval can be increased to 1000 flights.
 - when windshear or downdraft warnings are forecast.
 - when the anti-skid system is inoperative.
 - when the autothrottle is inoperative.
 - with the autothrottle disengaged.
- The derated thrust and reduced engine thrust (FLEX) procedures can be used on wet runways, if wet runway performance data is used.
 - Reduced thrust (FLEX) is not permitted if wing and/or cowl anti-icing are in use.
 - Reduced thrust (FLEX) is not permitted on runways contaminated with standing water, slush, snow or ice.

-
- Derated thrust is not permitted on runways with standing water, slush or snow unless takeoff performance is adjusted with a method approved by the appropriate authority that addresses possible loss in conservatism and possible loss of controllability when operating on these runway surfaces. When generating data from the CAFM, $V1 = VR$ must be set as follows: <TC>
 - Select Specified V1 Type in relevant CAFM calculator(s).
 - Set value to 1.0.
 - Derated thrust is not permitted on runways contaminated with ice.
 - During a derated thrust takeoff procedure, the takeoff thrust setting parameter is considered a limitation for takeoff and thrust levers should not be advanced.

NOTE

1. When only derate is used, thrust levers should not be advanced further except in an emergency. A further thrust increase after an engine failure can result in a loss of directional control while on the ground.
2. When flex and derate are used, if the assumed temperature method is applied to a fixed derate, application of additional power should not be more than fixed derate N1 limit as loss of directional control can occur while on the ground.

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable, except when modified as follows:

- The flight crew must confirm that either:
 - a. The target N1 shown on the EICAS (with engines running, takeoff thrust rating selected, and bleeds configured for takeoff) is the same as the N1 value in the thrust setting tables generated with the thrust setting module of the CAFM for the applicable configuration; or

b. The derated thrust and/or assumed temperature (FLEX) shown on the EICAS thrust mode display (and confirmed by both crew) are the same as the ones used to determine performance.

- During reduced thrust (FLEX) operation, takeoff or derated takeoff thrust can be achieved at any time, with the procedures that follow:
 - When only FLEX is used:
Setting the thrust levers to the maximum TLA.
 - When FLEX and derate are used:
Setting the thrust levers so that the thrust command bug cursor matches the TO reference.

NOTE

If the assumed temperature method is applied to a fixed derate, application of additional power must not be more than the fixed derate N1 limit as loss of directional control can occur while on the ground.

- The derated thrust and reduced thrust functions can be cancelled before takeoff, when a different takeoff thrust rating (e.g. TO, TO-1, TO-2, TO-3) is selected on the PERF – DEP tab of the FMS. This also clears the assumed temperature input (FLEX).

A. Reduced engine thrust takeoff setting (FLEX) procedure with N1 verification

To determine the reduced engine thrust takeoff setting (FLEX), use the procedures that follow:

1. Determine the assumed temperature (FLEX) as shown in the performance section in this supplement.
2. Determine the N1 value from the appropriate reduced thrust data generated with the Thrust Setting module of the CAFM output for the assumed temperature from step 1, the current ambient temperature, the required takeoff thrust rating (e.g. TO, TO-1, TO-2, TO-3) and engine bleed configuration.

3. Set bleeds for takeoff (with the engines running).
4. On the PERF – DEP tab of the FMS:
 - a. Enter TO THRUST (e.g. TO, TO-1, TO-2, TO-3).
 - b. Enter the assumed temperature (FLEX) from step 1.

NOTE

Assumed temperature (FLEX) should be at least 5°C higher than the OAT. If an assumed temperature is used that is within 5°C of the OAT, it can cause the assumed temperature entry on one or both engines to be rejected, and the **ENG SETTING MISMATCH** caution message to appear.

5. Compare the target N1 value shown on the EICAS with the value from step 2. If the N1 value shown on the EICAS is not within ±1% of the tabulated value of N1, the assumed temperature must be re-entered into the FMS until the two N1 values are within ±1% N1.

B. Reduced engine thrust takeoff setting (FLEX) procedure with TO mode and FLEX temperature verification

To determine the reduced engine thrust takeoff setting (FLEX), use the procedures that follow:

1. Determine the assumed temperature (FLEX) as shown in the Performance section in this supplement.
2. Set bleeds for takeoff.
3. On the PERF – DEP tab of the FMS:
 - a. Enter TO THRUST (e.g. TO, TO-1, TO-2, TO-3).
 - b. Enter the assumed temperature (FLEX) from step 1.

NOTE

Assumed temperature (FLEX) should be at least 5°C higher than the OAT. If an assumed temperature is used that is within 5°C of the OAT, it can cause the assumed temperature entry on one or both engines to be rejected, and the **ENG SETTING MISMATCH** caution message to appear.

4. Both crew confirm that the derated thrust and/or assumed temperature (FLEX) shown on the EICAS thrust mode display are the same as the ones used to determine performance.

C. Derated thrust takeoff setting procedure with N1 verification

To set a derated thrust takeoff setting, use the procedure that follows:

1. Determine the N1 value from the appropriate derated thrust data generated with the Thrust Setting module of the CAFM output for the required takeoff thrust rating (e.g. TO-1, TO-2, TO-3) and engine bleed configuration.
2. Set bleeds for takeoff (with the engines running).
3. On the PERF – DEP tab of the FMS:
 - a. Enter TO THRUST (e.g. TO-1, TO-2, TO-3).
 - b. APR ARM box is automatically checked. If the required takeoff thrust setting is with APR DISARMED, uncheck the APR ARM box.
4. Compare the target N1 value shown on the EICAS with the value from step 1. The N1 value shown on the EICAS should be within $\pm 1\%$ of the tabulated value.

D. Derated thrust takeoff setting procedure with TO mode verification

To set a derated thrust takeoff setting, use the procedure that follows:

1. Set bleeds for takeoff.

2. On the PERF – DEP tab of the FMS:
 - a. Enter TO THRUST (e.g. TO-1, TO-2, TO-3).
 - b. APR ARM box is automatically checked. If the required takeoff thrust setting is with APR DISARMED, uncheck the APR ARM box.
3. Both crew confirm that the derated thrust shown on the EICAS thrust mode display is the same as the one used to determine performance.

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable.

If there is an engine failure with APR ARMED, the FADEC will set the operating engine to APR thrust.

PERFORMANCE

The performance data in Chapter 5 are applicable, except when modified as follows:

The error messages that follow can be shown in the CAFM Thrust Setting module – Reduced Thrust Calculation and are accounted for in the performance calculation procedures.

ERR/Warn	ID	CAFM message
Error	102	For the selected assumed temperature, the reduced thrust takeoff N1 is identical to the normal operation N1.
Error	124	The assumed temperature cannot be lower than the airport temperature.
Error	298	The assumed temperature is greater than the maximum assumed temperature of the ISA [value].
Error	299	The assumed temperature is greater than the maximum assumed temperature of OAT [value].

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

A. Calculation of the assumed temperature (FLEX)

To calculate the assumed temperature, use the procedures that follow:

1. For the actual gross takeoff weight, determine the maximum allowable OAT for each of these requirements from the applicable CAFM performance module:
 - Runway length available (from Take-Off Performance module – Take-Off Field Length)
 - Maximum tire speed (from Take-Off Performance module – Take-Off Weight Limited by Tire Speed)
 - Climb requirements (from Take-Off Performance module – Take-Off Weight Limited by Climb Requirements)
 - Obstacle clearance (from Take-Off Path module)
2. In the CAFM Thrust Setting module – Reduced Thrust Calculation, enter the lowest of the maximum allowable OAT, determined in step 1, as the Assumed Temperature.
 - a. If no error message is returned by the CAFM, continue to step 3.
 - b. If error message 102 or 124 is returned by the CAFM, do not use FLEX.
 - c. If error message 298 or 299 is returned by the CAFM, use the maximum assumed temperature value given in the error message as the Assumed Temperature instead of the value from step 1 and continue to step 3.

NOTE

If an assumed temperature is used that is within 5°C of the maximum FLEX temperature, it can cause the assumed temperature entry on one or both engines to be rejected, and the **ENG SETTING MISMATCH** caution message to appear.

3. Use the airplane takeoff gross weight, the airport pressure altitude and the assumed temperature determined in step 2 to determine V1, VR, and V2 speeds.
4. If V1 determined from step 3 is more than V1MBE at the actual temperature, then reduce the assumed temperature as required.
5. Accomplish the procedures given in the Normal procedures, in this supplement.

B. Derated thrust takeoff procedure

In the Engine Data page of each calculator, select the Take-off thrust. TO represents the engine rating. TO-1, TO-2 and TO-3 (when available for a given engine rating) represent the various derate available. When selecting a derate only, a menu to select APR armed or disarmed will be available. The CAFM uses lower minimum control speeds (VMC) for derates.

C. Configuration and thrust settings

The configuration and thrust settings in Chapter 5 are applicable, except when modified as follows:

Phase of flight	Speed	Engine thrust setting	FLAP	Landing gear
Takeoff	Takeoff speeds (V1, VR, V2)	Four takeoff thrust levels (TO, TO-1, TO-2, TO-3 [when available]) with or without FLEX, 2 engines or 1 engine with or without APR	FLAP 2, 3, or 4	Down

Phase of flight	Speed	Engine thrust setting	FLAP	Landing gear
First segment climb	V ₂	Four takeoff thrust levels (TO, TO-1, TO-2, TO-3 [when available]) with or without FLEX, 2 engines or 1 engine with or without APR	FLAP 2, 3, or 4	Down
Second segment climb				Up
Level flight acceleration	Acceleration from V ₂ to V _{FTO}	Four takeoff thrust levels (TO, TO-1, TO-2, TO-3 [when available]) with or without FLEX, 2 engines or 1 engine with or without APR	Retraction from FLAP 2, 3, or 4 to FLAP 0	Up

D. Thrust setting tables

Derated thrust takeoff with or without APR and reduced thrust takeoff (FLEX) N1 thrust settings are calculated in the Thrust Setting module of the CAFM. These correspond to the N1 thrust setting as calculated by the Full Authority Digital Engine Control (FADEC).

The flight crew must complete the required verification procedures as given in the Normal procedures in this supplement.

SUPPLEMENTS

The supplementary data in Chapter 6 are applicable.

SUPPLEMENT 14 – FERRY KIT

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PERFORMANCE 06-14-01-2

SUPPLEMENTS..... 06-14-01-2

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INTRODUCTION

This supplement contains data applicable when a ferry kit is installed.

This supplement complements or supersedes data contained in the basic Airplane Flight Manual (AFM), and must therefore be used in conjunction with the basic AFM and its supplements.

LIMITATIONS

The limitations in Chapter 2 are applicable, except when modified as follows:

A. Maximum occupants

- Flight crew, and
- Cabin occupants as limited by the following, when the ferry kit is installed in a completed and approved cabin configuration:
 - Approved number of supplemental oxygen bottles, and
 - Approved number of life vests and life rafts.

NOTE

Before flight, cabin occupants must be briefed on the proper use of all emergency equipment, including:

- Supplemental oxygen system (at assigned seat locations),
- Life vests, and
- Life rafts.

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable.

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable.

PERFORMANCE

The performance data in Chapter 5 are applicable.

SUPPLEMENTS

The supplementary data in Chapter 6 are applicable.

SUPPLEMENT 19 – ETOPS <10109100C>

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PERFORMANCE 06-19-01-5

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INTRODUCTION

This supplement contains the operational information necessary to conduct extended operations.

ETOPS requirements apply to operations of two-engine airplanes beyond the applicable threshold specified by the national authority.

The type-design reliability and performance of this airplane-engine combination has been evaluated under SCA 2015-06 and found suitable for 180 minutes extended operations (ETOPS) when the configuration, maintenance, and procedures standard in the ETOPS Configuration, Maintenance and Procedures (BD500-3AB48-11200-00) are met. <TC>

The actual maximum approved diversion time for this airplane may be less based on its most limiting system time capability. This finding does not constitute operational approval to conduct ETOPS.

This supplement complements or supersedes data contained in the basic Airplane Flight Manual (AFM) and must therefore be used in conjunction with the basic AFM and its supplements.

LIMITATIONS

The limitations in Chapter 2 are applicable, except when modified as follows:

A. System limitations

(1) Time-limited systems

The time capability of the cargo fire suppression system is 135 minutes (120 minutes diversion + 15 minutes hold). <10100100C> or <10100101C>

The time capability of all the other ETOPS significant systems exceeds 195 minutes.

(2) Auxiliary Power Unit (APU)

The APU must be started and run on ground for at least 10 minutes, within 2 hours before the departure for an ETOPS flight.

Before departure, if an approved APU trend-monitoring program is not available, a normal (APU-assisted) engine start must be done to show that APU EGT does not exceed ETOPS departure limits.

The APU must be started at the mid point of an ETOPS route and run for 10 minutes. <10100101C> or <10100103C>

(3) Airplane cold soak

When the airplane is cold-soaked at an ambient temperature of -20°C (-4°F) or below for more than 8 hours, one of the procedures that follow is required:

- Before airplane cold soak, remove airplane main batteries and store at room temperature,
- During airplane cold soak, leave external power on, or
- After airplane cold soak with batteries installed, 20 minutes after the airplane is powered on by any AC electrical source, the battery control switches must be cycled one (1) time.

B. Operational requirements

The enroute alternate range circle at the planning stage must not exceed 120 minutes on a single engine at one engine cruising speed, under standard conditions and in still air. <10100100C> or <10100101C>

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable in conjunction with the procedures in the ETOPS Configuration, Maintenance and Procedures (BD500-3AB48-11200-00), except when modified as follows:

A. Preflight – If an approved APU trend-monitoring program is not available

The procedural steps that follow must be added before normal (APU-assisted) engine start:

Normal (APU-assisted) engine start:

- (1) APU EGT departure limit Use the table to determine the value.

A. Preflight – If an approved APU trend-monitoring program is not available (Cont'd)

APU EGT departure limit				
OAT		Pressure altitude (ft)		
°C	°F	SL	5000	10000
-50	-58	378	417	511
-45	-49	389	424	513
-40	-40	401	434	516
-35	-31	422	448	524
-30	-22	441	461	531
-25	-13	458	475	538
-20	-4	478	488	544
-15	5	494	501	549
-10	14	508	514	556
-5	23	521	527	564
0	32	535	540	572
5	41	546	555	580
10	50	557	572	589
15	59	568	591	603
20	68	579	604	617
25	77	590	618	630
30	86	600	631	642
35	95	614	643	655
40	104	625	655	--
45	113	644	666	--

A. Preflight – If an approved APU trend-monitoring program is not available (Cont'd)

APU EGT departure limit				
OAT		Pressure altitude (ft)		
°C	°F	SL	5000	10000
50	122	664	--	--

- (2) STATUS synoptic page Select
- (3) APU EGT Monitor during engine start
- (4) Engine start Complete

- COMPLETE -

B. Preflight

The procedural step that follows must be added as the last step to the Preflight procedure:

- (1) ♦ Ram air valve test Complete

- COMPLETE -

C. ETOPS flight

This procedure must be inserted as the first procedure in the IN FLIGHT section:

Before the start of any ETOPS segment and every hour during each ETOPS segment, up to the Equal Time Point (ETP):

- (1) Roll attitude Wings level
- (2) FLT CTRL synoptic page Select
- (3) Confirm that spoilers are retracted.

C. ETOPS flight (Cont'd)

NOTE

Drag may be higher than normal if any spoiler is deployed. Do not rely on FMS fuel predictions.

– COMPLETE –

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable in conjunction with the procedures in the ETOPS Configuration, Maintenance and Procedures (BD500-3AB48-11200-00).

PERFORMANCE

The performance data in Chapter 5 are applicable.

SUPPLEMENTS

The supplementary data in Chapter 6 are applicable except when modified as follows:

The use of the supplements that follow in conjunction with Supplement 19 is prohibited:

- Supplement 5 – Operation with airplane systems inoperative

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SUPPLEMENT 20 – ALTERNATE FORWARD CENTER OF GRAVITY <13000701C>

INTRODUCTION 06-20-01-1

LIMITATIONS. 06-20-01-1

 Center of gravity limits <Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003> 06-20-01-1

 Runway slopes 06-20-01-3

 Flight Management System (FMS) 06-20-01-3

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INTRODUCTION

This supplement contains information that must be used for operation with alternate forward CG.

This supplement complements or supersedes data contained in the basic Airplane Flight Manual (AFM) and must therefore be used in conjunction with the basic AFM and its supplements.

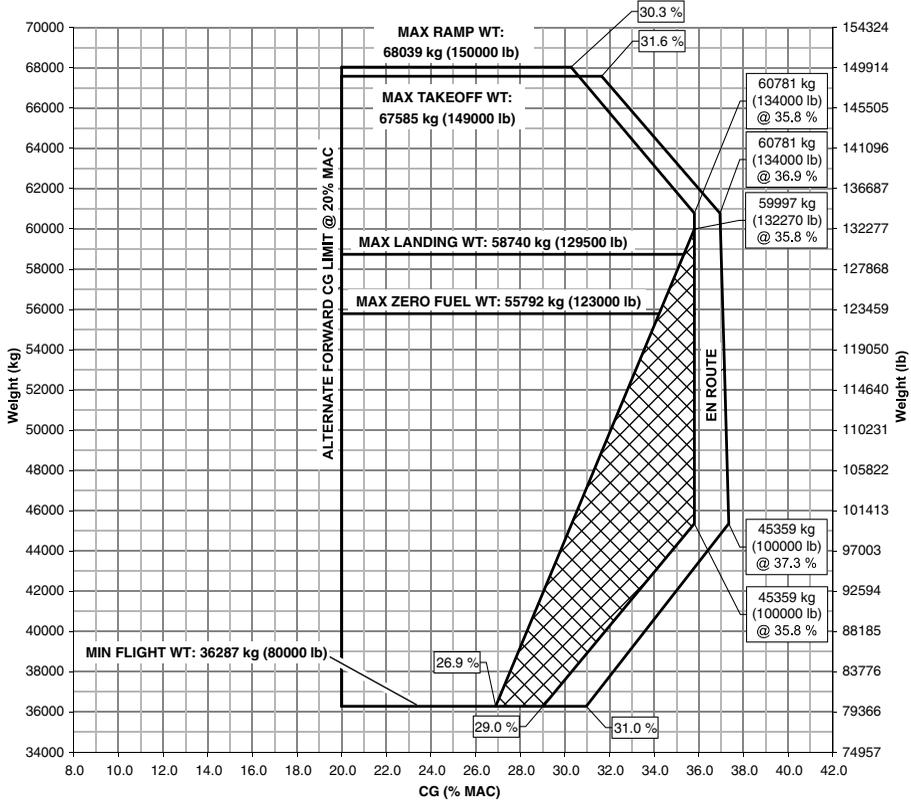
LIMITATIONS

The limitations in Chapter 2 are applicable, except when modified as follows:

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

A. Center of gravity limits

The maximum permissible Center of Gravity (CG) range with the landing gear extended is/are shown on the page(s) that follow(s).



LEGEND

 Takeoff prohibited.

Center of gravity limits – Alternate CG <13001310C> and <13001290C> and <13000701C>

Figure 06–20–01–1

B. Runway slopes

When the alternate forward CG option is selected to calculate performance in the CAFM, the maximum runway slopes approved for takeoff are: -1.5% to +2%.

C. Flight Management System (FMS)

Aircraft certified for the alternate forward CG must use the CAFM and select the alternate CG option to determine V_{REF} and V_{AC} . V_{GA} is $V_{AC} + 10$. V_{REF} , V_{AC} and V_{GA} must be manually entered on the FMS, PERF – ARR tab.

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable.

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable.

PERFORMANCE

The performance data in Chapter 5 are applicable, except when modified as follows:

The use of alternate forward center of gravity affects the airplane stall speed, takeoff performance, takeoff path, enroute performance, and approach and landing performance. The alternate forward CG option can be selected in each relevant calculation module of the CAFM.

SUPPLEMENTS

The supplementary data in Chapter 6 are applicable.

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GENERAL LIMITATIONS

This Configuration Deviation List (CDL) contains additional limitations for operation without certain secondary airframe and/or nacelle parts. The limitations in the Airplane Flight Manual (AFM) are applicable except as amended in this appendix. The Remarks and/or Exceptions column includes a statement to either prohibit or permit operation with a specific number of items inoperative, and provisos (conditions and limitations), as appropriate for such operation.

The limitations associated with the operational limitation label must be listed on a placard installed in the flight compartment on the instrument panel in clear view of both pilots.

The pilot-in-command (PIC) is notified of each operation with a missing part(s) when the missing part(s) is/are listed in the flight or dispatch release. In addition to CDL restrictions, further dispatch considerations may be required (refer to company MEL).

The operator makes the appropriate entry in the aircraft logbook to include the missing part(s) on each flight.

If an additional part is lost in flight, the airplane can not leave the airport at which it landed after this event until it again complies with the limitations in this appendix. This does not preclude the issuance of a ferry permit to allow the airplane to be flown to a point where the necessary repairs or replacements can be made.

CAFM/CIFP CDL INDEX

Performance penalties can either be applied using the penalties in this appendix or by calculating actual performance in the CAFM or CIFP with the CDL index in this appendix. The CDL index input is used to calculate performance with one or several CDL items missing from the airplane. The CDL index value is entered in the MMEL/CDL window. The CDL index is equal to the drag increment in drag counts (or the drag coefficient multiplied by 10000) rounded-up to one decimal place.

If several CDL items are missing, the user must add the various CDL index values to get the input CDL index for the CAFM or the CIFP. The minimum and maximum CDL index input values allowed in the CAFM and CIFP are 0 and 30 respectively. The CDL index is used in the CAFM modules that follow:

- Takeoff weight limited by climb requirements,
- Takeoff path,
- Enroute performance,
- Approach climb,
- Landing climb, and
- Landing weight limited by climb requirements.

The CDL index has no impact on the stall speed, maneuvering capability, and thrust setting modules.

The CDL index is not considered during takeoff speed or takeoff distance calculations.

Takeoff field length is not affected by CDL items because the drag increment has a negligible impact on takeoff distance calculations.

The CDL index is not considered during landing speed or landing distance calculations.

The CDL index input box is either greyed out (no input allowed) or not shown for all CAFM modules where the CDL index has no impact on calculations.

The CDL index can be used in all CIFP modules.

RESTRICTIONS ON PERFORMANCE PENALTIES

Not more than one part for any one system in this appendix can be missing unless specific combinations are given. Unless otherwise specified, parts from different systems can be missing at the same time. The performance penalties are cumulative unless specific penalties for combinations of missing parts are given.

No more than three parts that have each been determined to cause a negligible performance degradation can be missing for takeoff without applying a performance penalty. When more than three such parts are missing, a performance penalty of 61 kg (135 lb) must be applied for takeoff and landing for each subsequent missing part. A performance penalty of 195 kg (430 lb) must be applied for enroute, for each subsequent missing part. For fuel consumption, a performance penalty of 0.54% must be applied to the mission fuel consumption for each subsequent missing part.

Alternative: If the CAFM or the CIFP is used, a CDL index of zero can be used if up to three parts with negligible performance degradation are missing. For each subsequent such part that is missing, a CDL index of 1.5 must be added to the CDL index, cumulatively. Any number of items identified as no impact on aircraft performance can be missing at the same time.

Takeoff performance penalties should be applied to the takeoff weights that are limited by performance considerations only (i.e. takeoff field length, climb requirements, or takeoff flight path).

Landing performance penalties should be applied to the landing weights that are limited by performance considerations only (i.e. landing field length or climb requirements).

DEFINITIONS

Takeoff performance decrements are applicable to takeoff gross weights which are limited by field length, climb requirements, tire speed, or takeoff flight path. The actual takeoff weight must not exceed the normal takeoff weight limit minus the CDL takeoff weight penalty.

Enroute performance decrements are applicable to operations which are limited by enroute, one-engine-inoperative climb performance as specified by the applicable operational requirements (e.g. 14 CFR 121.191 for operators under FAA jurisdiction).

Landing performance decrements are applicable to landing gross weights which are limited by landing field length or climb requirements. The maximum allowable landing weight must not exceed the normal landing weight limit minus the CDL landing weight penalty.

Runways near water are runways where an over-run, under-run, or lateral runway excursion could end with the airplane in water deep enough that it would float. If a runway has such water within an area bounded by 1 nm from the runway threshold, to 1 nm beyond the departure end of the runway, and within 1000 feet laterally of the runway centerline, then it is considered near water.

The numbering and designation of systems in the appendix is based on the S1000D specification. The parts in each system are identified by functional description.

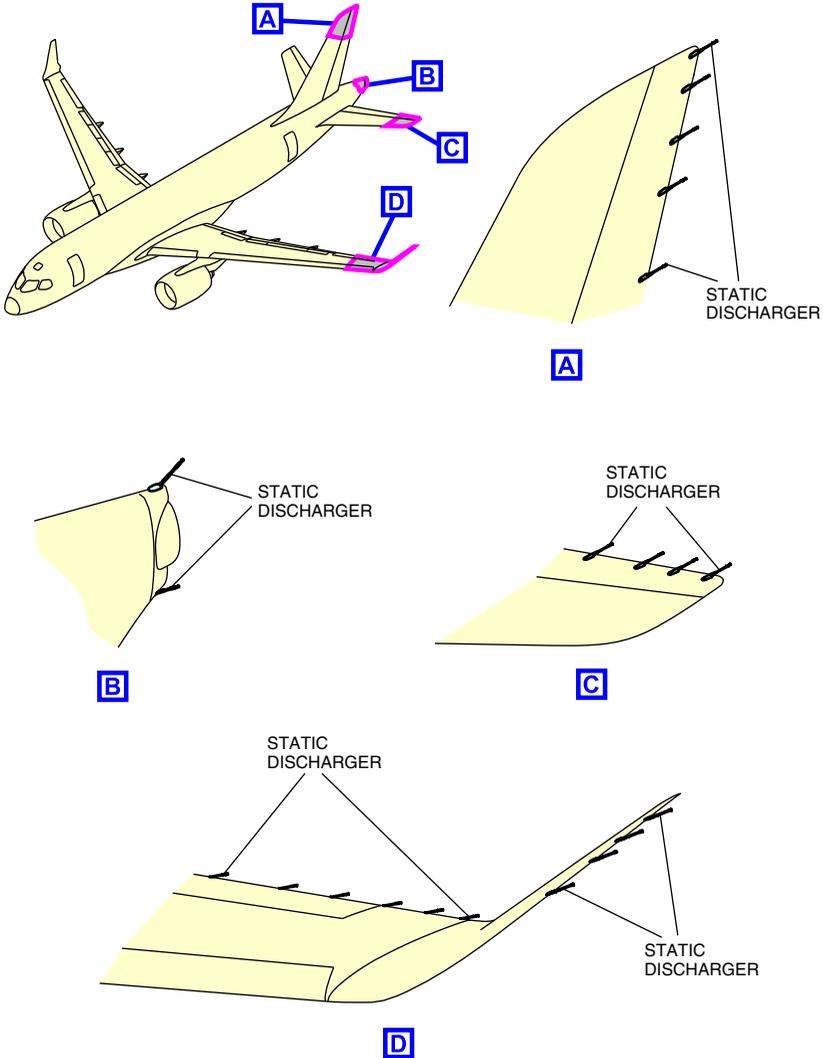
**APPENDIX
CONFIGURATION DEVIATION LIST
Communications**

CS300

SYSTEM 23 COMMUNICATIONS		
SUB-SYSTEM ITEM	1	Number required for all flight conditions except as provided in column 2
		2
		Remarks and/or exceptions
23-01 Static discharger	35	One or two can be missing with no impact on aircraft performance.

SYSTEM 23 COMMUNICATIONS

23-01: Static dischargers



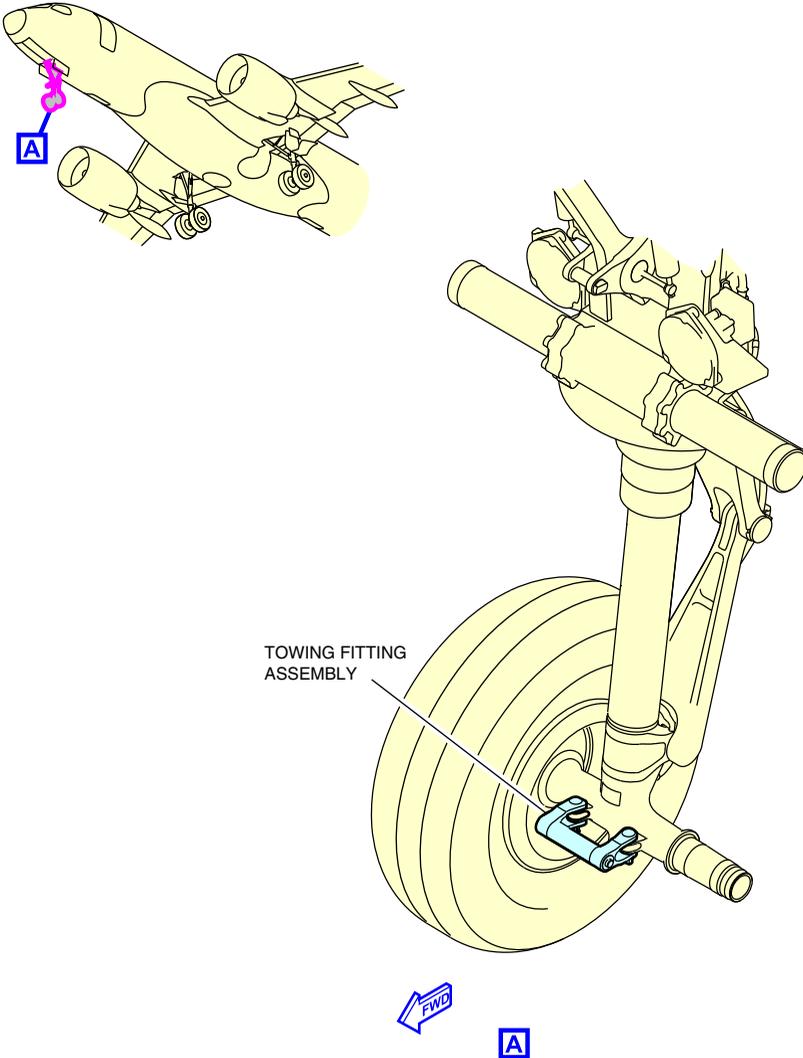
**APPENDIX
CONFIGURATION DEVIATION LIST
Landing gear**

CS300

SYSTEM 32 LANDING GEAR	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
32-01 Nose landing gear towing fitting assembly	1 Can be missing with no impact on aircraft performance.

SYSTEM 32 LANDING GEAR

32-01: Nose landing gear – Towing fitting assembly



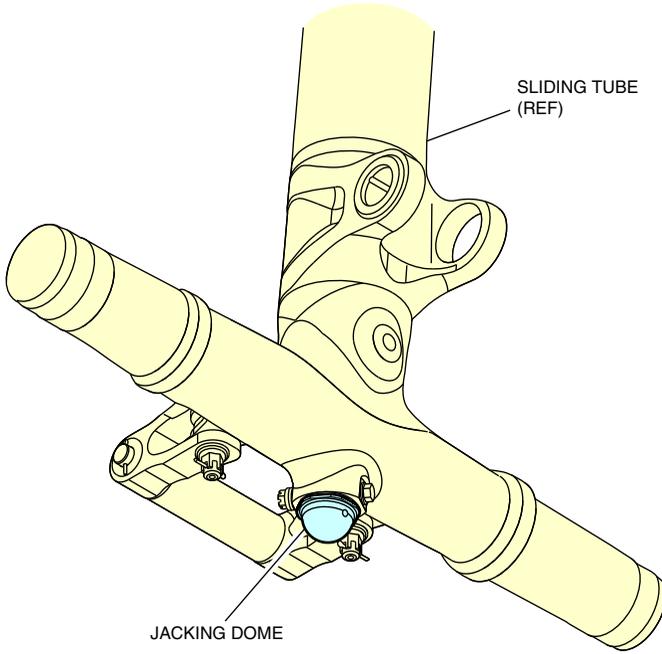
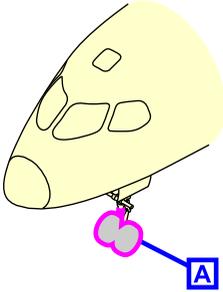
**APPENDIX
CONFIGURATION DEVIATION LIST
Landing gear**

CS300

SYSTEM 32 LANDING GEAR	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2 2 Remarks and/or exceptions
32-02 Nose landing gear jacking dome	1 Can be missing with no impact on aircraft performance. <ul style="list-style-type: none"> • The item must be replaced within 90 days after removal. Until replacement is installed, the aircraft cannot be jacked by the nose landing gear axle. • For a missing jacking dome, refer to Aircraft Maintenance Publication (AMP) (BD500-3AB48-10200-00), BD500-A-J32-21-16-01AAA-520A-A, for maintenance action.

SYSTEM 32 LANDING GEAR

32-02: NLG jacking dome



WHEELS NOT SHOWN FOR CLARITY



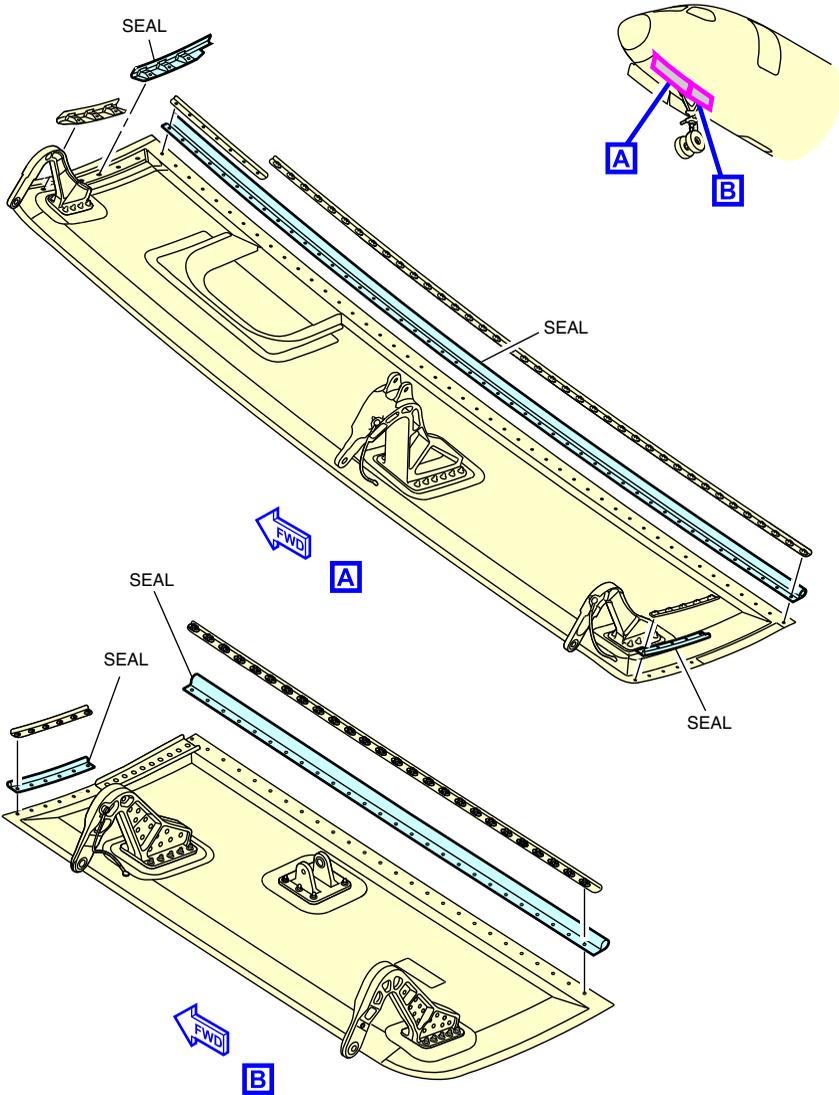
**APPENDIX
CONFIGURATION DEVIATION LIST
Landing gear**

CS300

SYSTEM 32 LANDING GEAR		
SUB-SYSTEM ITEM	1	2
32-04 Nose landing gear door seal	16	<p>Number required for all flight conditions except as provided in column 2</p> <p>Remarks and/or exceptions</p> <p>Any number or combination can be missing if operations are conducted with landing gear extended.</p> <ul style="list-style-type: none"> Operational limitation: Refer to Chapter 6 – Supplement 5 - Operation with airplane systems inoperative – Landing gear locked down.

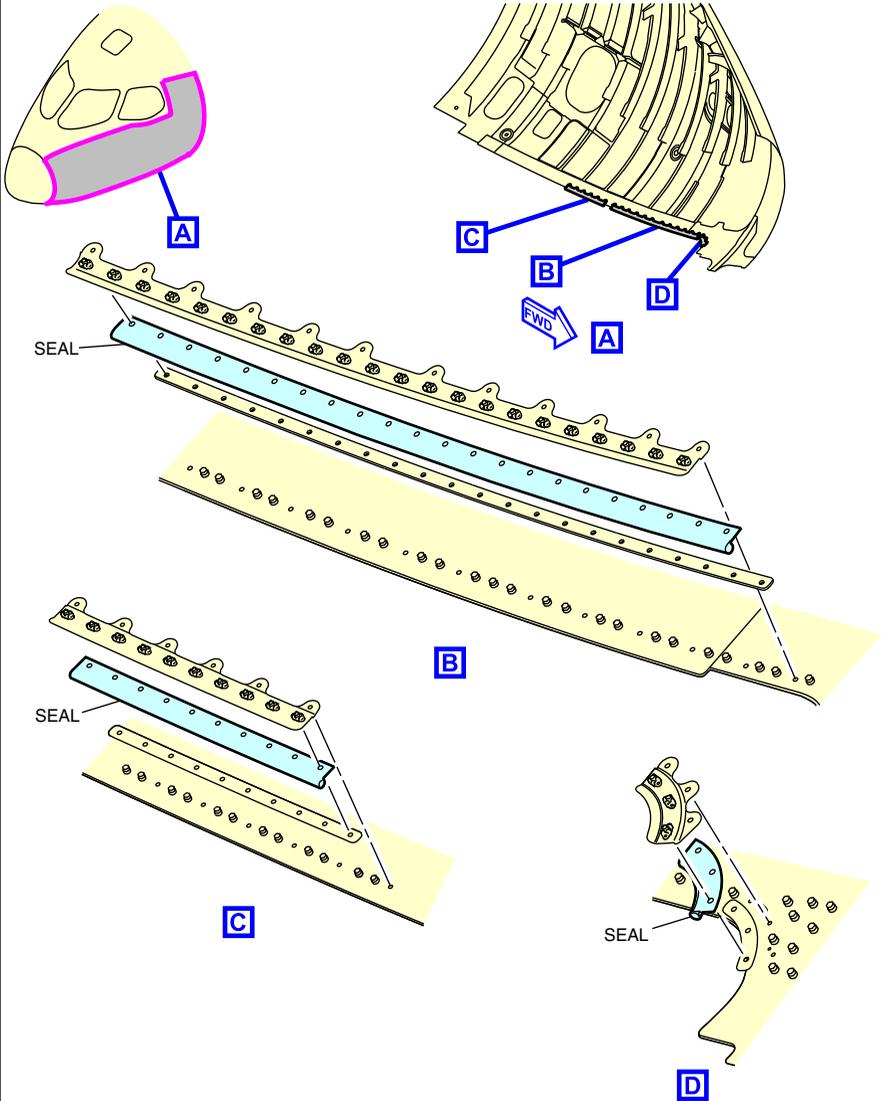
SYSTEM 32 LANDING GEAR

32-04: NLG door seals



SYSTEM 32 LANDING GEAR

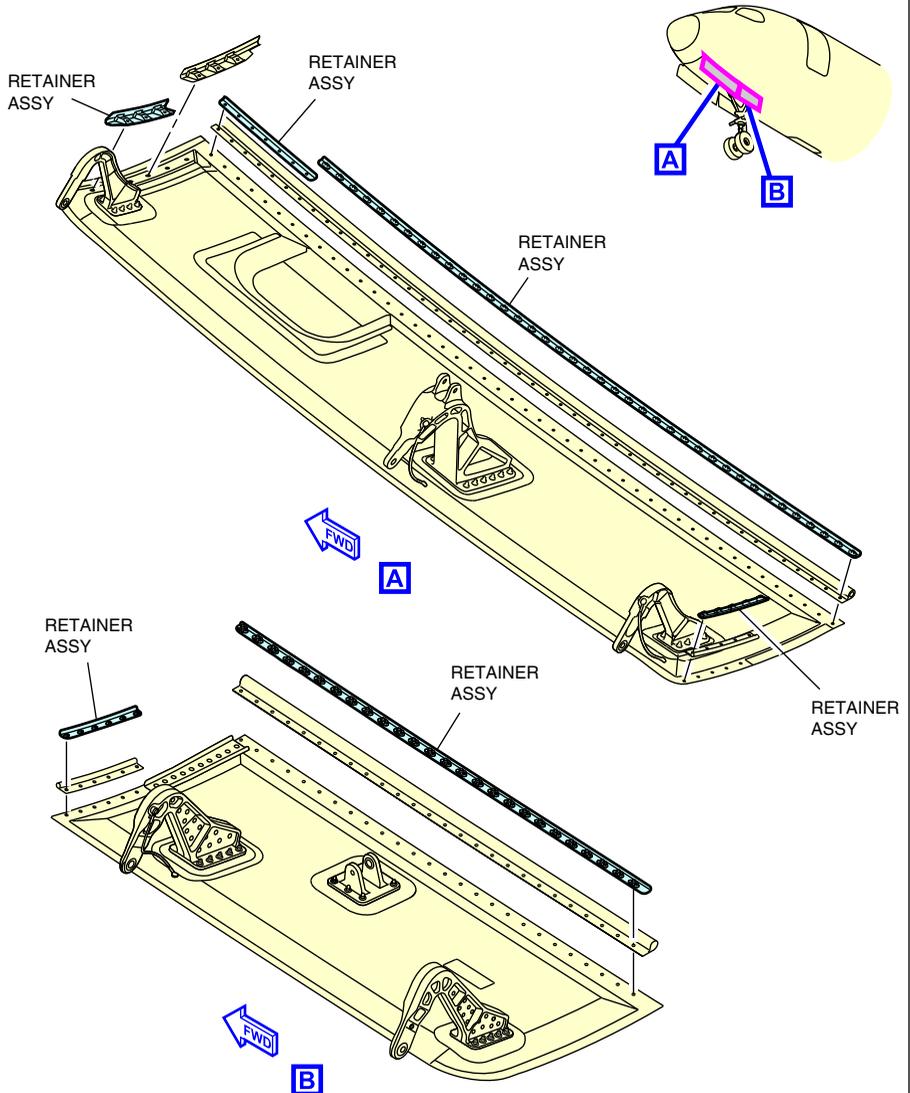
32-04: NLG door seals



SYSTEM 32 LANDING GEAR		
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2	2 Remarks and/or exceptions
32-05 Nose landing gear door seal retainer	18	<p>Any number or combination can be missing if operations are conducted with landing gear extended.</p> <ul style="list-style-type: none">Operational limitation: Refer to Chapter 6 – Supplement 5 - Operation with airplane systems inoperative – Landing gear locked down.

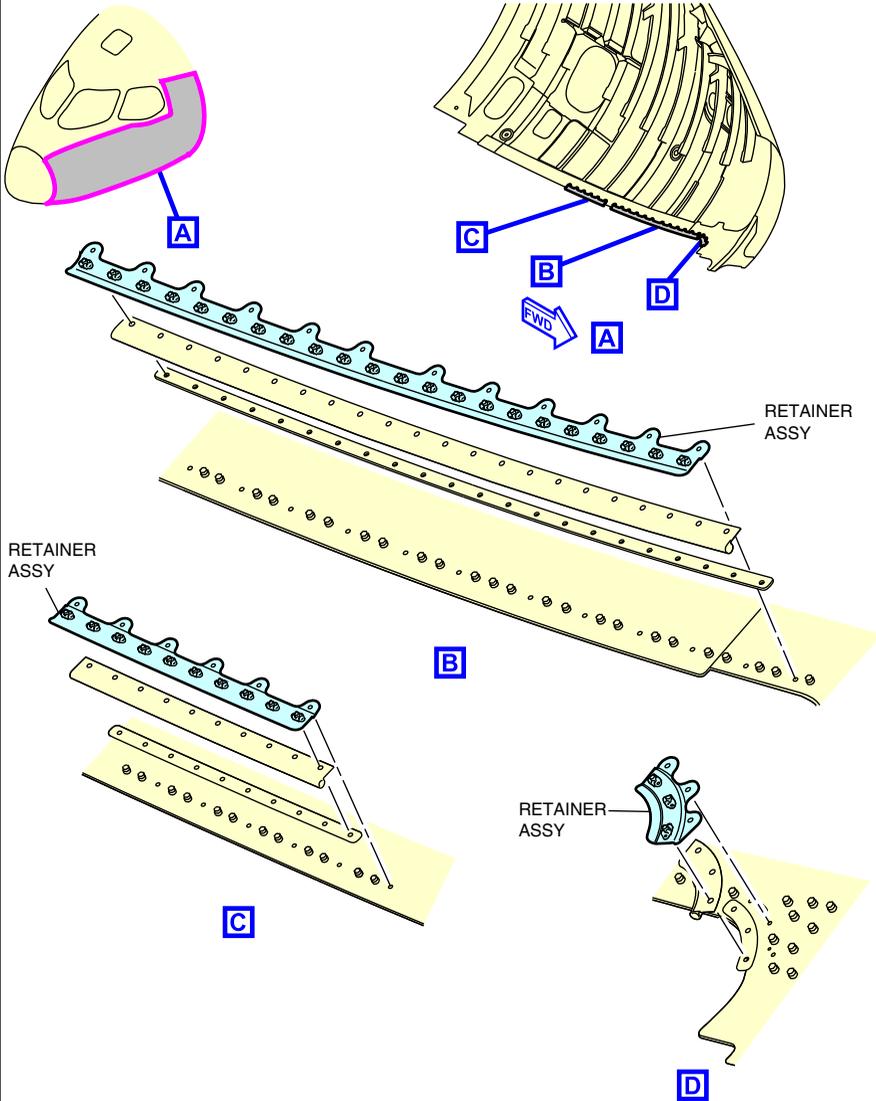
SYSTEM 32 LANDING GEAR

32-05: NLG door seal retainers



SYSTEM 32 LANDING GEAR

32-05: NLG door seal retainers



**APPENDIX
CONFIGURATION DEVIATION LIST
Landing gear**

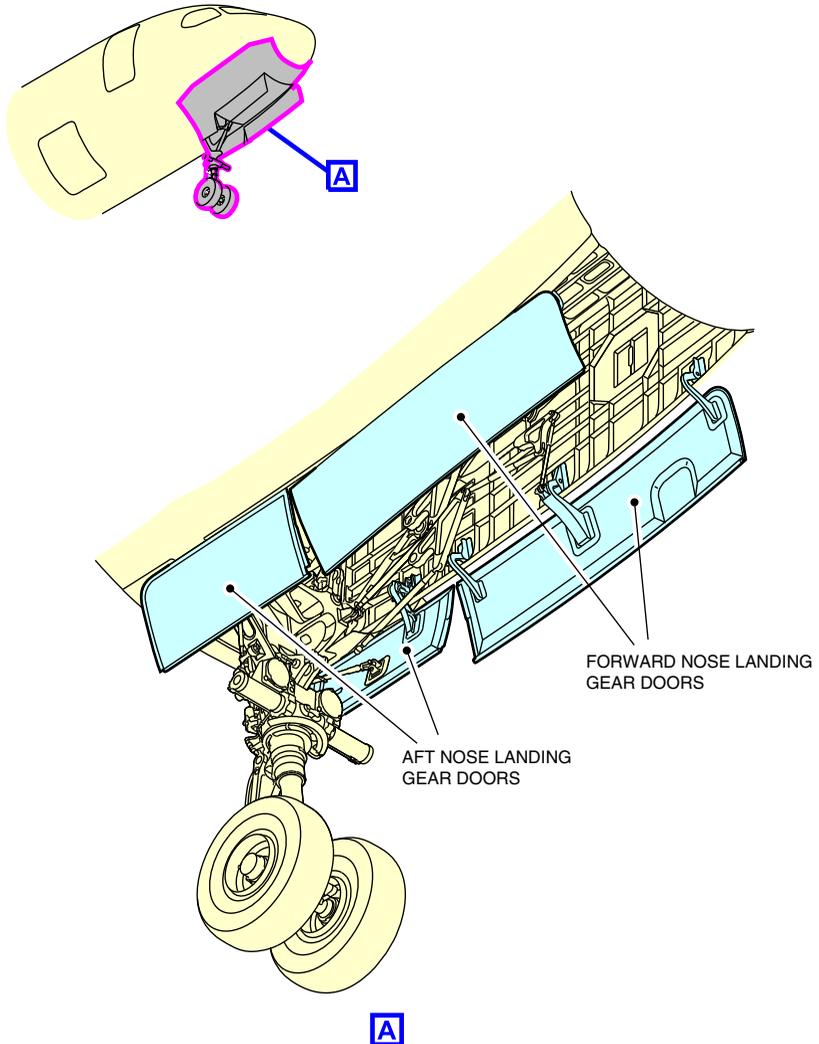
CS300

SYSTEM 32 LANDING GEAR													
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p> <p>2 Remarks and/or exceptions</p>												
32-06 Nose landing gear door	<p>4 Any number or combination can be missing if operations are conducted with all four door panels removed and landing gear extended.</p> <ul style="list-style-type: none"> Operational limitation: Refer to Chapter 6 – Supplement 5 - Operation with airplane systems inoperative – Landing gear locked down. Operational limitation: The maximum speed with NLG doors missing is 220 KIAS. The performance limited weights (based on landing gear down) are reduced by: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">Takeoff weight</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">531 kg</td> <td style="text-align: center;">1170 lb</td> </tr> </tbody> </table> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">Enroute climb</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1770 kg</td> <td style="text-align: center;">3900 lb</td> </tr> </tbody> </table> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">Landing weight</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">531 kg</td> <td style="text-align: center;">1170 lb</td> </tr> </tbody> </table>	Takeoff weight		531 kg	1170 lb	Enroute climb		1770 kg	3900 lb	Landing weight		531 kg	1170 lb
Takeoff weight													
531 kg	1170 lb												
Enroute climb													
1770 kg	3900 lb												
Landing weight													
531 kg	1170 lb												

SYSTEM 32 LANDING GEAR			
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2		
	2 Remarks and/or exceptions		
32-06 Nose landing gear door (Cont'd)	<p>CAFM/CIFP: Add 13.0 to the CDL index for this item, as calculated in Chapter 6 – Supplement 5 – Operation with airplane systems inoperative – Landing gear locked down.</p> <ul style="list-style-type: none">The mission fuel requirements (based on landing gear down) are increased by: <table border="1"><thead><tr><th>Fuel consumption</th></tr></thead><tbody><tr><td>+4.68% on fuel used</td></tr></tbody></table>	Fuel consumption	+4.68% on fuel used
Fuel consumption			
+4.68% on fuel used			

SYSTEM 32 LANDING GEAR

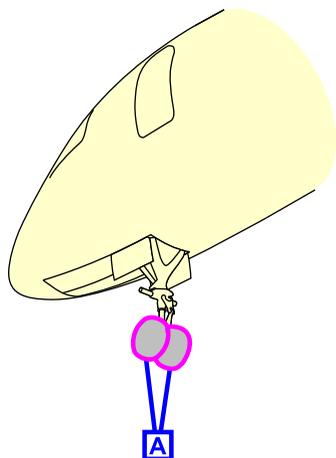
32-06: Nose landing gear doors



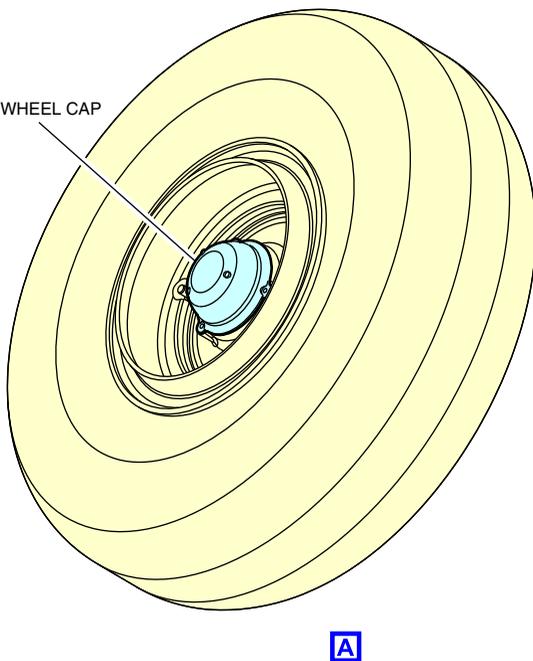
SYSTEM 32 LANDING GEAR	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
32-07 Nosewheel cap	2 One or two can be missing with no impact on aircraft performance. <ul style="list-style-type: none">• Speed tape must be installed to prevent air/humidity/water ingress in flight. Refer to the Aircraft Structure Repair Publication (ASRP), (BD500-3AB48-10600-00), Speed tape replacement. The nose wheel cap can be removed. Refer to MMEL items:<ul style="list-style-type: none">– 32-00-031-01 (section 2) and/or 32-00-033-01 (section 2) <TC> or <EASA>

SYSTEM 32 LANDING GEAR

32-07: Nosewheel cap



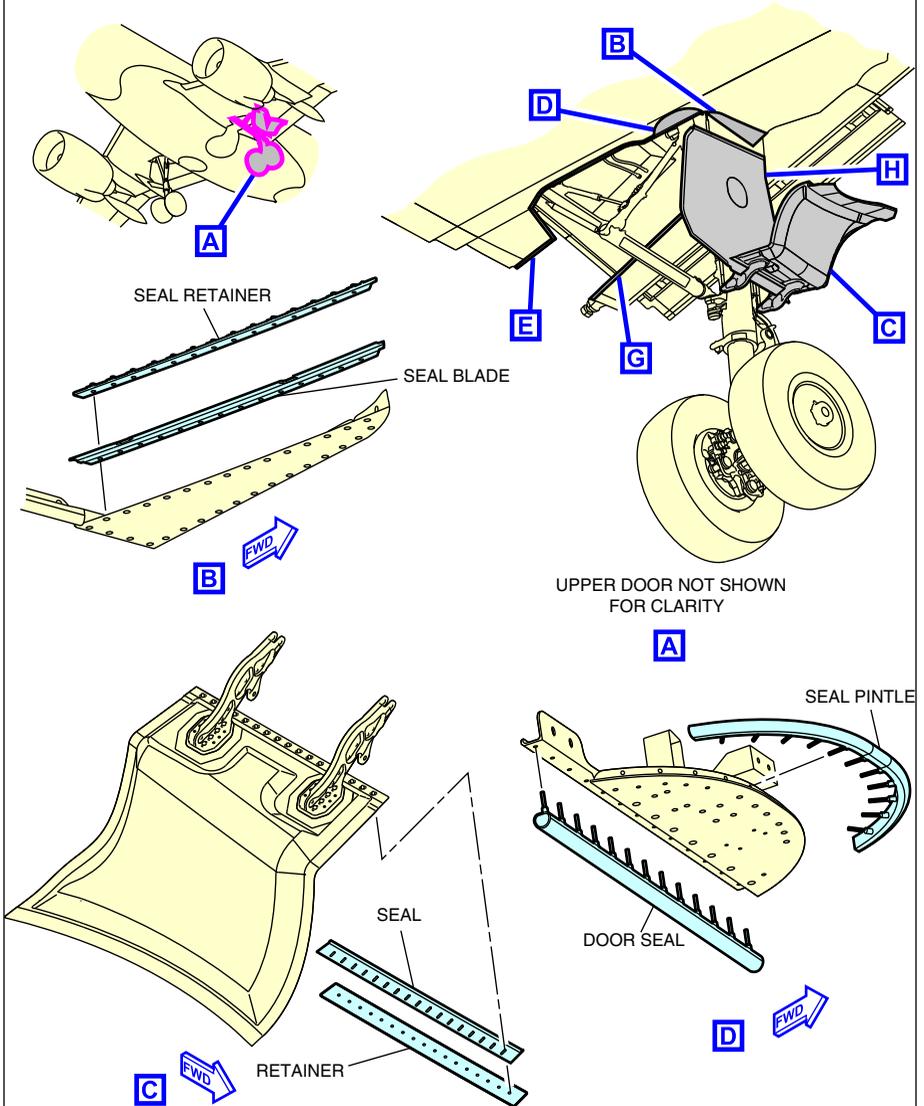
NOSEWHEEL CAP



SYSTEM 32 LANDING GEAR		
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2	2 Remarks and/or exceptions
32-09 Main landing gear door seal and retainer	32	Up to three (3) items can be missing with a negligible impact on aircraft performance. CAFM/CIFP: Use a CDL index of 0.0 for this item.

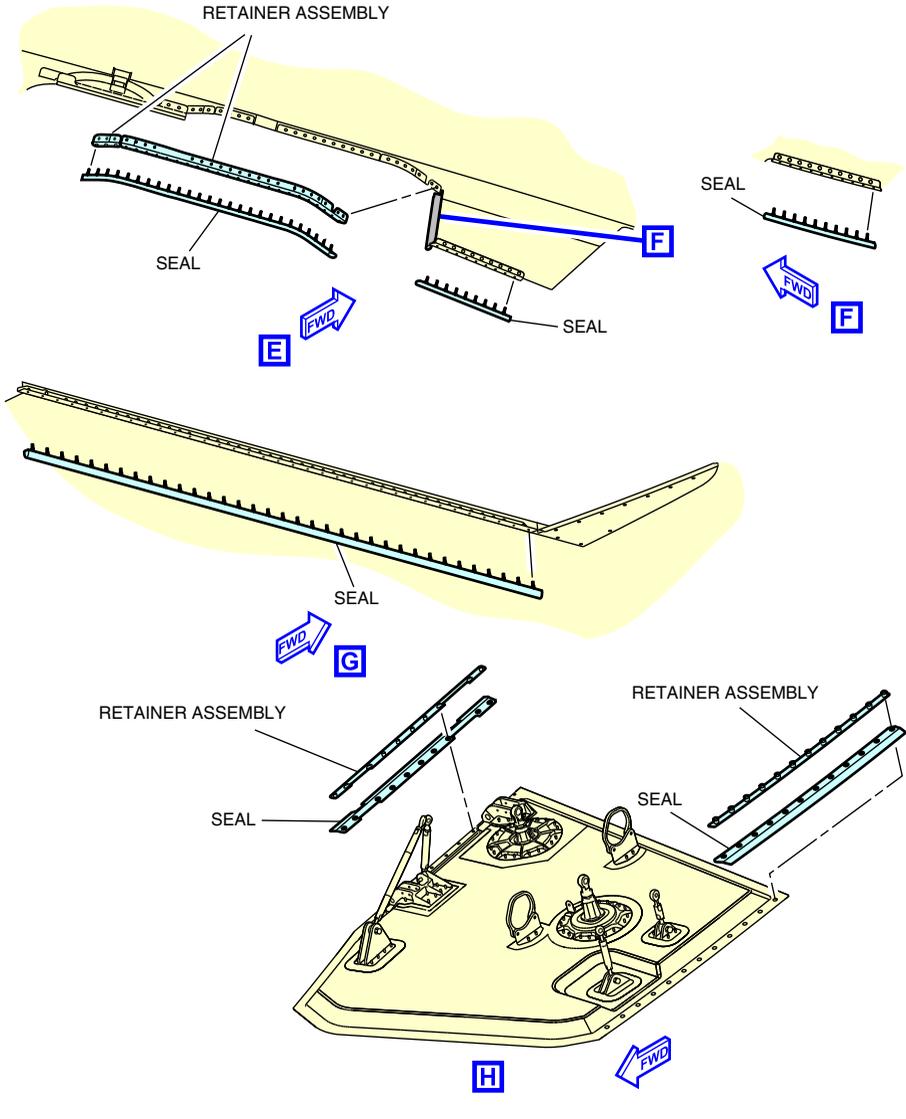
SYSTEM 32 LANDING GEAR

32-09: MLG door seals and retainers



SYSTEM 32 LANDING GEAR

32-09: MLG door seals and retainers



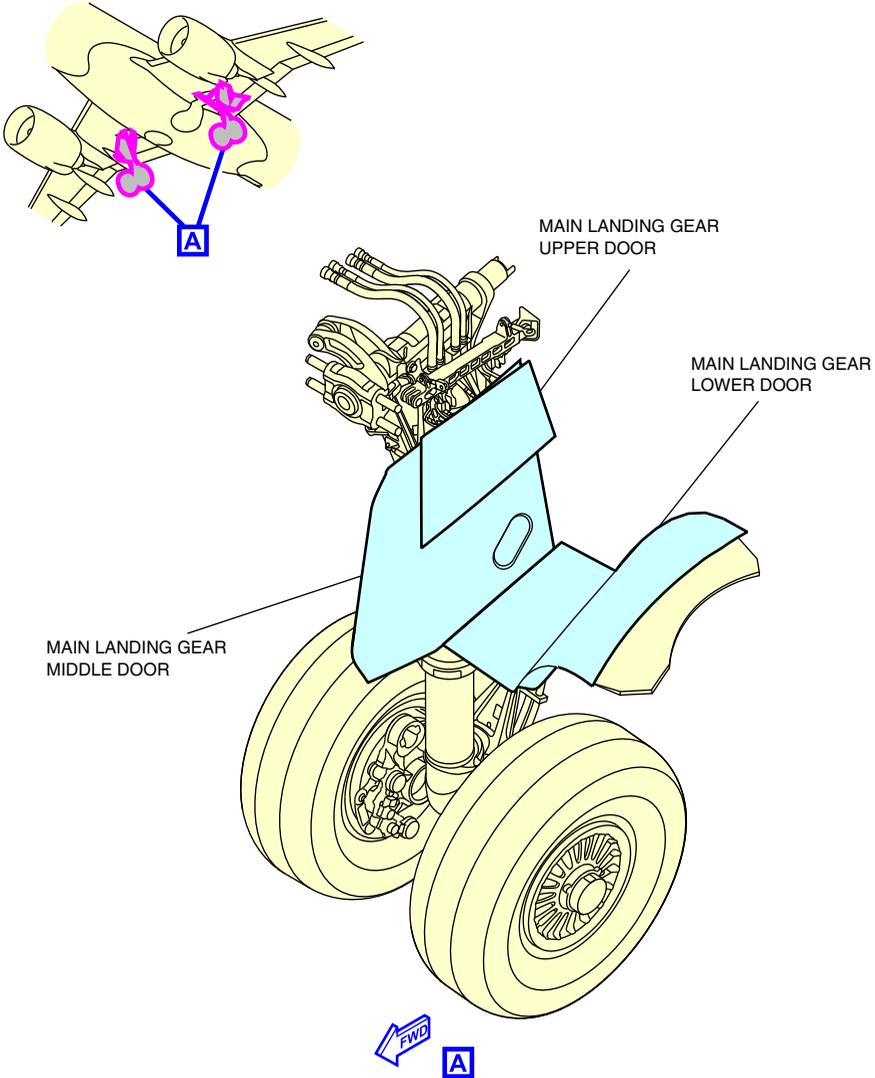
**APPENDIX
CONFIGURATION DEVIATION LIST
Landing gear**

CS300

SYSTEM 32 LANDING GEAR	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
32-10 Main landing gear door	2 Remarks and/or exceptions 6 Any number or combination can be missing if operations are conducted with landing gear extended. <ul style="list-style-type: none">• Operational limitation: Refer to Chapter 6 – Supplement 5 - Operation with airplane systems inoperative – Landing gear locked down.

SYSTEM 32 LANDING GEAR

32-10: Main landing gear doors



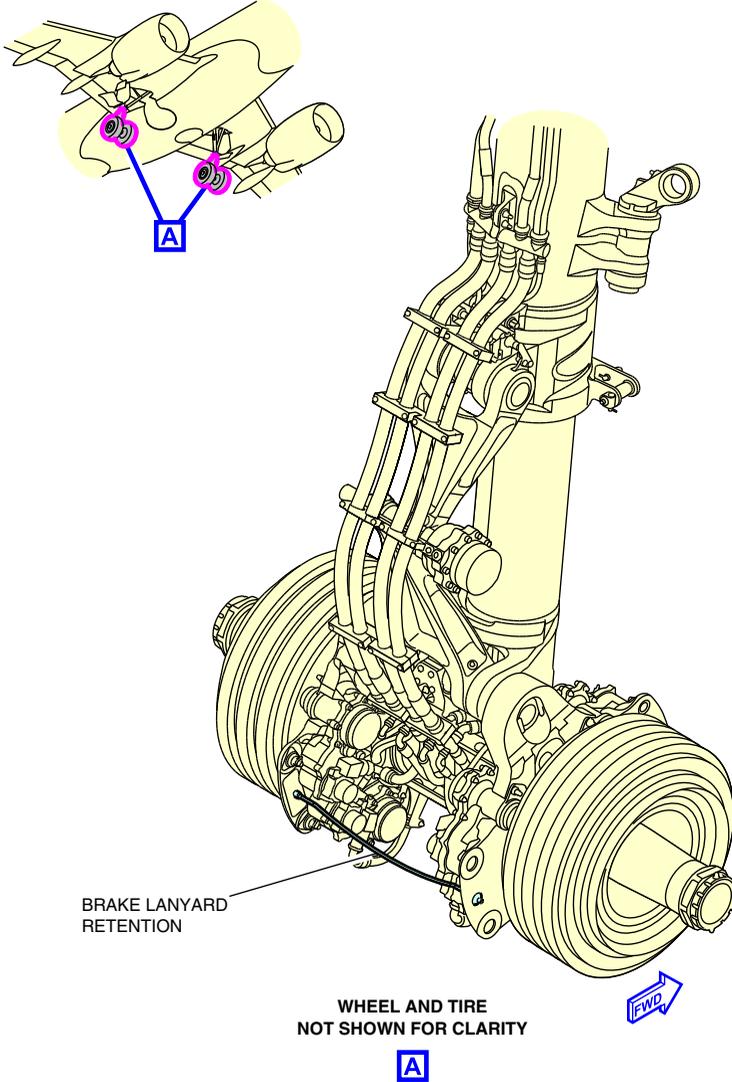
**APPENDIX
CONFIGURATION DEVIATION LIST
Landing gear**

CS300

SYSTEM 32 LANDING GEAR	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
32-12 Brake lanyard retention	2 Remarks and/or exceptions 2 Any number or combination can be missing with no impact on aircraft performance.

SYSTEM 32 LANDING GEAR

32-12: Brake lanyard retention



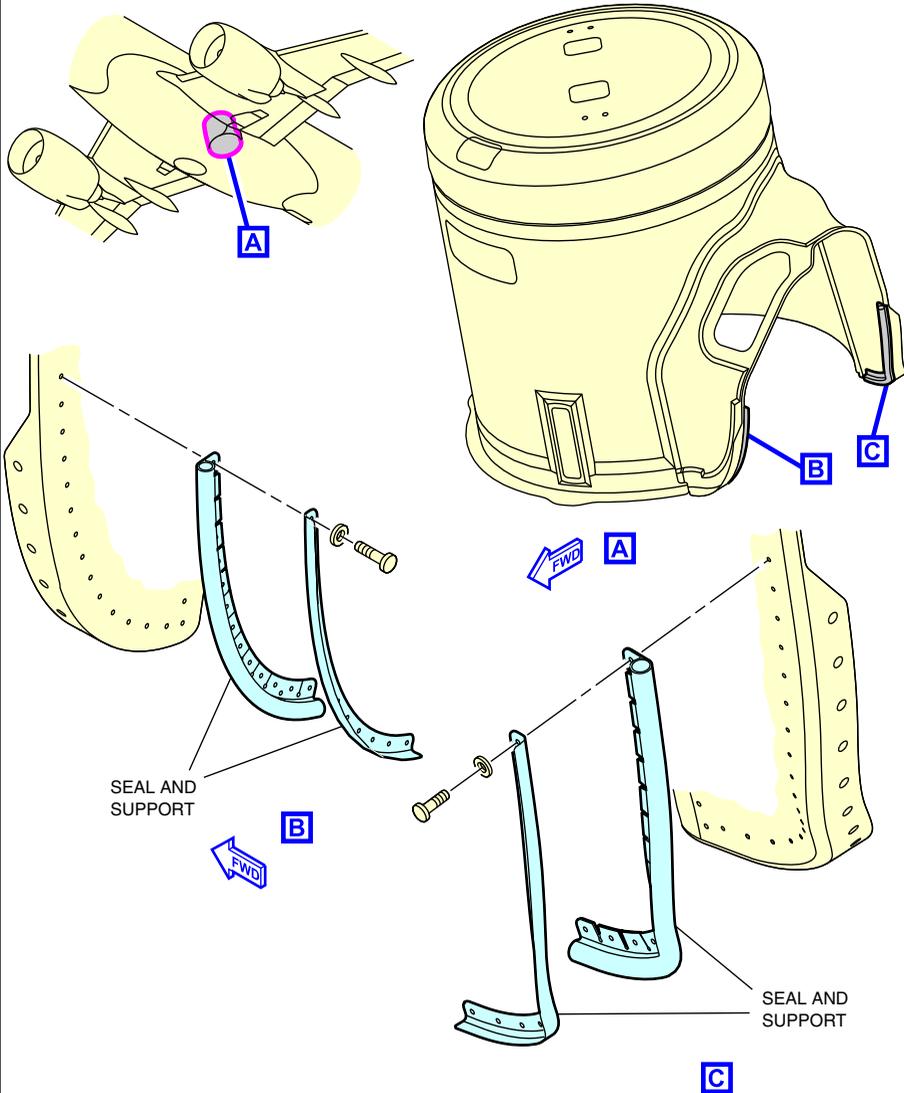
**APPENDIX
CONFIGURATION DEVIATION LIST
Landing gear**

CS300

SYSTEM 32 LANDING GEAR	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
32-14 Wheel bin seal and support	8 Any number or combination can be missing with a negligible impact on aircraft performance. CAFM/CIFP: Use a CDL index of 0.0 for this item.

SYSTEM 32 LANDING GEAR

32-14: Wheel bin seals



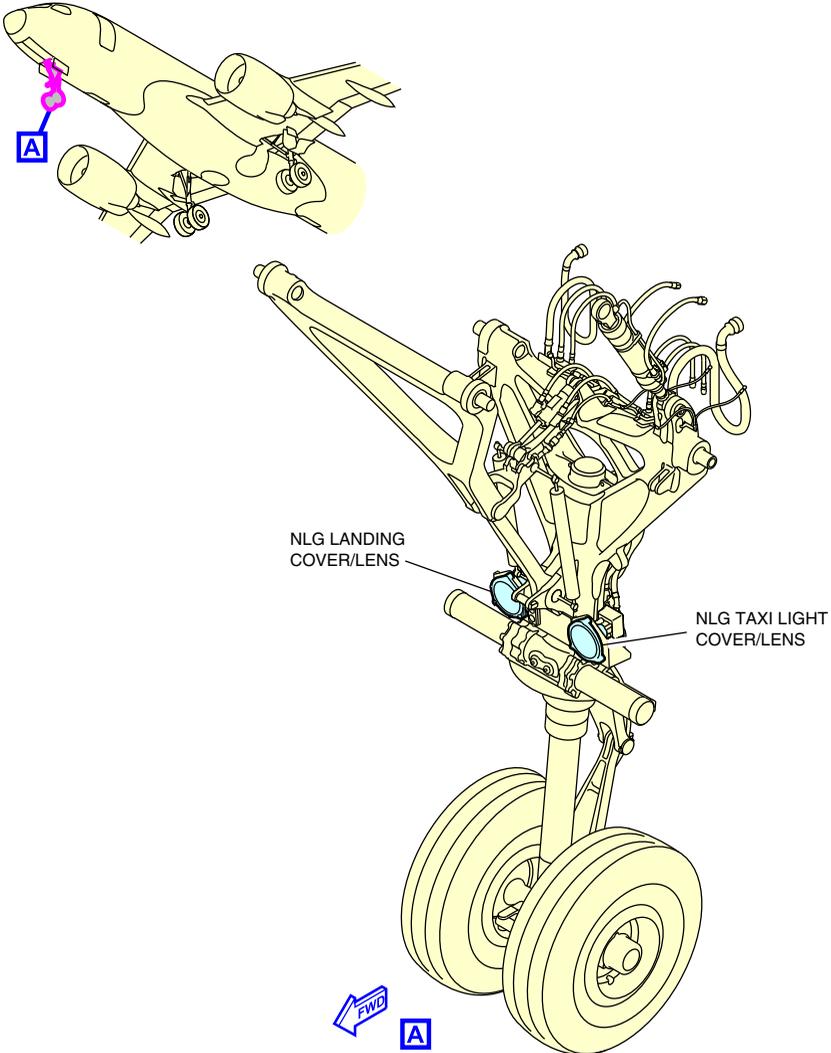
**APPENDIX
CONFIGURATION DEVIATION LIST
Lights**

CS300

SYSTEM 33 LIGHTS	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2 2 Remarks and/or exceptions
33-01 Nose landing gear taxi/landing light cover/lens	<p>2 One or two can be missing with no impact on aircraft performance.</p> <ul style="list-style-type: none"> • The light must be disabled (unpowered) and, if necessary, removed. Refer to MMEL item(s) 33-41-03 and/or 33-41-06. • Speed tape must be installed to prevent air/humidity/water ingress in flight. Refer to the Aircraft Structure Repair Publication (ASRP), (BD500-3AB48-10600-00), Speed tape replacement. • Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited.

SYSTEM 33 LIGHTS

33-01: Nose landing gear taxi/landing light cover/lens



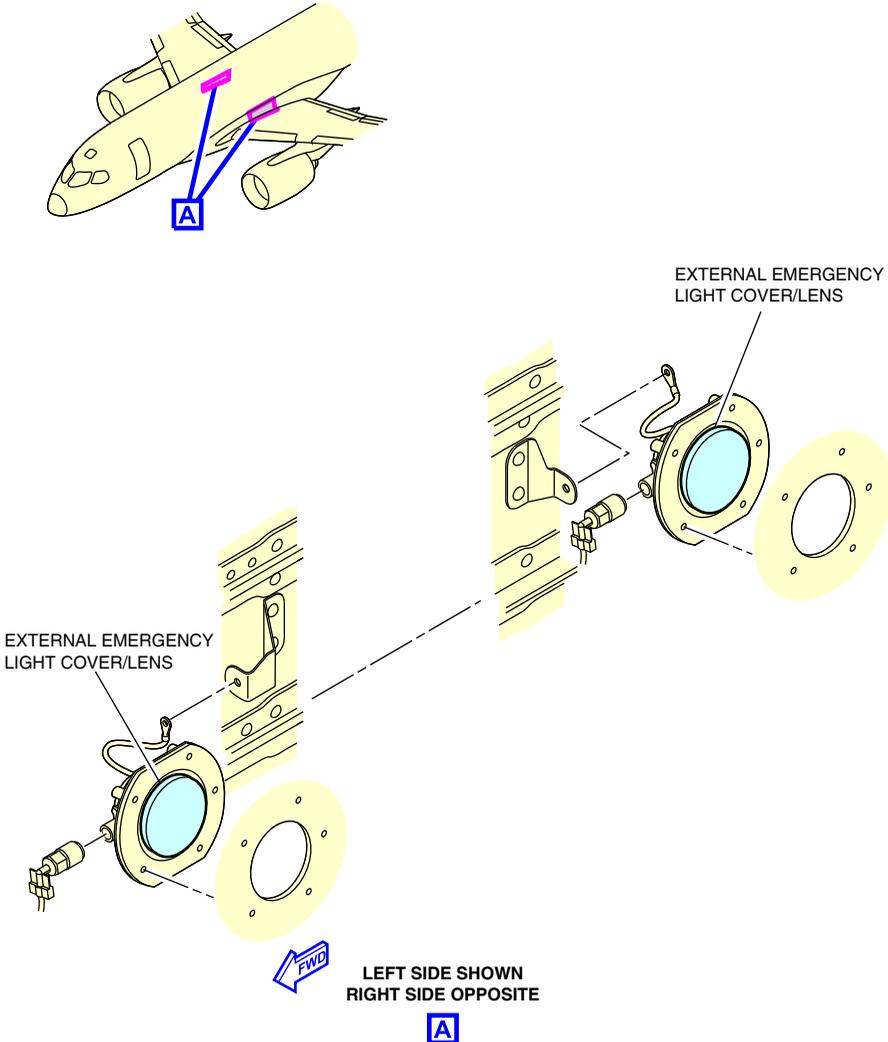
**APPENDIX
CONFIGURATION DEVIATION LIST
Lights**

CS300

SYSTEM 33 LIGHTS	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2 2 Remarks and/or exceptions
33-02 External emergency light cover/lens	<p>4 Any number or combination can be missing with a negligible impact on aircraft performance.</p> <ul style="list-style-type: none"> • The light must be disabled (unpowered) and kept in place. Refer to MMEL item 33-55-02. • Speed tape must be installed to prevent air/humidity/water ingress in flight. Refer to the Aircraft Structure Repair Publication (ASRP), (BD500-3AB48-10600-00), Speed tape replacement. • Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. <p>CAFM/CIFP: Use a CDL index of 0.0 for this item.</p>

SYSTEM 33 LIGHTS

33-02: External emergency light cover/lens



**APPENDIX
CONFIGURATION DEVIATION LIST
Lights**

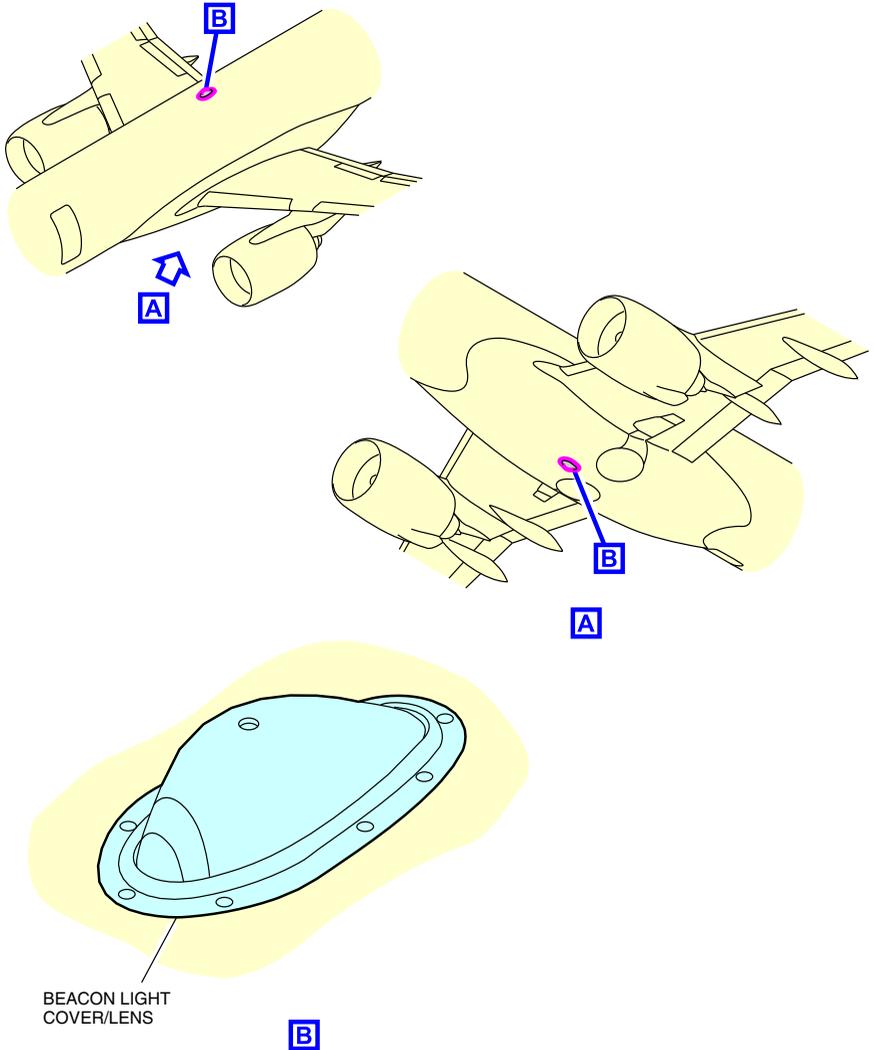
CS300

SYSTEM 33 LIGHTS													
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p>												
33-04 Upper/lower beacon light cover/lens	<p>2 Remarks and/or exceptions</p> <p>2 One or two can be missing if:</p> <ul style="list-style-type: none"> • The light must be disabled (unpowered) and kept in place. Refer to MMEL item 33-44-07. • Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. • The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">Takeoff weight</th> </tr> </thead> <tbody> <tr> <td align="center">27 kg/cover/lens</td> <td align="center">59 lb/cover/lens</td> </tr> </tbody> </table> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">Enroute climb</th> </tr> </thead> <tbody> <tr> <td align="center">89 kg/cover/lens</td> <td align="center">196 lb/cover/lens</td> </tr> </tbody> </table> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">Landing weight</th> </tr> </thead> <tbody> <tr> <td align="center">27 kg/cover/lens</td> <td align="center">59 lb/cover/lens</td> </tr> </tbody> </table> <p>CAFM/CIFP: Add 0.7 to the CDL index for each missing cover/lens.</p> <ul style="list-style-type: none"> • The mission fuel requirements are increased by: 	Takeoff weight		27 kg/cover/lens	59 lb/cover/lens	Enroute climb		89 kg/cover/lens	196 lb/cover/lens	Landing weight		27 kg/cover/lens	59 lb/cover/lens
Takeoff weight													
27 kg/cover/lens	59 lb/cover/lens												
Enroute climb													
89 kg/cover/lens	196 lb/cover/lens												
Landing weight													
27 kg/cover/lens	59 lb/cover/lens												

SYSTEM 33 LIGHTS			
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2		
	2 Remarks and/or exceptions		
33-04 Upper/lower beacon light cover/lens (Cont'd)	<table border="1"><tr><td>Fuel consumption</td></tr><tr><td>+0.24% on fuel used/cover/lens</td></tr></table>	Fuel consumption	+0.24% on fuel used/cover/lens
Fuel consumption			
+0.24% on fuel used/cover/lens			

SYSTEM 33 LIGHTS

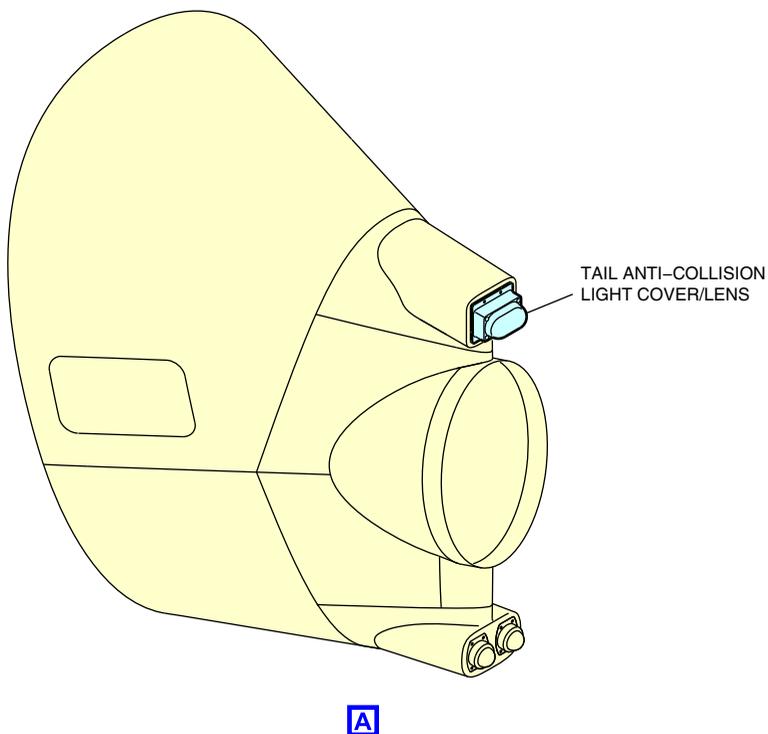
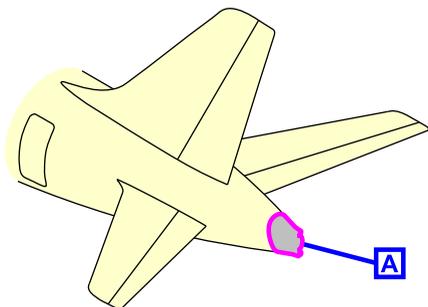
33-04: Upper/lower beacon light cover/lens



SYSTEM 33 LIGHTS	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
33-07 Tail anti-collision light cover/lens	<p>1 Can be missing with no impact on aircraft performance.</p> <ul style="list-style-type: none">Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited.

SYSTEM 33 LIGHTS

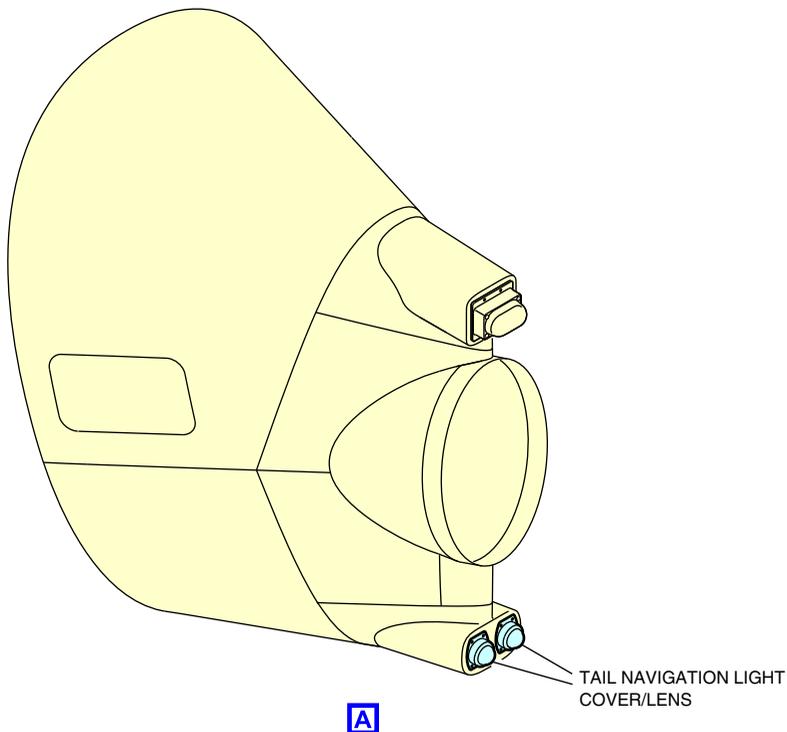
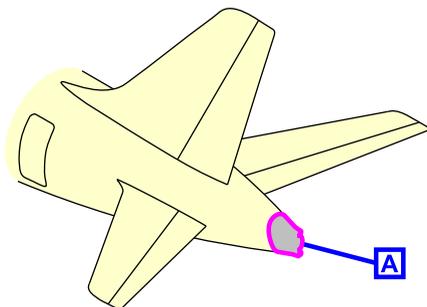
33-07: Tail anti-collision light cover/lens



SYSTEM 33 LIGHTS	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
33-08 Tail navigation light cover/lens, left/right	2 Can be missing with no impact on aircraft performance. <ul style="list-style-type: none">Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited.

SYSTEM 33 LIGHTS

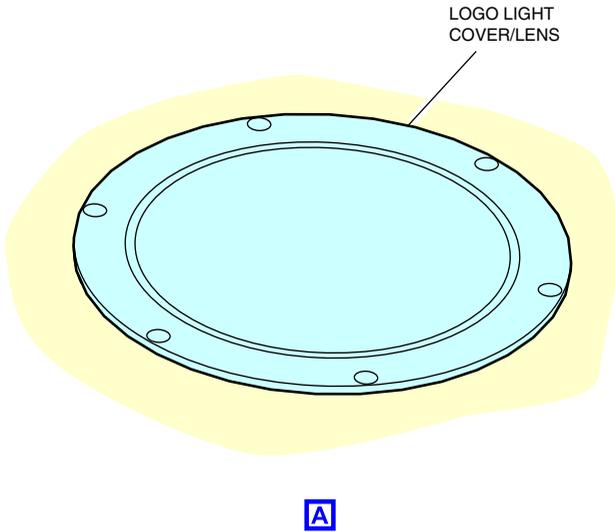
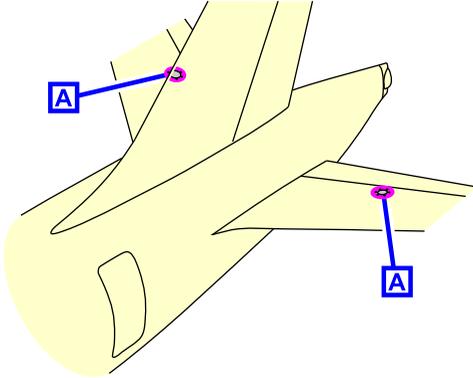
33-08: Tail navigation light covers/lenses



SYSTEM 33 LIGHTS	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
33-09 Logo light cover/lens, left/right	2 One or two can be missing with no impact on aircraft performance. <ul style="list-style-type: none">• Speed tape must be installed to prevent air/humidity/water ingress in flight. Refer to the Aircraft Structure Repair Publication (ASRP), (BD500-3AB48-10600-00), Speed tape replacement.• Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited.

SYSTEM 33 LIGHTS

33-09: Logo light covers/lenses



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**APPENDIX
CONFIGURATION DEVIATION LIST
Structures**

CS300

SYSTEM 51 STRUCTURES													
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p> <p>2 Remarks and/or exceptions</p>												
51-01 Aerodynamic sealant	<p>- Aerodynamic sealant is a rubberized compound used to fill gaps at external surface joints.</p> <p>Aerodynamic sealant must not be missing on the fuselage in RVSM zones defined in the Aircraft Structural Repair Publication (ASRP).</p> <p>Aerodynamic sealant can be missing on external surfaces if:</p> <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">Takeoff weight</th> </tr> </thead> <tbody> <tr> <td>33 kg / every 3 m or less missing</td> <td>72 lb / every 10 feet or less missing</td> </tr> </tbody> </table> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">Enroute climb</th> </tr> </thead> <tbody> <tr> <td>109 kg / every 3 m or less missing</td> <td>240 lb / every 10 feet or less missing</td> </tr> </tbody> </table> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">Landing weight</th> </tr> </thead> <tbody> <tr> <td>33 kg / every 3 m or less missing</td> <td>72 lb / every 10 feet or less missing</td> </tr> </tbody> </table>	Takeoff weight		33 kg / every 3 m or less missing	72 lb / every 10 feet or less missing	Enroute climb		109 kg / every 3 m or less missing	240 lb / every 10 feet or less missing	Landing weight		33 kg / every 3 m or less missing	72 lb / every 10 feet or less missing
Takeoff weight													
33 kg / every 3 m or less missing	72 lb / every 10 feet or less missing												
Enroute climb													
109 kg / every 3 m or less missing	240 lb / every 10 feet or less missing												
Landing weight													
33 kg / every 3 m or less missing	72 lb / every 10 feet or less missing												

SYSTEM 51 STRUCTURES			
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2		
	2 Remarks and/or exceptions		
51-01 Aerodynamic sealant (Cont'd)	CAFM/CIFP: Add 0.8 to the CDL index for every 3 m (10 feet) or less missing. <ul style="list-style-type: none">The mission fuel requirements are increased by: <table border="1"><thead><tr><th>Fuel consumption</th></tr></thead><tbody><tr><td>+0.29% on fuel used / every 3 m (10 feet) or less missing</td></tr></tbody></table>	Fuel consumption	+0.29% on fuel used / every 3 m (10 feet) or less missing
Fuel consumption			
+0.29% on fuel used / every 3 m (10 feet) or less missing			

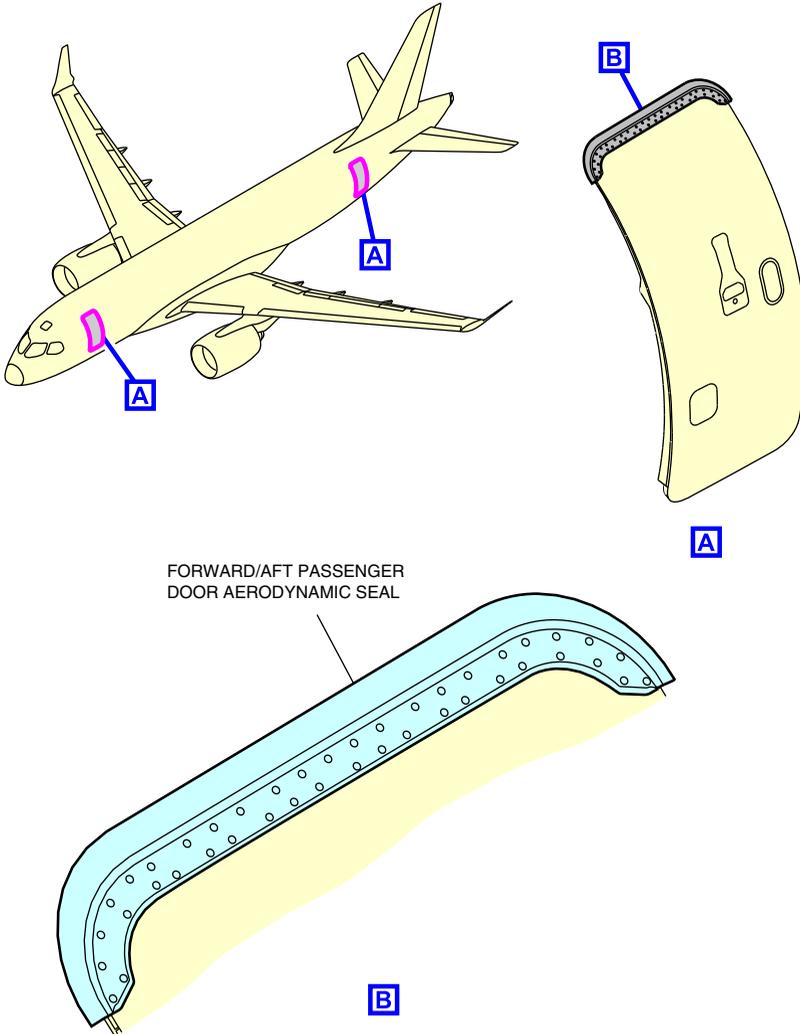
**APPENDIX
CONFIGURATION DEVIATION LIST
Doors**

CS300

SYSTEM 52 DOORS	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
SUB-SYSTEM ITEM	2 Remarks and/or exceptions
52-01 Forward/aft passenger door aerodynamic seal	2 One or two can be missing with a negligible impact on aircraft performance. CAFM/CIFP: Use a CDL index of 0.0 for this item.

SYSTEM 52 DOORS

52-01: Forward/aft passenger door aerodynamic seal



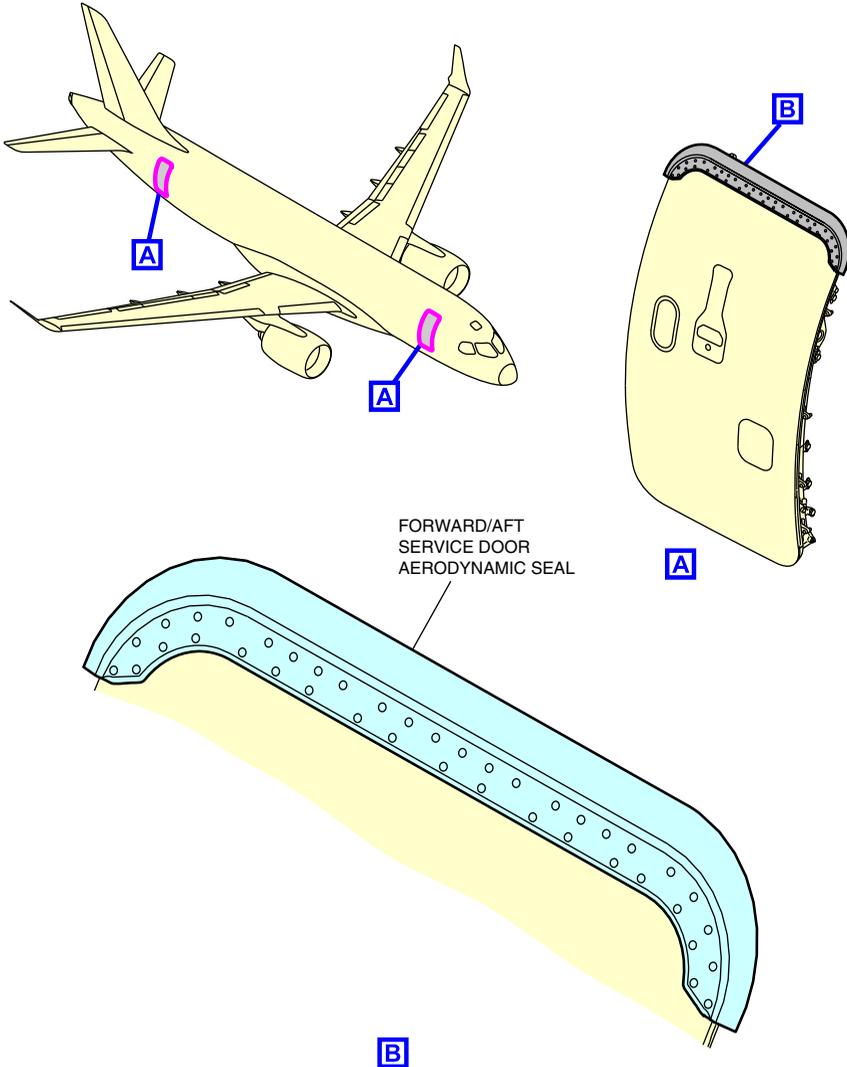
**APPENDIX
CONFIGURATION DEVIATION LIST
Doors**

CS300

SYSTEM 52 DOORS	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
52-02 Forward/aft service door aerodynamic seal	2 One or two can be missing with a negligible impact on aircraft performance. CAFM/CIFP: Use a CDL index of 0.0 for this item.

SYSTEM 52 DOORS

52-02: Forward/aft service door aerodynamic seal



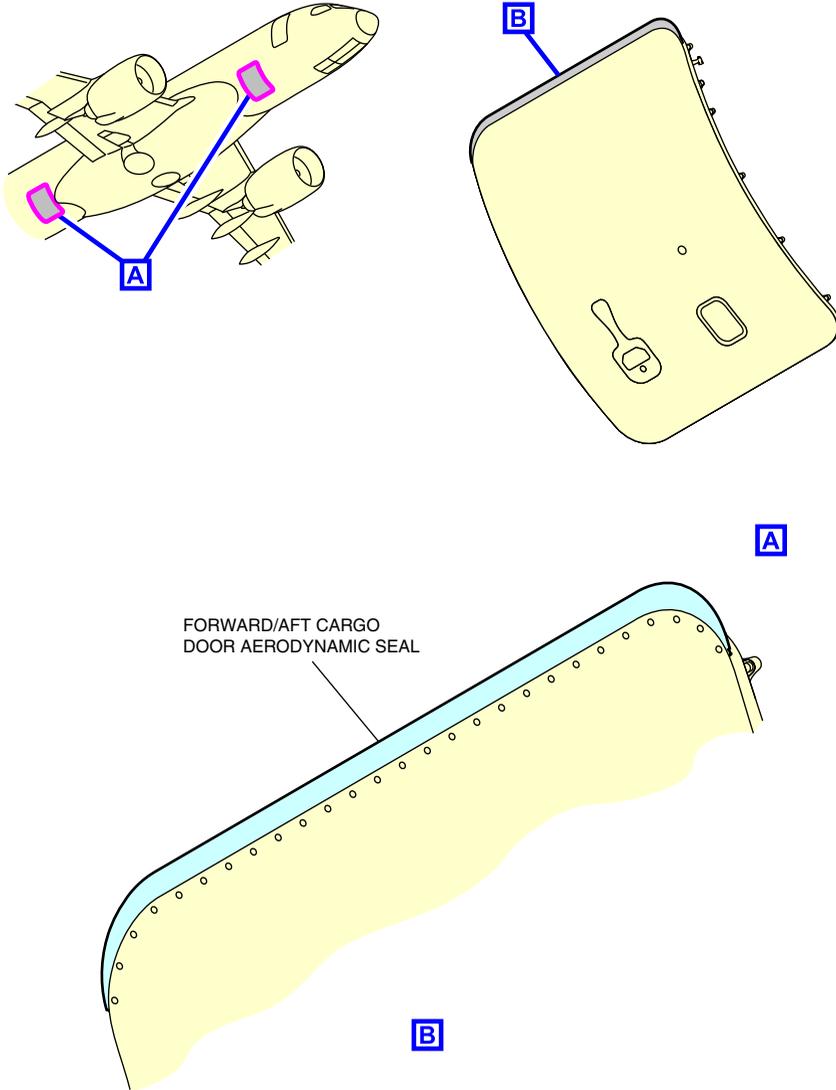
**APPENDIX
CONFIGURATION DEVIATION LIST
Doors**

CS300

SYSTEM 52 DOORS															
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p>														
52-03 Forward/aft cargo compartment door aerodynamic seal	<p>2 Remarks and/or exceptions</p> <p>2 One or two can be missing if:</p> <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>5 kg/seal</td> <td>11 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>17 kg/seal</td> <td>36 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>5 kg/seal</td> <td>11 lb/seal</td> </tr> </table> <p>CAFM/CIFP: Add 0.2 to the CDL index for each missing seal.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="margin-left: 20px;"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+0.05% on fuel used/seal</td> </tr> </table>	Takeoff weight		5 kg/seal	11 lb/seal	Enroute climb		17 kg/seal	36 lb/seal	Landing weight		5 kg/seal	11 lb/seal	Fuel consumption	+0.05% on fuel used/seal
Takeoff weight															
5 kg/seal	11 lb/seal														
Enroute climb															
17 kg/seal	36 lb/seal														
Landing weight															
5 kg/seal	11 lb/seal														
Fuel consumption															
+0.05% on fuel used/seal															

SYSTEM 52 DOORS

52-03: Forward/aft cargo compartment door aerodynamic seal



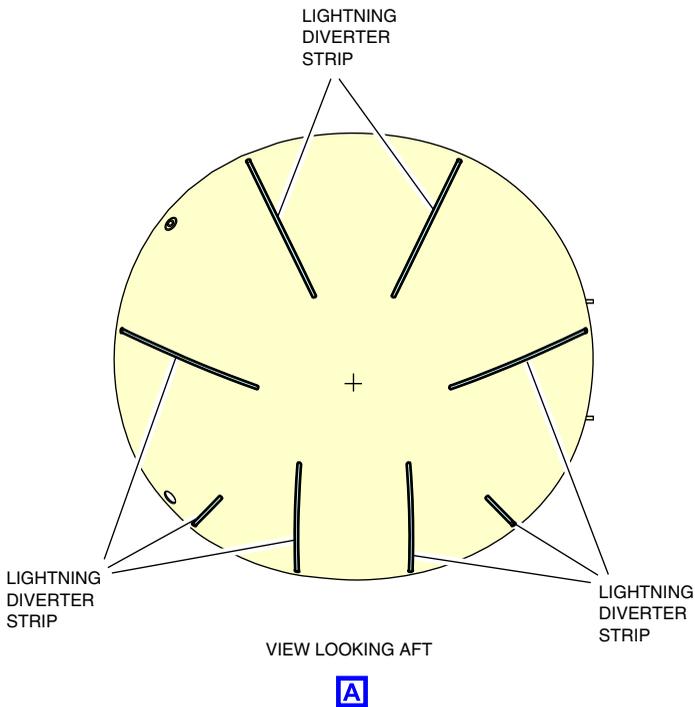
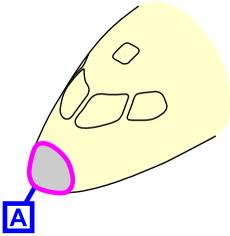
**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

CS300

SYSTEM 53 FUSELAGE	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
53-01 Radome lightning diverter strip	8 Can be missing with no impact on aircraft performance. • Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited.

SYSTEM 53 FUSELAGE

53-01: Radome lightning diverter strips



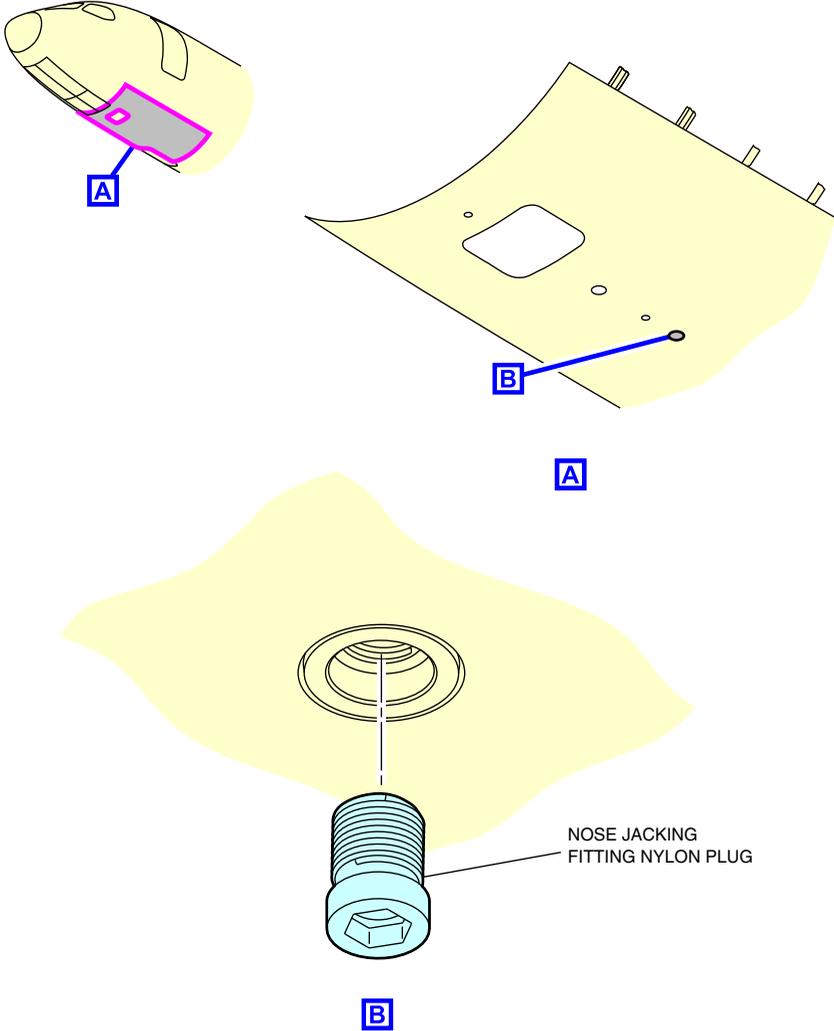
**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

CS300

SYSTEM 53 FUSELAGE	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
53-05 Nose jacking fitting nylon plug	<p>1 Can be missing with a negligible impact on aircraft performance.</p> <ul style="list-style-type: none"> • The hole must be patched. • Speed tape must be installed to prevent air/humidity/water ingress in flight. Refer to the Aircraft Structure Repair Publication (ASRP), (BD500-3AB48-10600-00), Speed tape replacement. <p>CAFM/CIFP: Use a CDL index of 0.0 for this item.</p>

SYSTEM 53 FUSELAGE

53-05: Nose jacking fitting nylon plug



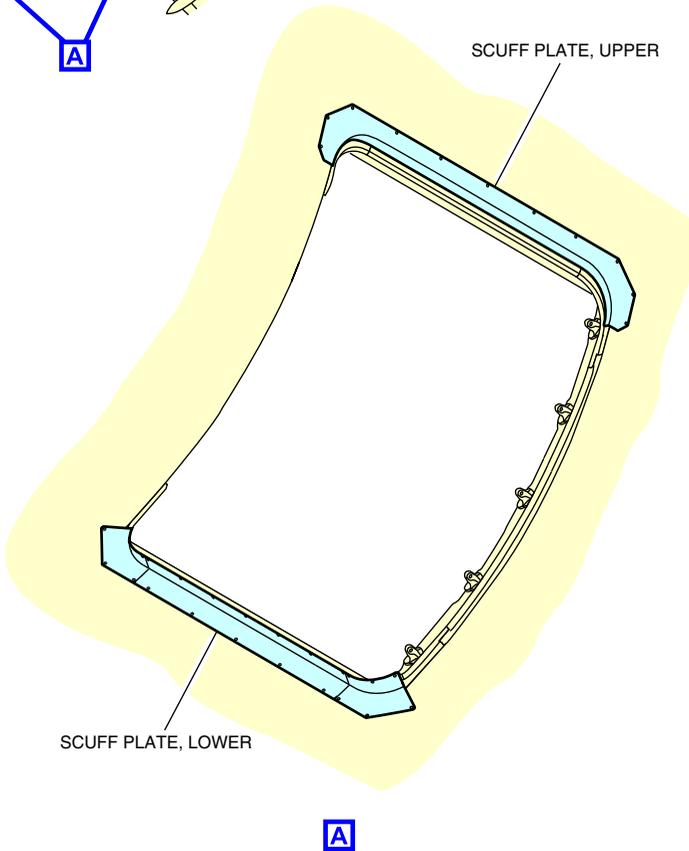
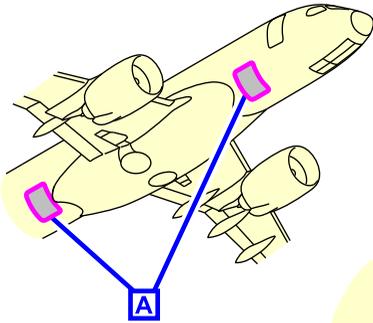
**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

CS300

SYSTEM 53 FUSELAGE	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
53-06 Forward/aft cargo door scuff plate, upper/lower	4 Any number or combination can be missing with no impact on aircraft performance. <ul style="list-style-type: none">• Operational limitation: It is prohibited to carry cargo in the affected cargo compartment.

SYSTEM 53 FUSELAGE

53-06: Forward/aft cargo door scuff plates, upper/lower



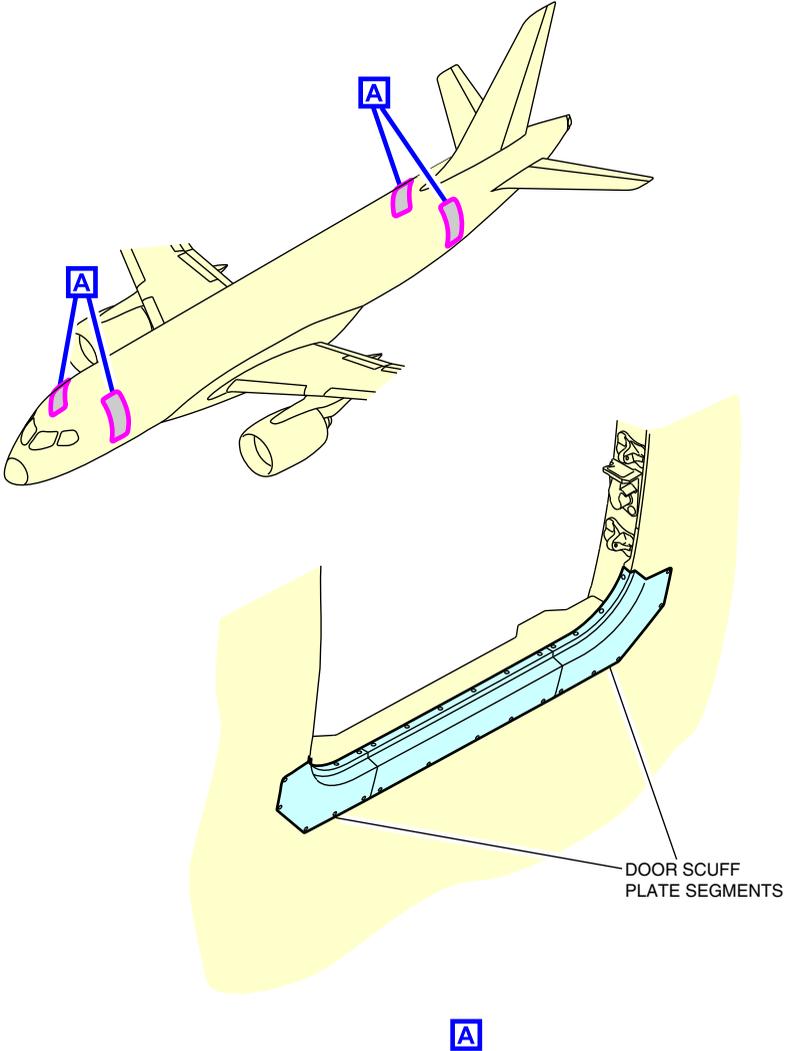
**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

CS300

SYSTEM 53 FUSELAGE	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
53-07 Forward/aft service/passenger door scuff plate segment	12 Any number or combination can be missing with no impact on aircraft performance.

SYSTEM 53 FUSELAGE

53-07: Forward/aft service/passenger door scuff plate segments



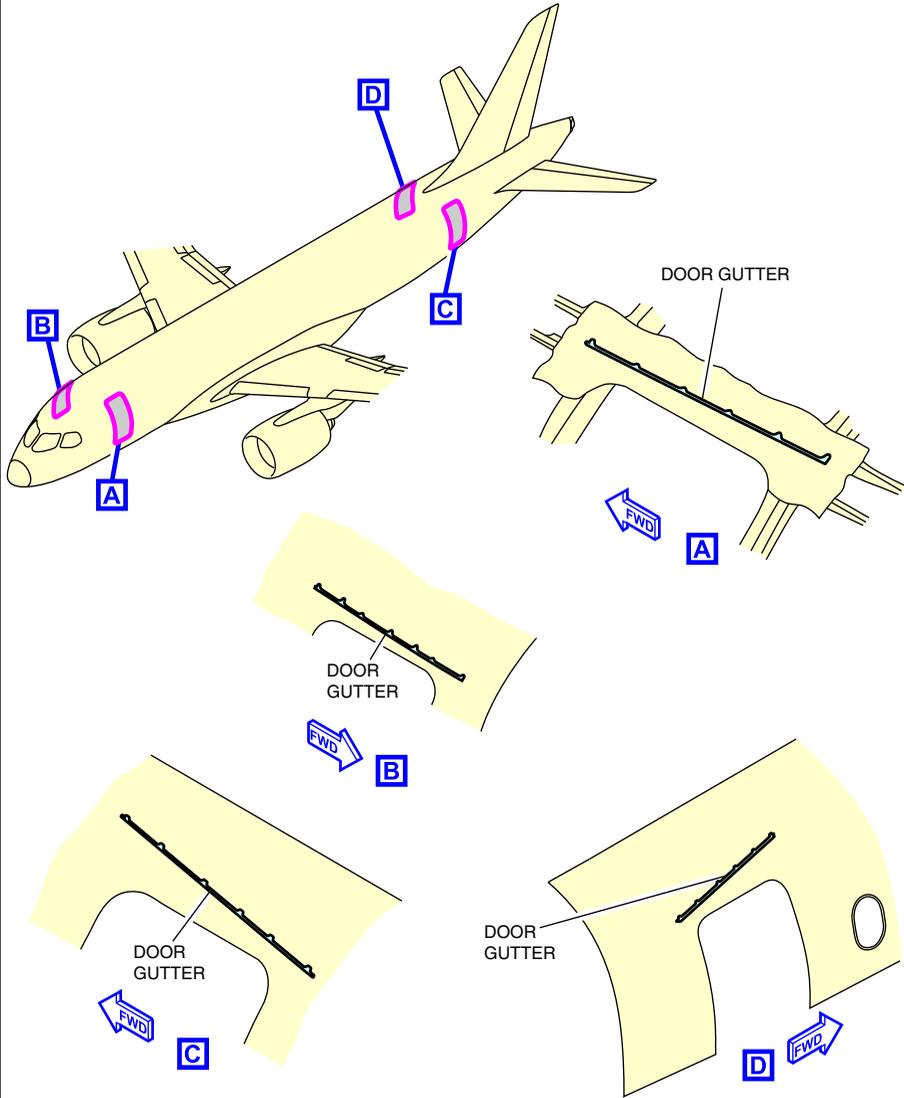
**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

CS300

SYSTEM 53 FUSELAGE	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
53-08 Forward/aft service/passenger door gutter	4 Any number or combination can be missing with no impact on aircraft performance.

SYSTEM 53 FUSELAGE

53-08: Forward/aft service/passenger door gutters



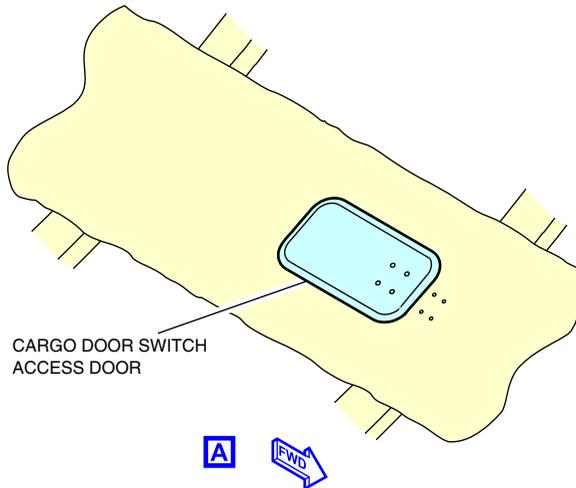
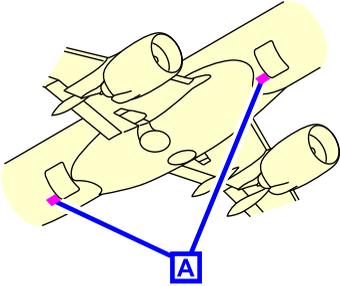
**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

CS300

SYSTEM 53 FUSELAGE															
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p>														
<p>53-09 Forward/aft cargo door switch access door</p>	<p>2 Remarks and/or exceptions</p> <p>2 Any number or combination can be missing if:</p> <ul style="list-style-type: none"> Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>6 kg/door</td> <td>12 lb/door</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>18 kg/door</td> <td>38 lb/door</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>6 kg/door</td> <td>12 lb/door</td> </tr> </table> <p>CAFM/CIFP: Add 0.2 to the CDL index for each missing door.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="margin-left: 20px;"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+0.05% on fuel used/door</td> </tr> </table>	Takeoff weight		6 kg/door	12 lb/door	Enroute climb		18 kg/door	38 lb/door	Landing weight		6 kg/door	12 lb/door	Fuel consumption	+0.05% on fuel used/door
	Takeoff weight														
	6 kg/door	12 lb/door													
	Enroute climb														
	18 kg/door	38 lb/door													
	Landing weight														
	6 kg/door	12 lb/door													
	Fuel consumption														
	+0.05% on fuel used/door														

SYSTEM 53 FUSELAGE

53-09: Forward/aft cargo door switch access doors



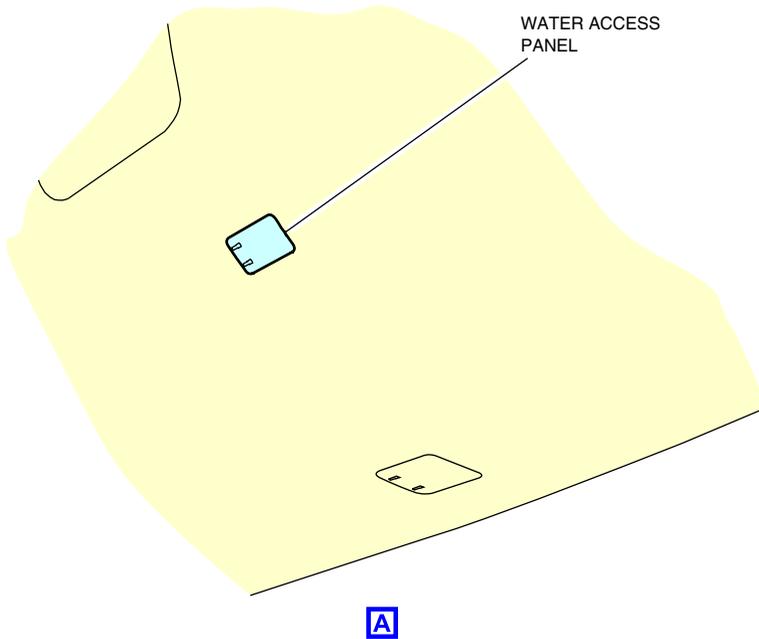
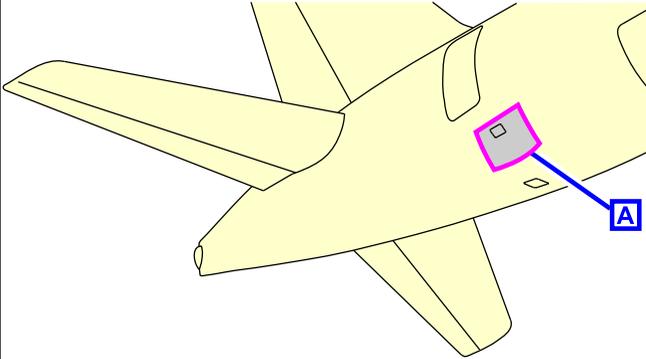
**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

CS300

SYSTEM 53 FUSELAGE															
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p> <p>2 Remarks and/or exceptions</p>														
53-10 Water access panel assembly	<p>1 Can be missing if:</p> <ul style="list-style-type: none"> Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>17 kg</td> <td>36 lb</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>55 kg</td> <td>120 lb</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>17 kg</td> <td>36 lb</td> </tr> </table> <p>CAFM/CIFP: Add 0.4 to the CDL index for this item.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="margin-left: 20px;"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+0.15% on fuel used</td> </tr> </table>	Takeoff weight		17 kg	36 lb	Enroute climb		55 kg	120 lb	Landing weight		17 kg	36 lb	Fuel consumption	+0.15% on fuel used
Takeoff weight															
17 kg	36 lb														
Enroute climb															
55 kg	120 lb														
Landing weight															
17 kg	36 lb														
Fuel consumption															
+0.15% on fuel used															

SYSTEM 53 FUSELAGE

53-10: Water access panel assembly



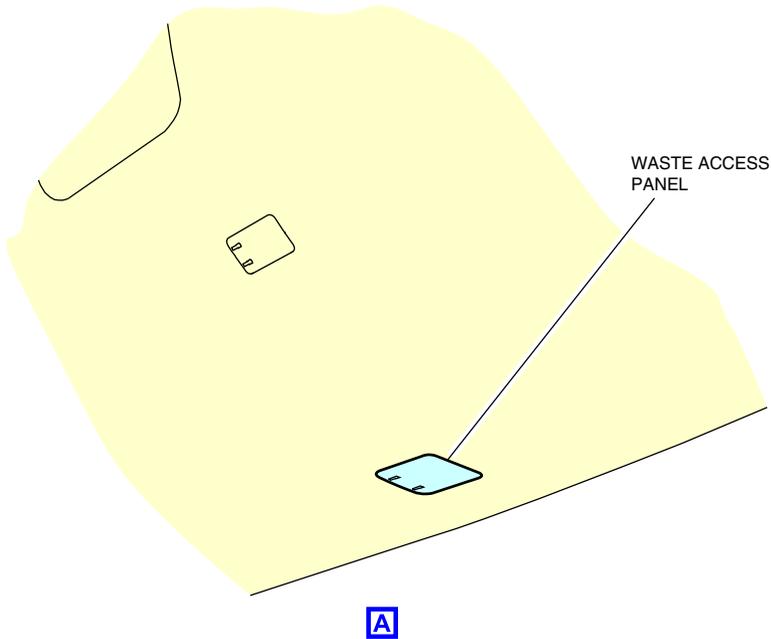
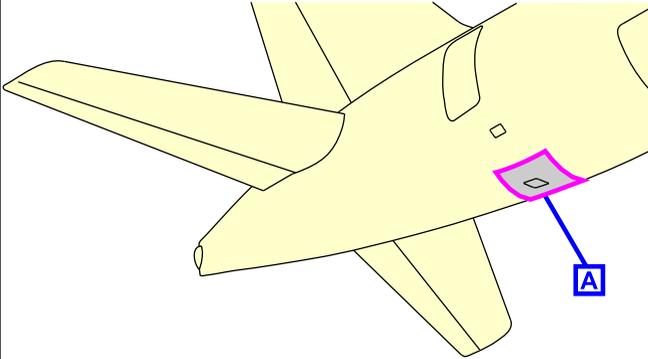
**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

CS300

SYSTEM 53 FUSELAGE															
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p>														
53-11 Waste access panel assembly	<p>2 Remarks and/or exceptions</p> <p>1 Can be missing if:</p> <ul style="list-style-type: none"> Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td style="text-align: center;">34 kg</td> <td style="text-align: center;">73 lb</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td style="text-align: center;">110 kg</td> <td style="text-align: center;">242 lb</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td style="text-align: center;">34 kg</td> <td style="text-align: center;">73 lb</td> </tr> </table> <p>CAFM/CIFP: Add 0.9 to the CDL index for this item.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="margin-left: 20px;"> <tr> <th>Fuel consumption</th> </tr> <tr> <td style="text-align: center;">+0.29% on fuel used</td> </tr> </table>	Takeoff weight		34 kg	73 lb	Enroute climb		110 kg	242 lb	Landing weight		34 kg	73 lb	Fuel consumption	+0.29% on fuel used
Takeoff weight															
34 kg	73 lb														
Enroute climb															
110 kg	242 lb														
Landing weight															
34 kg	73 lb														
Fuel consumption															
+0.29% on fuel used															

SYSTEM 53 FUSELAGE

53-11: Waste access panel assembly



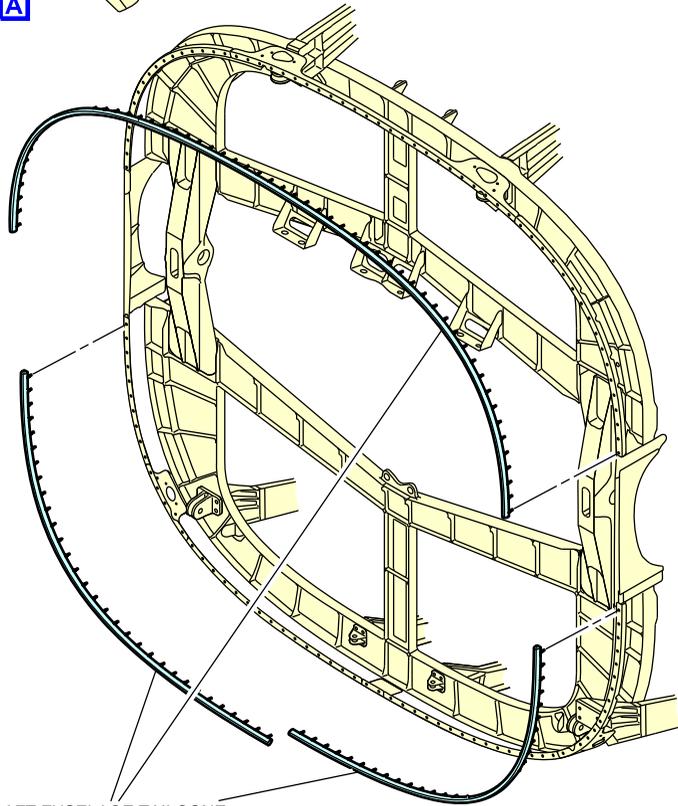
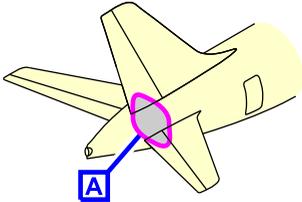
**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

CS300

SYSTEM 53 FUSELAGE															
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p> <p>2 Remarks and/or exceptions</p>														
53-13 Aft fuselage tailcone joining seal	<p>3 Any number or combination can be missing if:</p> <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>6 kg/seal</td> <td>13 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>20 kg/seal</td> <td>43 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>6 kg/seal</td> <td>13 lb/seal</td> </tr> </table> <p>CAFM/CIFP: Add 0.2 to the CDL index for each missing seal.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="margin-left: 20px;"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+0.06% on fuel used/seal</td> </tr> </table>	Takeoff weight		6 kg/seal	13 lb/seal	Enroute climb		20 kg/seal	43 lb/seal	Landing weight		6 kg/seal	13 lb/seal	Fuel consumption	+0.06% on fuel used/seal
Takeoff weight															
6 kg/seal	13 lb/seal														
Enroute climb															
20 kg/seal	43 lb/seal														
Landing weight															
6 kg/seal	13 lb/seal														
Fuel consumption															
+0.06% on fuel used/seal															

SYSTEM 53 FUSELAGE

53-13: Aft fuselage tailcone joining seal



AFT FUSELAGE TAILCONE
JOINING SEAL

A

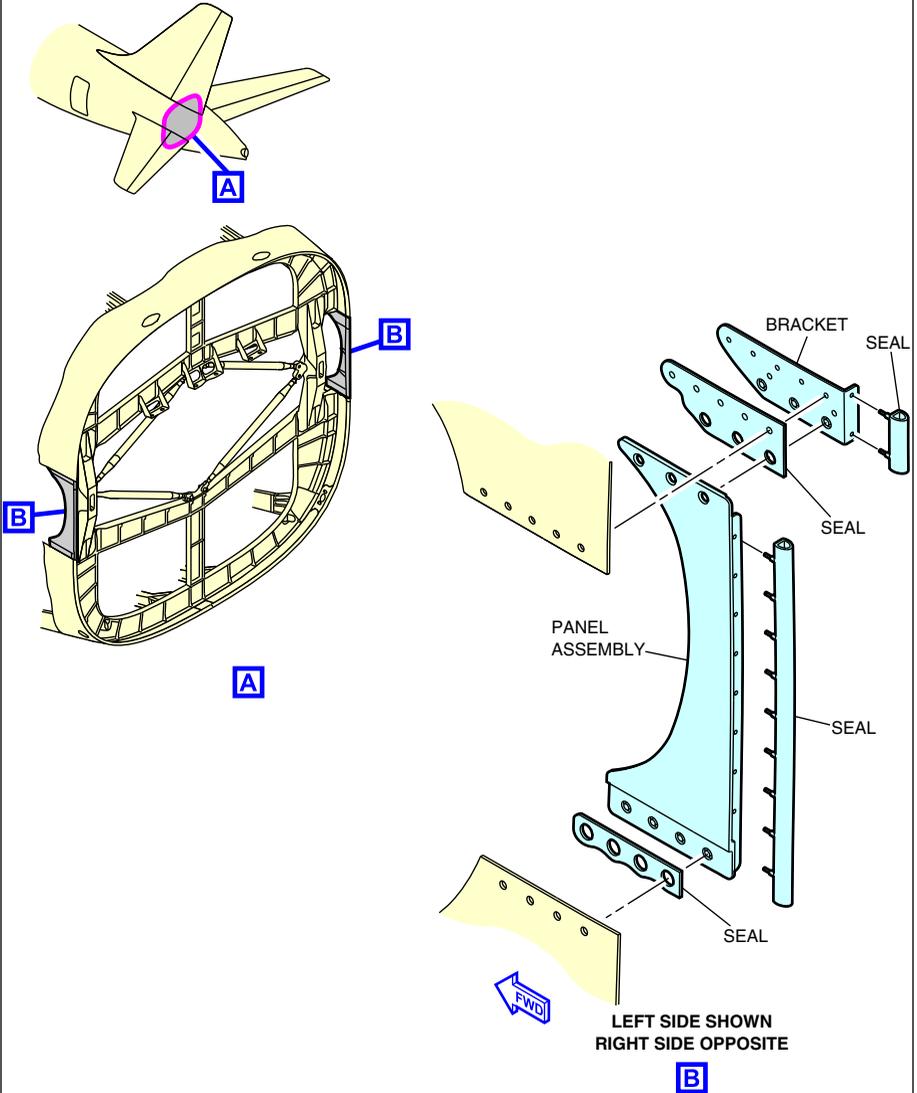
**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

CS300

SYSTEM 53 FUSELAGE	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
SUB-SYSTEM ITEM	2 Remarks and/or exceptions
53-15 Aft fuselage close-out panel seal and retainer, left/right	12 Any number or combination can be missing with a negligible impact on aircraft performance. CAFM/CIFP: Use a CDL index of 0.0 for this item.

SYSTEM 53 FUSELAGE

53-15: Aft fuselage close-out panel seal and retainer, left/right



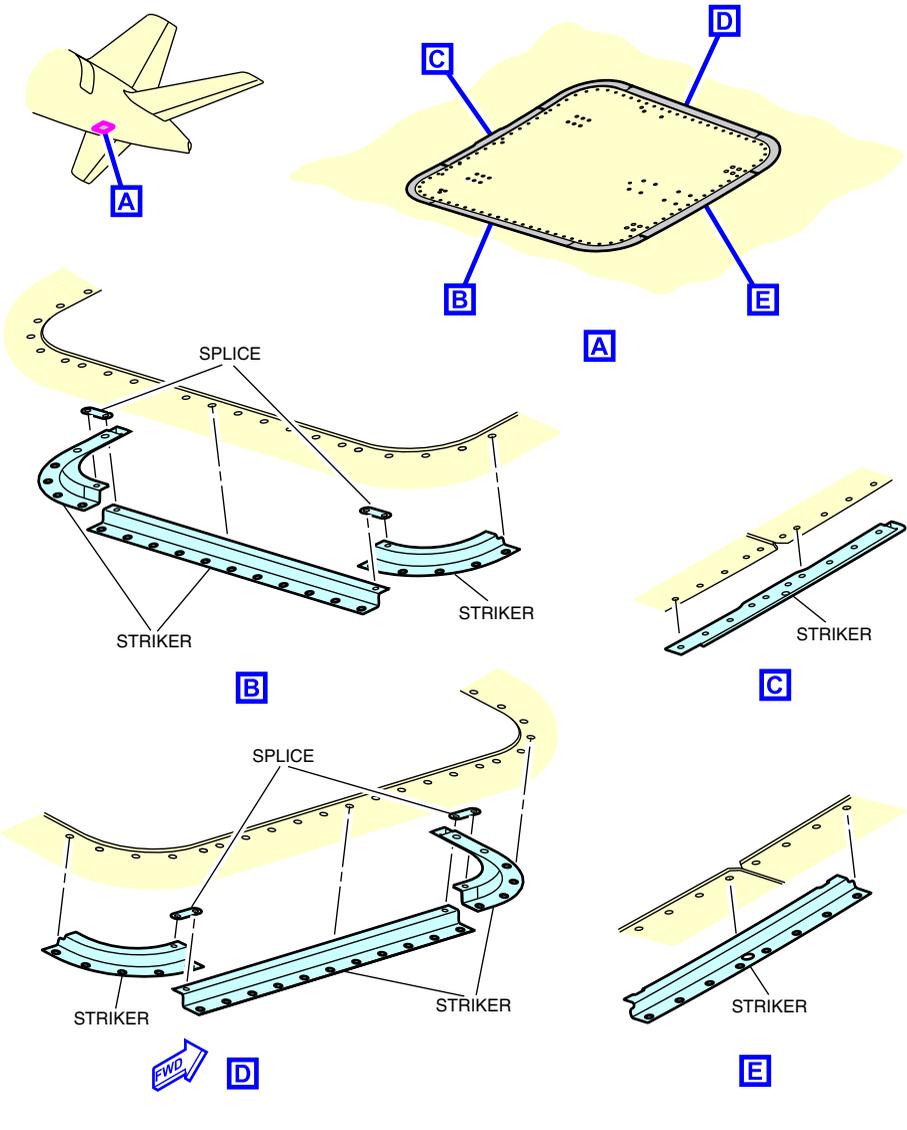
**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

CS300

SYSTEM 53 FUSELAGE	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
SUB-SYSTEM ITEM	2 Remarks and/or exceptions
53-16 Aft equipment bay seal striker and seal striker splice	12 Any number or combination can be missing with a negligible impact on aircraft performance. CAFM/CIFP: Use a CDL index of 0.0 for this item.

SYSTEM 53 FUSELAGE

53-16: Aft equipment bay door seal striker and splice



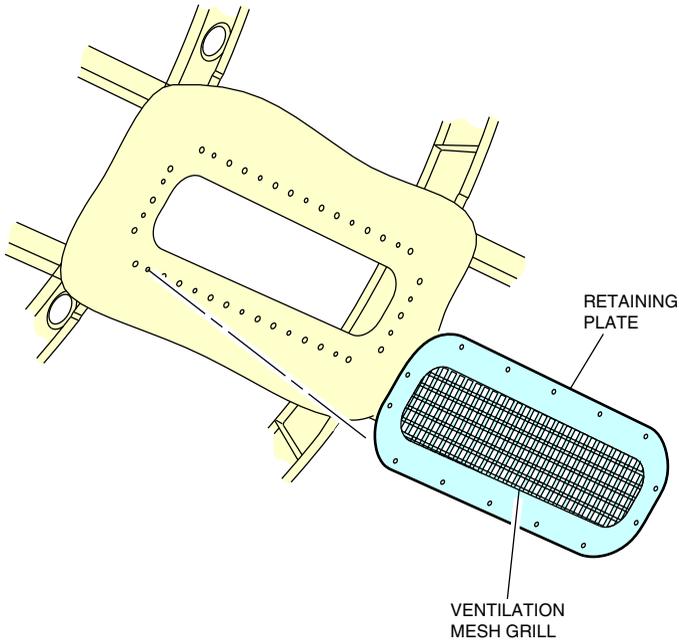
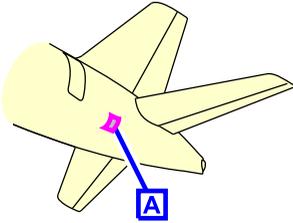
**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

CS300

SYSTEM 53 FUSELAGE	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2 2 Remarks and/or exceptions
53-17 Aft fuselage ventilation retaining plate and mesh grill	<p>2 Can be missing with no impact on aircraft performance.</p> <ul style="list-style-type: none"> • Do not install a blanking plate. • Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited.

SYSTEM 53 FUSELAGE

53-17: Aft fuselage ventilation retaining plate and mesh grill



LEFT SIDE SHOWN
RIGHT SIDE OPPOSITE



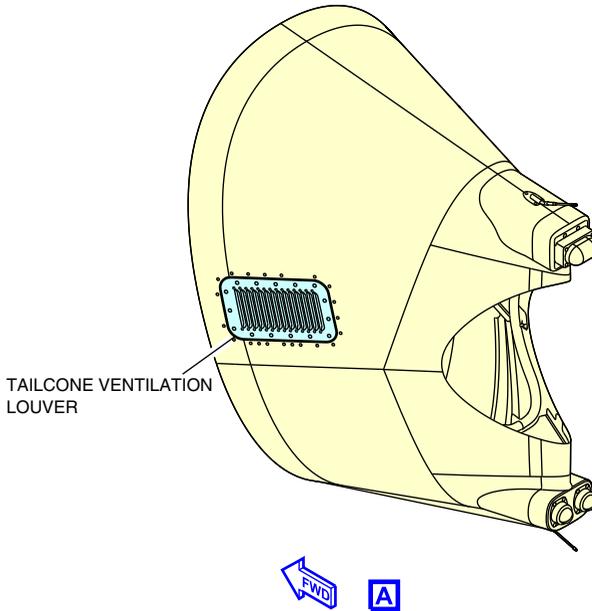
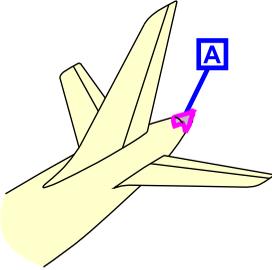
**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

CS300

SYSTEM 53 FUSELAGE															
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p>														
53-18 Tailcone ventilation louver	<p>2 Remarks and/or exceptions</p> <p>1 Can be missing if:</p> <ul style="list-style-type: none"> • Do not install a blanking plate. • Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. • The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td style="text-align: center;">7 kg</td> <td style="text-align: center;">15 lb</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td style="text-align: center;">23 kg</td> <td style="text-align: center;">49 lb</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td style="text-align: center;">7 kg</td> <td style="text-align: center;">15 lb</td> </tr> </table> <p>CAFM/CIFP: Add 0.2 to the CDL index for this item.</p> <ul style="list-style-type: none"> • The mission fuel requirements are increased by: <table border="1" style="margin-left: 20px;"> <tr> <th>Fuel consumption</th> </tr> <tr> <td style="text-align: center;">+0.06% on fuel used</td> </tr> </table>	Takeoff weight		7 kg	15 lb	Enroute climb		23 kg	49 lb	Landing weight		7 kg	15 lb	Fuel consumption	+0.06% on fuel used
Takeoff weight															
7 kg	15 lb														
Enroute climb															
23 kg	49 lb														
Landing weight															
7 kg	15 lb														
Fuel consumption															
+0.06% on fuel used															

SYSTEM 53 FUSELAGE

53-18: Tailcone ventilation louver



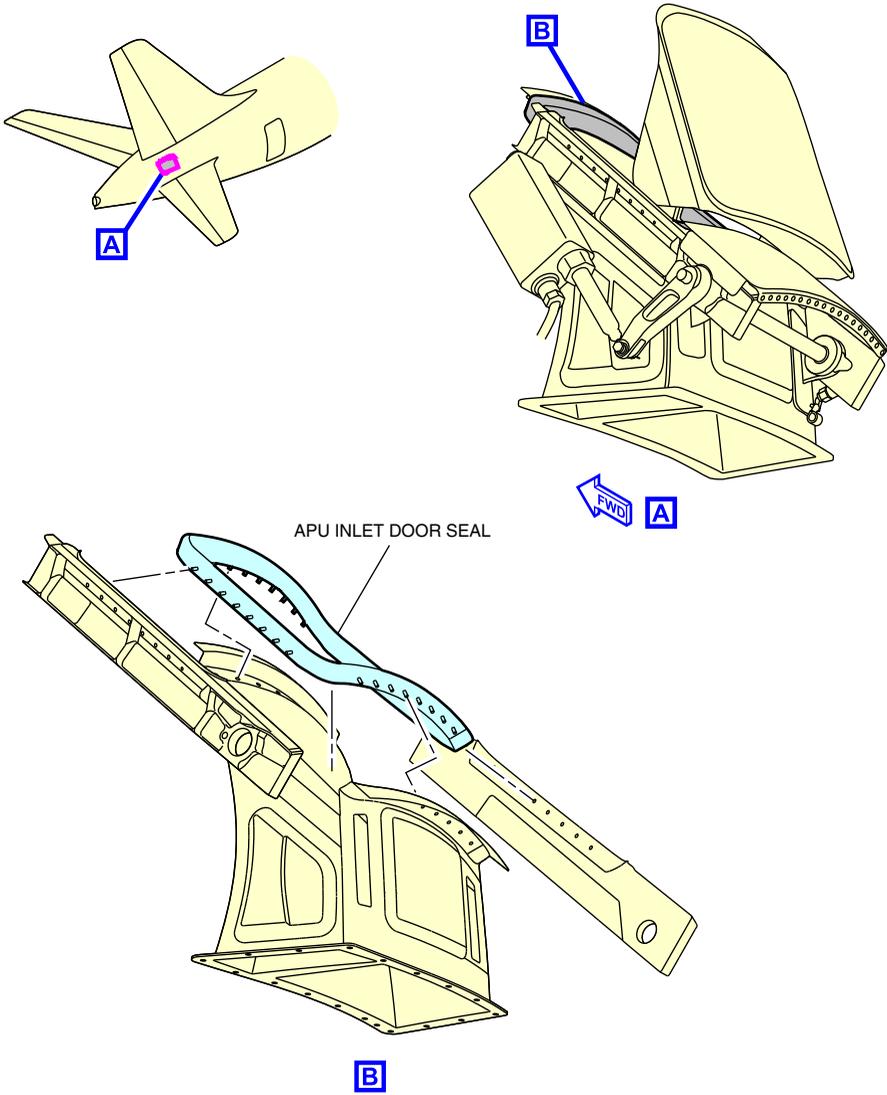
**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

CS300

SYSTEM 53 FUSELAGE	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2 2 Remarks and/or exceptions
53-19 APU inlet door seal	1 Can be missing with a negligible impact on aircraft performance if: <ul style="list-style-type: none"> • Refer to MMEL item 49-14-19: <ul style="list-style-type: none"> – The inlet door is secured in the open position. – Operational limitation: The maximum speed with the APU off is 250 KIAS or the APU is operated continuously during flight. <p align="center">NOTE</p> <p>Select APU on in CAFM and CIFP, where appropriate, to determine performance data.</p> <p>CAFM/CIFP: Use a CDL index of 0.0 for this item.</p>

SYSTEM 53 FUSELAGE

53-19: APU inlet door seal



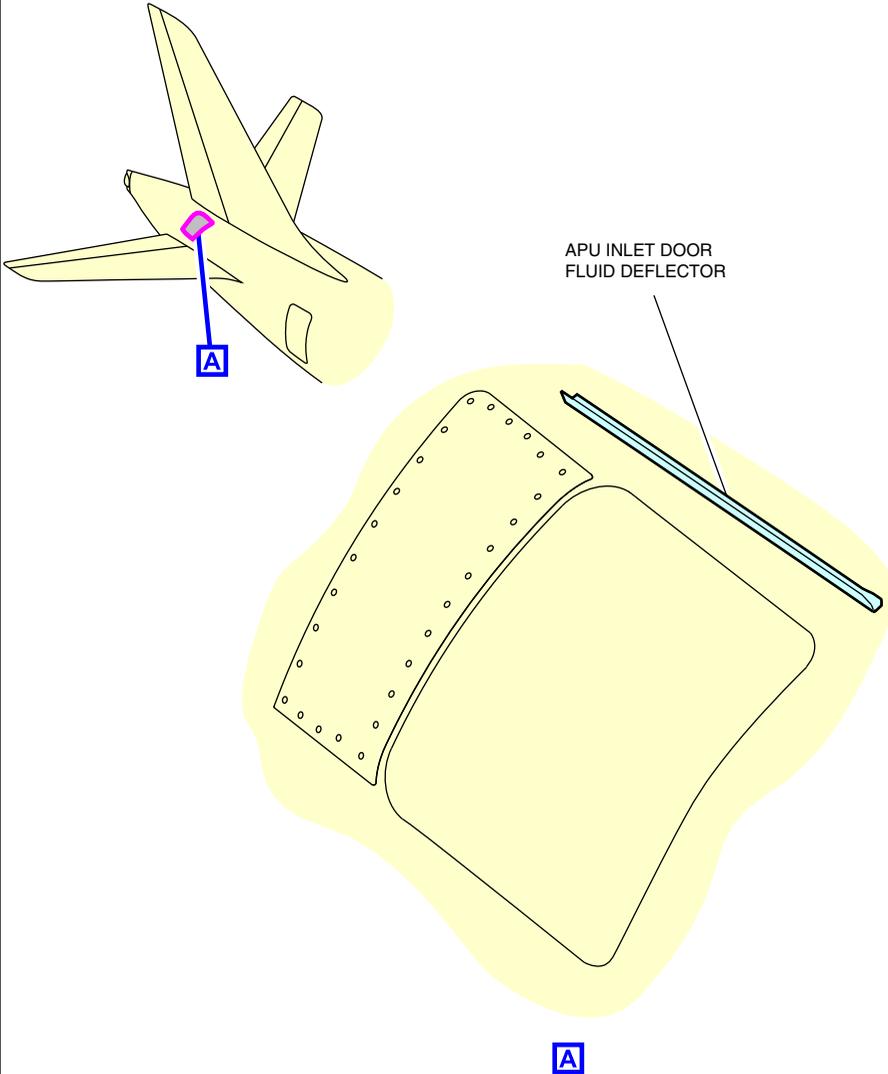
**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

CS300

SYSTEM 53 FUSELAGE	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
53-20 APU inlet door fluid deflector	1 Can be missing with no impact on aircraft performance.

SYSTEM 53 FUSELAGE

53-20: APU inlet door fluid deflector



**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

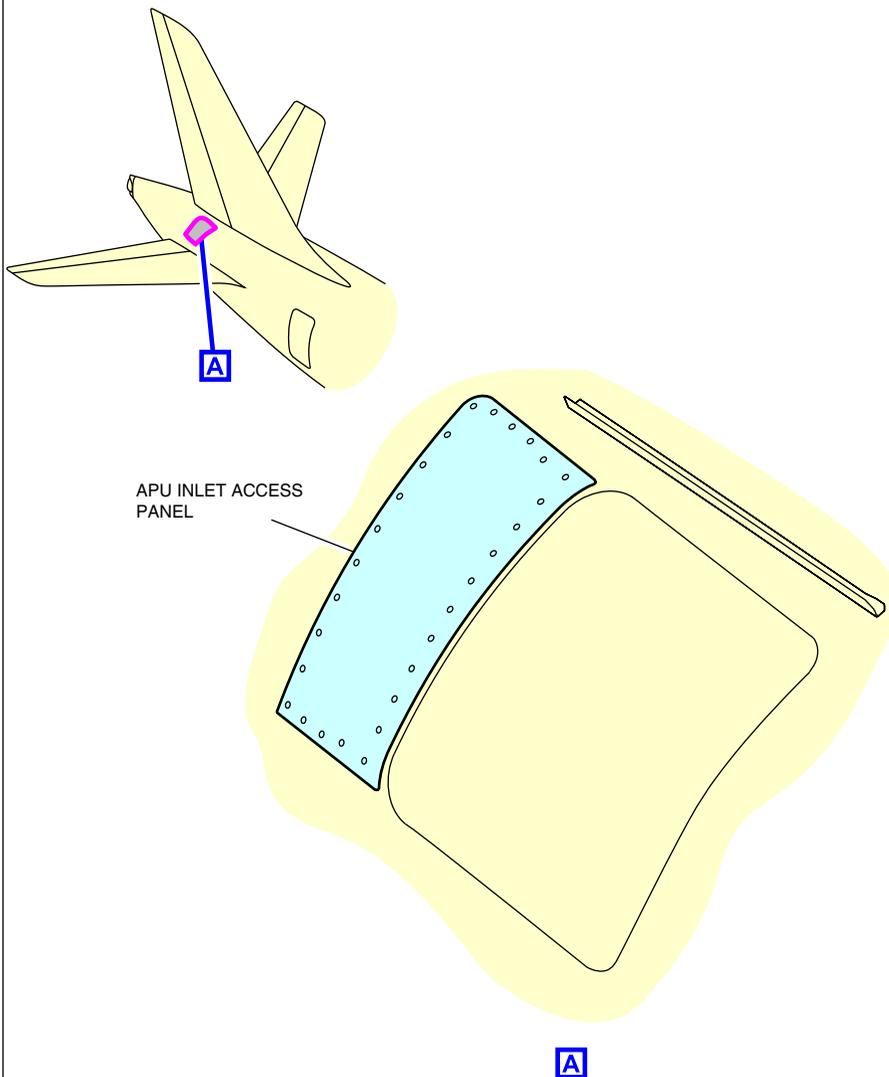
CS300

SYSTEM 53 FUSELAGE													
	<p>1 Number required for all flight conditions except as provided in column 2</p>												
	<p>2 Remarks and/or exceptions</p>												
<p>SUB-SYSTEM ITEM</p> <p>53-21 APU inlet door shaft access panel</p>	<p>1 Can be missing if:</p> <ul style="list-style-type: none"> • The APU is considered inoperative. Refer to MMEL item 49-00-03. • Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. • The performance limited weights are reduced by: <table border="1"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>5 kg</td> <td>11 lb</td> </tr> </table> <table border="1"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>16 kg</td> <td>35 lb</td> </tr> </table> <table border="1"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>5 kg</td> <td>11 lb</td> </tr> </table> <p>CAFM/CIFP: Add 0.2 to the CDL index for this item.</p> <ul style="list-style-type: none"> • The mission fuel requirements are increased by: 	Takeoff weight		5 kg	11 lb	Enroute climb		16 kg	35 lb	Landing weight		5 kg	11 lb
Takeoff weight													
5 kg	11 lb												
Enroute climb													
16 kg	35 lb												
Landing weight													
5 kg	11 lb												

SYSTEM 53 FUSELAGE			
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2		
	2 Remarks and/or exceptions		
53-21 APU inlet door shaft access panel (Cont'd)	<table border="1"><tr><td>Fuel consumption</td></tr><tr><td>+0.05% on fuel used</td></tr></table>	Fuel consumption	+0.05% on fuel used
Fuel consumption			
+0.05% on fuel used			

SYSTEM 53 FUSELAGE

53-21: APU inlet door shaft access panel



SYSTEM 53 FUSELAGE													
SUB-SYSTEM ITEM	<div style="display: flex; justify-content: space-between;"> 1 Number required for all flight conditions except as provided in column 2 2 Remarks and/or exceptions </div>												
53-23 WTBF High Pressure Ground Connection (HPGC) access panel assembly	<div style="display: flex; justify-content: space-between;"> 1 <div style="width: 95%;"> <p>Can be missing if:</p> <ul style="list-style-type: none"> A recommended visual inspection is done after each flight for any sign of FOD or damage. Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. Takeoff and landing are not conducted on runways near water. Operational limitation: ETOPS or extended overwater operations are not conducted. The performance limited weights are reduced by: <table border="1" style="margin-left: 20px; width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Takeoff weight</th> </tr> <tr> <td style="text-align: center; padding: 5px;">47 kg</td> <td style="text-align: center; padding: 5px;">103 lb</td> </tr> </table> <table border="1" style="margin-left: 20px; width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Enroute climb</th> </tr> <tr> <td style="text-align: center; padding: 5px;">156 kg</td> <td style="text-align: center; padding: 5px;">342 lb</td> </tr> </table> <table border="1" style="margin-left: 20px; width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Landing weight</th> </tr> <tr> <td style="text-align: center; padding: 5px;">47 kg</td> <td style="text-align: center; padding: 5px;">203 lb</td> </tr> </table> </div> </div>	Takeoff weight		47 kg	103 lb	Enroute climb		156 kg	342 lb	Landing weight		47 kg	203 lb
Takeoff weight													
47 kg	103 lb												
Enroute climb													
156 kg	342 lb												
Landing weight													
47 kg	203 lb												

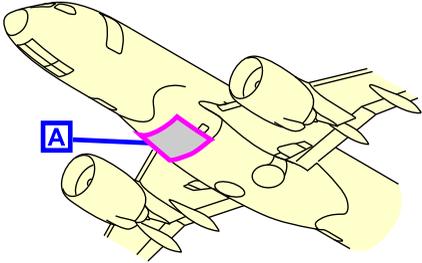
**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

CS300

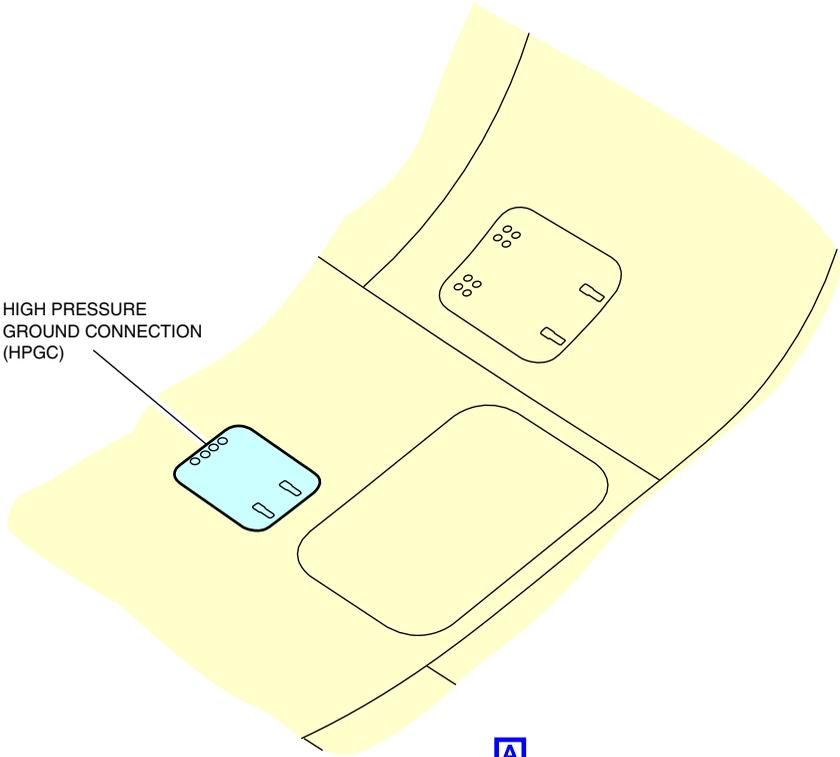
SYSTEM 53 FUSELAGE			
<p>SUB-SYSTEM ITEM</p> <p>53-23 WTBF High Pressure Ground Connection (HPGC) access panel assembly (Cont'd)</p>	<p>1 Number required for all flight conditions except as provided in column 2</p> <p>2 Remarks and/or exceptions</p> <p>CAFM/CIFP: Add 1.2 to the CDL index for this item.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td align="center">Fuel consumption</td> </tr> <tr> <td align="center">+0.41% on fuel used</td> </tr> </table>	Fuel consumption	+0.41% on fuel used
Fuel consumption			
+0.41% on fuel used			

SYSTEM 53 FUSELAGE

53-23: Wing to belly fairing access panel, HPGC



HIGH PRESSURE
GROUND CONNECTION
(HPGC)



**APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage**

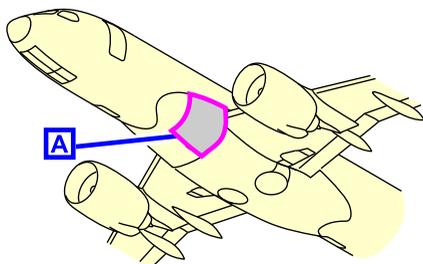
CS300

SYSTEM 53 FUSELAGE									
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p> <p>2 Remarks and/or exceptions</p>								
53-24 WTBF Low Pressure Ground Connection (LPGC) access panel assembly	<p>1 Can be missing if:</p> <ul style="list-style-type: none"> • The LPGC cover is confirmed not missing. Refer to MMEL item 21-20-01. • A recommended visual inspection is done after each flight for any sign of FOD or damage. • Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. • Takeoff and landing are not conducted on runways near water. • Operational limitation: ETOPS or extended overwater operations are not conducted. • The performance limited weights are reduced by: <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td align="center">80 kg</td> <td align="center">176 lb</td> </tr> </table> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td align="center">266 kg</td> <td align="center">586 lb</td> </tr> </table>	Takeoff weight		80 kg	176 lb	Enroute climb		266 kg	586 lb
Takeoff weight									
80 kg	176 lb								
Enroute climb									
266 kg	586 lb								

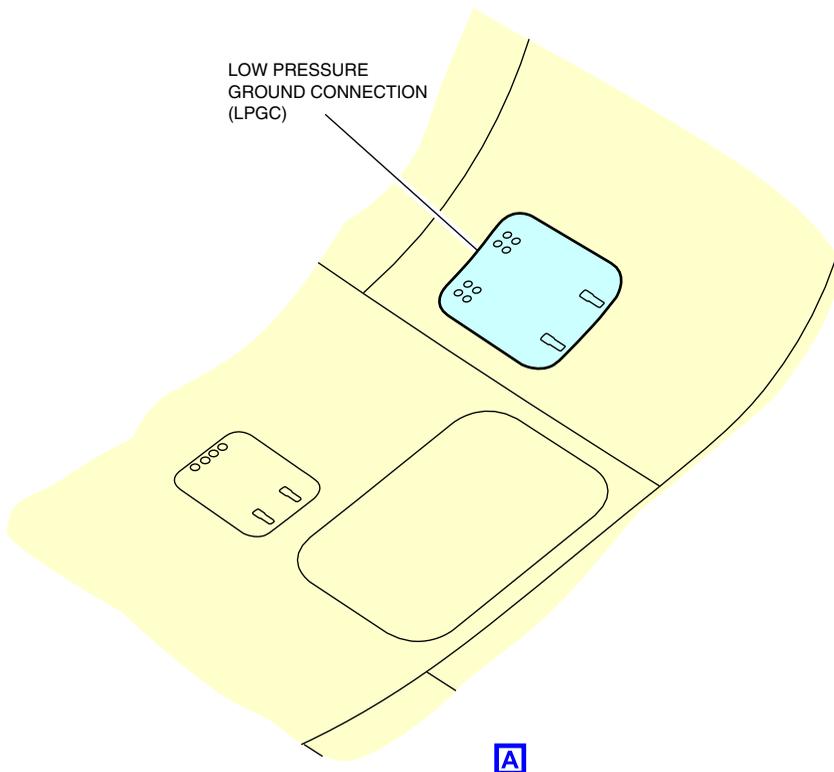
SYSTEM 53 FUSELAGE					
	1 Number required for all flight conditions except as provided in column 2				
SUB-SYSTEM ITEM	2 Remarks and/or exceptions				
53-24 WTBF Low Pressure Ground Connection (LPGC) access panel assembly (Cont'd)	<table border="1"><thead><tr><th colspan="2">Landing weight</th></tr></thead><tbody><tr><td>80 kg</td><td>176 lb</td></tr></tbody></table>	Landing weight		80 kg	176 lb
	Landing weight				
80 kg	176 lb				
	CAFM/CIFP: Add 2.0 to the CDL index for this item.				
	<ul style="list-style-type: none">The mission fuel requirements are increased by:				
	<table border="1"><thead><tr><th>Fuel consumption</th></tr></thead><tbody><tr><td>+0.71% on fuel used</td></tr></tbody></table>	Fuel consumption	+0.71% on fuel used		
Fuel consumption					
+0.71% on fuel used					

SYSTEM 53 FUSELAGE

53-24: Wing to belly fairing access panel, LPGC



LOW PRESSURE
GROUND CONNECTION
(LPGC)



SYSTEM 53 FUSELAGE													
SUB-SYSTEM ITEM	<div style="display: flex; justify-content: space-between;"> <div style="width: 10%;"> <p>1 Number required for all flight conditions except as provided in column 2</p> </div> <div style="width: 45%;"> <p>2 Remarks and/or exceptions</p> </div> </div>												
53-82 Box seal	<div style="display: flex; justify-content: space-between;"> <div style="width: 10%;">4</div> <div style="width: 45%;"> <p>Any number or combination can be missing if:</p> <ul style="list-style-type: none"> • Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. • The performance limited weights are reduced by: <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <thead> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Takeoff weight</th> </tr> </thead> <tbody> <tr> <td style="width: 50%; text-align: center; padding: 5px;">123 kg/side</td> <td style="width: 50%; text-align: center; padding: 5px;">270 lb/side</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <thead> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Enroute climb</th> </tr> </thead> <tbody> <tr> <td style="width: 50%; text-align: center; padding: 5px;">409 kg/side</td> <td style="width: 50%; text-align: center; padding: 5px;">900 lb/side</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Landing weight</th> </tr> </thead> <tbody> <tr> <td style="width: 50%; text-align: center; padding: 5px;">123 kg/side</td> <td style="width: 50%; text-align: center; padding: 5px;">270 lb/side</td> </tr> </tbody> </table> <p>CAFM: Add 3.0 to the CDL index for each side.</p> <p>CIFP: Add 7.0 to the CDL index for each side.</p> <ul style="list-style-type: none"> • The mission fuel requirements are increased by: </div> </div>	Takeoff weight		123 kg/side	270 lb/side	Enroute climb		409 kg/side	900 lb/side	Landing weight		123 kg/side	270 lb/side
Takeoff weight													
123 kg/side	270 lb/side												
Enroute climb													
409 kg/side	900 lb/side												
Landing weight													
123 kg/side	270 lb/side												

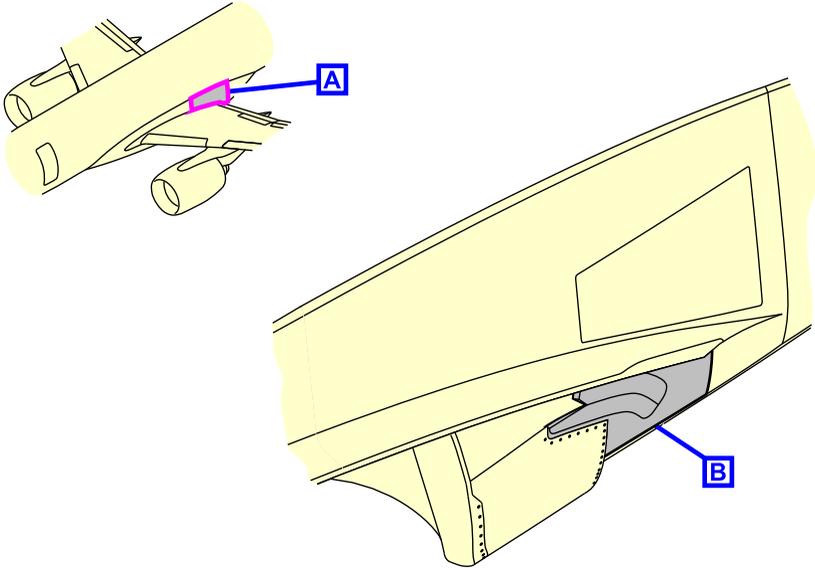
APPENDIX
CONFIGURATION DEVIATION LIST
Fuselage

CS300

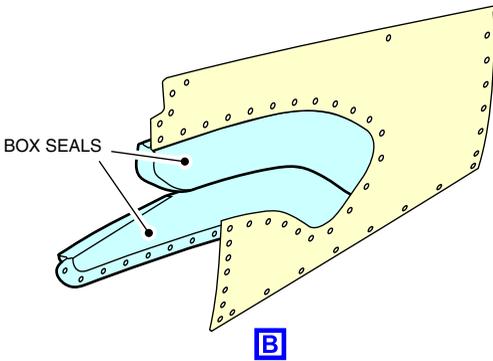
SYSTEM 53 FUSELAGE		
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2	
53-82 Box seal (Cont'd)	2 Remarks and/or exceptions	
	<table border="1"><tr><td>Fuel consumption</td></tr><tr><td>+2.52% on fuel used/side</td></tr></table>	Fuel consumption
Fuel consumption		
+2.52% on fuel used/side		

SYSTEM 53 FUSELAGE

53-82: Box seals



LEFT SIDE SHOWN
RIGHT SIDE SIMILAR



**APPENDIX
CONFIGURATION DEVIATION LIST
Nacelles/pylons**

CS300

SYSTEM 54 NACELLES/PYLONS			
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2 2 Remarks and/or exceptions		
54-09 (A) Nacelle seal – Internal ^[1] [1]Part number: <ul style="list-style-type: none"> • 999-3522-501 • 999-3522-502 • 999-3523-501 • 999-3523-502 • 999-3818-3 • 999-3825-1 • 999-3825-2 • 999-3826-1 • 999-3826-2 • 999-3829-1 • 999-3829-2 • 999-3350-551 • 999-3833-5 • 999-3833-6 • 999-3834-1 • 999-3835-3 • 999-3837-3 • 999-3839-3 	36 Any number or combination can be missing if: <ul style="list-style-type: none"> • The mission fuel requirements are increased by: <table border="1" style="margin-left: 20px;"> <tr> <td align="center">Fuel consumption</td> </tr> <tr> <td align="center">+1.0% on fuel used/seal</td> </tr> </table> <ul style="list-style-type: none"> • Takeoff performance: Multiply the OEI takeoff distance and takeoff run, the AEO takeoff distance and takeoff run, and the accelerate-stop distance calculated by the CAFM by 1.05. Alternative: Multiply the Takeoff Distance Available (TODA), Takeoff Run Available (TORA) and the Accelerate-Stop Distance Available (ASDA) by 0.95. • Takeoff weight limited by climb requirements: Reduce the takeoff weight limited by climb requirements calculated by CAFM by 544 kg (1200 lb). • Obstacle clearance: 	Fuel consumption	+1.0% on fuel used/seal
Fuel consumption			
+1.0% on fuel used/seal			

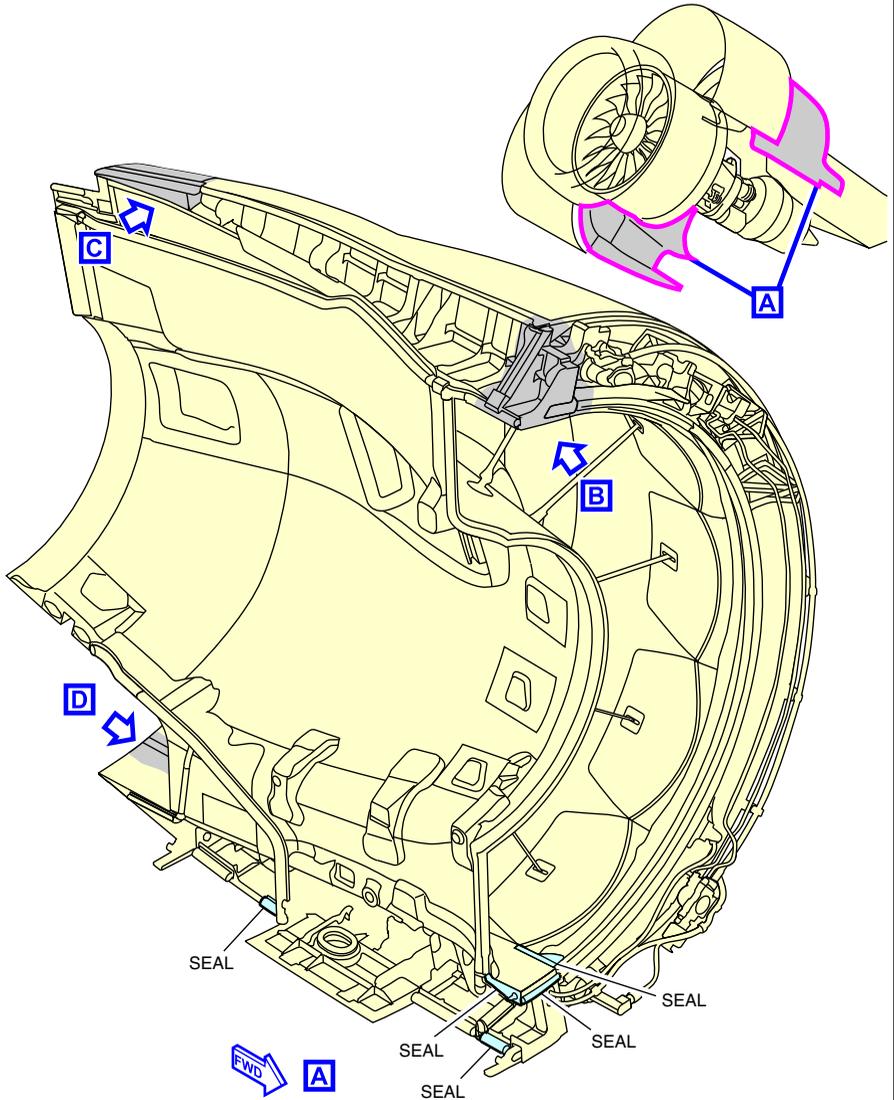
SYSTEM 54 NACELLES/PYLONS	
SUB-SYSTEM ITEM	<div style="display: flex; justify-content: space-between;"> 1 Number required for all flight conditions except as provided in column 2 2 Remarks and/or exceptions </div>
54-09 (A) Nacelle seal – Internal (Cont'd)	<p>If one or more obstacles are in the takeoff flight path, multiply the distance of the obstacles from the reference point by a factor of 0.95 (obstacles moved closer to the reference point).</p> <p>In addition, reduce the takeoff weight limited by obstacle clearance by 680 kg (1500 lb).</p> <ul style="list-style-type: none"> • Enroute performance: Reduce the required net ceiling calculated by the CAFM by 800 feet. • AEO climb performance: Decrease the cruise altitude limited by the climb ceiling or the maximum cruise speed capability determined by the CIFP by 800 feet. • Landing performance: Reduce the landing weight limited by climb requirements calculated by CAFM by 544 kg (1200 lb).

APPENDIX
CONFIGURATION DEVIATION LIST
Nacelles/pylons

CS300

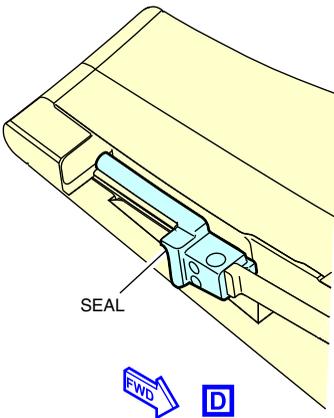
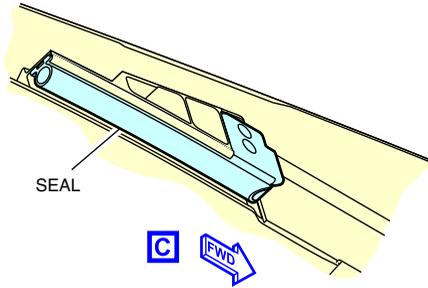
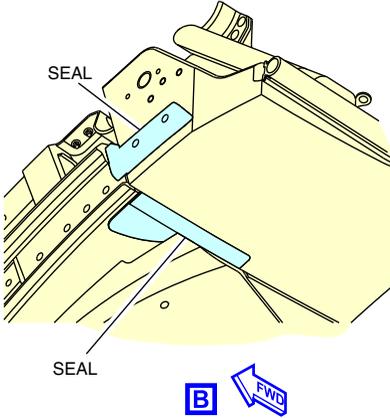
SYSTEM 54 NACELLES/PYLONS

54-09: (A) Nacelle seals – Internal – page 1



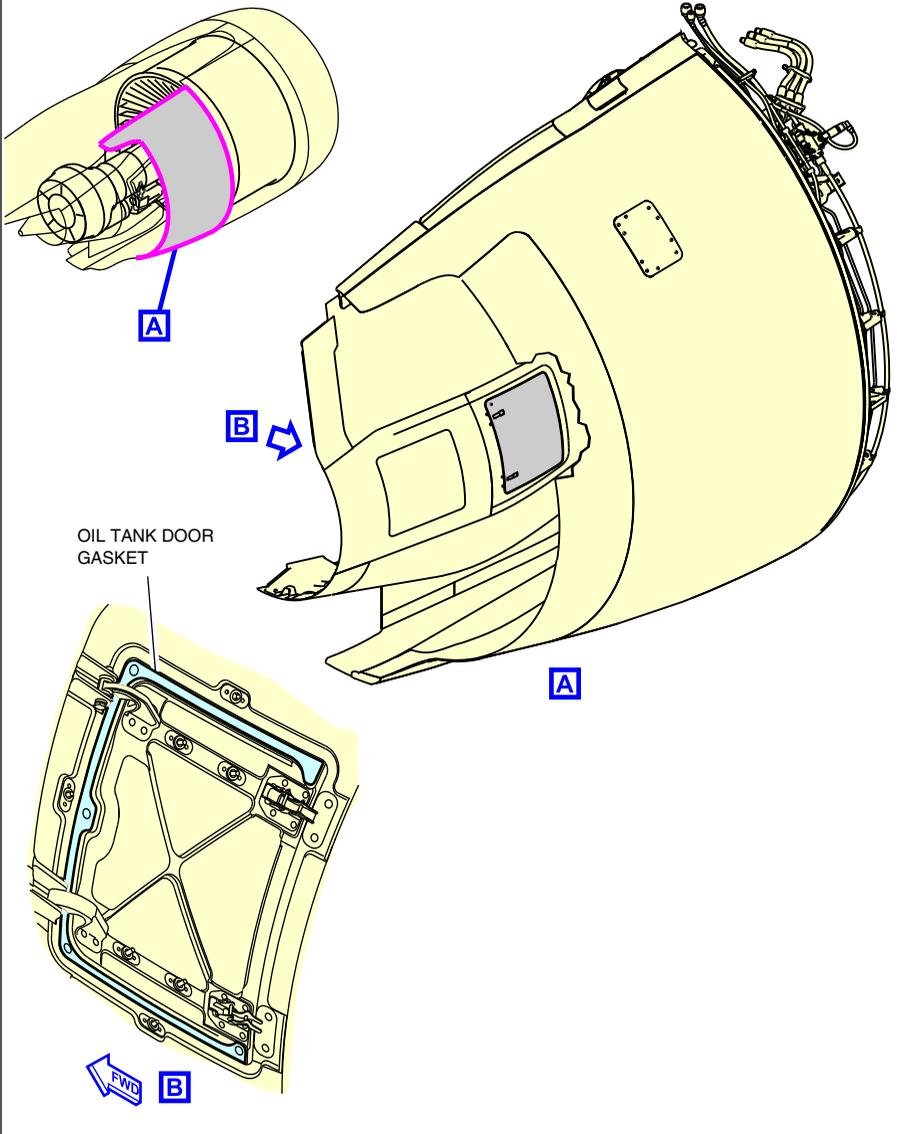
SYSTEM 54 NACELLES/PYLONS

54-09: (A) Nacelle seals – Internal – page 2



SYSTEM 54 NACELLES/PYLONS

54-09: (A) Nacelle seals – Internal – page 3



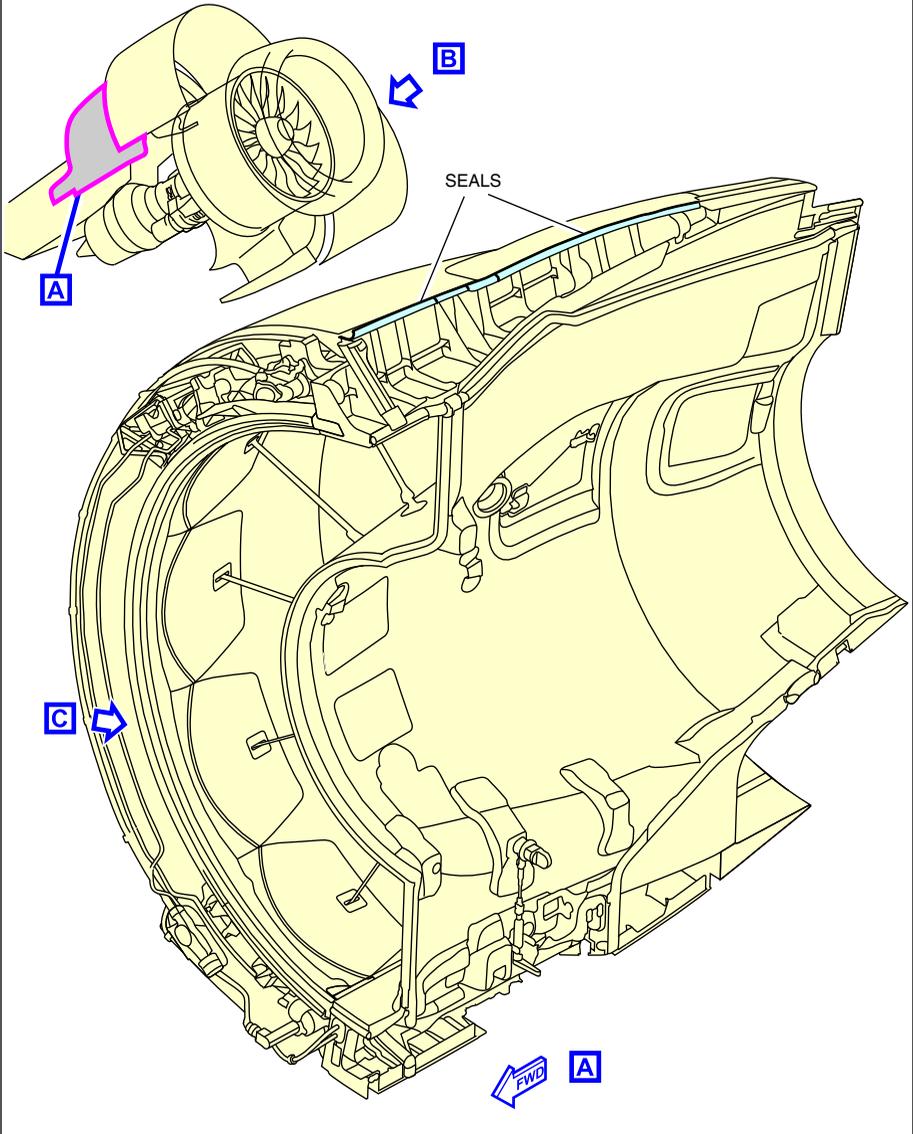
SYSTEM 54 NACELLES/PYLONS																	
SUB-SYSTEM ITEM	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>1 Number required for all flight conditions except as provided in column 2</p> </div> <div style="width: 45%;"> <p>2 Remarks and/or exceptions</p> </div> </div>																
<p>54-09 (B) Nacelle seal – External/environmental^[2]</p> <p>[2]Part number:</p> <ul style="list-style-type: none"> • 999-3584-1 • 999-3585-1 • 999-3585-2 • 999-3841-3 • 999-3841-4 • 999-3842-1 • 999-3842-2 • 999-3843-3 • 999-3843-4 • 999-3844-1 • 999-3844-2 	<p style="text-align: center; margin-bottom: 10px;">36</p> <p>Any number or combination can be missing if:</p> <ul style="list-style-type: none"> • The performance limited weights are reduced by: <table border="1" style="width: 100%; margin-bottom: 10px;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Takeoff weight</th> </tr> <tr> <td style="text-align: center; padding: 5px;">20 kg/seal</td> <td style="text-align: center; padding: 5px;">44 lb/seal</td> </tr> </table> <table border="1" style="width: 100%; margin-bottom: 10px;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Enroute climb</th> </tr> <tr> <td style="text-align: center; padding: 5px;">66 kg/seal</td> <td style="text-align: center; padding: 5px;">144 lb/seal</td> </tr> </table> <table border="1" style="width: 100%; margin-bottom: 10px;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Landing weight</th> </tr> <tr> <td style="text-align: center; padding: 5px;">20 kg/seal</td> <td style="text-align: center; padding: 5px;">44 lb/seal</td> </tr> </table> <p>CAFM/CIFP: Add 0.5 to the CDL index for each missing seal.</p> <ul style="list-style-type: none"> • The mission fuel requirements are increased by: <table border="1" style="width: 100%; margin-bottom: 10px;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Fuel consumption</th> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;">+0.18% on fuel used/seal</td> </tr> </table>	Takeoff weight		20 kg/seal	44 lb/seal	Enroute climb		66 kg/seal	144 lb/seal	Landing weight		20 kg/seal	44 lb/seal	Fuel consumption		+0.18% on fuel used/seal	
Takeoff weight																	
20 kg/seal	44 lb/seal																
Enroute climb																	
66 kg/seal	144 lb/seal																
Landing weight																	
20 kg/seal	44 lb/seal																
Fuel consumption																	
+0.18% on fuel used/seal																	

APPENDIX
CONFIGURATION DEVIATION LIST
Nacelles/pylons

CS300

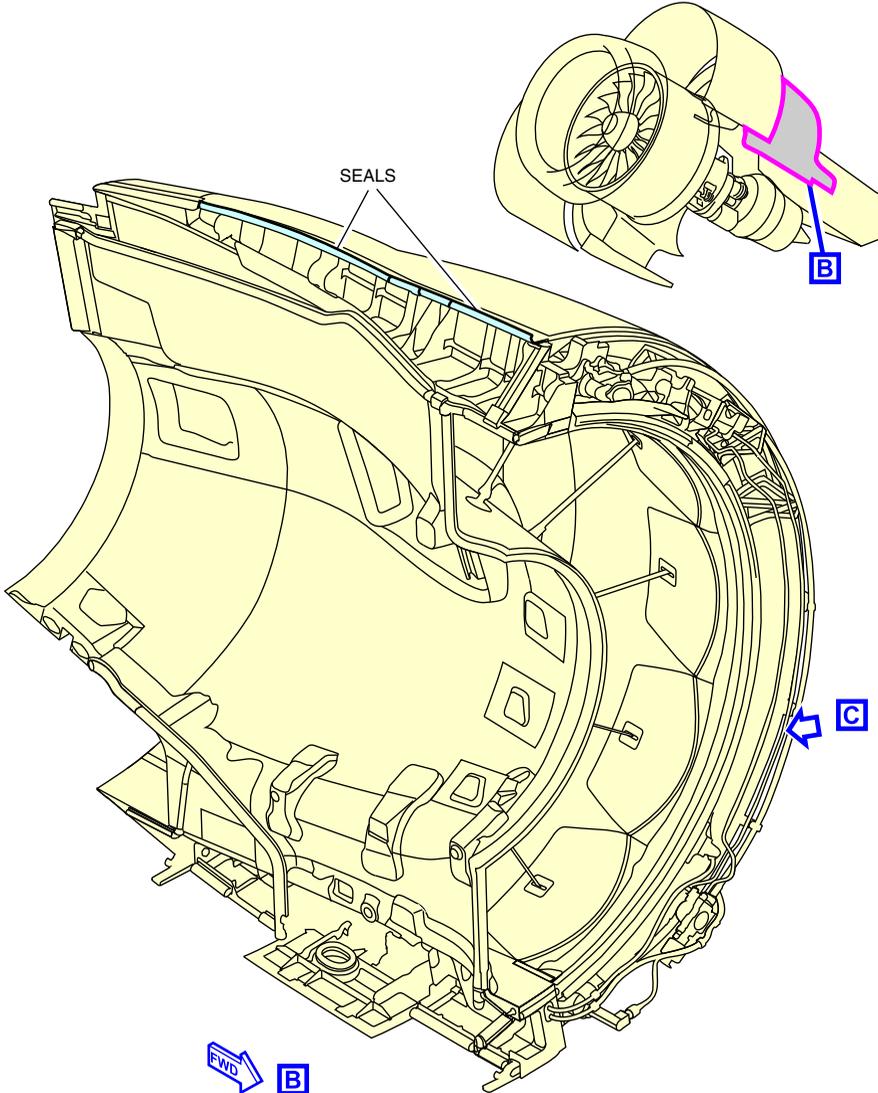
SYSTEM 54 NACELLES/PYLONS

54-09: (B) Nacelle seals – External/environmental – page 1



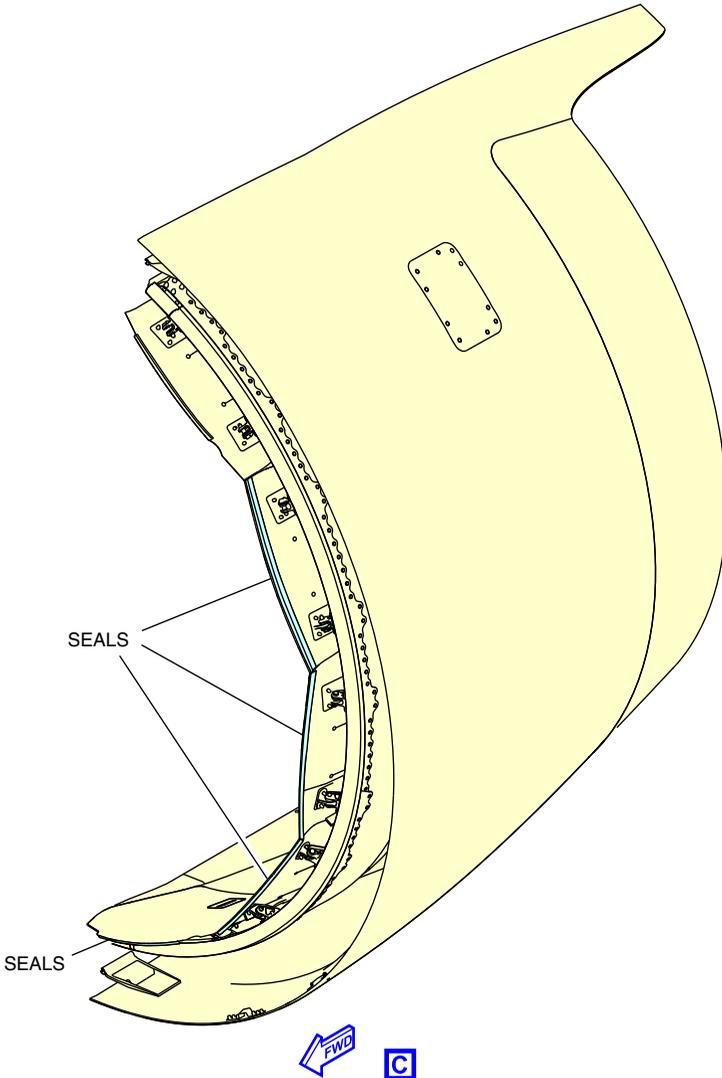
SYSTEM 54 NACELLES/PYLONS

54-09: (B) Nacelle seals – External/environmental – page 2



SYSTEM 54 NACELLES/PYLONS

54-09: (B) Nacelle seals – External/environmental – page 3



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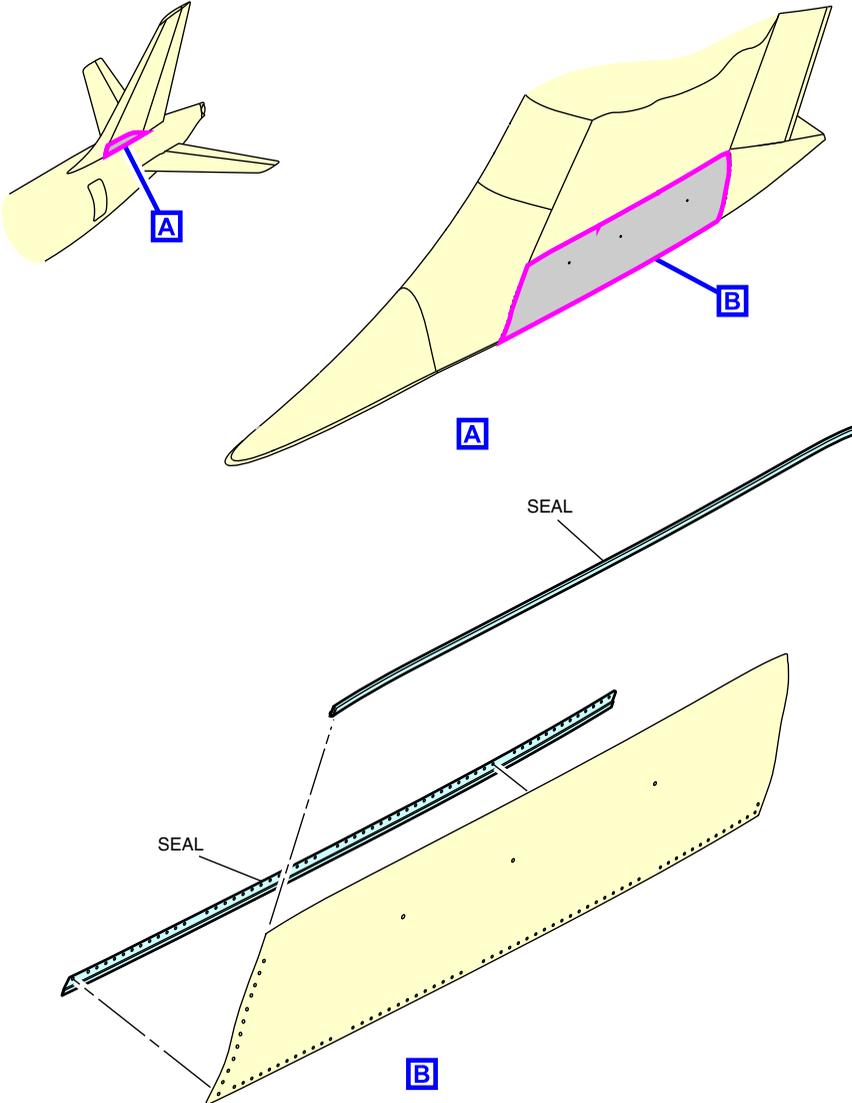
**APPENDIX
CONFIGURATION DEVIATION LIST
Stabilizers**

CS300

SYSTEM 55 STABILIZERS															
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p> <p>2 Remarks and/or exceptions</p>														
55-01 Vertical stabilizer skirt fairing seal	<p>4 Can be missing if:</p> <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>51 kg/seal</td> <td>112 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>170 kg/seal</td> <td>374 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>51 kg/seal</td> <td>112 lb/seal</td> </tr> </table> <p>CAFM/CIFP: Add 1.3 to the CDL index for each missing item.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="margin-left: 20px;"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+0.45% on fuel used/seal</td> </tr> </table>	Takeoff weight		51 kg/seal	112 lb/seal	Enroute climb		170 kg/seal	374 lb/seal	Landing weight		51 kg/seal	112 lb/seal	Fuel consumption	+0.45% on fuel used/seal
Takeoff weight															
51 kg/seal	112 lb/seal														
Enroute climb															
170 kg/seal	374 lb/seal														
Landing weight															
51 kg/seal	112 lb/seal														
Fuel consumption															
+0.45% on fuel used/seal															

SYSTEM 55 STABILIZERS

55-01: Vertical stabilizer skirt fairing seals



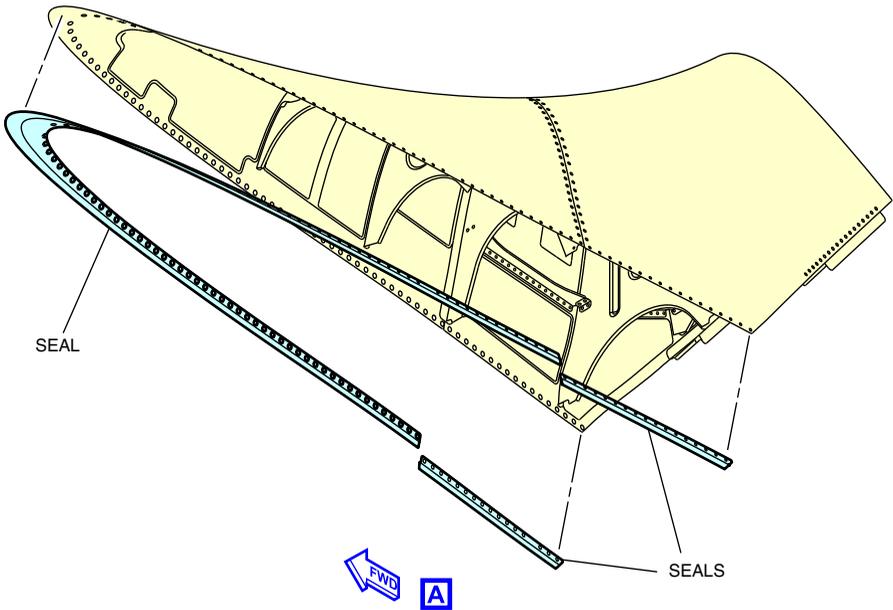
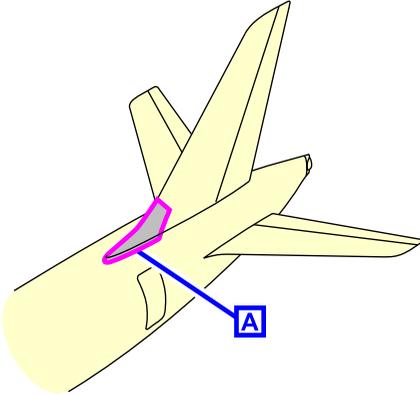
**APPENDIX
CONFIGURATION DEVIATION LIST
Stabilizers**

CS300

SYSTEM 55 STABILIZERS															
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p> <p>2 Remarks and/or exceptions</p>														
55-02 Vertical stabilizer dorsal fairing seal	<p>3 Can be missing if:</p> <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>95 kg/seal</td> <td>208 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>315 kg/seal</td> <td>693 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>95 kg/seal</td> <td>208 lb/seal</td> </tr> </table> <p>CAFM/CIFP: Add 2.4 to the CDL index for each missing item.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="margin-left: 20px;"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+0.84% on fuel used/seal</td> </tr> </table>	Takeoff weight		95 kg/seal	208 lb/seal	Enroute climb		315 kg/seal	693 lb/seal	Landing weight		95 kg/seal	208 lb/seal	Fuel consumption	+0.84% on fuel used/seal
Takeoff weight															
95 kg/seal	208 lb/seal														
Enroute climb															
315 kg/seal	693 lb/seal														
Landing weight															
95 kg/seal	208 lb/seal														
Fuel consumption															
+0.84% on fuel used/seal															

SYSTEM 55 STABILIZERS

55-02: Vertical stabilizer dorsal fairing seals



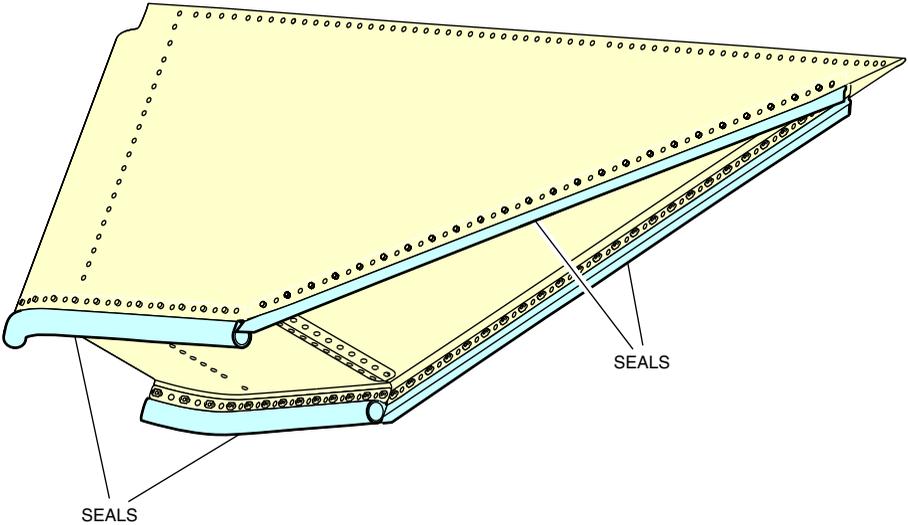
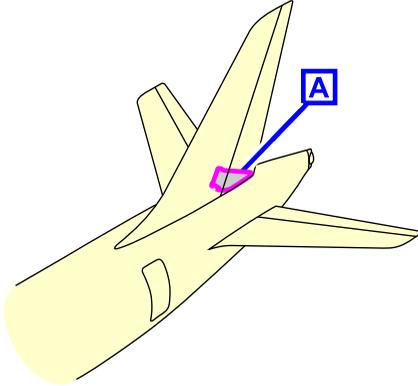
**APPENDIX
CONFIGURATION DEVIATION LIST
Stabilizers**

CS300

SYSTEM 55 STABILIZERS															
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p> <p>2 Remarks and/or exceptions</p>														
55-03 Vertical stabilizer rudder seal	<p>4 Can be missing if:</p> <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>40 kg/seal</td> <td>88 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>132 kg/seal</td> <td>291 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>40 kg/seal</td> <td>88 lb/seal</td> </tr> </table> <p>CAFM/CIFP: Add 1.0 to the CDL index for each missing item.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="margin-left: 20px;"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+0.35% on fuel used/seal</td> </tr> </table>	Takeoff weight		40 kg/seal	88 lb/seal	Enroute climb		132 kg/seal	291 lb/seal	Landing weight		40 kg/seal	88 lb/seal	Fuel consumption	+0.35% on fuel used/seal
Takeoff weight															
40 kg/seal	88 lb/seal														
Enroute climb															
132 kg/seal	291 lb/seal														
Landing weight															
40 kg/seal	88 lb/seal														
Fuel consumption															
+0.35% on fuel used/seal															

SYSTEM 55 STABILIZERS

55-03: Vertical stabilizer rudder seals



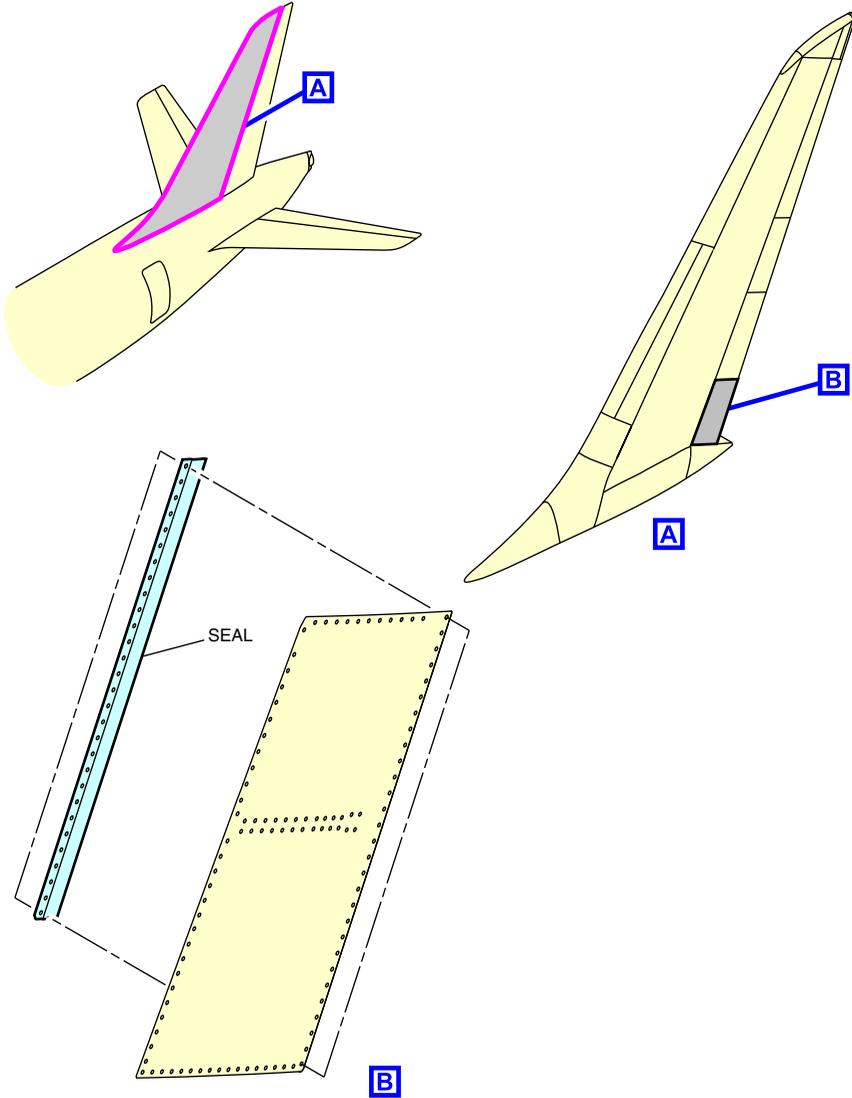
**APPENDIX
CONFIGURATION DEVIATION LIST
Stabilizers**

CS300

SYSTEM 55 STABILIZERS															
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p>														
55-04 Vertical stabilizer trailing edge seal	<p>2 Remarks and/or exceptions</p> <p>2 Can be missing if:</p> <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>55 kg/seal</td> <td>121 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>183 kg/seal</td> <td>403 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>55 kg/seal</td> <td>121 lb/seal</td> </tr> </table> <p>CAFM/CIFP: Add 1.4 to the CDL index for each missing item.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="margin-left: 20px;"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+0.49% on fuel used/seal</td> </tr> </table>	Takeoff weight		55 kg/seal	121 lb/seal	Enroute climb		183 kg/seal	403 lb/seal	Landing weight		55 kg/seal	121 lb/seal	Fuel consumption	+0.49% on fuel used/seal
Takeoff weight															
55 kg/seal	121 lb/seal														
Enroute climb															
183 kg/seal	403 lb/seal														
Landing weight															
55 kg/seal	121 lb/seal														
Fuel consumption															
+0.49% on fuel used/seal															

SYSTEM 55 STABILIZERS

55-04: Vertical stabilizer trailing edge seal, lower



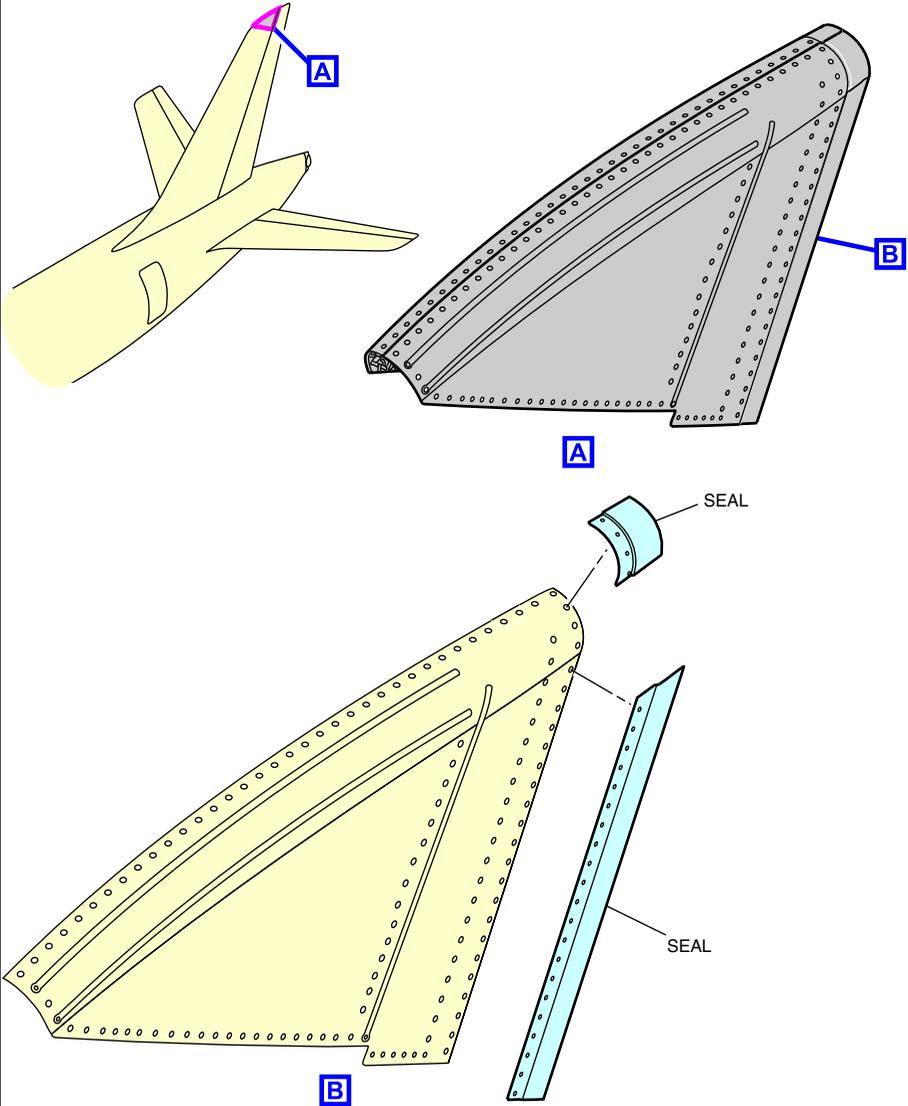
**APPENDIX
CONFIGURATION DEVIATION LIST
Stabilizers**

CS300

SYSTEM 55 STABILIZERS															
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p> <p>2 Remarks and/or exceptions</p>														
55-05 Vertical stabilizer tip seal	<p>4 Can be missing if:</p> <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>35 kg/seal</td> <td>77 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>116 kg/seal</td> <td>255 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>35 kg/seal</td> <td>77 lb/seal</td> </tr> </table> <p>CAFM/CIFP: Add 0.9 to the CDL index for each missing item.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="margin-left: 20px;"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+0.31% on fuel used/seal</td> </tr> </table>	Takeoff weight		35 kg/seal	77 lb/seal	Enroute climb		116 kg/seal	255 lb/seal	Landing weight		35 kg/seal	77 lb/seal	Fuel consumption	+0.31% on fuel used/seal
Takeoff weight															
35 kg/seal	77 lb/seal														
Enroute climb															
116 kg/seal	255 lb/seal														
Landing weight															
35 kg/seal	77 lb/seal														
Fuel consumption															
+0.31% on fuel used/seal															

SYSTEM 55 STABILIZERS

55-05: Vertical stabilizer tip seal



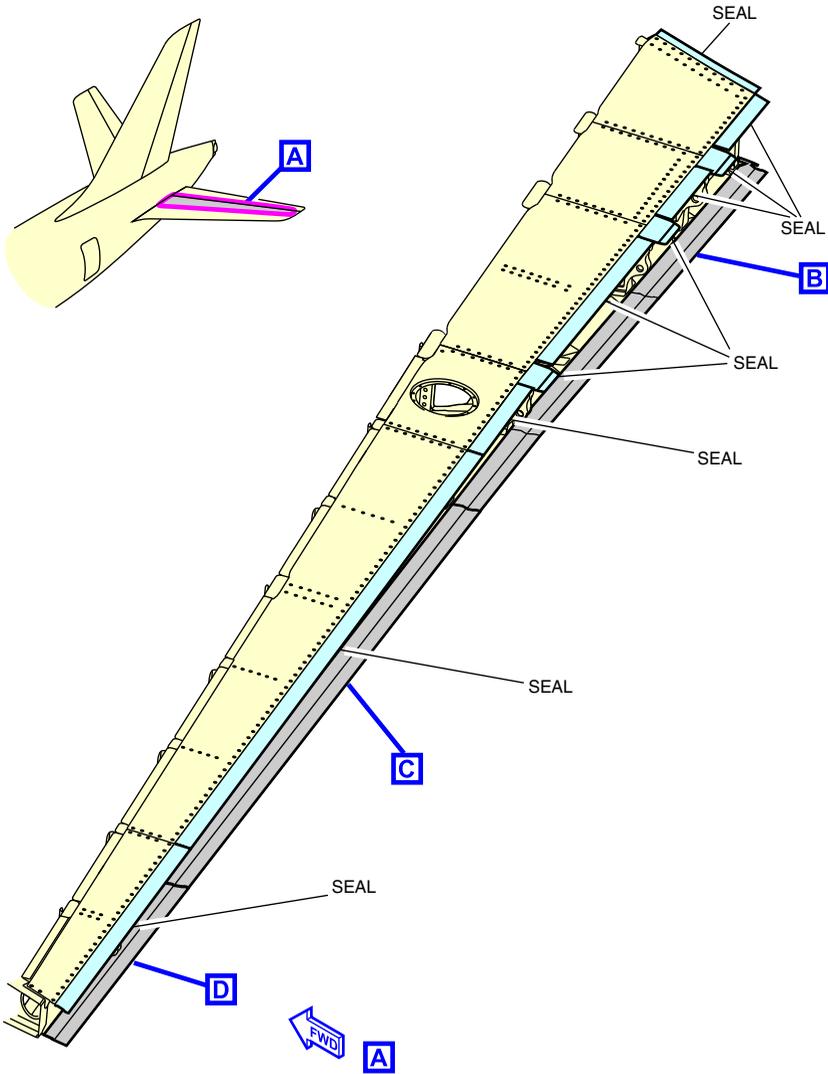
**APPENDIX
CONFIGURATION DEVIATION LIST
Stabilizers**

CS300

SYSTEM 55 STABILIZERS															
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2														
55-09 Horizontal stabilizer trailing edge seal	<p>2 Remarks and/or exceptions</p> <p>38 Can be missing if:</p> <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>35 kg/seal</td> <td>77 lb/seal</td> </tr> </table> <table border="1"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>116 kg/seal</td> <td>255 lb/seal</td> </tr> </table> <table border="1"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>35 kg/seal</td> <td>77 lb/seal</td> </tr> </table> <p>CAFM/CIFP: Add 0.9 to the CDL index for each missing item.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+0.31% on fuel used/seal</td> </tr> </table>	Takeoff weight		35 kg/seal	77 lb/seal	Enroute climb		116 kg/seal	255 lb/seal	Landing weight		35 kg/seal	77 lb/seal	Fuel consumption	+0.31% on fuel used/seal
Takeoff weight															
35 kg/seal	77 lb/seal														
Enroute climb															
116 kg/seal	255 lb/seal														
Landing weight															
35 kg/seal	77 lb/seal														
Fuel consumption															
+0.31% on fuel used/seal															

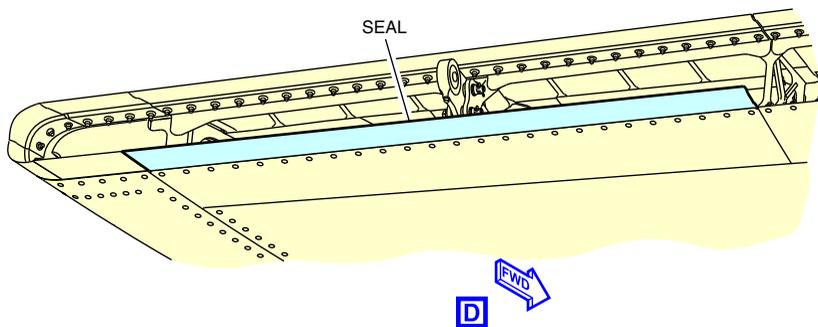
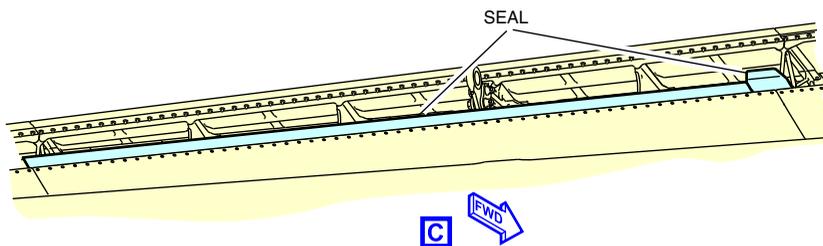
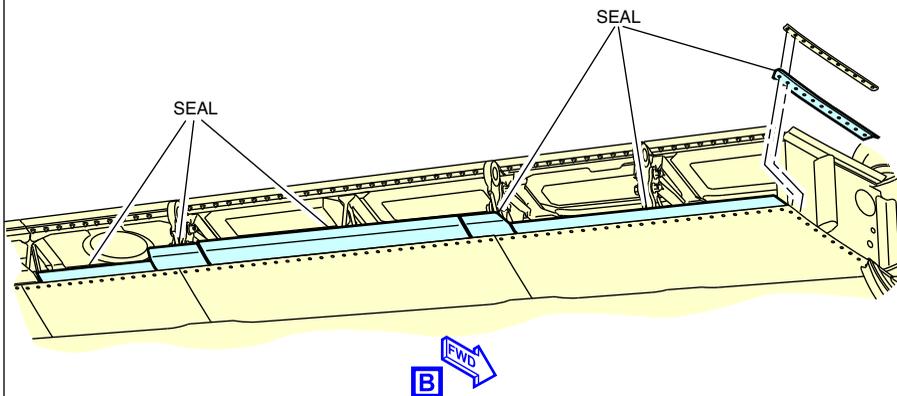
SYSTEM 55 STABILIZERS

55-09: Horizontal stabilizer trailing edge seals



SYSTEM 55 STABILIZERS

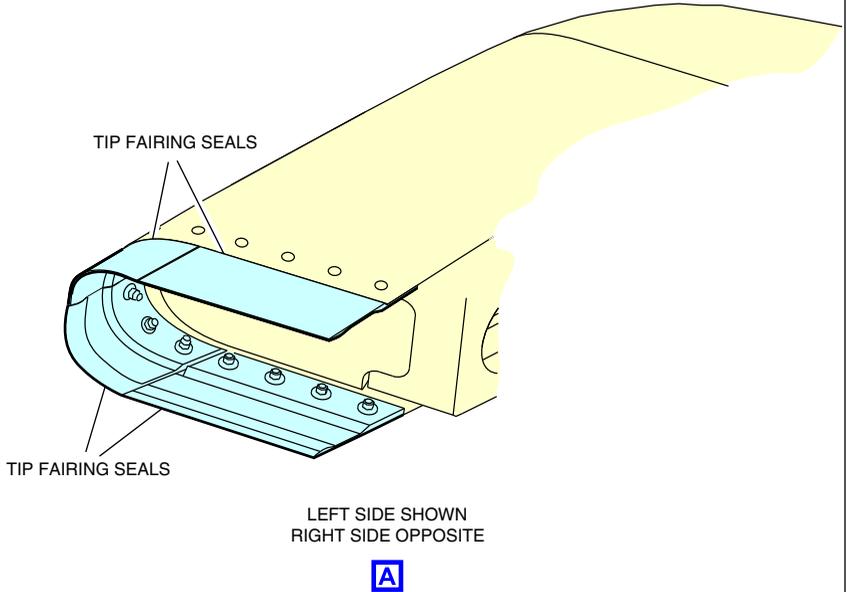
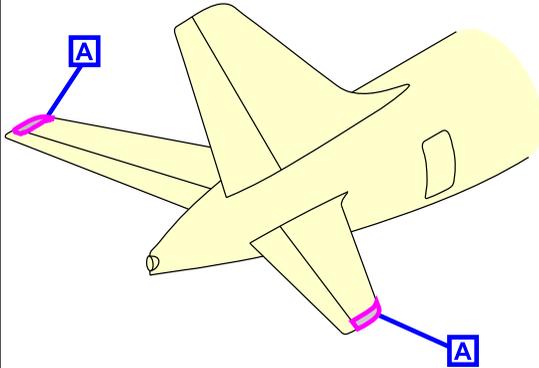
55-09: Horizontal stabilizer trailing edge seals



SYSTEM 55 STABILIZERS	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
55-10 Horizontal stabilizer tip fairing seal	8 Any number or combination can be missing with a negligible impact on aircraft performance. CAFM/CIFP: Use a CDL index of 0.0 for this item.

SYSTEM 55 STABILIZERS

55-10: Horizontal stabilizer tip fairing seals



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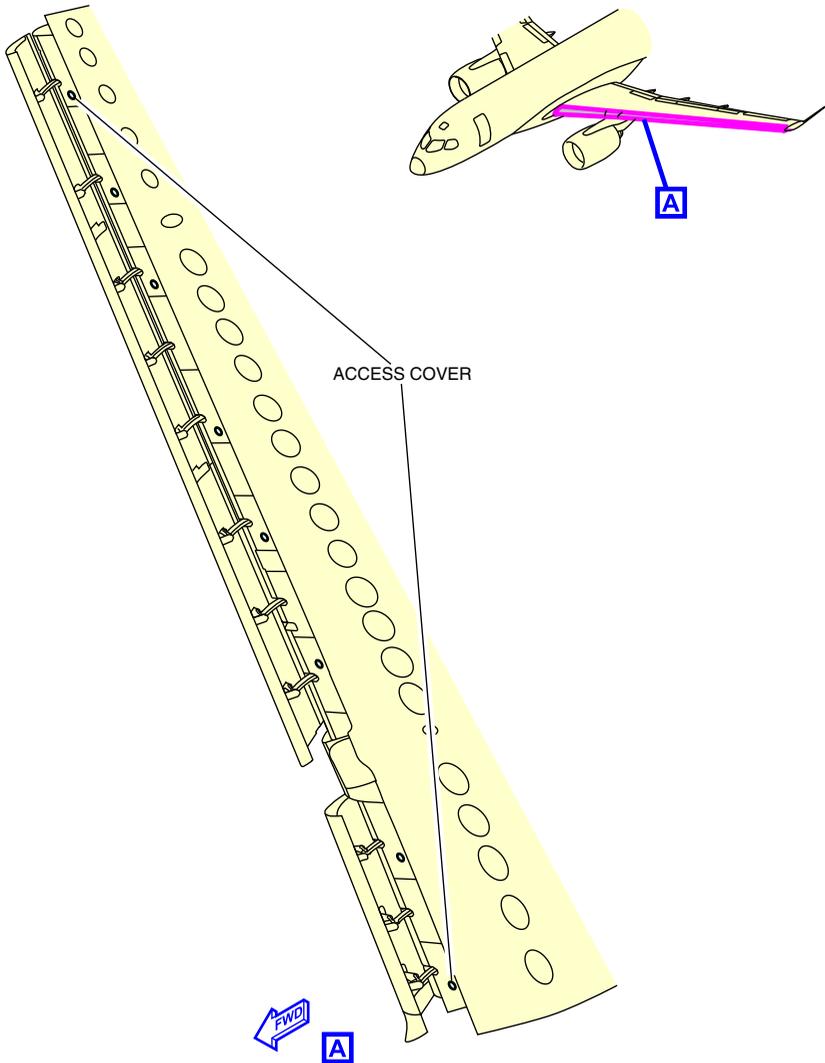
**APPENDIX
CONFIGURATION DEVIATION LIST
Wing**

CS300

SYSTEM 57 WING		
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2	2 Remarks and/or exceptions
57-01 Wing fixed leading edge lower access cover	16	<p>Any number or combination can be missing with negligible impact on aircraft performance.</p> <ul style="list-style-type: none"> Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. Operational limitation: If any of the access covers outboard of the telescopic duct are missing, use of wing anti-ice is prohibited. Operational limitation: Flight into icing conditions is prohibited. <p>CAFMs/CIFPs: Use a CDL index of 0.0 for this item.</p>

SYSTEM 57 WING

57-01: Wing fixed leading edge lower access covers



**APPENDIX
CONFIGURATION DEVIATION LIST
Wing**

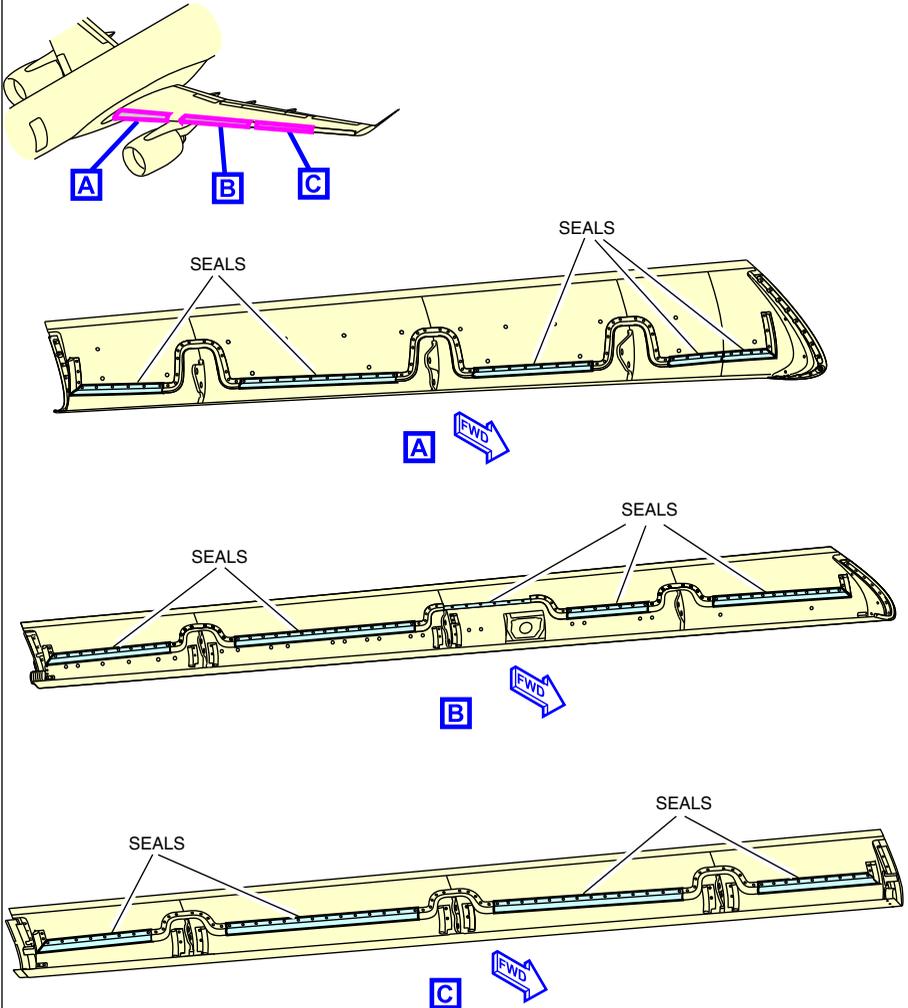
CS300

SYSTEM 57 WING					
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2 2 Remarks and/or exceptions				
57-03 Slat longitudinal seal	<p>28 Any number or combination can be missing if:</p> <ul style="list-style-type: none"> Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. The performance limited weights are reduced by: <p>CIFP: Add 0.1 to the CDL index for each missing seal.</p> <p>Takeoff weight:</p> <p>CAFM: Use a CDL index of 0.0 for this item.</p> <table border="1"> <thead> <tr> <th colspan="2">Enroute climb</th> </tr> </thead> <tbody> <tr> <td>14 kg/seal</td> <td>30 lb/seal</td> </tr> </tbody> </table> <p>CAFM: Add 0.1 to the CDL index for each missing seal.</p> <p>Landing weight:</p> <p>CAFM: Use a CDL index of 0.0 for this item.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: 	Enroute climb		14 kg/seal	30 lb/seal
Enroute climb					
14 kg/seal	30 lb/seal				

SYSTEM 57 WING			
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2		
	2 Remarks and/or exceptions		
57-03 Slat longitudinal seal (Cont'd)	<table border="1"><tr><td>Fuel consumption</td></tr><tr><td>+0.03% on fuel used/seal</td></tr></table>	Fuel consumption	+0.03% on fuel used/seal
Fuel consumption			
+0.03% on fuel used/seal			

SYSTEM 57 WING

57-03: Slat longitudinal seals



SYSTEM 57 WING					
SUB-SYSTEM ITEM	<div style="display: flex; justify-content: space-between;"> <div style="width: 10%;"> <p>1 Number required for all flight conditions except as provided in column 2</p> </div> <div style="width: 50%; border: 1px solid black; padding: 5px;"> <p>2 Remarks and/or exceptions</p> </div> </div>				
<p>57-04 Slat horseshoe and chordwise seal</p>	<div style="display: flex; justify-content: space-between;"> <div style="width: 10%; text-align: center;"> <p>44</p> </div> <div style="width: 50%; border: 1px solid black; padding: 5px;"> <p>Any number or combination can be missing if:</p> <ul style="list-style-type: none"> Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. Operational limitation: Flight into icing conditions is prohibited. Operational limitation: Use of wing anti-ice is prohibited. The performance limited weights are reduced by: <p>CIFP: Add 0.3 to the CDL index for each missing seal.</p> <p>Takeoff weight:</p> <p>CAFM: Use a CDL index of 0.0 for this item.</p> <table border="1" style="width: 100%; margin: 10px 0;"> <thead> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Enroute climb</th> </tr> </thead> <tbody> <tr> <td style="width: 50%; text-align: center; padding: 5px;">41 kg/seal</td> <td style="width: 50%; text-align: center; padding: 5px;">90 lb/seal</td> </tr> </tbody> </table> <p>CAFM: Add 0.3 to the CDL index for each missing seal.</p> <p>Landing weight:</p> </div> </div>	Enroute climb		41 kg/seal	90 lb/seal
Enroute climb					
41 kg/seal	90 lb/seal				

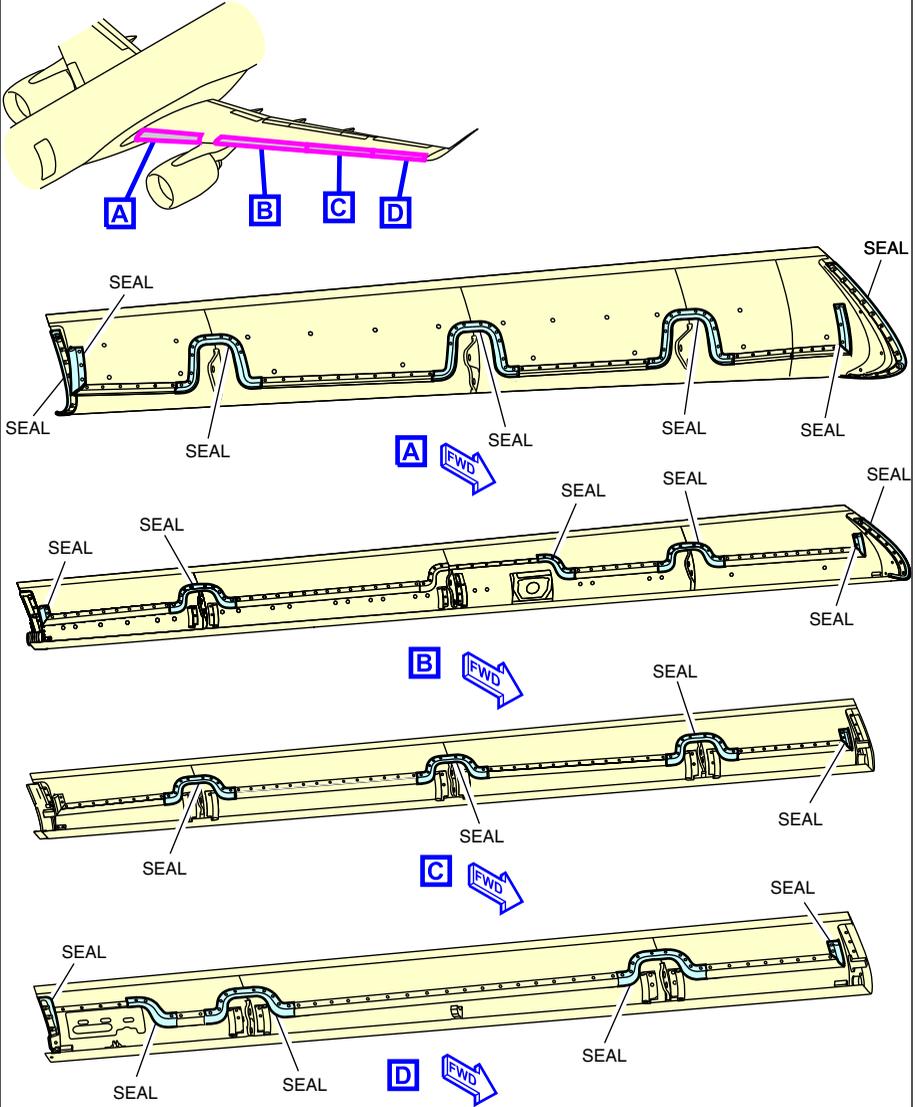
**APPENDIX
CONFIGURATION DEVIATION LIST
Wing**

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SYSTEM 57 WING			
<p>SUB-SYSTEM ITEM</p> <p>57-04 Slat horseshoe and chordwise seal (Cont'd)</p>	<p>1 Number required for all flight conditions except as provided in column 2</p> <p>2 Remarks and/or exceptions</p> <p>CAFM: Use a CDL index of 0.0 for this item.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td align="center">Fuel consumption</td> </tr> <tr> <td align="center">+0.11% on fuel used/seal</td> </tr> </table>	Fuel consumption	+0.11% on fuel used/seal
Fuel consumption			
+0.11% on fuel used/seal			

SYSTEM 57 WING

57-04: Slat horseshoe and chordwise seals



**APPENDIX
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Wing**

CS300

SYSTEM 57 WING													
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2 2 Remarks and/or exceptions												
57-06 Slat track closing plate	22 One item can be missing from each wing if: <ul style="list-style-type: none"> Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. Operational limitation: Flight into icing conditions is prohibited. The performance limited weights are reduced by: <table border="1"> <thead> <tr> <th colspan="2">Takeoff weight</th> </tr> </thead> <tbody> <tr> <td>6 kg/plate</td> <td>12 lb/plate</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Enroute climb</th> </tr> </thead> <tbody> <tr> <td>18 kg/plate</td> <td>38 lb/plate</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Landing weight</th> </tr> </thead> <tbody> <tr> <td>6 kg/plate</td> <td>12 lb/plate</td> </tr> </tbody> </table> <p>CAFM/CIFP: Add 0.2 to the CDL index for each missing plate.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: 	Takeoff weight		6 kg/plate	12 lb/plate	Enroute climb		18 kg/plate	38 lb/plate	Landing weight		6 kg/plate	12 lb/plate
Takeoff weight													
6 kg/plate	12 lb/plate												
Enroute climb													
18 kg/plate	38 lb/plate												
Landing weight													
6 kg/plate	12 lb/plate												

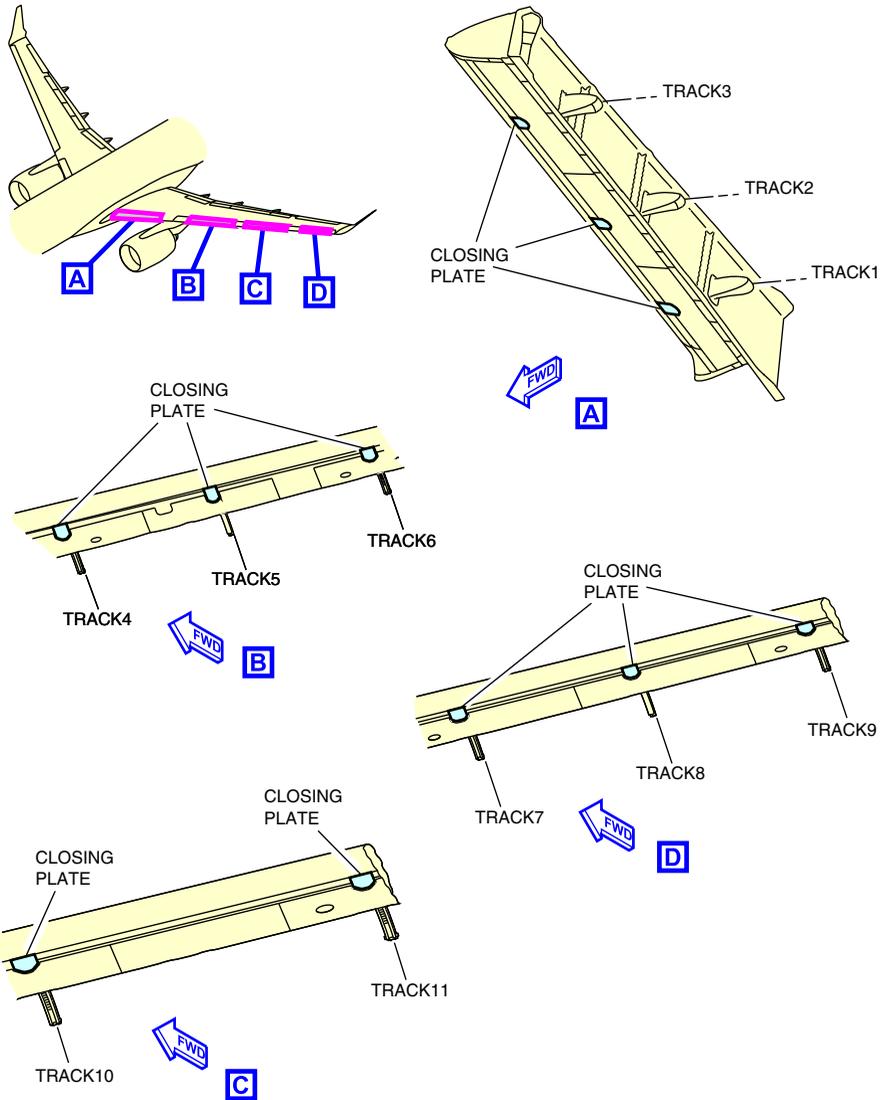
SYSTEM 57 WING			
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2		
	2 Remarks and/or exceptions		
57-06 Slat track closing plate (Cont'd)	<table border="1"><tr><td>Fuel consumption</td></tr><tr><td>+0.05% on fuel used/plate</td></tr></table>	Fuel consumption	+0.05% on fuel used/plate
Fuel consumption			
+0.05% on fuel used/plate			

APPENDIX
CONFIGURATION DEVIATION LIST
Wing

CS300

SYSTEM 57 WING

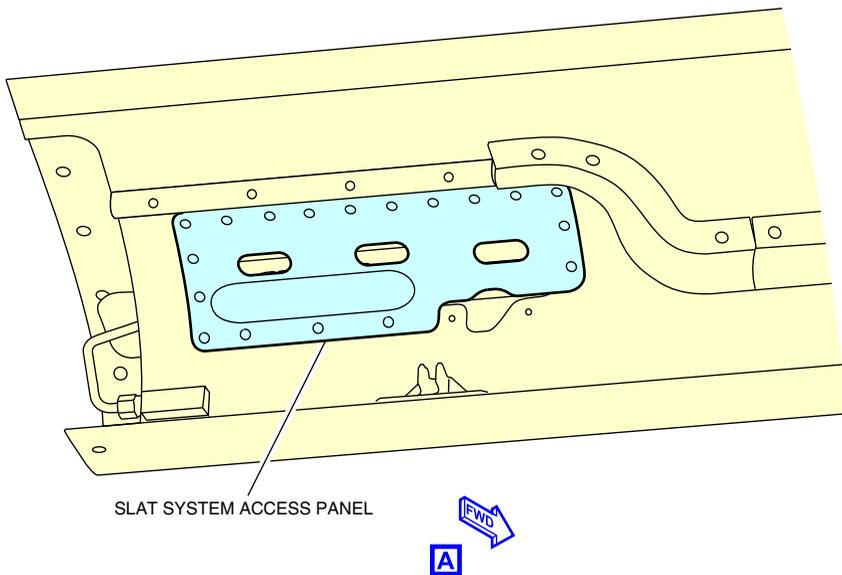
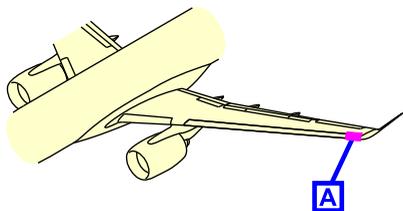
57-06: Slat track closing plates



SYSTEM 57 WING	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
57-07 Slat 4 access panel	2 Any number or combination can be missing with no impact on aircraft performance. <ul style="list-style-type: none">• Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited.• Operational limitation: Flight into icing conditions is prohibited.

SYSTEM 57 WING

57-07: Slat system access panels



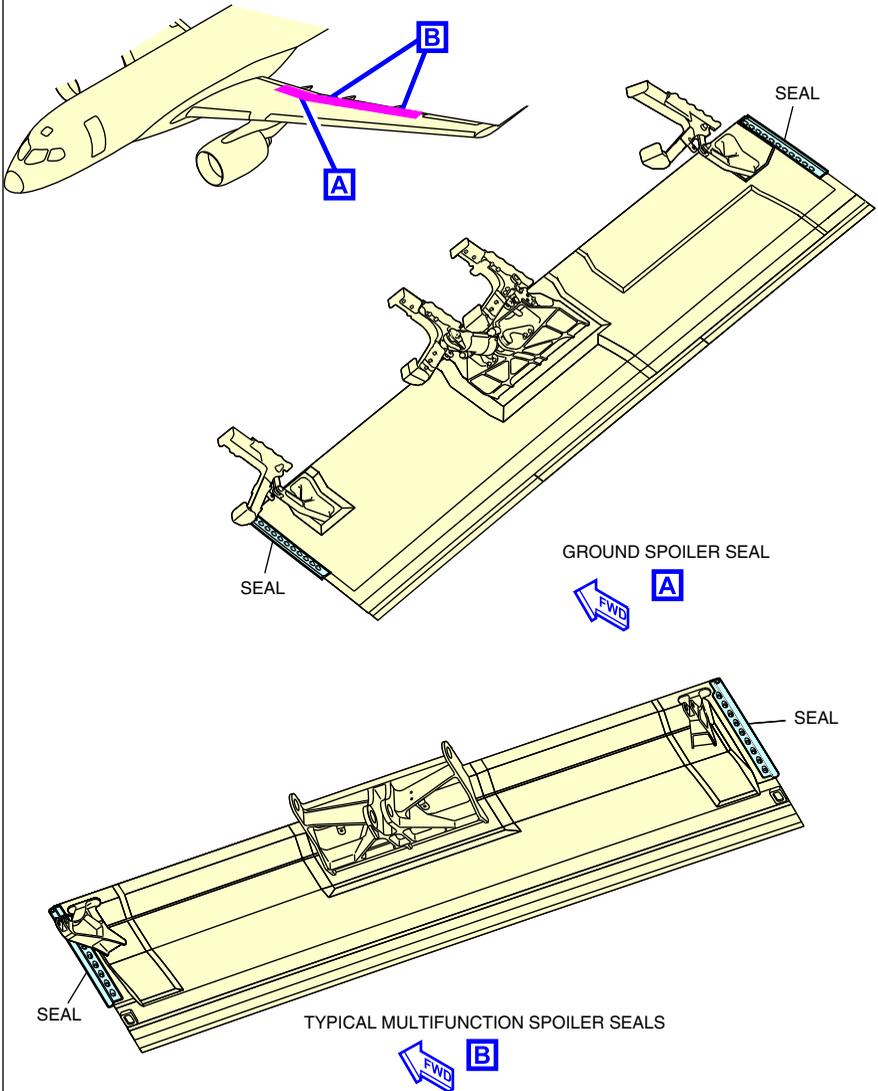
SYSTEM 57 WING																	
SUB-SYSTEM ITEM	<div style="display: flex; justify-content: space-between;"> <div style="width: 15%;"> <p>1 Number required for all flight conditions except as provided in column 2</p> </div> <div style="width: 65%;"> <p>2 Remarks and/or exceptions</p> </div> </div>																
57-08 Spoiler seal	<div style="display: flex; justify-content: space-between;"> <div style="width: 15%; text-align: center;">20</div> <div style="width: 65%;"> <p>Any number or combination can be missing if:</p> <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1" style="width: 100%; margin-bottom: 10px;"> <tr> <th colspan="2" style="text-align: center;">Takeoff weight</th> </tr> <tr> <td style="text-align: center;">6 kg/seal</td> <td style="text-align: center;">12 lb/seal</td> </tr> </table> <table border="1" style="width: 100%; margin-bottom: 10px;"> <tr> <th colspan="2" style="text-align: center;">Enroute climb</th> </tr> <tr> <td style="text-align: center;">18 kg/seal</td> <td style="text-align: center;">38 lb/seal</td> </tr> </table> <table border="1" style="width: 100%;"> <tr> <th colspan="2" style="text-align: center;">Landing weight</th> </tr> <tr> <td style="text-align: center;">6 kg/seal</td> <td style="text-align: center;">12 lb/seal</td> </tr> </table> <p>CAFM/CIFP: Add 0.2 to the CDL index for each missing seal.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="width: 100%; margin-top: 10px;"> <tr> <th colspan="2" style="text-align: center;">Fuel consumption</th> </tr> <tr> <td colspan="2" style="text-align: center;">+0.05% on fuel used/seal</td> </tr> </table> </div> </div>	Takeoff weight		6 kg/seal	12 lb/seal	Enroute climb		18 kg/seal	38 lb/seal	Landing weight		6 kg/seal	12 lb/seal	Fuel consumption		+0.05% on fuel used/seal	
Takeoff weight																	
6 kg/seal	12 lb/seal																
Enroute climb																	
18 kg/seal	38 lb/seal																
Landing weight																	
6 kg/seal	12 lb/seal																
Fuel consumption																	
+0.05% on fuel used/seal																	

APPENDIX
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Wing

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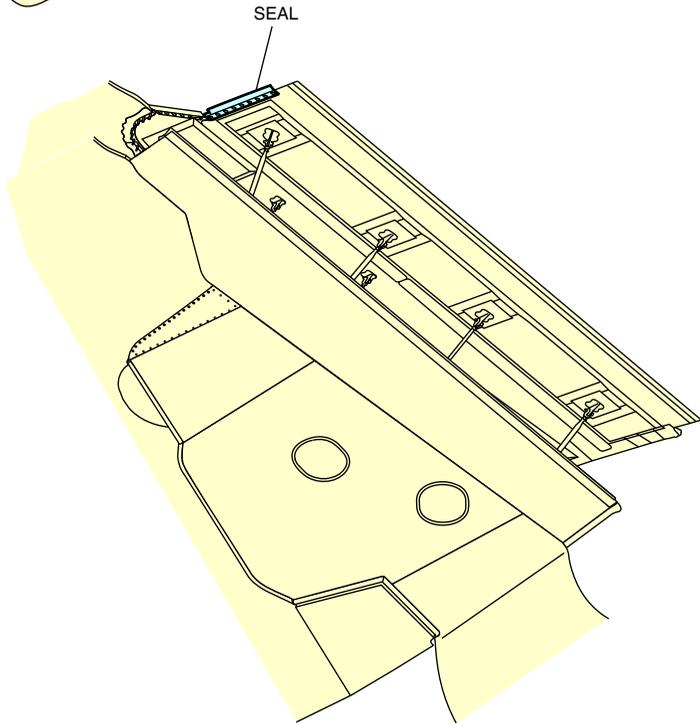
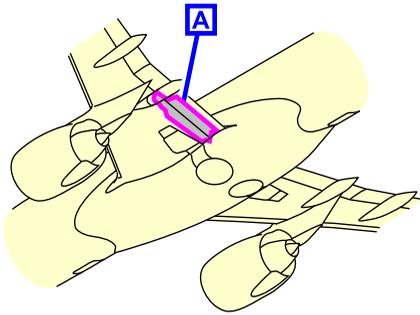
SYSTEM 57 WING

57-08: Spoiler seals



SYSTEM 57 WING

57-08: Spoiler seal



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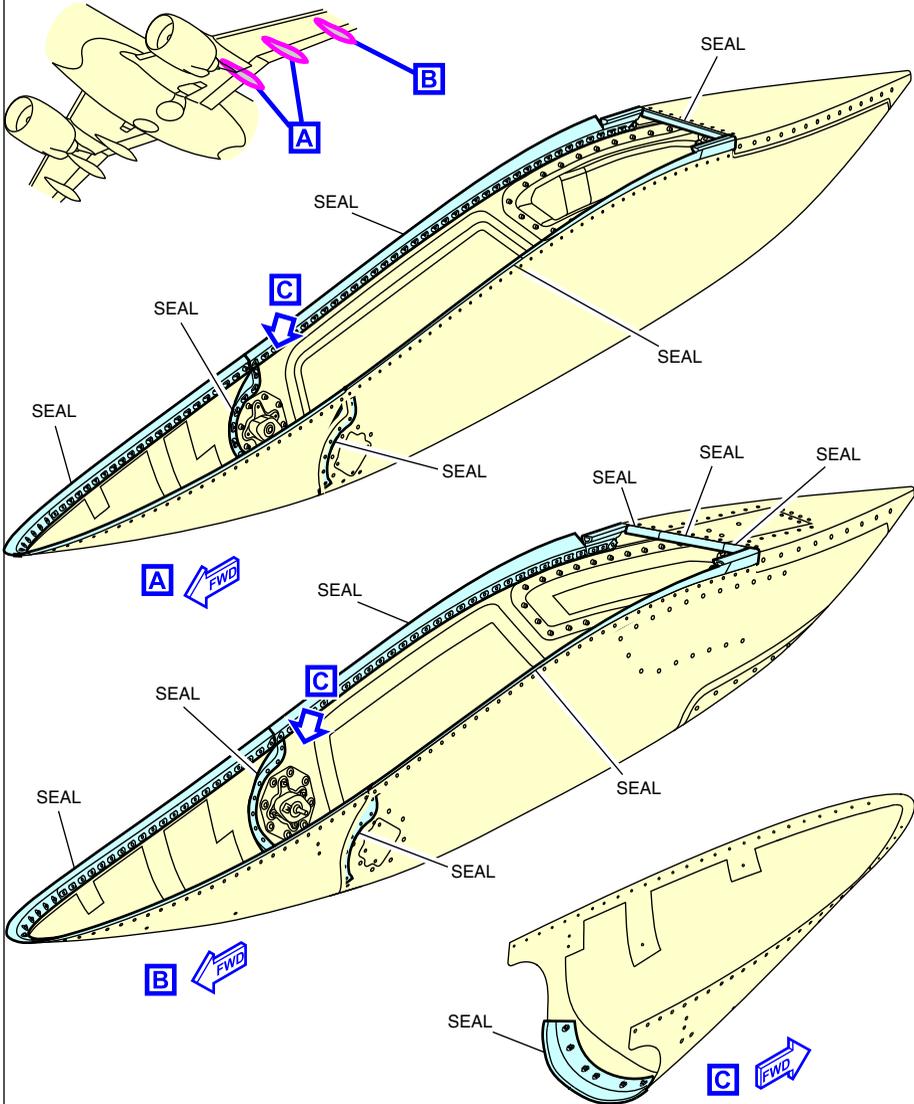
**APPENDIX
CONFIGURATION DEVIATION LIST
Wing**

CS300

SYSTEM 57 WING															
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2 2 Remarks and/or exceptions														
57-09 Flap track fairing seal	46 Any number or combination can be missing if: <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>53 kg/seal</td> <td>116 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>176 kg/seal</td> <td>387 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>53 kg/seal</td> <td>116 lb/seal</td> </tr> </table> CAFM/CIFP: Add 1.3 to the CDL index for each missing seal. The mission fuel requirements are increased by: <table border="1" style="margin-left: 20px;"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+0.47% on fuel used/seal</td> </tr> </table> 	Takeoff weight		53 kg/seal	116 lb/seal	Enroute climb		176 kg/seal	387 lb/seal	Landing weight		53 kg/seal	116 lb/seal	Fuel consumption	+0.47% on fuel used/seal
Takeoff weight															
53 kg/seal	116 lb/seal														
Enroute climb															
176 kg/seal	387 lb/seal														
Landing weight															
53 kg/seal	116 lb/seal														
Fuel consumption															
+0.47% on fuel used/seal															

SYSTEM 57 WING

57-09: Flap track fairing seals



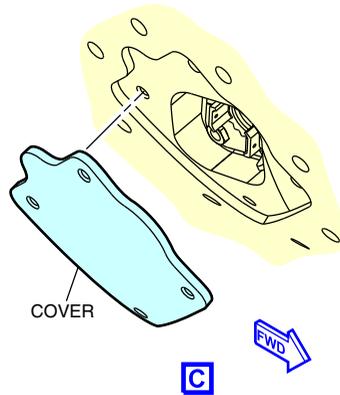
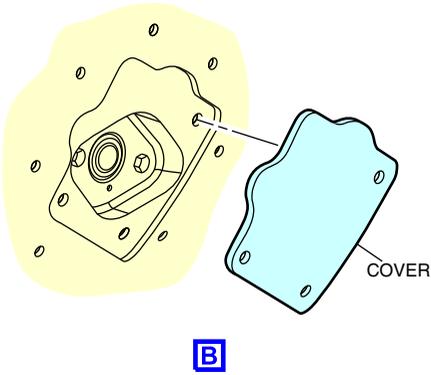
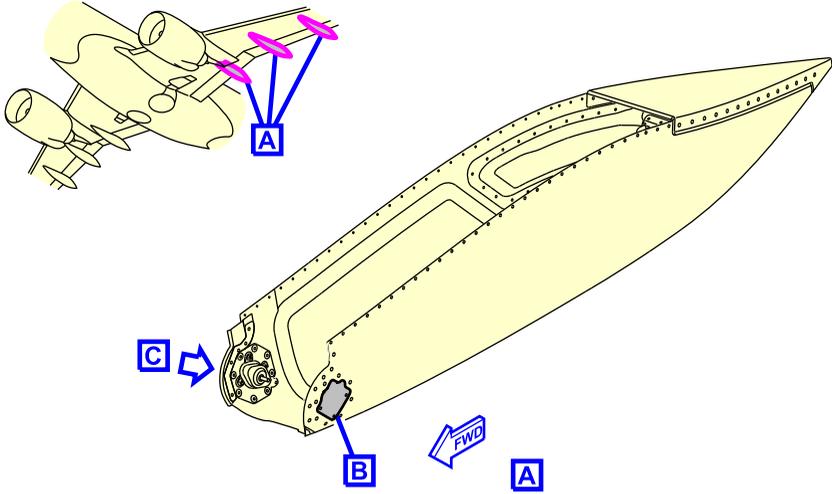
**APPENDIX
CONFIGURATION DEVIATION LIST
Wing**

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SYSTEM 57 WING	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2 2 Remarks and/or exceptions
57-10 Flap track fairing pivot cover	12 Any number or combination can be missing with a negligible impact on aircraft performance. <ul style="list-style-type: none"> • Speed tape must be installed to prevent air/humidity/water ingress in flight. Refer to the Aircraft Structure Repair Publication (ASRP), (BD500-3AB48-10600-00), Speed tape replacement. CAFM/CIFP: Use a CDL index of 0.0 for this item.

SYSTEM 57 WING

57-10: Flap track fairing pivot cover



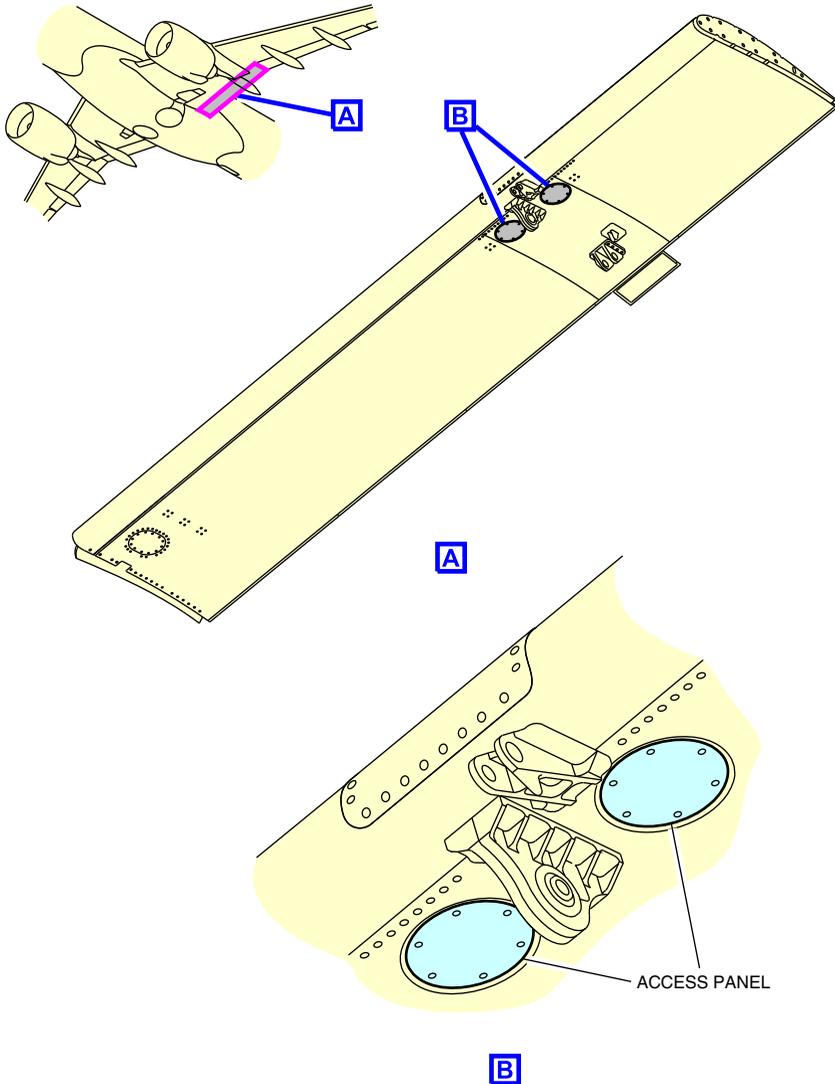
**APPENDIX
CONFIGURATION DEVIATION LIST
Wing**

CS300

SYSTEM 57 WING															
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p> <p>2 Remarks and/or exceptions</p>														
57-13 Inboard flap access panel	<p>4 Any number or combination can be missing if:</p> <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>6 kg/panel</td> <td>12 lb/panel</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>18 kg/panel</td> <td>39 lb/panel</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>6 kg/panel</td> <td>12 lb/panel</td> </tr> </table> <p>CAFM/CIFP: Add 0.2 to the CDL index for each missing panel.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="margin-left: 20px;"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+0.05% on fuel used/panel</td> </tr> </table>	Takeoff weight		6 kg/panel	12 lb/panel	Enroute climb		18 kg/panel	39 lb/panel	Landing weight		6 kg/panel	12 lb/panel	Fuel consumption	+0.05% on fuel used/panel
Takeoff weight															
6 kg/panel	12 lb/panel														
Enroute climb															
18 kg/panel	39 lb/panel														
Landing weight															
6 kg/panel	12 lb/panel														
Fuel consumption															
+0.05% on fuel used/panel															

SYSTEM 57 WING

57-13: Inboard flap access panels



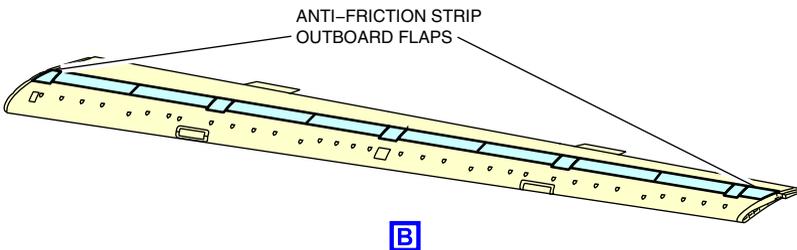
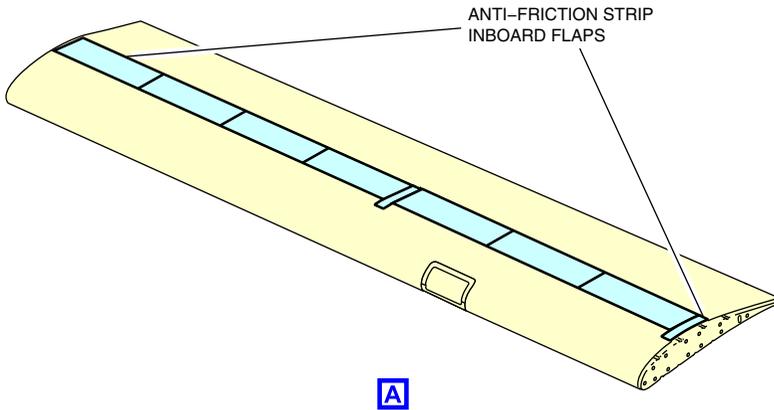
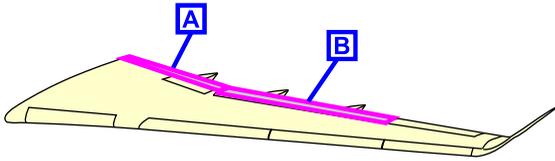
APPENDIX
CONFIGURATION DEVIATION LIST
Wing

CS300

SYSTEM 57 WING	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
SUB-SYSTEM ITEM	2 Remarks and/or exceptions
57-14 Inboard and outboard flap anti-friction strip	16 Any number or combination can be missing with no impact on aircraft performance.

SYSTEM 57 WING

57-14: Inboard/outboard flap anti-friction strip



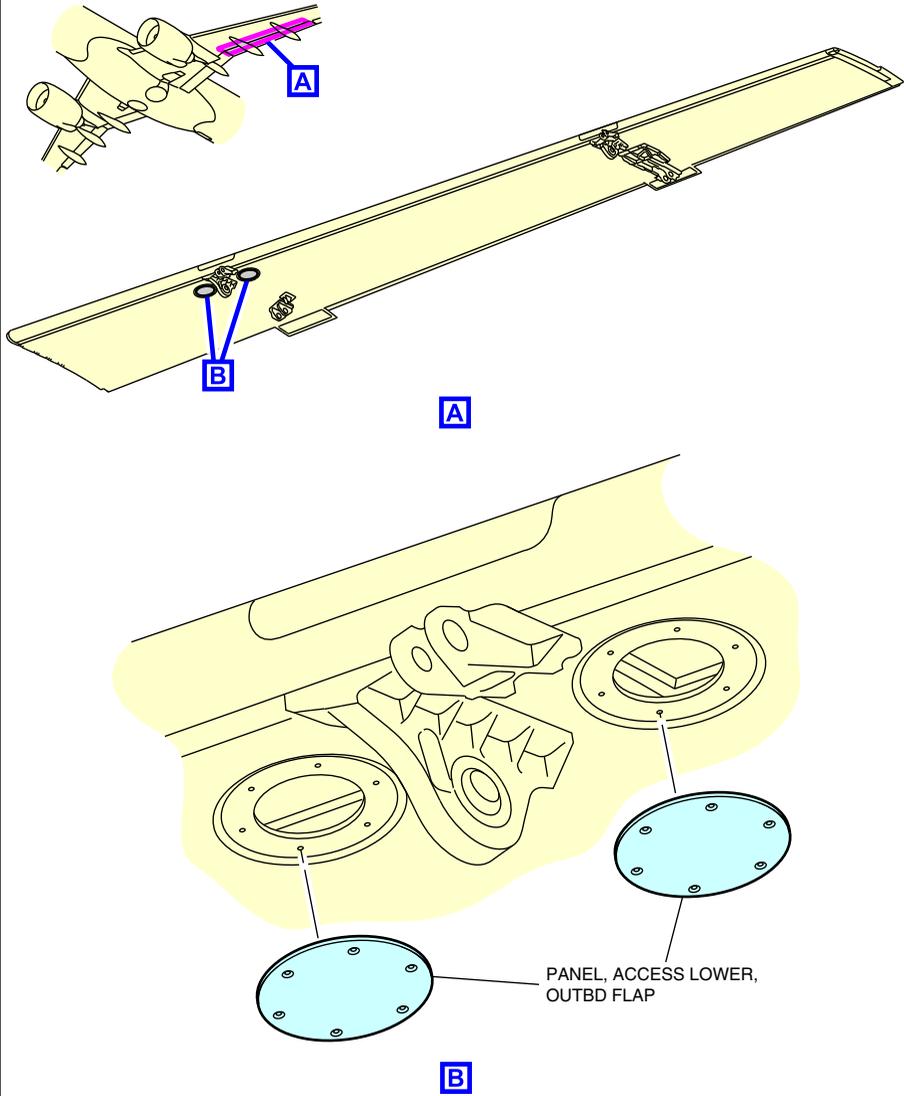
**APPENDIX
CONFIGURATION DEVIATION LIST
Wing**

CS300

SYSTEM 57 WING															
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p> <p>2 Remarks and/or exceptions</p>														
57-15 Outboard flap access panel	<p>4 Any number or combination can be missing if:</p> <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>6 kg/panel</td> <td>12 lb/panel</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>18 kg/panel</td> <td>39 lb/panel</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>6 kg/panel</td> <td>12 lb/panel</td> </tr> </table> <p>CAFM/CIFP: Add 0.2 to the CDL index for each missing panel.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="margin-left: 20px;"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+0.05% on fuel used/panel</td> </tr> </table>	Takeoff weight		6 kg/panel	12 lb/panel	Enroute climb		18 kg/panel	39 lb/panel	Landing weight		6 kg/panel	12 lb/panel	Fuel consumption	+0.05% on fuel used/panel
Takeoff weight															
6 kg/panel	12 lb/panel														
Enroute climb															
18 kg/panel	39 lb/panel														
Landing weight															
6 kg/panel	12 lb/panel														
Fuel consumption															
+0.05% on fuel used/panel															

SYSTEM 57 WING

57-15: Outboard flap access panel



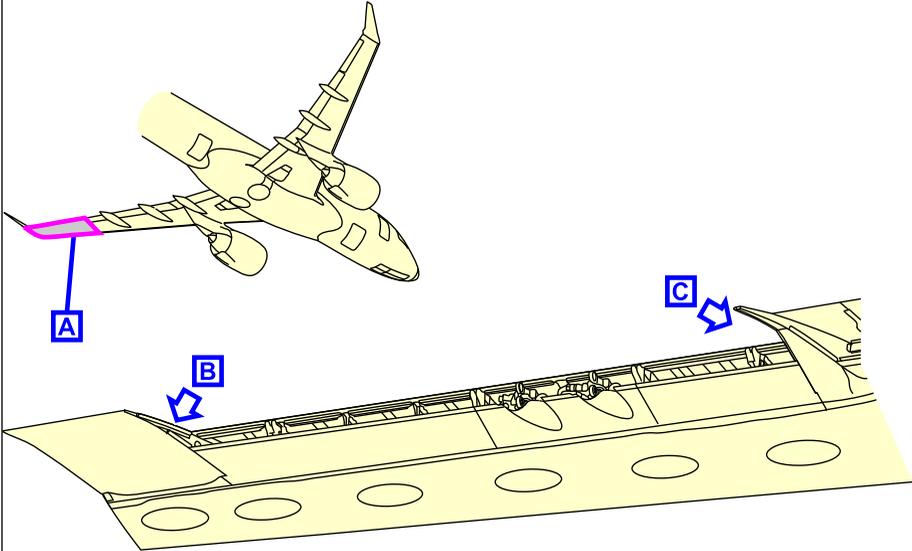
**APPENDIX
CONFIGURATION DEVIATION LIST
Wing**

CS300

SYSTEM 57 WING															
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2 2 Remarks and/or exceptions														
57-18 Seal between aileron side end and wing/winglet	<p>8 Any number or combination can be missing:</p> <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>5 kg/seal</td> <td>10 lb/seal</td> </tr> </table> <table border="1"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>15 kg/seal</td> <td>32 lb/seal</td> </tr> </table> <table border="1"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>5 kg/seal</td> <td>10 lb/seal</td> </tr> </table> <p>CAFM/CIFP: Add 0.2 to the CDL index for each missing seal.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+0.04% on fuel used/seal</td> </tr> </table>	Takeoff weight		5 kg/seal	10 lb/seal	Enroute climb		15 kg/seal	32 lb/seal	Landing weight		5 kg/seal	10 lb/seal	Fuel consumption	+0.04% on fuel used/seal
Takeoff weight															
5 kg/seal	10 lb/seal														
Enroute climb															
15 kg/seal	32 lb/seal														
Landing weight															
5 kg/seal	10 lb/seal														
Fuel consumption															
+0.04% on fuel used/seal															

SYSTEM 57 WING

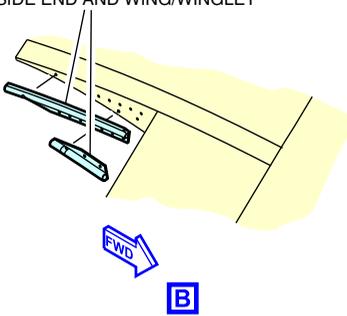
57-18: Seals between aileron side end and wing/winglet



AILERON NOT SHOWN
FOR CLARITY

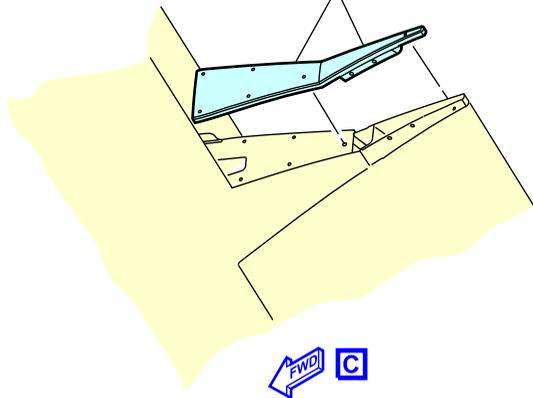
A

SEALS BETWEEN AILERON
SIDE END AND WING/WINGLET



B

SEALS BETWEEN AILERON
SIDE END AND WING/WINGLET



C

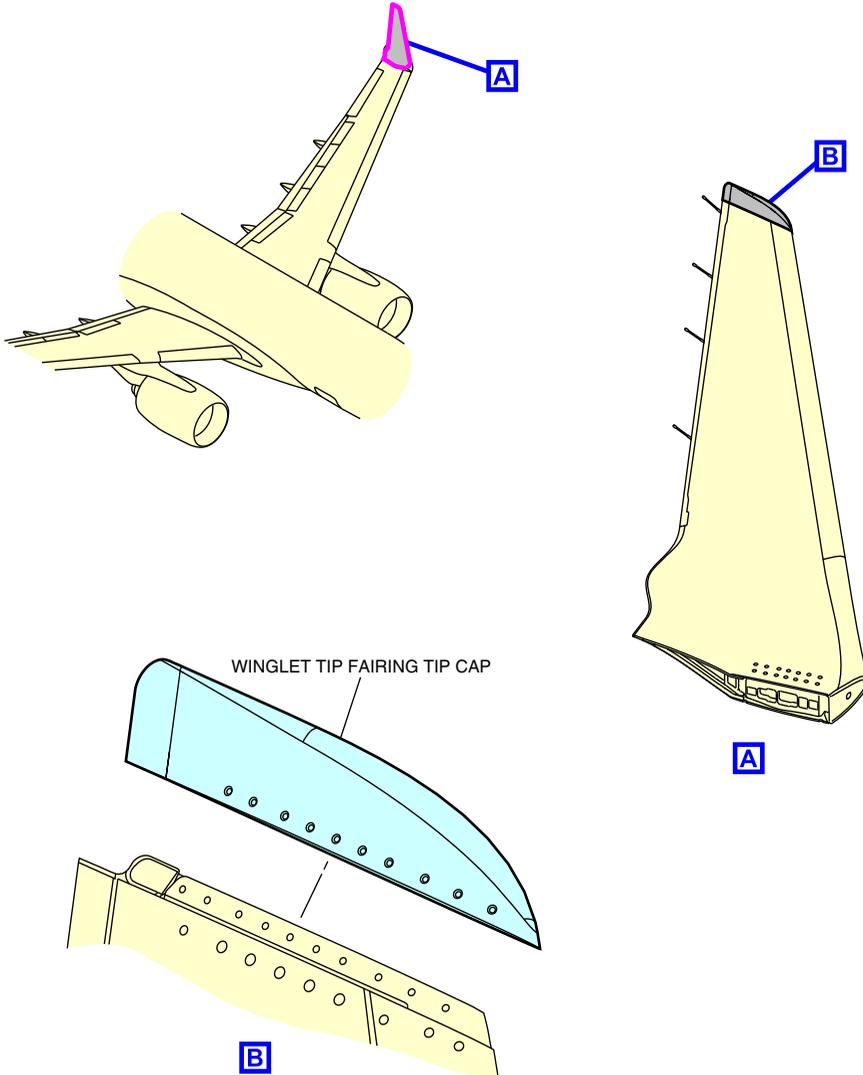
**APPENDIX
CONFIGURATION DEVIATION LIST
Wing**

CS300

SYSTEM 57 WING															
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p>														
57-20 Winglet tip fairing tip cap	<p>2 Remarks and/or exceptions</p> <p>2 One or two can be missing if:</p> <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>25 kg/winglet</td> <td>54 lb/winglet</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>82 kg/winglet</td> <td>180 lb/winglet</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>25 kg/winglet</td> <td>54 lb/winglet</td> </tr> </table> <p>CAFM/CIFP: Add 0.6 to the CDL index for each winglet with missing cap.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="margin-left: 20px;"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+0.22% on fuel used/winglet</td> </tr> </table>	Takeoff weight		25 kg/winglet	54 lb/winglet	Enroute climb		82 kg/winglet	180 lb/winglet	Landing weight		25 kg/winglet	54 lb/winglet	Fuel consumption	+0.22% on fuel used/winglet
Takeoff weight															
25 kg/winglet	54 lb/winglet														
Enroute climb															
82 kg/winglet	180 lb/winglet														
Landing weight															
25 kg/winglet	54 lb/winglet														
Fuel consumption															
+0.22% on fuel used/winglet															

SYSTEM 57 WING

57-20: Winglet tip fairing tip cap



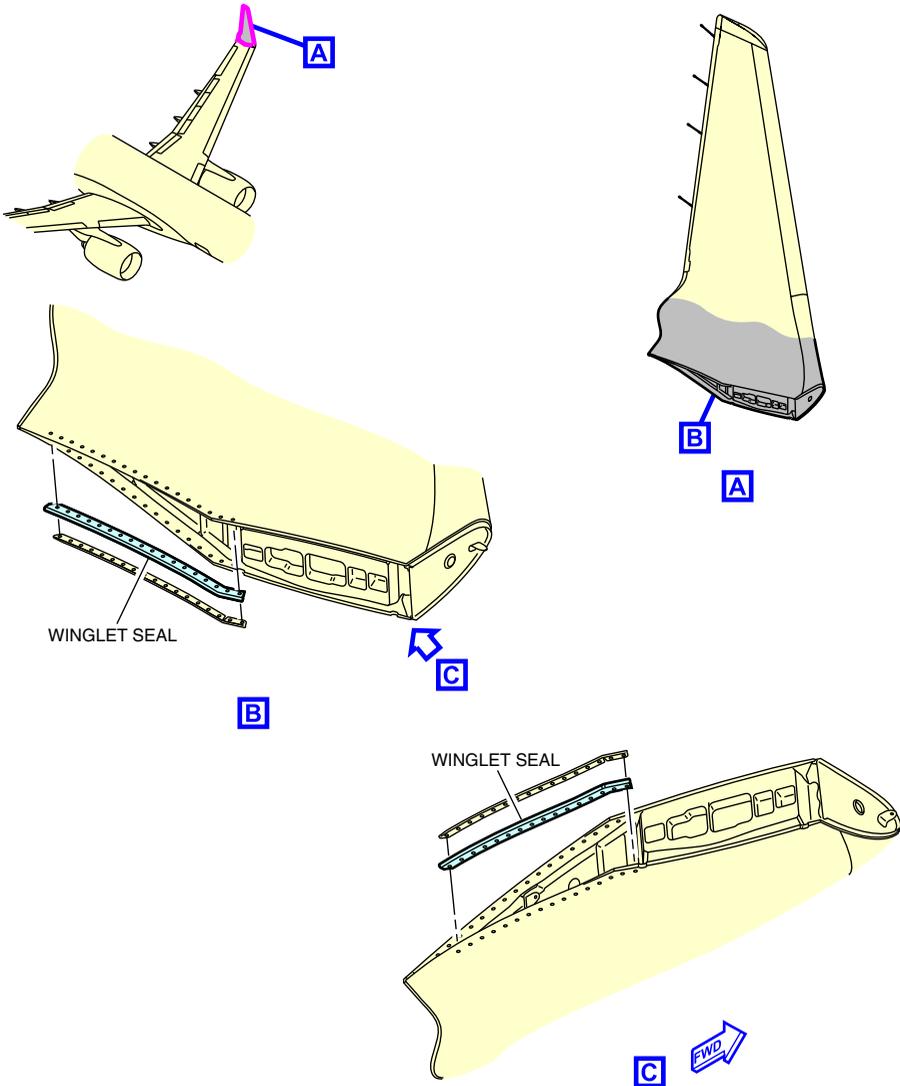
**APPENDIX
CONFIGURATION DEVIATION LIST
Wing**

CS300

SYSTEM 57 WING															
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p>														
57-21 Winglet seal	<p>2 Remarks and/or exceptions</p> <p>4 Any number or combination can be missing if:</p> <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>5 kg/seal</td> <td>10 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>15 kg/seal</td> <td>33 lb/seal</td> </tr> </table> <table border="1" style="margin-left: 20px;"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>5 kg/seal</td> <td>10 lb/seal</td> </tr> </table> <p>CAFM/CIFP: Add 0.2 to the CDL index for each missing seal.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="margin-left: 20px;"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+0.04% on fuel used/seal</td> </tr> </table>	Takeoff weight		5 kg/seal	10 lb/seal	Enroute climb		15 kg/seal	33 lb/seal	Landing weight		5 kg/seal	10 lb/seal	Fuel consumption	+0.04% on fuel used/seal
Takeoff weight															
5 kg/seal	10 lb/seal														
Enroute climb															
15 kg/seal	33 lb/seal														
Landing weight															
5 kg/seal	10 lb/seal														
Fuel consumption															
+0.04% on fuel used/seal															

SYSTEM 57 WING

57-21: Winglet seal



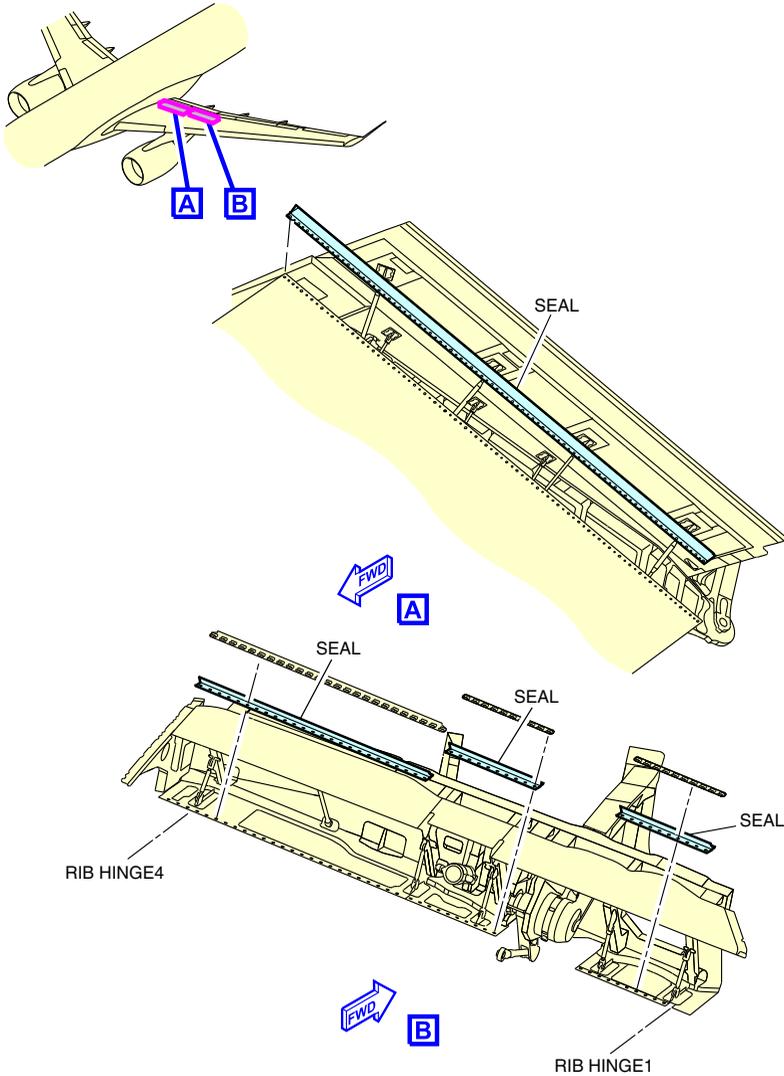
**APPENDIX
CONFIGURATION DEVIATION LIST
Wing**

CS300

SYSTEM 57 WING															
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2 2 Remarks and/or exceptions														
57-22 Wing trailing edge lower access/shroud panel seal	42 Any number or combination can be missing if: <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>24 kg/seal</td> <td>51 lb/seal</td> </tr> </table> <table border="1"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>76 kg/seal</td> <td>167 lb/seal</td> </tr> </table> <table border="1"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>24 kg/seal</td> <td>51 lb/seal</td> </tr> </table> CAFM/CIFP: Add 0.6 to the CDL index for each missing seal. <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+0.21% on fuel used/seal</td> </tr> </table>	Takeoff weight		24 kg/seal	51 lb/seal	Enroute climb		76 kg/seal	167 lb/seal	Landing weight		24 kg/seal	51 lb/seal	Fuel consumption	+0.21% on fuel used/seal
Takeoff weight															
24 kg/seal	51 lb/seal														
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76 kg/seal	167 lb/seal														
Landing weight															
24 kg/seal	51 lb/seal														
Fuel consumption															
+0.21% on fuel used/seal															

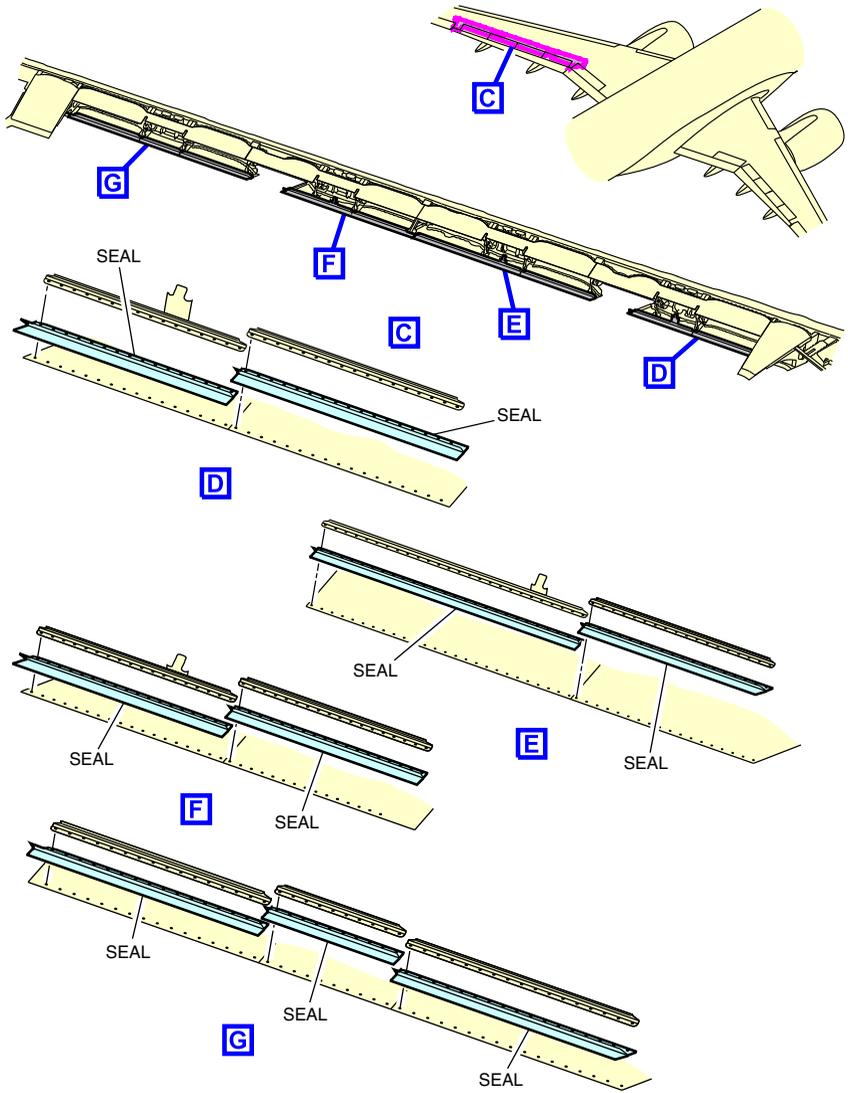
SYSTEM 57 WING

57-22: Wing trailing edge lower access/shroud panel seals



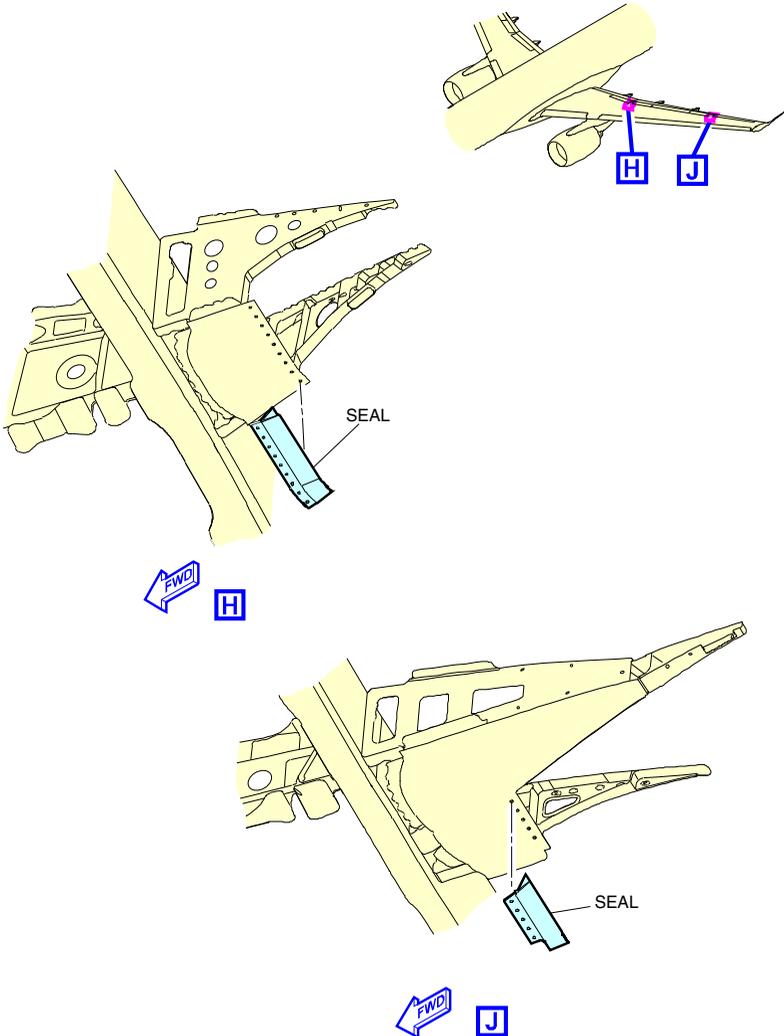
SYSTEM 57 WING

57-22: Wing trailing edge lower access/shroud panel seals



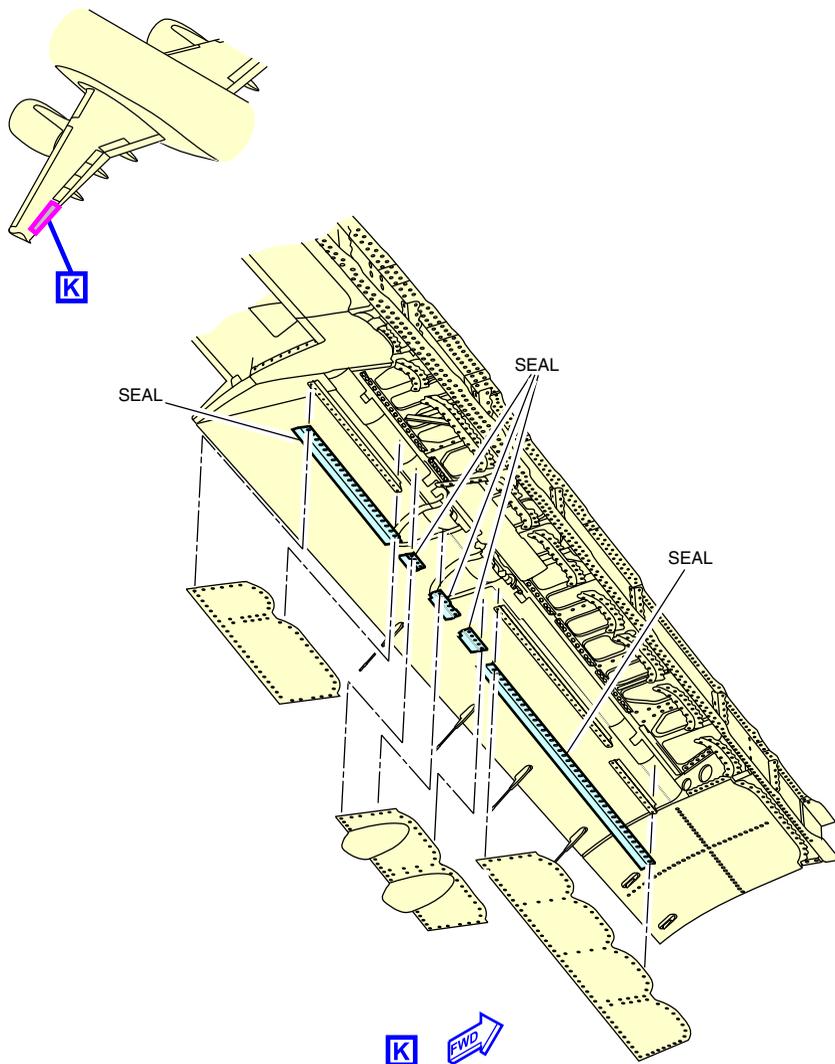
SYSTEM 57 WING

57-22: Wing trailing edge lower access/shroud panel seals



SYSTEM 57 WING

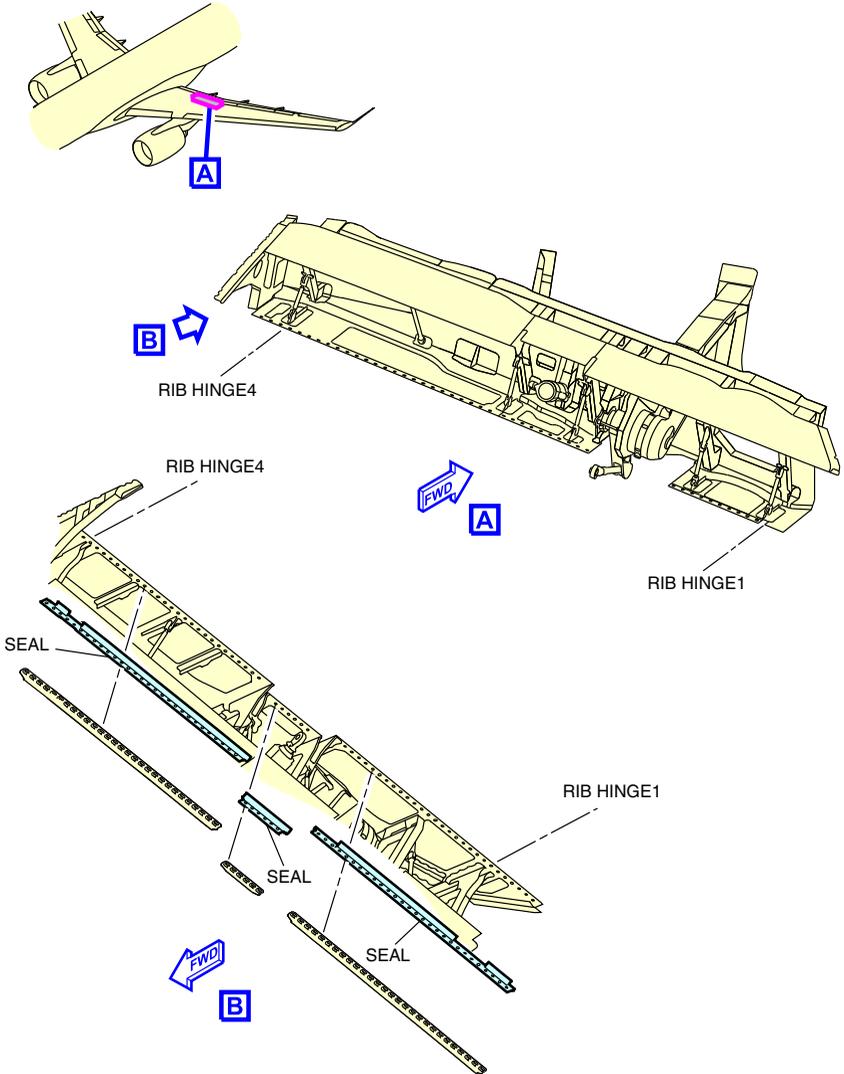
57-22: Wing trailing edge lower access/shroud panel seals



SYSTEM 57 WING																					
	1 Number required for all flight conditions except as provided in column 2																				
	2 Remarks and/or exceptions																				
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; padding: 5px;">SUB-SYSTEM ITEM</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">57-23 Wing trailing edge upper shroud panel seal</td> </tr> </tbody> </table>	SUB-SYSTEM ITEM	57-23 Wing trailing edge upper shroud panel seal	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center; vertical-align: middle;">36</td> <td style="padding: 5px;"> <p>Any number or combination can be missing if:</p> <ul style="list-style-type: none"> Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. The performance limited weights are reduced by: <table border="1" style="width: 100%; border-collapse: collapse; margin: 5px 0;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Takeoff weight</th> </tr> <tr> <td style="width: 50%; text-align: center; padding: 5px;">24 kg/seal</td> <td style="width: 50%; text-align: center; padding: 5px;">51 lb/seal</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse; margin: 5px 0;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Enroute climb</th> </tr> <tr> <td style="width: 50%; text-align: center; padding: 5px;">76 kg/seal</td> <td style="width: 50%; text-align: center; padding: 5px;">167 lb/seal</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse; margin: 5px 0;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Landing weight</th> </tr> <tr> <td style="width: 50%; text-align: center; padding: 5px;">24 kg/seal</td> <td style="width: 50%; text-align: center; padding: 5px;">51 lb/seal</td> </tr> </table> <p>CAFM/CIFP: Add 0.6 to the CDL index for each missing seal.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="width: 100%; border-collapse: collapse; margin: 5px 0;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Fuel consumption</th> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;">+0.21% on fuel used/seal</td> </tr> </table> </td> </tr> </table>	36	<p>Any number or combination can be missing if:</p> <ul style="list-style-type: none"> Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. The performance limited weights are reduced by: <table border="1" style="width: 100%; border-collapse: collapse; margin: 5px 0;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Takeoff weight</th> </tr> <tr> <td style="width: 50%; text-align: center; padding: 5px;">24 kg/seal</td> <td style="width: 50%; text-align: center; padding: 5px;">51 lb/seal</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse; margin: 5px 0;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Enroute climb</th> </tr> <tr> <td style="width: 50%; text-align: center; padding: 5px;">76 kg/seal</td> <td style="width: 50%; text-align: center; padding: 5px;">167 lb/seal</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse; margin: 5px 0;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Landing weight</th> </tr> <tr> <td style="width: 50%; text-align: center; padding: 5px;">24 kg/seal</td> <td style="width: 50%; text-align: center; padding: 5px;">51 lb/seal</td> </tr> </table> <p>CAFM/CIFP: Add 0.6 to the CDL index for each missing seal.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="width: 100%; border-collapse: collapse; margin: 5px 0;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Fuel consumption</th> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;">+0.21% on fuel used/seal</td> </tr> </table>	Takeoff weight		24 kg/seal	51 lb/seal	Enroute climb		76 kg/seal	167 lb/seal	Landing weight		24 kg/seal	51 lb/seal	Fuel consumption		+0.21% on fuel used/seal	
SUB-SYSTEM ITEM																					
57-23 Wing trailing edge upper shroud panel seal																					
36	<p>Any number or combination can be missing if:</p> <ul style="list-style-type: none"> Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. The performance limited weights are reduced by: <table border="1" style="width: 100%; border-collapse: collapse; margin: 5px 0;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Takeoff weight</th> </tr> <tr> <td style="width: 50%; text-align: center; padding: 5px;">24 kg/seal</td> <td style="width: 50%; text-align: center; padding: 5px;">51 lb/seal</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse; margin: 5px 0;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Enroute climb</th> </tr> <tr> <td style="width: 50%; text-align: center; padding: 5px;">76 kg/seal</td> <td style="width: 50%; text-align: center; padding: 5px;">167 lb/seal</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse; margin: 5px 0;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Landing weight</th> </tr> <tr> <td style="width: 50%; text-align: center; padding: 5px;">24 kg/seal</td> <td style="width: 50%; text-align: center; padding: 5px;">51 lb/seal</td> </tr> </table> <p>CAFM/CIFP: Add 0.6 to the CDL index for each missing seal.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1" style="width: 100%; border-collapse: collapse; margin: 5px 0;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;">Fuel consumption</th> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;">+0.21% on fuel used/seal</td> </tr> </table>	Takeoff weight		24 kg/seal	51 lb/seal	Enroute climb		76 kg/seal	167 lb/seal	Landing weight		24 kg/seal	51 lb/seal	Fuel consumption		+0.21% on fuel used/seal					
Takeoff weight																					
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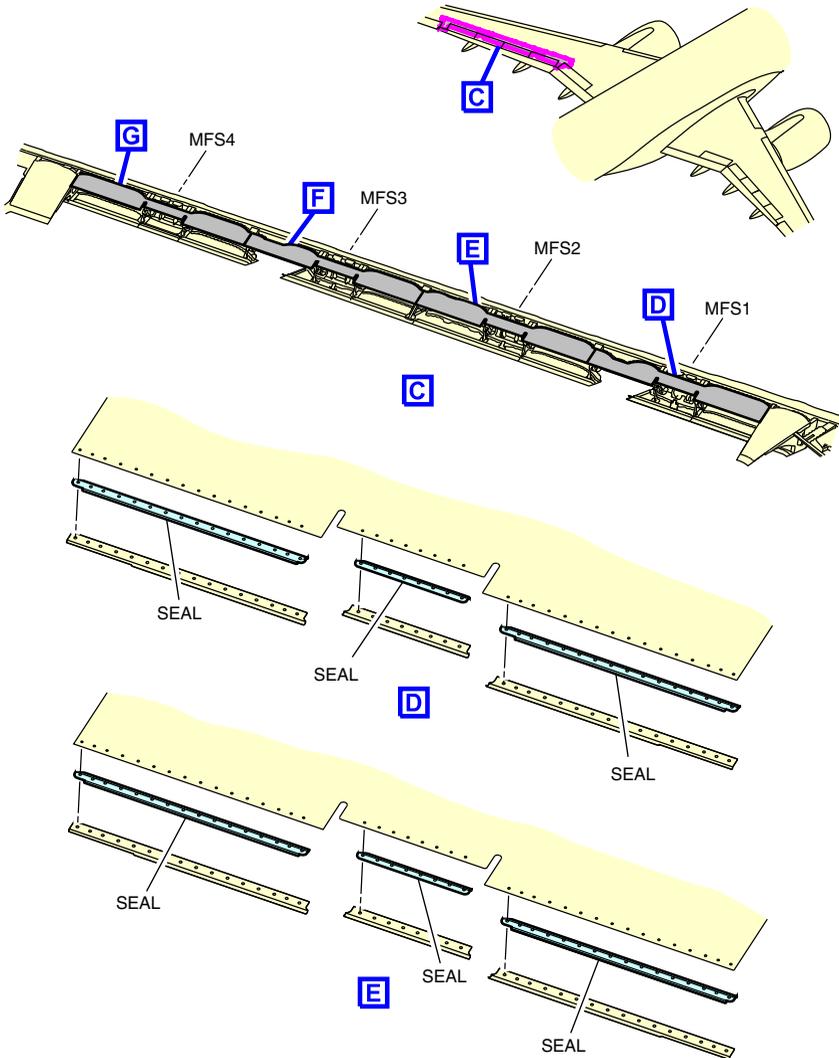
SYSTEM 57 WING

57-23: Wing trailing edge upper shroud panel seals



SYSTEM 57 WING

57-23: Wing trailing edge upper shroud panel seals

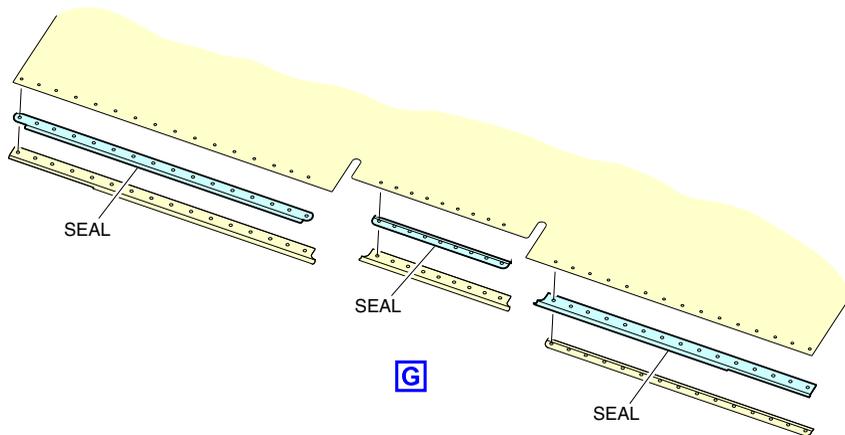
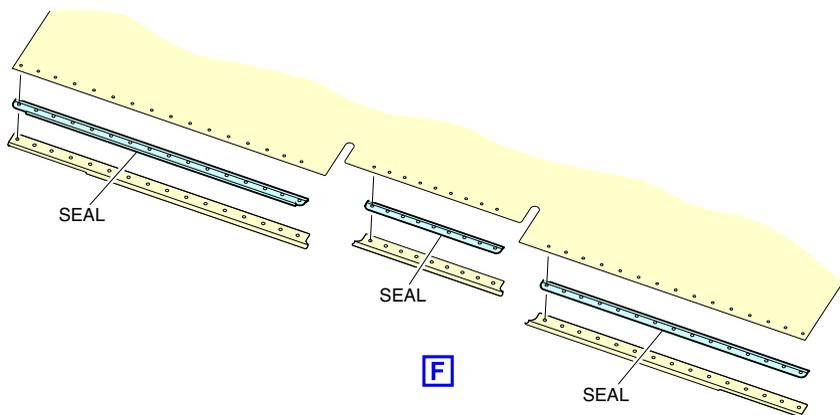


APPENDIX
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Wing

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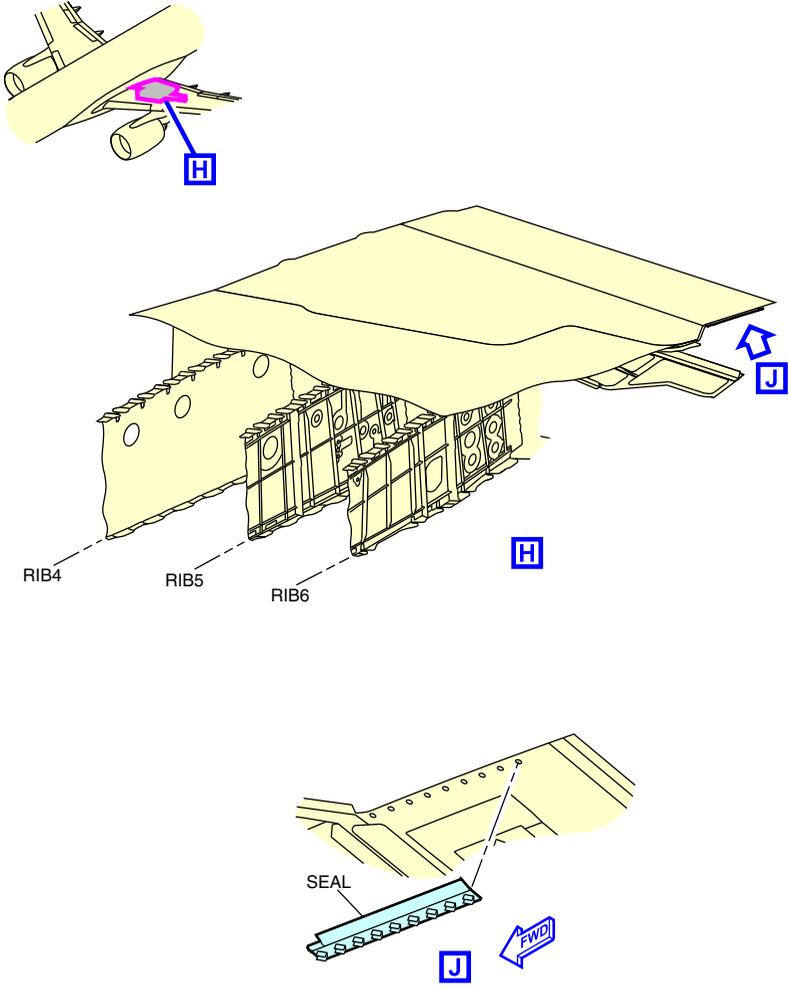
SYSTEM 57 WING

57-23: Wing trailing edge upper shroud panel seals



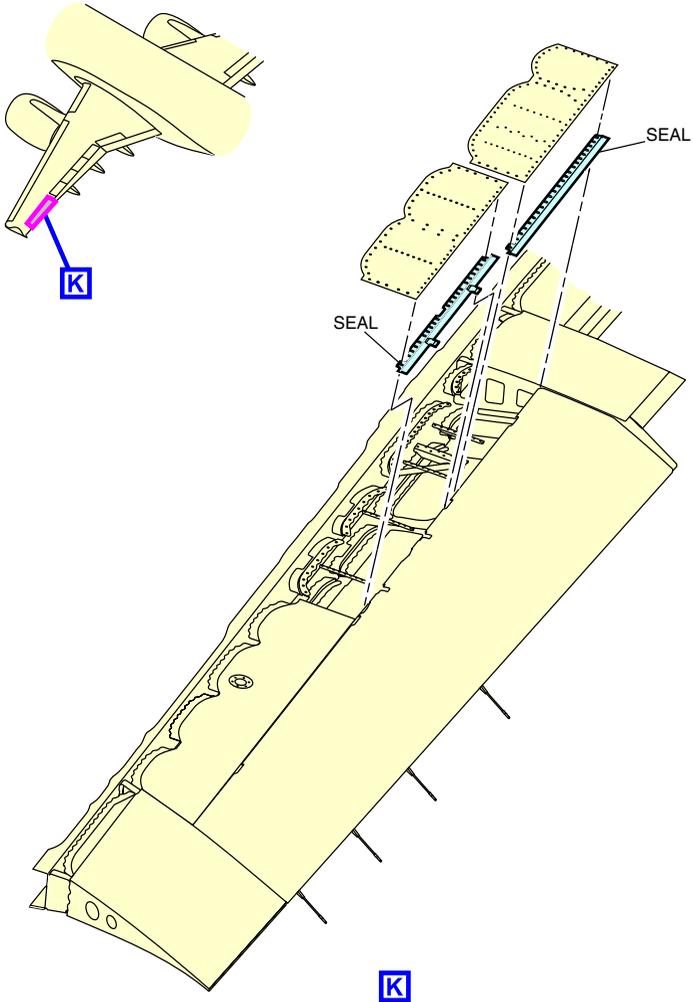
SYSTEM 57 WING

57-23: Wing trailing edge upper shroud panel seals



SYSTEM 57 WING

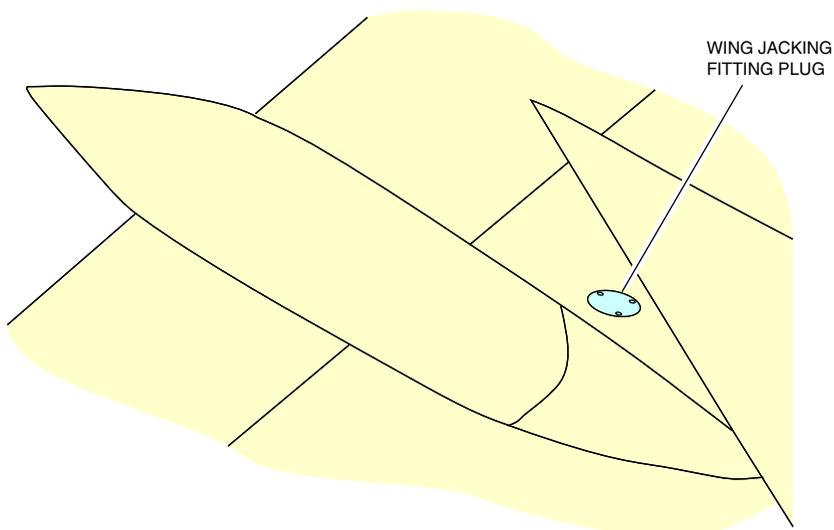
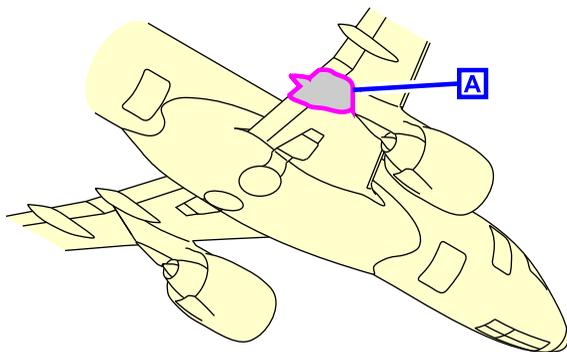
57-23: Wing trailing edge upper shroud panel seals



SYSTEM 57 WING	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
57-24 Wing jacking fitting plug	2 One or two can be missing with a negligible impact on aircraft performance. CAFM/CIFP: Use a CDL index of 0.0 for this item.

SYSTEM 57 WING

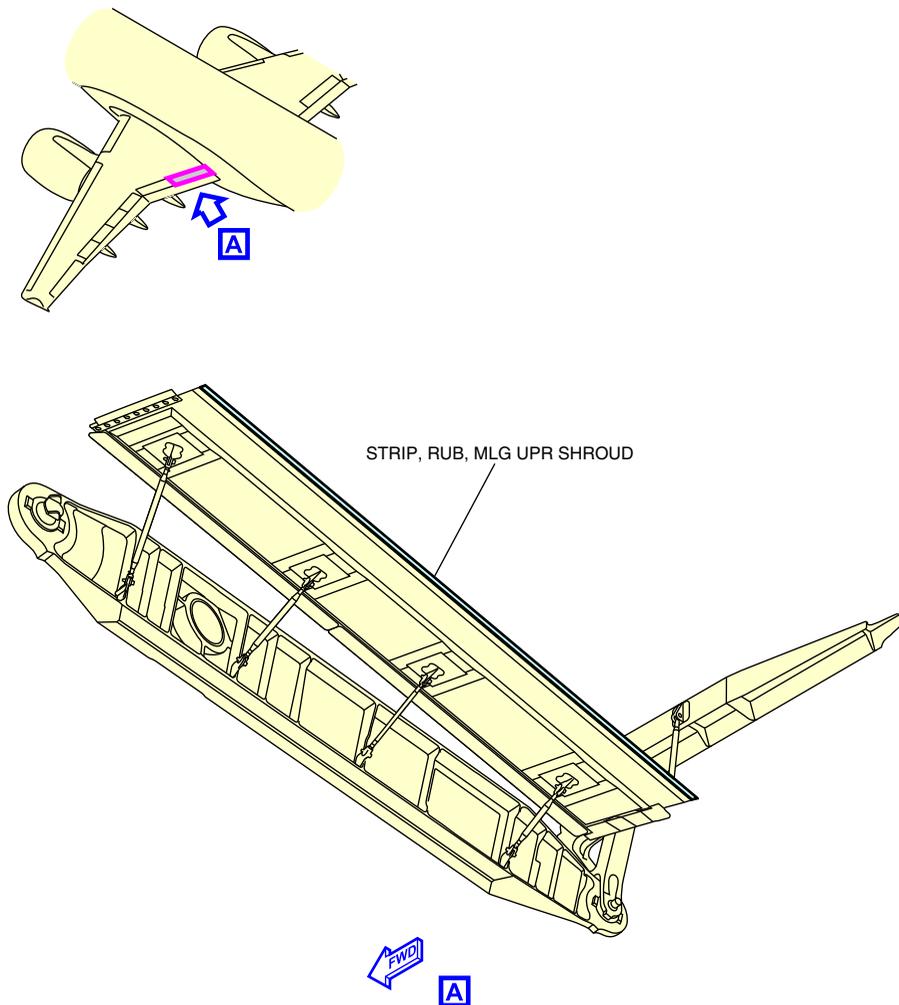
57-24: Wing jacking fitting plug



SYSTEM 57 WING	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
57-25 Inboard and outboard flap strip	6 Any number or combination can be missing with no impact on aircraft performance.

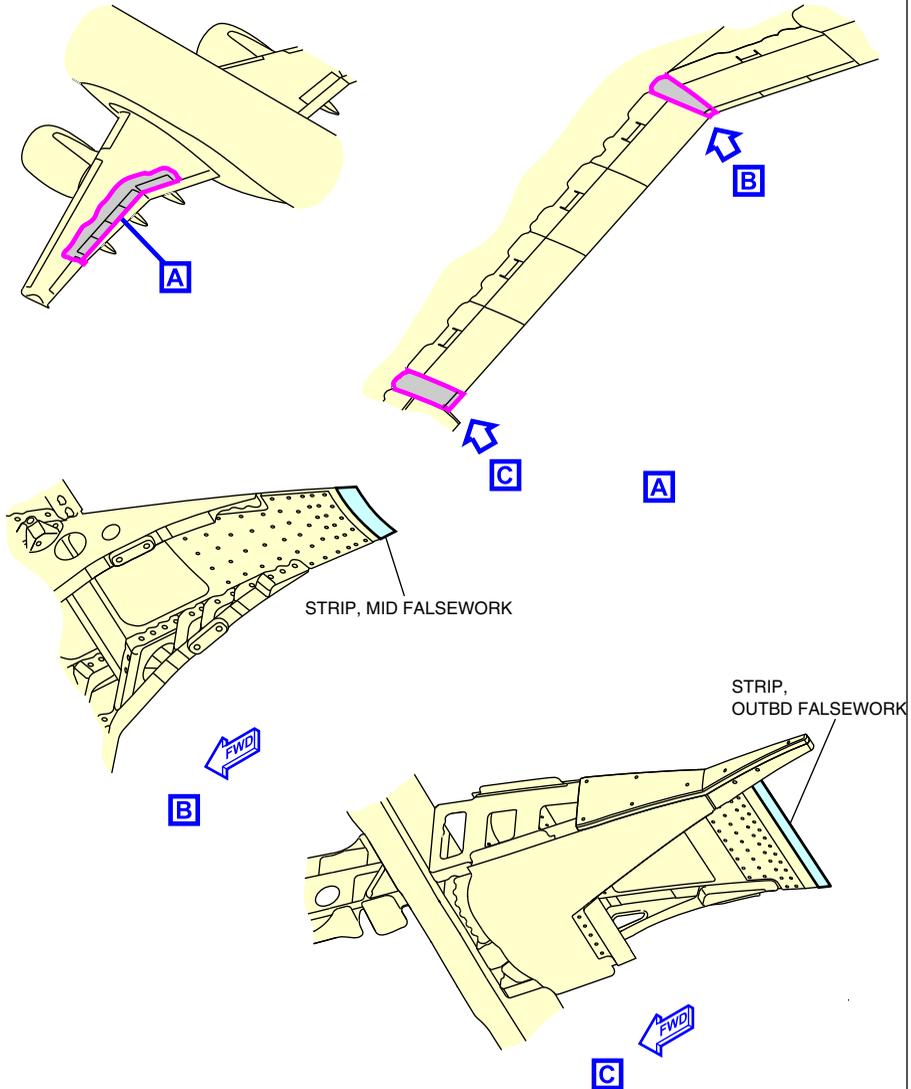
SYSTEM 57 WING

57-25: Inboard and outboard flap strip



SYSTEM 57 WING

57-25: Inboard and outboard flap strip



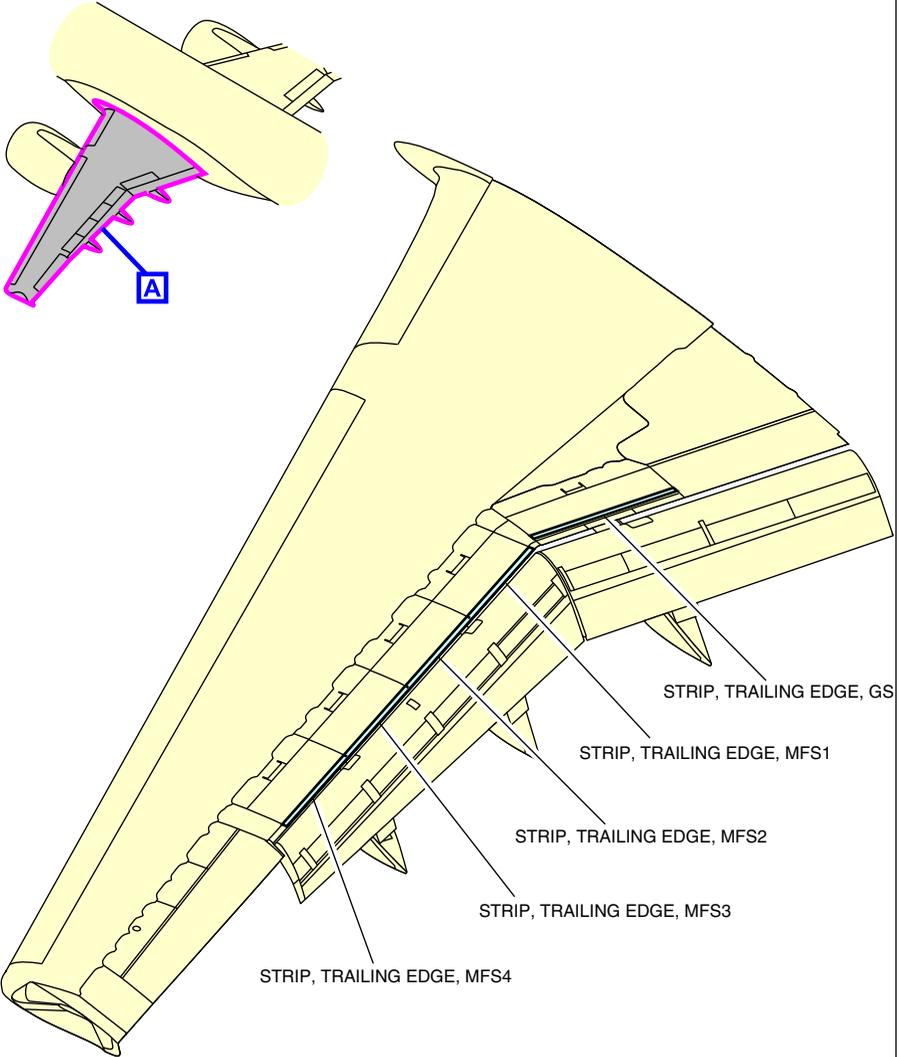
**APPENDIX
CONFIGURATION DEVIATION LIST
Wing**

CS300

SYSTEM 57 WING		
		1 Number required for all flight conditions except as provided in column 2
SUB-SYSTEM ITEM		2 Remarks and/or exceptions
57-27 Spoiler strip	10	Any number or combination can be missing with no impact on aircraft performance.

SYSTEM 57 WING

57-27: Spoiler strip



A

**APPENDIX
CONFIGURATION DEVIATION LIST
Wing**

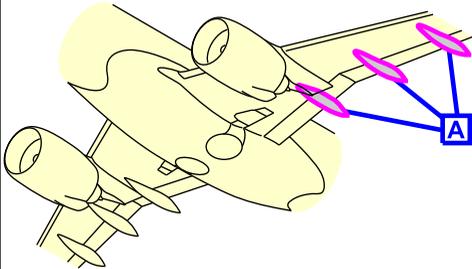
CS300

SYSTEM 57 WING													
SUB-SYSTEM ITEM	<p>1 Number required for all flight conditions except as provided in column 2</p> <p>2 Remarks and/or exceptions</p>												
57-28 Flap-track fairing assembly	<p>6 One item can be missing from each wing if:</p> <ul style="list-style-type: none"> • Operations are conducted with a complete flap-track fairing assembly (forward and aft sections) removed. • Operational limitation: The item must be replaced at the earliest opportunity. Until replacement is installed, flight within known or forecasted lightning conditions is prohibited. • Operational limitation: Flight into icing conditions is prohibited. • The performance limited weights are reduced by: <table border="1" style="margin-left: 40px;"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>245 kg/fairing</td> <td>540 lb/fairing</td> </tr> </table> <table border="1" style="margin-left: 40px;"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>817 kg/fairing</td> <td>1800 lb/fairing</td> </tr> </table> <table border="1" style="margin-left: 40px;"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>245 kg/fairing</td> <td>540 lb/fairing</td> </tr> </table> <p>CAFM: Add 6.0 to the CDL index for each missing flap-track fairing.</p>	Takeoff weight		245 kg/fairing	540 lb/fairing	Enroute climb		817 kg/fairing	1800 lb/fairing	Landing weight		245 kg/fairing	540 lb/fairing
Takeoff weight													
245 kg/fairing	540 lb/fairing												
Enroute climb													
817 kg/fairing	1800 lb/fairing												
Landing weight													
245 kg/fairing	540 lb/fairing												

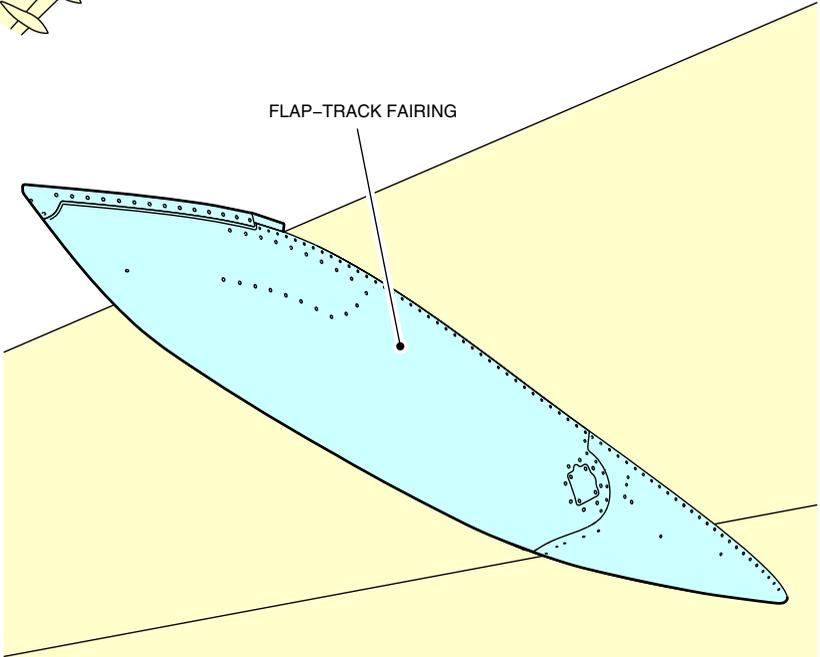
SYSTEM 57 WING			
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2		
	2 Remarks and/or exceptions		
57-28 Flap-track fairing assembly (Cont'd)	CIFP: Add 20.0 to the CDL index for each missing flap-track fairing. <ul style="list-style-type: none">The mission fuel requirements are increased by: <table border="1"><thead><tr><th>Fuel consumption</th></tr></thead><tbody><tr><td>+7.2% on fuel used/fairing</td></tr></tbody></table>	Fuel consumption	+7.2% on fuel used/fairing
Fuel consumption			
+7.2% on fuel used/fairing			

SYSTEM 57 WING

57-28: Flap-track fairings



FLAP-TRACK FAIRING



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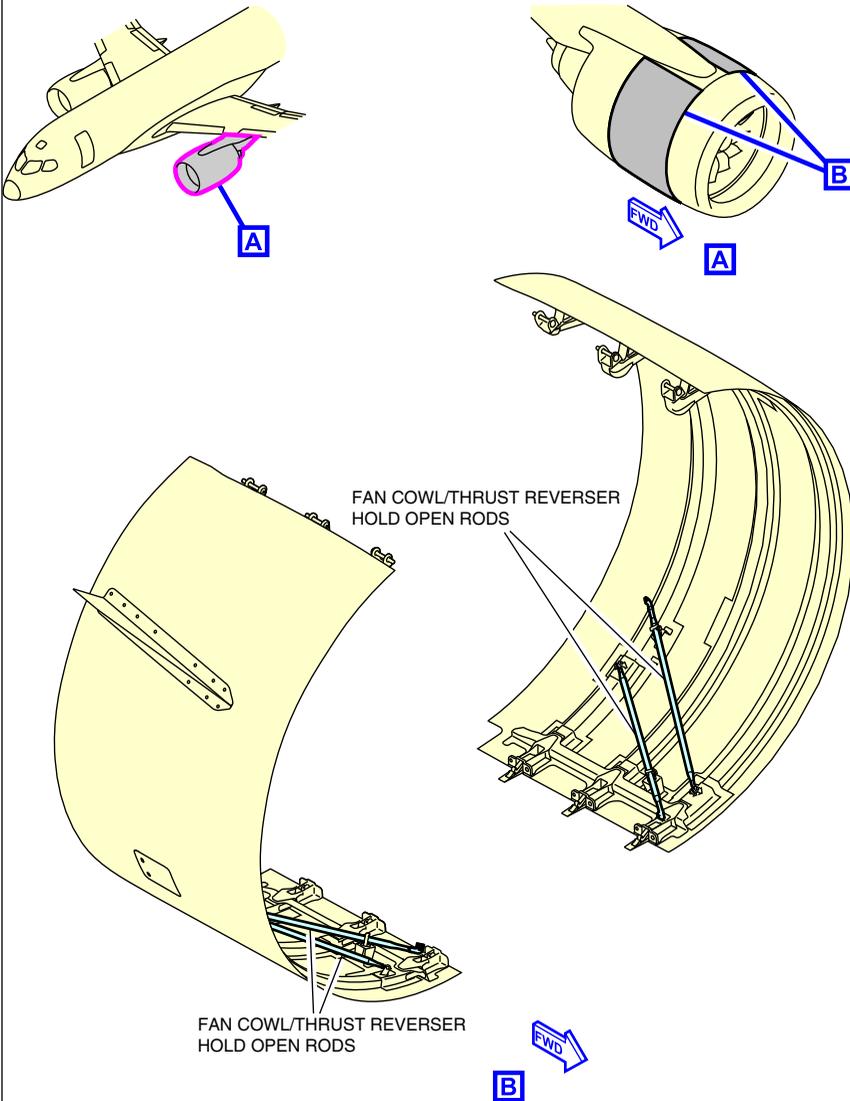
**APPENDIX
CONFIGURATION DEVIATION LIST
Power plant**

CS300

SYSTEM 71 POWER PLANT	
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2
	2 Remarks and/or exceptions
71-06 Fan cowl/thrust reverser hold open rod	8 Any number or combination can be missing with no impact on aircraft performance.

SYSTEM 71 POWER PLANT

71-06: Fan cowl/thrust reverser hold open rod



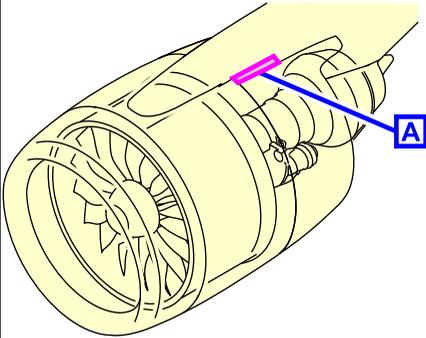
**APPENDIX
CONFIGURATION DEVIATION LIST
Exhaust**

CS300

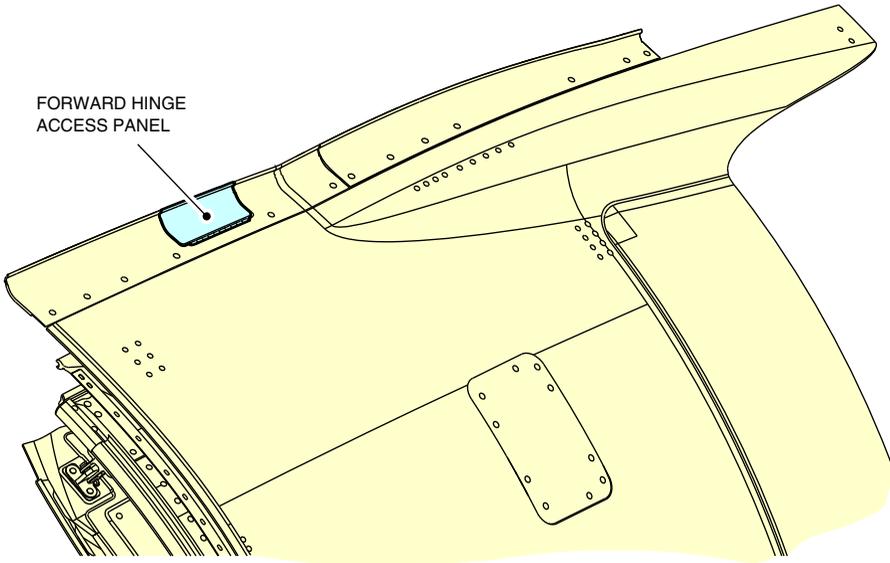
SYSTEM 78 EXHAUST															
	<p>1 Number required for all flight conditions except as provided in column 2</p>														
	<p>2 Remarks and/or exceptions</p>														
<p>SUB-SYSTEM ITEM</p> <p>78-01 Thrust reverser, forward hinge access panel</p>	<p>4 Any number or combination can be missing if:</p> <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>145 kg/panel</td> <td>319 lb/panel</td> </tr> </table> <table border="1"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>483 kg/panel</td> <td>1063 lb/panel</td> </tr> </table> <table border="1"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>145 kg/panel</td> <td>319 lb/panel</td> </tr> </table> <p>CAFM/CIFP: Add 3.6 to the CDL index for each missing panel.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+1.28% on fuel used/panel</td> </tr> </table>	Takeoff weight		145 kg/panel	319 lb/panel	Enroute climb		483 kg/panel	1063 lb/panel	Landing weight		145 kg/panel	319 lb/panel	Fuel consumption	+1.28% on fuel used/panel
Takeoff weight															
145 kg/panel	319 lb/panel														
Enroute climb															
483 kg/panel	1063 lb/panel														
Landing weight															
145 kg/panel	319 lb/panel														
Fuel consumption															
+1.28% on fuel used/panel															

SYSTEM 78 EXHAUST

78-01: Thrust reverser, forward hinge access panel



FORWARD HINGE
ACCESS PANEL



LEFT SIDE SHOWN
RIGHT SIDE IS OPPOSITE



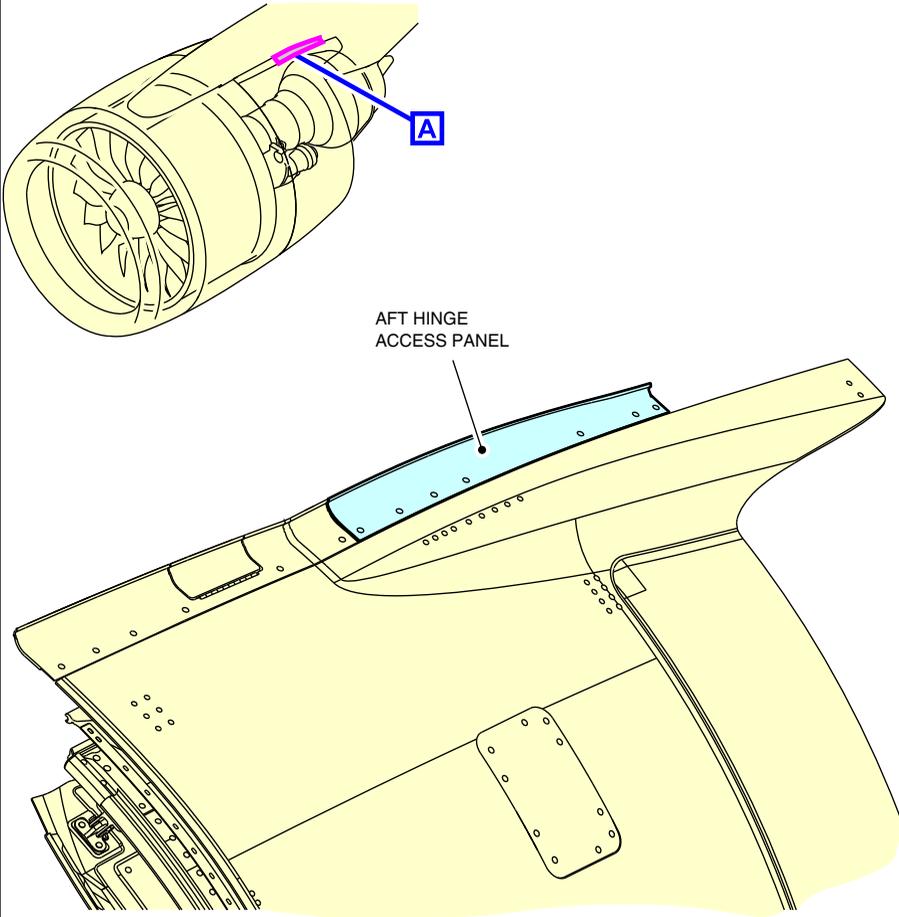
**APPENDIX
CONFIGURATION DEVIATION LIST
Exhaust**

CS300

SYSTEM 78 EXHAUST															
SUB-SYSTEM ITEM	1 Number required for all flight conditions except as provided in column 2 2 Remarks and/or exceptions														
78-02 Thrust reverser, aft hinge access panel	<p>4</p> <p>Any number or combination can be missing if:</p> <ul style="list-style-type: none"> The performance limited weights are reduced by: <table border="1"> <tr> <th colspan="2">Takeoff weight</th> </tr> <tr> <td>145 kg/panel</td> <td>319 lb/panel</td> </tr> </table> <table border="1"> <tr> <th colspan="2">Enroute climb</th> </tr> <tr> <td>483 kg/panel</td> <td>1063 lb/panel</td> </tr> </table> <table border="1"> <tr> <th colspan="2">Landing weight</th> </tr> <tr> <td>145 kg/panel</td> <td>319 lb/panel</td> </tr> </table> <p>CAFM/CIFP: Add 3.6 to the CDL index for each missing panel.</p> <ul style="list-style-type: none"> The mission fuel requirements are increased by: <table border="1"> <tr> <th>Fuel consumption</th> </tr> <tr> <td>+1.28% on fuel used/panel</td> </tr> </table>	Takeoff weight		145 kg/panel	319 lb/panel	Enroute climb		483 kg/panel	1063 lb/panel	Landing weight		145 kg/panel	319 lb/panel	Fuel consumption	+1.28% on fuel used/panel
Takeoff weight															
145 kg/panel	319 lb/panel														
Enroute climb															
483 kg/panel	1063 lb/panel														
Landing weight															
145 kg/panel	319 lb/panel														
Fuel consumption															
+1.28% on fuel used/panel															

SYSTEM 78 EXHAUST

78-02: Thrust reverser, aft hinge access panel



LEFT SIDE SHOWN
RIGHT SIDE IS OPPOSITE



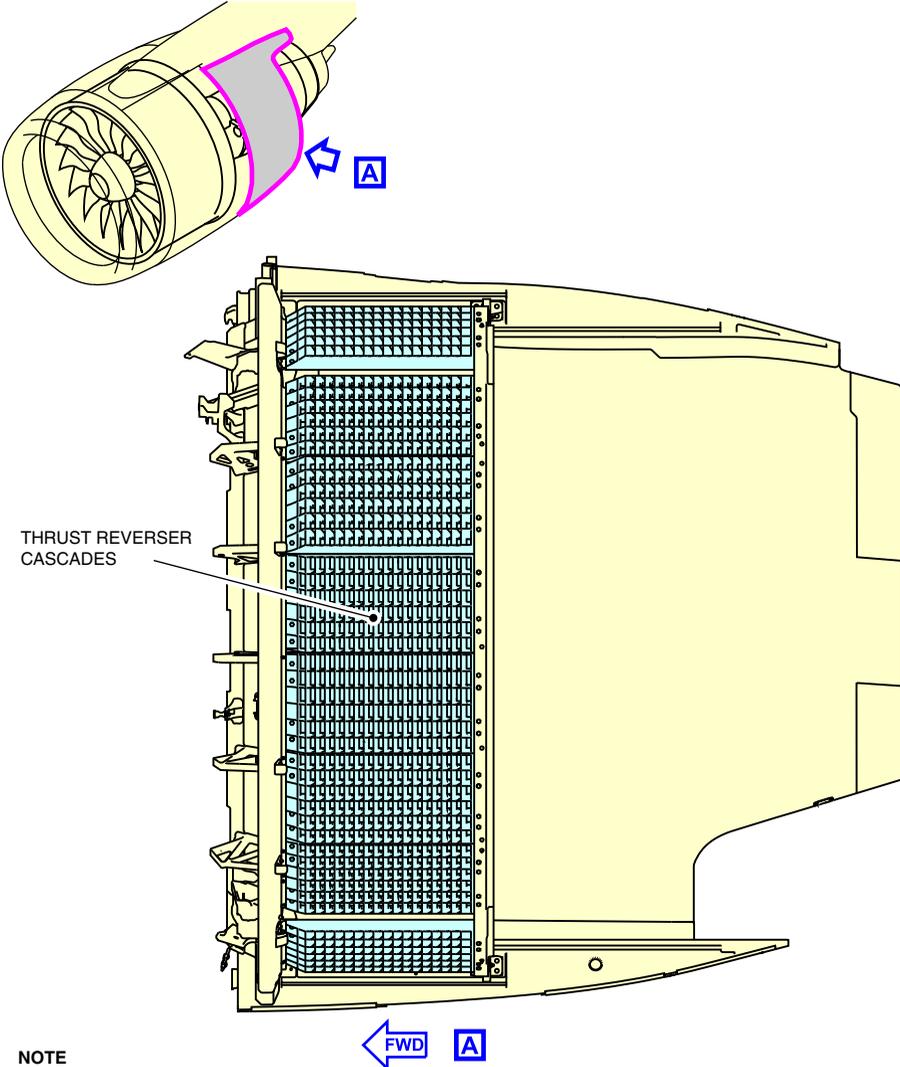
**APPENDIX
CONFIGURATION DEVIATION LIST
Exhaust**

CS300

SYSTEM 78 EXHAUST		
		1 Number required for all flight conditions except as provided in column 2
SUB-SYSTEM ITEM		2 Remarks and/or exceptions
78-08 Thrust reverser cascade	32	Any number or combination can be missing if: <ul style="list-style-type: none">• The affected thrust reverser is locked out.• Refer to MMEL item 78-30-02.

SYSTEM 78 EXHAUST

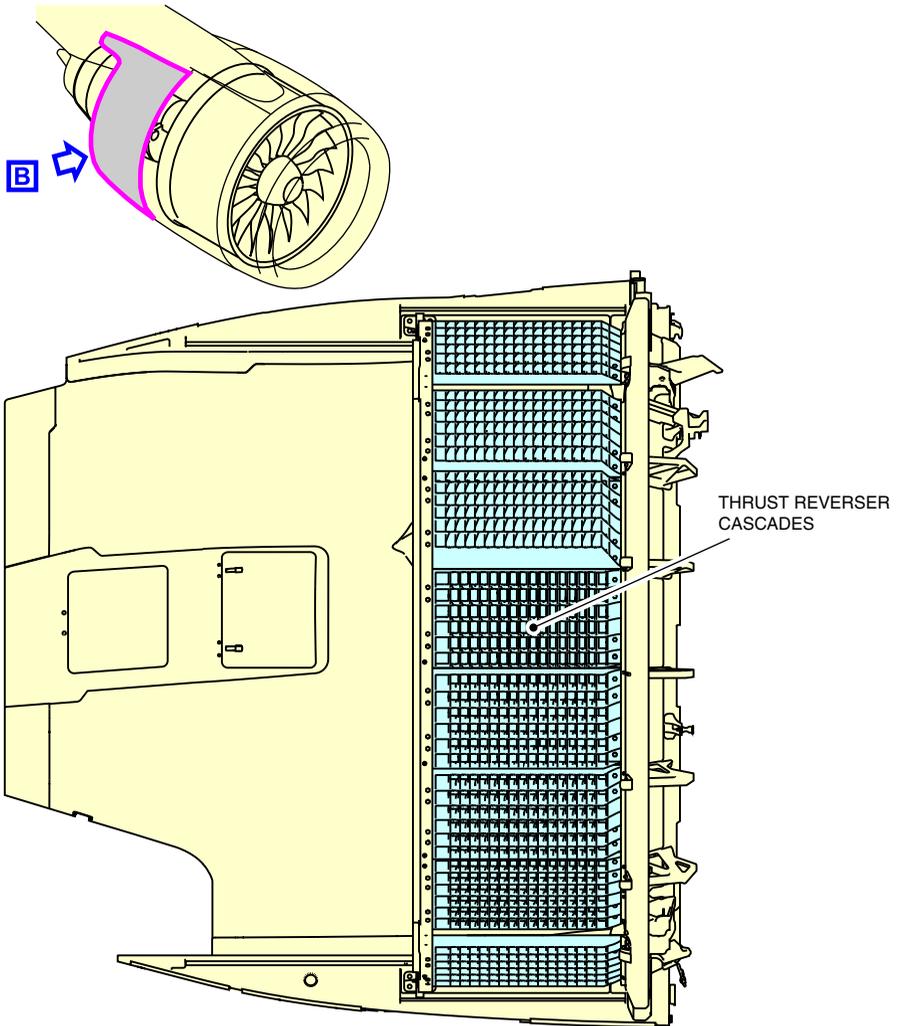
78-08: Thrust reverser cascades



Translating sleeve not shown for clarity.

SYSTEM 78 EXHAUST

78-08: Thrust reverser cascades



NOTE

Translating sleeve not shown for clarity.



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