

FAA APPROVED AIRPLANE FLIGHT MANUAL

for the CIRRUS VISION SF50

with Cirrus Perspective Touch+ Avionics System
and FL310 Maximum Operating Altitude



FAA Approved in Normal Category based on FAR 23. This document must be carried in the airplane at all times and be kept within the reach of the pilot during all flight operations.

THIS MANUAL INCLUDES THE MATERIAL REQUIRED TO BE FURNISHED TO THE PILOT BY FAR PART 23 AND ADDITIONAL INFORMATION PROVIDED BY CIRRUS AIRCRAFT AND CONSTITUTES THE FAA APPROVED AIRPLANE FLIGHT MANUAL.

Model - Serial #:

Registration #:

FAA Approved

A handwritten signature in black ink, appearing to read 'C. Roberts', is written over a horizontal line.

Nov 20, 2018
Date

Manager, Southwest Flight Test Section, AIR-713
Federal Aviation Administration
Ft. Worth, TX



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A I R C R A F T

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List of Effective Pages

Use this page to determine the current effective date for each page in the AFM. Supplements are issued individually and are controlled by the Log of Supplements Page in Section 9.

Dates of original issue and revised pages are:

Original Issue..... 20 Nov 2018
Revision 1 20 Aug 2020

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FAA Approved Adrian P. Tower Date Aug 20, 2020

Manager, Southwest Flight Test Section, AIR-713
Federal Aviation Administration
Ft. Worth, TX

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SF50 Airplane Flight Manual (AFM)

Temporary Change

Information in this Temporary Change adds to, supersedes, or deletes information in the basic Airplane Flight Manual.

Affected Publications: SF50 Basic Airplane Flight Manual:
• P/N 31452-002 Revision 1
(FAA Approved)

Filing Instructions: Insert the following revised pages adjacent to the first page of each affected POH section and retain until further notice. Insert this cover page adjacent to the last page of the List of Effective Pages and retain until further notice.

Purpose: This AFM Temporary Change adds the Safe Return Autoland system. TAFM was revised 12 Jun 2021 to update EMER AUTOLAND ACTIVATING Warning, and add CABIN ALTITUDE HIGH Warning.

Affected Sections:

- Frontmatter
- Section 2 - Limitations
- Section 3 - Emergency Procedures
- Section 3A - Abnormal Procedures
- Section 8 - Handling and Servicing
- Section 10 - Safety Information

FAA Approved



Jun 12, 2021
Date

Manager, Southwest Flight Test Section, AIR-713
Federal Aviation Administration
Ft. Worth, TX

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Foreword

Checklists

Serials without Safe Return Autoland: Electronic Checklist P/N 39723-001 applies to this AFM.

Serials with Safe Return Autoland: Electronic Checklist P/N 39723-003 applies to this AFM.

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Foreword

This Airplane Flight Manual (AFM) has been prepared by Cirrus Aircraft to familiarize operators with the aircraft. Read this AFM carefully. It provides operational procedures that will assure the operator obtains the performance published in the AFM, data designed to allow the most efficient and safe use of the airplane, and basic information to assist in maintaining the airplane in airworthy condition.

• NOTE •

All limitations, procedures, maintenance & servicing requirements, and performance data contained in this AFM are mandatory for compliance with Federal Aviation Administration (FAA) operating rules and for continued airworthiness of the airplane.

This AFM includes the material required to be furnished to the pilot by the Code of Federal Regulations (CFR) and additional information provided by Cirrus Aircraft and constitutes the FAA Approved AFM for the aircraft.

The Airplane Flight Manual

This AFM has been prepared using GAMA Specification #1 for Pilot's Operating Handbook, Revision 2, dated 18 October 1996 as the content model and format guide. However, some deviations from this specification were made for clarity. The AFM is presented in loose-leaf form for ease in inserting revisions and is sized for convenient storage. Tabbed dividers throughout the AFM allow quick reference to each section. Logical and convenient Tables of Contents are located at the beginning of each section to aid in locating specific data within that section. The AFM is divided into ten sections as follows:

Section 1	General
Section 2	Limitations
Section 3	Emergency Procedures
Section 3A	Abnormal Procedures
Section 4	Normal Procedures
Section 5	Performance Data
Section 6	Weight and Balance
Section 7	Systems Description
Section 8	Handling and Servicing
Section 9	Log of Supplements
Section 10	Safety Information

The data presented in this AFM is the result of extensive flight tests and is approved by the FAA. However, as new procedures or performance data are developed, the AFM will be revised.

• NOTE •

It is the responsibility of the owner to ensure that the AFM is current at all times. Therefore, it is very important that all revisions be properly incorporated into this AFM as soon as they become available.

Revising the Airplane Flight Manual

Two types of revisions may be issued for this AFM: Temporary and Numbered.

Temporary revisions are printed on yellow paper, normally cover only one topic or procedure, and are issued to provide safety related information in a timely manner. All the information needed to properly file a temporary revision is included on the revision itself. Typically, a temporary revision is superseded and replaced by the next numbered revision.

Numbered revisions are printed on white paper, normally cover several subjects, and are issued as general updates to the AFM. Each numbered revision includes an “Instruction Sheet,” a “List of Effective Pages”, and a “Revision Highlights” page. The “Instruction Sheet” is intended to assist the manual holder in removing superseded pages and inserting new or superseding pages. The “List of Effective Pages” shows the issue or revision status of all pages in the AFM. The “Revision Highlights” page gives a brief description of changes made to each page in the current revision.

Identifying Revised Material

Each page in the AFM has revision identification at the lower inside corner opposite the page number. Original issue pages will be identified by the words “Original Issue” at this location. In the event that the majority of pages in the AFM are revised, Cirrus Aircraft may determine that it is more effective to reissue the AFM. Reissued pages will be identified by the word “Reissue” followed by a letter indicating the reissue level; for example, “Reissue A” Revised pages will be identified by the word “Revision” followed by the revision number at this location; for example, “Revision 2” (Original Issue, Revision 2) or “Revision B1” (Reissue B, Revision 1).

Revised material on a page can be identified by a change bar located at the outside page margin. Revision bars are not used at reissues of the AFM.

Revisions to the Airplane Flight Manual

AFM revisions, temporary revisions, and supplements can be downloaded from Cirrus Aircraft at www.cirrusaircraft.com, or from the Authorized Service Center website.

Paper copies of AFM revisions and supplements can be purchased from Cirrus Direct at www.buycirrusdirect.com.

Checklists

Electronic Checklist P/N 39723-001 applies to this AFM.

Supplements

The Supplements section (Section 9) of this AFM contains FAA Approved Supplements necessary to safely and efficiently operate the airplane when equipped with optional equipment not provided with the standard airplane or not included in the AFM. Supplements are essentially “mini-hand-books” and may contain data corresponding to most sections of the AFM. Data in a supplement either adds to, supersedes, or replaces similar data in the basic AFM.

Section 9 includes a “Log of Supplements” page preceding all Cirrus Aircraft Supplements produced for this airplane. The “Log of Supplements” page can be utilized as a “Table of Contents” for Section 9. If the airplane is modified at a non-Cirrus Aircraft facility through an STC or other approval method, it is the owner’s responsibility to ensure that the proper supplement, if applicable, is installed in the AFM and that the supplement is properly recorded on the “Log of Supplements” page.

FAA Approved AFM Supplements must be in the airplane for flight operations when the subject optional equipment is installed or the special operations are to be performed.

Retention of Data

In the event a new title page is issued, the weight and balance data changes, the equipment list changes, or the “Log of Supplements” is replaced, the owner must ensure that all information applicable to the airplane is transferred to the new pages and the aircraft records are current. It is not a requirement that owners retain information, such as supplements, that is not applicable to their airplane.

In the event a new AFM is purchased, the owner must ensure that all information applicable to the airplane is transferred to the new AFM and the aircraft records are current.

Warnings, Cautions, and Notes

Warnings, Cautions, and Notes are used throughout this AFM to focus attention on special conditions or procedures as follows:

• **WARNING** •

Warnings are used to call attention to operating procedures which, if not strictly observed, may result in personal injury or loss of life.

• **CAUTION** •

Cautions are used to call attention to operating procedures which, if not strictly observed, may result in damage to equipment.

• **NOTE** •

Notes are used to highlight specific operating conditions or steps of a procedure.

Section 1: General

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Introduction

This section contains information of general interest to pilots and owners. You will find the information useful in acquainting yourself with the airplane, as well as in loading, fueling, sheltering, and handling the airplane during ground operations. Additionally, this section contains definitions or explanations of symbols, abbreviations, and terminology used throughout this AFM.

• NOTE •

For specific information regarding the organization of this AFM, revisions, supplements, and procedures to be used to obtain publications, see the “Foreword” section.

All liquid volumes referenced in this publication are expressed in United States Customary Units, e.g., U.S. Gallons.

Figure 1-1: Airplane Three View

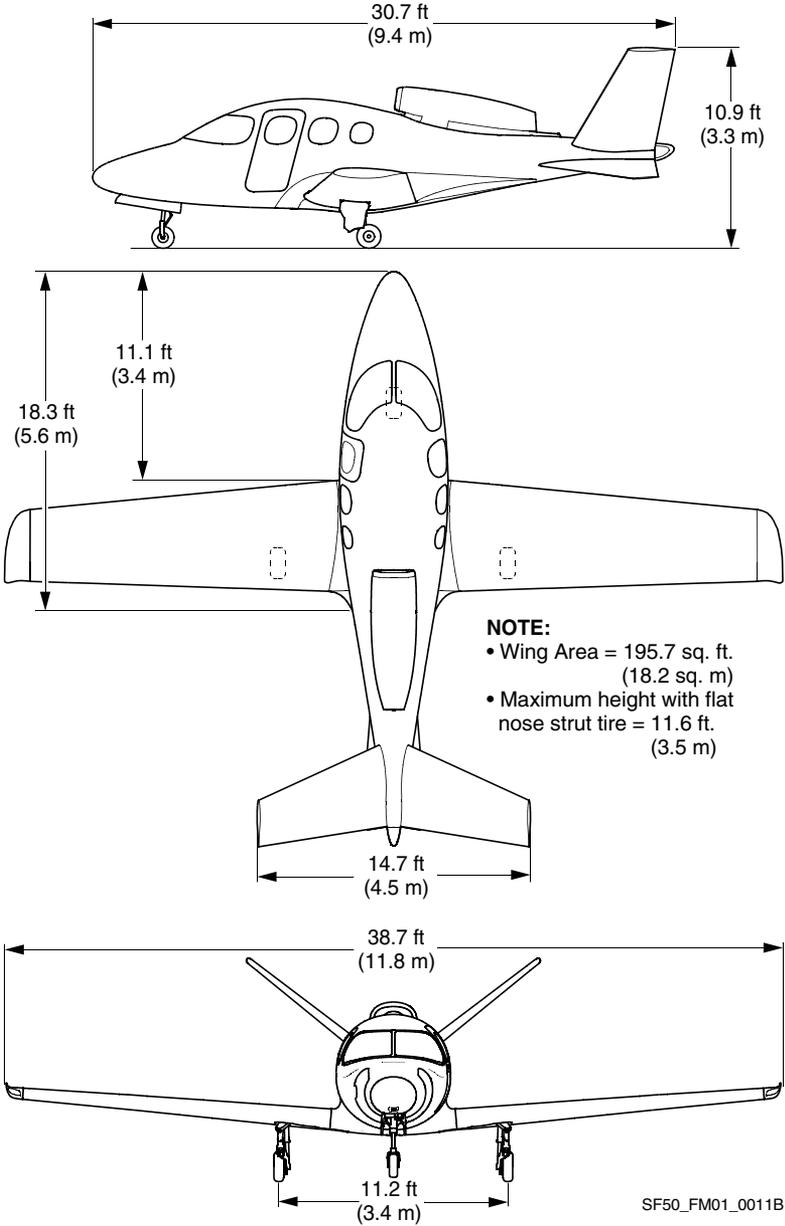
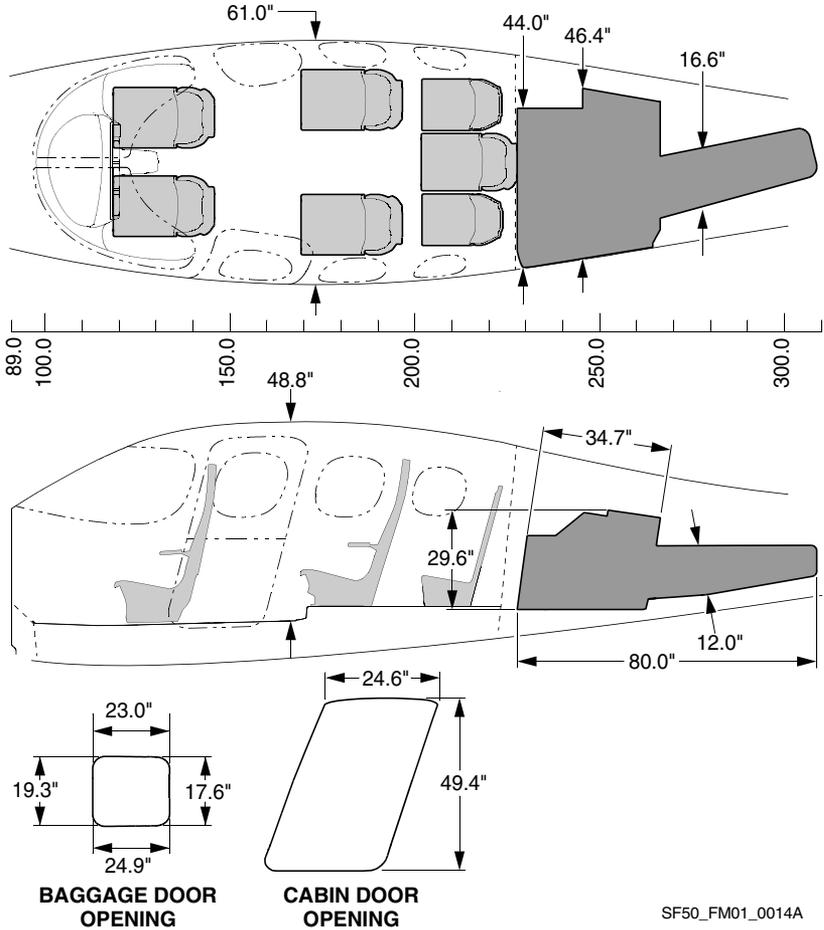


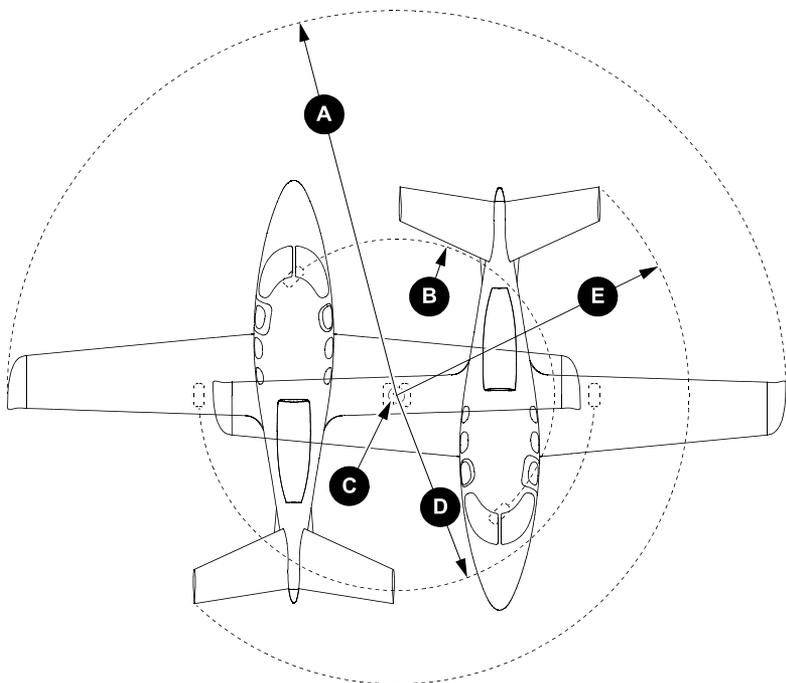
Figure 1-2: Airplane Interior Dimensions



SF50_FM01_0014A

Location	Length	Width	Height	Volume
Cabin	137.8"	61.0"	48.8"	170.0 cu ft
Main Baggage	35.0"	44.0"	28.0"	23.5 cu ft
Cargo X-Tend™ (optional)	33.9"	16.6"	12.0"	3.9 cu ft

Figure 1-3: Turning Radius



GROUND TURNING CLEARANCE

A	RADIUS FOR WING TIP	26.1 ft.	(7.9 m)
B	RADIUS FOR NOSE GEAR	11.6 ft.	(3.5 m)
C	RADIUS FOR INSIDE GEAR	0.5 ft.	(0.2 m)
D	RADIUS FOR OUTSIDE GEAR	11.7 ft.	(3.6 m)
E	RADIUS FOR STABILIZER/RUDDERVATOR	20.7 ft.	(6.3 m)

TURNING RADII ARE CALCULATED USING ONE BRAKE AND PARTIAL POWER. ACTUAL TURNING RADIUS MAY VARY AS MUCH AS 3.0 FEET (0.9 METER).

SF50_FM01_0012A

The Airplane

Engine

Number of Engines 1
Engine Manufacturer Williams International
Engine Model FJ33-5A
Engine Type..... Twin spool, turbofan engine with a single-stage fan and a three-stage axial compressor direct-driven by a two-stage turbine, a single-stage centrifugal compressor driven by a single-stage turbine, an annular combustor, a full length bypass duct, and an exhaust mixer.
Thrust Rating 1846 lb

Fuel

Total Capacity 298.5 US gal (2018 lb)
Usable 296 US gal (2001 lb)
Unusable 2.5 US gal (17 lb)

• NOTE •

Fuel mass provided for reference assuming nominal 6.76 lb/gallon at 59 °F (15 °C).

Approved Fuel Grades

Jet A Specification Fuel ASTM D1655
Jet A-1 Specification Fuel ASTM D1655
JP-8 Specification Fuel MIL-DTL-83133

Oil

Oil Capacity

Oil Tank Total Volume.....3 Quarts (2.8 L)
Oil Tank FULL Volume.....2.2 Quarts (2.1 L)
Oil Tank ADD Volume1.6 Quarts (1.5 L)
Oil Tank Usable Volume.....1.5 Quarts (1.4 L)

The oil tank total volume represents the volume at which the filler port will overflow. The oil tank “FULL” and “ADD” correspond to marking on the sight glass. Usable volume represents the volume the engine can consume between the sight glass “FULL” level and the onset of oil pressure fluctuations.

All engine oil level readings should be made at least 5 minutes after engine shutdown.

For a list of approved engine lubricants, refer to Section 2: Limitations, "Oil".

Landing Gear Hydraulic Fluid & Brake Fluid

- MIL-PRF-87257
- Fire resistant, synthetic-based

Ice Protection System (IPS) Fluid

- IPS Fluid (AL-5) DTD-406B

IPS Fluid Capacity

Total Tank Capacity	3.1 U.S. gallons (11.7 L)
Usable	3.0 U.S. gallons (11.4 L)
Unusable	0.1 U.S. gallon (0.4 L)

Maximum Certificated Weights

Max. Takeoff Gross Wt. (MTOGW).....	6000 lb (2722 kg)
Maximum Landing Weight (MLW)	5550 lb (2517 kg)
Maximum Ramp Weight (MRW)	6040 lb (2740 kg)
Max. Zero Fuel Weight (MZFW)	4900 lb (2223 kg)
Maximum Aft Baggage Compartment	300 lb (136 kg) ¹
Maximum Cargo X-Tend Compartment	40 lb (18 kg) ²

• NOTE •

Load limit for cargo and baggage on all floor surfaces is 50 lb/ft²
(244 kg/m²).

-
1. Includes Cargo X-Tend weight limit.
 2. Cargo X-Tend is an optional storage space that extends the main baggage area.

Noise Characteristics

The following noise levels comply with 14 CFR Part 36, Appendix B, Stage 4 maximum noise level requirements and were obtained by analysis of approved data from noise tests conducted under the provisions of Part 36, Amendment 36-28. The noise measurement and evaluation procedures used to obtain these noise levels are considered by the FAA to be equivalent to the Chapter 4 noise level required by the International Civil Aviation Organization (ICAO) in Annex 16, Volume I, Appendix 2, Amendment 7, effective March 21, 2002.

NOISE REFERENCE	WEIGHT (LBS.)	FLAP SETTING	NOISE LEVELS (EPNdB)
LATERAL	6000	50%	79.6
FLYOVER	6000	50%	70.9
APPROACH	5550	100%	80.3
Stage 4 Margin			50.2

Compliance with 14 CFR, Part 36 flyover and lateral noise levels was demonstrated using rated takeoff power with landing gear up, 50% flaps, and a climb speed of 122 KIAS. For flyover noise, a thrust cutback was initiated at 1558 ft AGL from takeoff N1 to 83.5% N1. Approach noise was obtained at 5550 lb (2495 kg), landing gear down, and 100% flaps at 94 KIAS.

No determination has been made by the FAA that the noise levels of this aircraft are, or should be, acceptable or unacceptable for operation at, into, or out of, any airport.

Terminology

Table 1: General Airspeed Terminology

General Airspeed Terminology	
Terminology	Definition
KCAS	Knots Calibrated Airspeed is the indicated airspeed corrected for position and instrument error.
KIAS	Knots Indicated Airspeed is the speed shown on the airspeed indicator. The IAS values published in this AFM assume no instrument error.
KTAS	Knots True Airspeed is the airspeed expressed in knots relative to undisturbed air which is KCAS corrected for altitude and temperature.
M	Mach Number is the ratio of true airspeed to the speed of sound.
M _{MO}	Maximum Operating Mach Number is the highest Mach at which the aircraft may be safely operated.
V _R	Rotation Speed is the speed at which the rotation of the aircraft should be initiated to takeoff attitude.
V _{MIN ICING}	Minimum airspeed for flight in icing conditions with flaps and gear UP (excluding climbs, approach, and landing).
V _O	Operating Maneuvering Speed is the maximum speed at which application of full control movement will not overstress the airplane.
V _{LO_EXT}	Maximum Landing Gear Operating Speed (Extension) is the maximum speed at which it is safe to extend the landing gear.
V _{LO_RET}	Maximum Landing Gear Operating Speed (Retraction) is the maximum speed at which it is safe to retract the landing gear.
V _{LE}	Maximum Landing Gear Extended Speed is the maximum speed at which it is safe to fly with the landing gear extended.

General Airspeed Terminology (Continued)	
Terminology	Definition
$V_{FE_{50\%}}$	Maximum Flap Extended Speed (50%) is the highest speed permissible with wing flaps extended to the 50% position (typical of takeoff and approach).
$V_{FE_{100\%}}$	Maximum Flap Extended Speed (100%) is the highest speed permissible with wing flaps extended to the 100% position (typical of landing).
V_{MO}	Maximum Operating Speed is the highest speed at which the aircraft may be safely operated.
V_{REF}	<p>Minimum final approach speed is the airspeed equal to the landing 50-foot point speed with flaps 100% (IPS OFF) or with flaps 50% and landing gear extended.</p> <p>For emergency and abnormal procedures, it is the airspeed equal to the 50-foot point speed with flaps in landing position as defined and landing gear extended.</p> <p>The green donut provides approximate V_{REF} and indicates an airspeed that is 1.3 times the stall speed for the given aircraft configuration.</p>
V_S	Stalling Speed is the minimum steady flight speed at which the aircraft is controllable.
$V_{S_{50\%}}$	Stalling Speed is the minimum steady flight speed at which the aircraft is controllable with 50% flaps.
V_{SO}	Stalling Speed is the minimum steady flight speed at which the aircraft is controllable in the landing configuration (100% flaps) at the most unfavorable weight and balance.
V_X	Best Angle of Climb Speed is the speed at which the airplane will obtain the highest altitude in a given horizontal distance. The best angle of climb speed normally increases slightly with altitude.

Table 2: Meteorological Terminology

Meteorological Terminology	
Terminology	Definition
IMC	Instrument Meteorological Conditions are meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling less than the minima for visual flight defined in 14 CFR 91.155.
ISA	International Standard Atmosphere (standard day) is an atmosphere in which (1) the air is a dry perfect gas, (2) the temperature at sea level is 59 °F (15 °C), and (3) the pressure at sea level is 29.92 in.Hg (1013.2 millibars)
MSL	Mean Sea Level is the average height of the surface of the sea for all stages of tide. In this AFM, altitude given as MSL is the altitude above the mean sea level. It is the altitude read from the altimeter when the altimeter's barometric adjustment has been set to the altimeter setting obtained from ground meteorological sources.
TAT	Total Air Temperature is the temperature measurement of air in motion. The total of static temperature plus temperature rise due to ram effect.
OAT	Outside Air Temperature is the free air static temperature obtained from in-flight temperature indications or from ground meteorological sources. It is expressed in either °C or °F.
PA	Pressure Altitude is the altitude read from the altimeter when the altimeter's barometric adjustment has been set to 29.92 inHg (1013.21 mb) corrected for position and instrument error. In this AFM, altimeter instrument errors are assumed to be zero.

Meteorological Terminology (Continued)	
Terminology	Definition
Standard Temperature	Standard Temperature is the temperature that would be found at a given pressure altitude in the standard atmosphere. It is 59 °F (15 °C) at sea level pressure altitude and decreases approximately 4 °F (2 °C) for each 1000 feet of altitude increase. See ISA definition.

Table 3: Engine Power Terminology

Engine Power Terminology	
Terminology	Definition
TLA	Thrust Lever Angle is the position of the thrust lever.
T/O	Takeoff thrust is the maximum installed thrust that the engine will produce. This is obtained when Thrust Lever Angle (TLA) is in Takeoff (T/O) position.
MCT	Maximum Continuous Thrust is the maximum power that can be used continuously. This is obtained when TLA is at the MCT detent.
FI	Flight Idle is the minimum steady engine speed attainable in flight.
GI	Ground Idle is the minimum steady engine speed attainable on the ground.
N1	N1 is the rotational speed (RPM) of the low pressure (LP) rotary group, which consists of a single-stage fan, followed by a three-stage axial intermediate pressure (IP) compressor in the gas generator flow path. The fan and IP compressor are directly driven by two LP turbines. N1 speed is sensed from a toothed ring on the LP shaft.

Engine Power Terminology (Continued)	
Terminology	Definition
N2	N2 is the rotational speed (RPM) of the high pressure (HP) rotary group, which consists of a single-stage compressor driven by a single-stage turbine. N2 speed is sensed in the gearbox via the accessory drive gear.
ITT	Inter-Turbine Temperature is the exhaust temperature measured between the HP and LP turbines.

Table 4: Performance and Flight Planning Terminology

Performance and Flight Planning Terminology	
Terminology	Definition
g	One “g” is a quantity of acceleration equal to that of earth’s gravity.
Demonstrated Crosswind Velocity	Demonstrated Crosswind Velocity is the velocity of the crosswind component for which adequate control of the airplane during taxi, takeoff, and landing was demonstrated during certification testing. Demonstrated crosswind is not considered to be limiting.
GPH	Gallons Per Hour is the amount of fuel (in gallons) consumed by the aircraft per hour.
NMPG	Nautical Miles Per Gallon is the distance (in nautical miles) which can be expected per gallon of fuel consumed at a specific engine power setting and/or flight configuration.
Unusable Fuel	Unusable Fuel is the quantity of fuel that cannot be safely used in flight.
Usable Fuel	Usable Fuel is the fuel available for flight planning.

Table 5: Weight and Balance Terminology

Weight and Balance Terminology	
Terminology	Definition
Reference Datum	Reference Datum is an imaginary vertical plane from which all horizontal distances are measured for balance purposes.
Fuselage Station	Fuselage Station (FS) is a location along the airplane fuselage measured in inches from the reference datum and expressed as a number. For example: A point 123 inches aft of the reference datum is FS 123.
CG	Center of Gravity is the point at which an airplane would balance if suspended. Its distance from the reference datum is found by dividing the total moment by the total weight of the airplane.
Arm	Arm is the horizontal distance from the reference datum to the center of gravity (CG) of an item. The airplane's arm is obtained by adding the airplane's individual moments and dividing the sum by the total weight.
Moment	Moment is the product of the weight of an item multiplied by its arm.
Basic Empty Weight	Basic Empty Weight is the actual weight of the airplane including all operating equipment that has a fixed location in the airplane. The basic empty weight includes the weight of unusable fuel and full oil.
Maximum Ramp Weight	Maximum Ramp Weight is the maximum weight approved for ground maneuvering and includes the weight of the fuel used for startup and taxi.
Maximum Gross Weight	Maximum Gross Weight is the maximum permissible weight of the airplane and its contents as listed in the aircraft specifications.

Weight and Balance Terminology (Continued)	
Terminology	Definition
Maximum Takeoff Weight	Maximum Takeoff Weight is the maximum weight approved for the start of the takeoff run.
Maximum Zero Fuel Weight	Maximum Zero Fuel Weight is the maximum permissible weight of the airplane and its contents minus the total weight of the fuel onboard.
Useful Load	Useful Load is the basic empty weight subtracted from the maximum ramp weight. It is the maximum allowable combined weight of pilot, passengers, fuel, and baggage.
Maximum Landing Weight	Maximum Landing Weight is the maximum weight approved for the landing touchdown.

Section 2: Limitations

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Systems and Equipment Limits

Safe Return Autoland System (if installed)

The Safe Return Autoland system is for emergency situations only and should not be used when the pilot is able to land the aircraft. It is intended to be used in the event that the pilot in command is unable to operate the aircraft, such as if the pilot is impaired or incapacitated.

Once activated, Safe Return Autoland declares the emergency condition, then maneuvers the aircraft to a suitable airport for landing, selecting the airport based upon a variety of parameters, including weather, terrain, available approach, and runway length.

• NOTE •

Safe Return Autoland cannot account for GPS outages or runway conditions (NOTAMs) which could degrade ability to safely land the airplane.

Safe Return Autoland assumes a fully functional airplane in order to function properly, and is not designed to mitigate system failures. Safe Return Autoland activation will be inhibited if there are missing or corrupt terrain, navigation, or obstacle databases. Other failures including (but not limited to) GPS, landing gear, flaps, wheel speed sensors, AFCS/pitch trim servos, or radar altimeter, will degrade Safe Return Autoland performance. This may result in damage to the airframe and possibly injury to the occupants.

A red slashed circle (⊘) illuminated on the Autoland activation panel to the left of the activation button indicates when a system failure may have caused Autoland to be degraded or unavailable, and is illuminated at all times when the aircraft is below 600 feet AGL. A green landing airplane icon illuminated on the Autoland activation panel to the right of the activation button indicates when Autoland is activated.

Other Limitations

Placards

Interior Placards

Figure 2-1: Safe Return Autoland Brake Release (if installed)

TO RELEASE BRAKES AFTER EMERGENCY AUTOLAND:

1. SHUT DOWN ENGINE.
LEFT COCKPIT ENGINE PANEL.
ROTATE KNOB TO OFF AND PRESS BUTTON.
2. TURN OFF ALL ELECTRICAL SWITCHES (BELOW DISPLAYS).
3. SECURE AIRCRAFT (KEEP FROM ROLLING).
4. PRESS AND HOLD GREEN "BRAKE RESET" BUTTON.
HOLD FOR APPROXIMATELY 5 SECONDS.
5. AIRCRAFT IS NOW FREE TO MOVE.

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Safe Return Autoland Activation Panel (if installed)

Placard stating "EMERGENCY USE ONLY" must appear adjacent to activation pushbutton.

Exterior Placards

Safe Return Autoland Equipped (if installed)

Placard stating "See inside pilot footwell for brake reset and aircraft movement instructions following Safe Return Emergency Autoland" must appear adjacent to cabin door.

Electronic Placards

Aircraft is equipped with: Cirrus Airframe Parachute System (CAPS), Garmin Electronic Stability and Protection (ESP), Safe Return Emergency Automatic Landing System (if installed).

Introduction

The limitations included in this Section of the AFM are approved by the FAA.

This section provides operating limitations, instrument markings, and basic placards required by regulation and necessary for the safe operation of the aircraft and its standard systems and equipment.

• **NOTE** •

Compliance with the operating limitations in this section and in Section 9 is required by the Code of Federal Regulations.

For installed equipment described in an FAA Approved AFM Supplement, refer to [Section 9: Log of Supplements](#) of this AFM for amended operating limitations.

Certification Status

The aircraft is certificated under the requirements of 14 CFR, Part 23, Airworthiness Standards: Normal Category, Part 34, Fuel Venting and Exhaust Emissions, Part 36, Noise Standards, and Special Conditions prescribed by the Administrator.

RVSM

This airplane is eligible for operations in Reduced Vertical Separation Minimum (RVSM) airspace when the following equipment is installed and operating normally upon entering RVSM airspace:

- ADC1 and ADC2
- Autopilot
- Altitude Miscompare Alert
- ATCRBS Transponder

This equipment must be maintained in accordance with the Airplane Maintenance Manual (AMM).

This does not constitute operational approval. Each operator must ensure compliance with required crew training and operating practices and procedures. Individual airplane and operational approval must be obtained in accordance with the applicable operating rules.

Taxiing, Takeoff, and Landing Limitations

Operational Limits

For taxiing operations, the lower cabin door must be closed.

Takeoffs and landings are limited to:

- Smooth surfaces, and
- Paved, concrete, or dry hard packed (dirt/clay) surfaces, and
- Surfaces free from loose dirt, rocks, or gravel

Maximum Tailwind for Takeoff and Landing..... 10 knots

Airspeed Limitations

Operating Speeds

Operating Maneuvering Speed (V_O) 150 KIAS

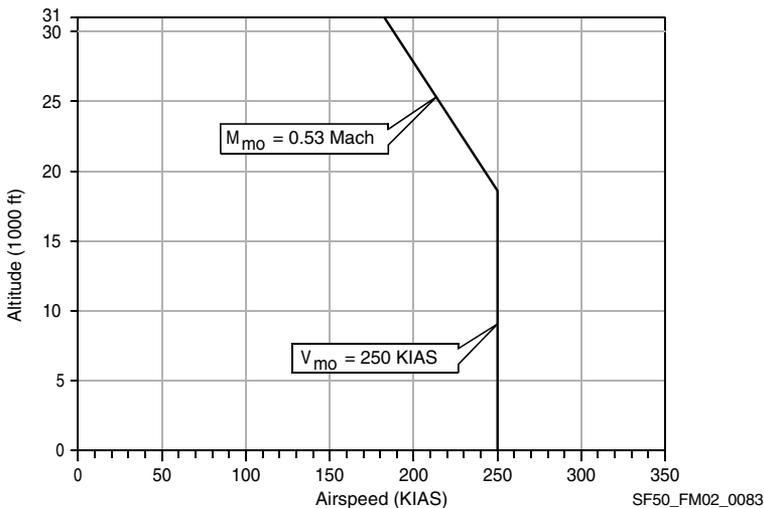
Max. Operating Speed (V_{MO}) 250 KIAS

Max. Operating Mach Number (M_{MO}).....0.53 Mach

• WARNING •

Avoid rapid and large alternating control inputs, especially in combination with large changes in pitch, roll, or yaw, as they may result in loss of control in flight and/or structural failures at any speed, including below V_O .

Figure 2-1: Maximum Operating Speed (V_{MO}/M_{MO})



Minimum Maneuvering Speeds

FLAP CONFIGURATION	SPEED
UP	$V_{REF}+20$
50%	$V_{REF}+15$
100%	$V_{REF}+10$

• NOTE •

These speeds are based on up to 40° angle of bank and are independent of thrust settings.

Flaps UP is an abnormal landing configuration, approved for use in the event of an emergency.

Flap Speeds

Maximum flap extended speed, 50%/Takeoff/Approach
($V_{FE_{50\%}}$) 190 KIAS
Maximum flap extended speed, 100%/Land ($V_{FE_{100\%}}$) 150 KIAS

Landing Gear Speeds

Maximum landing gear operation speed, Extension
($V_{LO_{EXT}}$) 210 KIAS
Maximum landing gear operation speed, Retraction
($V_{LO_{RET}}$) 150 KIAS
Max. landing gear extended speed (V_{LE}) 210 KIAS

• Note •

Landing gear extension / retraction times significantly increase with cold temps, high airspeeds, yaw angle, and increased acceleration.

Airspeed Indicator Markings

Marking	Value (KIAS/Mach)	Remarks
Red Line	250 KIAS/ 0.53 Mach	Maximum Operating Speed (V_{MO}) and Maximum Operating Mach Number (M_{MO})
	> 210 KIAS	Landing Gear: DOWN
	> 190 KIAS	$V_{FE_50\%}$
	> 150 KIAS	$V_{FE_100\%}$
Green Band	≤ Red Line	Based on aircraft configuration
	≥ Low Speed Awareness Marking	Dynamically based on sensed AOA

• Note •

The low speed color marking on the airspeed tape is computed dynamically based on the sensed AOA.

Powerplant Limitations

Operational Limits

The Cirrus Perspective Touch+™ by Garmin® avionics system provides dynamic gauge markings for engine instruments. Markings are automatically determined based on current conditions and mode of operation (start, climb, etc.).

Automated markings are designed to reduce pilot workload and eliminate pilot error; operators are recommended to rely on the indicated instrument markings for limitations, not memorization.

Operating Mode	ITT (°C)	N1 (%)	N2 (%)	Oil Pressure (psig)	Oil Temperature (°C)
Start	≤ 836	-	-	-	-40 – 135
	<u>Transients:</u> 1000 (15 sec.) 900 (30 sec.)				
Idle	836	-	< 80% until oil temp. >10 °C	<u>N2 < 80%</u> 35 - 120 <u>N2 ≥ 80%</u> 45 - 120 <u>Transient:</u>	10 – 135 <u>Transient:</u> -40 with N2 < 80% 149 (5 minutes)
Takeoff (T/O)	877 (10 sec.) 862 (5 minutes)	104.7% max. <u>Transient:</u> 105.7% (30 sec.)	100% max. <u>Transient:</u> 101% (30 sec.)	23 (5 minutes) 130 (5 minutes)	10 – 135 <u>Transient:</u> 149 (5 minutes)
	MCT	836			

• NOTE •

High oil temperatures and associated low oil pressures can occur when returning to ground idle from high power. Therefore, ground operation at or near Takeoff thrust should be limited in duration to avoid oil temperatures rising above 194 °F (90 °C) or perform a partial power cooldown prior to returning to ground idle.

Airflow disturbances across engine intake, particularly during gusty or crosswind conditions, may result in N1 or N2 speed fluctuations. This is normal at high power settings during static or low speed operations.

For maximum occupant comfort, avoid operations for more than 20 minutes at or near 78% N1.

It is highly recommended that while aircraft is unattended, inlet and exhaust covers are installed to prevent excessive windmilling and Foreign Object Damage (FOD).

Avoid unnecessary rapid movements of the thrust lever.

Engine Limit Exceedances

In the event of ITT, N1, N2, oil temperature, and/or oil pressure exceedances, the pilot should record each instance of the exceedance, along with the duration and degree of excess. This information should then be reported to Cirrus Aircraft.

Long term changes in N1 and N2 or ITT readings can be useful in tracking trends in engine health. Therefore, the pilot should monitor engine trend data and notify Cirrus Aircraft of any sudden or gradual changes over time.

Fuel

• NOTE •

Fuel mass values below provided for reference assuming nominal 6.76 lb/gallon at 59 °F (15 °C).

Jet A Specification Fuel	ASTM D1655
Jet A-1 Specification Fuel.....	ASTM D1655
JP-8 Specification Fuel	MIL-DTL-83133
Total fuel capacity	298.5 US Gallons (2018 lb)
Usable fuel	296 US Gallons (2001 lb)
Max. allowable fuel imbalance	15 US Gallons (101 lb)
Minimum fuel temperature	-40 °F (-40 °C)
Maximum fuel temperature	122 °F (50 °C)

• NOTE •

Recommended fueling best practice is to alternate between wings in 75-gallon (284-liter) increments when fueling from a single nozzle. Larger fuel imbalance may lead to fuel venting from low wing if aircraft “leans” towards a heavy wing as fuel reaches maximum tank capacity.

Fuel	Left	Right	Total
Total Capacity	149.25 U.S. gal (1009 lb)	149.25 U.S. gal (1009 lb)	298.5 U.S. gal (2018 lb)
Usable	148 U.S. gal (1000 lb)	148 U.S. gal (1000 lb)	296 U.S. gal (2001 lb)
Unusable	1.25 U.S. gal (8 lb)	1.25 U.S. gal (8 lb)	2.5 U.S. gal (17 lb)

Oil

Oil quantity..... Adequate for intended flight

Only the following approved lubrications shall be used for the engine:

Mobil Jet II(MIL-L-23699)

Mobil 254(MIL-L-23699)

Mixing of approved oils is permissible.

Landing Gear Hydraulic Fluid and Brake Fluid

Only the following approved hydraulic fluid shall be used for the landing gear and brakes:

SpecificationMIL-PRF-87257

Engine Start

Engine Start (General)

Minimum oil temperature.....-40 °F (-40 °C)

Minimum voltage for external power unit start..... 28 VDC

Minimum current for external power unit start 800 A

Maximum current for external power unit start..... 1000 A

Max. duration for Takeoff thrust5 minutes (max.)¹

Engine Start (Ground)

Maximum tailwind for start..... 15 knots²

Maximum crosswind for start25 knots

1. 2 minutes recommended for achieving rated engine life.

2. Tailwinds will increase the time required for start, and increase the likelihood of a Hot Start. The aircraft should be positioned into the wind whenever possible prior to start.

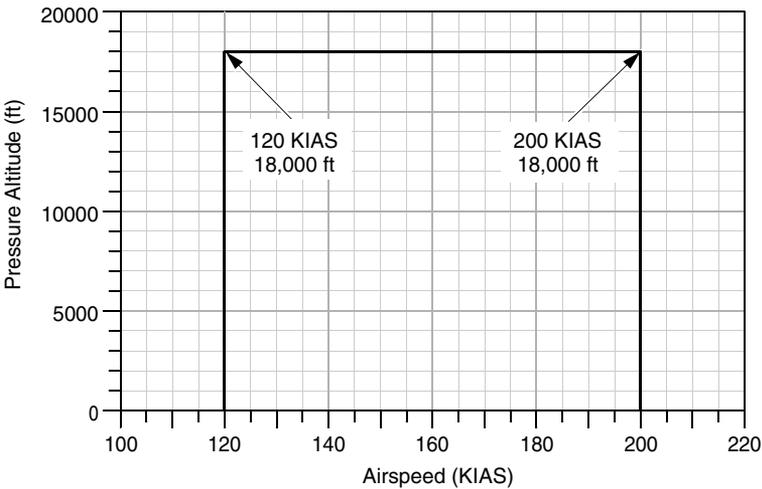
Start Abort Criteria

Abort start if any of the following are observed:

- Failure to accelerate after 30 seconds.
- No N1 indication at 25% N2.
- Low oil pressure after start.
- ITT exceeds limits (red line).

Engine Start (In flight)

Figure 2-2: Engine Start (In flight)



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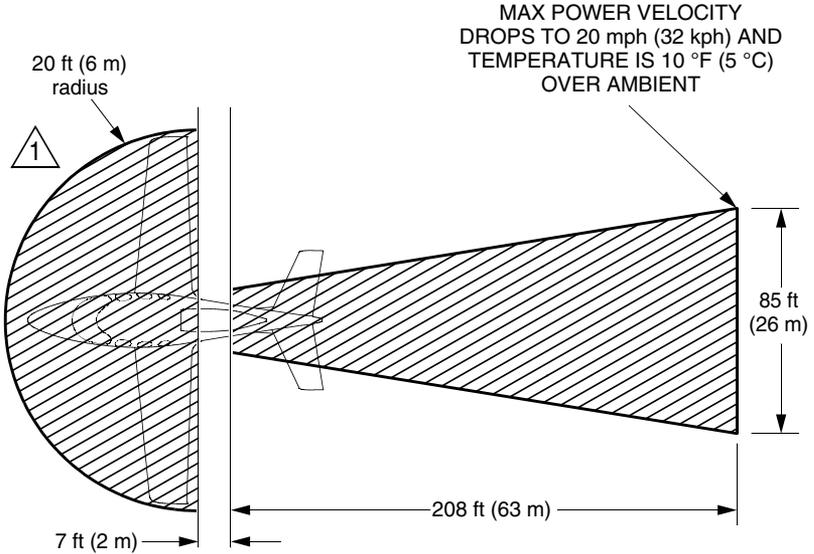
Starter Generator Limits (Start Mode)

The starter duty cycle is limited as follows:

1. 30-second maximum first start attempt followed by a 30-second minimum spool down and cool down period.
2. 30-second maximum second start attempt followed by a 5-minute minimum spool down and cool down period.
3. 30-second maximum third start attempt followed by a 30-minute minimum spool down and cool down period.

Repeat cycle (Steps 1 through 3 above), if required.

Figure 2-3: Danger Areas During Start and Ground Operation



Area to be cleared of personnel/equipment before engine start and during engine runs.

NOTE

1 Aircraft Static - Sea Level I.S.A. - No Wind.

• WARNING •

When operating on the ground, check danger areas for personnel, equipment, or Foreign Object Debris (FOD) before starting engine.

• CAUTION •

Point the nose of the aircraft into the wind. If this is not possible, and if the speed of the tailwind component is greater than 10 knots, do not operate engine N1 speed above 60% until the aircraft rolling speed is greater than the tailwind component. Running the engine with a tailwind can either cause the engine to surge or result in high ITT.

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Engine Instrument Markings & Annunciations

The following describes the engine instrument markings. Associated Warning and Caution annunciations are shown in capitalized text.

Powerplant

The Cirrus Perspective Touch+ by Garmin avionics system provides dynamic gauge markings for engine instruments. Markings are automatically determined based on current conditions and mode of operation (start, climb, etc.).

Automated markings are designed to reduce pilot workload and eliminate pilot error; operators are recommended to rely on the indicated instrument markings for limitations, not memorization.

Instrument (Range & Units)	Low Limit (Red Line)	Low Operating Range (Green Arc Bottom)	High Operating Range (Green Arc Top)	High Limit (Red Line)
Oil Pressure (0 – 130 psi)	$N_2 < 80\%$ 23 psi (5 minutes) 35 psi $N_2 \geq 80\%$ 45 psi	$N_2 < 80\%$ 35 psi $N_2 \geq 80\%$ 45 psi	120 psi	130 psi (5 minutes) 120 psi
Oil Temperature (-40 – 135 °C)	$N_2 < 80\%$ -40 °C $N_2 \geq 80\%$ 10 °C	10 °C	135 °C	149 °C (5 minutes) 135 °C
ITT (0 – 1150 °C)	-	0 °C	836 °C	See Note ^a
N1 (0 – 110%)	-	0%	MCT ^b (Blue "T" Bug at T/O) ^b	106% (30 sec.) 105%
N2 (0 – 110%)	-	<u>On Ground:</u> 53% <u>In Flight:</u> 61% 70% (AI ON ^c)	100%	101% (30 sec.) 100%
Thrust (0 – 110%)	-	0%	MCT ^b (Blue "T" Bug at T/O) ^b	-

- ITT Limitations (Engine Start: 1000 °C (15 sec.), 900 °C (30 sec.), 836 °C (unlimited); Takeoff: 877 °C (10 sec.), 862 °C (5 minutes); Continuous: 836 °C (unlimited)).
- Top of %N1 and % Thrust green arc depict Maximum Continuous Thrust (MCT); a value automatically determined by FADEC and avionics system based on current conditions. Takeoff Target %N1 and %Thrust are also automatically determined by FADEC and displayed by blue "T" bugs.
- Minimum flight idle %N2 with Engine anti ice ON increases to 70% in cruise configuration, and decreases to 61% with gear extended to facilitate landing thrust.

Fuel

Instrument (Range & Units)	Red Arc/Bar	Yellow Arc/Bar	Green Arc/Bar	Yellow Arc/Bar	Red Arc/Bar
	Min.	Min. Caution Range	Normal Range	Max. Caution Range	Max.
Fuel Flow (0 – 250 U.S. Gal./Hr.)	--	--	0 – 175	--	--
Fuel Quantity Gauge (0 – 150 U.S. Gallons)	0	1 – 25	26 – 150	--	--

Electrical

Instrument (Range & Units)	Red Arc/Bar	Yellow Arc/Bar	Green Arc/Bar	Yellow Arc/Bar	Red Arc/Bar
	Min.	Min. Caution Range	Normal Range	Max. Caution Range	Max.
Ess. Bus Voltage Synoptic Only (0 – 35.0 V)	--	< 26.5 V	$26.5 \leq V \leq 32.0$	--	> 32.0 V
Main Bus Voltage Synoptic Only (0 – 35.0 V)	--	< 25.5 V or < 26.5 V ^a	$25.5 \leq V \leq 32.0^a$ or $26.5 \leq V \leq 32.0^b$	--	> 32.0 V
Emer. Bus Voltage (0 – 35.0 V)	< 26.5 V ^b	< 25.0 V ^b	$25.0 \leq V \leq 32.0^c$ or $26.5 \leq V \leq 32.0^b$	--	> 32.0 V
Gen. 1 Current Digital Display: (-380 – 380 A) Analog Scale: (0 – 275 A)	--	Digital Display: < 5 A ^b	Digital Display: $5 \leq A \leq 275^b$ or $\leq 275 A^c$ Analog Scale: 0 - 275 A	--	Digital Display: > 275 A
Gen. 2 Current Digital Display: (0 – 200 A) Analog Scale: (0 – 75 A)	--	Digital Display: < 4 A ^b	Digital Display: $4 \leq A \leq 75^b$ or $\leq 75 A^c$ Analog Scale: 0 - 75 A	--	Digital Display: > 75 A
Batt. 1 Current Digital Display: (-245 – 245 A) Analog Scale: (-100 – 100 A)	--	< -5 A	$\geq 5 A$	--	--
Batt. 2 Current Digital Display: (-99 – 100 A) Analog Scale: (-50 – 100 A)	--	< -4 A	$\geq 4 A$	--	--

a. Only if the engine has been running for 15 seconds, or while in the air.

b. Only if on ground with the engine OFF, or during an engine start.

Weight Limits

• NOTE •

The airplane must be operated in accordance with the approved loading schedule.

Max. Takeoff Gross Wt. (MTOGW).....	6000 lb (2722 kg)
Maximum Landing Weight (MLW)	5550 lb (2517 kg)
Maximum Ramp Weight (MRW)	6040 lb (2740 kg)
Max. Zero Fuel Weight (MZFW)	4900 lb (2223 kg)
Maximum Aft Baggage Compartment	300 lb (136 kg) ¹
Maximum Cargo X-Tend Compartment	40 lb (18 kg)

Center of Gravity Limits

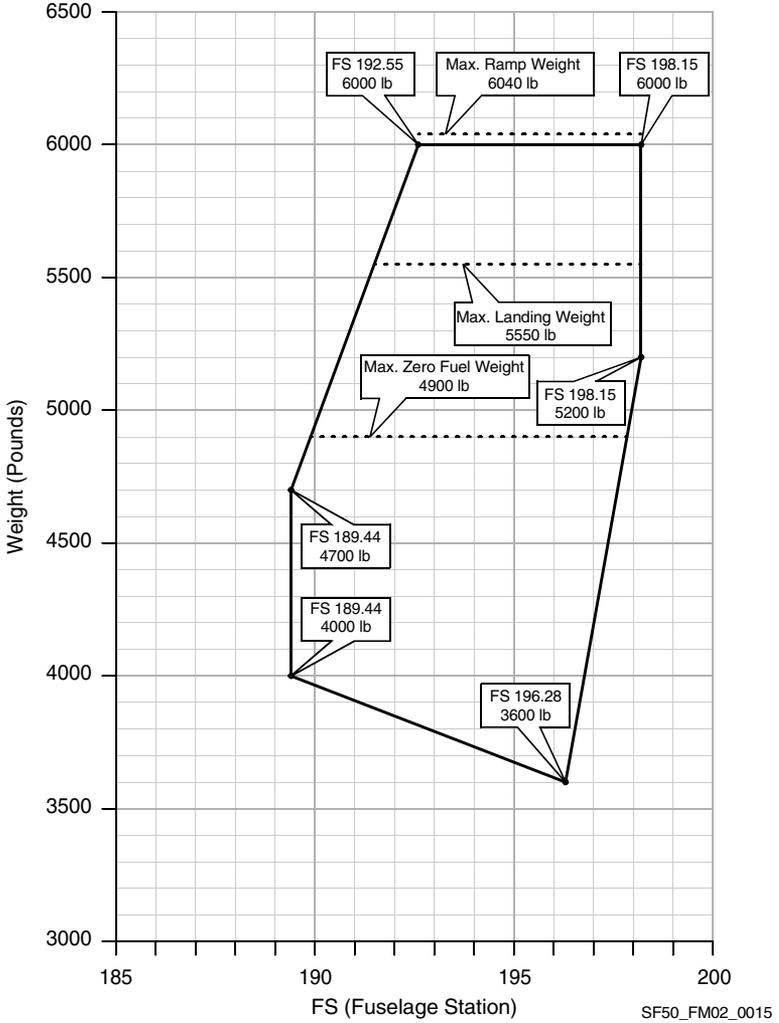
CG Envelope	Weight (lb)	FS (inches)
Forward Light	4000	189.44
Forward Intermediate	4700	189.44
Forward Gross	6000	192.55
Aft Gross	6000	198.15
Aft Intermediate	5200	198.15
Aft Light	3600	196.28

• Note •

Specifications for weight and balance data are defined in detail in [Section 6: Weight and Balance, "Weight and Balance Data"](#).

1. Includes Cargo X-Tend weight limit.

Figure 2-4: Center of Gravity Envelope



Maneuver Limits

Acrobatic maneuvers are strictly prohibited.

Spins are strictly prohibited.

This airplane is certified in the normal category and is not designed for acrobatic operations. Only those operations incidental to normal flight are approved. These operations include normal stalls, chandelles, lazy eights, and turns in which the angle of bank is limited to 60°.

A normal stall is a non-accelerated stall normally performed at a deceleration of approximately 1 kt per second. It does not include whip stalls, cross controlled stalls, etc.

The stall speed for any configuration is the speed at which the stick pusher activates.

Configuration Limitations

Maximum demonstrated crosswind

Flaps 50%	18 knots
Flaps 100%	16 knots

Flight Load Factor Limits

Flaps UP, any weight	+3.6g, -1.44g
Flaps 50%, any weight	+2.0g, 0g
Flaps 100%, any weight	+2.0g, 0g
Landing Gear Up or Extended	+3.6g, -1.44g
Landing Gear Operating	+2.0g, 0g

Kinds of Operation

This airplane is approved for the following types of operations when the required equipment listed in the Minimum Equipment List (MEL) is installed and operational:

- VFR Day and Night
- IFR Day and Night
- Flight Into Known Icing (FIKI)

Acrobatic maneuvers, including spins, are prohibited.

Maximum Operating Altitude Limit

Maximum Airport Elevation	10,000 ft MSL
Maximum Operating Altitude	FL310
Minimum Airport Elevation	-1000 ft MSL ¹
Maximum Positive Cabin Differential Pressure	7.1 psid

Outside Air Temperature Limits

Takeoff Temperatures

Minimum Takeoff Temperature	-40 °F (-40 °C)
Maximum Takeoff Temperature.....	122 °F (50 °C)

Operating Temperatures

Min. Operating Temp. (up to 20,000 ft).....	-65 °F (-54 °C)
Min. Operating Temp. (up to 31,000 ft).....	-82 °F (-63 °C)
Min. Landing Gear Operating Temp.	-40 °F (-40 °C)
Min. Wing/Stab IPS Operating Temp.	-40 °F (-40 °C)
Max. Engine IPS Operating Temperature.....	50 °F (10 °C)
Maximum Operating Temperature	122 °F (50 °C)

• CAUTION •

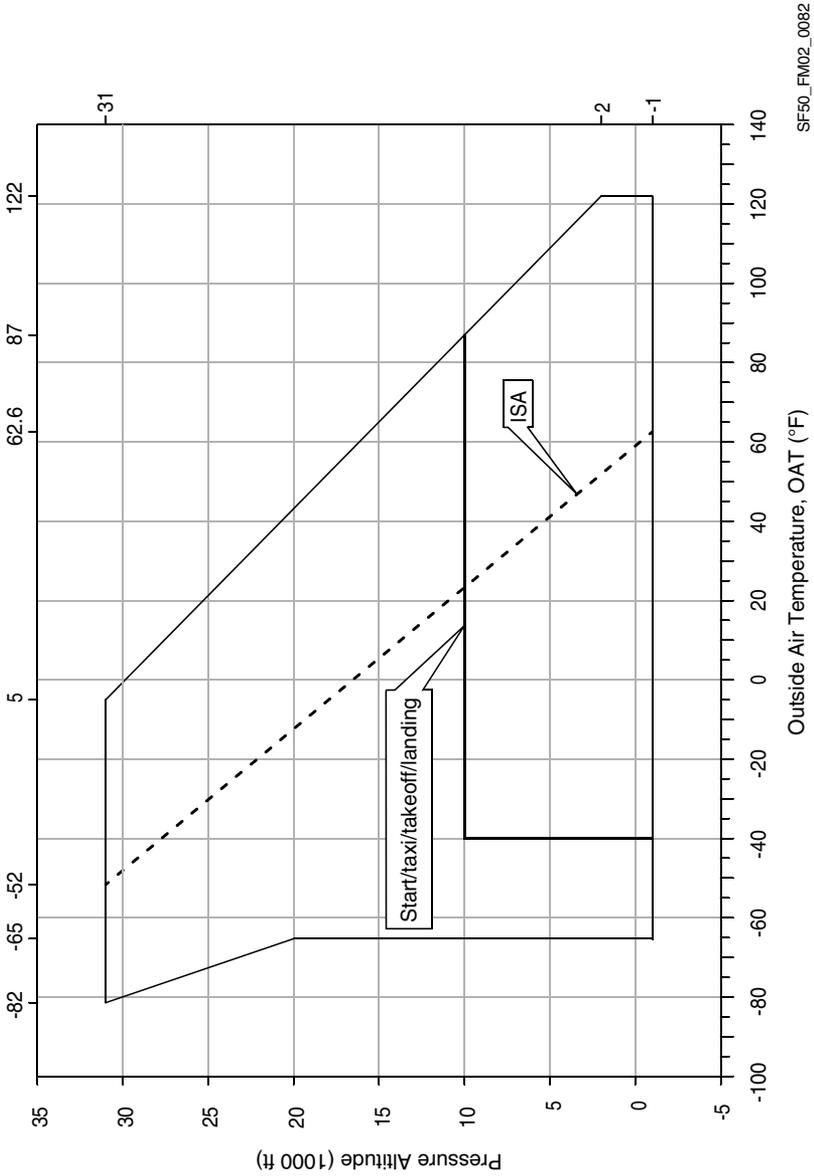
Power-on ground operations exceeding 30 minutes are prohibited either with ambient temperatures above 115 °F (46 °C) or with the Air Conditioning System (ACS) not operating and ambient temperatures above 100 °F (38 °C). Failure to comply could lead to overheating which may damage avionics Line Replaceable Units (LRUs).

• NOTE •

Windshield IPS performance is degraded below -22 °F (-30 °C). Avionics that have been cold soaked for two or more hours at an ambient temperature of -40 °F (-40 °C) or lower must be allowed to warm up for at least 20 minutes after power on prior to takeoff.

1. For operations at altitudes below sea level, use Mean Sea Level (MSL) values.

Figure 2-5: Outside Air Temperature Limits



SF50_FM02_0082

Minimum Crew Requirements

The minimum crew requirement for all operations is one appropriately rated pilot.

Maximum Passenger Seating Limits

Occupancy of this airplane is limited to seven persons - the pilot and six passengers. The two optional outboard XC seats are weight-limited to 90 lb (40 kg). If this weight restriction for the XC seats cannot be met, or if the XC seats are not installed, these seats cannot be used and occupancy is thus limited to five persons.

When the XC seats are occupied, seat 4 (if installed) must be in the aft position for all ground and air segments of the flight to facilitate cabin emergency egress.

If the wider executive seats are installed, seat 4 will not fit if installed in the forward position (aligned with seats 3 and 5).

When the convenience console is installed between seats 3 and 5, blocking access to the back row, seats 4, 6, and 7 may be installed but not occupied. Passengers in the third row must have an unobstructed egress path at all times.

• NOTE •

Refer to PIM Chapter 7 for seat layout.

Child Restraint System Limits

Rear seat configuration for LATCH-compliant child seats is limited to Seats 3, 4, and 5.

Installation of child seats in Seats 1, 2, 6, and 7 is prohibited.

• NOTE •

Refer to PIM Chapter 7 for seat layout.

Seat Belt Limits

Seat belts must be worn and tightened snug and low on the waist.

Seat Handling Limitations

• WARNING •

Do not move (or remove) the passenger seat while the aircraft is moving; do so when the aircraft is stationary.

Systems and Equipment Limits

Flight Controls

Flaps

Approved Takeoff Settings	50%
Approved Approach and Landing Settings.....	UP, 50%, 100%

• NOTE •

Flaps UP is an abnormal landing configuration, approved for use in the event of flap failure.

Use of flaps above 17,500 feet is prohibited.

Landing Gear

- 8 in-flight cycles per 32 minutes (Maximum)
 - 1 cycle consists of UP-Down-UP or Down-UP-Down
- 10 seconds rest between cycles (Minimum)

Warning

Stall Warning and Protection

Ensure stall warning and protection system are tested prior to each flight.

• NOTE •

Refer to [Section 4: Normal Procedures, "Preflight Inspection"](#).

Traffic Alert and Collision Avoidance System (TCAS-1)

TCAS-1 is for advisory use only to aid in visually acquiring traffic.

TCAS-1 traffic information must not be the only basis for avoidance maneuvers. The pilot is responsible to see and avoid traffic without TCAS-1 reliance.

Electrical System

The Cirrus Perspective Touch+ by Garmin avionics system provides dynamic gauge markings for engine instruments. Markings are automatically determined based on current conditions and mode of operation (start, climb, etc.).

Automated markings are designed to reduce pilot workload and eliminate pilot error; operators are recommended to rely on the indicated instrument markings for limitations, not memorization.

Electrical Bus	Normal Range (V)	Outside Normal Range Indications
Main	26.5 – 28.5	Yellow
Essential	27.3 – 29.5	Yellow
Emergency	26.5 – 29.5	Red

Maximum Generator Loads

Generator 1.....	270 A
Generator 2.....	76 A

Icing Conditions

Icing conditions are defined as visible moisture and OAT ≤ 41 °F (5 °C) or visible ice accumulations on the airframe.

Visible moisture is defined as any cloud, fog with visibility of one mile (1.6 km) or less, mist, rain, sleet, or snow.

Icing conditions may exist whenever Outside Air Temperature (OAT) on the ground, or for takeoff, is below 41 °F (5 °C) and visible moisture in any form is present.

Icing conditions may also exist when OAT on the ground and for takeoff is below 41 °F (5 °C) during operations where snow, ice, standing water, or slush may be encountered.

SAE Type 1 deicing fluid is approved for ground deicing.

Severe Icing

The airplane is prohibited from operating in severe icing conditions. Severe icing conditions are defined as any freezing drizzle, any freezing rain, Supercooled Large Droplets (SLD), or any icing conditions that overwhelm the ice protection systems. If the airplane encounters such conditions, the pilot must (i) immediately exit icing conditions by changing altitude or course, and (ii) remain clear of icing conditions for the remainder of the flight.

Severe icing conditions may be identified by the following:

- Unusually extensive ice accumulation on the airframe or windshield in areas not normally observed to collect ice.
- Accumulation of ice on the wing surface, aft of the deice boots.
- Inability of the airplane to maintain the published ice-contaminated performance specifications listed in [Section 5: Performance Data](#).
- Repeated use of MAX mode to clear the windshield.

The following weather conditions may be conducive to severe icing:

- Visible rain at temperatures colder than 32 °F (0 °C) static air temperature.
- Droplets that splash or splatter at temperatures colder than 32 °F (0 °C) static air temperature.

• CAUTION •

Delaying the use of the IPS may result in ice ingestion and possible engine damage or flameout.

Operation

In icing conditions, the airplane must be operated, and its ice protection systems used, as described in the operating procedures section of this AFM. Where specific operational speeds and performance information have been established for such conditions, this information must be used.

Takeoff is prohibited with any frost (polished or not), ice, snow, or slush adhering to the wings, stabilizers, control surfaces, engine inlet, or fuselage forward of the engine inlet.

When holding in icing conditions, higher speed will result in increased ice accretion rate.

Autopilot altitude holding performance has not been demonstrated in RVSM airspace (above FL280) with wing/stab ice protection on.

Minimum airspeed for flight in icing conditions with flaps and gear UP ($V_{MIN ICING}$)160 KIAS¹
Flaps (when holding in icing conditions)..... UP
Maximum flap deflection with ice accretions50%
Max. duty cycle (WINDSHLD IPS MAX Mode)50%,
with maximum of 10 seconds ON.

• WARNING •

Exit icing conditions immediately if any grinding or sticking is felt in the controls.

• CAUTION •

When OAT is above 41 °F (5 °C), probe heat may only be ON for 5 minutes (continuous) during ground operations. Extended use in warmer temperatures may damage the composite structure adjacent to the pitot probe.

1. Excluding climbs, approach, and landing.

Tactile Inspection

A tactile (hands on surface) check of the wing leading edge and the upper surface must be accomplished no more than 5 minutes prior to takeoff when operating in ground icing conditions.

This check must be performed whenever the OAT is below 41 °F (5 °C), or when the wing fuel temperature is not above 32 °F (0 °C), and visible moisture is present, or the airplane was exposed to visible moisture since the previous landing, or the difference between the dew point temperature and the OAT is 6 °F (3 °C) or less, or water is present in any form on the wing.

• WARNING •

On ground, do not rely on visual icing evidence to turn on the Engine IPS. Use the temperature and visual moisture criteria as specified earlier. Visual evidence of icing may not precede actual engine or engine inlet icing. Excessive ice accretions on the inlet or engine may cause engine damage if ice is ingested by the engine. The resulting loss of thrust may lead to reduced takeoff performance or an off-airport landing, either of which could cause serious injury or loss of life.

IPS Activation

The IPS must be activated:

- When OAT \leq 41 °F (5 °C) with visible moisture or visibility < 1 mile (1.6 km)
OR
- At first sign of ice.

• WARNING •

At first sign of ice, the WING/STAB IPS switch must be selected to the ON position and remain ON until the entire wing is free of ice accretion and ice is no longer accreting on the aircraft.

Stall Warning offset must remain ON until entire airframe is free of ice.

• NOTE •

The left wing leading edge is the primary reference area for determining if ice is accumulating on the aircraft. Ice may be visible on other areas of the aircraft as well, such as the forward windshield.

Ice Protection System (IPS) Fluid

Minimum Dispatch Quantity

IPS Fluid Minimum Dispatch Quantity..... 1.0 U.S. gal (4 L)

Endurance Limits (at minimum dispatch quantity)

NORM Mode.....90 minutes
HIGH Mode.....45 minutes

Use of Autopilot in Icing Conditions

In light-to-moderate icing conditions, autopilot use with periodic checks (disconnect and hand fly) is permitted. However, autopilot use is prohibited in the following conditions:

- Severe icing;
- Any unusually small or large control forces, or control deflections, to move flight controls when the autopilot is disconnected periodically for checking purposes; or
- Indications of frequent autopilot re-trimming during straight and level flight.

Autopilot

Autopilot must be on above FL290. Pilot must notify ATC of non-RVSM status if autopilot fails.

The Garmin GFC 700 Automatic Flight Control System (AFCS) has the following limitations:

- Minimum Autopilot Speed

Flaps	Minimum Autopilot Speed
100%	85 KIAS
50%	95 KIAS
UP	105 KIAS

- Maximum Autopilot Speed

Flaps	Maximum Autopilot Speed
100%	150 KIAS
50%	190 KIAS
Landing Gear DOWN	210 KIAS
Clean	250 KIAS / 0.53 Mach

- Autopilot Minimum-Use Height:
 - **NOTE** •
 - Transient descent below published minimum use height is permitted while transitioning to climb using coupled go around (GA) mode.
 - Takeoff and Climb..... 400 ft AGL
 - Enroute and Descent..... 1000 ft AGL
 - Approach (GP or GS Mode).....Higher of 200 ft AGL or Approach MDA, DA, DH
 - Approach (IAS, VS, PIT or ALT Mode) Higher of 400 ft AGL or Approach MDA
- The autopilot cannot be engaged beyond the Engagement Limits. If the autopilot is engaged beyond the command limits (up to engagement limits), it will be rolled or pitched to within the command limits, and an altitude loss of 1000 feet or more can be expected while attitude is established in the selected mode.

Axis	Autopilot Engagement Limit
Pitch	±50°
Roll	±75°

- The autopilot and Flight Director (FD) will not command pitch or roll beyond the Command Limits.

Axis	Autopilot Command Limit
FD Pitch Command Limits	+30°, -25°
FD Roll Command Limits	±30°

- Use of VNAV is not supported during an approach with a teardrop course reversal. VNAV will be disabled at the beginning of the teardrop.
- If Stall Warning is inoperative, Autopilot Underspeed Protection (USP) will not be provided in Altitude Critical Modes (ALT, GS, GP, T/O and GA).
- The autothrottle pilot controllable functions (if installed) are part of the autopilot, and are subject to autopilot limitations (minimum use height, speed, etc.).
- The autothrottle pilot controllable functions (if installed) cannot be engaged unless the autopilot is engaged.

Navigation and Communication Equipment

Attitude and Heading Reference System (AHRS)

The airplane must not operate in the regions listed below. Flying in these regions may lead to loss of attitude or heading information, and possibly even loss of aircraft control. Exceeding aircraft limitations may cause the aircraft to break up while in flight.

Magnetic Cut-out Regions	Latitude	Longitude
North	North of 72° N	All longitudes
	North of 65° N	Between 75° W and 120° W. (Northern Canada)
	North of 70° N	Between 70° W and 128° W. (Northern Canada)
	North of 70° N	Between 85° E and 114° E. (Northern Russia)
South	South of 70° S	All longitudes
	South of 55° S	Between 120° E and 165° E. (Region south of Australia and New Zealand)

• Note •

Alternative procedures must be established for dispatch if the indication GEO LIMITS is displayed.

Cirrus Perspective Touch+ by Garmin Avionics System

The appropriate revision of the Cirrus Perspective Touch+ Cockpit Reference Guide (p/n 190-02471-XX, where X can be any digit from 0 to 9) must be immediately available to the pilot during flight. The system software version stated in the reference guide must be appropriate for the system software version displayed on the equipment.

The avionics system has the following limitations:

- Use of VNAV is prohibited during the intermediate segment of an approach that includes a teardrop course reversal.
- Dead Reckoning (DR) Mode use is allowed only in Enroute (ENR) or Oceanic (OCN) phases of flight. The estimated navigation data supplied by the system in DR Mode must not be used as a sole means of navigation.

- The fuel quantity, fuel required, fuel remaining, and gross weight estimate functions presented in the AUX-WEIGHT PLANNING and AUX-TRIP PLANNING pages of the MFD are supplemental information only and must be confirmed by the flight crew prior to use.

Cirrus Perspective Touch+ by Garmin GPS Navigation System

The GPS receivers are approved under TSO C145a Class 3. The system has been demonstrated accurate for the following operations receiving usable navigation data.

- Enroute, terminal, non-precision instrument approach operations using GPS and Wide Area Augmentation System (WAAS), and approach procedures with vertical guidance (including “LNAV/VNAV”, “LNAV + V”, and “LPV”) within the U.S. National Airspace System in accordance with the latest revision of AC 20-138.
- Barometric VNAV is approved to enroute and terminal descents, as per AC 20-129. Guidance is provided up to the FAF waypoint when there is no procedure for vertical guidance following the FAF. Guidance is provided up to the waypoint preceding the FAF (FAF-1) when there are provisions for vertical guidance (ILS or GPS WAAS) following the FAF.
- Oceanic/Remote/MNPS/RNP-10 (per FAA AC 20-138A and FAA Order 8400-12A). Both GPS receivers are required to be operating and receiving usable signals except for routes requiring only one Long Range Navigation (LRN) sensor.

• Note •

For Oceanic/Remote operations, the WAAS Fault Detection and Exclusion (WFDE) Prediction Program works in combination with the Route Planning Software (version 1.2 or later approved version). For more information, refer to the WFDE Prediction Program Instructions Garmin part number 190-00643-01.

Enroute and Terminal including RNP-5/BRNAV and PRNAV (RNP-1) in accordance with JAA TGL-10 and ACJ 20X4, provided the FMS is receiving usable navigation information from one or more GPS receivers.

- VHF Navigation: Maximum demonstrated VHF VOR reception abeam aircraft position is 100 NM. Refer to FAA FAR AIM (1-1-8) for NAVAID service volumes.

The GPS navigation system has the following limitations:

- GPS-based IFR enroute, oceanic, and terminal navigation is prohibited unless the pilot verifies the currency of the database or verifies each selected waypoint for accuracy by reference to current approved data.

- RNAV/GPS instrument approaches must be accomplished in accordance with approved instrument approach procedures that are retrieved from the navigation database.

The database must incorporate the current update cycle.

- Note •

Not all the published approaches are in the navigation database. The flight crew must ensure that the planned approach is in the database.

- Receiver Autonomous Integrity Monitoring (RAIM) must be available when conducting instrument approaches utilizing the GPS receiver.
- IFR non-precision approach approval is limited to published approaches within the local Airspace System. Approaches to airports in other airspace are not approved unless authorized by the appropriate governing authority.
- When using GPS/NAV mode to intercept the final approach course, monitor the flight director transition to LOC/GS. If the transition does not occur automatically, manually select HDG mode and CDI source to LOC in order to intercept the final approach course.
- Use of the GPS receiver to accomplish ILS, LOC, LOC-BC, LDA, SDF, MLS or any other type of approach not approved for GPS overlay is not authorized.
- Operation in airspace referenced to a datum other than WGS-84 or NAD-83 is prohibited.
- Dispatch is not authorized with inoperative GPS, predicted degraded GPS (RAIM prediction), or known GPS outage (NOTAM) expected during the planned flight.

Enhanced Vision System (Optional)

The Enhanced Vision System (EVS) must not be used for flight guidance, navigation, traffic avoidance, or terrain avoidance. Maneuvering the airplane in any phase of flight such as taxi, takeoff, approach, landing, or roll out shall not be predicated on EVS imagery. The EVS must only be used as an aid to assist the flight crew with visually acquiring objects normally viewed through the cockpit windows.

Weather

Garmin GSR 56 Iridium Datalink

System functionality at cabin temperatures below -4 °F (-20 °C) should not be expected.

Other Limitations

Oxygen

The oxygen system is serviced with Oxygen, Aviator's Breathing, Liquid And Gas (MIL-O-27210, Type I - Gaseous). It is prohibited to use technical/medical oxygen.

The RH crew seat is equipped with a quick-don mask. During Preflight Inspection, the passenger must be briefed on its use. The second quick-don oxygen mask shall be considered a passenger oxygen mask, and operated as such, unless acting as pilot in command or required otherwise.

An additional passenger oxygen mask has been installed in the passenger compartment to accommodate multiple seat 4 positions. In the event of emergency oxygen use, all passenger masks will automatically deploy and user will have to pull pin to initiate flow.

In addition to the requirements of applicable operating rules, the following aircraft certification rules must be observed:

- Oxygen system is not approved for extended use of auto deploy passenger oxygen masks above 25,000 feet cabin altitude.
- To qualify as a quick-donning oxygen mask, comply with proper stowage of the pressure demand crew oxygen masks in their containers.

The oxygen endurance assumes the:

- Single pilot quick-don oxygen mask should be used in 100% mode above 20,000 feet.
- Single pilot quick-don oxygen mask should be used in NORMAL mode below 20,000 feet.
- Passenger oxygen is not used at 15,000 feet and below (including passenger using second quick-don mask).
- Passenger oxygen use is limited to 10 minutes or less.

• WARNING •

Ensure that the crew oxygen mask can be donned quickly without any interferences (i.e. eyewear, headsets, hats, hairstyles).

Ensure that the passenger oxygen masks are donned during an emergency descent to an altitude not requiring supplemental oxygen.

• NOTE •

Passenger oxygen is automatically made available at cabin altitudes exceeding 15,000 feet or if manually selected.

Fill Pressure vs. Temperature

OXYGEN FILL PRESSURE VERSUS TEMPERATURE		
TEMP °F	TEMP °C	FILL TO PSI
-40	-40	1321
-30	-34	1370
-20	-29	1418
-10	-23	1466
0	-18	1515
10	-12	1563
20	-7	1611
30	-1	1659
40	4	1707
50	10	1755
60	16	1802
70	21	1850
80	27	1898
90	32	1945
100	38	1993
110	43	2040
120	49	2088

Altitude vs. Minutes of Available Oxygen

Pilot Oxygen Mask Mode: NORM

The information in the tables below is based on the following:

- The quick-don (QD) masks set to NORM, and
- The bottle being filled to pressure noted in the following tables.

22 cu ft Oxygen Bottle

22 cu ft: 1850 PSI							
M I N U T E S							
ALT (FT.)	1 Crew						
	+	+	+	+	+	+	+
	2 nd QD						
	0 Pax	0 Pax	1 Pax	2 Pax	3 Pax	4 Pax	5 Pax
10,000	463	232	71	42	30	23	19
15,000	438	219	71	42	30	23	19
20,000	344	172	66	41	29	23	19
25,000	222	111	55	36	27	22	18
30,000	250	125	58	38	28	22	19
31,000	264	132	60	39	29	23	19

22 cu ft: 1600 PSI							
M I N U T E S							
ALT (FT.)	1 Crew						
	+	+	+	+	+	+	+
	2 nd QD						
	0 Pax	0 Pax	1 Pax	2 Pax	3 Pax	4 Pax	5 Pax
10,000	390	195	60	35	25	19	16
15,000	368	184	60	35	25	20	16
20,000	289	144	55	34	25	19	16
25,000	187	94	46	31	23	18	15
30,000	210	105	49	32	24	19	16
31,000	222	111	50	33	24	19	16

22 cu ft: 1000 PSI							
M I N U T E S							
ALT (FT.)	1 Crew						
	+	+	+	+	+	+	+
	2 nd QD						
	0 Pax	0 Pax	1 Pax	2 Pax	3 Pax	4 Pax	5 Pax
10,000	213	107	33	19	14	11	9
15,000	202	101	33	19	14	11	9
20,000	158	79	30	19	14	11	9
25,000	102	51	25	17	13	10	8
30,000	115	58	27	18	13	10	9
31,000	122	61	28	18	13	10	9

Pilot Oxygen Mask Mode: 100%

• CAUTION •

With 100% flow, endurance can be substantially lower than with diluted flow.

The information in the tables below is based on the following:

- The quick-don (QD) masks set to 100%, and
- The bottle being filled to pressures noted in the following tables.

22 cu ft Oxygen Bottle

22 cu ft: 1850 PSI							
M I N U T E S							
ALT (FT.)	1 Crew						
	+	+	+	+	+	+	+
	2 nd QD						
	0 Pax	0 Pax	1 Pax	2 Pax	3 Pax	4 Pax	5 Pax
10,000	47	24	19	16	14	12	11
15,000	59	29	23	19	16	14	12
20,000	74	37	27	22	18	15	14
25,000	95	47	33	25	20	17	15
30,000	125	62	40	29	23	19	16
31,000	134	67	42	30	24	19	17

22 cu ft: 1600 PSI							
M I N U T E S							
ALT (FT.)	1 Crew						
	+						
	2nd QD						
	+						
	0 Pax	0 Pax	1 Pax	2 Pax	3 Pax	4 Pax	5 Pax
10,000	40	20	16	14	12	10	9
15,000	49	25	19	16	13	12	10
20,000	62	31	23	18	15	13	11
25,000	80	40	28	21	17	14	12
30,000	105	53	33	25	19	16	14
31,000	112	56	35	25	20	16	14

22 cu ft: 1000 PSI							
M I N U T E S							
ALT (FT.)	1 Crew						
	+						
	2nd QD						
	+						
	0 Pax	0 Pax	1 Pax	2 Pax	3 Pax	4 Pax	5 Pax
10,000	22	11	9	7	6	6	5
15,000	27	13	11	9	7	6	6
20,000	34	17	13	10	8	7	6
25,000	44	22	15	12	9	8	7
30,000	58	29	18	13	11	9	7
31,000	62	31	19	14	11	9	8

Crew Headset

One headset with a boom microphone is required for pilot use.

Smoking

Smoking is prohibited in this airplane.

Brakes

• **WARNING** •

Brake assemblies, discs, and pads can be VERY HOT. Approach slowly and cautiously to detect the amount of radiant heat before proceeding with tactile inspection (hands on surface).

A cool down period and brake overheat inspection are required after all high-energy braking events. The minimum cool down period is 30 minutes, or until the brake discs have cooled enough to allow for tactile inspection, whichever occurs first.

High-energy braking events include:

- Rejected Takeoffs (RTOs) or engine emergencies on takeoff.
- High-speed landings (Landings with 0% flaps, ice contaminated airframe, or high-density altitude).

The cool down period is necessary because a high-energy use of the brakes leads to elevated brake temperatures, significant pad wear, as well as possible damage to discs and pads.

After each cool down period, inspect for damaged or overheated components.

• **NOTE** •

Refer to [Section 8: Handling and Servicing, "Brake Overheat Inspection"](#).

Tire Inflation Pressure (nominal)

Nose Tire 5.00 x 5 (10 PR)	88±5 psi (607±34 kPa)
Main Tires 18 x 5.5 (8 PR)	105±5 psi (724±34 kPa)

Circuit Breakers

Intentional pulling of circuit breakers during flight, other than as required in specific procedures, is prohibited.

In-Flight Entertainment

The In-Flight Entertainment (IFE) display screen must be stowed during ground operations, takeoff, and landing.

Exterior Windows

Adhering foreign items to exterior windows is prohibited. This includes but is not limited to: suction cups, films, window tint, stickers, decals, etc. This does not include the interior passenger window frost panes, which may have clear suction cup shades applied.

• CAUTION •

Objects in close contact with the windows, especially dark or black, may result in temperature damage or distortion of the window. Objects with dyes may transfer dye into the window acrylic resulting in damage to the aircraft window.

Placards

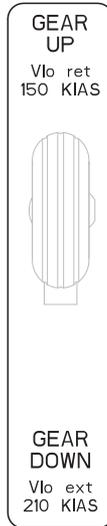
Interior Placards

Figure 2-6: Oxygen Fill Chart

OXYGEN FILL CHART		
TEMPERATURE °F	FILL PRESSURE PSIG	TEMPERATURE °C
-40	1321	-40.0
-30	1370	-34.4
-20	1418	-28.9
-10	1466	-23.3
0	1515	-17.8
10	1563	-12.2
20	1611	-6.7
30	1659	-1.1
40	1707	4.4
50	1755	10.0
60	1802	15.6
70	1850	21.1
80	1898	26.7
90	1945	32.2
100	1993	37.8
110	2040	43.3
120	2088	48.9

SF50_FM02_0013

Figure 2-7: Landing Gear V_{LO} Placard



SF50_FM02_0025

Figure 2-8: Fasten Seat Belts/No Smoking



SF50_FM02_0026

Figure 2-9: Cargo X-Tend (if installed)

CARGO X-TEND WEIGHT LIMIT: 40 LBS (18 KG)
INCLUDE WEIGHT IN TOTAL BAGGAGE
WEIGHT CALCULATION.

SF50_FM02_0027

Figure 2-10: Baggage Compartment Limitations

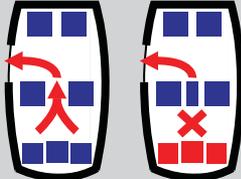
**TOTAL BAGGAGE COMPARTMENT
WEIGHT LIMIT: 300 LBS (136 KG)**

50 LB/FT² MAXIMUM (244 KG/M²)

LOAD IN ACCORDANCE WITH AFM.
REFER TO AFM FOR BAGGAGE TIE-DOWN,
WEIGHT AND BALANCE INFORMATION.

SF50_FM02_0028

Figure 2-11: Seats 3, 4, 5 (if installed)

<ul style="list-style-type: none">-Locate seat per AFM.-Do not block egress path.-Lock seat in position before flight. <p>-This seat weighs: <input type="text"/> lbs.</p>	
--	---

** Actual seat weight to be recorded on each seat placard.*

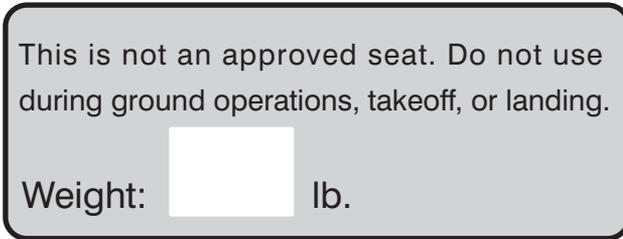
SF50_FM02_0087

Figure 2-12: Child Seats (if installed)

<ul style="list-style-type: none">-Locate seat per AFM.-Lock seat in position before flight.-Occupant weight limit: 90 lb. <p>-This seat weighs: <input type="text"/> lb.</p>	
---	---

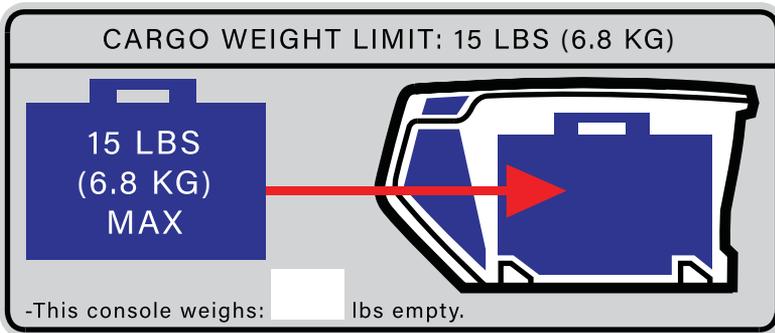
SF50_FM02_0032

Figure 2-13: Lavatory (if installed)



SF50_FM02_0040A

Figure 2-14: Convenience Console Weight Limit (if installed)



SF50_FM02_0088

Figure 2-15: Convenience Console (if installed)



SF50_FM02_0089

Figure 2-16: Flap Positions/Airspeeds

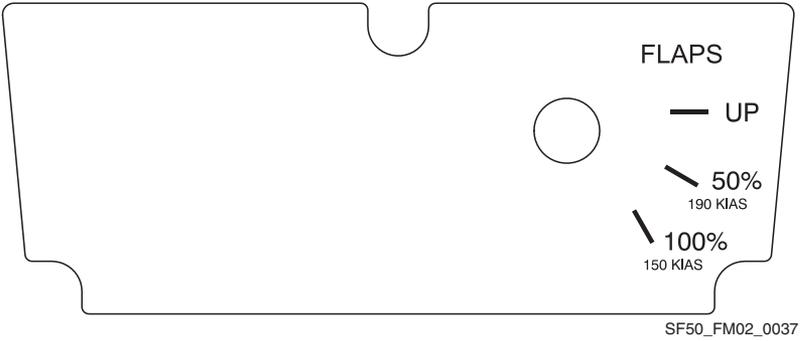


Figure 2-17: Pitch Trim Direction



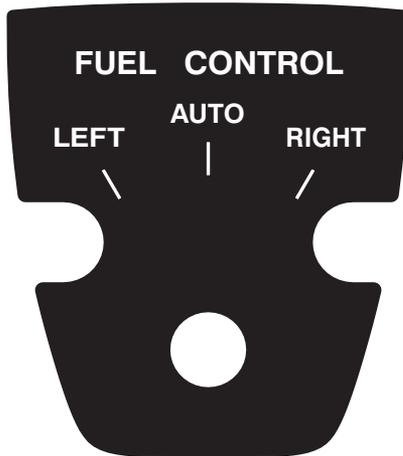
SF50_FM02_0035

Figure 2-18: Thrust Position



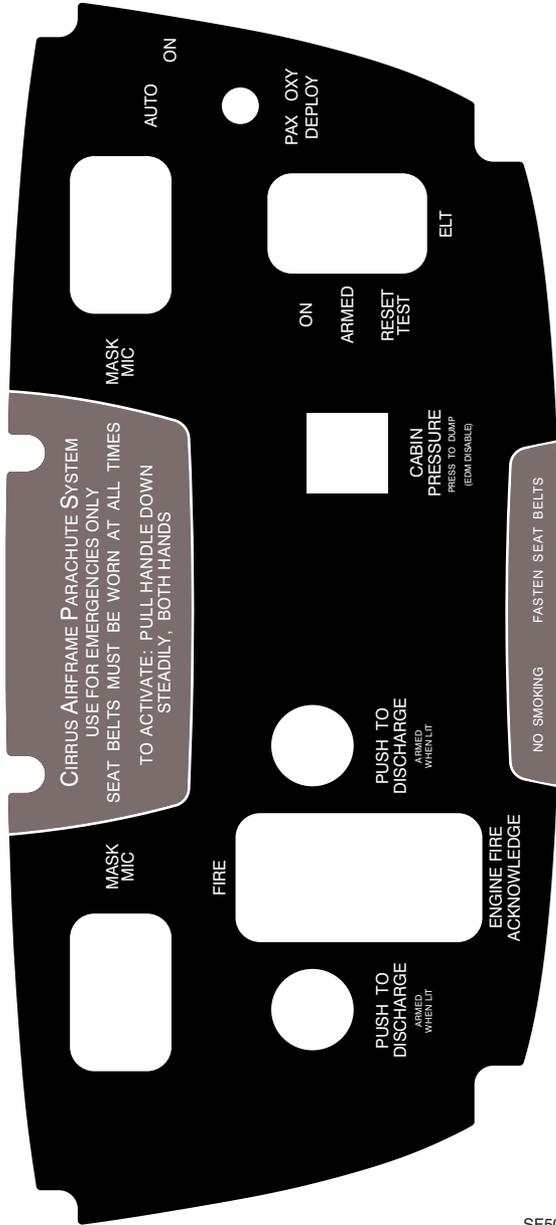
SF50_FM02_0036

Figure 2-19: Fuel Selector



SF50_FM02_0039

Figure 2-20: Emergency Panel



SF50_FM02_0086

Figure 2-22: Emergency Exit



SF50_FM02_0042

Figure 2-23: Door Operation, Upper



SF50_FM02_0044

Figure 2-24: Door Operation, Lower



SF50_FM02_0045

Figure 2-25: IFE Screen Stowage (if installed)



SF50_FM02_0046A

Figure 2-26: Egress



SF50_FM02_0081

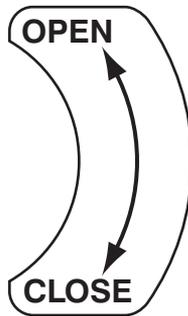
Exterior Placards

Figure 2-27: Emergency Exit



SF50_FM02_0041

Figure 2-28: Door Operation



SF50_FM02_0043

Figure 2-29: External Power



SF50_FM02_0052

Figure 2-30: Tire Pressure, Nose

NOSE TIRE:
88 PSI ± 5 PSI
607 kPa ± 34 kPa
Refer to AFM

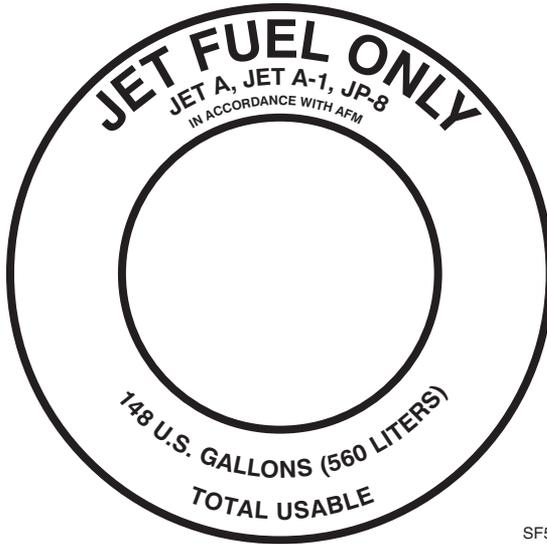
SF50_FM02_0022

Figure 2-31: Tire Pressure, Main

MAIN TIRE:
105 PSI ± 5 PSI
724 kPa ± 34 kPa
Refer to AFM

SF50_FM02_0023

Figure 2-32: Fuel Tank Capacity and Fuel Type



SF50_FM02_0021

Figure 2-33: TKS Fluid



SF50_FM02_0024A

Electronic Placards

Normal category airplane

No acrobatic maneuvers, including spins, approved.

This aircraft is certified for the following flight operations: DAY – NIGHT – VFR – IFR, Flight in known icing (with required equipment).

Operate per Airplane Flight Manual (AFM).

Maximum flap position 50% if airframe is ice contaminated.

Maneuvering Speed: V_o 150 KIAS

Seats must be in normal upright position for takeoff and landing.

Completely lock all seats in position before flight.

Aircraft is equipped with: Cirrus Airframe Parachute System (CAPS), Garmin Electronic Stability and Protection (ESP).

Section 3: Emergency Procedures

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Emergency CAS Procedures

AUTO DESCENT Warning

AUTO DESCENT

Aircraft descending to 14,000 ft.

• NOTE •

Aircraft will descend to 14,000 feet, level off for 4 minutes, then descend to 12,500 feet.

Serials with Safe Return Autoland: Unless canceled, Safe Return Autoland will activate descending through 15,000 feet pressure altitude and change route to an emergency landing airport. Refer to Section 10: Safety Information, "Safe Return Autoland System (if installed)".

To cancel auto descent, disconnect the autopilot:

- a. AP DISC ButtonPRESS AND RELEASE

Procedure Complete

CABIN ALTITUDE HIGH Warning

CABIN ALTITUDE HIGH

Cabin high altitude detected.

1. Oxygen Mask..... DON, 100%

2. BLEED Switch VERIFY BLEED

3. MIC SELECT SwitchMASK MIC

4. Perform Emergency Descent checklist as required.

5. Passenger Oxygen ENSURE PASSENGERS ARE RECEIVING OXYGEN

◆ If passenger oxygen masks do not deploy:

- a. PAX OXY DEPLOY Switch ON

6. TransponderSQUAWK 7700

7. CABIN PRESSURE DUMP Button.....PRESS

Procedure Complete

(Continued on next page)

(Continued)

• NOTE •

Refer to Section 2: Limitations, "Oxygen" for oxygen requirements.

If the CABIN PRESSURE DUMP is not activated, Emergency Descent Mode (EDM) will activate if the aircraft is at or above 14,900 feet pressure altitude and the cabin altitude is greater than or equal to 15,000 feet. An EDM activation can lead to an automatic activation of Safe Return Autoland. EDM and Safe Return Autoland will not automatically activate if CABIN PRESSURE DUMP is activated. Manual activation of Safe Return Autoland can still be accomplished following CABIN PRESSURE DUMP activation.

EMER AUTOLAND ACTIVATING Warning

EMER AUTOLAND ACTIVATING

Emergency Autoland is activating.

◆ If Safe Return Autoland activation is not desired:

- a. AP DISC Button.....PRESS AND HOLD 1 SECOND

○ If Safe Return Autoland activation has proceeded beyond 10-second EMER AUTOLAND ACTIVATING period:

• NOTE •

Safe Return Autoland will immediately squawk 7700, change the flight plan, and may change the altimeter setting.

- (1) Transponder..... SET
- (2) FMS A/R
- (3) Altimeter..... SET

□ If system has deployed flaps:

- (a) Flaps..... 50%
- (b) Flaps..... A/R

(Continued on next page)

(Continued)

- ☐ If system has deployed landing gear:
 - (a) Landing Gear DOWN
 - (b) Landing Gear A/RProcedure Complete

- If malfunction of Safe Return Autoland activation is suspected:
 - (1) EMER AUTOLAND CB (E11) PULL
 - (2) Perform Automatic Flight Control Malfunction (Stick Pusher, ESP, USP, Autopilot) checklist.Procedure Complete

- ◆ If Safe Return Autoland activation is desired:
 - a. No further action is required.
 - NOTE •
 - Refer to Section 8: Handling and Servicing, "Safe Return Autoland Runway Recovery".Procedure Complete

EMER AUTOLAND BRAKES Warning

EMER AUTOLAND BRAKES

Do not dispatch, autoland brakes in test mode.

- 1. Do not dispatch.
Procedure Complete

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Introduction

This section provides procedures for handling emergencies and critical flight situations that may occur while operating the aircraft. Although emergencies caused by airplane, systems, or engine malfunctions are rare, the guidelines described in this section should be considered and applied as necessary should an emergency arise.

Emergency procedures associated with optional equipment are not described in this section.

Although this section provides procedures for handling most emergencies and critical flight situations that could arise in the aircraft, it is not a substitute for proper flight training, thorough knowledge of the airplane, and recognized piloting techniques and standards. A thorough study of the information in this AFM while on the ground will help you prepare for time-critical situations in the air.

• NOTE •

Refer to [Section 9: Log of Supplements](#) for optional equipment Emergency Procedures.

Crew Alert System (CAS) Messaging

Warnings

Displayed in red against a black background, Warning CAS messages arise during emergency situations that require immediate flight crew awareness and immediate flight crew response.

- A flashing Warning CAS message with an accompanying aural alert requires immediate action.
- A Warning CAS message with no accompanying aural alert requires attention, dependent on workload. It may also require performing maintenance or taking corrective action prior to next flight. Warnings with no aural alert typically occur while on ground.

Preflight Planning

Enroute emergencies caused by weather can be minimized or eliminated by careful flight planning and good judgment when unexpected weather is encountered.

Preflight Inspections/Maintenance

In-flight mechanical problems in the aircraft will be extremely rare if proper preflight inspections and maintenance are practiced. Always perform a thorough walk-around inspection before any flight to ensure that no damage occurred during the previous flight or while the airplane was on the ground. Pay special attention to any oil leaks or fuel stains that could indicate engine problems.

• NOTE •

Refer to [Section 4: Normal Procedures, "Preflight Inspection"](#) for more information.

Methodology

Aircraft emergencies are dynamic events. Because of this, it is impossible to enumerate every action a pilot should properly undertake in response to a particular situation. However, four basic actions can be applied to any emergency. They are:

Maintain Aircraft Control

• CAUTION •

Press and hold red Master Autopilot Disconnect Button (AP DISC) on the side stick if the aircraft and/or automatic flight control system are causing an unexpected or uncommanded aircraft response.

Many minor aircraft emergencies turn into major ones when the pilot fails to maintain aircraft control. Do not panic and do not fixate on a particular problem. Over-attention to a warning light during an instrument approach can lead to a pilot-induced unusual attitude, and possibly worse. To avoid this, even in an emergency: always aviate, navigate, and communicate, in that order. Never let anything interfere with your control of the airplane. Never stop flying.

Analyze the Situation

Once you are able to maintain control of the aircraft, assess the situation. Read all warning and caution messages. Evaluate the engine parameters. Consider all aircraft operational information at your disposal.

Take Appropriate Action

In many situations, the procedures listed in this section will either correct or mitigate the aircraft problem or allow safe recovery of the aircraft. Follow them and use good pilot judgment.

Land as Soon as Conditions Permit

Once you have evaluated and responded to the emergency, assess your next move. Perform any non-critical “clean-up” items in the checklist and land as soon as practicable. Even if the airplane appears to be in sound condition, it may not be.

• NOTE •

Refer to [Section 3: Emergency Procedures, "Landing Guidance"](#) for factors that determine landing criticality.

Circuit Breakers

Some procedures involve manipulating circuit breakers (CBs). The following criteria should be followed during “Circuit Breaker” steps:

- Intentional pulling of circuit breakers during flight, other than as required in specific procedures, is prohibited.
- When instructed to “SET”, the appropriate circuit breaker should be checked for normal condition. If the circuit breaker is not “SET”, it may be reset only once. If the circuit breaker opens again, do not reset.
- When instructed to “PULL”, the appropriate circuit breaker should only be pulled and not reset.
- When instructed to “CYCLE”, the appropriate circuit breaker should be pulled, delayed for several seconds, and reset only once. Allow sufficient cooling time for circuit breakers that are reset through a “CYCLE” procedure.

Memory Items

Checklist steps emphasized by a rectangular enclosure, such as the example below, should be memorized for accomplishment without reference to the procedure, due to the nature of their urgency.

1. Best Glide Speed ESTABLISH

If the rectangle is open at the top or bottom of the page, additional steps related to the memory item(s) precede or follow those listed on the current page.

Procedure Division Symbols

For procedures requiring pilot decision, conditional steps are indented with a symbol to designate sub-sections within the procedure. On condition, the pilot makes a decision to identify the applicable sub-section. Following the initial decision, a further sub-division of the procedure may occur. In that event, one or more additional conditions guides the pilot through the remaining decisions. Once the applicable condition(s) are identified, the pilot follows the remaining steps until the indication “Procedure Complete” is reached.

The procedure symbol levels are:

- ◆ First Level
- Second Level
- Third Level

Landing Guidance

Land as soon as practicable

Extended flight is not recommended and the pilot should proceed to land the plane, but not necessarily at the first or closest landing location. The landing location and duration of flight remains at the discretion of the pilot in command, after considering all factors related to the safety of the flight. For example, landing may be deferred to an airfield which could provide post-landing maintenance procedures or malfunction investigation. The choice of airfield may be determined by the pilot with consideration to weather, runway dimensions, surface conditions, and services available. However, in no case shall a suitable landing airfield be discounted in the name of convenience.

Land as soon as possible

Land without delay at the first site at which a safe landing can be made. Continued flight beyond an available airfield at which a safe landing can be made will result in increased risk and shall not be attempted. The nearest suitable landing site shall be determined by the pilot with consideration given to weather, surface dimensions and conditions, and pilot experience.

Airspeeds for Emergency Operations

Maneuvering Speed

6000 lb (2721 kg)..... 150 KIAS

Emergency Landing

Flaps UP 100 KIAS

Flaps 50% 95 KIAS

Flaps 100% 90 KIAS

Best Glide (Gear and Flaps: UP)

6000 lb (2721 kg)	114 KIAS
5000 lb (2268 kg)	104 KIAS
4000 lb (1814 kg)	93 KIAS

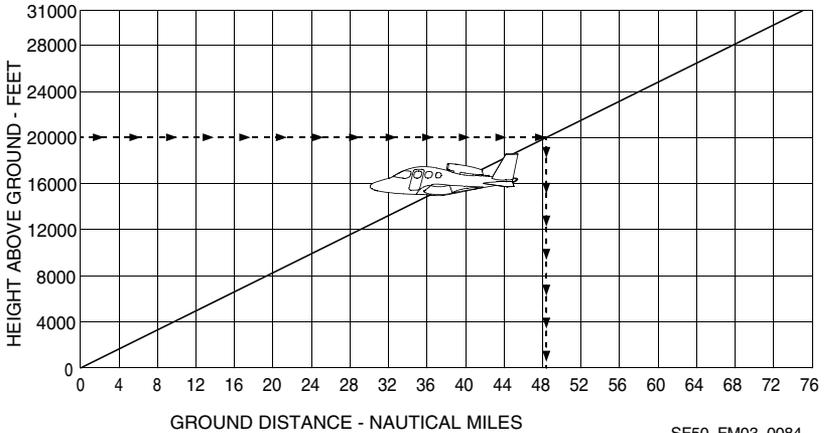
• NOTE •

In the clean configuration, the V_{REF} green donut indicates the speed for best glide.

Glide

Conditions		Example	
Power	OFF	Altitude	20,000 ft. AGL
Flaps	UP	Glide Distance	48.4 NM
Wind	Zero		
Gear	UP		

Figure 3-1: Maximum Glide Ratio ~ 14.7: 1



Emergency Procedures

Automatic Flight Control Malfunction (Stick Pusher, ESP, USP, Autopilot)

1. Grip side stick firmly.
2. AP DISC Button PRESS AND HOLD
3. Airplane Control MAINTAIN
4. AP SERVOS CB (A3)..... PULL
5. AP DISC Button RELEASE

◆ If in RVSM airspace:

- a. Airplane Control..... MAINTAIN
- b. Exit RVSM airspace.

• NOTE •

Refer to [Section 3A: Abnormal Procedures, "Autopilot Failure"](#).

6. Land as soon as practicable.

Procedure Complete

• NOTE •

If erroneous AOA indications are observed, green donut airspeed reference will be unavailable or unreliable. Low speed awareness indications on the airspeed tape should be considered unreliable and should not be referenced. Refer to [Section 3A: Abnormal Procedures, "STICK PUSHER FAIL Caution"](#).

Expect CAPS AUTOPILOT INOP CAS. Refer to [Section 3A: Abnormal Procedures, "CAPS AUTOPILOT INOP Advisory"](#).

Engine Emergency On Takeoff - Speed Below V_R

• NOTE •

Includes emergencies such as engine failure or fire.

- 1. BrakesMAX PILOT EFFORT W/O SKIDDING
- 2. Thrust Lever..... IDLE

- 3. Engine Knob OFF
- 4. Engine Button PRESS (MOMENTARY)

◆ If ENGINE FIRE Warning occurs:

- a. ENGINE FIRE ACKNOWLEDGE Switch.....LIFT GUARD, TOGGLE
- b. Left or Right PUSH TO DISCHARGE ButtonPUSH
- c. CABIN PRESSURE DUMP Button PRESS
- d. GEN 1 and GEN 2 Switches OFF
- e. BAT 1 and BAT 2 Switches OFF
- f. Evacuate airplane.

◆ If no indication of engine fire:

- a. Parking Brake.....DO NOT SET
- b. Exit aircraft normally when safe to do so.

After airplane comes to a complete stop:

- 5. Brakes COOL DOWN

Procedure Complete

(Continued on next page)

(Continued)

• CAUTION •

For maximum brake effectiveness, retract flaps, hold side stick control full back, and bring the airplane to a stop by smooth, even application of the brakes.

A cool down period and brake overheat inspection are required after high-energy braking events.

Refer to [Section 2: Limitations, "Brakes"](#).

• NOTE •

Refer to [Section 4: Normal Procedures, "After Landing"](#).

Engine Fire On Takeoff - Low Altitude

1. Land as soon as possible.

◆ If immediate landing is not possible:

- a. Perform [ENGINE FIRE Warning - In Flight](#) checklist.

Procedure Complete

• WARNING •

If the engine fails immediately after becoming airborne, abort on the runway if possible. In most cases, when the engine fails below 500 feet AGL, the landing should be made straight ahead, turning only to avoid obstructions. In such a case, lower the nose to maintain flying airspeed and establish a glide attitude. After establishing a glide for landing, perform as many of the checklist items as time permits.

• NOTE •

When determined that a forced landing is the safest option, a suitable landing site should be chosen as early as possible so that maximum time will be available to plan and execute the forced landing. While gliding, be aware that use of flaps will reduce glide distance. Flaps should not be selected until landing is assured. Land on the main gear and hold the nose wheel off the ground as long as possible.

Engine Failure On Takeoff - Low Altitude

1. Best Glide or Landing Speed 100 KIAS
2. Landing Gear A/R
3. Flaps A/R
4. Land straight ahead.

◆ If time permits:

- a. Engine Knob OFF
- b. Engine Button PRESS (MOMENTARY)
- c. CABIN PRESSURE DUMP Button PRESS
- d. GEN 1 and GEN 2 Switches OFF
- e. BAT 1 and BAT 2 Switches OFF

Procedure Complete

• **WARNING** •

If engine failure is accompanied by fuel fumes in the cockpit, or if internal engine damage is suspected, lift the guard on the ENGINE FIRE ACKNOWLEDGE switch, toggle the switch, and shut down the engine. Do not attempt a restart.

If the engine fails immediately after becoming airborne, abort on the runway if possible. In most cases, when the engine fails below 500 feet AGL, the landing should be made straight ahead, turning only to avoid obstructions. In such a case, lower the nose to maintain flying airspeed and establish a glide attitude. After establishing a glide for landing, perform as many of the checklist items as time permits.

• **NOTE** •

When determined that a forced landing is the safest option, a suitable landing site should be chosen as early as possible so that maximum time will be available to plan and execute the forced landing. While gliding, be aware that use of flaps will reduce glide distance. Flaps should not be selected until landing is assured. Land on the main gear and hold the nose wheel off the ground as long as possible.

Rejected Takeoff

- | | |
|-----------------------|--------------------------------|
| 1. Brakes..... | MAX. PILOT EFFORT W/O SKIDDING |
| 2. Thrust Lever | IDLE |

After airplane comes to a complete stop:

3. Brakes.....COOL DOWN

Procedure Complete

• **CAUTION** •

For maximum brake effectiveness, retract flaps, hold side stick control full back, and bring the airplane to a stop by smooth, even application of the brakes.

Do not set the parking brake following a Rejected Takeoff.

A cool down period and brake overheat inspection are required after high-energy braking events.

Refer to [Section 2: Limitations, Brakes](#).

• **NOTE** •

Use as much of the remaining runway as needed to safely bring airplane to a stop or to slow airplane sufficiently to turn off runway.

Refer to [Section 4: Normal Procedures, After Landing](#).

Engine Failure In Flight

- | | |
|--|------------------------|
| 1. Pitch for air start..... | AIRSPED 120 - 200 KIAS |
| 2. Turn toward possible landing site(s). | |
| 3. Oxygen Mask | DON, 100% |
| 4. MIC SELECT Switch | MASK MIC |

• **NOTE** •

Engine can be considered safe to attempt restart if no abnormal, loud noises or vibrations were noted prior to or during shutdown, N1 rotation is observed, and no exceedances were noted prior to shutdown.

(Continued on next page)

(Continued)

◆ If engine appears safe to attempt a restart:

- a. Perform **Air Start** checklist.

Procedure Complete

◆ If engine is unsafe to restart:

- a. Engine Knob..... OFF
- b. Engine ButtonPRESS (MOMENTARY)
- c. Perform **Emergency Landing w/o Power** checklist.

Procedure Complete

◆ If engine failure is accompanied by fuel fumes in the cockpit, or if internal engine damage is suspected:

- a. ENGINE FIRE ACKNOWLEDGE Switch.....LIFT GUARD, TOGGLE
- b. Shut down engine. Do not attempt a restart.
- c. Perform **Emergency Landing w/o Power** checklist.

Procedure Complete

• WARNING •

If all attempts to restart the engine fail and a forced landing is imminent, select a suitable landing site and prepare for landing. As forced landings on unimproved surfaces are not recommended, CAPS activation may be the safest option.

Refer to Section 3: Emergency Procedures, "CAPS Activation" checklist.

Refer to Section 10: Safety Information, "Cirrus Airframe Parachute System (CAPS)" for CAPS deployment scenarios and landing considerations.

Refer to Section 2: Limitations, "Oxygen" for oxygen requirements.

Uncontained Engine Failure (Rotor Burst in Flight)

1. Pitch for 120 KIAS (APPROX.)
2. Turn toward possible landing site(s).
3. Oxygen Mask DON, 100%
4. MIC SELECT Switch MASK MIC
5. ENGINE FIRE ACKNOWLEDGE Switch LIFT GUARD, TOGGLE
6. Left or Right PUSH TO DISCHARGE ButtonPUSH (REGARDLESS OF ARMED LIGHT)
7. Engine KnobOFF
8. Engine Button.....PRESS (MOMENTARY)
9. GEN 1 and GEN 2 Switches.....OFF
10. Perform [Emergency Landing w/o Power](#) checklist.

Procedure Complete

• **NOTE** •

This condition is identified by complete loss of thrust accompanied by the following:

1. Loud bangs, knocks, vibration, or other noise, or
2. Engine Fire Indication (CAS Warning and/or FIRE light), or
3. Fire Detector Fail (CAS Caution), or
4. Erratic engine indications, such as the following:
 - Indication failure/loss of indication
 - Low or no N1 or N2
 - Low fuel pressure
 - Low or no oil pressure
 - High ITT, fuel flow, or oil temperature

• **NOTE** •

Refer to [Section 2: Limitations, "Oxygen"](#) for oxygen requirements.

Loss of All Flight Displays

1. BAT 1 and BAT 2 Switches VERIFY ON
2. GEN 1 and GEN 2 Switches VERIFY ON
3. Land as soon as possible.

Procedure Complete

• NOTE •

BAT 2 is designed to power the Emergency Bus for at least 60 minutes.

FADEC NO DISPATCH faults will be displayed once normal power is restored. Faults can be cleared using the FADEC fault reset button.

FUEL VALVE #2 FAIL Caution will be displayed during normal tank AUTO selection since the secondary valve is not powered by emergency power.

Loss of Thrust Control

1. Shut down engine, if required.
2. Flaps A/R
3. Landing Gear A/R
4. Land as soon as practicable.

◆ If the thrust lever is stuck at, or near, the T/O detent:

- a. Turn toward nearest practical landing site.
- b. Engine Knob OFF
- c. Engine Button PRESS (MOMENTARY)
- d. Fly a [Flameout / Precautionary Approach](#).
- e. If necessary, consider [CAPS Activation](#).

Procedure Complete

(Continued on next page)

(Continued)

◆ If the thrust lever is stuck at, or near, the IDLE position, and straight and level flight cannot be maintained:

- a. Pitch for glide speed.
- b. Turn toward nearest practical landing site.
- c. Fly a [Flameout / Precautionary Approach](#).
- d. If necessary, consider [CAPS Activation](#).

Procedure Complete

• NOTE •

Refer to [Section 3: Emergency Procedures, "Flameout / Precautionary Approach"](#).

Loss of Reliable Airspeed Indication

- 1. Autopilot DISENGAGE
- 2. AOA Display ON
- 3. Use following guidance pertaining to phase of flight.

◆ Climb:

- a. AOA 0.25

• NOTE •

Airspeed is approximately 160 KIAS.

◆ Cruise:

- a. Power SET N1% PER
[Section 5: Performance Data, "Cruise Performance"](#)

◆ Descent:

- a. AOA 0.25

• NOTE •

Airspeed is approximately 160 KIAS.

(Continued on next page)

(Continued)

◆ Approach:

○ Gear UP:

(1) AOA0.35

• NOTE •

Airspeed is approximately 120 KIAS.

○ Gear DOWN, Flaps DOWN:

(1) AOA0.53

• NOTE •

Refer to V_{REF} Speeds table.

◆ Go Around:

a. AOA0.53

• NOTE •

Refer to V_{REF} Speeds table.

4. Land as soon as practicable.

Procedure Complete

Abnormal Engine Start

- | | |
|-----------------------|--------------------------------|
| 1. Engine Knob | OFF |
| 2. Engine Button..... | PRESS AND HOLD 15 - 30 SECONDS |

3. See [Section 2: Limitations, "Powerplant Limitations"](#) and [Section 2: Limitations, "Outside Air Temperature Limits"](#) in for corrective actions.

Procedure Complete

• NOTE •

An Abnormal Engine Start occurs when:

- there is a failure to accelerate after 30 seconds, or
- there is no N1 indication at 25% N2, or
- there is low oil pressure after start, or
- ITT exceeds limits (red line).

Air Start

1. Airspeed..... 120 - 200 KIAS
2. Altitude < 18,000 FT
3. Thrust Lever IDLE

Engine reset:

4. Engine Knob OFF
5. Engine Button PRESS (MOMENTARY)
6. N2 WAIT UNTIL < 24%

◆ If time permits:

- a. N2 WAIT UNTIL < 16%

Engine start:

7. Engine Knob RUN
8. Engine Button PRESS (MOMENTARY)

◆ If air start is successful:

- a. GEN 1 and GEN 2 Switches VERIFY ON
- b. Engine Instruments MONITOR
- c. Land as soon as practicable.

Procedure Complete

◆ If air start is unsuccessful:

- a. Engine Knob OFF
- b. Engine Button PRESS (MOMENTARY)
- c. GEN 1 and GEN 2 Switches OFF
- d. Perform [Emergency Landing w/o Power](#) checklist.

Procedure Complete

• CAUTION •

Probability of engine restart is greater when N2 < 16%.

Do not attempt a restart until N2 < 24%.

See [Section 2: Limitations, "Engine Start \(In flight\)"](#) for Engine Air Start envelope.

Smoke Removal

1. Oxygen Mask..... DON, EMER
2. Smoke Goggles (if equipped) DON
3. PAX OXY DEPLOY Switch..... ON
4. MIC SELECT SwitchMASK MIC
5. Instruct passenger(s) to don mask(s).
6. DEFOG Button ON
7. CABIN PRESSURE DUMP Button..... PRESS

• NOTE •

Autopilot Emergency Descent Mode (EDM) is disabled when the cabin dump switch is activated.

8. Perform **Emergency Descent** checklist as required.
9. BLEED Switch (below 14,000 feet) FRESH
10. ECS DISABLE SELECT
11. FIRE EXTINGUISHER.....A/R
12. All Other Switches (**except BAT 2**)..... OFF

◆ If setting switches off eliminates fire / fumes source and airplane is in night or IFR conditions:

- a. BAT 1 Switch..... ON
- b. GEN 1 and GEN 2 SwitchesA/R
- c. Required Systems..... ACTIVATE ONE AT A TIME
- d. Temperature Select..... COLD
- e. Panel Air Outlets OPEN
- f. Land as soon as possible.
- g. Oxygen MasksADJUST TO NORM IF ABLE AND BELOW 20,000 FEET

Procedure Complete

13. Land as soon as possible.
14. Oxygen MasksADJUST TO NORM IF ABLE AND BELOW 20,000 FEET

Procedure Complete

(Continued on next page)

(Continued)

• WARNING •

Regardless of smoke evidence, if there is no visual confirmation that fire has been extinguished following fire suppression and/or smoke evacuation, land as soon as possible.

The fire extinguisher should only be used in 2-second blasts, and additional shots should only be used if necessary to extinguish the fire. Inhalation of the complete discharge of the fire extinguisher may result in cardiotoxicity and/or anesthetic effects to the occupants. Occupants shall use emergency oxygen masks during and after fire extinguisher use.

• NOTE •

Refer to [Section 2: Limitations, "Oxygen"](#) for oxygen requirements.

Cabin Fire In Flight

- | | |
|-------------------------------------|-----------|
| 1. Oxygen Mask | DON, EMER |
| 2. Smoke Goggles (if equipped)..... | DON |
| 3. PAX OXY DEPLOY Switch..... | ON |
-
- | | |
|----------------------------------|--|
| 4. MIC SELECT Switch | MASK MIC |
| 5. BAT 1 Switch | OFF |
| 6. GEN 1 and GEN 2 Switches..... | OFF |
| 7. Fire Extinguisher | A/R |
| 8. Oxygen Mask | ADJUST TO NORM IF ABLE AND BELOW 20,000 FEET |

◆ If airflow is not sufficient to clear smoke or fumes:

- a. Perform [Smoke Removal](#) checklist.

Procedure Complete

(Continued on next page)

(Continued)

• WARNING •

The fire extinguisher should only be used in 2-second blasts, and additional shots should only be used if necessary to extinguish the fire. Inhalation of the complete discharge of the fire extinguisher may result in cardiotoxicity and/or anesthetic effects to the occupants. Occupants shall use emergency oxygen masks during and after fire extinguisher use.

• NOTE •

With BAT and GEN switches OFF, engine will continue to run. However, no electrical power will be available.

If the airplane is in IMC, turn GEN 1, GEN 2, and BAT 1 switches OFF. Power from Battery 2 will power all the loads on the Emergency Bus for at least 60 minutes. If airplane is in day VFR conditions and turning off the GEN switches eliminated the fire situation, leave the GEN switches OFF.

If the cause of the fire is readily apparent and accessible, use the fire extinguisher to extinguish flames and land as soon as possible.

If required to re-activate systems, pause several seconds between activating each system to isolate malfunctioning system. Continue flight to earliest possible landing with malfunctioning system OFF. Activate only the minimum amount of equipment necessary to complete a safe landing.

Refer to [Section 2: Limitations, "Oxygen"](#) for oxygen requirements.

Ditching

1. Radio..... TRANSMIT (ATC OR 121.5 MHZ) MAYDAY WITH LOCATION & INTENTIONS
2. TransponderSQUAWK 7700
3. ELT..... ON
4. Landing Gear UP
5. Flaps..... 100% (RECOMMENDED)
6. CABIN PRESSURE DUMP Button.....PRESS
7. AirspeedV_{REF}
8. Rate of Descent.....200 - 300 FEET PER MINUTE

(Continued on next page)

(Continued)

- 9. Align approach parallel to swells and attempt to touchdown along a wave crest or behind it.
 - ◆ If surface winds are strong, or waves rough and irregular:
 - a. Ditch into the wind on the backside of a wave.
- 10. Pitch attitude at water contact.....SLIGHTLY HIGHER THAN NORMAL LANDING ATTITUDE
- 11. Airspeed & Rate of Descent REDUCE TO MINIMUM, ABOVE STALL WARNING
- 12. Thrust Lever IDLE
- 13. Water Touchdown CONTACT ON CREST OF SWELL, PARALLEL TO MAJOR SWELL
- 14. AirplaneEVACUATE

• WARNING •

Evacuate via either egress window or main cabin door. However, main cabin door evacuation shall be done only via the upper cabin door. To avoid flooding the airplane, do not open lower cabin door.

- 15. Flotation Devices (if equipped) INFLATE WHEN CLEAR OF AIRPLANE

Procedure Complete

• NOTE •

If available, life preservers should be donned and the life raft prepared for immediate evacuation upon touchdown.

Emergency Descent

- | |
|--|
| 1. AP DISCPRESS AND RELEASE |
| 2. Thrust Lever IDLE |
| 3. Pitch -20° (APPROX.) |
| 4. Airspeed.....INCREASE TO V_{MO} (250 KIAS) / M_{MO} (0.53 Mach) MAXIMUM |

Procedure Complete

• CAUTION •

If significant turbulence is expected, do not descend at indicated airspeeds greater than V_O .

Emergency Landing w/o Power

1. Airplane ControlMAINTAIN
2. Pitch for glide speed.
3. Turn toward nearest practical landing site.
4. Radio TRANSMIT (ATC OR 121.5 MHZ) MAYDAY WITH LOCATION & INTENTIONS
5. TransponderSQUAWK 7700

◆ If landing site is improved:

- a. Landing GearDOWN
- b. FlapsA/R
- c. Seat Belt(s)SECURED
- d. CABIN PRESSURE DUMP ButtonPRESS
- e. TouchdownNORMAL TECHNIQUE

• WARNING •

Refer to Section 3: Emergency Procedures, "Flameout / Precautionary Approach" checklist.

If a safe landing is not assured by the High-Key/Low-Key approach, consider CAPS procedures.

After landing:

- f. BAT 1 and BAT 2 SwitchesOFF
- g. Evacuate airplane.

Procedure Complete

(Continued on next page)

(Continued)

- ◆ If landing site is unimproved:
 - a. Landing Gear A/R
 - b. Flaps A/R WITHIN GLIDING DISTANCE
 - c. Seat Belt(s) SECURED
 - d. CABIN PRESSURE DUMP Button.....PRESS
 - e. Touchdown..... MINIMUM CONTROLLABLE AIRSPEEDAfter landing:
 - f. BAT 1 and BAT 2 SwitchesOFF
 - g. Evacuate airplane.

Procedure Complete

• WARNING •

If all attempts to restart the engine fail and a forced landing is imminent, select a suitable landing site and prepare for landing. As forced landings on unimproved surfaces are not recommended, CAPS activation may be the safest option.

Refer to [Section 3: Emergency Procedures, "CAPS Activation"](#) checklist.

Refer to [Section 10: Safety Information, "Cirrus Airframe Parachute System \(CAPS\)"](#) for CAPS deployment scenarios and landing considerations.

When determined that a forced landing is the safest option, a suitable landing site should be chosen as early as possible so that maximum time will be available to plan and execute the forced landing. While gliding, be aware that use of flaps will reduce glide distance. Flaps should not be selected until landing is assured. Land on the main gear and hold the nose wheel off the ground as long as possible.

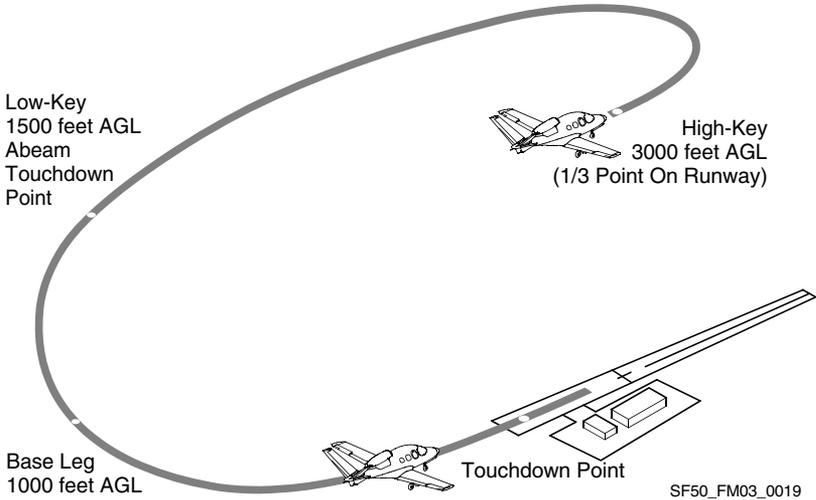
Flameout / Precautionary Approach

POSITION	ALTITUDE	AIRSPEED
High-Key	3000 ft AGL	115-130 KIAS
Low-Key	1500 ft AGL	120 KIAS
Base Leg	1000 ft AGL	120 KIAS

• NOTE •

Gear down and flaps when landing is assured.
Airspeed 110 KIAS (minimum) until short final.

Figure 3-2: Flameout / Precautionary Approach



Landing Without Aileron Control

1. Flaps 50%
2. Trim V_{REF}
3. Thrust Lever A/R
4. Use rudder as necessary to align the aircraft with the runway.

Procedure Complete

Landing Without Elevator Control

1. Use manual trim wheel to control pitch attitude.
2. Flaps 50%
3. Make small pitch and power changes and prepare for landing configuration early.

After touchdown and after the nose wheel is on the ground:

4. Brakes A/R

Procedure Complete

Landing Without Rudder Control

• *NOTE* •

Avoid crosswind conditions if possible.

1. Touchdown ACCOMPLISH
2. Maintain directional control on ground, using brakes and ailerons as required.

Procedure Complete

CAPS Activation

• **WARNING** •

The recommended CAPS activation speed is one that is less than 135 KIAS and 145 KTAS, whichever is lower, which will result in immediate parachute deployment once the CAPS handle is pulled. It is important for the operator to make all reasonable efforts to slow to the minimum possible airspeed prior to CAPS activation. This is necessary to minimize loads on the airframe and aircraft occupants and increase the chances of a successful outcome.

If CAPS is activated at speeds higher than 135 KIAS and 145 KTAS, whichever is lower, the system is designed to delay deployment of the parachute until the autopilot slows the airplane to the parachute deployment envelope. Do not attempt to overpower or disconnect the autopilot. The time required for the autopilot to slow the airplane from 250 KIAS to the parachute deployment airspeed has been demonstrated to be approximately 15-24 seconds. Flying at a slower airspeed when CAPS is activated will reduce this time.

If the airspeed is still above the maximum deployment speed approximately 30 seconds after CAPS activation, the system will automatically deploy the parachute.

CAPS deployment will likely result in damage or loss to the airframe and possible injury to the aircraft occupants. Seat belts must be worn at all times.

Jerking or rapidly pulling the CAPS activation handle will greatly increase the pull forces required to activate the rocket. Use a firm and steady pulling motion – a “chin-up” type pull ensures successful activation.

1. Activation Handle....PULL DOWN STEADILY WITH BOTH HANDS

• **NOTE** •

- Wait for plane to stabilize beneath canopy before proceeding.
2. Oxygen Mask (above 15,000 feet)..... DON, 100%
 3. PAX OXY DEPLOY Switch..... ON
 4. MIC SELECT SwitchMASK MIC
 5. Instruct passengers to don oxygen masks.

(Continued on next page)

(Continued)

- 6. Passenger Oxygen ENSURE PASSENGERS ARE RECEIVING OXYGEN
- 7. ENGINE FIRE ACKNOWLEDGE Switch LIFT GUARD, TOGGLE
- 8. ELT VERIFY ON
- 9. Landing Gear UP
Turn the BAT/GEN Switches OFF after completing any necessary radio communications.
- 10. BAT/GEN Switches (below 15,000 ft) OFF
- 11. Loose Items SECURE
- 12. Seat Belts TIGHTEN
- 13. Assume emergency landing body position.

After airplane comes to a complete stop:

- 14. Evacuate quickly and move upwind, well clear of the aircraft and parachute.

Procedure Complete

• NOTE •

In the event the cabin remains pressurized at touchdown, the egress hatch may not be removable.

After touchdown with the landing gear up, the lower half of the clamshell cabin door will not completely open with the belly of the aircraft resting on the ground.

Refer to [Section 2: Limitations](#), "Oxygen" for oxygen requirements.

Emergency Ground Egress

1. Engine Knob OFF
2. Engine Button..... PRESS (MOMENTARY)
3. BAT 1 and BAT 2 Switches OFF
4. Parking BrakeSET
5. Egress aircraft through exits.

Procedure Complete

• **WARNING** •

While exiting the airplane, make sure evacuation path is clear of aircraft and other hazards.

• **NOTE** •

In instances when the engine cannot be shut off, and has to be left running, set the parking brake prior to evacuating the airplane.

Pitch Trim Runaway / Failure

Red PTRM annunciator on PFD.

1. Grip side stick firmly.
2. AP DISC Button..... PRESS AND HOLD
3. Pitch Trim A/R (MANUAL TRIM WHEEL)
4. PITCH TRIM CB (A1)..... PULL
5. AP DISC Button..... RELEASE

Procedure Complete

Roll Trim Runaway / Failure

1. Grip side stick firmly.
2. AP DISC Button..... PRESS AND HOLD
3. Airspeed REDUCE (A/R TO MINIMIZE FORCE)
4. ROLL TRIM CB (A2)..... PULL
5. AP DISC Button..... RELEASE

Procedure Complete

Jammed Elevator Trim Tab

◆ During Cruise:

- a. Thrust Lever..... A/R
- b. Landing Gear A/R
- c. AirspeedMAINTAIN LAST TRIMMED AIRSPEED OR A/R
- d. Flaps UP OR A/R FOR CONDITIONS
- e. Land as soon as practicable.

Procedure Complete

◆ During Takeoff or Go-Around:

- a. Pitch and Thrust ...MAINTAIN ALTITUDE AND FLYING SPEED AS REQUIRED

• NOTE •

Expect extremely high stick forces.

When safely airborne and clear of obstacles:

- b. FlapsPLACE IN POSITION THAT JAM OCCURRED

• NOTE •

100% flaps may alleviate excessive nose-up tendencies following a normal takeoff.

- c. Landing Gear DO NOT RETRACT
- d. Land as soon as practicable.

Procedure Complete

AFCS Alerts

For more information on AFCS alerts, refer to SF50 Garmin Cockpit Reference Guide.

Emergency CAS Procedures

AUTO DESCENT Warning

AUTO DESCENT

Aircraft descending to 14,000 ft.

• NOTE •

Aircraft will descend to 14,000 feet, level off for 4 minutes, then descend to 12,500 feet.

To cancel auto descent, disconnect the autopilot:

- a. AP DISC ButtonPRESS AND RELEASE

Procedure Complete

CABIN ALTITUDE HIGH Warning

CABIN ALTITUDE HIGH

Cabin high altitude detected.

1. Oxygen Mask..... DON, 100%
2. BLEED Switch VERIFY BLEED
3. MIC SELECT SwitchMASK MIC
4. Perform **Emergency Descent** checklist as required.
5. Passenger Oxygen ENSURE PASSENGERS ARE RECEIVING OXYGEN
- ◆ If passenger oxygen masks do not deploy:
 - a. PAX OXY DEPLOY Switch ON
6. TransponderSQUAWK 7700

Procedure Complete

• NOTE •

Refer to [Section 2: Limitations, "Oxygen"](#) for oxygen requirements.

CABIN DIFF PRESSURE HIGH Warning

CABIN DIFF PRESSURE HIGH

Cabin differential pressure is too high.

1. Oxygen Mask DON, 100%
2. BLEED Switch.....FRESH
3. MIC SELECT Switch MASK MIC
4. Perform [Emergency Descent](#) checklist as required.

◆ If message persists:

- a. Thrust Lever..... REDUCE
- b. CABIN PRESSURE DUMP Button.....PRESS

Procedure Complete

• NOTE •

Autopilot Emergency Descent Mode (EDM) is disabled when the cabin dump switch is activated.

Refer to [Section 2: Limitations, "Oxygen"](#) for oxygen requirements.

CABIN DUMP Warning

CABIN DUMP

Cabin pressure dump activated.

• NOTE •

If the CABIN PRESSURE DUMP Button was inadvertently activated, it should be deactivated immediately.

Autopilot Emergency Descent Mode (EDM) is disabled when the cabin dump switch is activated.

◆ If message is accompanied by CABIN ALTITUDE HIGH Warning:

- a. Perform [CABIN ALTITUDE HIGH Warning](#) checklist.

Procedure Complete

CAPS ACTIVATED Warning

CAPS ACTIVATED

CAPS sequence has been activated.

◆ If message is displayed due to CAPS activation (pulling of CAPS Activation Handle):

1. Refer to [CAPS Activation](#) procedure.

Procedure Complete

• WARNING •

Do not press and hold AP DISC Button if CAPS handle has been pulled; if handle has been pulled, parachute will deploy regardless and pressing AP DISC will prevent the aircraft from adequately slowing prior to deployment.

◆ If message is displayed but CAPS handle is NOT pulled:

- a. AP DISC ButtonPRESS AND HOLD 5 SECONDS

Procedure Complete

• WARNING •

CAPS AP mode will be unavailable for remainder of flight until next power cycle. If CAPS activation is necessary, the pilot must manually reduce airspeed below 135 KIAS and 145 KTAS, whichever is lower, to deploy the parachute.

Refer to [Section 3: Emergency Procedures, "CAPS Activation"](#) procedure.

DOOR OPEN BAGGAGE Warning

DOOR OPEN BAGGAGE

Baggage door is open.

◆ If in flight:

- a. Land as soon as practicable.

Procedure Complete

◆ If on ground:

- a. Verify baggage door is closed.

Procedure Complete

DOOR OPEN MAIN Warning

DOOR OPEN MAIN

Main door is open.

◆ If in flight:

- a. Airplane Control MAINTAIN
- b. Airspeed LIMIT TO 150 KIAS
- c. Altitude AS LOW AS PRACTICAL
- d. Land as soon as practicable.

Procedure Complete

◆ If on ground:

- a. Verify main door is closed.

Procedure Complete

• **WARNING** •

Stay clear of door if malfunction is believed to have occurred. Ensure seat belts are tightened and secured in order to avoid extraction from aircraft in the event of rapid door opening/decompression.

Maneuver with care, avoiding unnecessary accelerations and abrupt maneuvers.

• **NOTE** •

If open door is discovered on takeoff roll, abort takeoff if sufficient runway remains. If already airborne, do not allow efforts to close the door interfere with the primary task of maintaining control of the airplane.

EMER BUS VOLTS Warning

EMER BUS VOLTS

Operating on emergency power.

◆ If GENERATOR 1 CURRENT OR GENERATOR 2 CURRENT CAS is also displayed:

- a. Perform GENERATOR 1 CURRENT OR GENERATOR 2 CURRENT procedure prior to performing remainder of EMER BUS VOLTS procedure.

◆ If GEN 1 and GEN 2 are not within limits:

- a. GEN 1 Switch OFF
- b. GEN 2 Switch OFF
- c. Interior Lights OFF
- d. BAT 1 Switch OFF
- e. BAT 2 Switch VERIFY ON

• NOTE •

With GEN 1, GEN 2, and BAT 1 OFF, the autopilot and the displays on the MFD and GTC 3 will be unavailable.

- f. Land as soon as possible.

Procedure Complete

• NOTE •

BAT 2 is designed to power the Emergency Bus for at least 60 minutes.

FADEC NO DISPATCH faults will be displayed once normal power is restored. Faults can be cleared using the FADEC fault reset button.

FUEL VALVE #2 FAIL Caution will be displayed during normal tank AUTO selection since the secondary valve is not powered by emergency power.

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(Continued)

• NOTE •

With Battery 1, Generator 1, and Generator 2 switched off, power will be removed from the entire main bus, including the hydraulic powerpack. The following equipment will also be inoperative:

- Stick Pusher (Perform [STICK PUSHER FAIL Caution](#) checklist)
- Landing gear control (To lower landing gear, perform [Alternate Gear Extension](#) checklist)
- Flaps control (Perform [Flaps Inoperative Approach/Landing](#) checklist)
- Cabin pressure control (Perform [CABIN PRESSURE CTRL FAIL Caution](#) checklist)
- Engine start/shutdown control (To shutdown engine, perform [Abnormal Engine Shutdown On Ground](#) checklist)
- Yaw SAS (Perform [YAW SAS SERVO Caution](#) checklist)
- Bleed air shutoff and ECS (such as AC Compressor and Fans)
- Redundant equipment (such as Fuel Valve 2, AHRS 2 / ADC 2, Right Pitot Heat, COM 2, and GPS 2)
- Non-essential equipment (such as Electric Fuel Pump, Stick Shaker, Avionics Fan, Anti-collision Lights, Landing Lights, IFE USB, Transponder1, Navigation Lights, Fuel Level, Oil Pressure, Intercom, and Passenger Oxygen)
- Optional equipment (such as Traffic/TCAS, Transponder2, Radar, EVS, ADS-B/UAT, 115VAC PWR, Iridium WIFI Data, DME, XM Data, and Yaw Damper)
- Autopilot Servos, Roll Trim, and electric Pitch Trim
- Ice Protection (Engine, Windshield, WING/STAB, Ice Light, and AOA Heat)

Emergency Bus Circuit Breakers

CIRCUIT BREAKER	CIRCUIT
BATT1 HOT BUS	
CONV LIGHTS	Interior Lights Controller
CAPS A	Primary CAPS
COPILOT CIRCUIT BREAKER PANEL (ROW D)	
FUEL VALVE 1 (D5)	Fuel Control Valve 1
LANDING GEAR IND (D6)	L MLG WOW Sensor
	R MLG WOW Sensor
	L MLG Down Sensor
	L MLG Locked Sensor
	R MLG Down Sensor
	R MLG Locked Sensor
	NLG Down Sensor
NLG Locked Sensor	
STANDBY ATT (D2)	ADAHRS 3 (MD302)
GTC 1A (D3)	GTC 1 (pwr A)
GEA (D4)	RDM
	GEA 71
CAPS B (D1)	Secondary CAPS
PILOT CIRCUIT BREAKER PANEL (ROW A)	
CABIN PRESS 2 (A10)	Manual Dump SW & Controller Solenoid Pwr
AP CTRL (A7)	AP Controller (GMC 707)
FIRE PROT 1 (A9)	Fire Bottle 1
	Fire Prot. CCA LED
CREW LIGHTS (A11)	Task Light, Copilot
	Task Light, Pilot
PROBE HT LEFT (A8)	Left Pitot Heat

CIRCUIT BREAKER	CIRCUIT
PILOT CIRCUIT BREAKER PANEL (ROW B)	
FIRE PROT 2 (B9)	Fire Bottle 2
	Fuel Shutoff Valve
AHRS 1 (B10)	AHRS 1 (GRS79)
ADC 1 (B11)	GDC 1
GTC 2A (B5)	GTC 2 (pwr A)
GPS NAV GIA 1 (B6)	GIA 1 MAIN
PFD A (B8)	PFD (pwr A)
COM 1 (B7)	GIA 1 COM

ENGINE FIRE Warning - In Flight

ENGINE FIRE

Engine fire detected.

1. Thrust Lever..... IDLE
 2. Pitch for 120 KIAS (APPROX.)
 3. Wait 15 seconds.
- ◆ If ENGINE FIRE Warning remains on, or secondary fire indications are present – probable engine fire:
- a. ENGINE FIRE ACKNOWLEDGE Switch.....LIFT GUARD, TOGGLE
 - b. Left or Right PUSH TO DISCHARGE Button.....PUSH
 - c. Oxygen Mask..... DON, 100%
 - d. MIC SELECT Switch.....MASK MIC
 - e. Engine Knob..... OFF
 - f. Engine ButtonPRESS (MOMENTARY)
 - g. GEN 1 and GEN 2 Switches OFF
 - h. Perform [Emergency Landing w/o Power](#) checklist.

Procedure Complete

◆ If ENGINE FIRE Warning extinguishes and secondary fire indications are not present – probable bleed leak:

- a. Thrust Lever REDUCE (MINIMUM REQUIRED)
- b. Land as soon as possible.

If time permits:

- c. BLEED Switch FRESH
- d. Oxygen Masks DON, 100%
- e. L / R MIC Switches.....MASK MIC
- f. Inlet Anti-Ice OFF
- g. Exit icing conditions.
- h. Prepare for Emergency Descent, Loss of Cabin Pressure.

Procedure Complete

(Continued on next page)

(Continued)

• NOTE •

An actual engine fire may be accompanied by abnormal or failing engine indications, erratic or rough engine operation, visible flames, or smoke trail from aircraft.

Secondary fire indications include N1 / N2 fluctuation, generator failure, or erratic or failing engine indications.

A sustained fire may cause the structure to be compromised.

Structural failure may cause significant injury or loss of life.

Limiting speed, if possible, and avoiding high maneuvering loads may reduce the possibility of structural failure.

Refer to [Section 2: Limitations](#), "Oxygen" for oxygen requirements.

ENGINE FIRE Warning - On Ground

ENGINE FIRE

Engine fire detected.

1. ENGINE FIRE ACKNOWLEDGE Switch LIFT GUARD, TOGGLE
2. Left or Right PUSH TO DISCHARGE Button PUSH
3. Engine Knob OFF
4. Engine Button PRESS (MOMENTARY)
5. Evacuate airplane.

Procedure Complete

• NOTE •

Engine Knob OFF inhibits Electric Fuel Pump.

ENGINE START N1 Warning

ENGINE START N1

N1 is not indicating rotation.

1. ENGINE START N1 ABORT START

◆ If in flight:

- a. Increase airspeed and retry start procedure.

Procedure Complete

◆ If on ground:

- b. Contact Cirrus for disposition.

Procedure Complete

EXTERNAL POWER CONNECTED Warning - On Ground

EXTERNAL POWER CONNECTED

External power is connected, set park brake.

1. Parking Brake or Brakes..... SET OR HOLD
2. Disconnect external power.

Procedure Complete

• *NOTE* •

Setting parking brake will extinguish CAS warning.

FADEC CTRL DEGRADED Warning

FADEC CTRL DEGRADED

Reference FADEC Fault Code Messages.

1. FADEC Reset via MFD Controller:
 - a. From Home, touch Aircraft Systems.
 - b. Touch the FADEC Stale Fault Reset Button.

◆ If message extinguishes:

- a. No further action required.

Procedure Complete

◆ If message persists:

• **WARNING** •

Possible inaccurate automatic power setting. The engine may exceed or go below allowable engine operating parameters which could ultimately result in loss of thrust. Avoid fast thrust lever movement or rapid thrust setting changes.

○ If in flight:

(1) ENG. IPS Switch ON

(a) Allow sufficient time for ice to clear from inlet probes.

(2) FADEC Reset via MFD Controller:

(a) From Home, touch Aircraft Systems.

(b) Touch the FADEC Stale Fault Reset Button.

(3) Land as soon as possible.

Procedure Complete

○ If on ground:

(1) Do not dispatch.

Procedure Complete

FADEC NO DISPATCH Warning - On Ground

FADEC NO DISPATCH

Reference FADEC Fault Code Messages.

1. FADEC Reset via MFD Controller:
 - a. From Home, touch Aircraft Systems.
 - b. Touch the FADEC Stale Fault Reset Button.

◆ If message extinguishes:

- a. No further action required.
Procedure Complete

◆ If message persists:

- a. Do not dispatch.
Procedure Complete

FLAPS CAL MODE Warning - On Ground

FLAPS CAL MODE

Do not dispatch, flaps system needs service.

1. Do not dispatch.
Procedure Complete

FLAPS ICE Warning

FLAPS ICE

Full flaps prohibited in icing conditions.

1. Flaps..... SET UP OR 50%

Procedure Complete

• WARNING •

Maximum flap deflection in icing conditions is limited to 50%.

• NOTE •

If pilot can verify airframe is not ice contaminated, then IPS stall offset reset may be used to allow extension of flaps beyond 50%.

FUEL FILTER BYPASS Warning

FUEL FILTER BYPASS

Fuel filter diff press too high, bypass impending.

1. Thrust LeverREDUCE (MINIMUM REQUIRED)
2. Land as soon as possible.

Procedure Complete

• **WARNING** •

Plan for possible imminent engine failure.

Refer to Section 3: Emergency Procedures, "Engine Failure In Flight" procedure for more information.

FUEL IMBALANCE Warning

FUEL IMBALANCE

Fuel imbalance is ≥ 50 gallons.

• **NOTE** •

If no roll trim imbalance exists when autopilot is disconnected, fuel imbalance or fuel quantity indication may be erroneous.

1. Fuel Quantity/Fuel Remaining.....COMPARE
 - a. Refer to EIS for fuel quantity (based on level sensors).
2. Fuel Control Switch FULLEST TANK
3. Airspeed..... MAINTAIN FOR ADEQUATE ROLL CONTROL

◆ If message extinguishes or imbalance decreases:

- a. Continue flight.
- b. Fuel Control Switch AUTO

Procedure Complete

◆ If message persists or imbalance increases:

- a. Land as soon as possible.

Procedure Complete

FUEL LOW LEFT/RIGHT/TOTAL Warning

FUEL LOW LEFT
FUEL LOW RIGHT
FUEL LOW TOTAL

Left fuel tank is nearly empty, OR
Right fuel tank is nearly empty, OR
Total fuel quantity is low.

1. Fuel Quantity..... CHECK
2. Fuel Control Switch..... FULLEST TANK
3. Land as soon as possible.
4. Avoid excessive pitch attitudes and lateral acceleration to prevent uncovering the fuel inlet lines and possible fuel flow interruption.

Procedure Complete

• NOTE •

Warning occurs when total fuel quantity \leq 25 U.S. gallons (95 L),
OR Left or Right fuel tank \leq 5 U.S. gallons (19 L).

FUEL PRESSURE LOW Warning

FUEL PRESSURE LOW

FDU fuel inlet pressure is low.

1. Fuel Control Switch SWITCH TO OTHER TANK
 - a. Refer to EIS for current tank selection (AUTO selection shown in white; LEFT/RIGHT selection shown in cyan).

◆ If message extinguishes:

- a. Continue flight.
- b. Fuel Quantity MAINTAIN BALANCE

Procedure Complete

◆ If message persists:

- a. Land as soon as possible.

Procedure Complete

• *NOTE* •

Selecting LEFT/RIGHT will control electric pump to ON. Pump latch is removed when cycling to LEFT/RIGHT tank selection, then back to AUTO.

To maintain fuel balance, monitor fuel quantity and alternate LEFT/RIGHT selection as needed.

FUEL TEMP LOW Warning

FUEL TEMP LOW

Fuel temperature below operating limit.

1. Fuel Temperature (L / R) CHECK

◆ If in flight:

- a. Climb or descend to warmer conditions.

• NOTE •

Change altitude to increase OAT and increase fuel temperature.
Due to temperature inversion, warmer temperatures may be at a
higher altitude.

- If message extinguishes:

(1) Fuel Temperature MONITOR
Procedure Complete

- If message persists:

(1) Land as soon as practicable.
Procedure Complete

◆ If on ground:

- a. Warm aircraft to increase fuel temperature.
Procedure Complete

FUEL VALVES BOTH FAIL Warning

FUEL VALVES BOTH FAIL

Both fuel control valves have failed.

1. Fuel Quantity CHECK
2. Airspeed..... MAINTAIN FOR ADEQUATE ROLL CONTROL
3. Land as soon as possible.

Procedure Complete

• *NOTE* •

Simultaneously failed valves will cause a fuel imbalance which will increase with continued flight.

If both fuel control valves fail, they will remain in the last commanded position.

GENERATOR 1 CURRENT Warning

GENERATOR 1 CURRENT

Generator 1 current is too high.

1. GEN 1 Switch OFF
2. GCU Reset via MFD Controller:
 - a. From Home, touch Aircraft Systems.
 - b. Touch the GCU Reset Button.
3. ECS DISABLE SELECT
4. GEN 1 Switch ON

◆ If message extinguishes:

- a. ECS DISABLE DESELECT

Procedure Complete

◆ If message persists:

- a. GEN 1 Switch OFF
- b. BAT 1 Switch..... OFF
- c. Land as soon as practicable, avoiding IMC or night flight as able (reduced power redundancy).

Procedure Complete

• NOTE •

With Battery 1 and Generator 1 switched off, power will be removed from the entire main bus, including the hydraulic powerpack. The following equipment will also be inoperative:

- Landing gear control (to lower landing gear, perform [Alternate Gear Extension](#) checklist)
- ECS (such as AC Compressor and Fans)
- Redundant equipment (such as Fuel Valve 2 and AHRS 2 / ADC 2)
- Non-essential equipment (such as Electric Fuel Pump, Stick Shaker, Yaw SAS, Avionics Fan, Nose Landing Lights, and IFE USB)
- Optional equipment (such as Traffic/TCAS, Transponder2, Radar, EVS, 115VAC PWR, and Iridium WIFI Data)

GENERATOR 1 OVERVOLTAGE Warning

GENERATOR 1 OVERVOLTAGE

Generator 1 voltage is high.

1. GEN 1 Switch.....OFF
2. GCU Reset via MFD Controller:
 - a. From Home, touch Aircraft Systems.
 - b. Touch the GCU Reset Button.
3. ECS DISABLE..... SELECT
4. GEN 1 Switch..... ON

◆ If message extinguishes:

- a. ECS DISABLEDESELECT

Procedure Complete

◆ If message persists:

- a. GEN 1 SwitchOFF
- b. BAT 1 SwitchOFF
- c. Land as soon as practicable, avoiding IMC or night flight as able (reduced power redundancy).

Procedure Complete

• NOTE •

With Battery 1 and Generator 1 switched off, power will be removed from the entire main bus, including the hydraulic powerpack. The following equipment will also be inoperative:

- Landing gear control (to lower landing gear, perform [Alternate Gear Extension](#) checklist)
- ECS (such as AC Compressor and Fans)
- Redundant equipment (such as Fuel Valve 2 and AHRS 2 / ADC 2)
- Non-essential equipment (such as Electric Fuel Pump, Stick Shaker, Yaw SAS, Avionics Fan, Nose Landing Lights, and IFE USB)
- Optional equipment (such as Traffic/TCAS, Transponder2, Radar, EVS, 115VAC PWR, and Iridium WIFI Data)

Main Bus Circuit Breakers

CIRCUIT BREAKER	CIRCUIT
PILOT CIRCUIT BREAKER PANEL (ROW B)	
BLEED AIR FLOW CTRL (B2)	Bleed Air Flow Control Valve
STICK SHAKER (B3)	Stick Shaker Motor
LANDING GEAR HYD (B4)	Landing Gear Hydraulics Power Control
PILOT CIRCUIT BREAKER PANEL (ROW C)	
PFD B GTC 1B (C8)	GTC-1 Secondary, PFD Secondary
MFD B GTC 2B (C9)	MFD-Secondary, GTC-2 Secondary
FUEL PUMP CTRL (C10)	Fuel Control Panel
IGNITER 1 (C11)	Igniter 1, Ignition Control Panel
COPILOT CIRCUIT BREAKER PANEL (ROW F)	
YAW SAS (F8)	Yaw Servo
IFE CTRL (F7)	Convenience Power Relay
IRIDIUM WIFI DATA (F6)	Wi-Fi Datalink, Iridium Satellite
AHRS 2 ADC 2 (F5)	AHRS 2, ADC 2
FUEL VALVE 2 (F2)	Fuel Control Valve (FCV) 2
AVIONICS FAN (F1)	Avionics Equipment Fan In Console

CIRCUIT BREAKER	CIRCUIT
AFT CIRCUIT BREAKER PANEL (ROW K)	
IFE USB (K1)	In-Flight Entertainment
FADEC PANEL (K2)	FADEC A Maintenance Panel, FADEC B Maintenance Panel
TRAFFIC (K3)	TCAS-1
DME (K4)	DME
FADEC B (K5)	Engine Control Electronics
XPONDER 2 (K6)	Transponder 2
PAX LIGHTS LIGHT CTRL (K7)	Passenger task lights
AFT CIRCUIT BREAKER PANEL (ROW L)	
115 VAC PWR (L12)	DC-AC Inverter
ECS BOOST FAN (L1)	ECS Booster Fan
ECS GROUND FAN (L2)	ECS Ground Fan
NOSE CIRCUIT BREAKER PANEL (ROW M)	
NOSE LAND LIGHT (M2)	Nose Landing Light
RADAR (M3)	Weather Radar
EVS (M4)	Enhanced Vision System
AC INLET DOOR (M6)	AC Door Actuator
ROCKET WARMER (M7)	CAPS Rocket Warmer

GENERATOR 2 CURRENT Warning

GENERATOR 2 CURRENT

Generator 2 current is too high.

1. GEN 2 Switch CYCLE
2. GEN 2 Amps.....CHECK WITHIN LIMITS

◆ If GEN 2 amps are within limits:

- a. No further action required.

Procedure Complete

◆ If GEN 2 amps are still not within limits:

- a. GEN 2 Switch OFF

• NOTE •

GEN 1 will support GEN 2 electrical loads.

- b. Land as soon as practicable.

Procedure Complete

GENERATOR 2 OVERVOLTAGE Warning

GENERATOR 2 OVERVOLTAGE

Generator 2 voltage is high.

1. GEN 2 Switch CYCLE

◆ If message persists:

- a. GEN 2 Switch OFF

• NOTE •

GEN 1 will support GEN 2 electrical loads.

- b. Land as soon as practicable.

◆ If message extinguishes:

- a. No further action required.

Procedure Complete

• NOTE •

Generator 2 voltage > 32 V.

ITT Warning

ITT

ITT limits exceeded.

◆ If in flight:

- a. Thrust Lever..... REDUCE
- b. ITTMONITOR

○ If message persists:

- (1) Land as soon as practicable.

Procedure Complete

◆ If on ground:

- a. Shut down engine. Do not dispatch.

Procedure Complete

LDG GEAR IS UP Warning

LDG GEAR IS UP

Landing gear is not down and locked for landing.

◆ If in flight:

- a. Landing Gear..... CHECK DOWN

○ If message persists:

- (1) Perform [Alternate Gear Extension](#) checklist.

Procedure Complete

◆ If on ground:

- a. Do not taxi.

- b. Landing Gear..... CHECK DOWN

Procedure Complete

• **NOTE** •

This CAS message is inhibited at altitudes and speeds where the aircraft landing gear warning system (as designed) has determined that airspeed and/or altitudes are not within normal parameters to require the landing gear to be down.

The landing gear DOWN / LOCK / WOW sensors are powered through the EMER BUS and the LANDING GEAR IND CB.

LDG GEAR SELECTED UP Warning

LDG GEAR SELECTED UP

Ldg gear should be selected down while on ground.

◆ If on ground:

- a. Do not taxi.
- b. Landing Gear SELECT DOWN

Procedure Complete

◆ If in flight:

- a. Disregard.

Procedure Complete

• NOTE •

This CAS message is displayed when the landing gear handle is in the UP position and the aircraft incorrectly indicates it is on the ground.

This CAS message may also indicate a possible WOW sensor failure.

N1 Warning

N1

N1 speed exceeded.

◆ If in flight:

- a. Thrust Lever REDUCE
- b. Monitor N1.

○ If message persists:

- (1) Land as soon as practicable.

Procedure Complete

◆ If on ground:

- a. Shut down engine. Do not dispatch.

Procedure Complete

N2 Warning

N2

N2 speed exceeded.

◆ If in flight:

- a. Thrust LeverREDUCE
- b. Monitor N2.

○ If message persists:

- (1) Land as soon as practicable.
Procedure Complete

◆ If on ground:

- a. Shut down engine. Do not dispatch.
Procedure Complete

OIL CHIP DETECT Warning - On Ground

OIL CHIP DETECT

Engine oil debris detected.

1. Shut down engine. Do not dispatch.
Procedure Complete

• NOTE •

Frequent oil chip detect messages during flight may cause the OIL CHIP DETECT Warning to occur on a subsequent flight. In that event, dispatch is not permitted unless maintenance is performed.

OIL FILTER BYPASS Warning - On Ground

OIL FILTER BYPASS

Oil filter diff press too high, bypass impending.

1. Shut down engine. Do not dispatch.
Procedure Complete

OIL PRESSURE Warning

OIL PRESSURE

Engine oil pressure exceedance.

◆ If in flight:

- a. Monitor oil system pressure and temperature.

○ If message persists:

- (1) Thrust LeverREDUCE (MINIMUM REQUIRED)
- (2) Avoid abrupt thrust lever movements.
- (3) Land as soon as possible.

Procedure Complete

◆ If on ground:

- a. Perform [Abnormal Engine Shutdown On Ground](#) checklist.

Procedure Complete

OIL TEMPERATURE Warning

OIL TEMPERATURE

Engine oil temperature exceedance.

1. Thrust LeverREDUCE (MINIMUM REQUIRED)
2. Monitor oil system pressure and temperature.

◆ If message persists:

- a. Land as soon as possible.

Procedure Complete

STALL WARNING

STALL WARNING

Stall warning active.

1. AOAREDUCE
2. Thrust Lever..... T/O

Procedure Complete

STICK PUSHER Warning

STICK PUSHER

Stick pusher active.

1. AOAREDUCE
2. Thrust Lever..... T/O

• CAUTION •

Do not attempt to overpower the stick pusher.

• NOTE •

If airspeed, altitude, power settings, and load factors are within normal limits, and there is no evidence of ice contamination, message should be considered a malfunction.

◆ If message is determined to be a malfunction:

- a. Grip side stick firmly.
- b. AP DISC Button PRESS AND HOLD
- c. Airplane Control.....MAINTAIN
- d. AP SERVOS CB (A3) PULL
- e. AP DISC Button RELEASE
- f. STICK SHAKER CB (B3) PULL

○ If in RVSM airspace:

- (1) Airplane ControlMAINTAIN
- (2) Exit RVSM airspace.

(Continued on next page)

(Continued)

- g. Airspeed MAINTAIN ABOVE 1.3 V_s
- h. Avoid stalls, low airspeed, and uncoordinated or abrupt control inputs.
- i. Land as soon as practicable.

Procedure Complete

• NOTE •

Autopilot, Stall Warning, and Stick Shaker will be unavailable. Green donut airspeed reference will be unavailable or unreliable.

Refer to the following procedures for V_{REF} speeds.

Low speed awareness indications on the airspeed tape should be considered unreliable and should not be referenced.

Refer to [Section 3A: Abnormal Procedures, "STICK PUSHER FAIL Caution"](#).

Refer to [Section 3A: Abnormal Procedures, "AOA FAIL Caution"](#).

Expect CAPS AUTOPILOT INOP CAS. Refer to [Section 3A: Abnormal Procedures, "CAPS AUTOPILOT INOP Advisory"](#).

V_{REF} Speeds (KIAS)					
FLAPS	4000 lb	4500 lb	5000 lb	5550 lb	6000 lb
UP or UNKNOWN	89	95	100	104	109
UP (Ice Contaminated Airframe/ STALL SPEED HIGH Advisory)	115	122	128	135	140
50%	82	87	91	96	100
50% (Ice Contaminated Airframe /STALL SPEED HIGH Advisory)	98	104	110	115	120
100%	71	76	81	85	89

TAKEOFF PITCH TRIM Warning - On Ground

TAKEOFF PITCH TRIM

Pitch trim not in takeoff configuration.

1. Takeoff.....ABORT
2. Pitch Trim..... ADJUST TO TAKEOFF (GREEN BAND)
Procedure Complete

THR LEVER CALIBRATION Warning - On Ground

THR LEVER CALIBRATION

FADEC is in TLA rigging mode.

1. Do not dispatch.
Procedure Complete

TT2 OVERHEAT Warning

TT2 OVERHEAT

TT2 probes pending overheat.

1. ENG. IPS Switch.....OFF
2. Avoid/exit icing conditions.
Procedure Complete

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Section 3A: Abnormal Procedures

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Abnormal CAS Procedures

WHEEL SPEED FAULT Advisory

WHEEL SPEED FAULT

Wheel speed sensor fault detected.

• NOTE •

Safe Return Emergency Autoland function will be degraded.
Wheel speed sensor maintenance is required.

1. Advisory only. No further action required.

Procedure Complete

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Introduction

This section provides procedures for handling abnormal system and/or flight conditions which, if followed, will maintain an acceptable level of airworthiness or reduce operational risk. The guidelines described in this section are to be used when an abnormal condition exists, and should be considered and applied as necessary.

• **WARNING** •

If a Warning annunciation is illuminated in combination with any of the following Abnormal annunciations, the Warning annunciation takes precedence and shall be performed first.

Crew Alert System (CAS) Messaging

Cautions

Displayed in yellow against a black background, Caution CAS messages arise during situations that require immediate flight crew awareness and subsequent flight crew response.

- A flashing Caution CAS message with an accompanying aural alert requires more timely flight crew response.
- A flashing Caution CAS message with no accompanying aural alert requires flight crew response, dependent on workload.
- A non-flashing Caution CAS message with no accompanying aural alert requires attention, dependent on workload. It may also require performing maintenance or taking corrective action prior to next flight.

Advisories

Displayed in white against a black background, Advisory CAS messages arise during situations that require flight crew awareness and that may require subsequent flight crew response.

Abnormal Procedures Guidance

Although this section provides procedures for handling most abnormal system and/or flight conditions that could arise in the aircraft, it is not a substitute for proper flight training, thorough knowledge of the airplane, and recognized piloting techniques and standards. A thorough study of the information in this AFM while on the ground will help you prepare for time-critical situations in the air.

Sound judgment as well as thorough knowledge of the aircraft, its characteristics, and the AFM procedures are essential in the handling of any abnormal system and/or flight condition. In addition to the outlined items in the Abnormal Procedures, the following steps are considered part of all abnormal situations:

- Maintain Aircraft Control
- Analyze the Situation
- Take Appropriate Action

Circuit Breakers

Some procedures involve manipulating circuit breakers (CBs). The following criteria should be followed during “Circuit Breaker” steps:

- Intentional pulling of circuit breakers during flight, other than as required in specific procedures, is prohibited.
- When instructed to “SET”, the appropriate circuit breaker should be checked for normal condition. If the circuit breaker is not “SET”, it may be reset only once. If the circuit breaker opens again, do not reset.
- When instructed to “PULL”, the appropriate circuit breaker should only be pulled and not reset.
- When instructed to “CYCLE”, the appropriate circuit breaker should be pulled, delayed for several seconds, and reset only once. Allow sufficient cooling time for circuit breakers that are reset through a “CYCLE” procedure.

Locating Circuit Breakers

Each circuit breaker panel row and column is labeled for easy reference. Each row is individually labeled A through C (on the Pilot CB panel) and D through F (on the Copilot CB panel). Each column is assigned a number. On the Aft CB panel, the columns are labeled K and L. Each row is assigned a number.

Circuit breakers are identified by a combination of the letter (A through F, K, or L) and the number. For instance, in the illustration below, the STICK SHAKER CB is located at B3 (‘B’ representing the row and ‘3’ representing the column).

Figure 3A-1: Example - Circuit Breaker Panel



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Procedure Division Symbols

For procedures requiring pilot decision, conditional steps are indented with a symbol to designate sub-sections within the procedure. On condition, the pilot makes a decision to identify the applicable sub-section. Following the initial decision, a further sub-division of the procedure may occur. In that event, one or more additional conditions guides the pilot through the remaining decisions. Once the applicable condition(s) are identified, the pilot follows the remaining steps until the indication “Procedure Complete” is reached.

The procedure symbol levels are:

- ◆ First Level
- Second Level
- Third Level

Landing Guidance

Land as soon as practicable

Extended flight is not recommended and the pilot should proceed to land the plane, but not necessarily at the first or closest landing location. The landing location and duration of flight remains at the discretion of the pilot in command, after considering all factors related to the safety of the flight. For example, landing may be deferred to an airfield which could provide

post-landing maintenance procedures or malfunction investigation. The choice of airfield may be determined by the pilot with consideration to weather, runway dimensions, surface conditions, and services available. However, in no case shall a suitable landing airfield be discounted in the name of convenience.

Land as soon as possible

Land without delay at the first site at which a safe landing can be made. Continued flight beyond an available airfield at which a safe landing can be made will result in increased risk and shall not be attempted. The nearest suitable landing site shall be determined by the pilot with consideration given to weather, surface dimensions and conditions, and pilot experience.

Abnormal Procedures

GIA 1 Failure

• **NOTE** •

GIA 1 interfaces with many systems; multiple CAS messages and synoptic X's are simultaneously presented in a GIA 1 failure. Workload and stress is greatly reduced by recognizing this as a single manageable failure and not multiple or cascading system failures.

The most recognizable sign of GIA 1 failure is the combined loss of COM1/NAV1 and GPS1 coincident with multiple system CAS messages.

1. Aircraft ControlMAINTAIN
2. Airspeed MAINTAIN ABOVE 1.3 V_S
3. Avoid stalls, low airspeed, and uncoordinated or abrupt control inputs.
4. Navigation.....SELECT GPS 2 OR NAV 2
5. Communication.....TUNE AND SELECT COM 2 AS ACTIVE
6. CAS Messages..... ASSESS AND ACKNOWLEDGE

• **NOTE** •

The following messages may result from loss of monitoring, not loss of function in related systems. AFM procedures associated with these conditions are not required in case of GIA 1 failure.

FUEL VALVES BOTH FAIL Warning

PROBE HEAT OFF Caution

IPS WING/STAB FAIL Caution

IPS ENGINE INLET OFF Caution

CABIN PRESSURE CTRL FAIL Caution

(Continued on next page)

(Continued)

• NOTE •

The following messages may be displayed, these are accurate if provided, but do not require pilot action unless specifically included in the action steps of the GIA 1 Failure checklist.

- FLAPS ICE Warning
- FADEC NO DISPATCH Caution
- FLAPS FAIL Caution
- LDG GEAR SELECTOR FAIL Caution
- FUEL VALVE AUTO FAIL Caution
- STICK PUSHER FAIL Caution
- SFD NO COMPARE Advisory
- STALL SPEED HIGH Advisory

- 7. Fuel Balance MAINTAIN
 - a. Fuel Quantity CHECK
 - b. Fuel Control Switch FULLEST TANK

• NOTE •

To maintain fuel balance, monitor fuel quantity and alternate LEFT/RIGHT selection as needed.

- 8. Altitude AS REQUIRED

• NOTE •

Although CABIN PRESSURE CTRL FAIL Caution is annunciated, only LFE functionality and depressurization on landing is affected.

(Continued on next page)

(Continued)

9. Flight into icing conditions AS REQUIRED

• NOTE •

System will provide several FAIL annunciations that are result of data loss, not system failure. With lack of active CAS monitor, avoiding ice conditions is best advised; if transit through ice is required, systems should be operated normally.

Approach and Landing using ice contaminated approach speeds will be required if STALL SPEED HIGH advisory is posted. Refer to [Section 5: Performance Data, "Landing Distance"](#) for appropriate Ice Contaminated landing distance chart.

FLAPS ICE message will be provided if flaps were at 100% at the time of GIA Failure. Refer to [Section 5: Performance Data, "Flaps: 50% \(Ice Contaminated\)"](#).

10. Perform [Alternate Gear Extension](#) checklist.

11. CABIN PRESSURE DUMP Button..... PRESS

12. Land as soon as practicable.

Procedure Complete

Loss of GPS Navigation

Amber GPS LOI text left of HSI and/or white system message on touchscreen controller.

• NOTE •

Stick pusher function will be inoperative.

1. Navigation..... VISUAL, OR SELECT VOR AND/OR DME

2. Perform [STICK PUSHER FAIL Caution](#) checklist.

Procedure Complete

• NOTE •

Dispatch is not authorized with inoperative GPS, predicted degraded GPS (RAIM prediction), or known GPS outage (NOTAM) expected during the planned flight.

Dry Motoring Engine - Failed Engine Start

• NOTE •

Dry motoring is used to clear the engine of residual fuel following a failed engine start.

The engine must be visually inspected after dry motoring to ensure no fuel has pooled and the exhaust is dry before attempting another engine start.

1. Thrust Lever IDLE
2. Engine Knob OFF
3. BLEED Switch FRESH
4. Engine Button PRESS AND HOLD 15 - 30 SECONDS

Procedure Complete

• NOTE •

Refer to [Section 2: Limitations, "Starter Generator Limits \(Start Mode\)"](#) for starter duty cycle limitations.

Battery damage may occur if motoring is prolonged.

High levels of bleed air extraction during engine start produces hotter ITT and slower start.

Engine Knob OFF inhibits Electric Fuel Pump.

Flaps Inoperative Approach/Landing

1. V_{REF} REFER TO GREEN DONUT
2. Landing Gear DOWN AND LOCKED

Procedure Complete

• NOTE •

Refer to [Section 5: Performance Data, "Flaps: UP"](#) for Flaps UP landing distance requirements.

Landing With Failed Brakes

◆ If one brake is inoperative:

- a. Land on the side of runway corresponding to the inoperative brake.
- b. Maintain directional control using rudder and operational brake.
- c. Shut down engine as soon as practical.

Procedure Complete

◆ If both brakes are inoperative:

- a. Divert to the longest, widest runway with the most direct headwind.
- b. Land on downwind side of the runway.
- c. Use the rudder and aileron for directional control.
- d. Shut down engine as soon as practical.

Procedure Complete

• **NOTE** •

Rudder effectiveness will decrease with decreasing airspeed.

Landing With Flat Tire

• WARNING •

If a flat tire is suspected, do not retract landing gear since it may cause difficulties in extending the gear. Additionally, landings with the gear up are potentially more hazardous than with the gear down. The probability of aircraft damage is greater with gear up landings.

If a flat tire or tread separation occurs during takeoff and it is not possible to abort, land as soon as practicable. Tread separation could damage wing-mounted fuel system components. Continued flight could result in fuel imbalance or fuel exhaustion. A significant imbalance and/or exhaustion can result in loss of aircraft due to loss of control or loss of thrust leading to an off-airport landing.

◆ If main gear tire is flat:

- a. Land on the side of the runway corresponding to the good tire.
- b. Maintain directional control with the brakes, rudder, and aileron.
- c. Do not taxi. Stop the airplane and perform a normal Engine Shut-down.

Procedure Complete

◆ If nose gear tire is flat:

- a. Land in the center of the runway.
- b. Hold the nosewheel off the ground as long as possible.
- c. Do not taxi. Stop the airplane and perform a normal Engine Shut-down.

Procedure Complete

Alternate Gear Extension

1. Airspeed BELOW 210 KIAS
2. LANDING GEAR HYD CB (B4)..... PULL
3. Landing Gear HandleDOWN
4. Alternate Gear Extension Handle..... PULL TO STOP, RESTOW
5. Verify 3 Green, DOWN / LOCKED indications.

◆ If landing gear is down and locked:

- a. No further action required.

Procedure Complete

◆ If landing gear is not down and locked:

- a. Alternate Gear Extension Handle PULL TO STOP, RESTOW

• NOTE •

Pull the handle to the end of its available travel to ensure landing gear is fully unlocked.

- b. Reduce airspeed, or increase load factor (g) by increasing bank angle to assist in extending/locking the gear.
- c. Check landing gear indications. If landing gear indications are still not confirmed down, prepare for landing with possible gear issue.
- d. Perform visual verification of gear position by ATC (towered airport), if possible.

Procedure Complete

Gear Indication(s) Not Down/Locked

◆ If in flight:

a. Landing GearCYCLE UP, THEN DOWN

○ If Landing Gear is down and locked:

(1) Monitor landing gear indications.
Procedure Complete

○ If Landing Gear is not down and locked:

(1) Perform **Alternate Gear Extension** checklist.
Procedure Complete

◆ If on ground:

a. Do not taxi.

b. Landing GearCHECK DOWN

Procedure Complete

• NOTE •

Even though the gear assemblies are functioning properly, the root cause may be a failure of the gear sensors to indicate properly (Down/Up or Locked/Unlocked). If possible, visual verification by ATC (towered airport) can be used to confirm gear position.

Failure of the gear sensors to provide proper indication could cause the LDG GEAR FAIL Caution to display.

Communications Failure

1. Switches, Controls CHECK
2. Frequency.....CHANGE
3. Circuit Breakers.....SET
4. Headset CHANGE OR SPEAKER
5. Attempt to use oxygen mask microphone or hand-held microphone and cabin speakers.

◆ If Precipitation-static is experienced during flight:

- a. WINDSHLD IPS Switch ON

Procedure Complete

• NOTE •

If, after following the checklist procedure, communication is not restored, proceed with FAR/AIM lost communications procedures.

In the event of an audio panel power failure, the audio panel connects COM 1 to the pilot’s headset.

If the oxygen mask microphone is used, emergency oxygen will be depleted. A hand-held microphone may optionally be furnished by the operator.

Flight Through Volcanic Ash

• CAUTION •

Avoid flying through volcanic ash where possible.

1. Engine Parameters MONITOR

◆ If engine parameters cannot be kept within limits:

- a. Land as soon as possible.

Procedure Complete

Abnormal Engine Shutdown On Ground

- ◆ If normal engine shutdown is not successful:
 - a. Thrust Lever..... IDLE
 - b. ENGINE FIRE ACKNOWLEDGE Switch..... LIFT GUARD, TOGGLE

Procedure Complete

• **CAUTION** •

Do not press PUSH TO DISCHARGE buttons when the ENGINE FIRE ACKNOWLEDGE switch is on. Discharging the fire bottles will result in the bottles requiring servicing before subsequent flights.

• **NOTE** •

Activating the ENGINE FIRE ACKNOWLEDGE switch activates the fuel shutoff valve which will remove fuel to engine and arm the fire bottles.

Engine Knob OFF inhibits the Electric Fuel Pump.

Wing/Stab IPS Activated in RVSM Airspace

- ◆ If activated by pilot:
 - a. Advise ATC of non RVSM status.
- Procedure Complete
- ◆ If activated uncommanded:
 - a. Verify WING/STAB Switch OFF.
 - b. WING/STAB IPS CB (A6)..... PULL

Procedure Complete

AFCS Alerts

For more information on AFCS alerts, refer to SF50 Garmin Cockpit Reference Guide.

Autopilot Abnormal Disconnect

Red AP flashing on PFD; continuous high-low aural tone.

1. AP DISC Button.....PRESS AND RELEASE
2. Airplane ControlMAINTAIN

Procedure Complete

Autopilot Failure

Red AFCS annunciator on PFD; red AP flashing on PFD; continuous high-low aural tone.

1. AP DISC Button.....PRESS AND RELEASE
2. Airplane ControlMAINTAIN

◆ If in RVSM airspace:

- a. Exit RVSM airspace.

Procedure Complete

Pitch Axis Failure

Red PTCH annunciator on PFD.

• NOTE •

If the pitch axis fails while autopilot is engaged, the autopilot will disengage as indicated by the red AP flashing on the PFD. The autopilot may be re-engaged; however, vertical Flight Director modes must be hand flown.

This condition will likely be accompanied by a “STICK PUSHER FAIL” CAS message.

1. Altitude.....MONITOR AND MAINTAIN AS POSSIBLE

Procedure Complete

Roll Axis Failure

Red ROLL annunciator on PFD.

• NOTE •

If the roll axis fails while autopilot is engaged, the autopilot will disengage as indicated by the red AP flashing on the PFD. The autopilot may not be re-engaged.

ESP is inoperative.

1. Airplane Control MAINTAIN
Procedure Complete

Yaw Axis Failure

Red YAW annunciator on PFD.

• NOTE •

The yaw damper will disconnect, but the autopilot may still be used for vertical and lateral guidance. Some lateral mistrim may become apparent, and manual rudder inputs may be required for turn coordination.

1. Continue flight.
Procedure Complete

Autopilot Preflight Test Fail

Red PFT annunciator on PFD.

1. Do not dispatch.
Procedure Complete

• NOTE •

The autopilot, stick pusher, and ESP are inoperative.

Elevator Mistrim Down

Yellow (down arrow) ELE annunciator on PFD.

• NOTE •

Be prepared for out of trim condition if AP is disengaged.

1. Manipulate elevator trim down to eliminate the mistrim condition.

◆ If condition persists:

- a. Disengage autopilot.
- b. Retrim aircraft as desired.

Procedure Complete

Elevator Mistrim Up

Yellow (up arrow) ELE annunciator on PFD.

• NOTE •

Be prepared for out of trim condition if AP is disengaged.

1. Manipulate elevator trim up to eliminate the mistrim condition.

◆ If condition persists:

- a. Disengage autopilot.
- b. Retrim aircraft as desired.

Procedure Complete

Aileron Mistrim Left/Right

Yellow (left/right arrow) AIL annunciator on PFD.

• NOTE •

Be prepared for out of trim condition if AP is disengaged.

1. Manipulate aileron trim as required to eliminate the mistrim condition.

• NOTE •

Momentary roll trim input in the direction of mistrim indication will typically correct the condition.

◆ If condition persists:

- a. Disengage autopilot.
- b. Retrim aircraft as desired.

Procedure Complete

Abnormal CAS Procedures

AOA FAIL Caution

AOA FAIL

AOA signal invalid.

1. Airspeed REFER TO V_{REF} SPEEDS TABLE
2. Avoid stalls, low airspeed, and uncoordinated or abrupt control inputs.
3. Land as soon as practicable.

Procedure Complete

V_{REF} Speeds (KIAS)					
FLAPS	4000 lb	4500 lb	5000 lb	5550 lb	6000 lb
UP or UNKNOWN	89	95	100	104	109
UP (Ice Contaminated Airframe/ STALL SPEED HIGH Advisory)	115	122	128	135	140
50%	82	87	91	96	100
50% (Ice Contaminated Airframe /STALL SPEED HIGH Advisory)	98	104	110	115	120
100%	71	76	81	85	89

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(Continued)

• **WARNING** •

The aircraft is not stall protected. Stalls must be avoided when the AOA is inoperative. Excessive altitude loss may result if the aircraft is stalled. Departure from controlled flight or spin may occur during stall with uncoordinated aileron/rudder inputs.

Stall warning is not operative or reliable.

Stick pusher is not operative or reliable.

Expect STALL WARNING FAIL or STICK PUSHER FAIL CAS.

Stall speeds in turns or increased load factor are higher.

• **NOTE** •

Green donut airspeed reference will be unavailable or unreliable.

AOA HEAT FAIL Caution

AOA HEAT FAIL

AOA heat failure.

1. PROBE HT RIGHT CB (E4) CYCLE
2. PROBE HT LEFT CB (A8) CYCLE
3. Avoid/exit icing conditions.

Procedure Complete

• NOTE •

In case of AOA heat failure during flight in icing conditions, AOA measurements may be erroneous.
Refer to V_{REF} Speeds table.

BLEED AIR Caution

BLEED AIR

ECS bleed air system pressure low or failed.

1. BLEED SwitchCYCLE FRESH, BLEED WITHIN < 1 SEC
2. Cabin Altitude MONITOR

◆ If message extinguishes:

- a. Continue flight.

Procedure Complete

◆ If message persists:

- a. Land as soon as practicable.

Procedure Complete

BLEED LEAK Caution

BLEED LEAK

Bleed leak detected in tailcone.

1. Oxygen Mask DON, 100%
2. BLEED Switch..... FRESH
3. MIC SELECT Switch MASK MIC
4. Wait 15 seconds.

◆ If message extinguishes:

- a. Descend and land as soon as practicable.

• NOTE •

Cabin pressurization is no longer functional.

Procedure Complete

◆ If message persists:

- a. Perform Emergency Descent checklist as required.
- b. Thrust Lever..... REDUCE (MINIMUM REQUIRED)
- c. Land as soon as possible.

Procedure Complete

• NOTE •

Refer to [Section 2: Limitations](#), "Oxygen" for oxygen requirements.

BLEED OFF Caution

BLEED OFF

Bleed air is switched to OFF/FRESH.

◆ If bleed is desired OFF:

- a. No further action required.

Procedure Complete

◆ If bleed is not desired OFF:

- a. BLEED Switch CYCLE TO BLEED

- b. Verify message is extinguished.

○ If message persists:

- (1) Cabin Altitude MONITOR

- (2) Monitor for CABIN ALTITUDE HIGH Warning.

Procedure Complete

BLEED OPEN Caution

BLEED OPEN

Shutoff solenoid failed to close.

- 1. BLEED Switch CYCLE

- 2. BLEED AIR SHUTOFF CB (D7) CYCLE

- 3. Land as soon as practicable.

Procedure Complete

BLEED OVERPRESSURE Caution

BLEED OVERPRESSURE

ECS bleed air system pressure high.

1. Thrust REDUCE
2. BLEED Switch..... CYCLE FRESH, BLEED WITHIN < 1 SEC

◆ If message extinguishes:

- a. Continue flight.

Procedure Complete

◆ If message persists:

- a. ThrustMINIMIZE A/R
- b. Land as soon as practicable.

Procedure Complete

CABIN LFE NOT SET Caution

CABIN LFE NOT SET

Landing field elevation is not set.

1. Input destination airport in flight plan.
OR
2. Manually set Landing Field Elevation on GTC.

Procedure Complete

CABIN PRESSURE CTRL FAIL Caution

CABIN PRESSURE CTRL FAIL

Detected failure of CPCS Controller.

1. Cabin Altitude MONITOR
2. Monitor for **CABIN ALTITUDE HIGH Warning**.
3. Land as soon as practicable.

Procedure Complete

• NOTE •

If cabin pressure controller fails, CPCS will maintain current cabin altitude.

CAPS AUTOPILOT INOP Advisory

CAPS AUTOPILOT INOP

Minimize CAPS deployment speed.

◆ If in an emergency situation:

- a. Airspeed MANUALLY REDUCE BELOW
135 KIAS AND 145 KTAS BEFORE DEPLOYING PARACHUTE

Procedure Complete

CAPS MISCOMPARE Advisory

CAPS MISCOMPARE

CAPS service required.

• WARNING •

CAPS may be unavailable.

◆ If in flight:

- a. Land as soon as practicable.

Procedure Complete

◆ If on ground:

- a. Do not dispatch.

Procedure Complete

DOOR OPEN Advisory - On Ground

DOOR OPEN

One or more doors are open.

1. Advisory only. No further action required.

Procedure Complete

DOOR OPEN EMER EXIT Caution

DOOR OPEN EMER EXIT

Emergency exit door is open.

• WARNING •

Stay clear of window if malfunction is believed to have occurred. Ensure seat belts are tightened and secured in order to avoid extraction from aircraft in the event of rapid door opening/decompression. Do not attempt to latch or unlatch the exit door or manipulate the exit door or latch.

◆ If in flight:

- a. Visually check window latch handle position.
- b. Land as soon as practicable.

Procedure Complete

◆ If on ground:

- a. Verify window is latched.

Procedure Complete

ECS BLEED HOT Caution

ECS BLEED HOT

Bleed supply temperature is too hot.

1. Cabin Temp Knob..... FULL COLD

◆ If message extinguishes:

- a. No further action required.

Procedure Complete

◆ If message persists:

a. TEMP BACKUP SELECT

- b. Verify message is extinguished.

Procedure Complete

• *NOTE* •

This CAS message is displayed when bleed supply temperature reaches 250 °F (121 °C).

ECS BLEED OVERHEAT Caution

ECS BLEED OVERHEAT

Bleed supply temperature is too hot.

1. Cabin Temp Knob FULL COLD

◆ If message extinguishes:

a. No further action required.

Procedure Complete

◆ If message persists:

a. TEMP BACKUP SELECT

b. Verify message is extinguished.

○ If message persists:

(1) Thrust Lever REDUCE AS PRACTICAL

(2) Verify message is extinguished.

□ If message persists or if TCV CONTROL FAIL is displayed:

(a) Oxygen Mask DON, 100%

(b) BLEED Switch FRESH

(c) MIC SELECT Switch MASK MIC

(d) Cabin Altitude MONITOR

(e) Monitor for **CABIN ALTITUDE HIGH Warning**.

(f) Land as soon as practicable.

Procedure Complete

• **NOTE** •

This CAS message is displayed when bleed supply temperature reaches 270 °F (132 °C).

Refer to [Section 2: Limitations, "Oxygen"](#) for oxygen requirements.

ECS CONTROL FAIL Caution

ECS CONTROL FAIL

ECS controller has failed, OR
All cabin temperature sensors have failed, OR
All ECS fans in cabin have failed, OR
Bleed duct temperature sensor has failed.

1. TEMP BACKUP SELECT
2. Cabin Temp Knob..... ADJUST FOR CABIN COMFORT
3. Monitor for ECS BLEED OVERHEAT Caution.
4. Perform **ECS BLEED OVERHEAT Caution** checklist, if required.

Procedure Complete

ECS TEMP BACKUP Caution

ECS TEMP BACKUP

Environmental control temperature backup mode.

- ◆ If TEMP BACKUP mode engaged intentionally:
 - a. Cabin Temp Knob ADJUST FOR CABIN COMFORT
 - b. Monitor for ECS BLEED HOT or ECS BLEED OVERHEAT cautions.
 - If ECS BLEED HOT is displayed:
 - (1) Perform ECS BLEED HOT caution checklist.
Procedure Complete
 - If ECS BLEED OVERHEAT is displayed:
 - (1) Perform ECS BLEED OVERHEAT caution checklist.
Procedure Complete
- ◆ If TEMP BACKUP mode engaged unintentionally:
 - a. TEMP BACKUP DESELECT
 - b. ECS Controls A/R
Procedure Complete

• **NOTE** •

When in Temp Backup mode, changes in thrust and aircraft speed affect incoming bleed air temperature.

Prior to increasing thrust or reducing aircraft speed, it is recommended that the temperature setting be lowered (especially during low altitude level off, landing, and go-around conditions).

EDM DISABLED Advisory

EDM DISABLED

Emergency Descent Mode is disabled.

1. Advisory only. No further action required.
Procedure Complete

EMER BATTERY FAIL Caution

EMER BATTERY FAIL

Emergency battery (Bat 2) service is required.

1. Exit IMC as soon as practicable.
2. Land as soon as practicable.

Procedure Complete

• CAUTION •

Emergency battery may be unavailable.

• NOTE •

Battery FAIL indicates an internal condition which reduces capability of the battery. Possible conditions include a faulty temperature sensor, disconnected heater, etc.

EMER BATTERY FAULT Caution

EMER BATTERY FAULT

Emergency battery (Bat 2) fault detected.

1. BAT 2 Switch CYCLE

◆ If message extinguishes:

- a. Continue flight.
- b. Service aircraft as soon as practicable.

◆ If message persists:

- a. Exit IMC as soon as practicable.
- b. Land as soon as practicable.

2. Contact Cirrus for corrective action.

Procedure Complete

• CAUTION •

Emergency battery is unavailable.

• NOTE •

Battery FAULT indicates a condition causing battery to disable charging and/or discharging until corrected. Possible conditions include under-voltage, over-voltage, over-current, short-circuit, and over-temperature.

ENGINE START BAT TEMP Caution

ENGINE START BAT TEMP

Main battery (Bat 1) is below minimum start temp.

1. Wait until message extinguishes before attempting start.

Procedure Complete

• CAUTION •

If start is attempted prior to message extinguishing, the battery may be temporarily inoperative, or it may result in an engine hot start or other faults.

ENGINE START VOLTS Caution - On Ground

ENGINE START VOLTS

Main battery (Bat 1) insufficient charge for reliable engine start.

• NOTE •

Avoid prolonged battery-only ground operation beyond 20 minutes combined operation, which may result in insufficient capacity for engine start.

Attempted start with insufficient battery capacity may result in battery low voltage protection circuit activation, which will temporarily make main battery unavailable.

Condition will automatically recover after main battery is adequately recharged.

1. Battery service, preheat and/or charging is required.

Procedure Complete

ESP FAIL Advisory

ESP FAIL

ESP is inoperative.

1. Advisory only. No further action required.

Procedure Complete

ESP OFF Advisory

ESP OFF

ESP selected off.

1. Advisory only. No further action required.

Procedure Complete

ESS BUS VOLTS Caution

ESS BUS VOLTS

Essential power bus voltage is low, OR
Loss of forward essential power bus voltage.

1. Perform [GENERATOR 1 CURRENT Caution](#) and [GENERATOR 2 CURRENT Caution](#) Checklists.

Procedure Complete

• **NOTE** •

Indicates GEN 1 and GEN 2 failure and is associated with low Main Bus and Essential Bus voltages, GEN 1 and GEN 2 current indications, BAT 1 and BAT 2 discharge, and GEN 1 and GEN 2 Cautions.

EXTERNAL POWER CONNECTED Caution - On Ground

EXTERNAL POWER CONNECTED

External power is connected.

1. Ensure external power is removed before moving airplane.

Procedure Complete

• **NOTE** •

Indicates external power is connected.

FADEC NO DISPATCH Caution

FADEC NO DISPATCH

Reference FADEC Fault Code Messages.

1. ENG. IPS Switch (OAT < 50 °F) VERIFY ON
 - a. Allow sufficient time for ice to clear from inlet probes.
2. FADEC Reset via MFD Controller:
 - a. From Home, touch Aircraft Systems.
 - b. Touch the FADEC Stale Fault Reset Button.

◆ If message extinguishes:

- a. No further action required.

Procedure Complete

◆ If message persists:

- a. Continuance of flight is permitted.

Procedure Complete

• NOTE •

Consider selecting a destination where the necessary FADEC maintenance can be performed. Failure to do so will prevent further dispatch.

FIRE DETECTOR FAIL Caution

FIRE DETECTOR FAIL

Engine fire detector loop low pressure.

◆ If in flight:

- a. Land as soon as practicable.

Procedure Complete

◆ If on ground:

- a. Do not dispatch.

Procedure Complete

FIRE EXT LOW L-R Caution

FIRE EXT LOW L-R

Pressure is low in both fire extinguishers.

◆ If in flight:

- a. Land as soon as practicable.

Procedure Complete

◆ If on ground:

- a. Do not dispatch.

Procedure Complete

• WARNING •

May result in limited/reduced fire suppressant capability.

FIRE EXT LOW L Advisory

FIRE EXT LOW L

Pressure is low in the left fire extinguisher.

1. Continue flight.
2. Service aircraft as soon as practical.

Procedure Complete

FIRE EXT LOW R Advisory

FIRE EXT LOW R

Pressure is low in the right fire extinguisher.

1. Continue flight.
2. Service aircraft as soon as practical.

Procedure Complete

FLAPS AIRSPEED INHIBIT Caution

FLAPS AIRSPEED INHIBIT

Flaps motion inhibited.

1. Airspeed..... INCREASE OR REDUCE, AS REQUIRED
OR

2. FlapsRETURN TO PREVIOUS POSITION

Procedure Complete

FLAPS DISAGREE Caution

FLAPS DISAGREE

Flaps are not within commanded position limits.

• WARNING •

Flaps motion is inhibited when a flap position disagree condition exists.

1. Flaps CYCLE TO DESIRED POSITION

◆ If message extinguishes:

a. Continue flight.

Procedure Complete

◆ If message persists:

a. FlapsMONITOR POSITION

○ If flap position is unknown:

(1) Airspeed.....BELOW 150 KIAS

b. Perform [Flaps Inoperative Approach/Landing](#) checklist.

Procedure Complete

FLAPS FAIL Caution

FLAPS FAIL

Flaps system inoperative, OR
Flaps position sensor miscompare, OR
Flaps sensors failed, position unknown, OR
Flaps have not reached the selected position.

1. Place flaps in last known or safe position.
2. FLAPS CB (C2) CYCLE

◆ If message persists:

- a. Perform [Flaps Inoperative Approach/Landing](#) checklist.

Procedure Complete

FLAPS SELECTOR FAIL Caution

FLAPS SELECTOR FAIL

Cannot determine flaps selector position.

1. Perform [Flaps Inoperative Approach/Landing](#) checklist.

Procedure Complete

FLIGHT IDLE FAIL Caution

FLIGHT IDLE FAIL

Engine idle N2 is too low.

1. Maintain at least 70% N2.
2. Land as soon as practicable.

Procedure Complete

• CAUTION •

When $N2 < 70\%$, Engine IPS and Wing/Stab IPS will be degraded.

• NOTE •

If $N2 < 70\%$, expect increased engine/go-around thrust acceleration time.

FUEL IMBALANCE Caution

FUEL IMBALANCE

Fuel imbalance is ≥ 15 Gallons.

1. Fuel Control Switch AUTO
 2. Fuel Quantity/Fuel Remaining.....COMPARE
 - a. Refer to EIS for fuel quantity (based on level sensors).
 3. Fuel Control Switch FULLEST TANK
 4. Airspeed..... MAINTAIN FOR ADEQUATE ROLL CONTROL
- ◆ If message extinguishes or imbalance decreases:
- a. Continue flight.
 - b. Fuel Control Switch..... AUTO

Procedure Complete

- ◆ If message persists or imbalance increases:

- a. Land as soon as possible.

Procedure Complete

• *NOTE* •

To maintain fuel balance, monitor fuel quantity and alternate LEFT/RIGHT selection as needed.

FUEL LOW LEFT/RIGHT/TOTAL Caution

FUEL LOW LEFT

FUEL LOW RIGHT

FUEL LOW TOTAL

Left fuel quantity is low, OR
Right fuel quantity is low, OR
Total fuel quantity is low.

1. Fuel Quantity..... CHECK
2. Thrust Lever..... REDUCE (MINIMUM REQUIRED)
3. Land as soon as practicable.

Procedure Complete

• *NOTE* •

AUTO Fuel Control will continue to balance fuel consumption during FUEL LOW LEFT/RIGHT/TOTAL caution.

FUEL PUMP FAIL Caution

FUEL PUMP FAIL

Fuel pump has failed.

1. Avoid abrupt thrust lever movements.
2. Land as soon as practicable.

Procedure Complete

FUEL PUMP ON Caution

FUEL PUMP ON

Fuel pump is ON due to low fuel pressure.

1. Fuel Control Switch SWITCH TO OTHER TANK
 - a. Refer to EIS for current tank selection (AUTO selection shown in white; LEFT/RIGHT selection shown in cyan).
 2. Fuel Control Switch AUTO
- ◆ If message extinguishes and does not reappear:
- a. Continue flight.

Procedure Complete

- ◆ If message persists or reappears:
- a. Fuel Control Switch FULLEST TANK
 - b. Fuel Quantity MAINTAIN BALANCE
 - c. Land as soon as practicable.

Procedure Complete

• *NOTE* •

Message indicates pump has been activated and latched ON. Latch is removed by setting the Fuel Control Switch to LEFT or RIGHT, then to AUTO.

To maintain fuel balance, monitor fuel quantity and alternate LEFT/RIGHT selection as needed.

FUEL PUMP ON Advisory

FUEL PUMP ON

Fuel pump is ON for normal operations.

1. Advisory only. No further action required.

Procedure Complete

• *NOTE* •

Fuel pump has been activated due to normal operations, either due to pilot action (selecting L or R tank) or by the avionics due to entering Start Mode.

FUEL QTY MISCOMPARE Caution

FUEL QTY MISCOMPARE

Sensed and totalized fuel quantity disagreement.

1. Fuel Quantity/Fuel Remaining COMPARE
 - a. Refer to EIS for fuel quantity (based on level sensors).

Procedure Complete

FUEL SELECTOR FAIL Caution

FUEL SELECTOR FAIL

Cannot determine fuel selector position.

1. Fuel Control Switch CHECK LEFT/AUTO/RIGHT

◆ If control is inoperable in all switch positions:

- a. Land as soon as possible.

Procedure Complete

• CAUTION •

A failed Fuel Control Switch will cause a fuel imbalance which will increase with continued flight.

◆ If LEFT and RIGHT Switch positions are operable:

- a. Fuel Quantity CHECK
- b. Fuel Control Switch FULLEST TANK, LEFT OR RIGHT ONLY
- c. Fuel Quantity MAINTAIN BALANCE
- d. Land as soon as possible.

Procedure Complete

• NOTE •

To maintain fuel balance, monitor fuel quantity, and alternate LEFT/RIGHT selection as needed.

FUEL SHUTOFF Advisory

FUEL SHUTOFF

Fuel shutoff valve is closed.

1. ENGINE FIRE ACKNOWLEDGE Switch CLOSE GUARD

Procedure Complete

• NOTE •

The above procedure opens the fuel shutoff valve. Disregard if fuel shutoff has been intentionally activated.

FUEL SHUTOFF FAIL Caution

FUEL SHUTOFF FAIL

Fuel shutoff valve not in commanded position.

◆ If during normal flight and engine is running:

- a. Land as soon as practicable.

Procedure Complete

◆ If airborne, and engine has shut down:

- a. ENGINE FIRE ACKNOWLEDGE Switch..... LIFT GUARD, TOGGLE, CLOSE GUARD
- b. Perform **Air Start** Checklist.

Procedure Complete

◆ If during Engine Fire In Flight Checklist:

- a. ENGINE FIRE ACKNOWLEDGE Switch..... CLOSE GUARD, LIFT GUARD, TOGGLE
- b. Continue with Engine Fire In Flight Checklist.

Procedure Complete

FUEL TANK BALANCED Advisory

FUEL TANK BALANCED

Fuel tank quantity balance has been detected.

1. Fuel Control Switch.....AUTO

Procedure Complete

FUEL TEMP LOW Caution

FUEL TEMP LOW

Fuel temperature is low, increase OAT.

1. Fuel Temperature (L / R) CHECK

◆ If in flight:

a. Climb or descend to warmer conditions.

• **NOTE** •

Change altitude to increase OAT and increase fuel temperature.

Due to temperature inversion, warmer temperatures may be at a higher altitude and cooler temperatures may be at a lower altitude.

b. Fuel Temperature..... MONITOR

○ If message extinguishes:

(1) No further action required.

Procedure Complete

○ If message persists:

(1) Land as soon as practicable.

Procedure Complete

◆ If on ground:

a. Warm aircraft to increase fuel temperature.

Procedure Complete

FUEL VALVE #1 FAIL Caution

FUEL VALVE #1 FAIL

Fuel Control Valve #1 has failed.

1. Fuel Quantity CHECK
2. Fuel Control Switch FULLEST TANK
3. Fuel Quantity MAINTAIN BALANCE
4. Land as soon as practicable.

Procedure Complete

• CAUTION •

Avoid AUTO selection, which will draw fuel through Fuel Valve #1 (which has failed).

• NOTE •

To maintain fuel balance, monitor fuel quantity and alternate LEFT/RIGHT selection as needed.

FUEL VALVE #2 FAIL Caution

FUEL VALVE #2 FAIL

Fuel Control Valve #2 has failed.

1. Fuel Quantity CHECK
2. Fuel Control Switch AUTO
3. Land as soon as practicable.

Procedure Complete

• NOTE •

The Fuel Control Switch should remain in AUTO position which draws fuel through Fuel Valve #1 which is operating normally. See EIS Display for selected valve position (AUTO).

Avoid using LEFT or RIGHT selection which activates the electric fuel pump and draws fuel through Fuel Valve #2 which has failed.

FUEL VALVE AUTO FAIL Caution

FUEL VALVE AUTO FAIL

Auto fuel tank selection failure, use Manual mode.

1. Fuel Quantity CHECK
2. Fuel Control Switch FULLEST TANK
3. Fuel Quantity MAINTAIN BALANCE
4. Land as soon as practicable.

Procedure Complete

• *NOTE* •

To maintain fuel balance, monitor fuel quantity and alternate
LEFT/RIGHT selection as needed.

GENERATOR 1 CURRENT Caution

GENERATOR 1 CURRENT

Generator 1 current is low.

1. GEN 1 Switch OFF
2. GCU Reset via MFD Controller:
 - a. From Home, touch Aircraft Systems.
 - b. Touch the GCU Reset Button.
3. GEN 1 Switch ON

◆ If GEN 1 resets:

- a. Continue flight.

Procedure Complete

◆ If GEN 1 does not reset (low GEN 1 Current and Main Bus voltage):

- a. GEN 1 Switch OFF

○ If flight conditions permit:

- (1) BAT 1 Switch OFF
- (2) Land as soon as practicable, avoiding IMC or night flight as able (reduced power redundancy).

Procedure Complete

• NOTE •

With Battery 1 and Generator 1 switched off, power will be removed from the entire main bus, including the hydraulic powerpack. The following equipment will also be inoperative:

- Landing gear control (to lower landing gear, perform [Alternate Gear Extension](#) checklist)
- ECS (such as AC Compressor and Fans)
- Redundant equipment (such as Fuel Valve 2 and AHRS 2 / ADC 2)
- Non-essential equipment (such as Electric Fuel Pump, Stick Shaker, Yaw SAS, Avionics Fan, Nose Landing Lights, and IFE USB)
- Optional equipment (such as Traffic/TCAS, Transponder2, Radar, EVS, 115VAC PWR, and Iridium WIFI Data)

Main Bus Circuit Breakers

CIRCUIT BREAKER	CIRCUIT
PILOT CIRCUIT BREAKER PANEL (ROW B)	
BLEED AIR FLOW CTRL (B2)	Bleed Air Flow Control Valve
STICK SHAKER (B3)	Stick Shaker Motor
LANDING GEAR HYD (B4)	Landing Gear Hydraulics Power Control
PILOT CIRCUIT BREAKER PANEL (ROW C)	
PFD B GTC 1B (C8)	GTC-1 Secondary, PFD Secondary
MFD B GTC 2B (C9)	MFD-Secondary, GTC-2 Secondary
FUEL PUMP CTRL (C10)	Fuel Control Panel
IGNITER 1 (C11)	Igniter 1, Ignition Control Panel
COPILOT CIRCUIT BREAKER PANEL (ROW F)	
YAW SAS (F8)	Yaw Servo
IFE CTRL (F7)	Convenience Power Relay
IRIDIUM WIFI DATA (F6)	Wi-Fi Datalink, Iridium Satellite
AHRS 2 ADC 2 (F5)	AHRS 2, ADC 2
FUEL VALVE 2 (F2)	Fuel Control Valve (FCV) 2
AVIONICS FAN (F1)	Avionics Equipment Fan In Console

CIRCUIT BREAKER	CIRCUIT
AFT CIRCUIT BREAKER PANEL (ROW K)	
IFE USB (K1)	In-Flight Entertainment
FADEC PANEL (K2)	FADEC A Maintenance Panel, FADEC B Maintenance Panel
TRAFFIC (K3)	TCAS-1
DME (K4)	DME
FADEC B (K5)	Engine Control Electronics
XPONDER 2 (K6)	Transponder 2
PAX LIGHTS LIGHT CTRL (K7)	Passenger task lights
AFT CIRCUIT BREAKER PANEL (ROW L)	
115 VAC PWR (L12)	DC-AC Inverter
ECS BOOST FAN (L1)	ECS Booster Fan
ECS GROUND FAN (L2)	ECS Ground Fan
NOSE CIRCUIT BREAKER PANEL (ROW M)	
NOSE LAND LIGHT (M2)	Nose Landing Light
RADAR (M3)	Weather Radar
EVS (M4)	Enhanced Vision System
AC INLET DOOR (M6)	AC Door Actuator
ROCKET WARMER (M7)	CAPS Rocket Warmer

GENERATOR 2 CURRENT Caution

GENERATOR 2 CURRENT

Generator 2 current is low.

1. GEN 2 Switch..... CYCLE
2. GEN 2 CB (C3).....CHECK, SET

◆ If GEN 2 resets:

- a. Continue flight.

Procedure Complete

◆ If GEN 2 does not reset (low GEN 2 current):

- a. GEN 2 SwitchOFF

• NOTE •

GEN 1 will support GEN 2 electrical loads.

- b. Land as soon as practicable, avoiding IMC or night flight as able (reduced power redundancy).

Procedure Complete

GROUND IDLE FAIL Caution - On Ground

GROUND IDLE FAIL

Ground idle is unavailable.

1. Do not dispatch.

Procedure Complete

• CAUTION •

With increased idle speed, idle thrust will be greater than normal.
To prevent overheating of brakes, exercise proper taxiing techniques.

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

• NOTE •

Idle speed is high for ground operation.

HYDRAULIC OVERHEAT Caution

HYDRAULIC OVERHEAT

Landing gear hydraulic power pack has overheated.

◆ If HYDRAULIC OVERHEAT Caution CAS is accompanied by LDG GEAR FAIL Caution CAS:

- a. Refer to [LDG GEAR FAIL Caution](#) checklist.

Procedure Complete

◆ If HYDRAULIC OVERHEAT Caution CAS is not accompanied by LDG GEAR FAIL Caution CAS:

- a. LANDING GEAR HYD CB (B4) PULL
- b. Wait 2-3 minutes for HYDRAULIC OVERHEAT CAS message to extinguish.

○ If HYDRAULIC OVERHEAT CAS message extinguishes:

- (1) Perform [Alternate Gear Extension](#) checklist, as required.

Procedure Complete

○ If HYDRAULIC OVERHEAT CAS message persists, power pack may still be operating continuously:

- (1) BAT 1 Switch OFF
- (2) GEN 1 Switch OFF
- (3) Perform [Alternate Gear Extension](#) checklist, as required.
- (4) Land as soon as practicable.

Procedure Complete

• NOTE •

FUEL VALVE #2 FAIL Caution CAS will be periodically displayed during normal tank AUTO selection since the secondary valve is not powered by emergency power.

With Battery 1 and Generator 1 switched off, power will be removed from the entire main bus, including the hydraulic powerpack. Landing gear control will also be inoperative. To lower landing gear, perform [Alternate Gear Extension](#) checklist.

Main Bus Circuit Breakers

CIRCUIT BREAKER	CIRCUIT
PILOT CIRCUIT BREAKER PANEL (ROW B)	
BLEED AIR FLOW CTRL (B2)	Bleed Air Flow Control Valve
STICK SHAKER (B3)	Stick Shaker Motor
LANDING GEAR HYD (B4)	Landing Gear Hydraulics Power Control
PILOT CIRCUIT BREAKER PANEL (ROW C)	
PFD B GTC 1B (C8)	GTC-1 Secondary, PFD Secondary
MFD B GTC 2B (C9)	MFD-Secondary, GTC-2 Secondary
FUEL PUMP CTRL (C10)	Fuel Control Panel
IGNITER 1 (C11)	Igniter 1, Ignition Control Panel
COPILOT CIRCUIT BREAKER PANEL (ROW F)	
YAW SAS (F8)	Yaw Servo
IFE CTRL (F7)	Convenience Power Relay
IRIDIUM WIFI DATA (F6)	Wi-Fi Datalink, Iridium Satellite
AHRS 2 ADC 2 (F5)	AHRS 2, ADC 2
FUEL VALVE 2 (F2)	Fuel Control Valve (FCV) 2
AVIONICS FAN (F1)	Avionics Equipment Fan In Console

CIRCUIT BREAKER	CIRCUIT
AFT CIRCUIT BREAKER PANEL (ROW K)	
IFE USB (K1)	In-Flight Entertainment
FADEC PANEL (K2)	FADEC A Maintenance Panel, FADEC B Maintenance Panel
TRAFFIC (K3)	TCAS-1
DME (K4)	DME
FADEC B (K5)	Engine Control Electronics
XPONDER 2 (K6)	Transponder 2
PAX LIGHTS LIGHT CTRL (K7)	Passenger task lights
AFT CIRCUIT BREAKER PANEL (ROW L)	
115 VAC PWR (L12)	DC-AC Inverter
ECS BOOST FAN (L1)	ECS Booster Fan
ECS GROUND FAN (L2)	ECS Ground Fan
NOSE CIRCUIT BREAKER PANEL (ROW M)	
NOSE LAND LIGHT (M2)	Nose Landing Light
RADAR (M3)	Weather Radar
EVS (M4)	Enhanced Vision System
AC INLET DOOR (M6)	AC Door Actuator
ROCKET WARMER (M7)	CAPS Rocket Warmer

IPS BLEED OVERHEAT Caution

IPS BLEED OVERHEAT

Ice protection bleed cooling failure.

1. WING/STAB IPS Switch.....OFF
2. Thrust Lever..... REDUCE
3. Avoid/exit icing conditions.

Procedure Complete

IPS ENG INLET OFF Caution

IPS ENG INLET OFF

Engine IPS should be on.

1. ENGINE IPS Switch..... ON
2. Verify message is extinguished.

Procedure Complete

• *NOTE* •

This CAS message is displayed when the WING/STAB IPS Switch is selected ON without the ENGINE IPS Switch being selected ON.

IPS ENG INLET ON Caution

IPS ENG INLET ON

Engine IPS should be off, OR
Shutoff solenoid failed to close.

◆ If Engine IPS should be off:

- a. ENGINE IPS Switch..... OFF

Procedure Complete

◆ If shutoff solenoid failed to close:

- a. ENGINE IPS Switch..... CYCLE
- b. ENGINE IPS Switch..... VERIFY OFF
- c. ENGINE IPS 1 CB (A6)..... VERIFY SET
- d. ENGINE IPS 2 CB (D9)..... VERIFY SET

Procedure Complete

• CAUTION •

Operation above temperature limitations may result in IPS ENG
INLET OVERHEAT Caution.

IPS ENG INLET OVERHEAT Caution

IPS ENG INLET OVERHEAT

Inlet temp higher than required for anti-ice, OR
Inlet temp higher than safe levels.

- 1. ENGINE IPS Switch CYCLE

◆ If message persists:

- a. ENGINE IPS Switch..... OFF
- b. Avoid/exit icing conditions.
- c. Reduce thrust as necessary to extinguish message.

Procedure Complete

IPS ENG INLET UNDERPRESS Caution

IPS ENG INLET UNDERPRESS

Engine IPS bleed flow low.

1. ENGINE IPS Switch..... CYCLE OFF, ON WITHIN < 1 SEC

◆ If message extinguishes:

- a. Continue flight.

Procedure Complete

◆ If message persists:

- a. Avoid/exit icing conditions.

Procedure Complete

IPS ENG INLET UNDERPRESS Advisory - On Ground

IPS ENG INLET UNDERPRESS

Engine IPS bleed flow low with engine at idle.

◆ If in icing conditions:

- a. Increase engine thrust to extinguish message.

Procedure Complete

IPS FLUID LOW Caution

IPS FLUID LOW

Less than 15 minutes of IPS fluid remaining.

1. Avoid/exit icing conditions.

Procedure Complete

• NOTE •

This CAS message is displayed when IPS fluid quantity \leq 0.2 U.S. gallon (0.8 L).

IPS FLUID LOW Advisory - On Ground

IPS FLUID LOW

IPS fluid below minimum dispatch quantity.

1. Fill IPS fluid as desired.

Procedure Complete

• *NOTE* •

This CAS message is displayed when IPS fluid quantity \leq 1 U.S. gallon (4 L).

IPS WINDSHLD TIMER Caution

IPS WINDSHLD TIMER

Loss of WS/Rad pump automatic timer control.

1. WINDSHLD IPS MAX SwitchA/R
2. Avoid/exit icing conditions.

Procedure Complete

IPS WING/STAB FAIL Caution

IPS WING/STAB FAIL

Wing/Stabilizer IPS low system pressure, OR
Wing/Stabilizer IPS zonal pressure failure, OR
Wing/Stabilizer IPS controller failure, OR
Low system pressure, Wing/Stab IPS inoperative.

1. Avoid/exit icing conditions.

Procedure Complete

IPS WING/STAB TEMP LOW Caution

IPS WING/STAB TEMP LOW

Min temp for boot operation is -40 °F.

◆ If activated by pilot:

- a. WING/STAB SwitchOFF
Procedure Complete

◆ If activation uncommanded:

- a. WING/STAB IPS CB (A6)..... PULL
Procedure Complete

LDG GEAR FAIL Caution

LDG GEAR FAIL

Landing gear didn't reach the selected position.

1. Landing Gear Indications VERIFY POSITION/LOCK
2. Landing Gear CYCLE

• NOTE •

Even though the gear assemblies are functioning properly, the root cause may be a failure of the gear sensors to indicate properly (Down/Up or Locked/Unlocked).

Reversing the landing gear handle to the opposite position clears the inhibit of the hydraulic power pack enable (limited to 30 seconds of continuous operation).

◆ If message extinguishes:

- a. Monitor landing gear indications.

Procedure Complete

◆ If message persists:

- a. Monitor for HYDRAULIC OVERHEAT Caution.
- b. Perform visual verification of gear position by ATC (towered airport), if possible.
- c. Perform [Alternate Gear Extension](#) checklist.

Procedure Complete

LDG GEAR SELECTOR FAIL Caution

LDG GEAR SELECTOR FAIL

Cannot determine landing gear selector position.

1. Landing Gear CYCLE

◆ If message extinguishes:

- a. No further action required.

Procedure Complete

◆ If message persists and landing gear is down:

- a. Do not cycle landing gear.
- b. Land as soon as practicable.

Procedure Complete

◆ If message persists and landing gear is up:

- a. Select gear down as required.

Procedure Complete

◆ If message persists and landing gear does not extend:

- a. Perform [Alternate Gear Extension](#).

Procedure Complete

MAIN BATTERY FAIL Caution

MAIN BATTERY FAIL

Main battery (Bat 1) service is required.

1. Exit IMC as soon as practicable.
2. Land as soon as practicable.

Procedure Complete

• CAUTION •

Air restart may not be possible.

• NOTE •

Battery FAIL indicates an internal condition which reduces capability of the battery. Possible conditions include a faulty temperature sensor, disconnected heater, etc.

MAIN BATTERY FAULT Caution

MAIN BATTERY FAULT

Main battery (Bat 1) fault detected.

1. BAT 1 Switch CYCLE

◆ If message extinguishes:

- a. Continue flight.
- b. Service aircraft as soon as practicable.

◆ If message persists:

- a. Exit IMC as soon as practicable.
- b. Land as soon as practicable.

2. Contact Cirrus for corrective action.

Procedure Complete

• CAUTION •

Air restart is not possible.

• NOTE •

Battery FAULT indicates a condition causing battery to disable charging and/or discharging until corrected. Possible conditions include under-voltage, over-voltage, over-current, short-circuit, and over-temperature.

MAIN BUS VOLTS Caution

MAIN BUS VOLTS

Loss of forward main power bus voltage, OR
Main power bus voltage is low.

1. Perform [GENERATOR 1 CURRENT Caution](#) Checklist.

Procedure Complete

• NOTE •

Indicates GEN 1 failure and is associated with low Main Bus voltage, GEN 1 current indications, BAT 1 discharge, and GENERATOR 1 CURRENT Caution.

MASK MICROPHONE Advisory

MASK MICROPHONE

A crew mask microphone is switched on.

◆ If not wearing oxygen mask:

- a. Turn MIC selection switch to normal headset position.

Procedure Complete

NO ADC MODES Caution

NO ADC MODES

Autopilot air data modes are not available.

• NOTE •

AP may only be engaged in pitch modes.

Procedure Complete

NO VERT MODES Caution

NO VERT MODES

Autopilot vertical modes are not available.

• NOTE •

AP may only be engaged in lateral modes.

Procedure Complete

OIL FILTER BYPASS Caution

OIL FILTER BYPASS

Oil filter diff press too high, bypass impending.

1. Avoid abrupt thrust lever movements.
2. Thrust Lever.....REDUCE (MINIMUM REQUIRED)
3. Land as soon as practicable.

Procedure Complete

OXYGEN OFF Caution

OXYGEN OFF

Oxygen has not been turned on.

1. OXYGEN MASTER Switch..... VERIFY ON
2. OXYGEN CREW CB (E7).....VERIFY SET
3. OXYGEN CREW CB (E7)..... CYCLE

◆ If message persists:

- a. Altitude DESCEND (BELOW 10,000 FT), IF PRACTICAL

Procedure Complete

OXYGEN ON Caution - On Ground

OXYGEN ON

Oxygen is on.

1. OXYGEN MASTER Switch VERIFY OFF

◆ If message persists:

- a. OXYGEN CREW CB (E7) VERIFY SET
- b. OXYGEN CREW CB (E7) CYCLE
- c. OXYGEN MASTER Switch CYCLE

○ If message persists:

- (1) Service oxygen bottle as required.
Procedure Complete

• *NOTE* •

This CAS message is displayed during shutdown procedures.

OXYGEN ON Advisory - On Ground

OXYGEN ON

Oxygen is on.

1. Advisory only. No further action required.
Procedure Complete

• *NOTE* •

This CAS message is displayed while taxiing after landing.

OXYGEN PASSENGER FAIL Caution

OXYGEN PASSENGER FAIL

Passenger oxygen valve has failed closed.

• CAUTION •

Complete any emergency descent procedure prior to completing this checklist.

1. OXYGEN PAX CB (B1).....VERIFY SET
2. OXYGEN PAX CB (B1)..... CYCLE
3. OXYGEN MASTER Switch..... VERIFY ON

◆ If message persists:

- a. AltitudeDESCEND (BELOW 15,000 FT)

Procedure Complete

OXYGEN PRESSURE LOW Caution

OXYGEN PRESSURE LOW

Oxygen pressure below regulator control (250 PSI), OR
Oxygen pressure low (500 PSI).

1. Altitude..... DESCEND (BELOW 10,000 FT), IF PRACTICAL
2. OXYGEN PAX CB (B1)..... PULL

Procedure Complete

• CAUTION •

If OXYGEN PAX CB is pulled, supplemental oxygen to the passengers will be unavailable.

PARK BRAKE Caution - On Ground

PARK BRAKE

Parking brake is set.

1. Parking BrakeA/R

Procedure Complete

PITCH MET ACTIVE Caution

PITCH MET ACTIVE

Pitch manual electric trim is active.

1. Prepare for abnormal pitch movement upon AP disconnect.
2. Perform [Pitch Trim Runaway / Failure](#) Checklist.

Procedure Complete

PROBE HEAT FAIL L Caution

PROBE HEAT FAIL L

Left probe heat failure.

1. PROBE HT LEFT CB (A8) CYCLE

◆ If message extinguishes:

- a. No further action required.

Procedure Complete

◆ If message persists:

○ If in flight:

(1) ADC 2 SELECTED ACTIVE

☐ If ADC 2 is unavailable or if PROBE HEAT FAIL R Caution is also present, and icing encountered:

(a) Perform [Loss of Reliable Airspeed Indication](#) Checklist.

(b) Exit icing conditions.

Procedure Complete

○ If on ground:

(1) Do not dispatch.

Procedure Complete

PROBE HEAT FAIL R Caution

PROBE HEAT FAIL R

Right probe heat failure.

1. PROBE HT RIGHT CB (E4) CYCLE

◆ If message extinguishes:

a. No further action required.

Procedure Complete

◆ If message persists:

○ If in flight:

(1) ADC 1 SELECTED ACTIVE

□ If ADC 1 is unavailable or if PROBE HEAT FAIL L Caution is also present, and icing encountered:

(a) Perform [Loss of Reliable Airspeed Indication](#) Checklist.

(b) Exit icing conditions.

Procedure Complete

○ If on ground:

(1) Do not dispatch.

Procedure Complete

PROBE HEAT OFF Caution

PROBE HEAT OFF

Probe heat is required.

1. Probe Heat Switch ON

◆ If message extinguishes:

- a. No further action required.

Procedure Complete

◆ If message persists, and icing encountered:

- a. Airspeed EXPECT NO RELIABLE INDICATION
- b. Perform [Loss of Reliable Airspeed Indication](#) checklist.
- c. Exit icing conditions.

Procedure Complete

SFD ALT MISCOMPARE Caution

SFD ALT MISCOMPARE

SFD altitude miscompare.

1. DISPLAY BACKUP Button SELECT
2. Altitude CROSS-CHECK SFD WITH PFD
3. Altitude CROSS-CHECK PFD ADC #1 WITH ADC #2

• NOTE •

Select PFD mode on GTC #2 or GTC #3 and select SENSORS menu to select PFD air data source.

4. Select correct sensor source, if required.
5. Pull erroneous ADC circuit breaker, if required.

◆ If in RVSM airspace:

- a. Exit RVSM airspace.
6. Exit IMC as soon as practical.
7. Land as soon as practicable.

Procedure Complete

SFD IAS MISCOMPARE Caution

SFD IAS MISCOMPARE

SFD airspeed miscompare.

1. DISPLAY BACKUP ButtonSELECT

2. Airspeed CROSS-CHECK SFD WITH PFD
3. Airspeed CROSS-CHECK PFD ADC #1 WITH ADC #2

• NOTE •

Select PFD mode on GTC #2 or GTC #3 and select SENSORS menu to select PFD air data source.

4. Select correct sensor source, if required.
5. Pull erroneous ADC circuit breaker, if required.
6. Exit IMC as soon as practical.
7. Land as soon as practicable.

Procedure Complete

SFD NO-COMPARE Advisory

SFD NO-COMPARE

SFD comparison data missing.

1. Exit IMC.
2. Land as soon as practicable.

Procedure Complete

SFD PITCH MISCOMPARE Caution

SFD PITCH MISCOMPARE

SFD pitch miscompare.

1. DISPLAY BACKUP Button..... SELECT

2. AttitudeCROSS-CHECK SFD WITH PFD

3. Attitude.....CROSS-CHECK PFD AHRS #1 WITH AHRS #2

• NOTE •

Select PFD mode on GTC #2 or GTC #3 and select SENSORS menu to select PFD attitude source.

4. Select correct sensor source, if required.
5. Pull erroneous AHRS circuit breaker, if required.
6. Exit IMC as soon as practical.
7. Land as soon as practicable.

Procedure Complete

SFD ROLL MISCOMPARE Caution

SFD ROLL MISCOMPARE

SFD roll miscompare.

1. DISPLAY BACKUP Button..... SELECT

2. AttitudeCROSS-CHECK SFD WITH PFD

3. Attitude.....CROSS-CHECK PFD AHRS #1 WITH AHRS #2

• NOTE •

Select PFD mode on GTC #2 or GTC #3 and select SENSORS menu to select PFD attitude source.

4. Select correct sensor source, if required.
5. Pull erroneous AHRS circuit breaker, if required.
6. Exit IMC as soon as practical.
7. Land as soon as practicable.

Procedure Complete

STALL SPEED HIGH Advisory

STALL SPEED HIGH

Stall protection system adjusted for icing.

- ◆ If airframe is no longer ice contaminated:
 - a. IPS Stall Offset Reset via MFD Controller:
 - (1) From Home, touch Aircraft Systems.
 - (2) Touch the IPS Stall Offset Reset Button.
- Procedure Complete

STALL WARNING FAIL Caution

STALL WARNING FAIL

Stall warning failure.

1. AirspeedMAINTAIN ABOVE 1.3 V_S
2. Avoid stalls, low airspeed, and uncoordinated or abrupt control inputs.
3. Land as soon as practicable.

Procedure Complete

• WARNING •

The aircraft may not be stall protected. Stalls must be avoided when the stall warning is inoperative. Excessive altitude loss may result if the aircraft is stalled.

Departure from controlled flight or spin may occur during stall with uncoordinated aileron/rudder inputs.

Stall warning is not operative or reliable.

Stick pusher may not be operative or reliable.

Expect STICK PUSHER FAIL CAS.

Stall speeds in turns or increased load factor are higher.

• NOTE •

Green donut airspeed reference will be unavailable or unreliable.

STARTER ENGAGED Caution

STARTER ENGAGED

Starter will not disengage (start relay stuck).

1. Start ABORT
2. GCU Reset via MFD Controller:
 - a. From Home, touch Aircraft Systems.
 - b. Touch the GCU Reset Button.
3. BAT 1 Switch OFF
4. GEN 1 Switch OFF

◆ If in flight:

- a. Land as soon as practicable.

◆ If on ground:

- a. Perform [Shutdown](#) Checklist.

Procedure Complete

STARTER ENGAGED Advisory

STARTER ENGAGED

Engine start in progress.

• NOTE •

Receiving a STARTER ENGAGED CAS Advisory is normal during an engine start.

Procedure Complete

STICK PUSHER FAIL Caution

STICK PUSHER FAIL

Stick pusher failure.

1. AirspeedMAINTAIN ABOVE 1.3 V_s
2. Avoid stalls, low airspeed, and uncoordinated or abrupt control inputs.
3. Land as soon as practicable.

Procedure Complete

• WARNING •

The aircraft is not stall protected. Stalls must be avoided when the stick pusher is inoperative. Excessive altitude loss may result if the aircraft is stalled.

Departure from controlled flight or spin may occur during stall with uncoordinated aileron/rudder inputs.

Stick pusher is not operative or reliable.

Stall speeds in turns or increased load factor are higher.

SURFACEWATCH FAIL Advisory

SURFACEWATCH FAIL

SurfaceWatch failed.

• NOTE •

SurfaceWatch is unavailable.

Procedure Complete

TAKEOFF EMER BAT Caution

TAKEOFF EMER BAT

Emergency battery (Bat 2) is not charged.

Emergency battery (Bat 2) is cold.

1. Delay takeoff until message extinguishes.

Procedure Complete

TAKEOFF FLAPS Caution - On Ground

TAKEOFF FLAPS

Flaps not in takeoff configuration.

1. Takeoff ABORT
2. Flaps SELECT 50%

Procedure Complete

TAKEOFF PITCH TRIM Advisory - On Ground

TAKEOFF PITCH TRIM

Pitch trim not in takeoff configuration.

1. Pitch Trim Position WITHIN GREEN ARC

Procedure Complete

TAKEOFF THRUST Caution

TAKEOFF THRUST

5 minute takeoff thrust limitation exceeded.

1. Thrust Lever MCT

Procedure Complete

• CAUTION •

Engine operating costs are predicated on a maximum of 2 minutes of takeoff thrust on an average flight. Exceeding 5 minutes of takeoff thrust may disproportionately increase engine operating costs. Time at takeoff thrust is limited to 5 minutes maximum, beginning when the thrust lever reaches the T/O thrust detent.

TAKEOFF THRUST Advisory

TAKEOFF THRUST

Engine is in takeoff thrust.

1. Thrust Lever..... MCT

Procedure Complete

• CAUTION •

Engine operating costs are predicated on a maximum of 2 minutes of takeoff thrust on an average flight. Exceeding 5 minutes of takeoff thrust may disproportionately increase engine operating costs. Time at takeoff thrust is limited to 5 minutes maximum, beginning when the thrust lever reaches the T/O thrust detent.

• NOTE •

This CAS message indicates the engine has been producing takeoff thrust for more than 2 minutes.

TCV CONTROL FAIL Caution

TCV CONTROL FAIL

TCV motor controller has failed.

1. Cabin Temperature.....MONITOR

• NOTE •

TCV will typically fail open resulting in colder than normal cabin temperatures.

In the unlikely event that the TCV does not open upon failure, duct air temperature may be higher than desired and DUCT OVERHEAT Caution may occur.

- ◆ If message persists and cabin temperature is warmer than acceptable:

- a. Altitude.....DESCEND (BELOW 10,000 FT), IF PRACTICAL
- b. BLEED SwitchFRESH
- c. CABIN PRESSURE DUMP Button.....PRESS

• NOTE •

Autopilot Emergency Descent Mode (EDM) is disabled when the cabin dump switch is activated.

- d. Land as soon as practicable.

Procedure Complete

- ◆ If message persists and cabin temperature is colder than acceptable:

- a. Altitude.....DESCEND TO WARMER OUTSIDE AIR TEMPERATURE, IF PRACTICAL
- b. Land as soon as practicable.

Procedure Complete

• NOTE •

A TCV CONTROL FAIL Caution may be followed by an ECS BLEED HOT Caution or an ECS BLEED OVERHEAT Caution.

THROTTLE SERVO Caution

THROTTLE SERVO

Throttle servo has failed.

• **NOTE** •

Autothrottle functions, including thrust lock, will be unavailable.
CAPS activation will require manual retard of thrust lever to IDLE.

Procedure Complete

TT2 HEAT FAIL Caution

TT2 HEAT FAIL

TT2 probe heater failure.

1. ENG. IPS Switch..... CYCLE
2. ENGINE IPS 1 CB (A6) VERIFY SET
3. ENGINE IPS 2 CB (D9) VERIFY SET

◆ If message persists:

- a. Avoid/exit icing conditions.

Procedure Complete

WOW DISAGREE Advisory

WOW DISAGREE

WOW indicating opposite on ground/in air states.

1. Continue flight.

Procedure Complete

• **NOTE** •

When WOW disagrees, avionics determines ground/in-air state
based on airspeed.

Expect GROUND IDLE FAIL Caution after landing.

WOW FAIL Caution

WOW FAIL

WOW is indicating on ground state.

1. Maintain at least 70% N2.
2. Land as soon as practicable.

Procedure Complete

• **WARNING** •

If above 10,000 ft, expect CABIN ALTITUDE Warning and aircraft to depressurize.

• **CAUTION** •

Minimum engine RPM will default to Ground Idle in all configurations. Expect FLIGHT IDLE FAIL Caution with thrust at IDLE thrust in flight.

• **NOTE** •

Bleed air ground cooling fan will run.

The following indications should be ignored:

OIL CHIP DETECT Warning (false indication possible if in air)

OXYGEN ON Advisory

TAKEOFF PITCH TRIM Advisory

YAW SAS SERVO Caution

YAW SAS SERVO

Yaw SAS servo has failed.

◆ If in flight:

- a. Limit flaps to 0% or 50% in landing configuration.
- b. Perform [Flaps Inoperative Approach/Landing](#) checklist.
- c. Avoid any unnecessary maneuvers during flight. Limit maneuvers only to those necessary to safely land the aircraft.

Procedure Complete

◆ If on ground:

- a. Do not dispatch.

Procedure Complete

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Section 4: Normal Procedures

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Introduction

This section provides amplified procedures for normal operation of the Vision SF50 aircraft.

• **NOTE** •

Refer to [Section 9: Log of Supplements](#) for optional equipment Normal Procedures.

Normal Procedures

Preflight Inspection

• **WARNING** •

Before carrying out preflight inspections, ensure that all required maintenance has been accomplished. Review your flight plan and compute weight and balance and performance requirements. Throughout the walk-around: check all hinges, hinge pins, and bolts for security; check skin for damage, condition, and evidence of delamination; check all control surfaces for proper movement and excessive free play; check area around liquid reservoirs and lines for evidence of leaking.

Ensure there is no equipment or unwanted material near the engine exhaust and inlet.

Remove all securing devices. This includes AOA cover, engine exhaust plugs or cover, probe covers, static port covers, gust locks, and any aftermarket equipment such as exterior gust locks, canopy and wing covers, etc.

In cold weather, remove all frost (polished or not), ice, snow, or slush from fuselage, wing, stabilizers, control surfaces, and engine inlet.

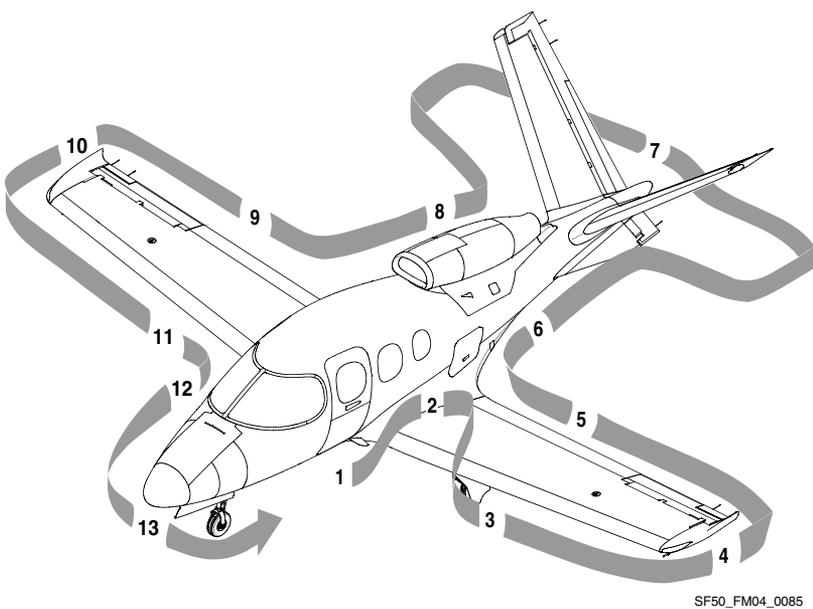
Ensure that control surfaces are free of internal ice or debris. Check that wheels are free of snow and ice accumulation.

Failure to comply may result in significant aircraft damage, loss of aircraft, and/or loss of life.

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Figure 4-1: Recommended Walk-Around Sequence



SF50_FM04_0085

1. Cabin

- a. Gust Lock REMOVED
- b. Cabin Door .. CHECK HINGE, LATCH AND SEAL CONDITION AND OPERATION
- c. Egress Window..... SECURED AND PIN REMOVED
- d. Seats, Interior Furnishing SECURED AND LOCKED
 - (1) Crew Seats LATCHED (FLIGHT RANGE POSITION)
 - (2) Passenger SeatsGRAB TOP, ROCK FORWARD AND AFT
 - (3) Seat Levers, Latches..... VISUALLY INSPECT
 - (4) Latch Pins (Child Seats)..... VISUALLY INSPECT
 - (5) Console, Relief Station (if installed) ..SECURED AND LOCKED
- e. Passenger Oxygen Masks STOWED
- f. Required Documents..... CHECK
- g. Fuel Control Switch AUTO

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(Continued)

- h. Alt Gear Extension Handle Cover Tab..... VISUALLY INSPECT
- i. ELT ARMED
- j. Passenger Oxygen Switch.....AUTO
- k. Fire Extinguisher CHARGED AND STOWED
- l. Circuit Breaker Panels CHECK AND SET
- m. Landing Gear.....DOWN
- n. Bolster Switches OFF
- o. Engine Knob..... OFF
- p. BAT 2 Switch..... ON
 - (1) Verify the PFD, GTC 1, and GTC 2 power up.
 - (2) Verify the MFD and GTC 3 do not power up.
- q. BAT 1 Switch ON
 - (1) Verify ENGINE START BAT TEMP CAS message not present.
 - **NOTE** •
 - If ENGINE START BAT TEMP CAS message is displayed, perform ENGINE START BAT TEMP checklist.
 - (2) Verify the MFD and GTC 3 power up.
 - **NOTE** •
 - During the initialization process, expect the FADEC System annunciators to cycle On & Off and between channels.
- r. Oxygen Pressure CHECK
- s. OXYGEN MASTER Switch ON
- t. Oxygen Mask(s)..... CHECK
 - **NOTE** •
 - It is recommended to verify oxygen flow using the press to test feature on the mask on at least a monthly basis.
- u. OXYGEN MIC SELECT CHECK AND SET
- v. PROBE HEAT ON AND CHECK NO CAS THEN OFF
- w. LightsON AND CHECK OPERATION THEN OFF
- x. Autopilot..... ON
- y. AP DISC Button PRESS

(Continued on next page)

(Continued)

- z. AP and YD PFD Annunciations.....CONFIRM
- aa. Aural AP Disconnect Tone.....CONFIRM
- ab. Fuel Control Switch.....LEFT
 - (1) Verify cyan L MAN selection box is displayed on the fuel section of the EIS.
 - (2) Verify no FUEL VALVE CAS messages are displayed.
- ac. Fuel Control Switch..... RIGHT
 - (1) Verify cyan MAN R selection box is displayed on the fuel section of the EIS.
 - (2) Verify no FUEL VALVE CAS messages are displayed.
- ad. Fuel Control Switch..... AUTO
 - (1) Verify white L or R selection box is displayed in the fuel section of the EIS.
- ae. BAT 1 and BAT 2 SwitchesOFF
- af. Test brakes by pressing brake pedals.

• WARNING •

Do not fly aircraft if brake pedals on either side feel soft or spongy.

• NOTE •

Complete the **Icing Conditions** Preflight Inspection Checklist if flight in icing conditions is expected or possible.

- 2. Engine Preflight
 - a. Engine Inlet.....CLEAR, COVER REMOVED, INSPECT
 - b. Engine Fan, DuctINSPECT, CLEAR
 - c. Engine Inlet Probes..... INSPECT
- 3. Left Forward Wing
 - a. LH Wing Root Vortex Generator..... CHECK
 - b. LH Fuel Collector Drain SAMPLE
 - c. LH Wing Deicer and Leading Edge.....CONDITION
 - d. LH MLGCONDITION
 - e. LH MLG Door..... CONDITION, SECURITY
 - f. LH Fuel Tank Drain SAMPLE
 - g. LH Fuel Cap..... CHECK FUEL LEVEL AND SECURE

(Continued)

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4. Left Wing Tip
 - a. LH Wing Tip, Strobe/Nav Lights ... CONDITION AND SECURITY
 - b. Pitot Probe CLEAR, COVER REMOVED

5. Left Wing Trailing Edge and Left Main Gear
 - a. LH Aileron, Roll Trim Tab CONDITION, MOTION
 - b. T-Strip CHECK
 - c. Static Wicks CHECK
 - d. LH Fuel Vent CLEAR
 - e. LH Flap CONDITION
 - f. LH MLG Brakes, Wheel and Tire CONDITION
 - (1) Brake Pads VISUALLY INSPECT FRICTIONAL MATERIAL
 - (a) Center channel indicates thickness is greater than wear limit.
 - (b) Edges are free from voids or large sections of material missing.
 - (2) Brake Discs VISUALLY INSPECT SURFACE CONDITION
 - (a) Surface appears smooth and uniform.
 - (b) Surface is free from irregularities such as large grooves, bumps, or deposits from brake pads.
 - (3) Brake Lines VISUALLY INSPECT
 - (a) Flexible lines for chafe and distress.
 - (b) Lines for leaking.

• NOTE •

Refer to [Section 8: Handling and Servicing, "Brake Overheat Inspection"](#).

(Continued on next page)

(Continued)

- 6. Left Fuselage
 - a. Baggage Circuit Breaker Panel CHECK AND SET
 - b. Baggage CHECK, SECURE
 - c. Baggage Door SECURE
 - d. External Power Service Door SECURE
 - e. Static Ports CONDITION, CLEAR
 - f. Nacelle INSPECT
 - g. Pylon Panels INSPECT
 - h. Pylon NACA Inlet INSPECT
 - i. Pylon Louver CLEAR
 - j. Antennae CONDITION
 - k. OAT Probes CONDITION
 - l. Ram Scoop Inlet CLEAR
 - m. Cabin Pressurization Static Port CLEAR
- 7. Empennage
 - a. Engine Nozzle INSPECT
 - b. Second LP Turbine INSPECT

• NOTE •

When inspecting the LP Turbine, look for Foreign Object Damage (FOD), overall damage, cracks, deformation, and evidence of pooled liquid (water, fuel, oil, etc.). If evidence of an oil leak is present, isolate the cause and correct.

A flashlight may be necessary to accomplish this step.

- c. Stabilizer Deicers CONDITION
- d. Ruddervators, Pitch Servo Tabs CONDITION, MOTION
- e. Ventral Fins CONDITION
- f. Yaw SAS CONDITION, MOTION
- g. Static Wicks CHECK
- h. Tail Lights CONDITION, SECURITY

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(Continued)

- 8. Right Fuselage
 - a. Engine Preflight COMPLETE
 - (1) Pylon NACA Inlet..... CLEAR
 - (2) Engine Oil Level CHECK
 - (3) Oil Cap.....CONDITION, SECURITY
 - b. Right Fuselage
 - (1) Static Ports CONDITION, CLEAR
 - (2) Overboard Drains CLEAR, NO LEAKS
 - (3) Cabin Pressurization Static Port CLEAR

- 9. Right Wing Trailing Edge and Right Main Gear
 - a. RH MLG Brakes, Wheel and Tire CONDITION
 - (1) Brake Pads..... VISUALLY INSPECT FRICTIONAL MATERIAL
 - (a) Center channel indicates thickness is greater than wear limit.
 - (b) Edges are free from voids or large sections of material missing.
 - (2) Brake Discs..... VISUALLY INSPECT SURFACE CONDITION
 - (a) Surface appears smooth and uniform.
 - (b) Surface is free from irregularities such as large grooves, bumps, or deposits from brake pads.
 - (3) Brake Lines..... VISUALLY INSPECT
 - (a) Flexible lines for chafe and distress.
 - (b) Lines for leaking.

 - NOTE •**
Refer to [Section 8: Handling and Servicing, "Brake Overheat Inspection"](#).
 - b. RH Flap CONDITION
 - c. Static Wicks CHECK
 - d. RH Fuel Vent..... CLEAR
 - e. RH Aileron, Roll Servo Tab..... CONDITION, MOVEMENT
 - f. T-Strip CHECK

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10. Right Wing Tip

- a. RH Wing Tip, Strobe/Nav Lights CONDITION, SECURITY
- b. Pitot Probe CLEAR, COVER REMOVED

11. Right Forward Wing

- a. RH Fuel Cap CHECK FUEL LEVEL AND SECURE
- b. RH Fuel Tank Drain SAMPLE
- c. RH MLG Door CONDITION, SECURITY
- d. RH MLG CONDITION
- e. RH Wing Deicer and Leading Edge CONDITION
- f. RH Fuel Collector Drain SAMPLE
- g. RH Wing Root Vortex Generator CHECK

12. Nose, Right Side

- a. Egress Window CONDITION, SECURITY (HANDLE FLUSH)
- b. Air Conditioning Air Inlet CLEAR
- c. Windshield Spray Bar CLEAR
- d. AOA Vane CLEAR, COVER REMOVED,
CONDITION, MOTION

13. Nose

- a. Lightning Diverters (if equipped) CONDITION
- b. Radome Spray Nozzle CONDITION
- c. EVS Camera FREE & CLEAR
- d. NLG CONDITION
- e. NLG Door CONDITION, SECURITY
- f. NLG Wheel, Tire CONDITION

• CAUTION •

NLG Wheel must be pointing forward.

Before Engine Start

• NOTE •

Extended use of Battery 1 without charging power will deplete the battery and may preclude battery engine start. Extended battery only ground operations (to obtain clearances, radio communications, entering and saving flight plans, etc.) may be accomplished utilizing Battery 2 to preserve starting battery capacity.

Do not change position of flaps until all avionics have completed initialization.

1. Preflight Inspection COMPLETE
2. Door LATCHED
3. Parking Brake A/R
4. BAT 1 and BAT 2 Switches ON
5. GEN 1 and GEN 2 Switches ON
6. External GPU AS NEEDED SET 28 VDC, 800 A (MINIMUM), 1000 A (MAXIMUM)
7. Verify active FADEC channel is displayed below % thrust indication.

Engine Start

• CAUTION •

Point nose of the aircraft into the wind. If this is not possible (and if the speed of the tailwind component exceeds 10 knots), do not operate engine N1 speed above 60% until the aircraft rolling speed is greater than the tailwind component. Running the engine with a tailwind can cause the engine to surge or result in high ITT.

If engine maintenance has been performed, air in fuel lines may cause a hot start. Ensure that proper purging procedures have been accomplished prior to attempting a start. Be prepared to abort start.

If oil pressure is outside the limits, shut down engine.

• NOTE •

Refer to [Section 2: Limitations, "Engine Start"](#) for engine start limitations.

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(Continued)

1. Strobe Lights ON
2. CAS Messages CHECK
3. Thrust Lever IDLE
4. Brakes..... HOLD
5. Engine Knob RUN
6. Fuel Pump CHECK
 - a. Verify FUEL PUMP ON Advisory CAS is displayed.
 - b. Audibly confirm pump is ON.
7. Verify ENGINE START BAT TEMP or ENGINE START VOLTS CAS message is not displayed.
8. Engine Button PRESS
9. Engine Instruments..... MONITOR

• CAUTION •

At 25% N2, ensure positive N1 indication.

Be prepared to abort start. If any of the following occur, abort start:

- ITT exceeds limits (red line).
- No N1 indication by 25% N2.
- No evidence of lightoff within 8 seconds.
- Low oil pressure after start.

10. EIS CHECK ALL NORMAL
11. Engine IPS A/R
12. ECS Control Panel SET
13. External GPU DISCONNECT
14. Oxygen Master Switch VERIFY ON
15. Avionics Initialization ALL INITS COMPLETE
16. CAPS Pin REMOVE AND STOW
17. Passengers..... BRIEF
18. Seat Belts..... SECURED

• NOTE •

The BLEED switch should not be set to BLEED until BAT 1 and BAT 2 have been ON for 2 minutes or more.

19. BLEED Switch..... BLEED

Before Taxi

• **WARNING** •

When operating aircraft on the ground in snow or icing conditions, N2 should be increased to 70% for 30 seconds every 10 minutes to ensure the inlet remains clear of ice. Failure to comply may result in ice accretions that may cause engine damage and possible loss of available thrust. This may lead to loss of aircraft and/or cause significant injury or loss of life.

1. COM and NAV/GPSSET
2. ATIS/ClearanceOBTAIN
3. Altimeter SET/CHECK
4. TransponderSET
5. Heading/Initial ALTSET
6. Flight Controls FREE & CORRECT

• **CAUTION** •

If TT2 HEAT FAIL Caution occurs with Engine IPS ON, dispatch is not allowed.

• **NOTE** •

Turn Engine IPS ON if OAT ≤ 41 °F (5 °C) with visible moisture or visibility of less than 1 mile (1.6 km).

7. TrimSET
8. Flaps 50%
9. Electric Roll Trim.....SET
10. TO/GA Button PRESS
11. CAS Messages..... CHECK
12. Seats must be in normal upright position.
13. Parking Brake RELEASE
14. Brakes CHECK

• **NOTE** •

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

Before Takeoff

• WARNING •

When operating aircraft on the ground in snow or icing conditions, N2 should be increased to 70% for 30 seconds every 10 minutes to ensure the inlet remains clear of ice. Failure to comply may result in ice accretions that may cause engine damage and possible loss of available thrust. This may lead to loss of aircraft and/or cause significant injury or loss of life.

1. Departure Briefing COMPLETE
2. Landing Lights A/R

• CAUTION •

Above 41 °F (5 °C), probe heat may only be ON for 5 minutes (continuous) during ground operations. Extended use in warmer temperatures may damage the composite structure adjacent to the pitot probe.

3. PROBE HEAT Switch ON
4. ENGINE IPS Switch A/R
5. WING/STAB IPS Switch OFF
6. CAS Messages CHECK
7. Trim SET
8. Flaps 50%
9. Verify TAKEOFF EMER BAT CAS message is not displayed.
10. Multi-Function Windows CONFIGURE

• WARNING •

Do not takeoff until oil temperature > 50 °F (10 °C). Failure to comply may cause possible engine damage.

Takeoff is prohibited with any frost (polished or not), ice, snow, or slush adhering to the wings, stabilizers, control surfaces, engine inlet, or fuselage forward of the engine inlet. A tactile inspection in accordance with Section 2, Limitations, must be accomplished no more than 5 minutes prior to takeoff when operating in ground icing conditions.

• CAUTION •

Flight operations with FADEC CH A or CH B inoperable are prohibited. Engine reliability and certification is predicated on having FADEC A and FADEC B available before dispatch. Attempting to operate with only one FADEC may result in loss of thrust or thrust control.

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• NOTE •

Prior to takeoff, engine should run at low thrust to stabilize engine temperature before Takeoff thrust is selected.

Following engine start, a warm engine should run at idle thrust for at least 2 minutes prior to takeoff.

If OAT < - 4 °F (-20 °C), run the engine at < 80% N2 until oil temperature has been above 81 °F (27 °C) for at least 5 minutes.

Normal Takeoff

1. BrakesHOLD
2. Thrust Lever..... T/O
3. Thrust Setting (N1% Indicator).....ALIGNED w/ BUG (T)
4. Engine InstrumentsCHECK NORMAL
5. Brakes RELEASE
6. V_R..... 80-90 KIAS
7. Pitch Attitude 5°
8. Landing Gear UP w/ POSITIVE RATE OF CLIMB
9. Flaps UP AT 115 KIAS, CLEAR OF OBSTACLES
10. AirspeedPER CLIMB TABLES

• NOTE •

Rolling takeoffs are permitted and will increase takeoff distance.

Climb

• CAUTION •

Thrust set to Takeoff thrust is limited to 5 minutes maximum. If practical, reduce to MCT within 2 minutes of selecting Takeoff thrust. Engine life and maintenance costs are contingent upon observing the 2-minute limit of Takeoff thrust for every 72 minutes of flight.

• NOTE •

Due to engine deck angle limitations, the pilot should avoid operation at deck angles of 20° or greater for more than 30 seconds.

1. Thrust Lever MCT
2. Engine Parameters MONITOR
3. Cabin Pressure MONITOR
4. Ice Protection A/R
5. Altimeter Transition Altitude SET 29.92 INCHES / 1013 MB

Cruise

1. Thrust Lever A/R
2. Ice Protection A/R
- ◆ If in RVSM Airspace:
 - If Wing/Stab IPS ON:
 - (1) Contact ATC and notify of non-RVSM status.
3. EIS MONITOR

Descent

1. Thrust Lever A/R
2. Landing Field Elevation CHECK
3. Ice Protection A/R
4. Altimeter Transition Altitude LOCAL SETTING
5. Seats and Seat Belts SECURE
6. Brake Pressure CHECK

Approach

1. Approach Briefing COMPLETE
2. All seats must be in normal upright position.
3. Ice ProtectionA/R
4. LightsA/R
5. Flaps 50%
6. Airspeed 140 KIAS

V_{REF} Speeds (KIAS)					
FLAPS	4000 lb	4500 lb	5000 lb	5500 lb	6000 lb
UP or UNKNOWN	89	95	100	104	109
UP (Ice Contaminated Airframe/ STALL SPEED HIGH Advisory)	115	122	128	135	140
50%	82	87	91	96	100
50% (Ice Contaminated Airframe /STALL SPEED HIGH Advisory)	98	104	110	115	120
100%	71	76	81	85	89

Before Landing

1. Landing GearDOWN AND LOCKED
2. Flaps A/R
3. Cabin Pressure Diff ~0 PSI
4. WINDSHLD IPS SwitchOFF

• NOTE •

IPS fluid decreases flight visibility.

5. AutopilotOFF
6. Airspeed..... V_{REF} TO $V_{REF}+10$
7. Brake Pressure CHECK

Landing

1. Flaps 100% (50%, IF AIRFRAME IS ICE CONTAMINATED)
 2. Airspeed .. V_{REF} (REFER TO LANDING CONSIDERATIONS TABLE)
 3. Thrust Lever..... A/R
- After landing:
4. BrakesA/R

Table 1: Landing Considerations

Normal, Gusty, and Crosswind Landing Considerations	
Normal Approaches	<ul style="list-style-type: none"> • Maintain $V_{REF}+10$ for all flap configurations (UP, 50%, and 100%). • AFM weight-adjusted V_{REF} or green donut on ASI tape are suitable for determining V_{REF} speed.
Gusty Approaches	<ul style="list-style-type: none"> • Maintain recommended approach speed plus half the gust factor.
Normal Landings	<ul style="list-style-type: none"> • 100% flaps is recommended as it provides the shortest landing distance and provides the lowest landing energy for tire and brake wear. • 50% flap landings are required for approaches with ice contaminated airframe and are recommended when crosswinds are higher than 15 knots.
Crosswind Landings	<ul style="list-style-type: none"> • Recommended technique is to maintain an additional 5 knots above normal approach and landing speeds to accommodate increased stall and stall warning speed when side slip is added. • Do not prolong flare.

• NOTE •

Stall speed increases when aircraft is not coordinated. The aircraft provides stall warning at lower angle-of-attack (higher speed) when aircraft is held in slip or skid. This is relevant for crosswind landing cases. When transitioning from crab to side slip/wing low landing technique, expect an increase in stall speed by 3-5 knots for a full ball side slip.

Go-Around

1. Thrust Lever T/O
2. TO/GA Button PRESS
3. Pitch Attitude 7°
4. Flaps 50%
5. Landing Gear UP w/ POSITIVE RATE OF CLIMB
6. Airspeed V_x
7. Flaps UP AT 115 KIAS, CLEAR OF OBSTACLES
8. Climb Out RESUME NORMAL CLIMB OUT

After Landing

1. Flaps UP
2. WING/STAB IPS Switch OFF
3. ENGINE IPS Switch A/R

• CAUTION •

Above 41 °F (5 °C), probe heat may only be ON for 5 minutes (continuous) during ground operations. Extended use in warmer temperatures may damage the composite structure adjacent to the pitot probe.

4. PROBE HEAT Switch OFF
5. External Lights A/R
6. Brakes CHECK

• NOTE •

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

Shutdown

• **NOTE** •

Allow engine to remain at ground idle for 2 minutes (minimum) prior to shutdown for hot section component temperatures to equalize.

1. Thrust Lever..... IDLE
2. ENGINE IPS Switch OFF
3. BLEED Switch FRESH
4. OXYGEN MASTER Switch..... OFF
5. Lights OFF

• **CAUTION** •

To avoid unnecessary FADEC System faults, do not remove aircraft power until $N_2 < 24\%$.

6. Engine Knob OFF
7. Engine Button..... PRESS
8. N_2 BELOW 24%
9. CAPS Pin..... REPLACE
10. GEN 1 and GEN 2 Switches OFF
11. BAT 1 and BAT 2 Switches OFF
12. Parking Brake A/R
13. Egress Door Pin..... REPLACE
14. Airplane..... SECURE

• **CAUTION** •

Moving airplane with parking brake set may result in aircraft damage.

Icing Conditions

Preflight Inspection

• WARNING •

In cold weather, remove all frost (polished or not), ice, snow, or slush from fuselage, wing, stabilizers, control surfaces, and engine inlet.

Ensure that control surfaces are free of internal ice or debris. Check that wheels are free of snow and ice accumulation.

Failure to comply may result in significant aircraft damage, loss of aircraft, and/or loss of life.

1. Cabin

- a. Circuit Breakers..... SET
- b. BAT 1 and BAT 2 Switches ON
- c. WINDSHLD IPS MAX SwitchPRESS & HOLD UNTIL FLUID EXITS SPRAY BAR
- d. IPS Fluid VERIFY QUANTITY

• NOTE •

IPS fluid minimum dispatch quantity is 1 U.S. gallon (4 L).

- e. ICE Light ON

2. Exterior

- a. ICE Light CHECK
- b. Nose Section VERIFY EVIDENCE OF IPS FLUID

• NOTE •

Fluid will spray clear of the airframe.

- c. Engine Inlet..... INSPECT

3. Cabin

- a. PROBE HEAT SwitchON AND CHECK NO CAS THEN OFF
- b. ICE LightOFF
- c. BAT 1 and BAT 2 Switches.....OFF

Before Takeoff

1. ENGINE IPS Switch .. ON AND CHECK OPERATION AND NO CAS THEN A/R
2. WING/STAB IPS Switch ... ON AND CHECK OPERATION AND NO CAS THEN OFF

• WARNING •

Takeoff is prohibited with any frost (polished or not), ice, snow, or slush adhering to the wings, stabilizers, control surfaces, engine inlet, or fuselage forward of the engine inlet. A tactile inspection in accordance with Section 2, Limitations, must be accomplished no more than 5 minutes prior to takeoff when operating in ground icing conditions.

IPS Activation

OAT ≤ 41 °F (5 °C) with visible moisture or visibility < 1 mile (1.6 km)

In Flight:

1. PROBE HEAT SwitchON
2. ENGINE IPS SwitchON
3. WING/STAB IPS Switch OFF
4. WINDSHLD IPS Switch OFF

On Ground:

1. PROBE HEAT SwitchON
2. ENGINE IPS SwitchON

At first sign of ice

• **WARNING** •

Ice contamination of the lifting surfaces may result in an inoperable or inadequate stall warning, which may cause an inadvertent stall. The resulting stall may lead to loss of control of the airplane. The

WING/STAB IPS switch must remain at the ON position until the entire wing is free of ice accretion and ice is no longer accreting on the aircraft. Stall Warning offset must remain ON until entire airframe is free of ice.

• **NOTE** •

The left wing leading edge is the primary reference area for determining if ice is accumulating on the aircraft. Ice may be visible on other areas of the aircraft as well, such as the forward windshield.

1. PROBE HEAT Switch..... ON
2. ENGINE IPS Switch..... ON
3. WING/STAB IPS Switch..... ON

◆ In RVSM Airspace:

- a. Contact ATC and notify of non-RVSM status.

• **NOTE** •

Verify STALL SPEED HIGH CAS Advisory is present.

4. WINDSHLD IPS Switch..... ON

• **CAUTION** •

For every 10 minutes that the aircraft is operating on the ground during falling or blowing snow or any freezing moisture, a static engine run-up to 70% N2 for 30 seconds is required to ensure the engine intake, Tt2 probes, and Pt2 probes remain clear of ice.

Failure to comply may result in ice accretions that may cause engine damage and possible loss of available thrust.

• **NOTE** •

Leave inlet IPS active for at least 2 minutes before turning it off again.

Section 5: Performance Data

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Introduction

Performance data in this section are presented for operational planning so that you will know what performance to expect from the airplane under various ambient and field conditions. Performance data are presented for takeoff, climb, cruise (including range & endurance), and landing.

All data based on published normal procedures.

Standard Charts

Associated Conditions Affecting Performance

Computed performance data in this section are based upon data derived from actual flight testing with the airplane and engine in good condition and using average piloting techniques. Unless specifically noted in the “Conditions” notes presented with each table, ambient conditions are for a standard day. Flap position as well as thrust setting technique is similarly noted with each table.

The charts in this section provide data for ambient temperatures from -4 °F (-20 °C) to 104 °F (40 °C). If ambient temperature is below the chart value, use the lowest temperature shown to compute performance. This will result in more conservative performance calculations.

• WARNING •

Use extreme caution at high density altitudes as performance degrades rapidly with increasing density altitude.

For operations at altitudes below sea level, use Mean Sea Level (MSL) values.

RELATED LINKS:

[Section 1: General, "Meteorological Terminology"](#).

Temperature Conversion

Temp to Convert °C or °F			Temp to Convert °C or °F			Temp to Convert °C or °F		
°C	<>	°F	°C	<>	°F	°C	<>	°F
-50	-58	-72	-17	2	36	17	62	144
-49	-56	-69	-16	4	39	18	64	147
-48	-54	-65	-14	6	43	19	66	151
-47	-52	-62	-13	8	46	20	68	154
-46	-50	-58	-12	10	50	21	70	158
-44	-48	-54	-11	12	54	22	72	162
-43	-46	-51	-10	14	57	23	74	165
-42	-44	-47	-9	16	61	24	76	169
-41	-42	-44	-8	18	64	26	78	172
-40	-40	-40	-7	20	68	27	80	176
-39	-38	-36	-6	22	72	28	82	180
-38	-36	-33	-4	24	75	29	84	183
-37	-34	-29	-3	26	79	30	86	187
-36	-32	-26	-2	28	82	31	88	190
-34	-30	-22	-1	30	86	32	90	194
-33	-28	-18	0	32	90	33	92	198
-32	-26	-15	1	34	93	34	94	201
-31	-24	-11	2	36	97	36	96	205
-30	-22	-8	3	38	100	37	98	208
-29	-20	-4	4	40	104	38	100	212
-28	-18	0	6	42	108	39	102	216
-27	-16	3	7	44	111	40	104	219
-26	-14	7	8	46	115	41	106	223
-24	-12	10	9	48	118	42	108	226
-23	-10	14	10	50	122	43	110	230
-22	-8	18	11	52	126	44	112	234
-21	-6	21	12	54	129	46	114	237
-20	-4	25	13	56	133	47	116	241
-19	-2	28	14	58	136	48	118	244
-18	0	32	16	60	140	49	120	248

OAT for International Standard Atmosphere (ISA) Condition

Press Alt Feet	ISA -30 °C		ISA -15 °C		ISA		ISA +15 °C		ISA +30 °C	
	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
SL	-15	5	0	32	15	59	30	86	45	113
1000	-17	1	-2	28	13	55	28	82	43	109
2000	-19	-2	-4	25	11	52	26	79	41	106
3000	-21	-6	-6	21	9	48	24	75	39	102
4000	-23	-9	-8	18	7	45	22	72	37	99
5000	-25	-13	-10	14	5	41	20	68	35	95
6000	-27	-17	-12	10	3	37	18	64	33	91
7000	-29	-20	-14	7	1	34	16	61	31	88
8000	-31	-24	-16	3	-1	30	14	57	29	84
9000	-33	-27	-18	0	-3	27	12	54	27	81
10,000	-35	-31	-20	-4	-5	23	10	50	25	77
11,000	-37	-35	-22	-8	-7	19	8	46	23	73
12,000	-39	-38	-24	-11	-9	16	6	43	21	70
13,000	-41	-42	-26	-15	-11	12	4	39	19	66
14,000	-43	-45	-28	-18	-13	9	2	36	17	63
15,000	-45	-49	-30	-22	-15	5	0	32	15	59
16,000	-47	-53	-32	-26	-17	1	-2	28	13	55
17,000	-49	-56	-34	-29	-19	-2	-4	25	11	52
18,000	-51	-60	-36	-33	-21	-6	-6	21	9	48
19,000	-53	-63	-38	-36	-23	-9	-8	18	7	45
20,000	-55	-67	-40	-40	-25	-13	-10	14	5	41
21,000	-57	-71	-42	-44	-27	-17	-12	10	3	37
22,000	-59	-74	-44	-47	-29	-20	-14	7	1	34
23,000	-61	-78	-46	-51	-31	-24	-16	3	-1	30
24,000	-63	-81	-48	-54	-33	-27	-18	0	-3	27
25,000	-65	-85	-50	-58	-35	-31	-20	-4	-5	23
26,000	-67	-89	-52	-62	-37	-35	-22	-8	-7	19
27,000	-69	-92	-54	-65	-39	-38	-24	-11	-9	16
28,000	-71	-96	-56	-69	-41	-42	-26	-15	-11	12
29,000	-72	-98	-57	-71	-42	-44	-27	-17	-12	10

Press Alt Feet	ISA -30 °C		ISA -15 °C		ISA		ISA +15 °C		ISA +30 °C	
	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
30,000	-74	-102	-59	-75	-44	-48	-29	-21	-14	6
31,000	-76	-106	-61	-79	-46	-52	-31	-25	-16	2

Pressure Conversion - Inches of Mercury to Millibars

Inches Of Mercury	Millibars
28.0	948
28.1	951
28.2	955
28.3	958
28.4	962
28.5	965
28.6	968
28.7	972
28.8	975
28.9	979
29.0	982
29.1	985
29.2	989
29.3	992
29.4	995
29.5	999

Inches Of Mercury	Millibars
29.6	1002
29.7	1006
29.8	1009
29.9	1012
30.0	1016
30.1	1019
30.2	1023
30.3	1026
30.4	1029
30.5	1033
30.6	1036
30.7	1040
30.8	1043
30.9	1046
31.0	1050

Fuel Quantity Conversion - U.S. Gallons to Liters

• NOTE •

Fuel mass provided for reference assuming nominal 6.76 lb/gallon
at 59 °F (15 °C).

U.S. Gallons (Liters)	Lb (Kg)
10 (37.9)	67.6 (30.7)
20 (75.7)	135.2 (61.3)
30 (113.6)	202.8 (92.0)
40 (151.4)	270.4 (122.7)
50 (189.3)	338.0 (153.3)
60 (227.1)	405.6 (184.0)
70 (265.0)	473.2 (214.6)
80 (302.8)	540.8 (245.3)
90 (340.7)	608.4 (276.0)
100 (378.5)	676.0 (306.6)
110 (416.4)	743.6 (337.3)
120 (454.2)	811.2 (368.0)
130 (492.1)	878.8 (398.6)
140 (530.0)	946.4 (429.3)
150 (567.8)	1014.0 (459.9)

U.S. Gallons (Liters)	Lb (Kg)
160 (605.7)	1081.6 (490.6)
170 (643.5)	1149.2 (521.3)
180 (681.4)	1216.8 (551.9)
190 (719.2)	1284.4 (582.6)
200 (757.1)	1352.0 (613.3)
210 (794.9)	1419.6 (643.9)
220 (832.8)	1487.2 (674.6)
230 (870.6)	1554.8 (705.2)
240 (908.5)	1622.4 (735.9)
250 (946.4)	1690.0 (766.6)
260 (984.2)	1757.6 (797.2)
270 (1022.1)	1825.2 (827.9)
280 (1059.9)	1892.8 (858.6)
290 (1097.8)	1960.4 (889.2)
300 (1135.6)	2028.0 (919.9)

Weight Conversion - Pounds to Kilograms

Pounds	Kilograms
6500	2948
6400	2903
6300	2858
6200	2812
6100	2767
6000	2722
5900	2676
5800	2631
5700	2585
5600	2540
5500	2495
5400	2449
5300	2404
5200	2359
5100	2313
5000	2268

Pounds	Kilograms
4900	2223
4800	2177
4700	2132
4600	2087
4500	2041
4400	1996
4300	1950
4200	1905
4100	1860
4000	1814
3900	1769
3800	1724
3700	1678
3600	1633
3500	1588

Distance Conversion: Feet to Meters

Feet	Meters
10	3
20	6
30	9
40	12
50	15
60	18
70	21
80	24
90	27
100	30
200	61
300	91
400	122
500	152

Feet	Meters
600	183
700	213
800	244
900	274
1000	305
2000	610
3000	914
4000	1219
5000	1524
6000	1829
7000	2134
8000	2438
9000	2743
10,000	3048

Length Conversion: Inches to Centimeters

Inches	Centimeters
1	2.54
2	5.08
3	7.62
4	10.16
5	12.70
6	15.24
7	17.78
8	20.32
9	22.86
10	25.40
11	27.94
12	30.48

Inches	Centimeters
20	50.8
30	76.2
40	101.6
50	127
60	142.4
70	177.8
80	203.2
90	228.6
100	254
150	381
200	508
250	635

Static Source Error Correction

Airspeed Correction

Conditions:

- Thrust for level flight or MCT, whichever is less.
- For altitudes below FL180 use the subsequent table.
- For altitudes above FL280 indicated airspeed is equal to calibrated airspeed (zero static source error).
- For altitudes between FL180 and FL280 interpolate between the table below and zero static source error.

• **NOTE** •

Indicated airspeed values assume zero instrument error.

KIAS	KCAS		
	Flap Deflection		
	0%	50%	100%
60			62
70		70	70
80	81	81	79
90	92	91	89
100	102	101	98
110	112	111	108
120	122	121	117
130	133	131	127
140	143	141	137
150	152	151	147
160	161	160	
170	170	169	
180	180	178	
190	190	188	
200	200		
210	210		
220	220		
230	230		
240	240		
250	250		

Altitude Correction, Flaps: 0%

Conditions:

- Thrust for level flight or MCT, whichever is less.
- For altitudes below FL180 use the subsequent table.
- For altitudes above FL280 indicated airspeed is equal to calibrated airspeed (zero static source error).
- For altitudes between FL180 and FL280 interpolate between the table below and zero static source error.

• NOTE •

Add correction to desired altitude to obtain indicated altitude to fly.

Indicated airspeed values assume zero instrument error.

Indicated Airspeed (KIAS)	CORRECTION TO BE ADDED (ft)						
	Indicated Altitude (ft MSL)						
	0	5000	10,000	15,000	20,000	25,000	28,000
80	9	10	12	14	17	20	22
90	13	15	17	20	24	28	32
100	17	19	23	27	31	37	42
110	21	24	29	33	40	47	52
120	25	30	35	41	48	57	63
130	30	35	41	48	56	67	75
140	35	40	47	55	65	78	86
150	33	39	45	53	62	74	82
160	19	23	26	31	37	43	48
170	4	5	5	6	7	9	10
180	0	0	0	0	0	0	0
190	0	0	0	0	0	0	0
200	0	0	0	0	0	0	0
210	0	0	0	0	0	0	0
220	0	0	0	0	0	0	0
230	0	0	0	0	0	0	0
240	0	0	0	0	0	0	0
250	0	0	0	0	0	0	0

Altitude Correction, Flaps: 50%

Conditions:

- Thrust for level flight or MCT, whichever is less.

• NOTE •

Add correction to desired altitude to obtain indicated altitude to fly.

Indicated airspeed values assume zero instrument error.

Indicated Airspeed (KIAS)	CORRECTION TO BE ADDED (ft)		
	Indicated Altitude (ft MSL)		
	0	5000	10,000
70	2	3	3
80	4	4	5
90	5	6	7
100	7	8	10
110	9	11	12
120	12	13	16
130	14	16	19
140	17	20	23
150	13	16	18
160	-2	-2	-2
170	-19	-22	-25
180	-29	-33	-39
190	-36	-42	-49

Altitude Correction, Flaps: 100%

Conditions:

- Thrust for level flight or MCT, whichever is less.

• NOTE •

Add correction to desired altitude to obtain indicated altitude to fly.

Indicated airspeed values assume zero instrument error.

Indicated Airspeed (KIAS)	CORRECTION TO BE ADDED (ft)		
	Indicated Altitude (ft MSL)		
	0	5000	10,000
60	8	10	11
70	2	3	3
80	-4	-5	-6
90	-10	-12	-14
100	-16	-19	-22
110	-22	-25	-29
120	-27	-31	-36
130	-31	-36	-42
140	-35	-41	-47
150	-45	-52	-61

Stall Speeds

Bank Angle Deg	STALL SPEEDS (KCAS) AT IDLE		
	Flap Deflection		
	0%	50%	100%
6000 lb			
0	86	77	67
15	88	78	68
30	92	83	72
45	102	92	80
60	122	109	95
5550 lb			
0	83	74	64
15	84	75	66
30	89	80	69
45	98	88	77
60	117	105	91
5200 lb			
0	80	72	62
15	81	73	63
30	86	77	67
45	95	85	74
60	113	101	88
4800 lb			
0	77	69	60
15	78	70	61
30	83	74	64
45	91	82	71
60	109	97	85

Stall Speeds (Ice Contaminated Airframe/STALL SPEED HIGH Advisory)

WING/STAB IPS: ON

• NOTE •

Actual stick pusher speed is dependent on physical ice accretion.

Bank Angle Deg	STALL SPEEDS (KCAS) AT IDLE	
	Flap Deflection	
	0%	50%
6000 lb		
0	108	93
15	110	95
30	116	100
45	128	111
5550 lb		
0	104	89
15	106	91
30	112	96
45	124	106
5200 lb		
0	101	87
15	102	88
30	108	93
45	120	103
4800 lb		
0	97	83
15	98	85
30	104	89
45	115	99

Wind Components

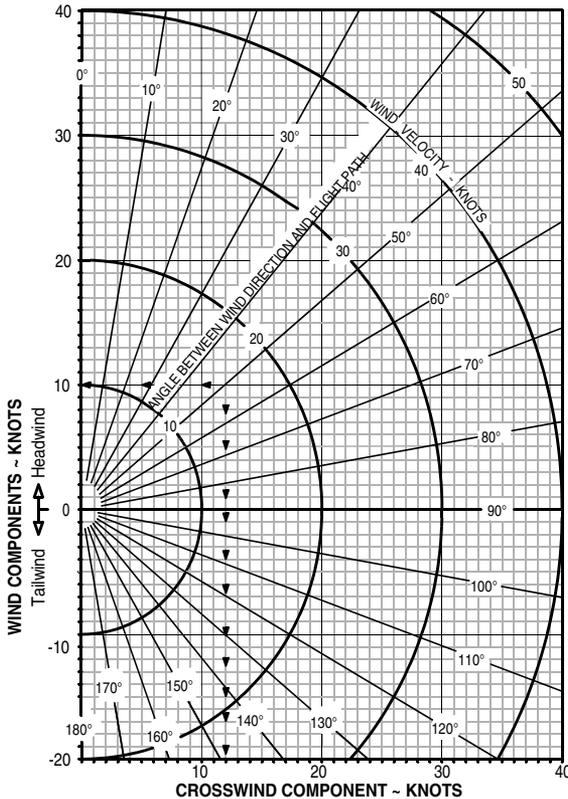
Example:

Runway Heading 10°
 Wind Direction 60°
 Wind Velocity 15 Knots

• NOTE •

Maximum demonstrated crosswind is 16 knots for 100% flaps, and 18 knots for 50% flaps. Reduced flap settings enable higher crosswind limits.

Figure 5-1: Wind Components



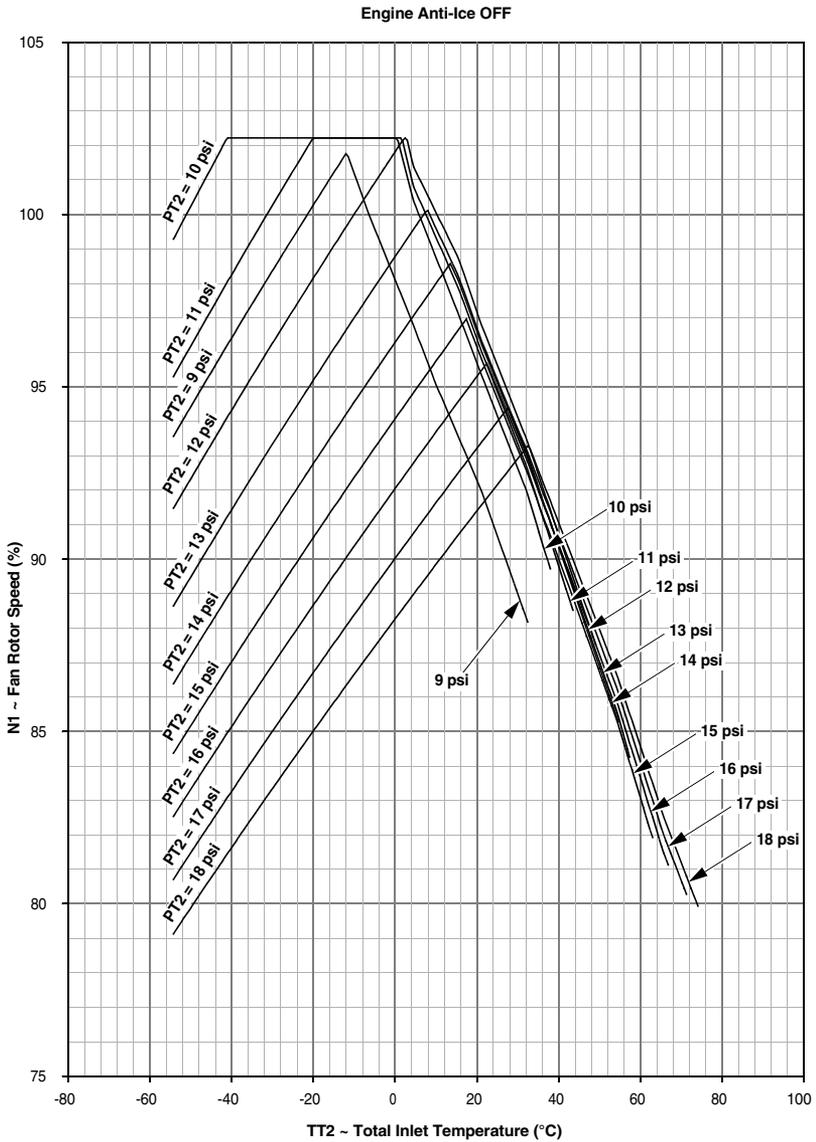
SF50_FM05_0017

Takeoff Power Setting (N1)

• NOTE •

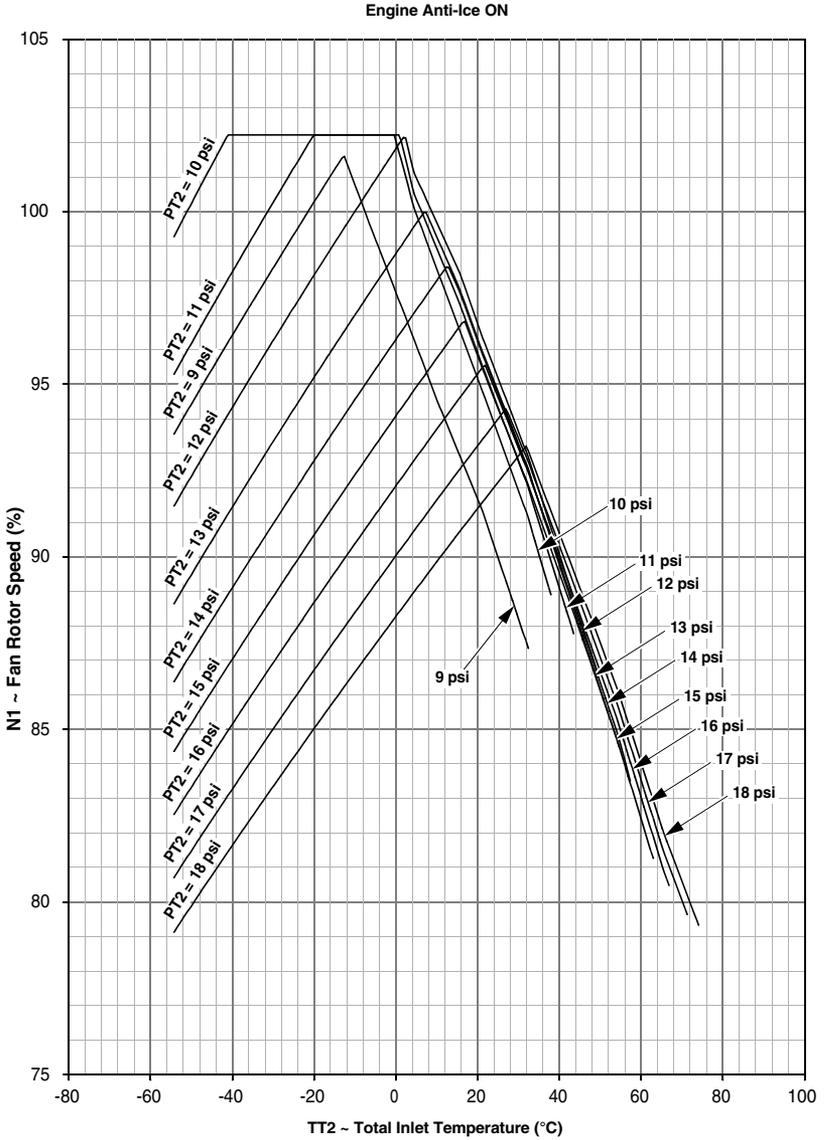
FADEC PT2 and TT2 values are displayed on the FUEL SYNOPTIC page.

Figure 5-2: Takeoff N1, Engine Anti-Ice: OFF



SF50_FM05_0049

Figure 5-3: Takeoff N1, Engine Anti-Ice: ON



SF50_FM05_0050

Takeoff Distance

Takeoff Weight: 6000 lb (2722 kg)

Engine Anti-Ice: A/R

Winds Calm
Runway..... Dry, Level, Paved
Thrust Lever T/O
Landing Gear DOWN
Flaps.....50%
BLEED SwitchON

Headwind: Subtract 7% from the ground run and 6% from the total distance for every 10 knots of headwind.

Tailwind: Add 40% to the ground run and 35% to the total distance for every 10 knots of tailwind.

Downhill gradient: Subtract 2% from the ground run for every 1% of downhill gradient.

Uphill gradient: Add 14% to the ground run for every 1% of uphill gradient.

Unpaved runway: Add 21% to the total distance.

• NOTE •

The total distance is over a 50-foot (15-meter) obstacle.
Performance table below considers engine anti-ice off or on
(maximum OAT for activation of Engine IPS is 10° C).

Takeoff Weight: 6000 lb (2722 kg)										
Press Alt Feet	Distance Feet	TEMPERATURE ~°C								ISA
		-20	-10	0	10	20	30	40	50	
SL	Gnd Roll	1780	1851	1924	1999	2231	2757	3418	4284	2036
	Total	2789	2900	3014	3133	3519	4415	5561	7093	3192
1000	Gnd Roll	1855	1928	2005	2084	2386	2947	3652	4591	2106
	Total	2907	3022	3142	3268	3773	4732	5959	7626	3302
2000	Gnd Roll	1930	2007	2086	2169	2586	3193	3970	5005	2175
	Total	3025	3146	3271	3402	4104	5147	6505	8350	3411
3000	Gnd Roll	2006	2087	2170	2331	2806	3466	4323	5462	2316
	Total	3145	3272	3403	3666	4471	5609	7113	9156	3642
4000	Gnd Roll	2084	2168	2255	2533	3048	3768	4711	5967	2452
	Total	3268	3400	3536	4000	4875	6122	7787	10,051	3864
5000	Gnd Roll	2165	2252	2340	2737	3289	4069	5094		2542
	Total	3395	3532	3670	4336	5278	6634	8451		4009
6000	Gnd Roll	2242	2332	2446	2983	3585	4440	5574		2613
	Total	3515	3657	3838	4747	5778	7271	9292		4121
7000	Gnd Roll	2329	2439	2666	3291	3960	4905	6178		2737
	Total	3651	3827	4201	5263	6416	8078	10,361		4321
8000	Gnd Roll	2457	2692	2942	3677	4429	5488	6932		2920
	Total	3853	4241	4654	5912	7216	9091	11,698		4619
9000	Gnd Roll	2735	2996	3297	4141	4996	6197			3212
	Total	4308	4740	5242	6693	8187	10,325			5100
10,000	Gnd Roll	3046	3336	3708	4661	5637	7005			3529
	Total	4817	5299	5926	7575	9289	11,741			5624

Takeoff Weight: 5500 lb (2495 kg)

Engine Anti-Ice: A/R

Winds	Calm
Runway.....	Dry, Level, Paved
Thrust Lever	T/O
Landing Gear	DOWN
Flaps.....	50%
BLEED Switch	ON

Headwind: Subtract 7% from the ground run and 6% from the total distance for every 10 knots of headwind.

Tailwind: Add 40% to the ground run and 36% to the total distance for every 10 knots of tailwind.

Downhill gradient: Subtract 1% from the ground run for every 1% of downhill gradient.

Uphill gradient: Add 13% to the ground run for every 1% of uphill gradient.

Unpaved runway: Add 21% to the total distance.

• NOTE •

The total distance is over a 50-foot (15-meter) obstacle.
Performance table below considers engine anti-ice off or on
(maximum OAT for activation of Engine IPS is 10° C).

Takeoff Weight: 5500 lb (2495 kg)										
Press Alt Feet	Distance Feet	TEMPERATURE ~°C								ISA
		-20	-10	0	10	20	30	40	50	
SL	Gnd Roll	1632	1697	1763	1833	2045	2528	3133	3927	1867
	Total	2458	2555	2656	2761	3099	3885	4887	6227	2812
1000	Gnd Roll	1700	1768	1838	1911	2187	2702	3348	4209	1931
	Total	2561	2663	2769	2879	3322	4163	5236	6693	2910
2000	Gnd Roll	1769	1840	1912	1989	2370	2927	3640	4588	1994
	Total	2666	2772	2882	2998	3613	4526	5714	7327	3006
3000	Gnd Roll	1839	1913	1989	2137	2572	3177	3963	5006	2123
	Total	2771	2883	2998	3230	3935	4931	6247	8031	3208
4000	Gnd Roll	1911	1988	2067	2322	2794	3454	4318	5469	2247
	Total	2880	2996	3116	3523	4290	5381	6836	8813	3404
5000	Gnd Roll	1985	2064	2145	2508	3015	3730	4669	5919	2330
	Total	2991	3112	3234	3818	4643	5829	7417	9572	3531
6000	Gnd Roll	2055	2138	2242	2735	3286	4070	5109	6487	2395
	Total	3097	3222	3381	4178	5081	6387	8153	10,540	3629
7000	Gnd Roll	2135	2236	2444	3017	3630	4497	5663		2509
	Total	3217	3372	3700	4631	5641	7094	9088		3806
8000	Gnd Roll	2252	2468	2697	3370	4060	5031	6355		2677
	Total	3395	3735	4098	5200	6342	7980	10,256		4068
9000	Gnd Roll	2507	2747	3023	3796	4580	5681	7201		2944
	Total	3794	4174	4615	5885	7192	9060	11,690		4490
10,000	Gnd Roll	2792	3058	3399	4273	5167	6422	8167		3235
	Total	4242	4665	5215	6658	8157	10,298	13,340		4950

Takeoff Distance: 5000 lb (2268 kg)

Engine Anti-Ice: A/R

Winds	Calm
Runway.....	Dry, Level, Paved
Thrust Lever	T/O
Landing Gear	DOWN
Flaps.....	50%
BLEED Switch	ON

Headwind: Subtract 7% from the ground run and 6% from the total distance for every 10 knots of headwind.

Tailwind: Add 40% to the ground run and 36% to the total distance for every 10 knots of tailwind.

Downhill gradient: Subtract 1% from the ground run for every 1% of downhill gradient.

Uphill gradient: Add 12% to the ground run for every 1% of uphill gradient.

Unpaved runway: Add 21% to the total distance.

• NOTE •

The total distance is over a 50-foot (15-meter) obstacle.
Performance table below considers engine anti-ice off or on
(maximum OAT for activation of Engine IPS is 10° C).

Takeoff Weight: 5000 lb (2268 kg)										
Press Alt Feet	Distance Feet	TEMPERATURE ~°C								ISA
		-20	-10	0	10	20	30	40	50	
SL	Gnd Roll	1483	1542	1603	1666	1859	2298	2848	3570	1697
	Total	2147	2232	2320	2412	2706	3388	4257	5417	2457
1000	Gnd Roll	1546	1607	1671	1737	1988	2456	3044	3826	1755
	Total	2237	2326	2418	2515	2900	3629	4560	5821	2541
2000	Gnd Roll	1608	1672	1739	1808	2155	2661	3309	4171	1813
	Total	2328	2421	2518	2618	3153	3945	4975	6370	2625
3000	Gnd Roll	1671	1739	1808	1942	2338	2889	3602	4551	1930
	Total	2420	2518	2619	2820	3433	4297	5437	6980	2801
4000	Gnd Roll	1737	1807	1879	2111	2540	3140	3926	4972	2043
	Total	2515	2617	2721	3076	3741	4688	5948	7657	2972
5000	Gnd Roll	1804	1877	1950	2280	2741	3391	4245	5381	2118
	Total	2613	2718	2825	3332	4049	5077	6452	8315	3083
6000	Gnd Roll	1868	1943	2038	2486	2987	3700	4645	5897	2177
	Total	2705	2814	2953	3645	4429	5561	7090	9153	3169
7000	Gnd Roll	1941	2033	2222	2742	3300	4088	5148	6568	2281
	Total	2810	2945	3231	4039	4915	6174	7899	10,254	3322
8000	Gnd Roll	2048	2243	2451	3064	3691	4574	5777	7406	2434
	Total	2966	3261	3577	4533	5523	6942	8910	11,629	3551
9000	Gnd Roll	2279	2497	2748	3451	4163	5164	6546	8364	2677
	Total	3313	3643	4026	5129	6261	7878	10,152	13,204	3918
10,000	Gnd Roll	2538	2780	3090	3885	4697	5838	7425	9411	2941
	Total	3702	4071	4548	5800	7099	8951	11,579	14,932	4318

Gear UP, Flaps 50%

Takeoff Climb Gradient

V_x 91 KIAS
 Thrust Lever T/O
 Flaps 50%
 Landing Gear UP

Engine Anti-Ice: A/R					
Press Alt Feet	OAT (°C)	Aircraft Weight (LB)			
		6000	5500	5000	4500
		Climb Gradient (Feet per Nautical Mile)			
0	-40	1232	1421	1641	1901
	-30	1231	1420	1639	1899
	-20	1230	1419	1638	1898
	-10	1239	1418	1637	1896
	0	1227	1415	1634	1893
	10	1223	1411	1629	1888
	20	1123	1302	1509	1754
	30	923	1084	1269	1488
	40	746	891	1057	1252
	50	584	714	862	1035

Engine Anti-Ice: A/R					
Press Alt Feet	OAT (°C)	Aircraft Weight (LB)			
		6000	5500	5000	4500
		Climb Gradient (Feet per Nautical Mile)			
1000	-40	1232	1422	1642	1903
	-30	1233	1423	1643	1904
	-20	1231	1421	1640	1901
	-10	1231	1420	1640	1900
	0	1228	1417	1637	1897
	10	1225	1414	1633	1892
	20	1094	1271	1475	1717
	30	899	1058	1241	1457
	40	725	868	1032	1225
	50	563	692	839	1010
2000	-40	1238	1428	1650	1912
	-30	1237	1427	1648	1910
	-20	1236	1426	1647	1909
	-10	1236	1426	1647	1909
	0	1232	1422	1643	1904
	10	1229	1419	1639	1899
	20	1051	1224	1425	1662
	30	862	1018	1198	1410
	40	689	829	990	1179
	48	561	689	836	1008

Engine Anti-Ice: A/R					
Press Alt Feet	OAT (°C)	Aircraft Weight (LB)			
		6000	5500	5000	4500
		Climb Gradient (Feet per Nautical Mile)			
3000	-40	1243	1435	1657	1921
	-30	1243	1435	1657	1920
	-20	1242	1434	1656	1919
	-10	1241	1432	1654	1917
	0	1237	1428	1649	1912
	10	1191	1378	1595	1851
	20	1008	1178	1374	1606
	30	825	978	1154	1362
	40	653	791	948	1133
	47	543	670	816	985
4000	-40	1252	1445	1669	1934
	-30	1251	1444	1667	1933
	-20	1251	1443	1667	1932
	-10	1248	1440	1663	1928
	0	1246	1438	1661	1926
	10	1142	1325	1537	1787
	20	965	1132	1324	1551
	30	786	936	1109	1311
	40	618	753	907	1088
	45	539	667	813	982

Engine Anti-Ice: A/R					
Press Alt Feet	OAT (°C)	Aircraft Weight (LB)			
		6000	5500	5000	4500
		Climb Gradient (Feet per Nautical Mile)			
5000	-40	1052	1225	1426	1663
	-30	1052	1225	1426	1663
	-20	1050	1224	1424	1661
	-10	1049	1222	1422	1659
	0	1046	1219	1420	1656
	10	893	1052	1235	1451
	20	724	868	1032	1225
	30	553	681	827	997
	40	391	504	632	781
	45	317	423	543	682
6000	-40	1062	1237	1440	1679
	-30	1063	1238	1440	1680
	-20	1061	1236	1438	1677
	-10	1060	1235	1437	1676
	0	1057	1232	1434	1672
	10	856	1012	1191	1403
	20	692	833	995	1184
	30	524	650	794	961
	40	365	476	603	748
	44	307	413	533	671

Engine Anti-Ice: A/R					
Press Alt Feet	OAT (°C)	Aircraft Weight (LB)			
		6000	5500	5000	4500
		Climb Gradient (Feet per Nautical Mile)			
7000	-40	1074	1251	1455	1697
	-30	1073	1250	1454	1696
	-20	1072	1248	1452	1693
	-10	1070	1246	1450	1691
	0	1010	1181	1378	1611
	10	796	947	1121	1325
	20	638	775	931	1114
	30	475	597	736	897
	40	321	428	550	691
	44	263	366	482	615
8000	-40	1061	1235	1437	1675
	-30	1059	1233	1435	1673
	-20	1058	1232	1433	1671
	-10	1008	1177	1373	1604
	0	929	1091	1278	1499
	10	722	865	1030	1223
	20	581	716	871	1051
	30	418	539	676	834
	40	262	368	488	625
	43		321	436	567

Engine Anti-Ice: A/R					
Press Alt Feet	OAT (°C)	Aircraft Weight (LB)			
		6000	5500	5000	4500
		Climb Gradient (Feet per Nautical Mile)			
9000	-40	1071	1247	1451	1691
	-30	1071	1247	1451	1691
	-20	1021	1192	1390	1624
	-10	955	1120	1311	1536
	0	868	1026	1207	1420
	10	665	804	963	1148
	20	527	658	808	981
	30	370	487	620	772
	40		321	437	569
	42		290	403	531
10,000	-40	1075	1251	1456	1697
	-30	1027	1199	1398	1633
	-20	968	1135	1327	1555
	-10	904	1065	1251	1470
	0	809	962	1137	1343
	10	612	746	900	1080
	20	474	601	745	913
	30	323	436	564	711
	40		274	386	514
	41		259	369	495

Takeoff Rate of Climb

V_x 91 KIAS
 Thrust Lever T/O
 Flaps 50%
 Landing Gear UP

Engine Anti-Ice: A/R					
Press Alt Feet	OAT (°C)	Aircraft Weight (LB)			
		6000	5500	5000	4500
		Rate of Climb (Feet per Minute)			
0	-40	2099	2421	2795	3238
	-30	2055	2371	2737	3170
	-20	2012	2321	2679	3104
	-10	1972	2275	2626	3043
	0	1933	2229	2574	2982
	10	1892	2183	2521	2921
	20	1707	1979	2295	2667
	30	1381	1621	1899	2225
	40	1097	1310	1554	1841
	50	846	1033	1248	1499

Engine Anti-Ice: A/R					
Press Alt Feet	OAT (°C)	Aircraft Weight (LB)			
		6000	5500	5000	4500
		Rate of Climb (Feet per Minute)			
1000	-40	2126	2452	2832	3281
	-30	2081	2401	2772	3212
	-20	2037	2350	2714	3145
	-10	1997	2304	2660	3083
	0	1956	2257	2607	3021
	10	1915	2210	2553	2958
	20	1682	1954	2268	2640
	30	1359	1599	1877	2203
	40	1078	1291	1535	1821
	50	825	1013	1228	1478
2000	-40	2158	2490	2876	3332
	-30	2110	2435	2813	3260
	-20	2068	2386	2756	3194
	-10	2027	2339	2701	3130
	0	1985	2291	2646	3067
	10	1943	2243	2591	3003
	20	1634	1903	2215	2583
	30	1317	1556	1831	2154
	40	1036	1247	1489	1772
	48	833	1024	1242	1497

Engine Anti-Ice: A/R					
Press Alt Feet	OAT (°C)	Aircraft Weight (LB)			
		6000	5500	5000	4500
		Rate of Climb (Feet per Minute)			
3000	-40	2193	2531	2923	3387
	-30	2145	2476	2859	3314
	-20	2101	2425	2800	3246
	-10	2058	2375	2744	3180
	0	2015	2326	2687	3115
	10	1906	2205	2551	2991
	20	1585	1852	2161	2525
	30	1274	1511	1784	2104
	40	994	1203	1443	1724
	47	816	1008	1227	1483
4000	-40	2233	2577	2976	3449
	-30	2184	2521	2912	3375
	-20	2139	2469	2851	3305
	-10	2095	2418	2793	3237
	0	2052	2368	2736	3171
	10	1849	2145	2487	2893
	20	1535	1799	2105	2466
	30	1229	1464	1734	2051
	40	950	1158	1395	1672
	45	823	1018	1241	1500

Engine Anti-Ice: A/R					
Press Alt Feet	OAT (°C)	Aircraft Weight (LB)			
		6000	5500	5000	4500
		Rate of Climb (Feet per Minute)			
5000	-40	1998	2211	2573	3001
	-30	1857	2164	2518	2937
	-20	1818	2119	2466	2876
	-10	1780	2074	2414	2816
	0	1743	2031	2364	2758
	10	1461	1721	2021	2374
	20	1165	1396	1661	1972
	30	875	1077	1308	1578
	40	609	785	984	1216
	45	489	653	839	1053
6000	-40	1939	2258	2628	3064
	-30	1898	2211	2572	3000
	-20	1858	2165	2519	2938
	-10	1820	2120	2467	2877
	0	1783	2077	2417	2819
	10	1417	1675	1973	2323
	20	1126	1355	1619	1927
	30	839	1040	1270	1537
	40	575	750	949	1179
	44	480	646	833	1049

Engine Anti-Ice: A/R					
Press Alt Feet	OAT (°C)	Aircraft Weight (LB)			
		6000	5500	5000	4500
		Rate of Climb (Feet per Minute)			
7000	-40	1981	2308	2685	3131
	-30	1939	2259	2628	3064
	-20	1899	2211	2573	3000
	-10	1859	2165	2519	2938
	0	1723	2014	2350	2747
	10	1332	1585	1876	2218
	20	1049	1274	1532	1833
	30	769	966	1191	1452
	40	511	682	876	1100
	44	417	579	762	973
8000	-40	1980	2305	2682	3127
	-30	1938	2256	2625	3060
	-20	1897	2209	2570	2996
	-10	1771	2069	2413	2819
	0	1602	1882	2204	2585
	10	1223	1466	1745	2071
	20	968	1193	1451	1751
	30	685	883	1107	1367
	40	422	593	786	1008
	43		514	698	910

Engine Anti-Ice: A/R					
Press Alt Feet	OAT (°C)	Aircraft Weight (LB)			
		6000	5500	5000	4500
		Rate of Climb (Feet per Minute)			
9000	-40	2025	2357	2742	3196
	-30	1982	2307	2683	3128
	-20	1852	2163	2521	2945
	-10	1700	1993	2332	2732
	0	1515	1790	2106	2478
	10	1141	1379	1651	1970
	20	888	1109	1360	1653
	30	614	807	1027	1280
	40		523	712	928
	42		472	655	864
10,000	-40	2055	2393	2784	3246
	-30	1923	2245	2618	3059
	-20	1777	2083	2437	2854
	-10	1628	1918	2252	2646
	0	1430	1699	2009	2373
	10	1061	1294	1561	1872
	20	808	1025	1271	1557
	30	542	732	946	1193
	40		453	637	847
	41		427	609	816

Enroute Obstacle Climb

Engine Anti-Ice: Off

Thrust LeverMCT
 Flaps..... UP
 Landing Gear UP
 Anti-ice OFF
 Airspeed 120 KIAS

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)
0	-54	2475	1057	2804	1197	3188	1362	3646	1557
	-50	2452	1057	2778	1197	3158	1361	3613	1557
	-40	2399	1057	2717	1197	3089	1361	3533	1557
	-30	2348	1056	2659	1196	3023	1360	3458	1556
	-20	2297	1055	2602	1195	2959	1358	3384	1554
	-10	2251	1054	2550	1193	2899	1357	3316	1552
	0	2205	1051	2497	1191	2840	1354	3248	1549
	10	2077	1008	2356	1144	2682	1302	3072	1491
	20	1629	805	1866	922	2142	1058	2469	1220
	30	1247	627	1448	727	1680	844	1955	982
	40	926	473	1096	559	1291	659	1522	777
50	640	332	782	406	945	490	1135	589	

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)
2000	-54	2484	1041	2815	1181	3203	1343	3666	1537
	-50	2461	1041	2789	1180	3174	1343	3633	1537
	-40	2407	1041	2728	1180	3104	1342	3552	1536
	-30	2353	1039	2667	1178	3035	1341	3474	1534
	-20	2304	1039	2612	1177	2972	1340	3402	1533
	-10	2258	1037	2559	1176	2912	1338	3333	1531
	0	2210	1035	2506	1173	2851	1335	3264	1528
	10	1910	910	2176	1037	2487	1185	2857	1362
	20	1482	719	1708	828	1970	955	2281	1106
	30	1121	553	1312	647	1533	756	1794	885
	40	812	407	973	488	1159	581	1377	690
	45	666	336	813	411	982	496	1179	596

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)
4000	-54	2491	1021	2826	1158	3217	1319	3684	1510
	-50	2468	1021	2800	1158	3187	1318	3650	1510
	-40	2413	1020	2738	1157	3117	1318	3569	1509
	-30	2360	1019	2677	1156	3048	1316	3490	1507
	-20	2310	1018	2621	1154	2984	1314	3417	1505
	-10	2262	1016	2566	1152	2922	1312	3346	1503
	0	2214	1013	2512	1149	2860	1308	3275	1498
	10	1772	826	2028	945	2326	1084	2680	1249
	20	1360	645	1576	747	1827	866	2124	1007
	30	1015	489	1198	578	1410	680	1659	800
40	712	349	867	425	1044	511	1250	613	
6000	-54	2401	962	2730	1093	3114	1247	3572	1431
	-50	2377	960	2702	1092	3083	1246	3536	1429
	-40	2324	960	2643	1092	3015	1245	3458	1428
	-30	2274	959	2586	1091	2950	1244	3383	1427
	-20	2226	958	2531	1089	2887	1243	3312	1425
	-10	2179	956	2478	1087	2827	1240	3242	1423
	0	2024	905	2307	1031	2637	1179	3029	1354
	10	1583	721	1824	830	2103	957	2434	1108
	20	1194	553	1397	647	1632	756	1910	884
	30	868	409	1040	490	1237	583	1469	692
36	690	328	845	402	1022	486	1228	584	

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)
8000	-54	2239	876	2556	1000	2925	1144	3364	1316
	-50	2218	876	2532	999	2898	1144	3333	1315
	-40	2168	875	2475	999	2833	1143	3258	1314
	-30	2121	874	2421	998	2771	1142	3187	1313
	-20	2077	873	2370	997	2713	1140	3120	1312
	-10	2033	871	2321	995	2656	1138	3055	1309
	0	1777	776	2039	890	2344	1024	2706	1182
	10	1370	609	1593	708	1851	823	2157	959
	20	1010	457	1198	542	1416	640	1671	756
	30	702	323	861	396	1042	480	1254	577
	31	673	310	829	382	1008	464	1216	560
10,000	-54	2081	795	2386	911	2740	1047	3162	1207
	-50	2062	795	2363	911	2715	1046	3132	1207
	-40	2015	794	2310	910	2653	1045	3061	1206
	-30	1971	793	2260	909	2596	1044	2994	1205
	-20	1929	792	2212	908	2541	1043	2931	1203
	-10	1888	790	2164	906	2486	1040	2868	1200
	0	1549	660	1793	764	2075	885	2410	1027
	10	1166	506	1373	596	1612	700	1893	822
	20	836	369	1011	447	1211	535	1446	639
	27	628	281	783	350	959	429	1164	520

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)
12,000	-54	1932	720	2225	830	2567	957	2971	1108
	-50	1914	720	2205	829	2543	957	2944	1107
	-40	1871	719	2155	829	2486	956	2877	1106
	-30	1830	719	2109	828	2432	955	2815	1105
	-20	1792	718	2064	827	2381	954	2756	1104
	-10	1715	701	1978	808	2284	933	2645	1081
	0	1321	550	1546	644	1806	752	2113	879
	10	967	410	1158	491	1377	584	1634	693
	20	664	286	826	356	1010	435	1224	528
22	605	262	761	329	938	406	1144	495	
14,000	-54	1779	647	2061	750	2389	869	2776	1010
	-50	1762	647	2041	749	2366	868	2749	1009
	-40	1722	646	1995	748	2312	867	2687	1008
	-30	1684	645	1951	748	2261	866	2628	1007
	-20	1647	644	1909	746	2212	865	2571	1005
	-10	1473	587	1717	684	1999	797	2331	929
	0	1107	450	1315	534	1555	631	1836	745
	10	781	323	957	396	1158	479	1393	576
	17	586	245	743	311	921	386	1128	472

Engine Anti-Ice: On

Thrust Lever MCT
 Flaps UP
 Landing Gear UP
 Anti-ice ON
 Airspeed 120 KIAS

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)
0	-54	2471	1056	2799	1196	3183	1360	3641	1555
	-50	2448	1055	2773	1195	3154	1359	3607	1555
	-40	2395	1055	2712	1195	3084	1359	3528	1554
	-30	2344	1054	2655	1194	3019	1358	3453	1553
	-20	2294	1053	2598	1193	2954	1356	3379	1551
	-10	2247	1052	2546	1192	2895	1355	3311	1550
	0	2201	1050	2493	1189	2835	1352	3243	1547
	10	2045	993	2321	1127	2644	1284	3029	1471
2000	-54	2479	1040	2811	1179	3198	1341	3661	1535
	-50	2456	1039	2785	1178	3169	1341	3627	1535
	-40	2402	1039	2723	1178	3099	1340	3547	1534
	-30	2349	1037	2663	1176	3030	1338	3468	1532
	-20	2300	1037	2608	1175	2967	1337	3396	1531
	-10	2254	1036	2555	1174	2907	1336	3328	1529
	0	2206	1033	2502	1171	2847	1333	3258	1525
	10	1878	895	2142	1021	2449	1167	2815	1342

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		ROC (FT/MIN)	Grad (FT/NM)	ROC (FT/MIN)	Grad (FT/NM)	ROC (FT/MIN)	Grad (FT/NM)	ROC (FT/MIN)	Grad (FT/NM)
4000	-54	2486	1019	2821	1156	3212	1316	3678	1507
	-50	2463	1019	2795	1156	3182	1316	3644	1507
	-40	2409	1018	2733	1155	3112	1315	3563	1506
	-30	2355	1017	2672	1153	3042	1313	3484	1504
	-20	2306	1016	2616	1152	2978	1312	3411	1502
	-10	2258	1014	2561	1150	2916	1310	3340	1500
	0	2207	1010	2504	1146	2851	1305	3265	1494
	10	1738	810	1991	928	2285	1065	2635	1227
6000	-54	2396	960	2725	1091	3109	1245	3566	1428
	-50	2372	959	2697	1090	3077	1243	3530	1426
	-40	2320	958	2638	1089	3009	1243	3452	1426
	-30	2270	957	2581	1089	2944	1242	3377	1424
	-20	2222	956	2526	1087	2882	1240	3306	1423
	-10	2175	955	2474	1086	2822	1238	3237	1421
	0	1990	890	2269	1014	2595	1160	2983	1334
	10	1547	704	1785	812	2060	938	2387	1087

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)	ROC (FT/ MIN)	Grad (FT/ NM)
8000	-54	2234	874	2550	998	2919	1142	3357	1313
	-50	2213	874	2527	997	2892	1141	3326	1313
	-40	2164	873	2470	996	2827	1140	3251	1312
	-30	2117	872	2416	995	2765	1139	3181	1310
	-20	2072	871	2365	994	2707	1138	3114	1309
	-10	2028	869	2315	992	2650	1136	3048	1307
	0	1742	761	2001	874	2302	1005	2659	1161
	10	1332	592	1551	690	1806	803	2106	936
10,000	-54	2076	793	2380	909	2734	1044	3155	1205
	-50	2057	793	2358	909	2709	1044	3126	1205
	-40	2010	792	2305	908	2647	1043	3055	1203
	-30	1966	791	2254	907	2590	1042	2988	1202
	-20	1924	790	2206	906	2534	1040	2924	1200
	-10	1883	788	2159	904	2480	1038	2862	1198
	0	1512	645	1753	747	2031	866	2361	1007
	10	1128	490	1331	578	1566	680	1842	799

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		ROC (FT/MIN)	Grad (FT/NM)	ROC (FT/MIN)	Grad (FT/NM)	ROC (FT/MIN)	Grad (FT/NM)	ROC (FT/MIN)	Grad (FT/NM)
12,000	-54	1927	718	2220	828	2561	955	2964	1105
	-50	1909	718	2200	827	2537	954	2937	1105
	-40	1866	717	2150	827	2480	953	2871	1104
	-30	1825	717	2103	826	2426	953	2808	1103
	-20	1787	716	2059	825	2375	951	2749	1101
	-10	1681	687	1941	793	2243	916	2600	1062
	0	1283	534	1505	626	1761	733	2062	858
	10	928	393	1115	473	1330	564	1582	670
14,000	-54	1774	645	2056	748	2383	867	2769	1007
	-50	1757	645	2036	747	2360	866	2743	1007
	-40	1717	644	1990	746	2306	865	2680	1005
	-30	1679	643	1946	745	2255	864	2621	1004
	-20	1642	642	1903	744	2206	862	2564	1002
	-10	1441	574	1681	670	1959	781	2287	912
	0	1068	434	1273	517	1508	612	1783	724
	10	741	306	914	378	1111	459	1340	554

Enroute Climb

Climb Gradient

Thrust Lever MCT
 Flaps..... UP
 Landing Gear..... UP
 Anti-ice OFF
 Airspeed Per subsequent Climb Gradient table

• NOTE •

Climb performance data provided results in approximately 95% best rate of climb.

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)
0	-54	187	731	186	820	186	925	185	1052
	-50	187	730	186	819	186	925	185	1051
	-40	187	729	186	818	186	923	185	1050
	-30	187	729	186	817	185	927	185	1054
	-20	187	726	186	819	185	924	185	1051
	-10	186	728	186	817	185	922	185	1049
	0	186	726	186	814	185	919	184	1050
	10	183	691	182	781	181	883	181	1005
	20	171	568	170	648	170	739	169	852
	30	160	455	159	528	157	613	156	715
	40	149	356	147	424	146	502	145	595
50	138	262	137	325	136	397	134	488	

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)
2000	-54	187	719	186	807	186	911	185	1037
	-50	187	719	186	807	186	911	185	1036
	-40	187	718	186	806	186	910	185	1040
	-30	187	716	186	808	185	912	185	1037
	-20	187	715	186	806	185	910	185	1035
	-10	186	717	186	805	185	908	185	1033
	0	186	714	186	801	185	909	184	1034
	10	175	636	174	722	173	820	172	943
	20	163	519	163	593	161	684	160	793
	30	152	412	151	483	150	565	148	667
	40	142	314	141	381	140	457	138	551
	45	137	266	136	330	134	405	133	495

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)
4000	-54	187	703	186	793	185	896	185	1019
	-50	187	703	186	793	185	895	185	1019
	-40	187	702	186	792	185	894	185	1017
	-30	186	703	186	790	185	892	184	1019
	-20	186	702	186	788	185	894	184	1017
	-10	186	700	186	786	185	892	184	1015
	0	183	702	182	789	182	892	181	1016
	10	171	582	169	664	168	761	168	873
	20	159	470	158	544	156	631	155	736
	30	148	369	147	437	145	519	144	614
40	138	275	137	338	135	414	134	504	
6000	-54	191	660	191	742	190	842	189	958
	-50	191	660	191	741	190	841	189	958
	-40	191	658	190	743	190	839	189	955
	-30	191	660	190	741	190	837	189	953
	-20	191	658	190	739	189	839	189	955
	-10	191	656	190	740	189	836	189	952
	0	181	624	180	707	179	802	179	916
	10	168	512	167	588	166	677	165	780
	20	155	407	154	476	153	560	152	656
	30	144	312	143	376	142	452	140	544
36	138	256	137	319	135	392	133	483	

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)
8000	-54	186	608	185	689	185	780	184	891
	-50	186	608	186	685	185	780	184	890
	-40	186	607	185	687	185	778	183	892
	-30	186	605	185	685	184	780	183	890
	-20	186	607	185	684	184	778	183	892
	-10	186	604	185	684	183	779	183	889
	0	172	549	171	624	170	716	169	826
	10	159	445	158	516	157	600	156	700
	20	147	346	146	412	145	491	144	583
	30	137	255	136	315	135	389	133	476
31	137	244	135	306	134	379	132	465	
10,000	-54	181	557	180	634	179	724	178	833
	-50	181	557	180	634	179	724	178	833
	-40	181	558	179	635	179	722	178	831
	-30	181	557	179	634	178	724	178	829
	-20	181	555	179	632	178	722	177	831
	-10	176	569	175	644	174	737	174	845
	0	163	480	162	553	161	640	160	740
	10	151	381	150	448	149	527	148	622
	20	141	287	139	352	138	425	137	515
27	134	224	133	283	132	355	131	436	

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)
12,000	-54	176	514	175	588	174	675	173	779
	-50	176	514	175	588	174	674	173	778
	-40	176	513	175	587	174	673	173	777
	-30	175	515	174	588	173	675	173	776
	-20	175	514	174	587	173	674	172	777
	-10	166	502	165	577	164	665	163	771
	0	155	408	154	477	153	558	152	655
	10	144	316	143	380	142	454	141	543
	20	135	229	134	288	133	357	131	441
	22	133	209	132	270	131	337	130	418
14,000	-54	171	472	170	542	169	625	167	725
	-50	171	471	170	542	169	625	167	724
	-40	171	470	170	541	169	623	167	722
	-30	171	469	170	539	169	622	167	725
	-20	171	468	169	540	168	623	167	722
	-10	158	434	157	505	155	587	154	686
	0	148	343	147	408	146	484	145	574
	10	139	253	137	316	136	386	135	469
	17	133	197	132	253	131	319	129	400

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)
16,000	-54	164	438	163	507	162	589	161	686
	-50	164	438	163	507	162	588	161	685
	-40	164	437	163	505	162	586	161	683
	-30	164	435	163	504	162	584	161	681
	-20	164	434	162	505	161	586	160	682
	-10	150	370	149	437	148	515	147	608
	0	142	280	141	341	139	415	138	500
	10	133	195	132	251	131	319	130	397
	14	130	162	129	217	128	281	127	358
18,000	-54	162	402	160	471	159	549	158	642
	-50	161	404	160	470	159	548	158	641
	-40	161	402	160	468	159	546	158	639
	-30	161	401	160	467	159	544	157	640
	-20	156	397	155	464	153	545	152	640
	-10	144	309	142	374	141	448	140	540
	0	136	225	135	283	133	353	132	434
	9	128	151	127	207	125	273	124	352

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)
20,000	-54	157	371	156	435	154	513	153	604
	-50	157	370	156	434	154	512	153	603
	-40	157	369	155	435	154	511	153	601
	-30	157	367	155	434	154	509	153	599
	-20	149	333	148	396	147	470	146	558
	-10	139	251	138	311	136	382	135	468
	0	130	172	129	229	127	296	125	378
	5	126	134	125	189	123	256	121	334
22,000	-56	153	347	152	407	151	481	150	569
	-50	153	343	152	409	151	482	150	570
	-40	153	343	152	406	151	480	150	567
	-30	153	341	152	404	151	477	150	564
	-20	143	270	142	329	141	401	140	483
	-10	133	194	132	252	131	318	129	398
	0	125	117	124	172	122	235	121	308
24,000	-58	151	312	150	372	149	443	148	527
	-50	151	311	150	371	149	441	148	525
	-40	151	309	150	369	148	441	147	525
	-30	144	317	143	378	142	452	142	536
	-20	137	210	136	266	135	331	133	411
	-10	129	141	127	195	126	257	125	332
	-4	124	97	123	149	122	208	121	278

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)
26,000	-59	148	270	147	328	146	397	145	476
	-50	148	271	147	328	146	395	145	474
	-40	148	269	147	326	145	395	144	474
	-30	139	250	138	311	137	379	136	461
	-20	131	155	130	208	129	272	128	345
	-10	125	88	124	139	123	197	121	266
	-8	123	75	122	125	121	182	120	249
28,000	-61	145	228	144	282	142	348	141	422
	-60	145	228	144	282	142	348	141	423
	-50	144	228	143	283	142	345	141	420
	-40	143	226	142	280	141	343	140	418
	-30	135	185	133	239	132	304	131	379
	-20	126	101	125	151	124	211	123	280
	-13	122	57	121	105	120	160	119	227
30,000	-63	142	185	141	236	139	298	138	368
	-60	141	187	141	237	139	298	138	368
	-50	141	187	140	238	138	300	137	371
	-40	139	179	138	230	137	291	136	361
	-30	130	127	128	178	127	239	126	309
	-20	121	51	120	99	119	154	118	219
	-18	120	38	119	85	118	139	117	202

Press Alt FT	OAT °C	Aircraft Weight							
		6000 lb		5500 lb		5000 lb		4500 lb	
		KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)
31,000	-64	140	163	139	213	138	270	136	340
	-60	140	164	139	213	138	270	136	340
	-50	140	164	139	214	138	271	136	340
	-40	137	156	136	205	135	265	134	333
	-30	128	100	127	149	125	208	124	275
	-20	119	28	118	74	117	128	116	190

Rate Of Climb

Thrust LeverMCT
 Flaps UP
 Landing Gear UP
 Anti-ice OFF
 Airspeed Per Rate Of Climb table below

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)
0	-54	187	2605	186	2914	186	3279	185	3719
	-50	187	2580	186	2887	186	3248	185	3684
	-40	187	2521	186	2820	186	3173	185	3599
	-30	187	2465	186	2758	185	3110	185	3527
	-20	187	2409	186	2701	185	3039	185	3447
	-10	186	2363	186	2644	185	2975	185	3374
	0	186	2311	186	2586	185	2910	184	3307
	10	183	2120	182	2382	181	2686	181	3051
	20	171	1609	170	1826	170	2076	169	2380
	30	160	1192	159	1372	157	1584	156	1835
	40	149	858	147	1014	146	1192	145	1402
	50	138	578	137	711	136	862	134	1044

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)
2000	-54	187	2616	186	2927	186	3296	185	3739
	-50	187	2591	186	2899	186	3264	185	3703
	-40	187	2531	186	2833	186	3190	185	3625
	-30	187	2472	186	2772	185	3121	185	3540
	-20	187	2419	186	2713	185	3054	185	3465
	-10	186	2372	186	2655	185	2989	185	3391
	0	186	2319	186	2596	185	2928	184	3322
	10	175	1909	174	2156	173	2440	172	2788
	20	163	1437	163	1639	161	1878	160	2165
	30	152	1055	151	1227	150	1428	148	1669
	40	142	742	141	891	140	1061	138	1265
	45	137	601	136	739	134	898	133	1085

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)
4000	-54	187	2616	186	2935	185	3306	185	3751
	-50	187	2590	186	2907	185	3273	185	3714
	-40	187	2531	186	2840	185	3198	185	3629
	-30	186	2476	186	2773	185	3123	184	3551
	-20	186	2422	186	2713	185	3061	184	3474
	-10	186	2369	186	2653	185	2994	184	3398
	0	183	2290	182	2566	182	2893	181	3285
	10	171	1747	169	1981	168	2256	168	2580
	20	159	1301	158	1496	156	1725	155	1997
	30	148	941	147	1107	145	1302	144	1530
40	138	644	137	786	135	952	134	1147	
6000	-54	191	2568	191	2877	190	3248	189	3688
	-50	191	2543	191	2849	190	3217	189	3652
	-40	191	2481	190	2785	190	3138	189	3562
	-30	191	2430	190	2722	190	3066	189	3481
	-20	191	2375	190	2660	189	3003	189	3409
	-10	191	2321	190	2606	189	2936	189	3333
	0	181	2059	180	2321	179	2625	179	2989
	10	168	1550	167	1768	166	2024	165	2324
	20	155	1132	154	1314	153	1530	152	1783
	30	144	797	143	951	142	1134	140	1349
36	138	620	137	764	135	929	133	1127	

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)
8000	-54	186	2358	185	2656	185	3001	184	3415
	-50	186	2336	186	2625	185	2972	184	3383
	-40	186	2280	185	2568	185	2902	183	3309
	-30	186	2228	185	2509	184	2841	183	3233
	-20	186	2182	185	2453	184	2776	183	3165
	-10	186	2132	185	2401	183	2718	183	3094
	0	172	1768	171	2003	170	2285	169	2621
	10	159	1311	158	1512	157	1746	156	2026
	20	147	938	146	1108	145	1308	144	1542
	30	137	633	136	778	135	949	133	1149
31	137	603	135	748	134	916	132	1113	
10,000	-54	181	2153	180	2436	179	2768	178	3166
	-50	181	2132	180	2412	179	2741	178	3135
	-40	181	2085	179	2359	179	2675	178	3060
	-30	181	2038	179	2305	178	2619	178	2990
	-20	181	1991	179	2252	178	2559	177	2928
	-10	176	1949	175	2203	174	2506	174	2863
	0	163	1507	162	1728	161	1987	160	2290
	10	151	1096	150	1282	149	1499	148	1755
	20	141	762	139	924	138	1108	137	1329
	27	134	561	133	704	132	871	131	1064

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)
12,000	-54	176	1979	175	2249	174	2566	173	2946
	-50	176	1960	175	2228	174	2542	173	2917
	-40	176	1915	175	2176	174	2482	173	2849
	-30	175	1876	174	2131	173	2431	173	2785
	-20	175	1834	174	2083	173	2377	172	2728
	-10	166	1671	165	1909	164	2188	163	2520
	0	155	1259	154	1462	153	1698	152	1979
	10	144	893	143	1066	142	1266	141	1502
	20	135	595	134	744	133	915	131	1119
	22	133	538	132	684	131	850	130	1044
14,000	-54	171	1808	170	2066	169	2367	167	2728
	-50	171	1790	170	2045	169	2344	167	2701
	-40	171	1747	170	1996	169	2287	167	2636
	-30	171	1707	170	1950	169	2235	167	2581
	-20	171	1667	169	1909	168	2188	167	2521
	-10	158	1415	157	1634	155	1890	154	2195
	0	148	1036	147	1223	146	1441	145	1699
	10	139	706	137	870	136	1056	135	1274
	17	133	520	132	665	131	832	129	1031

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)
16,000	-54	164	1661	163	1911	162	2203	161	2552
	-50	164	1644	163	1892	162	2181	161	2527
	-40	164	1604	163	1845	162	2128	161	2465
	-30	164	1565	163	1801	162	2077	161	2406
	-20	164	1529	162	1763	161	2033	160	2354
	-10	150	1182	149	1386	148	1623	147	1904
	0	142	832	141	1006	139	1211	138	1449
	10	133	534	132	684	131	860	130	1061
	14	130	433	129	575	128	737	127	930
18,000	-54	162	1538	160	1784	159	2068	158	2405
	-50	161	1526	160	1766	159	2047	158	2380
	-40	161	1487	160	1722	159	1995	158	2320
	-30	161	1451	160	1680	159	1947	157	2269
	-20	156	1373	155	1595	153	1858	152	2166
	-10	144	973	142	1166	141	1387	140	1652
	0	136	656	135	820	133	1012	132	1233
	9	128	410	127	557	125	725	124	922

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)
20,000	-54	157	1419	156	1655	154	1934	153	2260
	-50	157	1404	156	1638	154	1914	153	2237
	-40	157	1369	155	1601	154	1866	153	2181
	-30	157	1335	155	1562	154	1821	153	2128
	-20	149	1134	148	1341	147	1579	146	1862
	-10	139	784	138	962	136	1170	135	1416
	0	130	494	129	651	127	831	125	1046
	5	126	369	125	517	123	688	121	887
22,000	-56	153	1334	152	1563	151	1833	150	2154
	-50	153	1308	152	1541	151	1808	150	2124
	-40	153	1275	152	1499	151	1758	150	2066
	-30	153	1242	152	1460	151	1713	150	2013
	-20	143	905	142	1097	141	1321	140	1582
	-10	133	597	132	767	131	959	129	1187
	0	125	333	124	482	122	652	121	847
24,000	-58	151	1221	150	1448	149	1712	148	2023
	-50	151	1195	150	1417	149	1675	148	1979
	-40	151	1162	150	1378	148	1634	147	1931
	-30	144	1118	143	1329	142	1577	142	1865
	-20	137	692	136	870	135	1074	133	1318
	-10	129	430	127	588	126	768	125	981
	-4	124	282	123	429	122	595	121	788

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)
26,000	-59	148	1074	147	1292	146	1548	145	1847
	-50	148	1049	147	1263	146	1509	145	1800
	-40	148	1020	147	1228	145	1472	144	1755
	-30	139	877	138	1079	137	1309	136	1579
	-20	131	503	130	670	129	865	128	1089
	-10	125	268	124	417	123	586	121	784
	-8	123	224	122	369	121	534	120	725
28,000	-61	145	913	144	1122	142	1367	141	1651
	-60	145	911	144	1119	142	1364	141	1647
	-50	144	888	143	1091	142	1325	141	1602
	-40	143	855	142	1052	141	1280	140	1548
	-30	135	643	133	826	132	1040	131	1286
	-20	126	325	125	483	124	665	123	874
	-13	122	174	121	318	120	483	119	676
30,000	-63	142	751	141	950	139	1183	138	1452
	-60	141	750	141	945	139	1176	138	1443
	-50	141	731	140	924	138	1151	137	1413
	-40	139	675	138	861	137	1079	136	1331
	-30	130	439	128	610	127	809	126	1036
	-20	121	162	120	312	119	482	118	678
	-18	120	118	119	263	118	428	117	619

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)	KIAS	ROC (FT/MIN)
31,000	-64	140	663	139	857	138	1080	136	1344
	-60	140	659	139	851	138	1071	136	1333
	-50	140	646	139	834	138	1049	136	1305
	-40	137	589	136	771	135	982	134	1225
	-30	128	345	127	511	125	702	124	921
	-20	119	87	118	232	117	398	116	588

Enroute Ice Contaminated Climb

Climb Gradient

Thrust Lever MCT
 Flaps..... UP
 Landing Gear..... UP
 Airspeed Per Climb Gradient table below

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)
0	-54	140	713	139	817	139	931	138	1076
	-50	140	716	139	816	139	931	138	1079
	-40	140	715	139	816	139	931	138	1079
	-30	140	715	139	816	139	930	138	1078
	-20	140	714	139	814	139	929	138	1073
	-10	140	713	139	813	139	927	138	1075
	0	140	711	139	811	138	931	138	1072
	10	139	656	137	759	137	872	137	1003
2000	-54	140	700	139	799	138	918	138	1058
	-50	140	699	139	798	138	918	138	1057
	-40	140	699	139	798	138	917	138	1057
	-30	140	698	139	797	138	916	138	1055
	-20	140	697	139	796	138	915	138	1054
	-10	140	696	139	795	138	913	138	1052
	0	140	694	139	792	138	911	138	1049
	10	138	562	135	662	135	763	134	890

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)
4000	-54	140	680	139	777	138	895	138	1031
	-50	140	680	139	777	138	894	138	1031
	-40	139	682	139	777	138	894	137	1034
	-30	139	680	139	775	138	892	137	1032
	-20	139	680	139	774	138	894	138	1027
	-10	139	678	139	772	138	892	137	1029
	0	138	674	137	774	137	888	136	1024
10	138	479	133	577	133	673	132	787	
6000	-54	141	628	140	723	139	831	138	963
	-50	140	630	140	723	139	831	138	963
	-40	140	629	140	721	139	829	138	961
	-30	140	629	140	721	139	828	138	960
	-20	140	628	140	719	139	827	138	958
	-10	140	626	140	718	139	825	138	956
	0	138	565	137	655	136	760	135	882
10	138	381	133	471	132	558	132	657	

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)
8000	-54	138	565	138	650	137	754	136	876
	-50	138	565	138	650	137	754	136	875
	-40	138	563	138	649	136	756	136	874
	-30	138	564	138	649	136	755	136	873
	-20	138	563	138	648	136	754	136	872
	-10	138	562	137	648	136	752	136	870
	0	137	450	134	540	133	631	132	743
	10	137	282	132	364	130	444	129	536
10,000	-54	137	496	136	581	135	679	134	795
	-50	137	496	136	581	135	678	134	795
	-40	137	495	136	580	135	678	134	794
	-30	137	494	136	580	135	677	134	793
	-20	137	494	136	579	135	676	134	792
	-10	137	492	136	577	135	674	134	789
	0	137	346	132	434	130	519	130	614
	10	137	191	131	267	128	342	127	422

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)
12,000	-54	137	423	134	510	133	599	132	707
	-50	137	423	134	510	133	599	132	707
	-40	137	423	134	510	133	601	132	706
	-30	137	423	134	510	133	600	132	706
	-20	137	422	135	505	133	597	132	705
	-10	137	381	131	476	130	567	128	675
	0	137	237	131	316	128	397	127	482
10	137	97	131	164	125	235	124	304	
14,000	-54	138	353	132	440	131	524	130	622
	-50	138	352	132	440	131	524	130	622
	-40	138	352	132	439	131	524	130	621
	-30	138	352	132	439	131	523	130	620
	-20	138	351	132	438	131	522	130	619
	-10	138	273	132	358	128	444	126	539
	0	138	138	132	209	125	287	124	362
10	138	12	132	72	125	135	122	198	

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)
16,000	-54	138	290	132	374	130	454	129	549
	-50	138	290	132	374	129	457	129	549
	-40	138	290	132	374	129	457	129	548
	-30	138	289	132	373	129	456	129	546
	-20	138	288	132	372	129	454	129	545
	-10	138	173	132	248	126	329	125	411
	0	138	48	132	110	126	178	122	247
	10	138	-67	132	-16	126	38	120	94
18,000	-54	137	236	132	312	128	392	128	476
	-50	137	236	132	312	128	392	128	476
	-40	137	235	132	311	128	391	128	475
	-30	137	235	132	310	128	390	128	474
	-20	137	219	132	294	127	376	127	459
	-10	137	82	132	146	125	219	123	290
	0	137	-32	132	20	125	79	121	137
	9	137	-127	132	-84	125	-37	119	9

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)	KIAS	Grad (FT/ NM)
20,000	-54	137	182	132	253	127	329	126	408
	-50	137	182	132	252	127	328	126	407
	-40	137	181	132	252	127	327	126	406
	-30	137	181	132	251	127	326	126	405
	-20	137	120	132	186	126	258	125	330
	-10	137	0	132	55	125	117	122	177
	0	137	-105	132	-61	125	-13	119	35
	5	137	-153	132	-113	125	-70	119	-30
22,000	-56	138	138	131	204	127	274	126	345
	-50	138	137	131	203	126	274	126	344
	-40	138	135	131	202	126	272	126	342
	-30	138	134	131	200	126	270	126	340
	-20	138	29	131	86	125	146	122	209
	-10	138	-79	131	-31	125	19	120	70
	0	138	-175	131	-137	125	-99	119	-62
24,000	-58	138	88	132	149	126	212	125	278
	-50	138	87	132	148	126	212	125	277
	-40	138	87	132	147	126	210	125	275
	-30	138	75	132	139	126	204	125	268
	-20	138	-58	132	-10	125	41	121	92
	-10	138	-149	132	-109	125	-68	119	-28
	-4	138	-202	132	-167	125	-133	119	-101

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)
26,000	-59	137	36	132	88	126	146	125	203
	-50	137	35	132	87	126	145	125	203
	-40	137	34	132	87	126	144	124	202
	-30	137	-10	132	43	126	100	122	159
	-20	137	-129	132	-89	126	-47	120	-5
	-10	137	-209	132	-177	126	-144	119	-115
	-8	137	-224	132	-194	126	-163	119	-136
28,000	-61	138	-19	131	29	125	79	124	129
	-60	138	-18	131	29	125	79	124	130
	-50	138	-19	131	29	125	79	124	129
	-40	138	-22	131	25	125	74	124	124
	-30	138	-89	131	-45	125	1	121	47
	-20	138	-191	131	-157	125	-124	120	-92
	-13	138	-241	131	-212	125	-185	119	-163
30,000	-63	137	-68	132	-28	125	14	124	57
	-60	137	-67	132	-28	125	14	124	57
	-50	137	-67	132	-27	125	16	123	59
	-40	137	-79	132	-39	125	2	122	45
	-30	137	-155	132	-120	125	-83	120	-48
	-20	137	-243	132	-217	125	-191	119	-170
	-18	137	-257	132	-233	125	-209	119	-190

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)	KIAS	Grad (FT/NM)
31,000	-64	137	-95	132	-58	126	-20	123	19
	-60	137	-94	132	-58	126	-19	123	20
	-50	137	-92	132	-55	126	-17	123	22
	-40	137	-105	132	-69	126	-31	122	7
	-30	137	-184	132	-153	126	-120	120	-90
	-20	137	-266	132	-243	126	-221	119	-204

Rate Of Climb (Ice Contaminated)

Thrust Lever MCT
 Flaps UP
 Landing Gear UP
 Airspeed Per Rate Of Climb table below

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)
0	-54	140	1943	139	2208	139	2519	138	2889
	-50	140	1925	139	2188	139	2495	138	2862
	-40	140	1883	139	2140	139	2440	138	2799
	-30	140	1842	139	2094	139	2388	138	2739
	-20	140	1802	139	2049	139	2337	138	2680
	-10	140	1765	139	2006	139	2288	138	2625
	0	140	1727	139	1964	138	2240	138	2569
	10	139	1560	137	1781	137	2038	137	2345
2000	-54	140	1942	139	2209	138	2521	138	2894
	-50	140	1924	139	2188	138	2498	138	2867
	-40	140	1881	139	2140	138	2443	138	2804
	-30	140	1838	139	2092	138	2387	138	2740
	-20	140	1800	139	2048	138	2338	138	2683
	-10	140	1763	139	2006	138	2289	138	2628
	0	140	1724	139	1962	138	2240	138	2571
	10	138	1353	135	1559	135	1797	134	2080

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)
4000	-54	140	1932	139	2200	138	2514	138	2888
	-50	140	1914	139	2180	138	2490	138	2861
	-40	139	1871	139	2131	138	2435	137	2797
	-30	139	1828	139	2082	138	2379	137	2733
	-20	139	1790	139	2038	138	2329	138	2676
	-10	139	1751	139	1995	138	2279	137	2619
	0	138	1695	137	1933	137	2211	136	2541
	10	138	1180	133	1376	133	1599	132	1863
6000	-54	141	1839	140	2101	139	2406	138	2769
	-50	140	1822	140	2081	139	2384	138	2743
	-40	140	1779	140	2032	139	2328	138	2679
	-30	140	1741	140	1988	139	2277	138	2621
	-20	140	1703	140	1945	139	2228	138	2564
	-10	140	1667	140	1904	139	2180	138	2510
	0	138	1451	137	1668	136	1922	135	2223
	10	138	962	133	1144	132	1346	132	1584

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)
8000	-54	138	1659	138	1908	137	2197	136	2541
	-50	138	1643	138	1890	137	2177	136	2517
	-40	138	1606	138	1847	136	2128	136	2461
	-30	138	1571	138	1807	136	2081	136	2407
	-20	138	1538	138	1768	136	2036	136	2355
	-10	138	1504	137	1730	136	1992	136	2304
	0	137	1178	134	1378	133	1606	132	1876
	10	137	726	132	899	130	1081	129	1293
10,000	-54	137	1484	136	1721	135	1995	134	2321
	-50	137	1470	136	1705	135	1977	134	2299
	-40	137	1437	136	1666	135	1932	134	2247
	-30	137	1406	136	1630	135	1890	134	2198
	-20	137	1375	136	1594	135	1849	134	2150
	-10	137	1344	136	1559	135	1808	134	2103
	0	137	927	132	1117	130	1323	130	1565
	10	137	503	131	672	128	839	127	1027

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)
12,000	-54	137	1299	134	1526	133	1785	132	2091
	-50	137	1287	134	1512	133	1769	132	2072
	-40	137	1258	134	1478	133	1729	132	2025
	-30	137	1232	134	1447	133	1692	132	1981
	-20	137	1206	135	1416	133	1655	132	1939
	-10	137	1067	131	1275	130	1502	128	1768
	0	137	650	131	832	128	1017	127	1229
10	137	262	131	423	125	580	124	744	
14,000	-54	138	1108	132	1329	131	1572	130	1858
	-50	138	1098	132	1316	131	1557	130	1840
	-40	138	1073	132	1286	131	1521	130	1798
	-30	138	1049	132	1258	131	1488	130	1759
	-20	138	1026	132	1230	131	1455	130	1720
	-10	138	783	132	982	128	1187	126	1423
	0	138	389	132	564	125	738	124	924
10	138	34	132	190	125	341	122	488	

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)
16,000	-54	138	936	132	1155	130	1385	129	1655
	-50	138	927	132	1143	129	1372	129	1639
	-40	138	905	132	1117	129	1340	129	1601
	-30	138	884	132	1091	129	1309	129	1564
	-20	138	863	132	1066	129	1280	129	1529
	-10	138	508	132	698	126	889	125	1096
	0	138	138	132	304	126	469	122	633
	10	138	-190	132	-44	126	98	120	232
18,000	-54	137	779	132	988	128	1208	128	1462
	-50	137	771	132	979	128	1196	128	1447
	-40	137	752	132	955	128	1167	128	1412
	-30	137	734	132	932	128	1140	128	1380
	-20	137	671	132	867	127	1071	127	1301
	-10	137	248	132	423	125	603	123	784
	0	137	-94	132	57	125	213	121	357
	9	137	-369	132	-235	125	-98	119	22

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)
20,000	-54	137	616	132	820	127	1031	126	1269
	-50	137	610	132	812	127	1021	126	1256
	-40	137	594	132	792	127	995	126	1225
	-30	137	580	132	773	127	972	126	1196
	-20	137	379	132	561	126	746	125	944
	-10	137	1	132	163	125	328	122	486
	0	137	-319	132	-178	125	-35	119	93
	5	137	-459	132	-327	125	-193	119	-78
22,000	-56	138	480	131	681	127	883	126	1109
	-50	138	470	131	669	126	869	126	1091
	-40	138	455	131	649	126	844	126	1060
	-30	138	442	131	631	126	820	126	1031
	-20	138	93	131	264	125	431	122	601
	-10	138	-251	131	-95	125	54	120	193
	0	138	-544	131	-408	125	-280	119	-168
24,000	-58	138	316	132	511	126	703	125	912
	-50	138	308	132	500	126	688	125	893
	-40	138	299	132	485	126	668	125	868
	-30	138	255	132	451	126	635	125	828
	-20	138	-192	132	-31	125	124	121	270
	-10	138	-486	132	-339	125	-202	119	-78
	-4	138	-650	132	-515	125	-390	119	-281

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)
26,000	-59	137	131	132	312	126	493	125	683
	-50	137	127	132	303	126	480	125	666
	-40	137	121	132	294	126	467	124	648
	-30	137	-33	132	141	126	317	122	488
	-20	137	-436	132	-291	126	-146	120	-16
	-10	137	-694	132	-566	126	-440	119	-332
	-8	137	-744	132	-619	126	-497	119	-392
28,000	-61	138	-71	131	106	125	274	124	445
	-60	138	-70	131	106	125	274	124	445
	-50	138	-69	131	103	125	267	124	434
	-40	138	-82	131	86	125	247	124	408
	-30	138	-317	131	-153	125	4	121	147
	-20	138	-666	131	-524	125	-394	120	-281
	-13	138	-829	131	-699	125	-582	119	-486
30,000	-63	137	-267	132	-106	125	50	124	201
	-60	137	-263	132	-103	125	52	124	202
	-50	137	-256	132	-99	125	55	123	203
	-40	137	-293	132	-141	125	8	122	148
	-30	137	-566	132	-420	125	-278	120	-153
	-20	137	-868	132	-745	125	-627	119	-529
	-18	137	-915	132	-796	125	-682	119	-589

Press Alt (Feet)	OAT (°C)	Aircraft Weight (lb)							
		6000		5500		5000		4500	
		KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)	KIAS	ROC (FT/M IN)
31,000	-64	137	-379	132	-223	126	-73	123	68
	-60	137	-372	132	-218	126	-70	123	70
	-50	137	-356	132	-206	126	-62	123	75
	-40	137	-398	132	-251	126	-108	122	24
	-30	137	-681	132	-542	126	-407	120	-292
	-20	137	-966	132	-848	126	-735	119	-644

Time, Fuel, & Distance to Climb

Thrust LeverMCT
 Landing Gear..... UP
 Flaps..... UP
 Anti-iceOFF
 AirspeedPer subsequent tables

ISA -10

Aircraft Weight: 6000 lb (2722 kg)

ISA -10						
Altitude (ft)	OAT (°C)	KIAS	Time (min)	Fuel (U.S. gal)	Fuel (lb)	Distance (nm)
0	5	186	0	0	0	0
2000	1	186	1	2	13	2
4000	-3	186	2	4	26	5
6000	-7	191	3	6	39	7
8000	-11	186	3	8	52	10
10,000	-15	180	4	9	65	13
12,000	-19	175	6	11	79	16
14,000	-23	171	7	13	93	19
16,000	-27	164	8	15	107	23
18,000	-31	161	9	17	121	27
20,000	-35	157	11	19	136	32
22,000	-39	153	12	21	150	37
24,000	-43	151	14	23	166	42
26,000	-47	148	16	26	181	48
28,000	-50	144	18	28	198	55
30,000	-54	141	20	30	217	64
31,000	-56	140	22	32	227	69

Aircraft Weight: 5500 lb (2495 kg)

ISA -10						
Altitude (ft)	OAT (°C)	KIAS	Time (min)	Fuel (U.S. gal)	Fuel (lb)	Distance (nm)
0	5	186	0	0	0	0
2000	1	186	1	2	12	2
4000	-3	185	2	3	23	4
6000	-7	190	2	5	35	6
8000	-11	185	3	7	46	9
10,000	-15	179	4	8	58	11
12,000	-19	174	5	10	70	14
14,000	-23	170	6	12	82	17
16,000	-27	162	7	14	94	21
18,000	-31	160	8	15	107	24
20,000	-35	155	9	17	119	28
22,000	-39	152	11	19	132	32
24,000	-43	150	12	21	145	37
26,000	-47	147	14	22	158	42
28,000	-50	143	15	24	172	48
30,000	-54	140	17	26	187	55
31,000	-56	139	18	27	195	59

Aircraft Weight: 5000 lb (2268 kg)

ISA -10						
Altitude (ft)	OAT (°C)	KIAS	Time (min)	Fuel (U.S. gal)	Fuel (lb)	Distance (nm)
0	5	185	0	0	0	0
2000	1	185	1	2	10	2
4000	-3	185	1	3	21	4
6000	-7	189	2	5	31	6
8000	-11	183	3	6	41	8
10,000	-15	178	4	7	51	10
12,000	-19	173	4	9	62	12
14,000	-23	168	5	10	72	15
16,000	-27	161	6	12	83	18
18,000	-31	159	7	13	94	21
20,000	-35	154	8	15	105	25
22,000	-39	151	9	16	115	28
24,000	-43	149	10	18	126	32
26,000	-47	146	12	19	137	36
28,000	-50	142	13	21	149	41
30,000	-54	139	15	23	161	47
31,000	-56	138	16	23	168	50

Aircraft Weight: 4500 lb (2041 kg)

ISA -10						
Altitude (ft)	OAT (°C)	KIAS	Time (min)	Fuel (U.S. gal)	Fuel (lb)	Distance (nm)
0	5	184	0	0	0	0
2000	1	184	1	1	9	2
4000	-3	184	1	3	18	3
6000	-7	189	2	4	27	5
8000	-11	183	2	5	36	7
10,000	-15	177	3	7	45	9
12,000	-19	172	4	8	54	11
14,000	-23	167	5	9	64	13
16,000	-27	161	5	10	73	16
18,000	-31	158	6	12	82	19
20,000	-35	153	7	13	91	21
22,000	-39	150	8	14	101	24
24,000	-43	148	9	16	110	28
26,000	-47	145	10	17	119	31
28,000	-50	141	11	18	129	36
30,000	-54	138	13	19	139	40
31,000	-56	136	13	20	144	43

ISA

Aircraft Weight: 6000 lb (2722 kg)

ISA						
Altitude (ft)	OAT (°C)	KIAS	Time (min)	Fuel (U.S. gal)	Fuel (lb)	Distance (nm)
0	15	177	0	0	0	0
2000	11	173	1	2	15	3
4000	7	174	2	4	30	6
6000	3	175	3	6	44	8
8000	-1	173	4	9	58	11
10,000	-5	169	5	11	72	14
12,000	-9	165	7	13	87	18
14,000	-13	159	8	15	102	22
16,000	-17	159	9	17	117	25
18,000	-21	157	11	19	132	30
20,000	-25	152	12	21	147	34
22,000	-29	153	14	23	162	39
24,000	-33	151	15	25	178	45
26,000	-37	147	17	28	195	51
28,000	-40	144	19	30	213	58
30,000	-44	140	22	33	233	67
31,000	-46	139	23	34	244	73

Aircraft Weight: 5500 lb (2495 kg)

ISA						
Altitude (ft)	OAT (°C)	KIAS	Time (min)	Fuel (U.S. gal)	Fuel (lb)	Distance (nm)
0	15	177	0	0	0	0
2000	11	172	1	2	13	2
4000	7	173	2	4	26	5
6000	3	175	3	6	39	7
8000	-1	173	4	8	51	10
10,000	-5	168	5	9	64	13
12,000	-9	164	6	11	77	16
14,000	-13	158	7	13	90	19
16,000	-17	158	8	15	103	22
18,000	-21	156	9	17	116	26
20,000	-25	152	11	19	129	30
22,000	-29	152	12	20	142	34
24,000	-33	150	13	22	155	39
26,000	-37	146	15	24	169	44
28,000	-40	142	17	26	184	50
30,000	-44	139	19	28	200	58
31,000	-46	138	20	29	208	62

Aircraft Weight: 5000 lb (2268 kg)

ISA						
Altitude (ft)	OAT (°C)	KIAS	Time (min)	Fuel (U.S. gal)	Fuel (lb)	Distance (nm)
0	15	176	0	0	0	0
2000	11	171	1	2	12	2
4000	7	172	2	3	23	4
6000	3	174	3	5	34	7
8000	-1	172	3	7	45	9
10,000	-5	166	4	8	56	11
12,000	-9	163	5	10	68	14
14,000	-13	157	6	11	79	17
16,000	-17	157	7	13	90	20
18,000	-21	155	8	15	101	23
20,000	-25	150	9	16	112	26
22,000	-29	151	10	18	124	30
24,000	-33	149	12	19	135	34
26,000	-37	145	13	21	147	38
28,000	-40	141	14	23	159	43
30,000	-44	138	16	24	172	49
31,000	-46	136	17	25	179	53

Aircraft Weight: 4500 lb (2041 kg)

ISA						
Altitude (ft)	OAT (°C)	KIAS	Time (min)	Fuel (U.S. gal)	Fuel (lb)	Distance (nm)
0	15	175	0	0	0	0
2000	11	171	1	2	10	2
4000	7	172	1	3	20	4
6000	3	173	2	4	30	6
8000	-1	171	3	6	40	8
10,000	-5	165	4	7	49	10
12,000	-9	162	4	9	59	12
14,000	-13	156	5	10	69	15
16,000	-17	156	6	11	78	17
18,000	-21	153	7	13	88	20
20,000	-25	150	8	14	98	23
22,000	-29	150	9	15	107	26
24,000	-33	147	10	17	117	29
26,000	-37	144	11	18	127	33
28,000	-40	140	12	19	137	37
30,000	-44	137	14	21	147	42
31,000	-46	135	14	22	153	45

ISA +10

Aircraft Weight: 6000 lb (2722 kg)

ISA +10						
Altitude (ft)	OAT (°C)	KIAS	Time (min)	Fuel (U.S. gal)	Fuel (lb)	Distance (nm)
0	25	165	0	0	0	0
2000	21	162	1	3	18	4
4000	17	162	3	5	35	7
6000	13	164	4	8	52	11
8000	9	160	6	10	69	14
10,000	5	156	7	13	86	19
12,000	1	153	9	15	103	23
14,000	-3	150	11	18	121	28
16,000	-7	147	12	20	139	33
18,000	-11	144	14	23	157	38
20,000	-15	144	16	25	176	44
22,000	-19	141	19	28	195	51
24,000	-23	139	21	31	215	59
26,000	-27	135	24	34	236	67
28,000	-30	135	27	37	258	76
30,000	-34	130	30	40	281	87
31,000	-36	131	32	42	293	93

Aircraft Weight: 5500 lb (2495 kg)

ISA +10						
Altitude (ft)	OAT (°C)	KIAS	Time (min)	Fuel (U.S. gal)	Fuel (lb)	Distance (nm)
0	25	164	0	0	0	0
2000	21	161	2	2	16	3
4000	17	161	3	5	31	6
6000	13	163	4	7	45	9
8000	9	159	5	9	60	13
10,000	5	155	6	11	75	16
12,000	1	152	8	13	90	20
14,000	-3	149	9	15	105	24
16,000	-7	146	11	18	120	29
18,000	-11	143	12	20	136	33
20,000	-15	143	14	22	151	38
22,000	-19	140	16	24	167	44
24,000	-23	137	18	26	183	50
26,000	-27	134	20	29	200	57
28,000	-30	133	22	31	217	64
30,000	-34	128	25	33	235	72
31,000	-36	131	26	35	244	77

Aircraft Weight: 5000 lb (2268 kg)

ISA +10						
Altitude (ft)	OAT (°C)	KIAS	Time (min)	Fuel (U.S. gal)	Fuel (lb)	Distance (nm)
0	25	163	0	0	0	0
2000	21	160	1	2	14	3
4000	17	160	2	4	27	5
6000	13	162	3	6	40	8
8000	9	158	4	8	52	11
10,000	5	153	5	10	65	14
12,000	1	151	7	11	78	17
14,000	-3	148	8	13	91	21
16,000	-7	145	9	15	104	25
18,000	-11	142	11	17	117	29
20,000	-15	141	12	19	130	33
22,000	-19	139	14	21	143	38
24,000	-23	136	15	23	157	43
26,000	-27	133	17	24	170	48
28,000	-30	132	19	26	184	54
30,000	-34	127	21	28	198	61
31,000	-36	130	22	29	205	64

Aircraft Weight: 4500 lb (2041 kg)

ISA +10						
Altitude (ft)	OAT (°C)	KIAS	Time (min)	Fuel (U.S. gal)	Fuel (lb)	Distance (nm)
0	25	162	0	0	0	0
2000	21	159	1	2	12	2
4000	17	159	2	4	23	5
6000	13	161	3	5	34	7
8000	9	157	4	7	45	10
10,000	5	152	5	8	56	12
12,000	1	149	6	10	67	15
14,000	-3	147	7	12	78	18
16,000	-7	144	8	13	89	21
18,000	-11	141	9	15	100	25
20,000	-15	139	10	16	111	28
22,000	-19	138	12	18	122	32
24,000	-23	134	13	19	134	36
26,000	-27	132	14	21	145	41
28,000	-30	131	16	22	156	45
30,000	-34	125	17	24	167	51
31,000	-36	130	18	25	173	54

Cruise Performance

*** V_{MO}/M_{MO} Limited

** MCT

* Max Range Cruise (No Wind)

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
5000	6000	20	25	89.6**	94	242	25.6
				84.4	80	218	27.3
				79.1	68	194	28.7
				74.1*	58	171	29.4
		10	15	92.2**	105	257	24.5
				85.8	85	227	26.9
				79.2	68	197	28.9
				72.8*	56	168	29.9
		0	5	93.8***	113	268	23.6
				86.4	88	233	26.5
				78.7	68	198	29.2
				71.2*	54	163	30.4
		-10	-5	92.1***	110	264	24
				85	85	230	26.9
				77.6	66	196	29.6
				70.3*	52	162	30.9

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
5000	5500	20	25	89.6**	94	243	25.8
				83.6	78	216	27.8
				77.3	64	190	29.6
				71.6*	54	163	30.4
		10	15	92.1**	105	258	24.6
				85.2	83	226	27.3
				77.7	65	194	29.7
				70.7*	52	162	30.9
		0	5	93.6***	113	268	23.8
				85.8	86	232	26.9
				77.5	65	196	29.9
				69.4*	51	159	31.5
		-10	-5	91.9***	109	264	24.2
				84.3	83	228	27.3
				76.3	64	193	30.3
				68.4*	49	158	32

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
5000	5000	20	25	89.5**	94	244	25.9
				83.1	76	216	28.3
				76.2	62	188	30.4
				69.8*	51	160	31.4
		10	15	92.1**	105	259	24.7
				84.8	82	226	27.6
				76.8	64	193	30.3
				69.2*	50	160	31.9
		0	5	93.4***	112	268	23.9
				85.1	84	230	27.4
				76	62	192	30.7
				67.2*	47	154	32.5
		-10	-5	91.7***	108	264	24.3
				83.5	81	226	27.9
				74.4	60	188	31.3
				65.7*	45	150	33

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
5000	4500	20	25	89.5**	94	246	26
				82.7	75	216	28.6
				75.2	60	187	31.1
				68.1*	49	158	32.4
		10	15	92.1**	105	260	24.8
				83.7	79	223	28.2
				74.3	59	185	31.5
				65.4*	45	148	32.9
		0	5	93.2***	111	268	24.1
				84.6	83	229	27.7
				74.9	60	190	31.4
				65.4*	45	151	33.5
		-10	-5	91.5***	108	264	24.5
				83.3	80	226	28.1
				74	59	188	31.8
				64.8*	44	151	34.1

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
10,000	6000	20	15	91.8**	87	252	29
				87.2	75	230	30.7
				82.8	65	207	32
				78.4*	56	185	32.7
		10	5	94.5**	98	269	27.6
				88.6	80	240	30.1
				82.6	65	210	32.2
				76.9*	54	181	33.3
		0	-5	97.2***	110	287	26
				90.1	86	251	29.3
				82.8	67	215	32.2
				75.7*	53	179	33.8
		-10	-15	95.7***	108	283	26.3
				88.6	83	247	29.7
				81.3	64	211	32.8
				74.2*	51	175	34.4

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
10,000	5500	20	15	91.7**	87	254	29.2
				86.4	73	228	31.3
				81	61	202	33.1
				75.8*	52	177	33.9
		10	5	94.4**	98	271	27.7
				87.8	78	238	30.7
				81	62	206	33.2
				74.3*	50	173	34.5
		0	-5	97.2***	110	288	26.1
				89.3	83	249	29.8
				81.1	63	209	33.3
				73.0*	48	170	35.1
		-10	-15	95.5***	107	283	26.5
				87.7	80	244	30.3
				79.5	61	205	33.9
				71.5*	47	166	35.7

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
10,000	5000	20	15	91.7**	87	255	29.4
				85.5	71	226	31.9
				79.1	58	197	34.2
				73.0*	48	169	35.2
		10	5	94.4**	98	272	27.8
				87	76	236	31.3
				79.2	58	200	34.4
				71.5*	46	165	35.8
		0	-5	97.2***	110	289	26.2
				88.6	81	247	30.3
				79.5	60	204	34.3
				70.3*	44	162	36.5
		-10	-15	95.3***	106	283	26.7
				86.8	78	242	30.9
				77.9	57	200	34.9
				68.9*	43	159	37.1

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
10,000	4500	20	15	91.7**	87	257	29.5
				84.5	69	224	32.7
				77	54	192	35.4
				69.9*	43	159	36.6
		10	5	94.4**	98	273	28
				86.3	74	235	31.7
				77.7	56	197	35.4
				69.2*	43	159	37.3
		0	-5	97.2***	110	290	26.3
				88.2	80	246	30.7
				78.5	58	202	35.2
				68.4*	42	159	38
		-10	-15	95.1***	106	283	26.8
				86.2	77	240	31.4
				76.7	55	197	35.9
				66.9*	40	155	38.6

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
15,000	6000	20	5	93.0**	78	258	33.2
				89.3	68	238	34.8
				85.7	60	217	35.9
				82.3*	54	197	36.5
		10	-5	95.8**	88	277	31.6
				90.6	73	249	34.1
				85.5	61	221	36.2
				80.7*	52	193	37.1
		0	-15	98.1**	99	294	29.8
				91.7	78	259	33.3
				85.2	62	224	36.3
				79.2*	50	189	37.7
		-10	-25	98.6**	105	302	28.7
				91.9	81	264	32.8
				84.8	62	226	36.4
				78.0*	49	188	38.3

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
15,000	5500	20	5	93.0**	78	260	33.5
				88.6	67	237	35.5
				84.1	57	214	37.1
				80.0*	50	190	37.8
		10	-5	95.8**	88	278	31.8
				89.8	71	247	34.8
				83.9	58	217	37.4
				78.4*	48	186	38.5
		0	-15	98.0**	99	296	29.9
				91	76	258	33.9
				83.8	59	220	37.4
				77.0*	47	183	39.1
		-10	-25	98.6***	105	304	28.8
				91.2	78	262	33.4
				83.2	59	221	37.6
				75.6*	45	180	39.8

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
15,000	5000	20	5	93.0**	78	262	33.7
				87.8	65	236	36.3
				82.5	55	210	38.4
				77.4*	46	183	39.4
		10	-5	95.7**	88	280	31.9
				89.2	70	247	35.5
				82.5	55	213	38.5
				76.1*	45	180	40.1
		0	-15	98.0**	99	297	30
				90.4	75	257	34.4
				82.4	56	217	38.5
				74.7*	43	177	40.7
		-10	-25	98.6***	106	305	28.9
				90.5	77	261	34
				81.6	56	216	38.8
				73.0*	42	172	41.4

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
15,000	4500	20	5	93.0**	78	264	34
				86.8	63	234	37.1
				80.6	51	204	39.8
				74.4*	42	174	41
		10	-5	95.7**	88	281	32.1
				88.3	67	244	36.2
				80.6	52	207	39.9
				73.0*	41	171	41.7
		0	-15	98.0**	99	298	30.1
				89.6	72	254	35.1
				80.7	53	211	39.9
				71.7*	39	168	42.4
		-10	-25	98.6***	106	306	28.9
				89.7	75	258	34.6
				80	53	211	40.1
				70.1*	38	164	43.1

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
17,000	6000	20	1	93.5**	74	260	35.1
				90.3	66	241	36.5
				87	59	223	37.6
				84.0*	54	204	38
		10	-9	96.1**	83	279	33.4
				91.5	71	253	35.8
				87.1	60	228	37.7
				82.8*	52	203	38.7
		0	-19	98.5**	95	298	31.3
				92.7	76	264	34.8
				86.7	61	231	37.9
				81.1*	50	198	39.3
		-10	-29	98.5**	99	302	30.6
				92.2	76	266	34.7
				85.5	60	229	38.2
				79.3*	48	193	39.9

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
17,000	5500	20	1	93.4**	74	262	35.4
				89.4	64	240	37.4
				85.3	56	218	38.9
				81.6*	50	196	39.5
		10	-9	96.1**	83	281	33.7
				90.6	69	251	36.6
				85.2	57	222	39.1
				80.2*	48	193	40.2
		0	-19	98.5**	95	299	31.4
				91.9	74	262	35.6
				85	57	225	39.2
				78.5*	46	188	40.9
		-10	-29	98.6**	99	304	30.8
				91.7	75	265	35.3
				84.4	58	226	39.3
				77.5*	45	188	41.5

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
17,000	5000	20	1	93.4**	74	265	35.7
				88.5	62	239	38.3
				83.5	53	213	40.3
				78.8*	45	187	41.2
		10	-9	96.1**	83	283	33.8
				89.8	67	250	37.4
				83.5	54	217	40.5
				77.5*	44	184	41.9
		0	-19	98.4**	95	301	31.6
				91.2	72	261	36.2
				83.5	55	221	40.4
				76.2*	43	181	42.5
		-10	-29	98.6**	99	305	30.8
				90.7	73	262	36.1
				82.4	54	219	40.8
				74.5*	41	177	43.2

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
17,000	4500	20	1	93.4**	74	267	36
				87.8	61	238	39.1
				82	50	210	41.7
				76.4*	42	181	42.9
		10	-9	96.1**	84	284	34
				89.1	65	248	38.2
				81.9	51	213	41.8
				74.9*	41	177	43.7
		0	-19	98.4**	95	302	31.7
				90.5	70	259	36.9
				82	52	217	41.7
				73.5*	39	174	44.4
		-10	-29	98.6**	99	306	30.9
				90.1	71	261	36.7
				81	51	215	42.1
				72.0*	38	170	45.1

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
19,000	6000	20	-3	94.0**	71	261	37
				91	64	244	38.4
				88.2	58	227	39.3
				85.6*	53	210	39.7
		10	-13	96.5**	79	281	35.4
				92.1	68	256	37.7
				88	58	231	39.6
				84.0*	51	206	40.4
		0	-23	99.4**	93	303	32.7
				93.6	74	269	36.5
				87.7	59	235	39.7
				82.3*	49	201	41.1
		-10	-33	98.8**	93	303	32.6
				92.6	73	268	36.7
				86.4	58	233	40
				80.8*	47	198	41.7

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
19,000	5500	20	-3	93.9**	71	264	37.4
				90.2	62	243	39.4
				86.6	55	222	40.7
				83.2*	49	202	41.3
		10	-13	96.5**	79	283	35.7
				91.3	66	255	38.5
				86.3	55	226	41
				81.7*	47	198	42
		0	-23	99.3**	93	305	32.9
				93.1	72	269	37.1
				86.6	57	233	40.8
				80.5*	46	197	42.7
		-10	-33	98.8**	93	305	32.7
				91.9	71	267	37.4
				84.9	55	228	41.5
				78.4*	44	190	43.4

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
19,000	5000	20	-3	93.9**	71	267	37.8
				89.5	60	243	40.3
				85	52	219	42.2
				80.8*	45	195	43
		10	-13	96.5**	79	285	35.9
				90.5	64	253	39.4
				84.6	52	221	42.5
				79.1*	43	190	43.8
		0	-23	99.3**	93	306	33
				92.3	70	267	37.9
				85	54	227	42.2
				77.9*	42	188	44.5
		-10	-33	98.8**	93	307	32.8
				91.2	69	265	38.1
				83.3	52	223	42.9
				76.0*	40	182	45.2

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
19,000	4500	20	-3	93.8**	71	269	38.1
				88.4	58	241	41.3
				82.9	48	212	43.9
				77.7*	41	184	44.9
		10	-13	96.4**	79	286	36.1
				89.7	62	251	40.3
				82.8	49	216	44
				76.3*	40	181	45.7
		0	-23	99.3**	93	308	33.2
				91.4	68	264	38.8
				82.9	50	220	43.9
				74.7*	38	177	46.5
		-10	-33	98.8**	93	308	32.9
				90.5	68	263	38.8
				81.8	49	219	44.3
				73.4*	37	174	47.3

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
21,000	6000	20	-7	94.4**	67	263	39.1
				91.8	61	246	40.3
				89.3	56	230	41.1
				87.0*	52	214	41.5
		10	-17	97.0**	76	283	37.3
				92.9	65	259	39.6
				88.9	57	235	41.4
				85.4*	50	210	42.2
		0	-27	100.1**	89	306	34.6
				94.4	71	273	38.4
				88.7	58	239	41.5
				83.7*	48	206	42.9
		-10	-37	99.2**	88	305	34.6
				93	70	270	38.7
				87.2	56	236	42
				82.0*	46	202	43.5

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
21,000	5500	20	-7	94.4**	67	266	39.6
				91.1	60	247	41.3
				87.9	53	228	42.6
				84.9*	48	209	43.1
		10	-17	97.0**	76	286	37.6
				92.3	64	259	40.4
				87.8	54	233	42.8
				83.6*	47	206	43.9
		0	-27	100.0**	88	308	34.8
				93.9	70	273	39.1
				87.7	56	238	42.7
				82.1*	46	203	44.6
		-10	-37	99.2**	88	307	34.8
				92.5	68	270	39.4
				86	54	233	43.3
				80.1*	43	197	45.3

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
21,000	5000	20	-7	94.3**	67	269	40.1
				90.2	58	246	42.4
				86.1	50	223	44.2
				82.3*	44	200	45
		10	-17	96.9**	76	288	37.9
				91.5	62	258	41.4
				86	51	227	44.4
				80.9*	43	197	45.7
		0	-27	100.0**	89	310	35
				93	68	271	39.9
				86	52	232	44.3
				79.3*	42	193	46.5
		-10	-37	99.2**	88	308	34.9
				91.8	67	269	40.2
				84.6	51	229	44.8
				77.8*	40	189	47.2

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
21,000	4500	20	-7	94.3**	67	272	40.4
				89.3	56	245	43.6
				84.2	47	218	46
				79.5*	41	191	47
		10	-17	96.9**	76	290	38.1
				90.5	60	256	42.4
				84.2	48	222	46.1
				78.1*	39	188	47.8
		0	-27	100.0**	89	311	35.1
				92.2	66	269	40.8
				84.2	49	226	46
				76.5*	38	184	48.6
		-10	-37	99.2**	89	310	35
				91	65	266	41
				82.7	48	223	46.6
				74.9*	36	179	49.4

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
23,000	6000	20	-11	94.8**	64	263	41.3
				92.9	60	251	42.1
				91.1	56	239	42.8
				89.5*	53	227	43.1
		10	-21	97.5**	73	287	39.1
				94.2	64	265	41.4
				90.7	56	243	43
				87.6*	50	221	43.9
		0	-31	100.5**	84	308	36.7
				94.8	68	276	40.4
				89.8	56	244	43.4
				85.2*	47	212	44.7
		-10	-41	99.6**	83	306	36.8
				93.4	67	273	40.7
				88.2	54	240	44
				83.4*	46	207	45.4

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
23,000	5500	20	-11	94.7**	64	267	41.9
				91.7	57	249	43.5
				89	52	231	44.6
				86.3*	47	213	45.1
		10	-21	97.5**	73	290	39.5
				93.1	62	263	42.5
				88.6	53	236	44.8
				84.7*	45	209	45.8
		0	-31	100.5**	84	309	37
				94.2	67	275	41.3
				88.3	53	240	44.9
				83.1*	44	205	46.6
		-10	-41	99.6**	83	308	37
				92.9	66	273	41.4
				87.1	53	238	45.3
				81.7*	43	203	47.3

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
23,000	5000	20	-11	94.7**	64	270	42.5
				91	56	249	44.6
				87.5	49	228	46.3
				84.1*	44	207	47
		10	-21	97.4**	73	292	39.8
				92.3	60	262	43.5
				87.2	50	232	46.6
				82.3*	42	202	47.8
		0	-31	100.4**	84	312	37.3
				93.6	65	274	42.2
				87	51	237	46.5
				80.9*	41	199	48.6
		-10	-41	99.5**	83	310	37.2
				92.2	64	271	42.4
				85.4	49	232	47.1
				79.1*	39	194	49.4

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
23,000	4500	20	-11	94.7**	64	273	42.9
				90	54	248	45.9
				85.4	46	222	48.3
				81.1*	40	197	49.2
		10	-21	97.4**	73	294	40.1
				91.5	59	261	44.5
				85.5	47	227	48.4
				79.7*	39	194	50
		0	-31	100.4**	84	313	37.4
				92.8	63	272	43.1
				85.2	48	230	48.4
				78.0*	37	189	50.8
		-10	-41	99.5**	84	312	37.3
				91.7	62	270	43.3
				84.1	47	229	48.7
				76.8*	36	188	51.6

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
25,000	6000	20	-15	95.3**	61	264	43.5
				93.6	57	252	44.2
				92	54	241	44.7
				90.4*	51	229	44.9
		10	-25	97.7**	69	287	41.4
				94.6	61	266	43.7
				91.4	54	244	45.1
				88.5*	49	223	45.7
		0	-35	101.8**	81	313	38.6
				95.8	67	281	42
				91.2	55	250	45.2
				86.8*	47	219	46.5
		-10	-45	100.1**	79	308	39.1
				94	65	277	42.5
				89.5	54	246	45.8
				85.1*	46	215	47.2

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
25,000	5500	20	-15	95.2**	61	269	44.3
				92.6	55	252	45.6
				90.1	51	236	46.6
				88.0*	47	219	47
		10	-25	97.6**	69	291	41.9
				94.2	60	268	44.6
				90.5	53	245	46.5
				87.1*	46	222	47.7
		0	-35	101.7**	81	315	38.9
				95.1	65	280	43
				89.7	53	246	46.9
				84.7*	44	212	48.5
		-10	-45	100.1**	79	310	39.3
				93.3	63	276	43.6
				87.9	51	241	47.5
				82.9*	42	207	49.3

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
25,000	5000	20	-15	95.2**	61	272	45
				91.8	54	252	46.9
				88.6	48	233	48.5
				85.7*	43	213	49.2
		10	-25	97.6**	70	294	42.2
				93	58	265	45.9
				88.3	49	237	48.7
				84.0*	42	208	50
		0	-35	101.7**	81	317	39.2
				94.4	63	279	44.1
				88.1	50	241	48.6
				82.3*	40	204	50.8
		-10	-45	100.1***	79	312	39.6
				92.7	62	275	44.6
				86.4	48	237	49.4
				80.6*	39	199	51.6

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
25,000	4500	20	-15	95.1**	61	276	45.5
				90.9	52	252	48.3
				86.9	45	228	50.5
				83.1*	40	205	51.5
		10	-25	97.6**	70	296	42.6
				92.3	56	264	47
				86.7	46	232	50.7
				81.5*	38	201	52.3
		0	-35	101.6***	81	319	39.4
				93.8	62	278	45.1
				86.7	47	238	50.4
				80.0*	37	198	53.2
		-10	-45	99.6***	78	312	40
				91.9	59	272	45.8
				84.8	45	232	51.3
				78.2*	36	192	54

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
27,000	6000	20	-18	95.6**	57	263	46
				94.4	55	254	46.4
				93.2	52	245	46.6
				92.1*	50	236	46.8
		10	-28	97.7**	65	286	44
				95.5	59	270	45.5
				93.4	54	255	46.9
				91.4*	50	239	47.4
		0	-38	102.2**	76	313	41.2
				96.5	64	284	44.3
				92.3	54	255	47.2
				88.5*	47	226	48.4
		-10	-48	100.7**	74	308	41.6
				94.7	62	279	44.9
				90.4	52	250	48
				86.6*	45	221	49.1

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
27,000	5500	20	-18	95.6**	57	268	47
				93.4	53	254	48
				91.4	49	240	48.7
				89.5*	46	226	48.9
		10	-28	97.6**	65	290	44.6
				94.3	56	267	47.3
				91	50	244	49.1
				87.8*	44	222	49.8
		0	-38	102.2***	76	316	41.5
				96	63	286	45
				91.5	52	255	48.7
				87.1*	45	225	50.5
		-10	-48	100.3***	73	310	42.1
				93.9	61	278	45.9
				89.2	50	247	49.7
				84.8*	42	216	51.4

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
27,000	5000	20	-18	95.5**	57	273	47.8
				92.5	51	255	49.5
				89.7	46	236	50.8
				87.2*	42	218	51.4
		10	-28	97.6**	65	294	45.1
				93.5	55	267	48.6
				89.2	47	240	51.1
				85.5*	41	213	52.3
		0	-38	101.7***	75	316	42.1
				94.6	60	280	46.7
				89	48	245	51.2
				83.7*	39	209	53.1
		-10	-48	99.6***	72	310	42.8
				92.7	58	275	47.5
				87.2	46	240	51.9
				82.0*	38	205	54

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
27,000	4500	20	-18	95.5**	57	277	48.4
				91.7	50	255	50.9
				88.1	44	233	53
				84.7*	39	211	54
		10	-28	97.6**	65	297	45.5
				92.8	54	267	49.8
				87.8	45	238	53.1
				83.3*	38	208	54.9
		0	-38	101.2***	74	316	42.7
				93.7	58	278	48.1
				87.3	45	240	53.2
				81.4*	36	202	55.8
		-10	-48	99.1***	71	310	43.3
				91.8	56	272	48.8
				85.6	44	235	54
				79.7*	35	198	56.7

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
28,000	6000	20	-20	95.7**	55	261	47.2
				94.9	54	254	47.5
				94	52	247	47.7
				93.2*	50	241	47.7
		10	-30	98.5**	64	289	45
				96	59	273	46.5
				94	54	257	47.8
				92.0*	50	241	48.5
		0	-40	102.2**	73	311	42.7
				97	63	285	45.5
				93.1	54	259	48
				89.9*	47	234	49.4
		-10	-50	100.8**	71	307	43
				95.1	61	280	46.2
				91	52	253	48.9
				87.6*	45	226	50.2

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
28,000	5500	20	-20	95.7**	55	268	48.3
				94.4	53	259	49
				93.1	50	250	49.5
				91.8*	48	241	49.8
		10	-30	98.4**	64	293	45.7
				95.3	57	273	47.9
				92.7	51	254	49.7
				90.0*	46	235	50.7
		0	-40	102.2***	73	315	43.1
				95.9	61	284	46.7
				91.4	50	253	50.3
				87.1*	43	222	51.7
		-10	-50	100.3***	71	308	43.7
				94.1	59	279	47.3
				89.8	49	249	50.9
				85.7*	42	220	52.5

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
28,000	5000	20	-20	95.6**	55	273	49.3
				92.9	50	256	50.8
				90.3	46	238	52
				88.0*	42	221	52.5
		10	-30	98.2**	64	296	46.2
				94	54	269	49.8
				89.9	46	243	52.3
				86.2*	40	216	53.4
		0	-40	101.5***	72	315	43.8
				94.7	58	281	48.2
				89.5	47	246	52.5
				84.5*	39	212	54.3
		-10	-50	99.4***	69	308	44.5
				92.7	56	275	49
				87.6	45	241	53.3
				82.7*	38	208	55.1

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
28,000	4500	20	-20	95.6**	55	277	50
				91.9	49	255	52.5
				88.3	43	233	54.5
				85.2*	38	211	55.3
		10	-30	98.1**	64	299	46.7
				93.2	52	268	51.2
				88.1	44	238	54.6
				83.7*	37	208	56.2
		0	-40	100.9***	71	315	44.4
				93.6	56	278	49.8
				87.5	44	240	54.8
				81.8*	35	203	57.1
		-10	-50	98.8***	68	308	45.1
				91.9	54	273	50.4
				86.1	43	238	55.4
				80.7*	35	203	58

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
29,000	6000	20	-22	95.9**	54	260	48.3
				95.4	53	256	48.5
				94.9	52	251	48.7
				94.3*	51	247	48.8
		10	-32	99.3**	63	291	46.2
				96.4	58	274	47.6
				94.3	52	257	48.9
				92.3*	48	240	49.6
		0	-42	102.2**	70	309	44.3
				97.1	60	284	47
				93.3	53	259	49.2
				90.4*	46	234	50.5
		-10	-52	100.8**	68	305	44.6
				95.4	59	279	47.6
				91.4	51	254	49.9
				88.4*	45	229	51.2

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
29,000	5500	20	-22	95.8**	54	267	49.6
				94.8	52	259	50.3
				93.7	50	251	50.7
				92.6*	48	243	50.9
		10	-32	99.1**	63	295	46.8
				95.8	56	276	49
				93.2	50	256	50.9
				90.6*	46	237	51.8
		0	-42	102.2***	70	313	44.7
				96.3	59	285	48
				92.1	50	257	51.2
				88.4*	43	229	52.8
		-10	-52	100.3***	68	307	45.2
				94.2	57	278	48.9
				89.8	48	249	52.3
				86.0*	41	220	53.6

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
29,000	5000	20	-22	95.8**	54	273	50.7
				93.7	50	259	52
				91.6	46	245	53
				89.6*	43	231	53.6
		10	-32	99.0**	63	299	47.4
				94.7	54	273	50.8
				90.8	46	247	53.4
				87.2*	40	221	54.6
		0	-42	101.4***	69	314	45.5
				95	57	282	49.5
				90.3	47	250	53.7
				85.7*	39	219	55.5
		-10	-52	99.3***	66	307	46.2
				92.8	54	275	50.5
				88.1	45	243	54.7
				83.6*	38	212	56.4

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
29,000	4500	20	-22	95.7**	54	278	51.5
				92.4	48	257	53.9
				89.1	42	237	55.7
				86.3*	38	216	56.6
		10	-32	98.9**	63	302	47.9
				93.8	52	272	52.4
				89	43	242	55.8
				84.6*	37	212	57.5
		0	-42	100.7***	68	314	46.2
				93.7	54	278	51.3
				88.1	43	243	56.2
				82.8*	35	207	58.4
		-10	-52	98.6***	65	307	46.9
				91.7	52	272	52.2
				86.2	42	237	57.1
				81.1*	34	203	59.3

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
30,000	6000	20	-24	96.1*/**	52	259	49.4
		10	-34	99.9**	62	293	47.5
				96.8	56	274	48.8
				94.4	51	256	50
				92.5*	47	237	50.6
		0	-44	102.2**	67	307	45.8
				97.1	58	282	48.5
				93.2	51	257	50.5
				90.6*	45	232	51.4
		-10	-54	100.8**	66	303	46.1
				95.4	56	277	49.2
				91.4	49	252	51.3
				88.6*	43	227	52.2

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
30,000	5500	20	-24	96.0**	53	267	50.9
				95	50	259	51.5
				93.9	48	250	52
				92.8*	46	242	52.2
		10	-34	99.8**	62	297	48.2
				96.2	55	278	50.1
				93.7	50	258	52
				91.2*	45	239	53
		0	-44	102.2**	67	311	46.3
				96.8	58	286	49.4
				92.7	50	260	52.2
				89.4*	43	234	53.9
		-10	-54	100.3***	65	305	46.9
				94.5	55	278	50.4
				90.3	47	251	53.3
				87.0*	41	224	54.8

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
30,000	5000	20	-24	96.0**	53	274	52.1
				93.7	48	258	53.6
				91.5	44	242	54.5
				89.4*	41	226	54.8
		10	-34	99.7**	62	301	48.8
				95	53	275	52
				91.4	45	249	54.8
				87.9*	40	223	55.8
		0	-44	101.4***	66	312	47.2
				95.1	55	282	51.1
				90.7	46	251	55.1
				86.4*	39	221	56.7
		-10	-54	99.3***	64	305	47.9
				93.1	53	275	52.1
				88.6	44	245	56
				84.4*	37	215	57.6

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
30,000	4500	20	-24	95.9**	53	279	53
				92.8	47	258	55.4
				89.7	42	238	57.1
				86.9*	38	218	57.8
		10	-34	99.5**	62	304	49.3
				94.1	51	274	53.7
				89.4	42	243	57.3
				85.1*	36	213	58.8
		0	-44	100.5***	65	312	48.1
				93.8	53	279	52.9
				88.6	42	245	57.6
				83.7*	35	211	59.7
		-10	-54	98.4***	63	305	48.8
				91.7	50	272	53.9
				86.5	40	238	58.7
				81.6*	34	204	60.7

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
31,000	6000	20	-26	96.3*/**	51	258	50.4
		10	-36	100.6**	60	294	48.8
				97.5	55	276	50
				95	51	258	51
				93.3*	47	241	51.4
		0	-46	102.2**	64	305	47.5
				97.5	56	282	50
				93.8	50	259	51.5
				91.4*	45	236	52.3
		-10	-56	100.8**	63	300	47.8
				95.8	55	277	50.7
				92	49	254	52.3
				89.5*	43	231	53.1

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
31,000	5500	20	-26	96.3**	51	267	52.2
				95.3	49	259	52.7
				94.4	47	251	53.2
				93.5*	45	243	53.3
		10	-36	100.4**	60	299	49.6
				96.7	54	278	51.5
				93.9	48	258	53.3
				91.5*	44	237	54.2
		0	-46	102.2**	64	309	48
				96.7	55	284	51.2
				92.7	48	258	53.7
				89.7*	42	233	55.1
		-10	-56	100.5***	63	304	48.5
				94.8	54	278	52
				90.7	46	252	54.6
				87.7*	40	227	56

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
31,000	5000	20	-26	96.2**	51	274	53.5
				94.6	48	262	54.7
				93	45	250	55.6
				91.4*	42	238	55.9
		10	-36	100.3**	60	303	50.2
				95.5	52	277	53.2
				92	45	252	56.1
				88.7*	40	226	57
		0	-46	101.5***	63	311	49
				95.3	53	282	52.8
				90.9	45	252	56.5
				87.0*	38	223	57.9
		-10	-56	99.3***	61	304	49.7
				93.3	51	275	53.7
				89	43	247	57.4
				85.2*	37	218	58.8

Alt FT	Aircraft Weight LB	Δ ISA °C	OAT °C	%N1	Fuel Flow GPH	Airspeed KTAS	Specific Range Nm/ 10 U.S. Gal
31,000	4500	20	-26	96.1**	51	280	54.5
				93.3	46	261	56.9
				90.5	41	242	58.4
				87.9*	38	223	59.1
		10	-36	100.2**	60	307	50.8
				94.6	50	277	55
				90.2	42	247	58.7
				86.0*	36	217	60.2
		0	-46	100.4***	62	311	50
				93.9	51	279	54.6
				89.2	42	247	59.1
				84.5*	35	215	61.1
		-10	-56	98.3***	60	304	50.8
				91.8	49	272	55.6
				87	40	240	60.3
				82.5*	33	208	62.1

Descent Data

Airspeed0.51 MACH/245 KIAS

Throttle A/R

Pressure Altitude (ft)	Flight Path Angle = -2.8			Flight Path Angle = -3.7			Flight Path Angle = -4.6		
	Time (min: sec)	Fuel (US gal)	Dist (NM)	Time (min: sec)	Fuel (US gal)	Dist (NM)	Time (min: sec)	Fuel (US gal)	Dist (NM)
31,000	21:39	27	106	16:22	19	80	13:09	14	65
30,000	20:58	26	103	15:52	18	78	12:45	14	62
29,000	20:18	26	99	15:21	18	75	12:20	13	60
28,000	19:38	25	96	14:51	18	73	11:56	13	58
27,000	18:58	25	93	14:21	17	70	11:32	13	56
26,000	18:19	24	89	13:51	17	68	11:08	13	54
25,000	17:39	24	86	13:21	17	65	10:43	12	52
24,000	17:00	23	83	12:51	16	63	10:19	12	50
23,000	16:20	22	79	12:21	16	60	9:56	12	48
22,000	15:41	22	76	11:52	15	57	9:32	11	46
21,000	15:02	21	73	11:22	15	55	9:08	11	44
20,000	14:24	20	69	10:53	14	52	8:45	11	42
19,000	13:45	20	66	10:24	14	50	8:21	10	40
17,000	12:28	18	59	9:26	13	45	7:34	9	36
15,000	11:09	16	52	8:26	11	40	6:47	8	32
10,000	7:42	11	35	5:50	8	26	4:41	6	21
5000	4:00	6	17	3:01	4	13	2:25	3	11
0	0:00	0	0	0:00	0	0	0:00	0	0

Landing Distance

V _{REF} Speeds (KIAS)					
FLAPS	4000 lb	4500 lb	5000 lb	5550 lb	6000 lb*
UP or UNKNOWN	89	95	100	104	109
UP (Ice Contaminated Airframe/STALL SPEED HIGH Advisory)	115	122	128	135	140
50%	82	87	91	96	100
50% (Ice Contaminated Airframe /STALL SPEED HIGH Advisory)	98	104	110	115	120
100%	71	76	81	85	89

* Maximum Landing Weight (MLW) is 5550 lb (2495 kg).

• NOTE •

Refer to [Section 2: Limitations, "Brakes"](#) for high-energy braking events.

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

Aircraft Weight: 5550 lb (2517 kg)

Flaps: 100%

V_{REF} 85 KIAS
Winds Calm
Runway Dry, Level, Paved
Thrust Lever IDLE

Headwind: Subtract 8% from the ground run and 7% from the total distance for every 10 knots of headwind.

Tailwind: Add 46% to the ground run and 41% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

Unpaved runway: Add 20% to the total distance.

• NOTE •

The grayed-out cells in the subsequent table signify that the aircraft is not capable of meeting the regulatory balked landing climb gradient for these conditions.

Aircraft Weight: 5550 lb (2517 kg); Flaps: 100%								
Press Alt Feet	Distance Feet	TEMPERATURE ~°C						ISA
		0	10	20	30	40	50	
SL	Gnd Roll	1543	1600	1656	1713	1769		1628
	Total	2889	2970	3052	3134	3217		3011
1000	Gnd Roll	1600	1659	1717	1776	1835		1677
	Total	2971	3056	3141	3227	3313		3082
2000	Gnd Roll	1660	1721	1781	1842	1903		1727
	Total	3057	3146	3235	3324	3414		3155
3000	Gnd Roll	1722	1785	1848	1911			1779
	Total	3148	3240	3333	3426			3231
4000	Gnd Roll	1787	1852	1918	1983			1833
	Total	3243	3339	3436	3533			3311
5000	Gnd Roll	1855	1923	1991	2058			1889
	Total	3343	3443	3544	3645			3394
6000	Gnd Roll	1926	1996	2067	2137			1948
	Total	3448	3552	3658	3763			3480
7000	Gnd Roll	2000	2073	2146				2008
	Total	3558	3667	3777				3570
8000	Gnd Roll	2102	2179	2256				2095
	Total	3717	3832	3948				3707
9000	Gnd Roll	2227	2309	2390				2204
	Total	3916	4039	4162				3881
10,000	Gnd Roll	2360	2446					2318
	Total	4127	4258					4064

• NOTE •

Unfactored data: the above published distances do not include factors that may be required by operational rules.

Flaps: 50%

V _{REF}	96 KIAS
Winds	Calm
Runway	Dry, Level, Paved
Thrust Lever	IDLE

Headwind: Subtract 7% from the ground run and 6% from the total distance for every 10 knots of headwind.

Tailwind: Add 39% to the ground run and 36% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

Unpaved runway: Add 20% to the total distance.

• NOTE •

The grayed-out cells in the subsequent table signify that the aircraft is not capable of meeting the regulatory balked landing climb gradient for these conditions.

Refer to [Section 2: Limitations, "Brakes"](#) for high-energy braking events.

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

Aircraft Weight: 5550 lb (2517 kg); Flaps: 50%								
Press Alt Feet	Distance Feet	TEMPERATURE ~°C						ISA
		0	10	20	30	40	50	
SL	Gnd Roll	2173	2253	2332	2412	2492	2571	2293
	Total	3199	3296	3393	3490	3587	3685	3345
1000	Gnd Roll	2254	2336	2419	2501	2584	2666	2361
	Total	3297	3397	3498	3599	3700	3802	3428
2000	Gnd Roll	2337	2423	2509	2594	2680	2765	2432
	Total	3399	3503	3608	3713	3819	3925	3514
3000	Gnd Roll	2425	2514	2603	2691	2780	2869	2505
	Total	3506	3615	3724	3833	3943	4053	3604
4000	Gnd Roll	2516	2609	2701	2793	2885	2977	2582
	Total	3618	3731	3845	3959	4073	4188	3698
5000	Gnd Roll	2612	2708	2803	2899	2995		2661
	Total	3735	3853	3972	4090	4209		3796
6000	Gnd Roll	2712	2811	2911	3010	3109		2743
	Total	3859	3982	4105	4229	4352		3897
7000	Gnd Roll	2817	2920	3023	3126	3229		2828
	Total	3988	4116	4245	4373	4502		4003
8000	Gnd Roll	2960	3068	3177	3285	3393		2951
	Total	4172	4307	4442	4578	4714		4160
9000	Gnd Roll	3137	3251	3366	3481	3596		3104
	Total	4401	4545	4689	4833	4978		4361
10,000	Gnd Roll	3323	3445	3567	3688			3265
	Total	4644	4797	4950	5103			4571

• NOTE •

Unfactored data: The above published distances do not include factors that may be required by operational rules.

Flaps: 50% (Ice Contaminated Airframe/STALL SPEED HIGH Advisory)

V_{REF}..... 115 KIAS
Winds Calm
Runway Dry, Level, Paved
Thrust Lever IDLE

Headwind: Subtract 6% from the ground run and 5% from the total distance for every 10 knots of headwind.

Tailwind: Add 32% to the ground run and 29% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

Unpaved runway: Add 20% to the total distance.

• NOTE •

Refer to [Section 2: Limitations, "Brakes"](#) for high-energy braking events.

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

Aircraft Weight: 5550 lb (2517 kg); Flaps: 50% (Ice Contaminated)					
Press Alt Feet	Distance Feet	TEMPERATURE ~°C			
		-20	-10	0	10
SL	Gnd Roll	2706	2813	2920	3026
	Total	4949	5116	5283	5451
1000	Gnd Roll	2806	2916	3027	3138
	Total	5105	5278	5452	5627
2000	Gnd Roll	2910	3025	3140	3255
	Total	5268	5448	5629	5811
3000	Gnd Roll	3019	3138	3258	3377
	Total	5439	5627	5815	6005
4000	Gnd Roll	3133	3257	3380	3504
	Total	5618	5814	6010	6208
5000	Gnd Roll	3252	3380	3509	3637
	Total	5807	6010	6215	6420
6000	Gnd Roll	3376	3510	3643	3776
	Total	6004	6216	6430	6644
7000	Gnd Roll	3507	3645	3784	3922
	Total	6211	6433	6655	6878
8000	Gnd Roll	3685	3831	3976	4122
	Total	6504	6737	6971	7206
9000	Gnd Roll	3905	4059	4213	4368
	Total	6868	7116	7365	7615
10,000	Gnd Roll	4137	4301	4464	4628
	Total	7254	7517	7782	8048

• NOTE •

Unfactored data: The above published distances do not include factors that may be required by operational rules.

Flaps: UP

V_{REF}.....104 KIAS

• NOTE •

To calculate Flaps UP landing distance, add 35% to the total distance of Flaps 50%.

Refer to [Section 2: Limitations, "Brakes"](#) for high-energy braking events.

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

Flaps: UP (Ice Contaminated Airframe/STALL SPEED HIGH Advisory)

V_{REF}.....136 KIAS

• NOTE •

To calculate Flaps UP landing distance, add 35% to the total distance of Flaps 50% (Ice Contaminated Airframe/STALL SPEED HIGH Advisory).

Refer to [Section 2: Limitations, "Brakes"](#) for high-energy braking events.

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

Aircraft Weight: 4500 lb (2041 kg)

Flaps: 100%

V_{REF}.....76 KIAS

WindsCalm

RunwayDry, Level, Paved

Thrust LeverIDLE

Headwind: Subtract 8% from the ground run and 7% from the total distance for every 10 knots of headwind.

Tailwind: Add 46% to the ground run and 43% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

Unpaved runway: Add 20% to the total distance.

• NOTE •

The grayed-out cells in the subsequent table signify that the aircraft is not capable of meeting the regulatory balked landing climb gradient for these conditions.

Aircraft Weight: 4500 lb (2041 kg); Flaps: 100%								
Press Alt Feet	Distance Feet	TEMPERATURE ~°C						ISA
		0	10	20	30	40	50	
SL	Gnd Roll	1543	1600	1656	1713	1769	1826	1628
	Total	2307	2380	2454	2528	2602	2676	2417
1000	Gnd Roll	1600	1659	1717	1776	1835	1893	1677
	Total	2381	2457	2534	2611	2688	2765	2480
2000	Gnd Roll	1660	1721	1781	1842	1903	1964	1727
	Total	2459	2538	2618	2698	2778	2858	2546
3000	Gnd Roll	1722	1785	1848	1911	1974	2037	1779
	Total	2540	2623	2706	2789	2872	2956	2615
4000	Gnd Roll	1787	1852	1918	1983	2049	2114	1833
	Total	2625	2711	2798	2884	2971	3058	2686
5000	Gnd Roll	1855	1923	1991	2058	2126	2194	1889
	Total	2715	2804	2894	2984	3075	3165	2760
6000	Gnd Roll	1926	1996	2067	2137	2208	2278	1948
	Total	2808	2902	2995	3089	3183	3277	2837
7000	Gnd Roll	2000	2073	2146	2220	2293		2008
	Total	2907	3004	3101	3199	3297		2918
8000	Gnd Roll	2102	2179	2256	2333	2410		2095
	Total	3045	3147	3250	3353	3456		3036
9000	Gnd Roll	2227	2309	2390	2472			2204
	Total	3217	3325	3434	3544			3186
10,000	Gnd Roll	2360	2446	2533	2619			2318
	Total	3398	3514	3630	3746			3343

• NOTE •

Unfactored data: The above published distances do not include factors that may be required by operational rules.

Flaps: 50%

V _{REF}	87 KIAS
Winds	Calm
Runway	Dry, Level, Paved
Thrust Lever	IDLE

Headwind: Subtract 7% from the ground run and 6% from the total distance for every 10 knots of headwind.

Tailwind: Add 39% to the ground run and 37% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

Unpaved runway: Add 20% to the total distance.

• NOTE •

Refer to [Section 2: Limitations, "Brakes"](#) for high-energy braking events.

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

Aircraft Weight: 4500 lb (2041 kg); Flaps: 50%								
Press Alt Feet	Distance Feet	TEMPERATURE ~°C						ISA
		0	10	20	30	40	50	
SL	Gnd Roll	2173	2253	2332	2412	2492	2571	2293
	Total	2751	2844	2937	3030	3123	3217	2890
1000	Gnd Roll	2254	2336	2419	2501	2584	2666	2361
	Total	2845	2941	3038	3135	3232	3329	2970
2000	Gnd Roll	2337	2423	2509	2594	2680	2765	2432
	Total	2943	3043	3143	3244	3345	3445	3053
3000	Gnd Roll	2425	2514	2603	2691	2780	2869	2505
	Total	3045	3149	3254	3358	3463	3568	3140
4000	Gnd Roll	2516	2609	2701	2793	2885	2977	2582
	Total	3153	3261	3369	3478	3587	3696	3229
5000	Gnd Roll	2612	2708	2803	2899	2995	3090	2661
	Total	3265	3378	3490	3603	3716	3829	3322
6000	Gnd Roll	2712	2811	2911	3010	3109	3208	2743
	Total	3383	3500	3617	3734	3852	3970	3419
7000	Gnd Roll	2817	2920	3023	3126	3229	3332	2828
	Total	3506	3628	3750	3872	3994	4116	3520
8000	Gnd Roll	2960	3068	3177	3285	3393	3502	2951
	Total	3677	3806	3934	4062	4191	4320	3666
9000	Gnd Roll	3137	3251	3366	3481	3596	3711	3104
	Total	3890	4026	4162	4298	4435	4572	3851
10,000	Gnd Roll	3323	3445	3567	3688	3810	3932	3265
	Total	4114	4259	4403	4548	4693	4838	4045

• NOTE •

Unfactored data: The above published distances do not include factors that may be required by operational rules.

Flaps: 50% (Ice Contaminated)

V _{REF}	104 KIAS
Winds	Calm
Runway	Dry, Level, Paved
Thrust Lever	IDLE

Headwind: Subtract 6% from the ground run and 5% from the total distance for every 10 knots of headwind.

Tailwind: Add 32% to the ground run and 30% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

Unpaved runway: Add 20% to the total distance.

• NOTE •

Refer to [Section 2: Limitations, "Brakes"](#) for high-energy braking events.

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

Aircraft Weight: 4500 lb (2041 kg); Flaps: 50% (Ice Contaminated)					
Press Alt Feet	Distance Feet	TEMPERATURE ~°C			
		-20	-10	0	10
SL	Gnd Roll	2706	2813	2920	3026
	Total	3939	4082	4225	4369
1000	Gnd Roll	2806	2916	3027	3138
	Total	4072	4221	4370	4519
2000	Gnd Roll	2910	3025	3140	3255
	Total	4212	4367	4521	4676
3000	Gnd Roll	3019	3138	3258	3377
	Total	4359	4519	4680	4841
4000	Gnd Roll	3133	3257	3380	3504
	Total	4512	4679	4846	5013
5000	Gnd Roll	3252	3380	3509	3637
	Total	4672	4846	5019	5194
6000	Gnd Roll	3376	3510	3643	3776
	Total	4840	5021	5201	5382
7000	Gnd Roll	3507	3645	3784	3922
	Total	5016	5204	5392	5580
8000	Gnd Roll	3685	3831	3976	4122
	Total	5261	5459	5657	5855
9000	Gnd Roll	3905	4059	4213	4368
	Total	5565	5774	5984	6195
10,000	Gnd Roll	4137	4301	4464	4628
	Total	5886	6108	6331	6554

• NOTE •

Unfactored data: The above published distances do not include factors that may be required by operational rules.

Landing Distance - Factored Data

The landing distance data in the subsequent tables includes a 1.67 factor for dry pavement and a 1.92 factor (1.67×1.15) for wet pavement.

Aircraft Weight: 5550 lb (2517 kg)

Flaps: 100%, Dry Runway

Headwind: Subtract 8% from the ground run and 7% from the total distance for every 10 knots of headwind.

Tailwind: Add 46% to the ground run and 41% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

Unpaved runway: Add 20% to the total distance.

• NOTE •

The greyed-out cells in the subsequent table signify that the aircraft is not capable of meeting the regulatory balked landing climb gradient for these conditions.

Aircraft Weight: 5550 lb (2517 kg); Flaps: 100%; Runway: Dry								
Press Alt Feet	Distance Feet	TEMPERATURE ~°C						ISA
		0	10	20	30	40	50	
SL	Gnd Roll	2577	2672	2766	2861	2954		2719
	Total	4825	4960	5097	5234	5372		5028
1000	Gnd Roll	2672	2771	2867	2966	3064		2801
	Total	4962	5104	5245	5389	5533		5147
2000	Gnd Roll	2772	2874	2974	3076	3178		2884
	Total	5105	5254	5402	5551	5701		5269
3000	Gnd Roll	2876	2981	3086	3191			2971
	Total	5257	5411	5566	5721			5396
4000	Gnd Roll	2984	3093	3203	3312			3061
	Total	5416	5576	5738	5900			5529
5000	Gnd Roll	3098	3211	3325	3437			3155
	Total	5583	5750	5918	6087			5668
6000	Gnd Roll	3216	3333	3452	3569			3253
	Total	5758	5932	6109	6284			5812
7000	Gnd Roll	3340	3462	3584				3353
	Total	5942	6124	6308				5962
8000	Gnd Roll	3510	3639	3768				3499
	Total	6207	6399	6593				6191
9000	Gnd Roll	3719	3856	3991				3681
	Total	6540	6745	6951				6481
10,000	Gnd Roll	3941	4085					3871
	Total	6892	7111					6787

Flaps: 100%, Wet Runway

Headwind: Subtract 8% from the ground run and 7% from the total distance for every 10 knots of headwind.

Tailwind: Add 46% to the ground run and 41% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

• NOTE •

The greyed-out cells in the subsequent table signify that the aircraft is not capable of meeting the regulatory balked landing climb gradient for these conditions.

Aircraft Weight: 5550 lb (2517 kg); Flaps: 100%; Runway: Wet								
Press Alt Feet	Distance Feet	TEMPERATURE ~°C						ISA
		0	10	20	30	40	50	
SL	Gnd Roll	2963	3073	3180	3290	3397		3127
	Total	5548	5704	5861	6019	6178		5783
1000	Gnd Roll	3073	3186	3297	3411	3524		3221
	Total	5706	5869	6032	6197	6363		5919
2000	Gnd Roll	3188	3305	3420	3538	3655		3317
	Total	5871	6042	6213	6384	6557		6059
3000	Gnd Roll	3307	3428	3549	3670			3417
	Total	6046	6222	6401	6580			6205
4000	Gnd Roll	3432	3557	3684	3808			3520
	Total	6228	6413	6599	6785			6359
5000	Gnd Roll	3563	3693	3824	3952			3628
	Total	6420	6612	6806	7000			6518
6000	Gnd Roll	3699	3833	3970	4104			3741
	Total	6622	6822	7025	7227			6683
7000	Gnd Roll	3841	3981	4121				3856
	Total	6833	7042	7254				6856
8000	Gnd Roll	4037	4185	4333				4023
	Total	7138	7359	7582				7119
9000	Gnd Roll	4277	4434	4590				4233
	Total	7521	7757	7993				7453
10,000	Gnd Roll	4532	4698					4452
	Total	7926	8177					7805

Flaps: 50%, Dry Runway

Headwind: Subtract 7% from the ground run and 6% from the total distance for every 10 knots of headwind.

Tailwind: Add 39% to the ground run and 36% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

Unpaved runway: Add 20% to the total distance.

• NOTE •

The greyed-out cells in the subsequent table signify that the aircraft is not capable of meeting the regulatory balked landing climb gradient for these conditions.

Refer to [Section 2: Limitations, "Brakes"](#) for high-energy braking events.

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

Aircraft Weight: 5550 lb (2517 kg); Flaps: 50%; Runway: Dry								
Press Alt Feet	Distance Feet	TEMPERATURE ~°C						ISA
		0	10	20	30	40	50	
SL	Gnd Roll	3630	3762	3895	4028	4161	4294	3829
	Total	5343	5504	5666	5828	5991	6154	5585
1000	Gnd Roll	3764	3901	4039	4177	4315	4452	3943
	Total	5506	5673	5842	6011	6180	6350	5724
2000	Gnd Roll	3903	4046	4189	4332	4475	4618	4061
	Total	5676	5851	6026	6201	6378	6554	5869
3000	Gnd Roll	4050	4198	4346	4494	4643	4791	4184
	Total	5855	6036	6219	6401	6585	6769	6019
4000	Gnd Roll	4202	4356	4510	4664	4818	4972	4311
	Total	6042	6231	6421	6611	6802	6993	6176
5000	Gnd Roll	4362	4522	4682	4841	5001		4443
	Total	6238	6435	6633	6831	7030		6339
6000	Gnd Roll	4529	4695	4861	5027	5192		4581
	Total	6444	6649	6855	7062	7269		6508
7000	Gnd Roll	4704	4876	5048	5220	5392		4723
	Total	6660	6874	7089	7304	7519		6684
8000	Gnd Roll	4943	5124	5305	5486	5667		4928
	Total	6967	7192	7418	7645	7872		6948
9000	Gnd Roll	5238	5430	5622	5813	6005		5184
	Total	7350	7590	7830	8071	8313		7283
10,000	Gnd Roll	5550	5753	5956	6160			5452
	Total	7756	8011	8266	8522			7634

Flaps: 50%, Wet Runway

Headwind: Subtract 7% from the ground run and 6% from the total distance for every 10 knots of headwind.

Tailwind: Add 39% to the ground run and 36% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

• NOTE •

The greyed-out cells in the subsequent table signify that the aircraft is not capable of meeting the regulatory balked landing climb gradient for these conditions.

Refer to [Section 2: Limitations, "Brakes"](#) for high-energy braking events.

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

Aircraft Weight: 5550 lb (2517 kg); Flaps: 50%; Runway: Wet								
Press Alt Feet	Distance Feet	TEMPERATURE ~°C						ISA
		0	10	20	30	40	50	
SL	Gnd Roll	4174	4327	4480	4632	4785	4938	4403
	Total	6145	6330	6516	6703	6890	7077	6423
1000	Gnd Roll	4328	4487	4645	4803	4962	5120	4534
	Total	6332	6524	6718	6912	7107	7302	6583
2000	Gnd Roll	4489	4653	4818	4982	5146	5311	4670
	Total	6528	6728	6930	7132	7334	7537	6749
3000	Gnd Roll	4657	4828	4998	5169	5339	5510	4812
	Total	6733	6942	7151	7362	7572	7784	6922
4000	Gnd Roll	4833	5010	5187	5364	5541	5717	4958
	Total	6948	7166	7384	7603	7822	8042	7102
5000	Gnd Roll	5016	5200	5384	5567	5751		5110
	Total	7174	7401	7628	7856	8084		7289
6000	Gnd Roll	5208	5399	5590	5780	5971		5268
	Total	7411	7647	7883	8121	8359		7484
7000	Gnd Roll	5409	5607	5805	6003	6201		5432
	Total	7659	7905	8152	8399	8647		7687
8000	Gnd Roll	5685	5893	6101	6309	6517		5667
	Total	8012	8271	8531	8792	9053		7990
9000	Gnd Roll	6024	6244	6465	6685	6906		5961
	Total	8453	8729	9005	9282	9560		8375
10,000	Gnd Roll	6383	6616	6850	7084			6270
	Total	8919	9212	9506	9800			8779

Flaps: 50% (Ice Contaminated Airframe/STALL SPEED HIGH Advisory), Dry Runway

Headwind: Subtract 6% from the ground run and 5% from the total distance for every 10 knots of headwind.

Tailwind: Add 32% to the ground run and 29% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

Unpaved runway: Add 20% to the total distance.

• NOTE •

Refer to [Section 2: Limitations, "Brakes"](#) for high-energy braking events.

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

Aircraft Weight: 5550 lb (2517 kg); Flaps: 50% (Ice Contaminated); Runway: Dry					
Press Alt Feet	Distance Feet	TEMPERATURE ~°C			
		-20	-10	0	10
SL	Gnd Roll	4519	4697	4876	5054
	Total	8265	8543	8822	9102
1000	Gnd Roll	4685	4871	5056	5241
	Total	8525	8814	9105	9396
2000	Gnd Roll	4860	5052	5244	5436
	Total	8797	9099	9401	9705
3000	Gnd Roll	5042	5241	5440	5639
	Total	9083	9397	9712	10,028
4000	Gnd Roll	5232	5439	5645	5852
	Total	9383	9709	10,037	10,367
5000	Gnd Roll	5431	5645	5860	6074
	Total	9697	10,037	10,379	10,722
6000	Gnd Roll	5639	5861	6084	6307
	Total	10,027	10,382	10,738	11,095
7000	Gnd Roll	5856	6087	6319	6550
	Total	10,373	10,743	11,114	11,486
8000	Gnd Roll	6154	6397	6640	6883
	Total	10,861	11,251	11,642	12,034
9000	Gnd Roll	6521	6779	7036	7294
	Total	11,470	11,884	12,300	12,717
10,000	Gnd Roll	6910	7183	7455	7728
	Total	12,114	12,554	12,996	13,439

Flaps: 50% (Ice Contaminated Airframe/STALL SPEED HIGH Advisory), Wet Runway

Headwind: Subtract 6% from the ground run and 5% from the total distance for every 10 knots of headwind.

Tailwind: Add 32% to the ground run and 29% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

• NOTE •

Refer to [Section 2: Limitations, "Brakes"](#) for high-energy braking events.

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

Aircraft Weight: 5550 lb (2517 kg); Flaps: 50% (Ice Contaminated); Runway: Wet					
Press Alt Feet	Distance Feet	TEMPERATURE ~°C			
		-20	-10	0	10
SL	Gnd Roll	5196	5402	5607	5812
	Total	9505	9824	10,145	10,468
1000	Gnd Roll	5388	5601	5814	6027
	Total	9804	10,136	10,471	10,806
2000	Gnd Roll	5589	5809	6030	6251
	Total	10,117	10,463	10,811	11,160
3000	Gnd Roll	5798	6027	6256	6485
	Total	10,445	10,806	11,168	11,532
4000	Gnd Roll	6017	6254	6492	6730
	Total	10,790	11,166	11,543	11,922
5000	Gnd Roll	6245	6492	6739	6985
	Total	11,151	11,543	11,936	12,330
6000	Gnd Roll	6484	6740	6997	7253
	Total	11,531	11,939	12,348	12,759
7000	Gnd Roll	6734	7000	7266	7532
	Total	11,929	12,354	12,781	13,209
8000	Gnd Roll	7077	7357	7636	7916
	Total	12,490	12,939	13,388	13,840
9000	Gnd Roll	7499	7796	8092	8388
	Total	13,190	13,667	14,145	14,624
10,000	Gnd Roll	7946	8260	8574	8888
	Total	13,931	14,437	14,946	15,455

Aircraft Weight: 4500 lb (2041 kg)

Flaps: 100%, Dry Runway

Headwind: Subtract 8% from the ground run and 7% from the total distance for every 10 knots of headwind.

Tailwind: Add 46% to the ground run and 43% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

Unpaved runway: Add 20% to the total distance.

• NOTE •

The greyed-out cells in the subsequent table signify that the aircraft is not capable of meeting the regulatory balked landing climb gradient for these conditions.

Aircraft Weight: 4500 lb (2041 kg); Flaps: 100%; Runway: Dry								
Press Alt Feet	Distance Feet	TEMPERATURE ~°C						ISA
		0	10	20	30	40	50	
SL	Gnd Roll	2577	2672	2766	2861	2954	3049	2719
	Total	3853	3975	4098	4222	4345	4469	4036
1000	Gnd Roll	2672	2771	2867	2966	3064	3161	2801
	Total	3976	4103	4232	4360	4489	4618	4142
2000	Gnd Roll	2772	2874	2974	3076	3178	3280	2884
	Total	4107	4238	4372	4506	4639	4773	4252
3000	Gnd Roll	2876	2981	3086	3191	3297	3402	2971
	Total	4242	4380	4519	4658	4796	4937	4367
4000	Gnd Roll	2984	3093	3203	3312	3422	3530	3061
	Total	4384	4527	4673	4816	4962	5107	4486
5000	Gnd Roll	3098	3211	3325	3437	3550	3664	3155
	Total	4534	4683	4833	4983	5135	5286	4609
6000	Gnd Roll	3216	3333	3452	3569	3687	3804	3253
	Total	4689	4846	5002	5159	5316	5473	4738
7000	Gnd Roll	3340	3462	3584	3707	3829		3353
	Total	4855	5017	5179	5342	5506		4873
8000	Gnd Roll	3510	3639	3768	3896	4025		3499
	Total	5085	5255	5428	5600	5772		5070
9000	Gnd Roll	3719	3856	3991	4128			3681
	Total	5372	5553	5735	5918			5321
10,000	Gnd Roll	3941	4085	4230	4374			3871
	Total	5675	5868	6062	6256			5583

Flaps: 100%, Wet Runway

Headwind: Subtract 8% from the ground run and 7% from the total distance for every 10 knots of headwind.

Tailwind: Add 46% to the ground run and 43% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

• NOTE •

The greyed-out cells in the subsequent table signify that the aircraft is not capable of meeting the regulatory balked landing climb gradient for these conditions.

Aircraft Weight: 4500 lb (2041 kg); Flaps: 100%; Runway: Wet								
Press Alt Feet	Distance Feet	TEMPERATURE ~°C						ISA
		0	10	20	30	40	50	
SL	Gnd Roll	2963	3073	3180	3290	3397	3507	3127
	Total	4431	4571	4713	4855	4997	5139	4642
1000	Gnd Roll	3073	3186	3297	3411	3524	3636	3221
	Total	4573	4719	4867	5014	5162	5310	4763
2000	Gnd Roll	3188	3305	3420	3538	3655	3772	3317
	Total	4723	4874	5028	5182	5335	5489	4890
3000	Gnd Roll	3307	3428	3549	3670	3791	3912	3417
	Total	4878	5037	5197	5356	5516	5677	5022
4000	Gnd Roll	3432	3557	3684	3808	3935	4060	3520
	Total	5041	5206	5374	5539	5706	5873	5158
5000	Gnd Roll	3563	3693	3824	3952	4083	4214	3628
	Total	5214	5385	5558	5731	5906	6078	5301
6000	Gnd Roll	3699	3833	3970	4104	4240	4375	3741
	Total	5393	5573	5752	5932	6113	6293	5448
7000	Gnd Roll	3841	3981	4121	4264	4404		3856
	Total	5583	5769	5955	6144	6332		5604
8000	Gnd Roll	4037	4185	4333	4481	4628		4023
	Total	5848	6044	6242	6439	6637		5831
9000	Gnd Roll	4277	4434	4590	4747			4233
	Total	6178	6386	6595	6806			6119
10,000	Gnd Roll	4532	4698	4865	5030			4452
	Total	6526	6749	6971	7194			6420

Flaps: 50%, Dry Runway

Headwind: Subtract 7% from the ground run and 6% from the total distance for every 10 knots of headwind.

Tailwind: Add 39% to the ground run and 37% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

Unpaved runway: Add 20% to the total distance.

• NOTE •

Refer to [Section 2: Limitations, "Brakes"](#) for high-energy braking events.

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

Aircraft Weight: 4500 lb (2041 kg); Flaps: 50%; Runway: Dry								
Press Alt Feet	Distance Feet	TEMPERATURE ~°C						ISA
		0	10	20	30	40	50	
SL	Gnd Roll	3629	3763	3894	4028	4162	4294	3829
	Total	4594	4749	4905	5060	5215	5372	4826
1000	Gnd Roll	3764	3901	4040	4177	4315	4452	3943
	Total	4751	4911	5073	5235	5397	5559	4960
2000	Gnd Roll	3903	4046	4190	4332	4476	4618	4061
	Total	4915	5082	5249	5417	5586	5753	5099
3000	Gnd Roll	4050	4198	4347	4494	4643	4791	4183
	Total	5085	5259	5434	5608	5783	5959	5244
4000	Gnd Roll	4202	4357	4511	4664	4818	4972	4312
	Total	5266	5446	5626	5808	5990	6172	5392
5000	Gnd Roll	4362	4522	4681	4841	5002	5160	4444
	Total	5453	5641	5828	6017	6206	6394	5548
6000	Gnd Roll	4529	4694	4861	5027	5192	5357	4581
	Total	5650	5845	6040	6236	6433	6630	5710
7000	Gnd Roll	4704	4876	5048	5220	5392	5564	4723
	Total	5855	6059	6263	6466	6670	6874	5878
8000	Gnd Roll	4943	5124	5306	5486	5666	5848	4928
	Total	6141	6356	6570	6784	6999	7214	6122
9000	Gnd Roll	5239	5429	5621	5813	6005	6197	5184
	Total	6496	6723	6951	7178	7406	7635	6431
10,000	Gnd Roll	5549	5753	5957	6159	6363	6566	5453
	Total	6870	7113	7353	7595	7837	8079	6755

Flaps: 50%, Wet Runway

Headwind: Subtract 7% from the ground run and 6% from the total distance for every 10 knots of headwind.

Tailwind: Add 39% to the ground run and 37% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

• NOTE •

Refer to [Section 2: Limitations, "Brakes"](#) for high-energy braking events.

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

Aircraft Weight: 4500 lb (2041 kg); Flaps: 50%; Runway: Wet								
Press Alt Feet	Distance Feet	TEMPERATURE ~°C						ISA
		0	10	20	30	40	50	
SL	Gnd Roll	4173	4327	4479	4632	4786	4938	4404
	Total	5283	5462	5641	5819	5998	6178	5550
1000	Gnd Roll	4329	4486	4646	4803	4963	5120	4534
	Total	5464	5648	5834	6021	6207	6393	5704
2000	Gnd Roll	4488	4653	4819	4982	5147	5310	4671
	Total	5652	5844	6036	6230	6424	6616	5863
3000	Gnd Roll	4657	4828	4999	5168	5339	5510	4811
	Total	5848	6048	6249	6449	6651	6852	6030
4000	Gnd Roll	4832	5011	5187	5364	5541	5717	4959
	Total	6055	6263	6470	6679	6889	7098	6201
5000	Gnd Roll	5016	5201	5383	5568	5752	5934	5110
	Total	6270	6487	6703	6920	7137	7354	6380
6000	Gnd Roll	5208	5399	5591	5781	5971	6161	5268
	Total	6497	6722	6946	7171	7398	7624	6566
7000	Gnd Roll	5410	5608	5806	6003	6201	6399	5431
	Total	6733	6968	7202	7436	7670	7905	6760
8000	Gnd Roll	5685	5892	6101	6309	6516	6726	5667
	Total	7062	7309	7555	7801	8049	8297	7041
9000	Gnd Roll	6025	6244	6464	6685	6906	7127	5961
	Total	7471	7732	7993	8254	8517	8781	7396
10,000	Gnd Roll	6382	6616	6850	7083	7317	7551	6270
	Total	7901	8179	8456	8734	9013	9291	7768

Flaps: 50% (Ice Contaminated Airframe/STALL SPEED HIGH Advisory), Dry Runway

Headwind: Subtract 6% from the ground run and 5% from the total distance for every 10 knots of headwind.

Tailwind: Add 32% to the ground run and 30% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

Unpaved runway: Add 20% to the total distance.

• NOTE •

Refer to [Section 2: Limitations, "Brakes"](#) for high-energy braking events.

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

Aircraft Weight: 4500 lb (2041 kg); Flaps: 50% (Ice Contaminated); Runway: Dry					
Press Alt Feet	Distance Feet	TEMPERATURE ~°C			
		-20	-10	0	10
SL	Gnd Roll	4519	4697	4876	5054
	Total	6578	6816	7056	7295
1000	Gnd Roll	4685	4871	5056	5241
	Total	6801	7049	7298	7547
2000	Gnd Roll	4860	5052	5244	5436
	Total	7034	7292	7551	7809
3000	Gnd Roll	5042	5241	5440	5639
	Total	7279	7547	7815	8084
4000	Gnd Roll	5232	5439	5645	5852
	Total	7535	7813	8092	8372
5000	Gnd Roll	5431	5645	5860	6074
	Total	7803	8092	8383	8673
6000	Gnd Roll	5639	5861	6084	6307
	Total	8083	8385	8686	8989
7000	Gnd Roll	5856	6087	6319	6550
	Total	8377	8691	9005	9319
8000	Gnd Roll	6154	6397	6640	6883
	Total	8786	9116	9447	9778
9000	Gnd Roll	6521	6779	7036	7294
	Total	9293	9643	9994	10,345
10,000	Gnd Roll	6910	7183	7455	7728
	Total	9830	10,201	10,573	10,946

Flaps: 50% (Ice Contaminated Airframe/STALL SPEED HIGH Advisory), Wet Runway

Headwind: Subtract 6% from the ground run and 5% from the total distance for every 10 knots of headwind.

Tailwind: Add 32% to the ground run and 30% to the total distance for every 10 knots of tailwind.

Downhill gradient: Add 10% to the ground run for every 1% of downhill gradient.

• NOTE •

Refer to [Section 2: Limitations, "Brakes"](#) for high-energy braking events.

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

Aircraft Weight: 4500 lb (2041 kg); Flaps: 50% (Ice Contaminated); Runway: Wet					
Press Alt Feet	Distance Feet	TEMPERATURE ~°C			
		-20	-10	0	10
SL	Gnd Roll	5196	5402	5607	5812
	Total	7564	7839	8114	8390
1000	Gnd Roll	5388	5601	5814	6027
	Total	7821	8106	8392	8679
2000	Gnd Roll	5589	5809	6030	6251
	Total	8090	8386	8683	8981
3000	Gnd Roll	5798	6027	6256	6485
	Total	8371	8679	8988	9297
4000	Gnd Roll	6017	6254	6492	6730
	Total	8665	8985	9306	9628
5000	Gnd Roll	6245	6492	6739	6985
	Total	8973	9306	9640	9974
6000	Gnd Roll	6484	6740	6997	7253
	Total	9296	9642	9989	10,337
7000	Gnd Roll	6734	7000	7266	7532
	Total	9634	9994	10,355	10,717
8000	Gnd Roll	7077	7357	7636	7916
	Total	10,104	10,484	10,864	11,244
9000	Gnd Roll	7499	7796	8092	8388
	Total	10,687	11,090	11,493	11,897
10,000	Gnd Roll	7946	8260	8574	8888
	Total	11,304	11,731	12,159	12,588

Section 6: Weight and Balance

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Introduction

This section describes the procedure for establishing the basic empty weight and center of gravity of the airplane. Sample forms are provided for reference. A comprehensive list of all equipment available for this airplane is included at the back of this section.

It is the responsibility of the pilot to ensure that the airplane is loaded properly and that all changes to the basic empty weight and center of gravity are recorded.

• NOTE •

Refer to AMM Chapter 8: Leveling & Weighing for instructions.

Weight and Balance Record

Weight and Balance Data

Refer to “As-Delivered” Weight and Balance Data.

Loading Instructions

It is the responsibility of the pilot to ensure that the airplane is properly loaded and operated within the prescribed weight and center of gravity limits. The following information enables the pilot to calculate the total weight and center of gravity for loading. The calculated Center of Gravity is then compared to the [Weight and Center of Gravity Limit](#) chart for a determination of proper loading.

Airplane loading determinations are calculated using the Weight & Balance Loading Form.

1. Basic Empty Weight – Enter the current Basic Empty Weight and Moment from the Weight & Balance Record.
2. Front Row Seat (Seats 1 and 2) Occupants – Enter the total weight and moment/1000 for the front row seat occupants from the Loading Data.
3. Middle Row Seats (Seats 3 and 5) – Enter total weight and moment/1000 for the middle row seats from the Loading Data.
4. Middle Row Outboard Seat (Seats 3 and 5) Occupants – Enter total weight and moment/1000 for the middle row seat occupants from the Loading Data.
5. Middle Row Inboard Seat (Seat 4) – Enter total weight and moment/1000 for the middle row seat from the Loading Data.

• NOTE •

Seat 4 may be located in any of three locations (forward, mid, and aft).

6. Middle Row Inboard Seat (Seat 4) Occupant – Enter total weight and moment/1000 for the middle row seat occupant from the Loading Data.

7. XC Seats (Seats 6 and 7) – Enter the total weight and moment/1000 for the XC seats, if installed, from the Loading Data.
8. XC Seat Occupants – Enter the total weight and moment/1000 for the XC Seat occupants from the Loading Data.
9. Lavatory – Enter the total weight and moment/1000 for the lavatory from the Loading Data.
10. Convenience Console – Enter the total weight and moment/1000 for the convenience console from the Loading Data.
11. Baggage and Cargo X-Tend Baggage – Enter weight and moment/1000 from the Loading Data. Assume the most adverse location.

• NOTE •

Load limit is 50 lb/sq. ft.

12. IPS Fluid – Enter the weight and moment/1000 of IPS Fluid loaded on the airplane from the Loading Data.
13. Zero Fuel Condition – If desired, subtotal the weights and moment/1000 from steps 1 through 9. This includes all useful load items, excluding fuel.
14. Fuel Loading – Enter the weight and moment/1000 of usable fuel loaded on the airplane from the Loading Data.
15. Ramp Condition (weight and moment of aircraft before taxi) – Subtotal the weight and moment/1000.
16. Fuel for start, taxi, and run-up – This value is pre-entered on the form. Normally, fuel used for start and taxi before takeoff is approximately 40 lb (6 U.S. gallons).
17. Takeoff Condition Weight – Subtract item 13 from item 12. Must be less than 6000 lb (2722 kg).

RELATED TABLE/FIGURE:

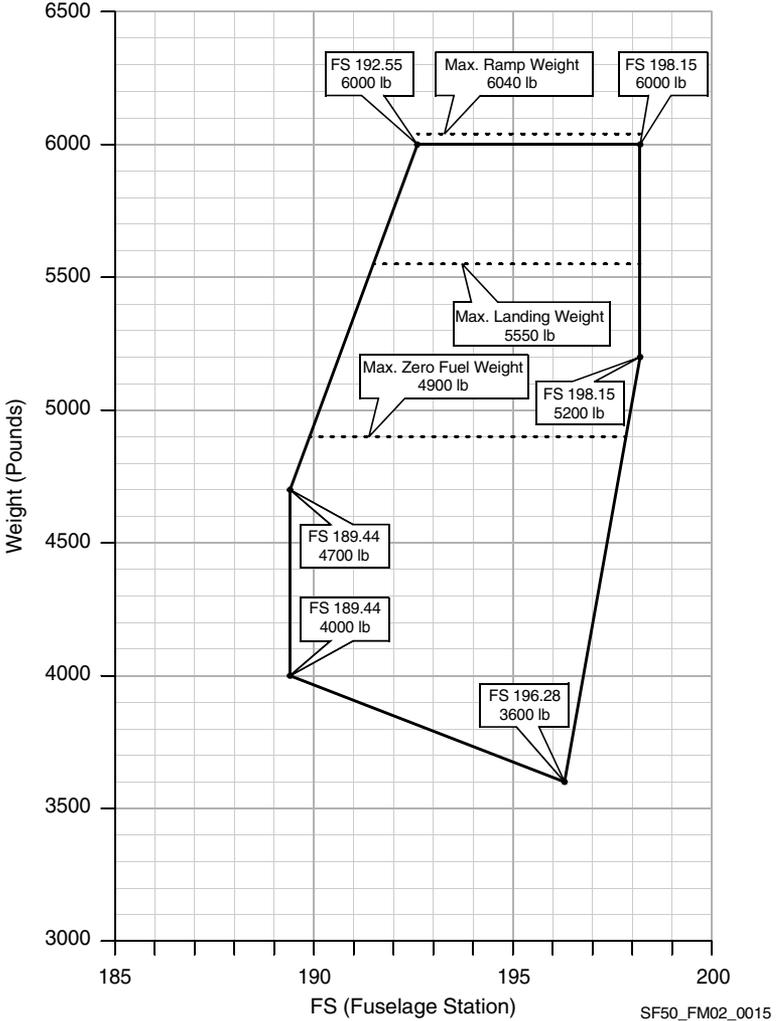
Refer to "Figure 6-1: Center of Gravity Envelope".

Refer to Section 6: Weight and Balance, "Weight/Fuselage Station (FS) Chart".

Weight and Balance Determination for Flight

Weight and Center of Gravity Limit

Figure 6-1: Center of Gravity Envelope



Weight/Fuselage Station (FS) Chart

Weight (lb)	FS - Min. (inches)	FS - Max. (inches)	Weight (lb)	FS - Min. (inches)	FS - Max. (inches)
3600	196.28	196.28	4800	189.68	197.62
3650	195.43	196.34	4850	189.80	197.68
3700	194.57	196.40	4900	189.92	197.74
3750	193.72	196.46	4950	190.04	197.80
3800	192.86	196.51	5000	190.16	197.86
3850	192.01	196.57	5050	190.28	197.92
3900	191.15	196.63	5100	190.40	197.97
3950	190.30	196.69	5150	190.52	198.03
4000	189.44	196.75	5200	190.64	198.09
4050	189.44	196.81	5250	190.76	198.15
4100	189.44	196.86	5300	190.88	198.15
4150	189.44	196.92	5350	191.00	198.15
4200	189.44	196.98	5400	191.11	198.15
4250	189.44	197.04	5450	191.23	198.15
4300	189.44	197.10	5500	191.35	198.15
4350	189.44	197.16	5550	191.47	198.15
4400	189.44	197.22	5600	191.59	198.15
4450	189.44	197.27	5650	191.71	198.15
4500	189.44	197.33	5700	191.83	198.15
4550	189.44	197.39	5750	191.95	198.15
4600	189.44	197.45	5800	192.07	198.15
4650	189.44	197.51	5850	192.19	198.15
4700	189.44	197.57	5900	192.31	198.15
4750	189.56	197.62	5950	192.43	198.15
			6000	192.55	198.15

Weight and Balance Loading Form

• NOTE •

The Takeoff Condition Weight must not exceed 6000 lb (2722 kg).

The Takeoff Condition Moment must be within the Minimum Moment to Maximum Moment range at the Takeoff Condition Weight.

Serial Num:

Date:

Reg. Num:

Initials:

RELATED TABLE/FIGURE:

Refer to "Figure 6-1: Center of Gravity Envelope".

Item	Description	Weight lb	FS Inches [(Moment/1000) *1000]/Weight	Moment/1000 (Weight*FS)/1000
1.	Basic Empty Weight Includes unusable fuel & full oil, and Seats 1 & 2 in the forward positions.			
2.	Front Row Seat Occupants (Seats 1 & 2) Pilot & Passenger (total)		132.9	
3.	Add Seats 3 and 5		183.2	
4.	Middle Row Outboard Seat Occupants (Seats 3 & 5)		178.4	
5.	Middle Row Inboard Seat (Seat 4)		183.2 (Fwd)	
			197.2 (Mid)	
			211.2 (Aft)	

Item	Description	Weight lb	FS Inches [(Moment/1000) *1000]/Weight	Moment/1000 (Weight*FS)/ 1000
6.	Middle Row Inboard Seat Occupant (Seat 4)		178.4 (Fwd)	
			192.4 (Mid)	
			206.4 (Aft)	
7.	XC Seats (Seats 6 & 7)		217.9	
8.	XC Seat Occupants (Seats 6 & 7)		209.6	
9.	Lavatory		209.5	
10.	Convenience Console		179.9	
11.	Baggage Area (300 lb max.)		247.0	
	Cargo X-Tend Baggage Area (40 lb max.) Note: 50 lb/sq. ft load limit		282.0 (Cargo X-tend)	
12.	IPS Fluid 3 US Gallons @ 9.18 lb/gal. Maximum		249	
13.	Zero Fuel Condition Weight Subtotal item 1 thru 12 4900 lb maximum			
14.	Fuel Loading 296 U.S. gallons @ 6.76 lb/gal. Maximum		203	

Item	Description	Weight lb	FS Inches [(Moment/1000) *1000]/Weight	Moment/1000 (Weight*FS)/ 1000
15.	Ramp Condition Weight Subtotal items 13 and 14, must be less than 6040 lb			
16.	Fuel for start, taxi, and run-up Normally, fuel used for start and taxi before takeoff is approx. 40 lb (6 U.S. gallons).		203	
17.	Takeoff Condition Weight Subtract item 16 from item 15, must be less than 6000 lb			

Equipment List

This list will be determined after the final equipment has been installed in the aircraft.

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Section 7: Systems Description

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• NOTE •

Content for Section 7: Systems Description is located in the Pilot's Information Manual (PIM).

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Section 8: Handling and Servicing

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Ground Handling

Safe Return Autoland Runway Recovery

• *NOTE* •

Brakes will remain set after emergency automatic landing and after power is removed from aircraft.

Perform the following steps to move the aircraft away from the runway after an emergency automatic landing. Brake reset must be accomplished any time the automatic braking system is activated as part of Safe Return Autoland. Brake reset is not intended for use during flight.

Post-Autoland Aircraft Recovery

1. Evacuate passengers from aircraft.
 2. Place landing gear selector in DOWN position.
 3. Shut down engine.
 - a. Place engine knob in OFF position.
 - b. Press engine button.
 4. Set BAT 1 and BAT 2 switches in OFF positions.
 5. Chock or secure airplane.
 6. Press green brake reset button located on the right side of parking brake for 5 seconds.
 7. Tow airplane away in accordance with Towing procedure in this section.
 8. Perform Hard/Overweight Landing procedure in accordance with AMM Chapter 5-50: Unscheduled Maintenance Checks.
-

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Introduction

This section provides general guidelines for handling, servicing, and maintaining your aircraft. In order to ensure continued safe and efficient operation of your airplane, keep in contact with your Authorized Cirrus Service Center to obtain the latest information pertaining to your aircraft.

Operator's Publications

The FAA Approved AFM and Pilot's Information Manual (PIM) are provided at delivery. Additional or replacement copies may be obtained from Cirrus Aircraft.

Service Publications

The following service publications are available for purchase from Cirrus Aircraft:

- Airplane Maintenance Manual (AMM) – Maintenance Manual divided into chapters as specified by GAMA and S1000D covering inspection, servicing, maintenance, troubleshooting, and repair of the airplane structure, systems, and wiring. A current copy of the AMM is provided at delivery.
- Wiring Manual (WM) - Manual covering maintenance, troubleshooting, testing, and repair of the airplane electrical wiring.
- Illustrated Parts Catalog (IPC) - Catalog prepared to aid operators and mechanics to identify and procure replacement airplane parts.
- CAPS Component Maintenance Manual (CMM) - Maintenance Manual with Illustrated Parts List prepared to enable an authorized Cirrus Aircraft CAPS technician to restore the system to a functional condition.
- Engine Operators and Maintenance Manual – Cirrus Aircraft provides a Williams Engine Operator's and Maintenance Manual at the time of delivery. Engine and engine accessory overhaul manuals can be obtained from the original equipment manufacturer.
- Avionics Component Operator and Maintenance Manuals -- Cirrus Aircraft provides all available operator's manuals at the time of delivery. Maintenance manuals, if available, may be obtained from the original equipment manufacturer.

Cirrus Aircraft publishes Service Bulletins, Service Advisories, and Service Information Letters. Copies can be obtained from Cirrus Aircraft at www.cirrusaircraft.com.

- Service Bulletins are of special importance. When a Service Bulletin affecting your plane is published, comply with it promptly.

- Service Advisories are used to notify you of optional Service Bulletins, supplier Service Bulletins or Service Information Letters affecting your airplane, and maintenance data or corrections not requiring a Service Bulletin. Pay careful attention to the Service Advisory information.

Obtaining Publications

AFMs and aircraft service publications can be obtained from Cirrus Aircraft at www.cirrusaircraft.com, or the Cirrus Connection at www.cirrusconnection.com.

Airplane Records and Certificates

The FAA requires that certain data, certificates, and licenses be displayed or carried aboard the airplane at all times. Additionally, other documents must be made available upon request. The mnemonic acronym “ARROW” is often used to help remember the required documents.

RELATED TABLE/FIGURE:

Refer to “Table 1: Required Documents”.

• NOTE •

Owners of aircraft not registered in the United States should check with the registering authority for additional requirements.

Table 1: Required Documents

Required Documents		Note
A	Airworthiness Certificate FAA Form 8100-2	Must be displayed at all times.
R	Registration Certificate FAA Form 8050-3	Must be in the aircraft for all operations.
R	Radio Station License FCC Form 556	Required only for flight operations outside the United States.
O	Operating Instructions	FAA Approved AFM and associated aircraft placards fulfill this requirement.
W	Weight & Balance Data	Included in FAA Approved AFM. Data must include current empty weight, CG, and equipment list.

Other Documents	Note
Airplane Logbook	Must be made available upon request.
Engine Logbook	Must be made available upon request.
Pilot's Checklist	Available in cockpit at all times.

Airworthiness Directives

The FAA publishes Airworthiness Directives (ADs) that apply to specific aircraft and aircraft appliances or accessories. ADs are mandatory changes and must be complied with within a time limit set forth in the AD. Operators should periodically check with Cirrus Service Centers or A&P mechanic to verify receipt of the latest issued AD for their airplane.

Airplane Inspection Periods

• NOTE •

14 CFR 1.1 defines time in service, with respect to maintenance time records, as “the time from the moment an aircraft leaves the surface of the earth until it touches it at the next point of landing.”

The inspection items specified in the Annual/100-Hour Inspection have been determined by the average aircraft use rate of the typical owner. Non-commercially operated aircraft that are flown significantly more than 100 hours per year should consider additional inspections commensurate with the hours flown.

100-Hour Inspection or enrollment in a Progressive Inspection Program should be considered in addition to the normally required Annual Inspection. The Annual Inspection interval may also be shortened to accommodate high utilization rate.

Hour Meters

The #1 hour meter, labeled HOBBS, is located forward of the cabin door and to the left of the pilot seat. It starts the meter and begins recording when the pilot turns the Engine knob to RUN and momentarily presses the Engine button. BAT 1 and either GEN 1 or GEN 2 need to be ON. It stops tracking time when the pilot turns the Engine knob to OFF and momentarily presses the Engine button (which stops the engine).

The #2 hour meter, labeled FLIGHT, is located forward of the HOBBS Hour Meter. It begins recording when the wheels are off the ground (Weight-On-Wheels is False) and the ground fan is OFF. It stops recording when the wheels are on the ground (Weight-On-Wheels is True) and the ground fan is ON.

The FLIGHT Hour Meter should be used to track maintenance time intervals as it records time-in-service more accurately than the HOBBS Hour Meter.

Annual Inspection

Unless enrolled in a Progressive Inspection Program, the U.S. Code of Federal Regulations requires all civil aircraft must undergo a thorough Annual Inspection every twelve calendar months. Annual Inspections are due on the last day of the twelfth month following the last Annual Inspection. For example: If an Annual Inspection was performed on 19 November 2015, the next Annual Inspection will be due 30 November 2016. Annual Inspections must be accomplished regardless of the number of hours flown the previous year and can only be performed by a licensed Airframe and Powerplant (A&P) mechanic holding an Inspection Authorization (IA). Annual inspections can only be performed by facilities approved by Cirrus Aircraft. The inspection is listed, in detail, in Chapter 5 of the Airplane Maintenance Manual.

100-Hour Inspection

If the airplane is used to carry persons or provide flight instruction for hire, the Code of Federal Regulations requires that the airplane undergo a 100-Hour Inspection every 100 hours of flight operation in addition to the Annual Inspection requirement. The scope of the 100-Hour Inspection is identical to the Annual Inspection, except that it can be accomplished by a licensed A&P mechanic. The 100-hour interval may be exceeded by not more than 10 flight hours in order to reach a place where the inspection can be accomplished. Any flight hours used to reach an inspection station must be deducted from the next 100-Hour Inspection interval. The inspection is listed, in detail, in Chapter 5 of the Airplane Maintenance Manual.

Cirrus Aircraft Progressive Inspection Program

In lieu of the above requirements, an airplane may be inspected using a Progressive Inspection Program in accordance with 14 CFR Part 91.409(d).

The Cirrus Aircraft Progressive Inspection Program provides for the complete inspection of the airplane utilizing a five-phase cyclic inspection program.

400 flight hours: A total of eight inspections are accomplished over the course of 400 flight hours, with an inspection occurring every 50 flight hours.

800 flight hours: A total of sixteen inspections are accomplished over the course of 800 flight hours, with an inspection occurring every 50 flight hours.

The inspection items to be covered in the Progressive Inspection are very similar to the Annual Inspection items. The Progressive Inspection will accomplish a full Inspection of the airplane at 400 (or 800) flight hours or at 12 calendar months.

The inspections are listed, in detail, in Chapter 5 of the Airplane Maintenance Manual.

Ground Handling

Application of External Power

An external power receptacle, located on the LH wing fairing behind the baggage door, permits the use of an external power unit for cold weather starting and maintenance procedures.

To Apply External Power to Airplane

• CAUTION •

In accordance with the manufacturer's recommendation, external power should not be used to start the airplane with a dead battery.

Lithium Ion batteries may be recharged while remaining in the airplane. Battery maintenance must be performed in accordance with the appropriate AMM procedures.

Do not leave external power connected to the aircraft for extended periods of time without monitoring. Prolonged charging time may damage BAT 1.

Do not leave external power connected to the aircraft when the aircraft power is OFF, even if the external power source is turned OFF.

• NOTE •

If external power is connected and BAT 1 is not switched ON, BAT 1 will still be charged by external power.

Refer to [Section 2: Limitations, "Engine Start \(General\)"](#) for external power unit start limitations.

1. Ensure external power unit is regulated to 28 VDC.
2. Verify BAT 1, BAT 2, GEN 1, and GEN 2 power switches are set to OFF.
3. Plug external power unit into the receptacle.
4. Set BAT 1 and BAT 2 switches to ON. 28 VDC from the external power unit will energize the main, essential, and emergency distribution buses. The airplane may now be started or electrical equipment operated.

• CAUTION •

Depleting battery power, or running it down to low levels, may cause issues when starting the engine. If maintenance on avionics systems is to be performed, it is recommended that external power be used.

• NOTE •

Avionics power is provided by BAT 1 and BAT 2.

To Remove External Power from Airplane

1. Pull external power unit plug.

Towing

The airplane may be moved on the ground by the use of a nose wheel steering bar or by power equipment that will not damage or excessively strain the nose gear assembly. The steering bar is engaged by attaching it into the nose wheel axle.

• NOTE •

Do not use any control surfaces or stabilizers to move the airplane.

If a tow bar is not available, use the wing roots as push points.

Use care when towing the airplane when the main gear is obstructed by mud or snow. Excessive force will damage the aircraft or landing gear.

Towing provisions are included in the nose wheel axle; 0.556 inch (1.412 cm) outer diameter.

Recommended Towing Equipment

ITEM	P/N or SPEC	DESCRIPTION	SUPPLIER
Tow Bar	Any	Tow airplane.	Any Supplier
Wheel Chocks	WCK1001	Block wheels.	Cirrus

To Tow Airplane

• NOTE •

Be especially cognizant of hangar door clearances.

1. Refer to [Section 1: General, "Airplane Three View"](#) for turning radius clearances.
2. Attach tow bar/adaptor onto the nose wheel axle.

• NOTE •

If towing with tow vehicle, attach tow bar to tow vehicle.

3. Release parking brake.
4. Remove chocks.
5. Move airplane to desired location.
6. Set parking brake in accordance with [Parking](#) procedure in this section.

• CAUTION •

Ensure nose wheel is facing forward.

7. Install chocks.
8. Remove tow bar.

• NOTE •

If towing with tow vehicle, remove tow bar from tow vehicle.

9. Set parking brake.
-

Taxiing

• CAUTION •

Only rated pilots and mechanics should taxi the aircraft or run the engine.

Verify that taxi area is clear before beginning taxi.

Do not operate the engine at high thrust when running up or taxiing over ground containing loose stones, gravel, or any loose material that may cause damage to aircraft.

Taxi with minimum thrust needed for forward movement. Excessive braking may result in overheated or damaged brakes.

Refer to [Section 10: Safety Information, "Taxiing, Steering, and Braking Practices"](#).

To Taxi Airplane

1. Remove chocks.
2. Start engine in accordance with Airplane Flight Manual procedures.
3. Release parking brake.
4. Advance thrust lever to initiate taxi. Immediately after initiating taxi, apply the brakes to determine their effectiveness. To ascertain steering effectiveness during taxi, use differential braking to make slight turns.

• CAUTION •

Observe wing clearance when taxiing near buildings or other stationary objects. If possible, station an observer outside the airplane.

Avoid holes and ruts when taxiing over uneven ground.

5. Taxi airplane to desired location.
 6. Shut down engine in accordance with Airplane Flight Manual procedures.
 7. Set parking brake in accordance with [Parking](#) procedure in this section.
 8. Install chocks.
 9. In gusty or stormy weather, moor airplane.
-

Parking

The airplane should be parked to protect the airplane from weather and to prevent it from becoming a hazard to other aircraft. The parking brake may release or exert excessive pressure because of heat buildup after heavy braking or during wide temperature swings. Therefore, if the airplane is to be left unattended or is to be left overnight, chock and tie down the airplane.

If the airplane is parked for 30 days or more, the use of an external power unit for starting is recommended.

If parked for longer periods (60 days or more), the battery may become discharged. The battery may be recharged using a constant potential charger.

Recommended Parking Equipment

ITEM	P/N or SPEC	DESCRIPTION	SUPPLIER
Wheel Chocks	WCK1001	Block wheels.	Cirrus
Tail Stand	39003-001	Support tail (if required under heavy snow conditions).	Cirrus

To Park Airplane

1. Position airplane on level surface and headed into the wind.
2. Retract flaps.

• CAUTION •

Use care if setting parking brake during cold weather when accumulated moisture may freeze brakes, or when brakes are overheated.

3. Set parking brake by first applying brake pressure using the toe brakes and then pulling the parking brake handle aft.
4. Install chocks.
5. In gusty or stormy weather, tie down airplane in accordance with [Tie Down](#) procedure in this section.
6. Install pitot heat, AOA vane, engine inlet covers, and exhaust plugs. Be sure to remove the covers before flight.
7. Ensure cabin and baggage doors are locked when the airplane is left unattended.

Tie Down

The airplane should be moored for immovability, security, and protection. FAA Advisory Circular AC 20-35C, Tie-down Sense, contains additional information regarding preparation for severe weather, tie down, and related information.

Recommended Tie Down Equipment

ITEM	P/N or SPEC	DESCRIPTION	SUPPLIER
Wheel Chocks	WCK1001	Block wheels.	Cirrus
Inlet Cover	JETENGCVR	Prevent entry of moisture and/or foreign particles.	Bruce's Custom Covers
Pitot Tube Covers	PITOT2014	Prevent entry of moisture and/or foreign particles.	Cirrus
Static Ground Cable	Steel Cable with Clamps	Ground airplane.	Any Source
Rope	3/8 Braided	Tie down wing and tail.	Any Source

To Tie Down Airplane

1. Position airplane on level surface and headed into the wind.

• CAUTION •

Do not set parking brake during cold weather, when accumulated moisture may freeze brakes, or when brakes are overheated.

2. Secure gust lock strap to immobilize the side sticks.
3. Retract flaps.
4. Set parking brake in accordance with [Parking](#) procedure in this section.
5. Install chocks.
6. Install wing tie-down rings.

• NOTE •

The wing tie-down rings are included in the Flight and Operation Accessories (Flyaway kit).

7. Secure tie-down ropes to the wing tie-down rings and to the NLG tie-down ring at approximately 45°-angles to the ground.

• CAUTION •

To prevent eye bolt damage in heavy winds, anchor points for wing tie-downs should not be more than 20 feet (6 meters) apart.

Use bowline knots, square knots, or the midshipman's hitch (also known as a taut line hitch or half-hitch). Do not use plain slipknots.

When using rope or non-synthetic material, leave sufficient slack to avoid damage to the airplane should the ropes contract.

8. In high snow load conditions, install tail stand at aft tail mooring point (located on the underside of the tail).
9. Install pitot heat, AOA vane, engine inlet, and exhaust covers to prevent entry of foreign materials. Be sure to remove the covers before flight.

Leveling

Refer to AMM Chapter 8: Leveling & Weighing, Weighing the Airplane procedures for instructions and illustration.

Jacking

Refer to AMM Chapter 7: Lifting & Shoring, Jacking the Airplane procedures for list of required tools and for illustration.

Ground Deicing

• WARNING •

Only SAE Type 1 Deicing Fluid is approved for use on the SF50 aircraft. Type II, III, & IV are prohibited. Follow the fluid manufacturer's recommendation for limitations and heating instructions. Follow the FAA guidelines on recommended holdover times.

The application of heated, diluted SAE Type 1 deicing fluid removes frost, snow and/or ice from the airplane, and provides limited anti-icing protection.

Heated solutions of SAE Type 1 deicing fluid are more effective than unheated fluid. The temperature of the fluid applied to the aircraft must not exceed 180 °F (82 °C). Cooled SAE Type 1 deicing fluid may also be used if allowed by the fluid manufacturer. Always check with the fluid manufacturer to determine the recommended heating procedure.

SAE Type 1 deicing fluids are used in a diluted state as appropriate for the ambient temperature conditions.

SAE Type 1 deicing fluids have very limited holdover times. Refer to the FAA guidelines for information on applicable holdover times.

A heated hangar is an excellent option to deice aircraft and should be utilized whenever possible. Care must be exercised to ensure all melted precipitation is removed from the aircraft to prevent refreezing when aircraft is moved into cooler air.

Preliminary removal of heavy accumulation should be accomplished prior by brooms or another similar method. Exercise caution around antennas, windows, flight controls, deice boots, vanes, probes, etc.

When removing ice, snow, slush, or frost from aircraft surfaces, take care to prevent it from entering and accumulating in auxiliary intakes or control surface hinge areas. Manually remove snow from wing and tail surfaces forward towards the leading edge and remove control surfaces back towards the trailing edge.

RELATED TABLE/FIGURE:

Refer to “Figure 8-1: Deice Zones”.

To Deice Airplane

• NOTE •

Before Type 1 deicing procedures begin, deice personnel should familiarize themselves with areas to be sprayed and areas to avoid with a direct spray of fluid.

Aircraft should be parked clear of obstacles.

Aircraft should have engine OFF and all electrical equipment OFF. Flaps should be set to 50%.

1. Close doors. Install covers and plugs as necessary.

• CAUTION •

Avoid excessive pressure when applying fluid. Pressure should be adjusted to be able to traverse distance from nozzle to aircraft without damaging paint or structure.

The temperature of the fluid applied to the aircraft must not exceed 180 °F (82 °C).

Never spray deicing fluid or water on or into any air inlet or exhaust area, open tubes or ports (i.e., pitot tubes, static ports, total air temperature probe, AOA probes, vents, ducts, engine, etc.). Never spray landing gear components. Avoid direct spraying of static wicks.

• NOTE •

Fluid spray direction must be from nose to tail and top to bottom to prevent fluid accumulation in sheltered areas.

Avoid spraying heated fluids onto cabin and cockpit windows, baggage door, egress hatch, and cabin door.

Aircraft must be sprayed symmetrically. Left and right wings and left and right tail must be treated and not one side only.

It is recommended to start deicing in an area visible from the cockpit, to allow for visual inspection of deiced areas for ice accumulation.

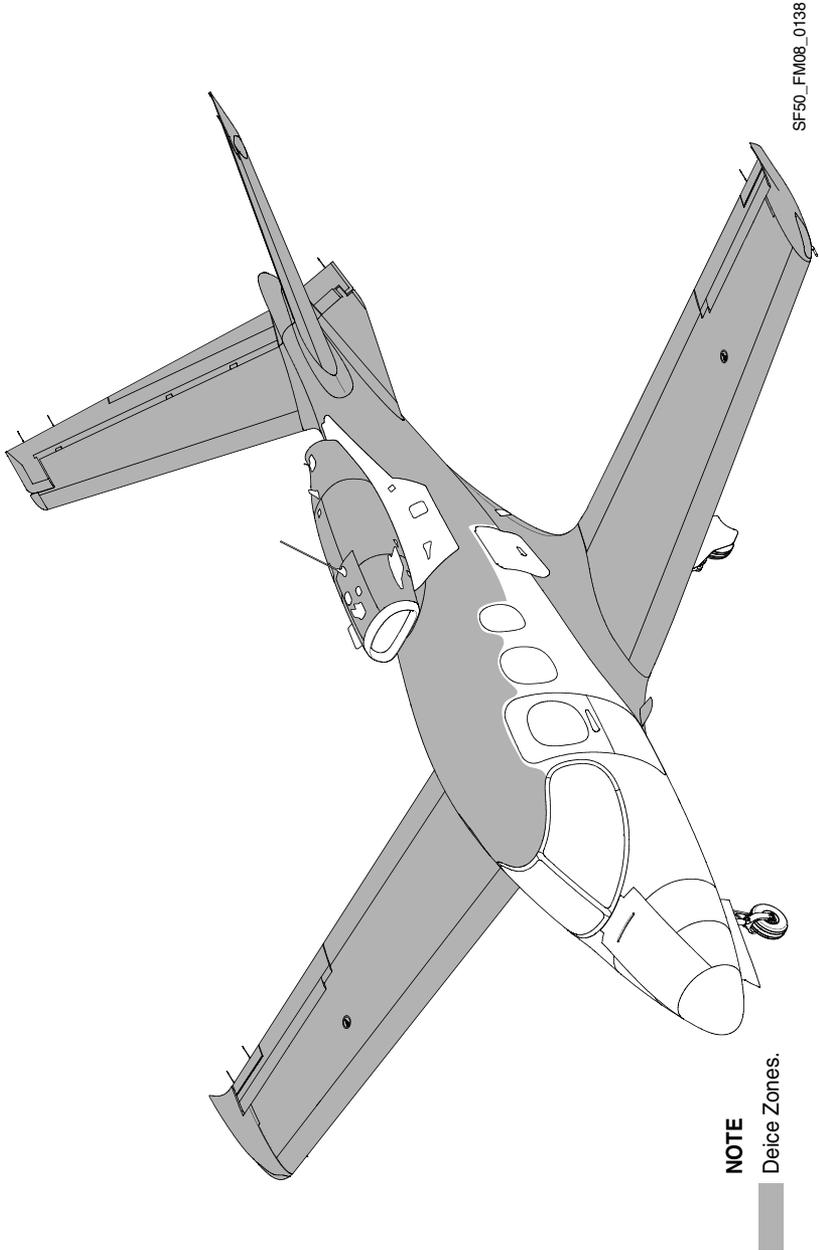
2. Spray wing and tail surfaces from tip to root and from leading edge to trailing edge.
3. Spray along fuselage centerline and then outboard, letting fluid cascade down and across windows.

• NOTE •

Use soft flannel cloth to minimize scratching when clearing windshield.

4. Ensure windshield is free of residual fluid to ensure adequate visibility prior to taxi.

Figure 8-1: Deice Zones



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NOTE
Deice Zones.

Servicing

Landing Gear Servicing

The nose landing gear is an air/oil oleo shock strut; the main landing gear is an air/oil oleo shock strut. The landing gear system is serviced with MIL-PRF-87257 hydraulic fluid and filled with compressed, dry nitrogen. The strut pressure should be checked every 50 hours and the struts should be serviced at the Annual/100-Hour inspection.

Landing gear servicing must be accomplished in accordance with AMM procedures.

Brake Servicing

Brake Replenishing

The brake system is filled with MIL-PRF-87257 hydraulic brake fluid. The fluid level should be checked at every oil change and at the annual/100-hour inspection, replenishing the system when necessary. The brake reservoir is located in the RH nose bay.

• NOTE •

If the entire system must be refilled, refer to AMM Chapter 12: Servicing, Brake Fluid Replenishing.

To Replenish Brake Fluid

1. Install chocks.
2. Release parking brake.
3. Remove upper right nose access panel to gain access to hydraulic fluid reservoir.
4. Clean reservoir plug and area around plug before opening reservoir cap.
5. Remove plug and add MIL-PRF-87257 hydraulic fluid as necessary to fill reservoir.
6. Install plug, inspect area for leaks, and then install and secure upper right nose access panel.

Brake Overheat Inspection

The brakes shall be inspected before every flight for general condition, evidence of overheating, and deterioration.

The aircraft shall not be operated with overheated, damaged, or leaking brakes. Conditions include, but are not limited to:

- Leaking brake fluid at the caliper. This can be observed by checking for evidence of fluid on the ground or deposited on the inside of the landing gear panels.
 - Overheated components, such as:
 - Brake Pads: The profile of the edges is deformed and may include large voids or sections of missing material.
 - Brake Discs: Surface is irregular and may include large grooves, bumps, or deposits from brake pads.

Brake Assembly Wear Limits

To Inspect the Brake Assemblies

• **NOTE** •

Refer to the manufacturer's approved Instructions For Continued Airworthiness for more information.

1. Wipe off any debris from brake caliper assembly that may obstruct inspection.
2. Check brake pad assemblies and discs for deterioration and maximum permissible wear.
 - a Verify brake pad assembly frictional material minimum thickness is not less than 0.040 inch (1 mm).
Proper pad frictional material thickness is indicated by the presence of a center channel in the frictional material of each pad.
 - b Verify brake disc minimum thickness is not less than 0.433 inch (11 mm).
 - c Verify brake disc / wheel interface maximum gap is not more than 0.020 inch (0.51 mm).

Hydraulic Power Pack Servicing

The hydraulic power pack system is filled with MIL-PRF-87257 hydraulic brake fluid. The fluid level should be checked at every oil change and at the annual/100-hour inspection, replenishing the system when necessary.

The hydraulic power pack reservoir is located in the LH nose bay.

• **NOTE** •

Refer to AMM Chapter 12: Replenishing and Chapter 32: Extension and Retraction for servicing procedures.

To Replenish Hydraulic Power Pack Fluid

1. Pull LANDING GEAR HYD circuit breaker.
 2. Remove upper left nose access panel to gain access to hydraulic power pack fluid reservoir.
 3. Clean Vent/Fill Cap Assembly, and area around it, before opening assembly.
 4. Remove Vent/Fill Cap Assembly and internal strainer.
 5. Add MIL-PRF-87257 hydraulic fluid as necessary to fill reservoir.
 6. Install assembly, inspect area for leaks, and then install and secure upper left nose access panel.
 7. Set LANDING GEAR HYD circuit breaker.
-

Tire Inflation

The main landing gear wheel assemblies use 18 × 5.5, 8-ply rating tubeless tires. The nose wheel assembly uses a 5.00 × 5, 10-ply rated tubeless tire. Always keep tires inflated to the rated pressure to obtain optimum performance and maximum service.

For maximum service from the tires, keep them inflated to the proper pressure. When checking tire pressure, examine the tires for wear, cuts, nicks, bruises and excessive wear.

All wheels and tires are balanced before original installation and the relationship of tire and wheel should be maintained upon reinstallation. In the installation of new components, it may be necessary to rebalance the wheels with the tires mounted. Unbalanced wheels or tires can cause extreme vibration in the landing gear.

To Inflate Tires

1. Remove valve stem cap and verify tire pressure with a dial-type tire pressure gauge.
 2. Inflate nose tire to 88±5 psi (607±34 kPa) and main wheel tires to 105±5 psi (724±34 kPa).
 3. Replace valve stem cap.
-

Engine Oil Servicing

It is recommended that the oil be changed every 24 months/600 operating hours (sooner under unfavorable operating conditions).

An oil filler cap is located at the 2 o'clock position on the right-hand side of the engine, next to the front mounting pad. The sight glass (located at the 3 o'clock position) is marked with two levels: FULL and ADD.

ITEM	DESCRIPTION	VOLUME (Quarts)
Oil Tank Total	Represents volume at which filler port will overflow.	3.0
Oil Tank "Full Oil"	Represents volume required to reach FULL mark.	2.2
Oil Tank "Add Oil"	Represents volume required to reach ADD mark.	1.6
Oil Tank Usable	Represents volume which the engine can consume between FULL level and the onset of oil pressure fluctuations.	1.7

• CAUTION •

The engine should not be operated with observed oil level (sight glass indication) below the ADD mark.

• NOTE •

To correctly track engine oil consumption, do not add oil until observed level reaches the ADD mark on sight glass.

All engine oil level readings should be made at least 5 minutes after engine shutdown.

Use only oils conforming to Teledyne Continental Specification SAE J 1899 (Ashless Dispersant Lubrication Oil).

For a list of approved engine lubricants, refer to [Section 2: Limitations, "Oil"](#).

To Check and Add Oil

1. Open oil check door located on lower RH side of nacelle. Verify oil level via sight glass.
2. If oil level is at or below ADD mark on sight glass, open oil fill door on upper RH side of nacelle.
3. Top-up oil level and install filler cap.
4. Close and secure access panels.
5. In the engine logbook, record the amount and type of oil added.

Fuel System Servicing

Fuel Filtration Element

A 20-micron disposable fuel filter element is located on the engine FCU. In the event that the fuel filter becomes blocked, a filter bypass valve located adjacent to the filter will allow fuel to bypass the fuel filter for continued engine operation. A FUEL FILTER BYPASS warning is displayed prior to the bypass valve actuating.

Refer to AMM Chapter 28: Fuel, Fuel Screen/Element servicing procedures.

Fuel Requirements

Approved Fuel Grades:

Jet A Specification Fuel.....	ASTM D1655
Jet A-1 Specification Fuel.....	ASTM D1655
JP-8 Specification Fuel.....	MIL-DTL-83133

Filling Fuel Tanks

Observe all safety precautions required when handling aviation fuel. Fuel fillers are located on the upper surface of the wing. Each wing holds a maximum of 148 US gallons (560 L) (usable) with a total aircraft capacity of 296 US gallons (1120 L) (usable). When using less than full fuel capacity, the fuel should be distributed equally between each side.

If takeoff weight limitations for the next flight permit, the fuel tanks should be filled after each flight to minimize condensation.

• WARNING •

During fueling, have a fire extinguisher available.

Ground fuel truck or cart to suitable earth ground.

Do not fill tank within 100 ft (30.5 m) of any energized electrical equipment capable of producing a spark.

Smoking or open flames are prohibited within 100 ft (30.5 m) of airplane or refuel vehicle.

Do not operate radios or electrical equipment during refuel operations.

Do not operate any electrical switches.

• NOTE •

Recommended fueling best practice is to alternate between wings in 75-gallon (284-liter) increments when fueling from a single nozzle. Larger fuel imbalance may lead to fuel venting from low wing if aircraft “leans” towards a heavy wing as fuel reaches maximum tank capacity.

• NOTE •

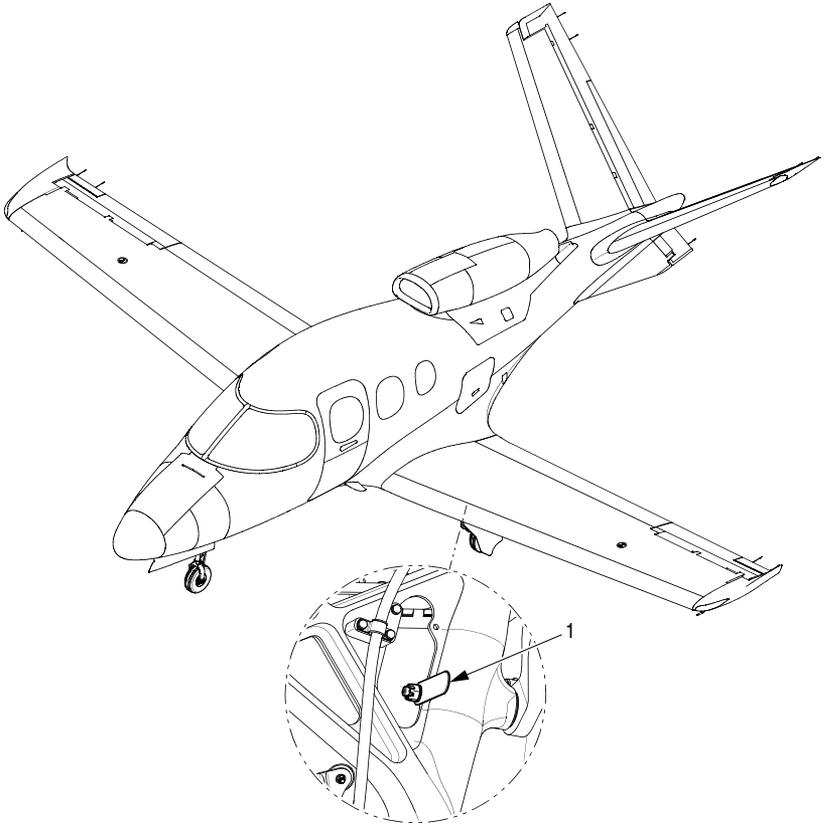
Ground fuel nozzle and fuel truck to one of the MLG ground tabs (at Left or Right MLG Trunnion/Side-brace pin). All grounding

points are connected to each other through the aircraft structure which also provides lightning protection.

RELATED TABLE/FIGURE:

[Refer to “Figure 8-2: Fuel Grounding Points”.](#)

Figure 8-2: Fuel Grounding Points



LEGEND
1. MLG Ground Tab

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To Refuel Airplane

1. Place fire extinguisher near fuel tank being filled.
2. Connect ground wire from refuel nozzle to airplane ground point, from airplane ground point to fuel truck or cart, and from fuel truck or cart to a suitable earth ground.
3. Place rubber protective cover over wing around fuel filler.

• NOTE •

Do not permit fuel nozzle to come in contact with bottom of fuel tanks.

4. Remove fuel filler cap and fuel airplane to desired level.

• NOTE •

Recommended fueling best practice is to alternate between wings in 75-gallon (284-liter) increments when fueling from a single nozzle. Larger fuel imbalance may lead to fuel venting from low wing if aircraft “leans” towards a heavy wing as fuel reaches maximum tank capacity.

• NOTE •

Refer to [Section 2: Limitations, "Fuel"](#) for maximum fuel imbalance information.

5. Remove nozzle, install filler cap, and remove protective cover.
 6. Repeat refuel procedure for opposite wing.
 7. Remove ground wires.
 8. Remove fire extinguisher.
-

Fuel Contamination and Sampling

Typically, fuel contamination results from foreign material such as water, dirt, rust, and fungal or bacterial growth. Additionally, chemicals and additives that are incompatible with fuel or fuel system components are also a source of fuel contamination. To ensure that the proper grade of fuel is used and that contamination is not present, the fuel must be sampled prior to each flight after adding fuel, and sampled prior to the first flight of the day.

Each fuel system drain must be sampled by draining a cupful of fuel into a clear sample cup. Fuel drains are provided for the wing tanks and collector tank drains. A total of four tank drains are located at the low spot in the respective tank.

If sampling reveals contamination, the tank drains must be sampled again repeatedly until all contamination is removed. It is helpful to gently rock the wings and slightly oscillate the pitch attitude to move contaminants to the drain points for sampling. If after repeated samplings (three or more), evidence of significant contamination remains, do not fly the airplane until a mechanic is consulted, the fuel system is drained and purged, and the source of contamination is determined and corrected.

If sampling reveals the airplane has been serviced with an improper fuel grade, do not fly the airplane until the fuel system is drained and refueled with an approved fuel grade.

• NOTE •

Piston fuels such as 100 (Green) or 100LL (Blue) are dyed, while turbine fuels are undyed.

To help reduce the occurrence of contaminated fuel coming from the supplier or fixed based operator, pilots should ensure that the fuel supply has been checked for contamination and that the fuel is properly filtered. Also, between flights, the fuel tanks should be kept as full as operational conditions permit to reduce condensation on the inside of fuel tanks. In extremely humid areas, the fuel supply should be checked frequently and drained of condensation to prevent possible distribution problems due to fuel icing during flight.

De-Fueling

A portion of the fuel in each tank may be drained from the wing fuel tanks using a siphon hose placed in the cell or tank through the filler neck. Additionally, using the electric fuel pump, the fuel may be pumped out of the bulkhead fitting at the engine firewall using an additional external hose. The remaining fuel may be drained by opening the drain valves. Use the same precautions as when refueling airplane.

• Note •

Refer to AMM Chapter 12: Servicing, Airplane De-Fueling procedures for more information.

Ice Protection System (IPS) Servicing

IPS Fluid Replenishment

The IPS fluid tank is serviced through a filler cap and neck located on the RH side of the fuselage.

• **WARNING** •

Only use approved IPS fluids. Use of unapproved fluids may cause aircraft damage due to material incompatibility. It may also result in inadequate ice protection which may cause ice accretions that could possibly damage the airframe or engine. Engine damage could lead to loss of thrust resulting in an off-airport landing.

Refer to Section 1: General, "Ice Protection System (IPS) Fluid".

To prevent IPS fluid contamination, maintain a clean, dedicated measuring container and ensure mouth of fluid container is clean before dispensing. Secure the filler cap immediately after filling. Only reuse IPS fluid drained from the aircraft if it is known to be free of debris, contaminants, and other liquids.

Always store fluid in accordance with the manufacturer's recommendations, preferably in the manufacturer's container. In lieu of manufacturer's recommendations, only store fluid in an inert plastic container known to be chemically compatible or in a stainless steel (300 Series) container.

To add IPS fluid

1. Dispense approved IPS fluid into clean measuring container.
 2. Remove filler cap.
 3. Use funnel to fill fluid tank to desired level.
 4. Install filler cap.
-

Battery Service

The aircraft is equipped with rechargeable lithium-ion batteries. The primary start battery (Battery 1) is mounted below the left-hand baggage floor, the battery is accessed via the baggage compartment door. Refer to AMM Chapter 5: Time Limits And Maintenance Checks, Overhaul and Replacement Schedule.

The emergency battery (Battery 2) is mounted on the exterior of the LH parachute bay in the nose, the battery is accessed via the LH access panel in the nose. Refer to AMM Chapter 5: Time Limits And Maintenance Checks, Scheduled Maintenance.

The external power receptacle is located on the LH wing fairing behind the baggage door. Refer to AMM Chapter 24: Electrical Power, External Power for servicing procedures.

Oxygen System Servicing

• WARNING •

To preclude the possibility of fire by spontaneous combustion, oil, grease, paint, hydraulic fluid, and other flammable material should be kept away from oxygen equipment.

Service the oxygen system as follows:

Oxygen Supply Cylinder

- 5-year hydrostatic and regulator overhaul
- 15-year replacement

Crew Mask (Quick Don)

- 6-year overhaul

Passenger Mask Containment System (MCS)

- 6-year replacement

Passenger Solenoid

- Operational check every 200 flight hours

Cleaning Exterior Surfaces

• CAUTION •

Waxing, an unapproved cleaning method, may damage the pneumatic deicers due to material incompatibility. Do not wax leading edge pneumatic deicers.

Prior to cleaning, place the airplane in a shaded area to allow the surfaces to cool.

The airplane should be washed with a mild soap and water. Harsh abrasives or alkaline soaps or detergents could make scratches on painted or plastic surfaces or could cause corrosion of metal. Cover static ports and other areas where cleaning solution could cause damage. Be sure to remove the static port covers before flight.

General Exterior Surfaces

1. Flush away loose dirt with water.
2. Apply cleaning solution with a soft cloth, a sponge, or a soft bristle brush.
3. To remove exhaust stains, allow the solution to remain on the surface longer.
4. To remove stubborn oil and grease, use a cloth dampened with naphtha.
5. Rinse all surfaces thoroughly.

• NOTE •

Any good silicone-free automotive wax may be used to preserve painted surfaces. Soft cleaning cloths or a chamois should be used to prevent scratches when cleaning or polishing. A heavier coating of wax on the leading surfaces will reduce the abrasion problems in these areas.

Recommended Exterior Cleaning Products

Cleaning Product	Cleaning Application	Supplier
Pure Carnauba Wax	Painted Exterior	Any Source
Mothers California Gold Pure Carnauba Wax	Painted Exterior	Wal-Mart Stores
RejeX	Painted Exterior	Corrosion Technologies

Cleaning Product	Cleaning Application	Supplier
WX/Block System	Painted Exterior	Wings and Wheels
AeroShell Flight Jacket Plexicoat	Painted Exterior	ShellStore Online
XL-100 Heavy-Duty Cleaner/Degreaser	Painted Exterior and Landing Gear	Buckeye International
Stoddard Solvent PD-680 Type II	Engine Compartment	Any Source
Kerosene	Exterior Windshield and Windows	Any Source
Klear-To-Land	Exterior Windshield and Windows	D.W. Davies & Co
Prist	Exterior Windshield and Windows	Prist Aerospace
LP Aero Plastics Acrylic Polish & Sealant	Exterior Windshield and Windows	Aircraft Spruce & Specialty
Goodrich Aerospace Cleaner 54023-004	Deicer Exterior	Cirrus Aircraft
Goodrich Aerospace Protectant 54023-005	Deicer Exterior	Cirrus Aircraft
Goodrich SILVERboot Polish 54023-006	Deicer Exterior	Cirrus Aircraft
ICEX® II Ice Adhesion Inhibitor 54023-003 (2 pints), 54023-301 (16 oz pump spray)	Deicer Exterior	Cirrus Aircraft
Nuvite NuShine II S Polish	Engine Inlet Lipskin	Nuvite Chemical Compounds

Care of Graphics

Graphics require care similar to any fine paint finish. Use high quality products designed specifically for use on automobile finishes. Use products in accordance with the manufacturer's instructions.

Exposure to Environmental Conditions

Graphics, like paint, are degraded by prolonged exposure to sun and atmospheric pollutants. Store the aircraft in a hangar, under a cloth cover, or in a shaded area whenever possible. Protect the aircraft from dew and rain which may contain acidic pollutants (commonly found in large metropolitan areas).

• CAUTION •

If graphics start to discolor or turn brown as a result of exposure to acidic pollution, immediately have a professional remove the graphic from the aircraft to avoid staining the underlying paint.

Regular Washing

Wash graphics whenever the aircraft appears dirty. Contaminants allowed to remain on the exterior may be more difficult to remove.

To wash and clean graphics

1. Rinse off as much dirt and grit as possible with a spray of water.
 2. Clean graphic with a wet, non-abrasive detergent such as 3M™ Car Wash Soap 39000, Meguiar's NXT Generation® Car Wash, or Deep Crystal® Car Wash, and a soft, clean cloth or sponge.
 3. Rinse thoroughly with clean water.
 4. To reduce water spotting, immediately use a silicone squeegee to remove water.
 5. Dry with a clean microfiber cloth.
-

Pressure Washing

Although hand washing is preferred, pressure washing may be used when necessary to remove dirt and contaminants. Pressure washing must be performed in accordance with the following procedure:

1. Ensure the water pressure is less than 2000 psi (14 MPa).
2. Ensure water temperature is less than 180 °F (82 °C).
3. Use a spray nozzle with a 40° wide angle spray pattern.

• CAUTION •

Holding the nozzle of a pressure washer at an angle less than 90° to the graphic may lift the edges of the graphic.

4. Keep the spray nozzle perpendicular to the graphic, and at a distance of at least 1 foot (30 cm).
5. To reduce water spotting, immediately use a silicone squeegee to remove water.
6. Dry with a clean microfiber cloth.

Removing Difficult Contaminants

Difficult contaminants such as bugs, bird droppings, or tree sap may require spot cleaning.

• CAUTION •

To prevent scratching the graphic, refrain from rough scrubbing and the use of abrasive tools.

To spot clean difficult contaminants

1. Soften contaminants by soaking with hot, soapy water for several minutes.
2. Rinse thoroughly with clean water.
3. To reduce water spotting, immediately use a silicone squeegee to remove water.
4. Dry with a clean microfiber cloth.

• CAUTION •

Initially test cleaning products on an inconspicuous area of the graphic to verify they will not cause damage.

5. If further cleaning is needed, one of the following products may be used: Meguiar's Gold Class™ Bug and Tar Remover, 3M™ Citrus Base Cleaner, a mixture of two parts isopropyl alcohol to one part water (mix ratio 2:1), or denatured alcohol.
 6. Immediately rinse off all residue with clean water.
 7. To reduce water spotting, immediately use a silicone squeegee to remove water.
 8. Dry with a clean microfiber cloth.
-

Cleaning Fuel Spills

• CAUTION •

Immediately clean fuel spills to avoid degrading the vinyl and adhesive used in the graphic.

To clean fuel spills

1. Wipe off spilled fuel.
 2. Clean graphic with a wet, non-abrasive detergent such as 3M™ Car Wash Soap 39000, Meguiar's NXT Generation® Car Wash, or Deep Crystal® Car Wash, and a soft, clean cloth or sponge.
 3. Rinse thoroughly with clean water.
 4. To reduce water spotting, immediately use a silicone squeegee to remove water.
 5. Dry with a clean microfiber cloth.
-

Graphic Restoration

If typical cleaning methods fail to produce satisfactory results, refer to the recommended restoration products and mixtures below to help preserve the condition of the graphics on your aircraft.

• CAUTION •

Do not use abrasive polishes or cutting compounds.

Do not use polish or wax on graphics with a matte or texture finish.

Initially test restoration products and mixtures on an inconspicuous area of the graphic to verify they will not cause damage.

• NOTE •

Use an all-purpose cleaner to remove wax or wax residue.

RELATED TABLE/FIGURE:

[Refer to “Table 2: Recommended Graphic Restoration Products and Mixtures”.](#)

Table 2: Recommended Graphic Restoration Products and Mixtures

Film or Finish Type	Product or Mixture
Smooth Gloss	3M™ Perfect-it™ Show Car Paste Wax 39526; Meguiar's Gold Class™ Carnuaba Plus Premium Liquid Wax
Matte or Satin Texture	Mixture of two parts isopropyl alcohol to one part water (mix ratio 2:1)
Matte White (1080-M10) Carbon Fiber White Texture (1080-CF10)	Depending on the type and degree of contamination to be removed, use one or more of the following solutions in the order shown: <ol style="list-style-type: none"> 1. Hot, soapy water solution 2. Mixture of two parts isopropyl alcohol to one part water (mix ratio 2:1) 3. Simple Green® All-Purpose Cleaner 4. Household chlorine bleach, followed by a mixture of two parts isopropyl alcohol to one part water (mix ratio 2:1) 5. Mineral spirits, followed by a mixture of two parts isopropyl alcohol to one part water (mix ratio 2:1)
Carbon Fiber or Brushed Metal Texture	3M™ Tire Restorer or Meguiar's Natural Shine Protectant
Carbon Fiber Black Texture (1080-CF12)	Meguiar's Ultimate Black Plastic Restorer

Exterior Windshield and Windows

Before cleaning an acrylic window, rinse away all dirt particles before applying cloth or chamois. Never rub dry acrylic. Dull or scratched window coverings may be polished using a special acrylic polishing paste.

• CAUTION •

Clean acrylic windows with a solvent-free, non-abrasive, antistatic acrylic cleaner. Do not use gasoline, alcohol, benzene, carbon tetrachloride, thinner, acetone, or glass window cleaning sprays.

Use only a non-abrasive cotton cloth or genuine chamois to clean acrylic windows. Paper towel or newspaper are highly abrasive and will cause hairline scratches.

To clean the Exterior Windshield and Windows

1. Remove grease or oil using a soft cloth saturated with kerosene then rinse with clean, fresh water.

Wiping with a circular motion can cause glare rings. Use an up and down wiping motion on the windshield in the direction of the airflow to prevent this.

To prevent scratching from dirt that has accumulated on the cloth, fold cloth to expose a clean area after each pass.

2. Using a moist cloth or chamois, gently wipe the windows clean of all contaminants.
 3. Apply acrylic cleaner to one area at a time, then wipe away with a soft, cotton cloth.
 4. Dry the windows using a dry non-abrasive cotton cloth or chamois.
-

Engine Compartment

The engine exterior and compartment may be cleaned with a dry cleaning solvent, MIL-PRF-680 Type II.

To clean the Engine Compartment

1. Remove engine nacelle.
 2. Cover fire extinguisher discharge nozzles to ensure no water or debris falls into the discharge tubes during cleaning.
 3. Hand scrub parts with solvent using a soft fiber brush or pad to remove contaminants.
 4. If any residue remains after cleaning, use a stiff fiber brush to remove residue. Repeat previous step.
 5. Using an air compressor, blow components dry with clean, filtered shop air restricted to less than 30 psi.
 6. If solvent is used to clean titanium parts, such as the airframe fire barrier, use clean water for final rinse.
 7. Uncover fire extinguisher discharge nozzles.
 8. Install engine nacelle.
-

Flight Near/Over Salt Water

A fresh water rinse of the powerplant must be performed after a flight near/over salt water.

• CAUTION •

Failure to conduct a fresh water rinse after flight near/over salt water may cause engine damage.

Heated Inlet

To clean the Heated Inlet

• NOTE •

The preferred method of removing bugs is to use a mixture of water and mild soap.

1. Use a clean, lint-free, cotton cloth full wetted in a mixture of water and mild soap or isopropyl alcohol.
 2. Wipe lipskin surface and inner barrel to remove bugs, dirt, and other debris.
 3. Rotate cloth continuously. Use a new cloth as necessary to reduce the chance of any collected debris scratching the lipskin surface.
 4. Dry surface with a new, clean, lint-free, cotton cloth.
-

To polish the Lipskin (Cosmetic Polish)

• CAUTION •

Hand polish only. Mechanical polishing is prohibited on all areas of the inlet assembly.

1. Use Teflease tape to mask off painted surfaces beyond the trailing edges of the lipskin.
2. Apply a non-abrasive metal polish to the lipskin in small fingertip dabs (0.5 inch diameter) in a 1-inch by 1-inch grid pattern.
3. Using a clean, lint-free, cotton cloth, start polishing the inner surfaces of the lipskin and progress to the outer surfaces. Use a swirl pattern around the lipskin. Ensure the cloth is rotated or folded as necessary.

• NOTE •

Black discoloration on the cloth is expected.

4. Gently remove any excess polish with a clean, lint-free, cotton cloth, rotating as necessary until mirror finish is restored.
-

Landing Gear

Before cleaning the landing gear, place a plastic cover or similar material over the wheel and brake assembly.

To clean the Landing Gear

1. Place a pan under the gear to catch waste.
 2. Spray or brush the gear area with solvent or a mixture of solvent and degreaser, as desired. Where heavy grease and dirt deposits have collected, it may be necessary to brush areas that were sprayed, in order to clean them.
 3. Allow the solvent to remain on the gear from five to ten minutes. Then rinse the gear with additional solvent and allow to dry.
 4. Remove the cover from the wheel and remove the catch pan.
 5. Lubricate the gear in accordance with AMM Chapter 12: Servicing.
-

Deicers

Before cleaning/maintaining the deicers, place a plastic cover or similar material over the surrounding wing or stabilizer surfaces.

• NOTE •

It is recommended the maintenance process be performed in the following sequence: (i) Clean (ii) Polish (iii) Protect (iv) Apply Ice Adhesion Inhibitor

Preventative Maintenance

• NOTE •

It is helpful to check for damage with deicer inflated and leak detector fluid. Air leaking damage can be located and marked for repair.

To clean/maintain the Deicers

1. Perform visual inspection of deicers.
 - a Inspect deicer carefully for surface damage: pinholes, cuts, tears, abrasions, scuffs, cracking and/or crazing.
 - b It is permissible to use leak detection fluid or suitable equivalent to check for air leaks in damaged areas.
 2. Wash deicers frequently (per instructions in the Deicer Cleaner Application section) using mild soap and warm water to protect the surface appearance.
-

Deicer Cleaner Application

Goodrich Aerospace Cleaner is to be used for frequent routine cleaning of the Silver Urethane Deicers. It may be used as needed for removal of bugs, dirt, and grime. Goodrich Aerospace Cleaner may be used as a spot cleaner as well.

• **NOTE** •

Goodrich Aerospace Cleaner does not need to be diluted for use.

Ambient Conditions (Temperatures > 50 °F (10 °C),
Humidity < 90%).

Dry Time (Use when dry).

To apply Deicer Cleaner

1. Using clean, soft, lint-free cotton cloths, fully wet deicer surface with Goodrich Aerospace Cleaner.

Ensure cloth is continually wetted with Aerospace Cleaner to avoid abrasion and creating scratches on deicer surfaces.

2. Allow cleaner solution to penetrate surface contamination (approximately 60 to 90 seconds) before gently removing contamination with fully wetted cloths.

If the deicer surface is stained, allow a longer penetration time for severe cleaning conditions, up to 30 minutes.

3. Rinse deicer as needed with clean water and clean, soft, lint-free, cotton cloths; maintain the cloths fully wetted at all times.

Ensure cloth is continually wetted with water to avoid abrasion and creating scratches in deicer surface.

4. Dry deicer with clean, soft, lint-free, cotton cloths.

Avoid excessive pressure when polishing to prevent abrasion and creating scratches in the deicer surface.

5. Repeat cleaner application as needed until deicer surface is clean and free of contamination.

• **NOTE** •

Although not required, the deicer protectant should be used after the cleaner application in order to provide additional UV protection.

Deicer Polish Application

Goodrich SILVERboot Polish is a polish designed to reduce cosmetic imperfections and to enhance the silver appearance of the deicers. The product is specially formulated for use on the silver urethane material. The polish is designed and recommended for use after the deicers have been in service for 6 to 12 months. Reapplication is suggested at 3 to 12 month intervals as needed. Polish application on new deicers will not cause damage but will not improve cosmetic appearance. Polish application will not remove or eliminate all cosmetic imperfections.

• NOTE •

Avoid excessive pressure when polishing so as to prevent abrasion and creating scratches in the deicer surface.

Ambient Conditions (Temperatures between 40 °F (4 °C) and 85 °F (29 °C), Humidity < 90%).

Dry Time (Use when dry).

To apply Deicer Polish

1. Clean the deicer using the Goodrich Aerospace Cleaner. Refer to [Section 8: Handling and Servicing, "Deicer Cleaner Application"](#).
 2. Apply a quarter-sized spot of SILVERboot Polish to a clean, soft, lint-free cotton cloth.
 3. Rub polish on the deicer, working in a small area (approximately 6 × 8 inches). A dark gray residue will appear on the deicer and on the polishing cloth. Use medium pressure to wipe deicers, applying a uniform coat of the protectant.
 4. Buff the deicer with a clean, dry rag in the polished area.
 5. Repeat on an adjacent area, blending the polished areas together.
The polish and buffing cloths may be used on many adjacent areas. Some improvement in polishing action is seen once the polish cloth becomes saturated.
 6. If polish dries prior to buffing, it should be removed by re-polishing.
 7. Deicer protectant may be used immediately on top of polish, but is not required. Refer to [Section 8: Handling and Servicing, "Deicer Protectant Application"](#).
-

Deicer Protectant Application

The Goodrich Aerospace Protectant is designed for frequent routine use. The protectant is resistant to dust, soiling, and staining, and minimizes UV damage.

• **NOTE** •

Ambient Conditions (Temperatures > 50 °F (10 °C),
Humidity < 90%).

Dry Time (5-15 minutes, use when dry).

To apply Deicer Protectant

1. Clean the deicer using the Goodrich Aerospace Cleaner. Refer to [Section 8: Handling and Servicing, "Deicer Cleaner Application"](#).
2. Agitate the Aerospace Protectant before application.
3. Spray Aerospace Protectant onto a clean, lint-free cloth, saturating the cloth. The protectant may alternately be sprayed directly onto the deicer in addition to spraying the cloth.

Overspray should be wiped off.

Ensure cloth is continually wetted with Aerospace Protectant to avoid abrasion and creating scratches in deicer surface.

4. Use medium pressure to wipe deicers, applying a uniform coat of the protectant.

Avoid excessive pressure when polishing so as to prevent abrasion and creating scratches in the deicer surface.

5. Wipe deicers one final time with a clean, lint-free cloth to evenly distribute the protectant on the deicer surface.
6. Apply as needed to maintain surface protection and appearance.

• **NOTE** •

Although not required, ICEX II Ice Adhesion Inhibitor should be applied after the deicer protectant in order to provide improved surface finish and to lower ice adhesion strength.

Cosmetic Surface Protectant Application

• CAUTION •

Avoid scratching the unprotected deicer surface. Use clean, soft, lint-free, cotton cloths.

It is important to leave only a thin film of ICEX II. A heavy application can result in a sticky surface that would collect dust and dirt, thereby reducing the product's ice adhesion inhibitor efficiency. The water thins the silicone film, assists in spreading (polishing) the ICEX II to a uniformly even coating, and helps promote the curing and toughening of the film.

• NOTE •

Dry Time (24 hours is recommended. ICEX II will fully harden during this time, but less time can be allowed, if needed.)

To apply Cosmetic Surface Protectant

1. For deicers with previous use and operation, wash prior to application. Refer to [Section 8: Handling and Servicing, "Deicer Cleaner Application"](#).
2. Rinse deicer with clean water and allow to dry.
3. Clean deicer with isopropyl alcohol to remove substances that cannot be removed with soap and water.
4. Apply masking tape on leading edge lined up to the aft edge of the conductive edge sealer. Form neat, straight lines to border the application area.
5. Apply ICEX II to clean, soft, lint-free cotton cloth.

• CAUTION •

Ensure cloth is continually wetted with ICEX II to avoid abrasion and creating scratches on deicer surface.

6. Using cloth wetted with ICEX II and water, apply a light, even coat of ICEX II to entire deicer surface and masked-off region aft of deicer. Wipe cloth in single, continuous, back-and-forth motions, spanwise on deicer.
7. Allow ICEX II to remain undisturbed on deicer surface for at least 5 minutes in order to wet out the surfaces.

• CAUTION •

Ensure cloth is continually wetted with water to avoid abrasion and creating scratches on deicer surface.

8. Using a clean, soft, lint-free cotton cloth wetted with clean water, evenly polish the ICEX II-treated surfaces, turning cloth frequently.

• CAUTION •

Avoid excessive pressure when polishing to prevent abrasion and creating scratches on deicer surface.

9. Using a dry, clean, lint-free cotton cloth, finish polishing the ICEX II-treated surfaces. Lightly polish only to the point where there is a thin, even, oily film on the deicer surface.

Ice Adhesion Inhibitor Application

When ICEX II is applied to a silver urethane deicer, the resulting surface finish helps protect the deicer from insect impact stains and other forms of surface contamination. The resulting surface finish also helps protect the deicer surface from scratches due to cloth drag during subsequent washing procedures.

• CAUTION •

Avoid scratching the unprotected deicer surface. Use clean, soft, lint-free, cotton cloths.

It is important to leave only a thin film of ICEX II. A heavy application can result in a sticky surface that would collect dust and dirt, thereby reducing the product's ice adhesion inhibitor efficiency. The water thins the silicone film, assists in spreading (polishing) the ICEX II to a uniformly even coating, and helps promote the curing and toughening of the film.

• NOTE •

Ambient Conditions (Temperatures > 50 °F (10 °C),
Humidity < 90%).

Dry Time (Depending on application, either 1 hour or 24 hours.
24 hours is recommended.)

To apply Ice Adhesion Inhibitor

1. For deicers with previous use and operation, wash prior to application. Refer to [Section 8: Handling and Servicing, "Deicer Cleaner Application"](#).
2. Rinse deicer with clean water and allow to dry.
3. Clean deicer with isopropyl alcohol to remove substances that cannot be removed with soap and water.
4. Apply masking tape on leading edge lined up to the aft edge of the conductive edge sealer. Form neat, straight lines to border the application area.
5. Apply ICEX II to clean, soft, lint-free cotton cloth.

• CAUTION •

Ensure cloth is continually wetted with ICEX II to avoid abrasion and creating scratches on deicer surface.

6. Using cloth wetted with ICEX II, apply a light, even coat of ICEX II to entire deicer surface by wiping cloth in single, continuous, back-and-forth motions, spanwise on deicer.

• NOTE •

ICEX II used as an ice adhesion inhibitor will never fully dry to hard coating like the cosmetic surface protectant application.

Cleaning Interior Surfaces

Seats, carpet, upholstery panels, and headliners should be vacuumed at regular intervals to remove surface dirt and dust. While vacuuming, use a fine bristle nylon brush to help loosen particles.

• CAUTION •

Remove any sharp objects from pockets or clothing to avoid damaging interior panels or upholstery.

Interior Windshield and Windows

Never rub dry acrylic. Dull or scratched window coverings may be polished using a special acrylic polishing paste.

• CAUTION •

Clean acrylic windows with a solvent-free, non-abrasive, antistatic acrylic cleaner. Do not use gasoline, alcohol, benzene, carbon tetrachloride, thinner, acetone, or glass window cleaning sprays.

Use only a non-abrasive cotton cloth or genuine chamois to clean acrylic windows. Paper towel or newspaper are highly abrasive and will cause hairline scratches.

• NOTE •

Wiping with a circular motion can cause glare rings. Use an up and down wiping motion on the windshield in the direction of the airflow to prevent this.

To prevent scratching from dirt that has accumulated on the cloth, fold cloth to expose a clean area after each pass.

To clean Interior Windshield and Windows

1. Using a moist cloth or chamois, gently wipe the windows clean of all contaminants.
2. Apply acrylic cleaner to one area at a time, then wipe away with a soft, cotton cloth.
3. Dry the windows using a dry, non-abrasive cotton cloth or chamois.

Recommended Interior Cleaning Products

Cleaning Product	Cleaning Application	Supplier
Prist	Interior Windshield and Windows	Prist Aerospace
Optimax	Display Screens	PhotoDon
Mild Dishwasher Soap (abrasive-free)	Cabin Interior	Any Source
Leather Care Kit 50689-001	Leather Upholstery	Cirrus Aircraft
Leather Cleaner 50684-001	Leather Upholstery	Cirrus Aircraft
Ink Remover 50685-001	Leather Upholstery	Cirrus Aircraft
Leather Conditioner 50686-001	Leather Upholstery	Cirrus Aircraft
Spot and Stain Remover 50687-001	Leather Upholstery	Cirrus Aircraft
Vinyl Finish Cleaner 50688-001	Vinyl Panels	Cirrus Aircraft
Vinyl & Leather Cleaner 51479-001	Vinyl and Leather Upholstery	Cirrus Aircraft

Instrument Panel and Electronic Display Screens

The instrument panel, control knobs, and plastic trim need only to be wiped clean with a soft, damp cloth. The multifunction display, primary flight display, and other electronic display screens should be cleaned with Optimax - LCD Screen Cleaning Solution as follows:

• CAUTION •

To avoid solution dripping onto display and possibly migrating into component, apply the cleaning solution to cloth first, not directly to the display screen.

Use only a lens cloth or non-abrasive cotton cloth to clean display screens. Paper towels, tissue, or camera lens paper may scratch the display screen.

Clean display screen with power OFF.

To clean Instrument Panel and Electronic Display Screens

1. Gently wipe the display with a dry, clean, cotton cloth.
 2. Moisten cotton cloth with cleaning solution.
 3. Wipe the soft cotton cloth across the display in one direction, moving from the top of the display to the bottom. Do not rub harshly.
 4. Gently wipe the display with a dry, clean cotton cloth.
-

Headliner and Trim Panels

The airplane interior can be cleaned with a mild detergent or soap and water. Harsh abrasives or alkaline soaps or detergents should be avoided. Solvents and alcohols may damage or discolor vinyl or urethane parts. Cover areas where cleaning solution could cause damage. Use the following procedure:

• CAUTION •

Solvent cleaners and alcohol should not be used on interior parts. If cleaning solvents are used on cloth, cover areas where cleaning solvents could cause damage.

To clean Headliner and Trim Panels

1. Clean headliner and side panels with a stiff bristle brush, and vacuum where necessary.
 2. Soiled upholstery may be cleaned with a good upholstery cleaner suitable for the material. Carefully follow the manufacturer's instructions. Avoid soaking or harsh rubbing.
-

Leather Upholstery and Seats

For routine maintenance, occasionally wipe leather upholstery with a soft, damp cloth. For deeper cleaning, start with mix of mild detergent and water. If necessary, work your way up to the products available from Cirrus Aircraft for more stubborn marks and stains. Do not use soaps as they contain alkaline which will alter the leather's pH balance and cause the leather to age prematurely. Cover areas where cleaning solution could cause damage. Use the following procedure:

• CAUTION •

Solvent cleaners and alcohol should not be used on leather upholstery.

To clean Leather Upholstery and Seats

1. Clean leather upholstery with a soft bristle brush, and vacuum where necessary.
 2. Wipe leather upholstery with a soft, damp cloth.
 3. Soiled upholstery may be cleaned with the approved products available from Cirrus Aircraft. Avoid soaking or harsh rubbing.
-

Carpets

To clean carpets, first remove loose dirt with a whiskbroom or vacuum. For soiled spots and stubborn stains, use a non-flammable, dry cleaning fluid. Floor carpets may be cleaned like any household carpet.

Section 9: Log of Supplements

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As Required

FAA Approved AFM Supplements must be in the airplane for flight operations when the subject optional equipment is installed or the special operations are to be performed.

This Log of Supplements shows all Cirrus Aircraft Supplements available for the aircraft at the corresponding date of the revision level shown in the lower left corner. A check mark in the Part Number column indicates that the supplement is applicable to the AFM. Any installed supplements not applicable to the AFM are provided for reference only.

Section 10: Safety Information

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Cirrus Airframe Parachute System (CAPS)

Deployment Scenarios

Pilot Incapacitation

Pilot incapacitation may be the result of anything from a pilot's medical condition to a bird strike that injures the pilot.

Serials without Safe Return Autoland: If incapacitation occurs and the passengers are not trained to land the aircraft, CAPS activation by the passengers should be used.

Serials with Safe Return Autoland: If incapacitation occurs and the passengers are not trained to land the aircraft, passengers should activate Safe Return Autoland. In the event that Safe Return Autoland is unavailable, as indicated by a red slashed circle (⊘) illuminated on the Safe Return Autoland activation panel or as shown on the respective passenger informational screen while Safe Return Autoland is active, CAPS activation by the passengers should be used.

These scenarios should be discussed with passengers prior to flight and all appropriate passengers should be briefed on CAPS operation so they could effectively activate CAPS if required. The CAPS operation briefing should include the following:

- Reference to the passenger briefing card.
- Use of the LVL button.
- Use of the CAPS activation handle.

Safe Return Autoland System (if installed)

The Safe Return Autoland system is designed to safely land the aircraft in the event of pilot incapacitation. Once activated, it performs the following:

- Declares an emergency and provides periodic status updates
- Selects the closest suitable airport
- Navigates via the most direct route possible while avoiding terrain and undesirable weather if weather information is available for use
- Lands the aircraft, and brings it to a stop

• **NOTE** •

Safe Return Autoland evaluates runway length, width, elevation, gradient, terminal area weather, time to destination, and aircraft fuel state to select a destination.

Safe Return Autoland uses METAR data in determining destination suitability. If METAR data is unavailable, the system may select a less suitable destination.

Safe Return Autoland uses NEXRAD weather information to route around weather. If NEXRAD data is unavailable, the system will be unable to route around weather.

• **WARNING** •

Safe Return Autoland assumes a fully functional airplane in order to function properly, and is not designed to mitigate system failures. Any system failure that prevents the AFCS or engine from functioning, or the FMS from navigating, will also prevent Safe Return Autoland from functioning. CAPS activation by the passengers should then be used. Other failures including (but not limited to) landing gear, flaps, wheel speed sensors, or radar altimeter, will degrade system performance, and may result in damage to the airframe and possible injury to the occupants.

Because of these conditions and limitations, Safe Return Autoland should only be activated in a true pilot incapacity emergency situation.

Activation Scenarios

This section describes possible scenarios in which Safe Return Autoland activation is appropriate for the Cirrus Vision SF50. This list is not intended to be exhaustive, but merely illustrative of the type of circumstances when Safe Return Autoland activation could be the most appropriate means of saving the aircraft occupants.

Pilot Incapacitation

Pilot incapacitation may be the result of anything from a pilot's medical condition to a bird strike that injures the pilot such that he/she can not safely fly and land the airplane. If pilot incapacitation occurs, and no other type-rated pilots are on board, passengers should activate the Safe Return Autoland system. If required airplane system functionality is degraded or unavailable, the Safe Return Autoland system will indicate the degraded condition via a red slashed circle (⊗) illuminated on the Safe Return Autoland activation panel or shown on the respective passenger informational screen while Safe Return Autoland is active.

Passengers must be briefed to recognize that, in rare cases, sufficient fuel may be unavailable to reach a suitable runway. This information is provided on the flight display during Safe Return Autoland activation.

In the event that Safe Return Autoland is unavailable, or there is not sufficient fuel to reach the system's target airport once Safe Return Autoland has been activated, CAPS activation by the passengers should then be used. This scenario should be discussed with passengers prior to flight and all appropriate passengers should be briefed on Safe Return Autoland operation so they could effectively activate Safe Return Autoland if required.

The Safe Return Autoland operation briefing should include the following:

- Reference to the passenger briefing card.
- Use of the Safe Return Autoland pushbutton.
- Status indications “system unavailable or degraded” red slashed circle (⊗) to the left of the button, “activated” green landing airplane icon to the right of the button.
- Fuel remaining until landing and estimated time until landing.
- GTC push-to-talk for passenger emergency communications.

Other

Safe Return Autoland activation should be considered any time the pilot is unable to safely fly the aircraft.

Landing Considerations

After a Safe Return Autoland landing, the airplane must be recovered from the runway, and inspected for damage due to a potential hard landing.

• NOTE •

The brakes will be locked on until they are reset. Refer to Section 8: Handling and Servicing, "Safe Return Autoland Runway Recovery".

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Introduction

This aircraft is designed to operate safely and efficiently in a flight environment. However, like any other aircraft, pilots must maintain proficiency to achieve maximum safety, utility, and economy. Cirrus Aircraft strongly recommends that all pilots seek regular recurrent training and that they operate in accordance with the Cirrus Aircraft Flight Operations Manual and Envelope of Safety. In addition, regulations require additional pilot training and proficiency because the SF50 is turbojet-powered (14 CFR 61.58).

As the pilot, you must be thoroughly familiar with the contents of this AFM, the Supplements, Flight Checklist, and operational guides and data provided by manufacturers of equipment installed in this airplane. You must operate the airplane in accordance with the applicable FAA operating rules and within the limitations specified in Section 2 of this AFM.

• NOTE •

Refer to [Section 9: Log of Supplements](#) for applicable FAA operating rules.

The Normal Procedures section of this AFM was designed to provide guidance for day-to-day operation of this airplane. The procedures given are the result of flight testing, FAA certification requirements, and input from pilots with a variety of operational experience. Become fully familiar with the procedures, perform all the required checks, and operate the airplane within the limitations and as outlined in the procedures.

Taxiing, Steering, and Braking Practices

The Vision SF50 uses a full-castering nose wheel and relies on differential braking for directional control while taxiing. Proper braking practices are therefore critical to avoid potential damage to the brakes.

The most common cause of brake damage and/or failure is the creation of excessive heat through improper braking practices. Pilots unaccustomed to full-castering nose wheel steering may be inclined to “ride” the brakes to maintain constant taxi speeds and use the brakes excessively for steering during cross-wing taxiing.

Operating Practices

When taxiing, directional control is accomplished with intermittent braking (toe taps) as necessary. Use only as much power as is necessary to achieve forward movement. Deceleration or taxi speed control using brakes but without a reduction in power will result in increased brake temperature.

“Riding the brakes” while taxiing is similar to driving a car with one foot on the brake and one foot on the gas. This causes a continuous buildup of energy that would otherwise be moving the airplane.

Observe the following operating practices:

- Verify that the parking brake is completely disengaged before taxi.
- Use only the minimum thrust necessary to achieve forward movement. Keep in mind, any additional power added with the thrust will be absorbed in the brakes to maintain constant speed.
Approximately 38% N1 is the required breakaway thrust at 6000 lb (2722 kg).
- Use minimum necessary inputs of differential braking to achieve directional control.
- Do not “ride the brakes”. Pilots should consciously remove pressure from the brakes while taxiing. Failure to do so results in excessive heat buildup, premature brake wear, and increased possibility of brake failure or fire.
- Avoid unnecessary high-speed taxiing. High-speed taxiing may result in excessive demands on the brakes, increased brake wear, and the possibility of brake failure or fire.
- Brakes have a large energy absorbing capacity; therefore, cooling time should be considered. Energy absorbed during a few seconds of deceleration can take several minutes to dissipate. Always allow adequate cooling time after brake use.
- A cool down period and brake overheat inspection are required after high-energy braking events.

• NOTE •

Refer to [Section 2: Limitations, "Brakes"](#).

Brake Maintenance

The brakes shall be inspected before every flight for general condition, evidence of overheating, and deterioration.

• NOTE •

Refer to [Section 8: Handling and Servicing, "Brake Servicing"](#) for brake system servicing information and brake overheat inspection procedures.

Cirrus Airframe Parachute System (CAPS)

The Cirrus Airframe Parachute System (CAPS) is designed to lower the aircraft and its passengers to the ground in the event of a life-threatening emergency. CAPS deployment will likely result in damage to, or loss of, the airframe, and possible injury to the aircraft occupants.

The primary purpose of CAPS on the Cirrus Vision SF50 is to bring the aircraft occupants safely to the ground following a loss of thrust event, if the pilot has determined the use of CAPS to be safer than a forced landing. The use of CAPS should also be considered for pilot incapacitation or other emergency situations, if no other recovery options are deemed to exist. CAPS should be used in accordance with the procedures and guidance set forth in this AFM.

The following discussion is meant to guide your thinking about CAPS activation. CAPS activation should be well thought out and mentally practiced by every Cirrus Vision SF50 pilot. Cirrus Aircraft also strongly recommends that pilots complete initial and recurrent factory training programs which focus on the proper use of CAPS.

Deployment Scenarios

This section describes possible scenarios in which CAPS activation is appropriate for the Cirrus Vision SF50. This list is not intended to be exhaustive, but merely illustrative of the type of circumstances when CAPS deployment could be the most appropriate means of saving the aircraft occupants.

Loss of Thrust

The primary purpose of CAPS on the Cirrus Vision SF50 is to bring the aircraft occupants safely to the ground following a loss of thrust event or other engine loss, if the pilot has determined the use of CAPS to be safer than a forced landing. CAPS activation is recommended if a forced landing is required on an unprepared surface, over rough or mountainous terrain, over water out of gliding distance to land, over widespread fog, or at night.

In most cases, CAPS is a safer option than performing a forced landing on either an improved or unimproved surface. In some cases, CAPS may be safer than attempting a glide approach in order to land on a runway.

Loss of Thrust during Departure

If loss of thrust occurs during departure at an altitude of less than 600 feet AGL, it is recommended that the pilot land straight ahead if practicable. If a straight-ahead landing is not practicable, it is recommended that the pilot activate CAPS immediately.

If loss of thrust occurs during departure at an altitude between 600 and 2000 feet AGL, it is recommended that the pilot activate CAPS immediately.

Altitude loss from horizontal flight deployments has been demonstrated to be less than 600 feet.

If loss of thrust occurs during departure at an altitude of greater than 2000 feet AGL, the pilot must determine if a successful forced landing is assured. If not, CAPS should be utilized.

Loss of Thrust Enroute

While attempting to glide to an airfield to perform a power-off landing, the pilot must be continuously aware of altitude and ability to successfully perform the landing. The pilot must determine by 1000 feet AGL if landing is assured or if CAPS will be required.

Pilot Incapacitation

Pilot incapacitation may be the result of anything from a pilot's medical condition to a bird strike that injures the pilot. If incapacitation occurs and the passengers are not trained to land the aircraft, CAPS activation by the passengers should be used.

This scenario should be discussed with passengers prior to flight and all appropriate passengers should be briefed on CAPS operation so they could effectively activate CAPS if required. The CAPS operation briefing should include the following:

- Reference to the passenger briefing card.
- Use of the LVL button.
- Use of the CAPS activation handle.

Other

CAPS activation should be considered for other life-threatening emergency situations when all other emergency procedures have been unsuccessful or if no other options are deemed to exist.

General Deployment Information

Deployment Speed

The recommended CAPS activation speed is one that is less than 135 KIAS and 145 KTAS, whichever is lower, which will result in immediate parachute deployment. It is important for the operator to make all reasonable efforts to slow to the minimum possible airspeed prior to CAPS activation. This is necessary to minimize loads on the airframe and aircraft occupants and increase the chances of a successful outcome.

If CAPS is activated at higher speeds, the system is designed to delay deployment of the parachute until the autopilot (triggered by handle pull) slows the airplane to the parachute deployment envelope. The time required for the autopilot to slow the airplane from 250 KIAS (level flight) to the parachute deployment envelope has been demonstrated to be 15-24 seconds. Flying at a slower airspeed when CAPS is activated will reduce this time.

In any event, the system will automatically deploy the parachute approximately 30 seconds after CAPS activation regardless of airspeed.

Deployment Altitude

No minimum altitude for deployment has been set. This is because the actual altitude loss during a particular deployment depends upon the airplane's airspeed, altitude and attitude at deployment as well as other environmental factors. In all cases, however, the chances of a successful deployment increase with altitude. Altitude loss from horizontal flight deployments has been demonstrated to be less than 600 feet. Deployment at a low altitude leaves little or no time for the aircraft to stabilize under the canopy or for the cabin to be secured. A low altitude deployment increases the risk of injury or death and should be avoided if possible. If circumstances permit, it is advisable to activate the CAPS at or above 1000 feet AGL.

At any altitude, once the CAPS is determined to be the best alternative available for saving the aircraft occupants, activate the system without delay.

Deployment Attitude

CAPS deployment has been demonstrated from straight and level and vertical descent (nose pointed down) attitudes. These tests showed that as long as the parachute was introduced to the free air by the extraction system, it would successfully recover the aircraft into its level descent attitude under the parachute. Deployment from other attitudes has not been tested and is unknown; however, it may remain the best option.

Landing Considerations

After a CAPS deployment, the airplane will descend at approximately 1560 feet per minute with a lateral speed equal to the velocity of the surface wind. The CAPS landing touchdown is equivalent to ground impact from a height of approximately 10.5 feet. While the airframe and seats are designed to accommodate the touchdown forces, occupants must be prepared for the landing.

• WARNING •

Occupant protection during a CAPS landing has been demonstrated with the landing gear in the UP position. A CAPS landing with the gear in the DOWN position may result in a cracked or punctured fuel tank.

The overriding consideration in all CAPS-deployed landings is to prepare the occupants for the touchdown in order to protect them as much as possible from injury.

Emergency Landing Body Position

The most important consideration for a touchdown with CAPS deployed is to protect the occupants from injury, especially back injury. Contacting the ground with the back offset attempting to open a door or secure items increases the likelihood of back injury. All occupants must be in the emergency landing body position well before touchdown. After touchdown, all occupants should maintain the emergency landing body position until the airplane comes to a complete stop.

The emergency landing body position is assumed with tightened seat belt and shoulder harness by placing both hands beside the legs, and holding the upper torso and neck/back of the head erect and against the seat backs. For seats with armrests, the hands can be placed on the armrests. The seat should be back in the upright or second upright notch position. The seat cushions contain an aluminum honeycomb core designed to crush under impact to absorb downward loads and help protect the spine from compression injury.

Emergency Ground Egress

After CAPS activation, if time permits, the pilot should consider the best option for emergency ground egress once the airplane comes to a complete stop.

• NOTE •

Refer to [Section 3: Emergency Procedures, "Emergency Ground Egress"](#).

If the cabin door is clear, exit via the cabin door. If the cabin door is blocked, or has jammed on impact, exit via the emergency exit (egress window).

Depending on altitude and condition of the cabin after touchdown, dumping cabin pressure (in accordance with the [CAPS Activation](#) procedure) prior to shutting down electrical systems may be required to allow use of the emergency exit (egress window).

• NOTE •

An emergency exit egress will involve removal of the window from the interior of the airplane. Refer to Chapter 8: Doors, Windows, and Exits of the Pilot's Information Manual (PIM) for necessary instructions.

Water Landings

The ability of the airplane to float after a water landing has not been tested and is unknown. After CAPS activation but before touchdown, if time permits, the pilot should consider the best option for emergency egress should a water landing be likely.

Post-Impact Fire

If there is no fire prior to touchdown and the pilot is able to shut down the engine, fuel, and electrical systems, there is less chance of a post-impact fire. After CAPS activation but before touchdown, if time permits, the pilot should consider the best option for emergency egress in anticipation of the risk of a post-impact fire.

Ground Gusts

If it is known or suspected that ground gusts are present in the landing zone, the parachute could drag the airplane after touchdown, especially if the terrain is flat and without obstacles. In order to ensure that the occupants can escape the airplane in the timeliest manner after the airplane comes to rest, the pilot should consider the best option for emergency ground egress.

• NOTE •

Refer to [Section 3: Emergency Procedures, "Emergency Ground Egress"](#) for more information.

Occupants must be in the emergency landing body position for touchdown. Occupants must not loosen seat belts until the airplane comes to rest. When the airplane comes to rest, the occupants should exit the airplane and immediately move upwind to prevent a sudden gust from dragging the airplane in their direction.

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