Performance

Chapter 5

INTRODUCTION TO PERFORMANCE

The purpose of this section is to present the owner or operator with information needed to planning of flights with reasonable accuracy.

The Performance Data and charts presented herein are calculated, based on actual flight test with the airplane and engine in good condition and the engine power control properly adjusted.

The flight test data has been corrected to International Standard Atmosphere condition and then expanded analytical to cover various airplane gross weight, operating altitudes, and outside air temperatures.

NOTE

All airspeeds in this section are indicated airspeeds in Mph (IAS) and assume zero instrument error.

Airspeed-Calibration Datasheet
Lancair 320 HB-YFR

Aircraft –Type	Lancair 320
Registration	HB-YFR
Test Weight	740 Kg
Date	11.03.1994
Pilot	BORGEAUD

Flap pos. / Gear pos.	Mph. IAS	Mph. IAS-Error	Mph. CAS
Flap -10° / up	140	+2.1	137.9
Flap -10° / up	150	+2.3	147.7
Flap -10° / up	160	+3.3	156.7
Flap -10° / up	170	+3.2	166.8
Flap -10° / up	180	+2.9	177.1

Flap -20° / down	100	+1.6	98.4
Flap 0° / down	120	+1.2	118.8

STALL SPEEDS - POWER OFF – (757 kg / CG 740 mm _ Aft)

Landing Configuration

Gear Down/Flap Pos.	Stall Speed IAS
Flap: 40°	Vso = 70 Mph

(The Stall accordance FAR 23.49 - 61 KIAS - is fulfilled.)

Stall description

With full flaps, the aircraft stabilises itself at 65 - 70 Mph, limited by control stop. No positive stall. Strong buffeting from 75 Mph.

Cruise - Configuration

Gear Up / Flap position	Stall speed IAS
Flap: -10°	Vs1 = 75 Mph

Stall description

Prior to STALL there is a distinctive change of rudder response – the rudder are becoming very weak. **A VERY LIGHT BUFFETING is felt about 4 Kts prior to stall.**

STALL SPEEDS - POWER ON – (755 kg / CG 740 mm _ Aft)

Landing Configuration

Gear Down/Flap Pos.	Stall Speed IAS
Flap: 40° / 0° bank	65 Mph

Stall description

Prior to STALL there is a distinctive change of rudder response – the rudder are becoming very weak. **A VERY DISTINCTIVE buffeting is felt about 4 Kts prior to stall**

Cruise – Configuration (0° bank)

Gear Up / Flap position	Stall speed IAS
Flap: -10° / 0° bank	**75 Mph**

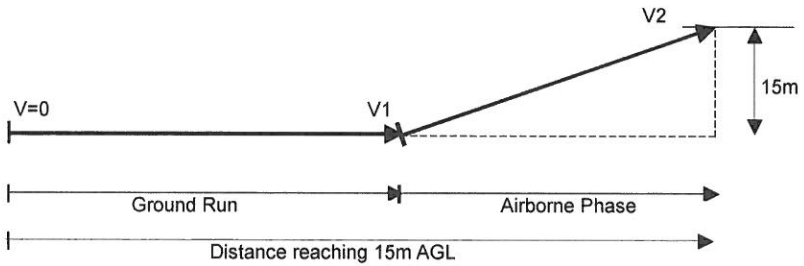
COACHEN

By all the Stall-Speed test flights in each above mentioned configuration the maximum altitude loss was 100 ft.

NOTE FOR TAKEOFF AND LANDING:

Due to very short propeller clearance, takeoff and landing are not recommended on grass runways.

TAKEOFF DISTANCE



Normal Take Off over 15 Meter Obstacle and Ground-Run

Performance –Data's

-Speed: V_1 70 Mph V_2 90 Mph

AIRCRAFT: LANCAIR 320 **REGISTRATION: HB-YFR**

TAKEOFF PERFORMANCE I

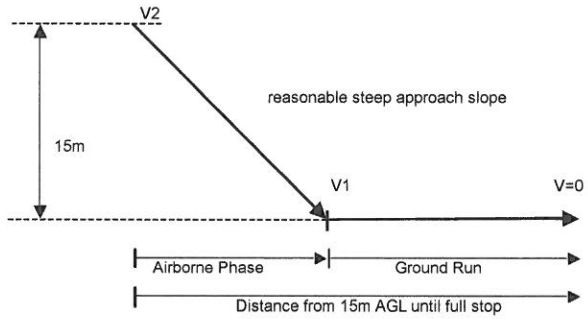
ROTATION SPEED IAS: **70 Mph** WEIGHT: **760 kg**

CLIMB SPEED IAS: **90 Mph** Apply full power then release brakes

Hard runway surface **2500 RPM**

Pressure Altitude	ISA +0 □C			ISA +10 □C			ISA +20 □C			ISA +30 □C			
	Ground Run	Airborne Phase		Ground Run	Airborne phase		Ground Run	Airborne phase		Ground Run	Airborne phase		
feets	m	m		m	m		m	m		m	m		
0	309	164		328	170		345	176		362	181		
2000	362	185		379	190		394	195		409	200		
4000	411	204		426	209		441	214		454	219		
6000	457	223		471	228		484	232		497	236		
8000	501	241		514	245		526	249		537	253		

LANDING DISTANCE



Normal Landing over 15 Meter Obstacle and Ground-Run

Performance –Data's

-Speed: V_2 88 Kts V_1 73 Kts

steep approach slope was approximately 5 degrees.

AIRCRAFT: LANCAIR 320 **REGISTRATION: HB-YFR**

LANDING PERFORMANCE

TOUCH-DOWN SPEED IAS: **77 Mph** WEIGHT: **760 kg**

SPEED OVER 15 m IAS: **90 Mph**

Hard runway surface

Pressure Altitude	ISA +0 □C		ISA +10 □C		ISA +20 □C		ISA +30 □C		ISA +40 □C	
	Ground Run	Distance over15 m obstacle	Ground Run	Distance over15 m obstacle	Ground Run	Distance over15 m obstacle	Ground Run	Distance over15 m obstacle	Ground Run	Distance over15 m obstacle
feets	m	m	m	m	m	m	m	m	m	m
0	263	381	284	411	303	439	321	466	338	490
2000	313	473	341	528	367	561	392	603	416	644
4000	373	582	409	645	443	707	477	768	509	828
6000	445	712	491	797	535	881	579	965	620	1048
8000	535	876	593	987	649	1098	705	1210	759	1323

RATE OF CLIMB

The rate of Climb is a function of gross weight, pressure altitude and outside air temperature. It assumes full power (leaned at higher altitudes), climb at 120Mph IAS, flaps and gear up. The climb rate values are the linearization result of the related test flight on June 6th 1994. Evaluation was done by OFAC flight data's evaluator on June 12th 1994.

Climb performance

Max-weight: 764 kg Flap -10° Vy: 120 Mph IAS
Full power RPM: 2500 Temp: ISA

Altitude [feet]	Temp [°C]	Climb rate [ft/min]	Time [min]
2'000	13.0	1111.3	1
3'100	13.0	1169.0	2
4'250	12.0	1121.2	3
5'350	10.0	917.4	4
6'250	8.0	971.3	5
7'200	8.0	972.8	6
8'150	5.0	868.3	7
9'000	3.0	891.1	8
9'870	3.0	912.6	9
10'760	0.0	862.1	10
11'600	0.0	802.4	11
12'380	-2.0	637.7	12
13'000	-3.0	567.1	13
13'550	-3.0	484.7	14
14'020	-5.0		15

Rate of climb at SL: 1338.9 ft/min

Climb performance table

HB-YFR 120 Mph Test fleight 6.6.94

Density Altitude	Rate of climb (ft/min)
0 ft	1340
4'000 ft	1140
8'000 ft	940
12'000 ft	740
16'000 ft	540
20'000 ft	330
24'000 ft	120

Letter from the FOCA, dated Nov. 5th 1996, concerning transition program.

3003 Bern, 5. November 1996

Herrn
R. Schumacher
Klosterweg 4
3902 Gils

Ref. Mf/275
Tel. (031) 325 97 40
Fax. (031) 325 80 51

HB-YFR

LANCAIR 320, HB-YFV

Sehr geehrter Herr Schumacher

Bundesamt für Zivilluftfahrt (BAZL)
Office fédéral de l'aviation civile (OFAC)
Ufficio federale dell'aviazione civile (UFAC)
Uffizi federal da l'aviaziun civila (UFAC)
Federal Office for Civil Aviation (FOCA)

Aufgrund durchgeführter Flugversuche mit dem Model LANCAIR 320 & 320 MkII möchten wir folgendes festhalten :

1. Statische Längsstabilität :
Die folgenden Ausführungen sind gültig für das Modell 32o mit dem original Leitwerk; in der Schweiz sind nur 2 Flugzeuge betroffen HB-YFV und HB-YFR (kleines Leitwerk).
Gemäss Flight Test Reports (siehe Beilage : KITPLANE Aug.1993 & July 1994) ist der Dämpfungseffekt des kleinen Leitwerks ungenügend. Die statische Längsstabilität in der Landekonfiguration ist neutral und negativ im Bereich der Stall-speed; dies kann PIO pilot induced oscylation begünstigen; Piloten mit ungenügender Erfahrung können mit diesem Flugverhalten Probleme haben.
Sollten andere Piloten auf Ihrem Flugzeug eingewiesen werden, müssten vorgängig die Anforderungen und ein Einweisungsprogramm festgelegt werden; das Programm wird vom BAZL definiert.
Grundsätzlich empfehlen wir die Modifikation "Leitwerksvergrösserung" (retro-fittable) gemäss NEICO (Modell 320 MkII) auszuführen.

2. Stall Speed 61 Kts Requirement :
Infolge der notwendigen Gewichtserhöhung des Flugzeugs HB-YFV von 764 kg auf 794 kg erwarten wir eine Erhöhung der Stall Speed Vso über die 61 kts Limite; zur weiteren Beurteilung möchten wir Sie bitten bei Vorliegen der Flugversuchsergebnisse uns die Daten zuzustellen (speed calibration & stall speeds).

Für weitere Fragen stehen wir Ihnen gerne zur Verfügung.

Mit freundlichen Grüssen
Bundesamt für Zivilluftfahrt
Sektion Musterzulassung
R. Meier

longitudinal stability
dropback effect

Kopie an:

- Herrn P.A. Walther, Eigerweg 7 3122 Kehrsatz (RSA)
- Mon. A. Borgeaud, Le Chatelard 1044 Fey; (HB-YFR)
- Flight test reports

FUEL CONSUMPTION

Test flight at 3000 ft, 27.3.1994 and 13.4.1994

At 75% power (23" MP 2450 RPM) : **33 l/h**

At 55% power (20" MP, 2300 RPM) : **28 l/h**