

**Transport Canada Approved Flight Manual Supplement
For**

**WIPLINE/FLUIDYNE/FEDERAL
C3200 SKIS**

This supplemental manual is applicable to C3200 ski equipped FBA-2C2 airplanes or C3200 ski equipped FBA-2C1 airplanes with Mod 1043 installed. Mod 1043 replaces the plain flap system on the model FBA-2C1 airplane with a slotted Fowler-type flap system (commonly referred to as “Fowler Flaps”). Therefore where 2C2 is used in this manual it is acceptable to read 2C1 with Mod 1043 installed.

This Supplement must be attached to the Transport Canada Approved Airplane Flight Manual when the airplane is modified by the installation of C3200 skis in accordance with Found Aircraft Canada drawing D220 Issue 2 or later approved revision.

The information contained herein supplements or supersedes the basic flight manual, airplane markings and/or placards only in those areas listed herein.


For Limitations, Procedures, and Performance information not contained in this Supplement, consult the airplane markings and placards and/or basic Airplane Flight Manual, (P/N: FAC2-M400).

Approved: 

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LOG OF REVISIONS

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SECTION 1 GENERAL

INTRODUCTION

This supplemental manual is applicable to C3200 ski equipped FBA-2C2 airplanes or C3200 ski equipped FBA-2C1 airplanes with Mod 1043 installed. Mod 1043 replaces the plain flap system on the model FBA-2C1 airplane with a slotted Fowler-type flap system (commonly referred to as “Fowler Flaps”). Therefore where 2C2 is used in this manual it is acceptable to read 2C1 with Mod 1043 installed.

This supplement provides information and limitations not included in the Transport Canada approved markings and placards, and/or Airplane Flight Manual (P/N: FAC2-M400).

The aircraft is to be operated under the “NORMAL CATEGORY” only.

DESCRIPTIVE DATA

MAXIMUM CERTIFICATED WEIGHTS

Maximum Operational Weight:	
Takeoff:	3200 lbs
Landing:	3200 lbs

STANDARD AIRPLANE WEIGHTS

Standard Empty Weight:	2075 lbs *
Maximum Useful Load:	1125 lbs *

* the above weights may vary depending on configuration.

SPECIFIC LOADINGS

Wing Loading:	17.8 lbs/sq.ft.
Power Loading:	10.7 lbs/hp.

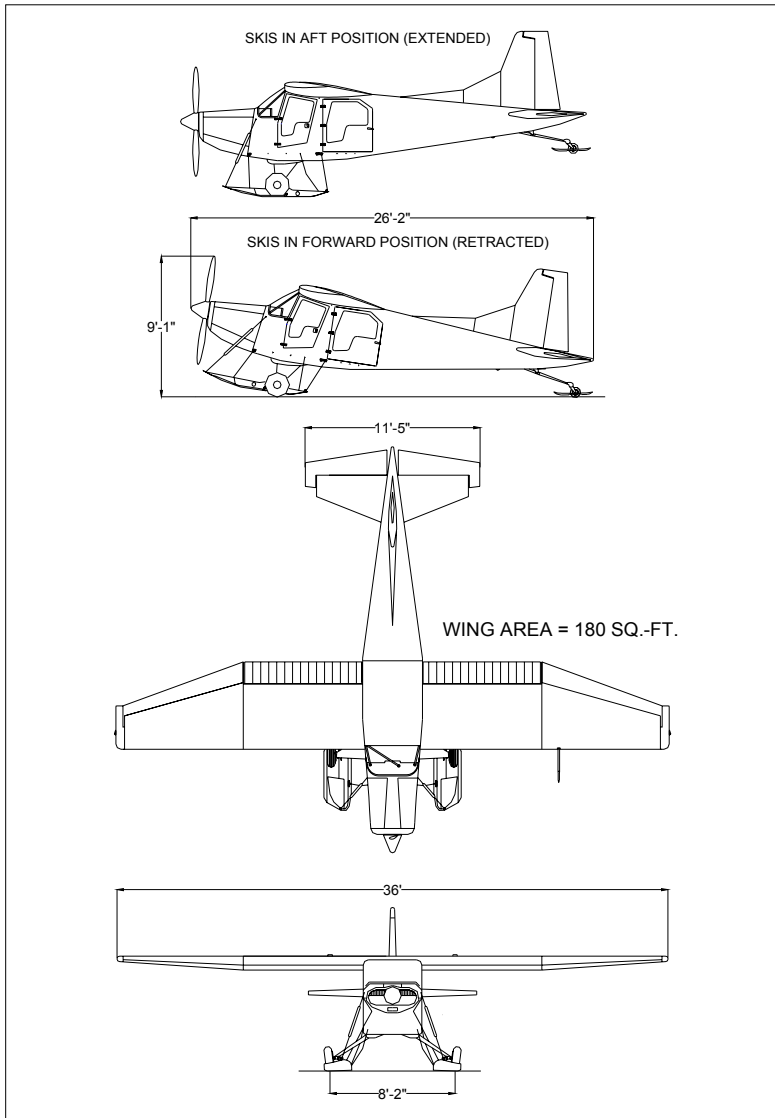


Figure 1 Three View - Normal Ground Attitude

SECTION 2 LIMITATIONS

INTRODUCTION

The FBA-2C2 Bush Hawk-XP equipped with the Wipline/FluiDyne/Federal C3200 skis must be operated in accordance with the limitations contained in this section. These include operating limitations, instrument markings, colour coding and basic placards, systems and equipment limitations. The limitations shown in this section apply only to operations of the FBA-2C2 Bush Hawk-XP skiplane.

AIRSPEED LIMITATIONS

Airspeed limitations are essentially unchanged from the FBA-2C2 landplane except for the following additional limitation due to the skis. See Airplane Flight Manual P/N: FAC2-M400 for landplane airspeed limitations.

	SPEED	KCAS	KIAS	REMARKS
V _{LO}	Maximum Landing Gear Operating Speed	124	125	Do not extend or retract skis above this speed.

NOTE

Since the operating speeds for the ski installation are within 3 knots of those for the standard wheel installation, no changes to the airspeed indicator markings have been made.

WEIGHT LIMITS

Maximum Takeoff Weight:	3200 lbs.
Maximum Landing Weight:	3200 lbs.
Maximum Weight in Baggage Compartment:	250 lbs.

CENTER-OF-GRAVITY LIMITS

Center-of-Gravity
Range:

Forward:	17.0 inches aft of datum at 2750 lbs or less. 19.0 inches aft of datum at 3200 lbs. maximum gross weight with linear variation with weight in between.
Aft:	23.5 inches aft of datum at all weights.
Reference Datum:	Main wheel axle.

PLACARDS

The following information is displayed in the form of composite or individual placards.

1. Located on the instrument panel in clear view of the pilot.

<p>DO NOT EXTEND OR RETRACT SKIS AT SPEEDS ABOVE 125 KIAS. DO NOT EXTEND OR RETRACT SKIS WHILE IN MOTION ON THE GROUND</p>
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SECTION 3 EMERGENCY PROCEDURES

Unchanged from the landplane, see Airplane Flight Manual P/N: FAC2-M400.

SECTION 4 NORMAL PROCEDURES

NOTE

These items supplement the FBA-2C2 normal procedures given in the basic Airplane Flight Manual P/N: FAC2-M400. Be sure to follow the FBA-2C2 procedures except as noted below.

AIRSPEEDS FOR NORMAL OPERATION

Airspeeds for normal operation of the skiplane are the same as the FBA-2C2 landplane. Refer to speeds in section 4 of Airplane Flight Manual P/N: FAC2-M400.

NORMAL PROCEDURES CHECKLISTS

PREFLIGHT INSPECTION

1. Skiplane Approved Flight Manual Supplement should be available in the airplane.
2. Ski Hydraulic Pump PUMP skis to desired position
 - a) For Wheel Landing RETRACT
 - b) For Ski Landing..... EXTEND
3. Skis INSPECT for condition.
..... CHECK that they are not frozen to the surface.
4. Hydraulic System INSPECT system for quantity and leakage.
5. Weight and Balance Data CHECK and load the skiplane to maintain the CG within the prescribed limits.

WARNING

A SIGNIFICANT FORWARD SHIFT IN CG IS CAUSED BY THE INSTALLATION OF SKIS OR RETRACTION OF THE SKIS TO THE FORWARD POSITION. BALLAST MAYBE REQUIRED UNDER CERTAIN LOADING CONDITIONS.

PRIOR TO TAKEOFF

1. Skis CHECK against desired stop.
2. Selector Valve NEUTRAL

BEFORE LANDING

1. Ski Hydraulic Pump PUMP skis to desired position
 - a) For Wheel Landing RETRACT
 - b) For Ski Landing..... EXTEND
2. Selector Valve NEUTRAL
3. Ski Position CONFIRM VISUALLY

AMPLIFIED NORMAL PROCEDURES

TAXIING

Normal skiplane taxiing techniques are used. Due to the characteristics of the tail ski steering, the minimum turning radius is increased as compared to landplane taxiing with the use of brakes.

WARNING

DO NOT EXTEND OR RETRACT SKIS WHILE IN MOTION ON THE GROUND. LANDING GEAR DRAG, CAUSED BY ONE SKI PRECEDING THE OTHER DURING THE RETRACTION OR EXTENSION CYCLE, WILL RESULT IN A GROUND LOOPING TENDENCY.

SECTION 5 PERFORMANCE

HEIGHT LOSS IN STALLS

A height loss of up to 100 ft may occur in stalls.

AIRSPPEED CALIBRATION

Airspeed calibrations are unchanged from the FBA-2C2 landplane. Refer to airspeed calibration presented in section 5 of the Airplane Flight Manual P/N: FAC2-M400 for the landplane.

STALL SPEEDS

STALL SPEEDS AT 3200 POUNDS

CONDITIONS : Power off
Ski retracted (forward position)

MOST FORWARD CENTRE OF GRAVITY

FLAP SETTING	ANGLE OF BANK							
	0°		30°		45°		60°	
	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
UP	55	57	59	61	66	68	78	81
10 ⁰	54	55	58	60	64	66	76	78
20 ⁰	48	50	51	54	57	59	68	71
30 ⁰	47	49	51	53	56	58	67	69

NOTES :

1. Altitude loss during stall recovery may be up to 200 feet.
2. KIAS values are approximate.
3. Stall speeds are estimated from the stall speeds of C3600 skiplane with Fowler-type flaps.

TAKEOFF PERFORMANCE

Under the most favourable conditions of smooth packed snow at temperatures approximating 32°F (0°C), the skiplane takeoff distance is approximately 10% greater than that shown for the landplane.

CLIMB PERFORMANCE

Climb performance of the skiplane is equivalent to the landplane climb performance shown in section 5 of the Airplane Flight Manual P/N: FAC2-M400.

LANDING PERFORMANCE

Under the most favourable conditions of smooth packed snow at temperatures approximating 32°F (0°C), the skiplane takeoff distance is approximately 20% greater than that shown for the landplane.

SECTION 6 WEIGHT AND BALANCE

The Bush Hawk-XP equipped with Wipline/FluiDyne/Federal C3200, must be loaded in accordance with the limitations in Section 2. These are shown as an aircraft weight/moment envelope or an aircraft weight versus c.g. locations chart on the following pages.

WARNING
IT IS THE RESPONSIBILITY OF THE AIRPLANE OWNER AND PILOT TO INSURE THAT THE AIRPLANE IS LOADED PROPERLY.

SKIPLANE REFERENCE DATUM

Unchanged from the landplane (main wheel axle), see Airplane Flight Manual P/N: FAC2-M400.

WEIGHING PROCEDURES

Unchanged from the landplane, see Airplane Flight Manual P/N: FAC2-M400.

WEIGHT AND BALANCE PROCEDURES

Unchanged from the landplane, see Airplane Flight Manual P/N: FAC2-M400.

ADDITIONAL EQUIPMENT LIST

Item	Wt. [lbs]	Arm [in]
Wipline/FluiDyne/Federal C3200 Ski (One main ski, ski down) *	61.0	-18.0
Wipline/FluiDyne/Federal C3200 Ski (One main ski, ski up) *	61.0	-34.2
Magnum 3400-10-23 Tail Ski *	7.8	232.0
Wipline/FluiDyne/Federal CT3200 Tail Ski *	8.5	232.0
Hydraulic pump *	7.0	18.0

* Nominal weight. Accurate weight of each installation must be determined.

Figure 2 C3200 Skiplane Additional Equipment List

CENTER OF GRAVITY MOMENT ENVELOPE

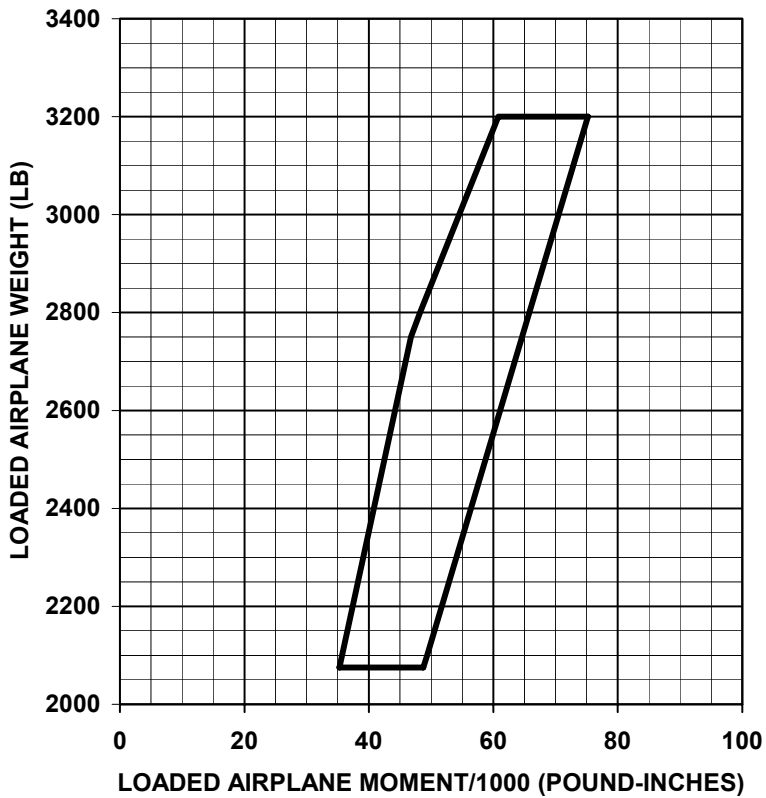


Figure 3 CG Moment Envelope for 300hp Fowler Flap C3200 Skiplane

CENTER OF GRAVITY RANGE ENVELOPE

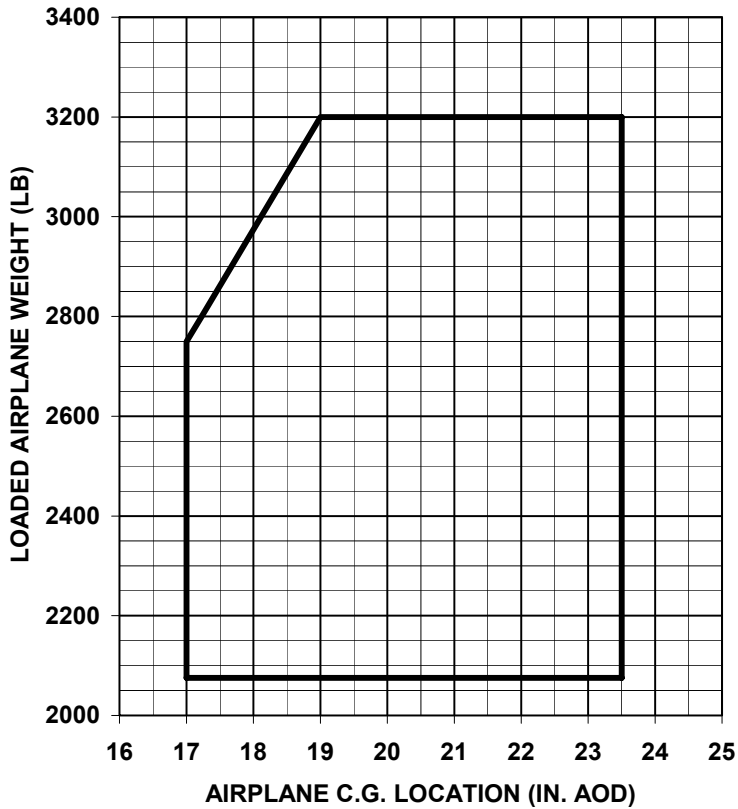


Figure 4 CG Range Envelope for 300hp Fowler Flap C3200 Skiplane

SECTION 7

AIRPLANE & SYSTEMS DESCRIPTION

This section contains a description of the modifications and equipment associated specifically with the installation of Wipline/FluiDyne/Federal C3200 skis on FBA-2C2 Bush-Hawk.

The Bush Hawk-XP C3200 skiplane is identical to the Bush Hawk-XP landplane with the following modifications:

1. The airplane is fitted with retractable main wheel skis and a tail wheel ski.
2. A ski axle assembly for each main gear.
3. Shock chords and limit cables to support the ski installation.
4. Hydraulic system to support the retractable main wheel skis (Figure 5).
5. Skiplane placards.

RETRACTABLE MAIN WHEEL SKIS

The main wheel skis are attached to a special ski axle assembly by means of a link. This allows the skis to be moved back and down (extended) which tucks the skis under the wheel for ski operation. The skis need to be moved forward and up (retracted) which allows the main wheel to protrude below the bottom of the ski for bare surface operation.

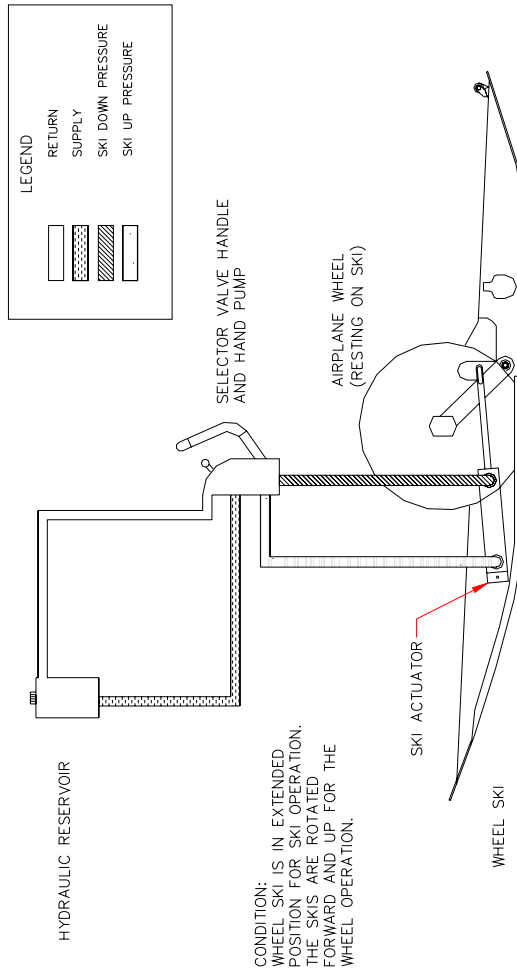


Figure 5 Ski Installation