

GENERAL

The data approved by Lancair International and the limitations presented herein are those established by Lancair as applicable to the Lancair IV model aircraft.

The airspeeds quoted are given conventional nomenclature, are shown in knots, calibrated airspeed, and assumes zero instrument error.

NOTE: It is imperative that you calibrate your airspeed system (static and pitot) to provide the corrections to the values shown below in KCAS. There is instrument (gauge) error that needs to be factored in also to reach KIAS.

AIRCRAFT OPERATING SPEEDS

SPEED	MARKING	KCAS
Never exceed speed	Vne Red Line	274
Caution, smooth air only	Yellow Arc	220-274
Maneuvering Speed	Va	170
Normal Operating range	Vno Green Arc	69-220
Flap Operating range	0-10 Deg	174
Flap Operating range	Vfe White Arc	61-132
Best Angle of climb speed	Vx	110
Best Rate of climb speed	Vy	135
Stall Speed clean	Vs	69
Stall Speed landing config.	Vso	61
Landing Gear Operating speed	Vlo (down)	150
Landing Gear Operating speed	Vlo (up)	120
Landing Gear Extended speed	Vle	165
Max. demonstrated x-wind component		21

POWERPLANT LIMITATIONS

The Lancair is powered with a Walter 601 D two stage turbine engine rated at 724 horsepower.

OPERATING LIMITATIONS

Operating limitations for the Walter turbine engine are listed below. The data and limits shown are for new specification engines and do not reflect any degradation due to age or number and quality of overhauls.

Max continuous takeoff power for 5 minutes is 724 shp

Max continuous power is 657 shp

Max ITT 735 degrees C.

Cruise ITT 660 degrees C.

Max N1 101.55%

Max N2 2080

Max Torque 105%

Max Oil Temp 85 degrees C.

Min Oil Temp 20 degrees C.

Max Oil Temp During emergency power setting 95 degrees C.

Min. Start Voltage 20 V.

Oil Pressure Max PSI 51

Oil Pressure Min PSI 17

Fuel Flow .648 LB/ESHP/HR

Fuel Flow vs. Horsepower (See Spec. Sheets)

Fuel Pressure (Unmetered p.s.i.g.)

Idle (700 RPM)

Take-off

OIL SPECIFICATIONS

Oil used must conform to BP 2380 Turbine Oil or Shell Turbine 500 Oil.

POWERPLANT INSTRUMENT MARKINGS

It is recommended that the following markings be made on the engine instrument gauges to conform to convention.

NOTE: The owner/operator should compare and correct (where different) for the particular model specifications for his installation.

MISC. INSTRUMENT MARKINGS

VACUUM PRESSURE (IN. HG.)	4.8-5.2
---------------------------	---------

HYDRAULIC PRESSURE (PSI)

Normal System Pressure	1100
Accumulator Pre-Charge	600

WEIGHT LIMITS (LBS)

Maximum Take-Off Weight	3900
Maximum Landing Weight	3400
Maximum Baggage Weight	100

CENTER OF GRAVITY LIMITS (Gear Extended)

The allowable Center of Gravity (CG) range is from Fuselage Station (FS) to (FS) or 8.0 to 27.5% MAC.

AFT LIMIT

The aft CG limit is at FS 104.053 inches and must be considered a firm limit. Loads which place the CG further aft are dangerous and must not be accepted. A "Weight and Balance" sheet must be completed and carried in the aircraft at all times.

REFERENCE DATUM

The Datum is located at FS "0". This can be located by measuring 51.25" forward to the bottom forward face of the firewall.

MEAN AERODYNAMIC CHORD

The MAC corresponding to the CG limits of 104.053 and 112.053 are 8.0% and 27.5% respectfully.

FLIGHT LOAD FACTOR LIMITS

Flaps Up	+4.4 to -2.3 g's.
Flaps Down	+3.8 to -2.0 g's.

TIME OF OPERATIONS AND LIMITS

The Lancair IV is approved for the following types of flight when the required equipment is installed and operations are conducted as defined in the LIMITATIONS section.

- A. VFR, day and night
- B. IFR, day and night

WARNING: Flight operations with passengers for hire is prohibited.
Flight into known icing is prohibited.

FUEL QUANTITIES

Standard Fuel	126 US Gal.
Extended Fuel Option	156 US Gal.

The operator must be aware of an increase in the amount of unusable fuel and of CG shift.

FUEL MANAGEMENT

Do not take off with less than 20 gallons in each tank. There is no interconnection between the wing tanks.

SEATING

The aircraft accommodates 4 adult occupants. Fully functional controls allow the aircraft to be flown from either front seat.

WINTER OPERATIONS

Winter Operations are acceptable with proper oil grades for the operating temperatures. Engine pre-heating is recommended when the ambient temperature is below freezing.

Minimum Oil Temp. during Start	-12 degrees C (-19 degrees F)
--------------------------------	-------------------------------

NORMAL PROCEDURES

SECTION IV: TABLE OF CONTENTS

PREFLIGHT INSPECTION (CHECKLIST)	Page 37
BEFORE STARTING (CHECKLIST)	39
MANUAL START (CHECKLIST)	39
START (AUTO START) (CHECKLIST)	40
BEFORE TAKE-OFF (CHECKLIST)	40
PRIOR TO TAXIING (CHECKLIST)	41
ON RUNWAY (CHECKLIST)	41
TAKE-OFF AND CLIMB (CHECKLIST)	41
IN RANGE (DESCENT) (CHECKLIST)	42
PRE LANDING (CHECKLIST)	42
BALKED LANDING (CHECKLIST)	43
NORMAL LANDING (CHECKLIST)	43
POST LANDING (CHECKLIST)	43
SHUT DOWN (CHECKLIST)	43
HEATING AND VENTILATION	43B
COLD WEATHER OPERATIONS	44
ICING CONDITIONS	44
NOISE	44

PREFLIGHT INSPECTION

1. CABIN
 - A. Control Lock REMOVE
 - B. Gear Switch DOWN
 - C. Master Switch ON
 - D. Gear Position Lights 3 GREEN LIGHTS
 - E. Fuel Quantity Indicators CHECK QTY.
 - F. Flaps DOWN
 - G. Lights CHECK – night ops.
 - H. Master Switch OFF
 - I. Fuel Selector Valve RIGHT/FULLEST
 - J. Door Seal CHECK CONDITION

2. EMPENNAGE
 - A. Baggage Door LOCKED
 - B. Static Ports CLEAR
 - C. Tail Tie-Down DISCONNECT
 - D. Control Surfaces CHECK – freedom of movement and security

3. RIGHT WING TRAILING EDGE
 - A. Main Landing Gear Doors SECURE
 - B. Flap CHECK – movement and security
 - C. Aileron CHECK – freedom of movement and security
 - D. Position Lights CHECK – security and condition
 - E. Fuel Tank Vent CLEAR/NO obstructions

4. RIGHT WING
 - A. Wing Tie-Down DISCONNECT
 - B. Fuel Quantity CHECK VISUALLY – desired level
 - C. Fuel Filler Cap SECURE
 - D. Pitot Tube REMOVE COVER – check for obstructions

- E. Main Gear and Tire CHECK – proper inflation/general condition
 - F. Before first flight of the day and after each refueling, use sampler cup and drain small quantity of fuel from fuel tank sump quick-drain valve to check for water, sediment and proper fuel grade.
 - G. Nose Gear Doors SECURE
 - H. Nose Gear Wheel Well CHECK – general condition/leaks/security of retraction/extension system
5. NOSE
- A. Propeller and Spinner CHECK – nicks/security/oil leaks
 - B. Landing Lights CHECK – condition and Cleanliness
 - C. Air Inlets CHECK – for restrictions or other foreign matter
 - D. Nose Gear and Tire CHECK – proper inflation and security
 - E. Engine Oil Level CHECK
6. LEFT WING
- A. Main Gear and Tire CHECK – proper inflation/general condition
 - B. Before first flight of the day and after each refueling, use sampler cup and drain small quantity of fuel from fuel tank sump quick-drain valve to check for water, sediment and proper fuel grade.
 - C. Fuel Quantity CHECK VISUALLY – desired level
 - D. Fuel Filler Cap SECURE
 - E. Wing Tie-Down DISCONNECT
 - F. Position Lights CHECK – security and condition
 - G. Fuel Tank Vent CLEAR/NO obstructions

7. LEFT WING TRAILING EDGE

A. Aileron

CHECK – freedom of
movement and security

B. Trim Tab

CHECK – attachment
and security

C. Flap

CHECK – movement
and security

D. Main Landing Gear Door

SECURE

BEFORE STARTING

1. ATIS

OBTAIN

2. Seats, Belts, Shoulder Harnesses

SECURE

3. Passenger Briefing

CHECK

4. Fuel Selector

BOTH/FULLEST TANK

5. Radio Masters

OFF

6. Brakes

TEST

7. Circuit Breakers

CHECK

8. Door

LATCHED

9. Master On

GEAR LIGHTS

MANUAL START

1. Power ON

2. Inverter ON if necessary

3. Fuel Selector ON

4. Fuel Pump/Pumps ON

5. Condition Lever in OFF position

6. Prop in FEATHER position

7. Throttle in IDLE position

8. ISOL Valve ON (Emergency Throttle System)

9. Press START

10. Monitor N1 (Compressor RPM). When N1 reaches 16/18%, feed fuel in by forwarding Condition Lever. It could be necessary to forward almost to the IDENT position to light. Once the turbine has lit, reduce fuel by pulling the Condition Lever towards SHUT OFF position, not to exceed 620/680 degrees C. Keep adding fuel by forwarding the Condition Lever until such time as N1 reaches 60/63%.

11. At 60/63% (N1), make sure the Throttle is in IDLE position and switch ISOL OFF (Normal Position).
12. Monitor Oil Pressure, Fuel Pressure, ITT, N1 and Torque.
13. Generator ON
14. Forward Prop Lever to FULL FINE PITCH

START (AUTO START)

1. Power ON
2. Inverter ON (if necessary)
3. Fuel Selector ON
4. Fuel Pump/Pumps ON
5. Condition Lever FORWARD TO DETENT
6. Propeller in FEATHER position
7. Throttle in IDLE position
8. Press START. Best to keep hand on Condition Lever in case of overtemp.
9. Carefully monitor the ITT for increasing temperature. Do not exceed 710 degrees C. Rate of increase is important. If overtemp occurs, pull Condition Lever to SHUT OFF position.
10. Make sure N1 (Compressor RPM) increases to at least 60%. If not, forward Throttle slightly and monitor ITT
11. After N1 and ITT stabilize, switch Generator ON
12. Check Oil and Fuel Pressure
13. Forward Prop to FULL FINE Pitch

STARTING

NOTE: After starting, check for oil pressure indication within 30 seconds in normal temperatures and 60 seconds in cold temperatures. If no indication appears, shut off engine and investigate.

BEFORE TAKE-OFF

- | | |
|-----------------------------------|------------------------------------|
| 1. Cabin Door | CLOSED/LOCKED
AND SEAL INFLATED |
| 2. Flight Controls | FREE/CORRECT |
| 3. Elevator, Aileron, Rudder Trim | TAKE-OFF SETTINGS |
| 4. Flight Instruments | SET |
| 5. Radios | SET |
| 6. Autopilot | TEST, then STAND BY
OR OFF |

7. Fuel Selector Valve
8. Strobe Lights
9. Transponder
10. Throttle Friction Lock
11. Wing Flaps

RIGHT/FULLEST
TANK
ON as required
ON/ALT.
ADJUST
SET 10 Degrees

PRIOR TO TAXIING

1. Set trims
2. Set DG Heading
3. VOT Test
4. COM 1 & 2
5. Transponder Code
6. DG and Compass
7. Set Wing Flaps

CHECK
CHECK
CHECK
SET
CHECK
Correspond
10 Degrees

ON RUNWAY

1. Time
2. Landing Lights
3. PITOT Heat
4. Prop Heat
5. Heading

RECORD
ON
ON
CHECK
SAME AS RUNWAY

TAKEOFF AND CLIMB

1. NORMAL TAKE-OFF
 - A. Wing Flaps
 - B. Power
 - C. Brakes
 - D. Elevator Control
 - E. Wing Flaps
 - F. Climb Speed
 - G. Gear Up

10 Degrees
FULL THROTTLE
MAX 5 MINUTES
RELEASE at 75%
ROTATE at 80 KIAS
RETRACT slowly after
reaching 100 KIAS
110 KIAS until all
obstacles are cleared VX
120 KIAS Gear Lights
3 YELLOW

2. **NORMAL CLIMB**

A. Airspeed

B. Power

C. Fuel Selector Valve

KIAS 165

REDUCE power to
MAX CONTINUOUS
OR LESS

BOTH

3. **CRUISE**

A. Power

B. Elevator and Rudder Trim

HT 660 degrees C
ADJUST

IN RANGE (DESCENT)

1. Power

2. Prop to Fine Pitch

3. Wing Flaps

AS DESIRED

AS DESIRED

AS DESIRED

(0-10 degrees below 174
KIAS, 10-40 degrees
below 132 KIAS)

4. Approach Plates

5. OAT

6. ATIS

7. PITOT Heat

8. Prop

9. Windshield

10. Fuel Selector

11. DG and Compass

12. Seat Belts

13. Missed Approach

14. Landing Lights

Review

Ice?

OBTAIN

IF NECESSARY

IF NECESSARY

IF NECESSARY

BOTH/FULLEST TANK

CORRESPOND

CHECK

REVIEW

ON (BOTH)

PRE LANDING

1. Seats, Belts, Shoulder Harnesses

2. Fuel Selector

3. Reduce Speed

4. Gear Down

5. Airspeed

SECURE

BOTH/FULLEST TANK

AS/ATC

3 GREEN LIGHTS

(BELOW 150 KIAS)

120 KIAS (FLAPS UP)

6. Wing Flaps

0-40 degrees below 132

KIAS

7. Set Trims

AS REQUIRED

8. *Camp*

BALKED LANDING

1. Power

AS REQUIRED

2. Wing Flaps

RETRACT to 20 degrees

3. Gear

RETRACT after positive
rate of climb

4. Airspeed

110 KIAS VX

5. Wing Flaps

RETRACT slowly.

NORMAL LANDING

1. Touchdown

MAIN WHEELS FIRST

2. Landing Roll

LOWER NOSE WHEEL
SLOWLY

3. BETA

MAX 1900 RPM

4. Braking

AS REQUIRED

POST LANDING

1. Wing Flaps

UP

2. Transponder

AUTOMATIC

3. Strobes

OFF

4. PITOT Heat

OFF

5. Prop Heat

OFF

6. Landing Lights

OFF (BOTH)

SHUT DOWN

1. Radios 121.5

CHECK

2. Avionics Masters

OFF

3. Throttle

IDLE

4. Propeller

FEATHER FOR 1 MIN.

5. Condition Lever

SHUT OFF POSITION

6. Battery #2 Switch

OFF

7. Fuel Pump

OFF

8. Generator

OFF

9. Master Switch

OFF

10. *FUEL SELECTOR*

OFF.