

SECTION 2

LIMITATIONS

TABLE OF CONTENTS	Page
Introduction	2-3
Airspeed Limitations	2-3
Airspeed Indicator Placards	2-4
Power Plant Limitations	2-5
Power Plant Instrument Markings	2-6
Weight Limits	2-7
Center of Gravity Limits	2-7
Maneuver Limits	2-7
Flight Load Factors Limits	2-7
Flap Limitations	2-7
Fuel Limitations	2-8
Maximum Operating Altitude	2-8
Minimum Flight Crew	2-8
Maximum Passenger Seating Configuration	2-8
Runway Surface	2-8
Kinds of Operational Limits	2-8
Kinds of Operation Equipment List	2-9
Engine Monitor	2-11
Limitation Placards	2-13

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INTRODUCTION

The FBA-2C3 (Expedition E350) landplane must be operated in accordance with the limitations contained in this section. These include operating limitations, instrument markings, colour coding and basic placards, power plant, systems and equipment limitations.

AIRSPPEED LIMITATIONS

Airspeed limitations and their operational significance are shown below. The indicated airspeeds presented are based on the normal static source airspeed calibration. When using the optional alternate static source, allow for the airspeed calibration variations between the normal and alternate static sources, as shown in Section 5.

	SPEED	KCAS	KIAS	REMARKS
V_A	Maneuvering Speed 3800 lbs.	117	118	Do not make full or abrupt control movements above this speed.
V_{FE}	Maximum Flap Extended Speed	115	116	Do not exceed this speed with flaps down.
V_{NE}	Never Exceed Speed	188	191	Do not exceed this speed in any operation.
V_{NO}	Maximum Structural Cruising Speed	153	155	Do not exceed this speed except in smooth air, and then only with caution.

Figure 2-1 Airspeed Limitations

AIRSPPEED INDICATOR MARKINGS

Airspeed indicator markings and their colour coding are presented below. The indicated airspeeds presented are based on the normal static source airspeed calibration. When using the optional alternate static source, allow for the airspeed calibration variations between the normal and alternate static sources, as shown in Section 5.

MARKING	KIAS OR RANGE	SIGNIFICANCE
White Arc	50 – 116	Full flap operating range. Lower limit is approximately maximum weight V_{so} in landing configuration. Upper limit is maximum flap extended speed.
Green Arc	56 - 155	Normal operating range. Lower limit is approximately maximum weight V_s at forward C.G. with flaps retracted. Upper limit is maximum structural cruising speed.
Yellow Arc	155 - 191	Operations must be conducted with caution and only in smooth air.
Red Line	191	Maximum speed for all operations.

Figure 2-2 Airspeed Indicator Markings

POWER PLANT LIMITATIONS

Number of Engines:	1
Engine Manufacturer:	Textron Lycoming
Engine Model Number:	IO-580-B1A
Rated Maximum Continuous HP @ RPM:	315 @ 2700
Maximum Oil Temperature:	235°F (112°C)
Oil Pressure:	
Minimum:	25 psi
Maximum:	115 psi
Maximum Cylinder Head Temperature:	465° F (240° C)
Aviation Grade Fuel:	100LL (Blue) or 100 (Green)
Approved Oils*:	MIL-L-6082 Mineral Oil or MIL-L-22851 Ashless Dispersant Oil.

*See Chapter 8 for oil specification for engine break-in and recommended viscosity versus temperature table.

Propeller

Propeller Manufacturer:	Hartzell Propellers Inc.
Propeller Model Number:	HC-C3YR-1RF/F8068
Propeller Diameter:	82 inches (minimum 81 inches)

POWER PLANT INSTRUMENT MARKINGS

Power plant markings and their colour coding are presented below.
The coding is represented by a coloured arc, bar or number.

INSTRUMENT	RED	GREEN	YELLOW	RED
	MINIMUM LIMIT	NORMAL OPERATING	CAUTION RANGE	MAXIMUM LIMIT
Oil Temperature	---	0 °F – 235 °F	---	235 °F
Oil Pressure	25 psi	55 – 95 psi	25 – 55 & 95 – 115 psi	115 psi
Cylinder Head Temperature	---	150 – 435 °F	435 – 465 °F	465 °F
Tachometer	---	500 to 2700 RPM	---	Above 2700 RPM
Manifold Pressure	---	12 to 32 in. in. Hg	---	---
Suction Gage	---	4.5 – 5.5 in. Hg	---	---
Fuel Quantity	0 litres	---	---	---
Fuel Flow	---	0 to 40 GPH	---	---
Voltage	---	25 to 32 V	0 to 25 V	Above 32 V

Figure 2-3 Power Plant Markings

WEIGHT LIMITS

Maximum Takeoff Weight:	3800 pound
Maximum Landing Weight:	3800 pound
Maximum Weight in Baggage Compartment:	250 pound maximum at Station 94 in.

CENTER-OF-GRAVITY LIMITS

Center-of-Gravity Range:

Forward:	15.0 inches aft of datum at 2600 pounds or less. 20.5 inches aft of datum at 3800 pounds maximum gross weight with linear variation with weight in between.
Aft:	24.5 inches aft of datum at all weights.

Reference Datum: ½" aft of the lower hinge pin on front door

MANEUVER LIMITS

This airplane is certificated in the *Normal Category* and no acrobatic maneuvers, including spins, are approved.

FLIGHT LOAD FACTOR LIMITS

Flight Load Factors:

Flaps-Up:	-1.52g to +3.8g
Flaps-Down:	-1.52g to +2.0g

FLAP LIMITATIONS

Approved Takeoff Range:	0° to 20°
Approved Landing Range:	0° to 30°

FUEL LIMITATIONS

2 Standard Tanks:	189.3 litres each (50 U.S. gallons each)
(For all flight conditions)	
Total Fuel:	378.5 litres (100 U.S. gallons)
Usable Fuel:	372.1 litres (98.3 U.S. gallons)
Unusable Fuel:	6.4 litres (1.7 U.S. gallons)

MAXIMUM OPERATING ALTITUDE

Maximum Operating Altitude18, 000 ft. MSL

MINIMUM FLIGHT CREW

The minimum flight crew is one pilot

MAXIMUM PASSENGER SEATING CONFIGURATION

The maximum occupancy of this airplane is four passengers and one pilot.

RUNWAY SURFACE

This airplane may be operated into and off of any paved, gravel and grass runway surface.

KINDS OF OPERATIONAL LIMITS

The airplane is approved for day and night VFR and IFR flights when equipped as required by national requirements (e.g. CAR 605, FAR Part 91 & Part 135).
Flight into known icing conditions is prohibited.

KINDS OF OPERATION EQUIPMENT LIST

This airplane is approved for flight into non-icing conditions during day or night, and under VFR or IFR conditions when equipped in accordance with national regulations and the required equipment is operating properly.

The following list does not include specific radio or navigation equipment, the pilot in command must ensure compliance with national regulations for each intended flight.

NOTE

All references to types of flight operations on the operating limitations placards are based upon equipment installed at the time of Airworthiness Certificate issuance.

System, Instrument, and/or Equipment	Kinds of Operation				Notes
	VFR Day	VFR Night	IFR Day	IFR Night	
Communications					
VHF Comm	---	---	1	1	
Electrical Power					
Battery	1	1	1	1	
Alternator	1	1	1	1	
Voltammeter	1	1	1	1	
Under Voltage Indicator	1	1	1	1	
Over Voltage Indicator	1	1	1	1	
Circuit Breakers	AR	AR	AR	AR	As Required
Flight Controls					
Flap Position Indicator	1	1	1	1	
Flap System	1	1	1	1	
Pitch Trim Indicator	1	1	1	1	
Pitch Trim System	1	1	1	1	
Stall Warning System	1	1	1	1	
Fuel System					
Auxiliary Fuel Pump	1	1	1	1	
Fuel Quantity Indicator	2	2	2	2	
Fuel Selector Valve	1	1	1	1	
Ice & Rain Protection					
Alternate Engine Air Induction System	1	1	1	1	
Alternate Static Air Source	---	---	1	1	
Pitot Heater	---	1	1	1	

SECTION 2
LIMITATIONS

FOUND
FBA-2C3

System, Instrument, and/or Equipment	Kinds of Operation				Notes
	VFR Day	VFR Night	IFR Day	IFR Night	
Lights					
Anticollision Lights	2	2	2	2	
Instrument Lights	---	*	---	*	* - Must be operative
Navigation Lights	---	4	---	4	1 Red, 1 Green, 2 White Lights
Landing Lights	---	1	---	1	
Navigation & Instruments					
Airspeed Indicator	1	1	1	1	
Altimeter (Sensitive)	1	1	1	1	Sensitive Altemeter
Vertical Speed Indicator	---	1	1	1	
Magnetic Compass	1	1	1	1	
Attitude Indicator	---	1	1	1	
Directional Gyro	---	1	1	1	
HSI	---	---	1	1	
Turn Coordinator (Gyro)	---	1	1	1	
Clock	---	---	1	1	
Pitot System	1	1	1	1	
OAT Gauge	---	1	1	1	
Vacuum Gauge	---	---	1	1	
Engine Instruments					
Oil Pressure Indicator	1	1	1	1	
Oil Temperature Indicator	1	1	1	1	
Oil Quantity Indicator (Dipstick)	1	1	1	1	
CHT Indicator	1	1	1	1	
Fuel Flow Indicator	1	1	1	1	
Manifold Pressure Gauge	1	1	1	1	
Tachometer	1	1	1	1	
Equipment & Furnishings					
ELT	1	1	1	1	
Restraint System	AR	AR	AR	AR	As Required
Fire Protection					
Portable Fire Extinguisher	1	1	1	1	

ENGINE MONITOR

This airplane is equipped with a digital engine monitor. This unit has a full colour, glass-panelled display that has factory set and pilot customizable screens.

The factory set screens display the engine and system parameters. These screens cannot be changed by the pilot. Figure 2-4 show the factory set Main screen. All factory set screens are approved screens.



Figure 2-4 Factory Set Main Screen

Figure 2-5 shows a typical pilot customizable screen. Only the “blue” screen on the left can be customized, the “black” screen on the left is set by the factory and cannot be changed.

All pilot customizable screens are NOT approved. Following is a list of non-approved screens.

- System Screen

- Add Fuel
- Fuel Management
- Timers
- Clocks and Hours Meters
- Weight and Balance
- Check List 1
- Check List 2
- Check List 3
- Flight Plans
- Gen. Info. 1
- Gen. Info. 2
- Data Logs: Flight-Log
- Bar Graph Setup
- USB Data Recording
- Voice + Display Control
- Screen Button Setup
- System Configuration



Figure 2-5 Typical Pilot Customizable Screen (left “blue” side)

LIMITATIONS PLACARDS

All limitation placards are as follows. A list of all placards is detailed in chapter 11 of the airplane maintenance manual (FAC2-M200).

INTERIOR PLACARDS

Located on the Fuel Selector:

USABLE 185 L
(49 US GAL)
LEFT

USABLE 185 L
(49 US GAL)
RIGHT

OFF
LIFT KNOB

In the Baggage Compartment:

250 POUNDS MAXIMUM BAGGAGE
AT THIS ARM (94")
↓

Near the Airspeed Indicator:

MANEUVER SPEED = 118 KIAS

In full view of the pilot on the Flight Instrument Panel:

The markings and placards installed in this airplane contain operating limitations which must be complied with when operating this airplane in the Normal Category. Other operating limitations which must be complied with when operating this airplane in this category are contained in the Airplane Flight Manual.

Normal Category: No acrobatic maneuvers, including spins, approved.

Flight into known icing conditions is prohibited.

This airplane is certified for the following flight operations:
DAY – NIGHT – VFR – IFR
(WITH REQUIRED EQUIPMENT)

Near the ELT Remote Switch:

FOR AVIATION
EMERGENCY USE ONLY
UNAUTHORIZED OPERATION
PROHIBITED

On the Circuit Breaker Panel or other Instrument Panel:

NO SMOKING
FASTEN SEATBELTS

FIRE EXTINGUISHER LOCATED
ON R/H SIDE OF CONSOLE

X955

In clear view of the pilot:

This aircraft is airworthy with up to 4 VGs missing per wing. The upper wing surface must be inspected prior to each flight to verify that no more than 4 VGs per wing are missing or damaged.

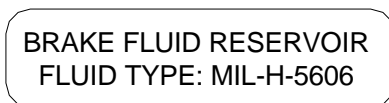
X969

EXTERIOR PLACARDS

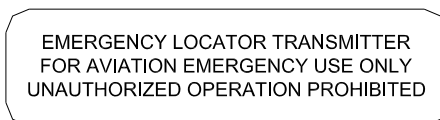
Near the Fuel Tank Filler Caps:



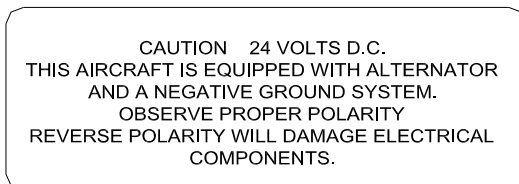
Near the Brake Fluid Reservoir:



On the External Surface of the Fuselage near the ELT:



Near the Battery:



On the Oil Check Access Panel:

OIL SUMP CAPACITY 10.4 LITRES (11 US QUARTS)
SAFE MINIMUM OIL IN SUMP 3.8 LITRES (4 US QUARTS)
SEE AIRCRAFT FLIGHT MANUAL FOR GRADE