

King Air C90B | Limitations

TRAINING REFERENCE ONLY — NOT A SUBSTITUTE FOR THE AFM

This document is a training summary compiled from the aircraft's POH/AFM. In any conflict, the FAA Approved Airplane Flight Manual for the specific airplane, including all applicable Temporary Changes and Supplements, is the governing authority. Verify limitations against the AFM for the serial number being flown.

Source: Beechcraft King Air C90B (Model C90A) Pilot's Operating Handbook and FAA Approved Airplane Flight Manual, P/N 90-590024-35B — Section II, Limitations (pages 2-3 through 2-21), including Temporary Changes 90-590024-35BTC2 (Power Levers / Beta Range) and 90-590024-35BTC3 (Rate of Sink).

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1. AIRSPEED

AIRSPEED LIMITATIONS

POH 2-3

The limitations included in this section have been approved by the Federal Aviation Administration and they must be observed in the operation of the BEECHCRAFT King Air C90A.

SPEED	KCAS	KIAS	REMARKS
Maximum Operating Speed Vmo	226	226	Do not exceed this airspeed in any operation.
Maximum Operating Speed Mmo	.46 Mach	.46 Mach	Do not exceed this airspeed in any operation.
Maneuvering Speed Va	169	169	Do not make full or abrupt control movements above this speed.
Maximum Flap Extension/Extended Speed Vfe — Approach	182	184	Do not extend flaps or operate with flaps extended above these speeds.
Maximum Flap Extension/Extended Speed Vfe — Down	140	148	Do not extend flaps or operate with flaps extended above these speeds.
Maximum Landing Gear Operating Speed Vlo — Extension	182	182	Do not extend or retract the landing gear above these speeds.
Maximum Landing Gear Operating Speed Vlo — Retraction	164	163	Do not extend or retract the landing gear above these speeds.
Maximum Landing Gear Extended Speed Vle	182	182	Do not exceed this speed with the landing gear extended.
Air Minimum Control Speed Vmca	82	80	This is the lowest speed at which the airplane is directionally controllable after sudden loss of engine when the remaining engine is at take-off power.

NOTE

Mmo .46 Mach is printed as a single value spanning the KCAS and KIAS columns.

MARKING	KCAS VALUE OR RANGE	KIAS VALUE OR RANGE	SIGNIFICANCE
Red Radial	82	80	Air Minimum Control Speed (V_{mca}).
White Arc	76 to 140	78 to 148	Full-flap Operating Range.
Wide White Arc	76 to 88	78 to 88	Lower Limit is the Stalling Speed (V_{so}) at maximum weight with Flaps Down and idle power.
Narrow White Arc	88 to 140	88 to 148	Lower Limit is the Stalling Speed (V_s) at maximum weight with Flaps Up and idle power. Upper Limit is the maximum speed permissible with flaps extended beyond Approach.
White Triangle	182	184	Maximum Speed with Approach Flaps.
Blue Radial	110	108	One Engine Inoperative Best Rate-Of-Climb Speed.
Red and White Hash-marked Pointer	226 KCAS (226 KIAS) or value equal to .46 Mach, whichever is Lower**	226 KCAS (226 KIAS) or value equal to .46 Mach, whichever is Lower**	Maximum Speed for any operation.

*The Airspeed Indicator is marked in IAS values.

**Airspeed is not to exceed the Red and White Hash-marked Pointer.

NOTE

The Red and White Hash-marked Pointer value is printed once, spanning both the KCAS and KIAS columns.

2. POWER PLANT

POWER PLANT LIMITATIONS

POH 2-4

NUMBER OF ENGINES	2
ENGINE MANUFACTURER	Pratt & Whitney Canada (Longueuil, Quebec, Canada)
ENGINE MODEL NUMBER	PT6A-21
POWER LEVERS	Do not lift power levers in flight.

POWER PLANT LIMITATIONS — POWER LEVERS (TEMPORARY CHANGE)

TEMPORARY CHANGE

POH 1 of 2

Applicability: BEECH KING AIR® C90B (MODEL C90A) TEMPORARY CHANGE TO THE PILOT'S OPERATING HANDBOOK AND FAA APPROVED AIRPLANE FLIGHT MANUAL, P/N 90-590024-35BTC2, August 22, 1997. PUBLICATION AFFECTED: King Air C90B Pilot's Operating Handbook and FAA Approved Airplane Flight Manual P/N 90-590024-35B, Reissued July, 1993 or Subsequent. AIRPLANE SERIAL NUMBERS AFFECTED: LJ-1288, LJ-1295, LJ-1302, LJ-1303, LJ-1305 thru LJ-1308, LJ-1311, LJ-1312, LJ-1314 thru LJ-1316, LJ-1318 and LJ-1320 thru LJ-1352.

PUBLICATION AFFECTED	King Air C90B Pilot's Operating Handbook and FAA Approved Airplane Flight Manual P/N 90-590024-35B, Reissued July, 1993 or Subsequent
AIRPLANE SERIAL NUMBERS AFFECTED	LJ-1288, LJ-1295, LJ-1302, LJ-1303, LJ-1305 thru LJ-1308, LJ-1311, LJ-1312, LJ-1314 thru LJ-1316, LJ-1318 and LJ-1320 thru LJ-1352
DESCRIPTION OF CHANGE	Provides a Limitation prohibiting the selection of Beta Range in flight.
FILING INSTRUCTIONS	Insert this Temporary Change into the C90B Pilot's Operating Handbook and FAA Approved Airplane Flight Manual following page 2-4 (LIMITATIONS Section), and retain until rescinded or replaced.

Do not lift the power levers in flight. Lifting the power levers in flight, or moving the power levers in flight below the flight idle position, could result in a nose-down pitch and a descent rate leading to aircraft damage and injury to personnel.

APPROVED BY: [signature] A. C. Jackson, Raytheon Aircraft Company, DOA CE-2

ENGINE OPERATING LIMITS

POH 2-5

The following limitations shall be observed. Each column presents limitations. The limits presented do not necessarily occur simultaneously. Refer to Pratt & Whitney Engine Maintenance Manual for specific actions required if limits are exceeded.

OPERATING CONDITION	SHP	TORQUE FT-LBS (1)	MAXIMUM OBSERVED ITT°C	GAS GENERATOR RPM N1 — RPM	GAS GENERATOR RPM N1 — %	PROP RPM N2	OIL PRESS PSI (2)	OIL TEMP °C (3)
STARTING	—	—	1090 (4)	—	—	—	—	-40 (min)
LOW IDLE	—	—	660 (5)	—	58 (min)	1100 (min)	40 (min)	-40 to 99
HIGH IDLE	—	—	—	—	70 (approx)	—	—	0 to 99
TAKEOFF AND MAX CONT	550	1315	695	38,100	101.5	2200	80 to 100	10 to 99
CRUISE CLIMB AND MAX CRUISE	538	1315 (6)	695	38,100	101.5	2200	80 to 100	0 to 99
MAX REVERSE (7)	—	—	695	—	88	2100	80 to 100	0 to 99
TRANSIENT	—	1500 (4)	825 (4)(8)	38,500	102.6	2420	—	0 to 99

(1) Maximum permissible sustained torque is 1315 ft-lbs. Propeller speeds (N2) must be set so as not to exceed power limitation.

(2) When gas generator speeds are above 72% N1 and oil temperatures are between 60°C and 70°C, normal oil pressure is between 80 and 100 psi. Oil pressure between 40 and 80 psi is undesirable; it should be tolerated only for the completion of the flight, and then only at a reduced power setting. Oil pressure below 40 psi is unsafe; it requires that either the engine be shut down, or that a landing be made as soon as possible, using the minimum power required to sustain flight.

(3) For increased service life of engine oil, an oil temperature of between 74° to 80°C is recommended. A minimum oil temperature of 55°C is recommended for fuel heater operation at take-off power.

(4) These values are time-limited to two seconds.

(5) High ITT at ground idle may be corrected by reducing accessory load and/or increasing N1 rpm.

(6) Cruise torque values vary with altitude and temperature.

(7) Reverse power operation is limited to one minute.

(8) High generator loads at low N1 speeds may cause the ITT transient temperature limit to be exceeded. Observe generator load limits.

EXTERNAL POWER LIMITS

POH 2-6

External power carts will be set to 28.0 - 28.4 volts and be capable of generating a minimum of 1000 amperes momentarily and 300 amps continuously.

GENERATOR LIMITS

POH 2-6

The In-Flight Limits are: 100% GENERATOR LOAD and a MINIMUM N1 of 85%

During ground operation, observe the following limitations:

GENERATOR LOAD	MINIMUM N1
0 to 50%	59%
50 to 80%	61%
80 to 85%	70%

PROPELLERS

POH 2-8

NUMBER OF PROPELLERS	2
PROPELLER MANUFACTURER	McCauley Propeller (Vandalia, Ohio)

PROPELLER HUB AND BLADE MODEL NUMBERS: Two full-feathering, constant-speed, reversing, four-bladed propellers consisting of 94LMA-4 blades and 4HFR34C768 hubs.

PROPELLER DIAMETER — Maximum Diameter	90 inches (228.5 centimeters)
PROPELLER DIAMETER — Minimum Diameter	89 inches (226 centimeters)
PROPELLER BLADE ANGLES AT 30-INCH STATION — Reverse	-10.0° ± 0.2°
PROPELLER BLADE ANGLES AT 30-INCH STATION — Feathered	85.8° ± 0.2°
PROPELLER ROTATIONAL SPEED LIMITS — Transients not exceeding 5 seconds	2420 rpm
PROPELLER ROTATIONAL SPEED LIMITS — Reverse	2100 rpm
PROPELLER ROTATIONAL SPEED LIMITS — All other conditions	2200 rpm

PROPELLER ROTATIONAL OVERSPEED LIMITS: The maximum propeller overspeed limit is 2420 rpm and is time-limited to five seconds. Sustained propeller overspeeds faster than 2200 rpm indicate failure of the primary governor. Sustained propeller overspeeds faster than 2288 rpm indicate failure of both the primary governor and the overspeed governor.

POWER PLANT INSTRUMENT MARKINGS

POH 2-9

INSTRUMENT	Red (Radial) Line MINIMUM LIMIT	Green Arc NORMAL OPERATING	Red (Radial) Line MAXIMUM LIMIT
INTERSTAGE TURBINE TEMPERATURE	---	400° to 695°	* 695°C
TORQUEMETER	---	---	1315 ft-lbs
PROPELLER TACHOMETER	---	1800 to 2200 RPM	2200 RPM
GAS GENERATOR TACHOMETER	---	---	101.5%
OIL TEMPERATURE	---	10° to 99°C	99°C
OIL PRESSURE	40 psi	80 to 100 psi	100 psi

* Starting Limit (Dashed Red Radial): 1090°C

3. FUEL

FUEL LIMITS — MINIMUM TEMPERATURE LIMITS

POH 2-6

Engine oil is used to heat the fuel on entering the fuel control. Since no temperature measurement is available for the fuel at this point, it must be assumed to be the same as the OAT. Operations with Commercial Grade fuels are prohibited below the OAT indicated below unless approved anti-icing fuel additives are used. Military Grade fuels have anti-icing additives blended in the fuel at the refinery, and no further treatment is necessary. Operations with Military Grade fuels below the temperatures indicated are prohibited.

COMMERCIAL GRADES	MILITARY GRADES
Jet A: -40°C	JP-4: -58°C
Jet A-1: -47°C	JP-5: -46°C
Jet B: -50°C	JP-8: -50°C

APPROVED ENGINE FUELS

POH 2-6

COMMERCIAL GRADES	Jet A
COMMERCIAL GRADES	Jet A-1
COMMERCIAL GRADES	Jet B
MILITARY GRADES	JP-4
MILITARY GRADES	JP-5
MILITARY GRADES	JP-8

EMERGENCY ENGINE FUELS

POH 2-6

COMMERCIAL AVIATION GASOLINE GRADES	80 Red (Formerly 80/87)
COMMERCIAL AVIATION GASOLINE GRADES	100LL Blue*
COMMERCIAL AVIATION GASOLINE GRADES	100 Green (Formerly 100/130)
MILITARY AVIATION GASOLINE GRADES	80/87 Red
MILITARY AVIATION GASOLINE GRADES	100/130 Green
MILITARY AVIATION GASOLINE GRADES	115/145 Purple

*In some countries, this fuel is colored Green and designated "100L".

USE OF AVIATION GASOLINE

POH 2-6

1. Operation is limited to 150 hours between engine overhauls.
2. Operation is limited to 8000 feet pressure altitude or below with boost pumps inoperative.
3. Crossfeed capability is required for climbs above 8000 feet pressure altitude.

Use anti-icing additive conforming to Specification MIL-1-27686. Refer to Section IV, NORMAL PROCEDURES, for blending procedures.

CAUTION

Prior to refueling, check with the fuel supplier to determine whether or not anti-icing additive has already been added to the fuel. If anti-icing additive is required, it must be properly blended with the fuel to avoid deterioration of the fuel cell sealant. The additive concentration by volume shall be a minimum of 0.06% and a maximum of 0.15%. To assure proper concentration by volume of fuel on board, blend only enough additive for the unblended fuel.

FUEL BIOCIDES ADDITIVE

POH 2-7

Fuel biocide-fungicide "BIOBOR JF" in concentrations of 135 ppm or 270 ppm may be used in the fuel. BIOBOR JF may be used as the only fuel additive or it may be used with the anti-icing additive conforming to MIL-I-27686 specification. Used together the additives have no detrimental effect on the fuel system components.

Refer to the King Air 90 Series Maintenance Manual and the latest revision of Pratt & Whitney Service Bulletin No. 1244 for concentrations to use and for procedures, recommendations and limitations pertaining to the use of biocidal/fungicidal additives in turbine fuels.

FUEL MANAGEMENT — USABLE FUEL

POH 2-7

(GALLONS X 6.7 = POUNDS)

1. Total Usable Fuel Quantity	384 gal (1453 L), 2573 lbs
a. Each Side	192 gal (727 L), 1286.5 lbs
1) Each Wing Tank System	132 gal (500 L), 884.5 lbs
2) Each Nacelle Tank	60 gal (227 L), 402 lbs

FUEL IMBALANCE

POH 2-7

Maximum allowable fuel imbalance between wing fuel systems is 200 pounds.

FUEL CROSSFEED

POH 2-7

Crossfeeding of fuel is permitted only in the event of:

1. Electric boost pump failure, or
2. Engine failure

FUEL GAGES IN THE YELLOW ARC

POH 2-7

Do not take-off if fuel quantity gages indicate in the yellow arc or indicate less than 265 pounds of fuel in each wing system.

OPERATING WITH LOW FUEL PRESSURE

POH 2-7

Operation of either engine with its corresponding fuel pressure annunciator (L FUEL PRESS or R FUEL PRESS) illuminated is limited to 10 hours before overhaul or replacement of the engine-driven fuel pump. Windmilling time need not be charged against this time limit.

BOOST PUMPS

POH 2-8

Both boost pumps must be operational prior to takeoff.

4. OIL

OIL SPECIFICATION

POH 2-8

Any oil called out by brand name in the latest revision of Pratt & Whitney Service Bulletin Number 1001 is approved for use in the PT6A-21 engine.

APPROVED ENGINE OILS	7.5 Centistoke Turbine Engine Oils
APPROVED ENGINE OILS	5 Centistoke Turbine Engine Oils

5. INSTRUMENT MARKINGS

MISCELLANEOUS INSTRUMENT MARKINGS

POH 2-9

FUEL QUANTITY INDICATORS — Yellow Arc (No-takeoff Range)	0 to 265 lbs
CABIN DIFFERENTIAL PRESSURE GAGE — Green Arc (Approved Operating Range)	0 to 5.0 psi
CABIN DIFFERENTIAL PRESSURE GAGE — Red Arc (Unapproved Operating Range)	above 5.0 psi to end of scale
PNEUMATIC PRESSURE GAGE — Green Arc (Normal Operating Range)	12 to 20 psi
PNEUMATIC PRESSURE GAGE — Red line (Maximum Operating Limit)	20 psi
PROPELLER DEICE AMMETER — Green Arc (Operating Range)	18 to 24 amps
GYRO SUCTION GAGE — Narrow Green Arc (Normal from 35,000 to 15,000 feet)	2.8 to 4.3 in. Hg
GYRO SUCTION GAGE — Wide Green Arc (Normal from 15,000 feet to Sea Level)	4.3 to 5.9 in. Hg
GYRO SUCTION GAGE — 35K marked on the face of gage at	3.0 in. Hg
GYRO SUCTION GAGE — 15K marked on the face of gage at	4.3 in. Hg

6. WEIGHT AND BALANCE

WEIGHT LIMITS

POH 2-9

Maximum Ramp Weight	10,160 lbs (4608 kg)
Maximum Take-off Weight	10,100 lbs (4581 kg)
Maximum Landing Weight	9600 lbs (4354 kg)
Maximum Zero Fuel Weight	No Structural Limitation
Maximum Rear Baggage Compartment Load	350 lbs (158 kg)
Maximum Nose Avionics/Baggage Compartment Load	350 lbs (158 kg)

CENTER OF GRAVITY LIMITS (LANDING GEAR EXTENDED)

POH 2-9

AFT LIMIT: 160.0 inches aft of datum at all weights.

FORWARD LIMITS	152.0 inches aft of datum at 10,100 lbs (4581 kg)
FORWARD LIMITS	150.6 inches aft of datum at 9600 lbs (4354 kg)
FORWARD LIMITS	144.7 inches aft of datum at 7850 lbs (3560 kg) or less

DATUM

POH 2-10

The reference datum is located 83.5 inches (212 centimeters) forward of the center of the nose jack point.

MEAN AERODYNAMIC CHORD (MAC)

POH 2-10

The leading edge of the MAC is 135.9 inches (345.2 centimeters) aft of datum.

The MAC length is 75.9 inches (193 centimeters).

7. FLIGHT AND OPERATING LIMITS

MANEUVER LIMITS

POH 2-10

This is a normal category airplane. Acrobatic maneuvers, including spins, are prohibited.

FLIGHT LOAD FACTOR LIMITS (10,100 POUNDS / 4581 KILOGRAMS)

POH 2-10

FLAPS UP	FLAPS DOWN
3.29 positive g's	2.00 positive g's
1.33 negative g's	0.00 g

MINIMUM FLIGHT CREW

POH 2-10

Minimum Flight Crew	One Pilot
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MAXIMUM OPERATING PRESSURE-ALTITUDE LIMIT

POH 2-10

Maximum Operating Pressure-Altitude Limit	30,000 feet
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MAXIMUM OUTSIDE AIR TEMPERATURE LIMIT

POH 2-10

Maximum Outside Air Temperature Limit	ISA +37°C
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CABIN PRESSURIZATION AND STRUCTURAL LIMITATION

POH 2-10

Maximum Cabin Differential Pressure	5.1 psi
Fuselage Pressure Vessel Structure	Inspections in Chapters 5 and 53-10-00 of the Beech King Air 90 Series Maintenance Manual are required for continued airworthiness.

LANDING GEAR LIMITATIONS

POH 2-10

Landing gear cycles (1 up - 1 down) are limited to one every 3 minutes for a total of 10 cycles, followed by a 15-minute cool-down period.

MAXIMUM OCCUPANCY LIMIT

POH 2-10

Maximum Occupancy Limit	13 including crew
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STARTER OPERATING TIME LIMIT

POH 2-10

Use of the starter is limited to 40 seconds ON, 60 seconds OFF, 40 seconds ON, 60 seconds OFF, 40 seconds ON, then 30 minutes OFF.

LIMITATIONS — CABIN PRESSURIZATION AND STRUCTURAL LIMITATION

(Temporary Change) **TEMPORARY CHANGE**

POH Temporary Change, filed following page 2-10

Applicability: Beech King Air C90B (Model C90A) Temporary Change to the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual, P/N 90-590024-35BTC3, dated October 20, 1999. PUBLICATION AFFECTED: Beech King Air C90B Pilot's Operating Handbook and FAA Approved Airplane Flight Manual, P/N 90-590024-35B, Dated September, 1998, or later revision. AIRPLANE SERIAL NUMBERS AFFECTED: LJ-1288, LJ-1295, LJ-1302, LJ-1303, LJ-1305 thru LJ-1308, LJ-1311, LJ-1312, LJ-1314 thru LJ-1316, LJ-1318 and LJ-1320 thru LJ-1352

DESCRIPTION OF CHANGE: Limits the maximum rate-of-sink at touchdown to 500 feet per minute.

FILING INSTRUCTIONS: Insert this Temporary Change into the Beech King Air C90A Pilot's Operating Handbook and FAA Approved Airplane Flight Manual following page 2-10 (LIMITATIONS Section), and retain until rescinded or replaced.

Maximum Rate-of-Sink at Touchdown	500 FEET PER MINUTE
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FAA Approved by: A.C. Jackson, Raytheon Aircraft Company, DOA CE-2

8. ICE AND RAIN PROTECTION

ICING LIMITATIONS

POH 2-10A

Minimum Airspeed (KIAS) for Sustained Icing Flight	140 knots
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Sustained flight in icing conditions with flaps extended is prohibited except for approach and landings.

Minimum Temperature for Operation of Deicing Boots	-40°C
Temperature requiring Engine Anti-ice, if conditions free of visible moisture cannot be assured	+5°C or lower

SAE AMS 1424 Type I

ISO 11075 Type I

SAE AMS 1428 Type II

ISO 11078 Type II

SAE AMS 1428 Type IV. Only the following type IV fluids are approved:

Clariant Safewing MP IV 1957

Clariant Safewing MP IV 2001

UCAR ULTRA+ (Approved for use down to -15°C)

Octagon Max Flight Type IV

LIMITATIONS WHEN ENCOUNTERING SEVERE ICING CONDITIONS (Required By FAA AD 98-04-24)

POH 2-10A

WARNING

Severe icing may result from environmental conditions outside of those for which the airplane is certificated. Flight in freezing rain, freezing drizzle, or mixed icing conditions (supercooled liquid water and ice crystals) may result in ice build-up on protected surfaces exceeding the capability of the ice protection system, or may result in ice forming aft of the protected surfaces. This ice may not be shed using the ice protection systems, and may seriously degrade the performance and controllability of the airplane.

1. During flight, severe icing conditions that exceed those for which the airplane is certificated shall be determined by the following visual cues. If one or more of these visual cues exists, immediately request priority handling from Air Traffic Control to facilitate a route or an altitude change to exit the icing conditions.
 - a. Unusually extensive ice accreted on the airframe in areas not normally observed to collect ice.
 - b. Accumulation of ice on the upper surface of the wing aft of the protected area.
 - c. Accumulation of ice on the propeller spinner farther aft than normally observed.
2. Since the autopilot may mask tactile cues that indicate adverse changes in handling characteristics, use of the autopilot is prohibited when any of the visual cues specified above exist, or when unusual lateral trim requirements or autopilot trim warnings are encountered while the airplane is in icing conditions.
3. All icing detection lights must be operative prior to flight into icing conditions at night. [NOTE: This supersedes any relief provided by the Master Minimum Equipment List (MMEL).]

9. WINDSHIELD AND WINDOWS

CRACKED OR SHATTERED WINDSHIELD

POH 2-10B

The following limitations apply when continued flight is required with a cracked outer or inner ply of the windshield.

1. Continued flight with a cracked windshield is limited to 25 flight hours.
2. Windshields which have a shattered inner ply will have numerous cracks which will obstruct forward vision and may produce small particles or flakes of glass that can break free of the windshield and interfere with the crew's vision. These windshields must be replaced prior to the next flight unless a special flight permit is obtained from the local FAA Flight Standards District Office.
3. Crack(s) must not impair visibility.
4. Crack(s) must not interfere with the use of windshield wipers for flights requiring the use of the wipers.
5. Windshield Anti-ice must be operational for flights in icing conditions.
6. The following placard must be installed in plain view of the pilot:

MAXIMUM AIRPLANE ALTITUDE IS LIMITED TO 25,000 FEET. CABIN ΔP MUST BE MAINTAINED BETWEEN 2.0 AND 4.6 PSI DURING FLIGHT

Windshields that have cracks in both the inner and outer plies must be replaced prior to the next flight unless a special flight permit is obtained from the local FAA Flight Standards District Office.

The following limitations apply when continued flight is required with a cracked outer or inner ply in any dual pane side window or a crack in any single pane side window. These limitations do not apply to minor compression-type chips (Clamshell) which may occur on the milled edge of cockpit side windows. Refer to the maintenance manual for the disposition of such chips.

1. Continued flight is limited to 25 flight hours.
2. Flights must be conducted with the cabin depressurized. The following placard must be installed in clear view of the pilot:

PRESSURIZED FLIGHT IS PROHIBITED DUE TO A CRACKED SIDE WINDOW. CONDUCT FLIGHT WITH THE CABIN PRESSURE SWITCH IN THE DUMP POSITION.

10. PLACARDS

PLACARDS

POH 2-11

On Overhead Panel in Pilot's Compartment:

OPERATION LIMITATIONS — THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS MARKINGS AND MANUALS. NO ACROBATIC MANEUVERS INCLUDING SPINS ARE APPROVED. THIS AIRPLANE APPROVED FOR VFR IFR DAY & NIGHT OPERATION

CAUTION

STALL WARNING IS INOPERATIVE WHEN MASTER SWITCH IS OFF. STANDBY COMPASS IS ERRATIC WHEN WINDSHIELD ANTI-ICE AND/OR AIR-CONDITIONER AND/OR ELECTRIC HEAT IS ON.

(Placard number C93LJ02C0230 C)

On Left Sidepanel Below Fuel Panel:

MAX AIRSPEEDS KNOTS

Item	Knots
GEAR EXTENSION	182
GEAR RETRACT	163
GEAR EXTENDED	182
APPROACH FLAP	184
FULL DOWN FLAP	148
MANEUVERING	169

(Placard number C93LJ02C0231 C)

Aft of Overhead Light Panel:

OXYGEN PULL-ON

(Placard number C93LJ02C0233 C)

On Pilot's and copilot's Window Sills:

WARNING

DO NOT SMOKE WHILE OXYGEN IS IN USE. WITH DILUTER-DEMAND CREW MASK FLOW STOPS WHEN BREATHING STOPS.

(Placard number C9200605 C)

On Pilot's Side Window Sill When Strobe Lights Are Installed:

TURN OFF STROBE LIGHTS WHEN TAXIING IN VICINITY OF OTHER AIRCRAFT OR DURING FLIGHT THROUGH FOG OR CLOUDS. STD POSITION LIGHTS TO BE TURNED ON FOR ALL NIGHT OPERATIONS.

(Placard number C9200604 C)

On Instrument Panel Adjacent to Each Gyroscopic Instrument (Except for Flight Director) Depending on Gyro's Power Source: (Omitted When Power Source is Indicated On Instrument Face:

AIR AC DC

(Placard number C9200608 C)

On Curved Pedestal Adjacent to Power Levers:

CAUTION

REVERSE ONLY WITH ENGINES RUNNING

(Placard number C9200607 C)

On Pedestal Adjacent to Cabin Pressurization Controller:

WARNING

DE-PRESSURIZE CABIN BEFORE LANDING

(Placard number C9200609 C)

On Floor Between Pilot's Seats:

LANDING GEAR ALTERNATE EXTENSION — 1. REMOVE HANDLE FROM SECURING CLIP AND PUMP. 2. AFTER ALL THREE GREEN INDICATOR LIGHTS ARE ILLUMINATED AND FURTHER RESISTANCE IS FELT, SECURE HANDLE IN STOWED POSITION.

(Placard number C9200610 C)

PLACARDS (continued)

On Right Sidepanel:

PILOT'S STATIC AIR SOURCE — NORMAL ALTERNATE — WARNING — SEE FLIGHT MANUAL PERFORMANCE SECTION FOR INSTR CAL ERROR

(Placard number C93LJ02C0232 C)

On Outside of Each Oxygen Access Door, When Optional Oxygen System is Installed:

OXYGEN-PUSH

(Placard number C93LJ02C0235 C)

On Inside Surface of Each Oxygen Access Door, When Optional Oxygen System is Installed:

WARNING

WARNING — DO NOT SMOKE WHILE OXYGEN IS IN USE — HOSE PLUG MUST BE DISCONNECTED TO STOP FLOW OF OXYGEN

(Placard number C93LJ02C0466 C)

Adjacent to the Baggage Compartment Dome Light, When the Aft Air and Light Installation is Used:

WARNING

DO NOT SMOKE WHILE OXYGEN IS IN USE. PULL CONNECTING PLUG TO STOP OXYGEN FLOW.

(Placard number C93LJ02C0236 C)

On Shoulder Harness Assemblies for All Cabin Chairs:

SHOULDER HARNESS MUST BE WORN DURING TAKE-OFF AND LANDING WITH SEAT IN OUTBD POSITION, SEAT BACK UPRIGHT AND HEADREST FULLY EXTENDED

(Placard number C9200623 C)

On Cupholders and Tables When Installed:

STOW BEFORE TAKE-OFF AND LANDING

(Placard number C9200624 C)

Located on Right Forward and Aft Partitions:

[Symbolic placard: no-smoking symbol and fasten-seat-belt symbol]

(Placard number C9200614 C)

PLACARDS (continued)

On Emergency Exit Hatch Release Cover:

EMERGENCY DOOR RELEASE

CAUTION

DO NOT OPEN ESCAPE HATCH WHEN CABIN IS PRESSURIZED.

OPEN COVER, PULL HOOKS TO OVERRIDE PRESSURE LOCK, PUSH BUTTON AND PULL HANDLE.

(Placard number C93LJ02C0234 C)

On Aft Wall of Baggage Compartment:

NOTICE — THIS COMPARTMENT CAN BE OCCUPIED DURING TAKEOFF AND LANDING ONLY IF EQUIPPED WITH A SEAT BELT

COMPARTMENT CAPACITY — TOTAL COMPARTMENT CAPACITY INCLUDING BAGGAGE AND/OR PASSENGER AND/OR EQUIPMENT NOT TO EXCEED 350 LB

SEE WEIGHT AND BALANCE SECTION OF FLIGHT MANUAL FOR LOADING INSTRUCTIONS

(Placard number C93LJ02C0238 C)

On Left Hand Aft Compartment Sidewall:

NOTICE — FASTEN SHOULDER HARNESS AND SEAT BELT DURING TAKEOFF AND LANDING

(Placard number C93LJ02C0239 C)

Inside Airstair Door Behind Handle:

CAUTION

DO NOT OPEN DOOR WHEN CABIN IS PRESSURIZED

CAUTION

DO NOT ATTEMPT TO CHECK SECURITY OF CABIN DOOR BY MOVING DOOR HANDLE UNLESS CABIN IS DEPRESSURIZED AND AIRCRAFT IS ON THE GROUND

PUSH BUTTON & TURN HANDLE TO OPEN DOOR

[Placard also shows a rotary handle diagram labeled OPEN, LOCK, LATCH, LOCK]

(Placard number C9200593 C)

Inside Airstair Door On Folding Step:

LIFT STEP TO INSPECT DOOR LOCK

(Placard number C9200597 C)

Inside Airstair Door Between Folding Steps:

WHEN HANDLE IS IN LOCKED POSITION-ARM SHOULD BE / AROUND PLUNGER AS SHOWN

NOTE

Placard drawing reference: C9200596 C

In Nose Baggage Compartment:

BAGGAGE AND / OR EQUIPMENT / COMPARTMENT CAPACITY 350 LB / SEE WEIGHT & BALANCE SECTION / OF FLIGHT MANUAL FOR LOADING / INSTRUCTIONS.

NOTE

Placard drawing reference: C93LJ02C0237 C

11. KINDS OF OPERATION

Kinds of Operation Limits

POH 2-18

The BEECHCRAFT Model C90A is approved for the following types of operations when the required equipment, as shown in the KINDS OF OPERATIONS EQUIPMENT LIST, is installed and operable.

1.	VFR Day
2.	VFR Night
3.	IFR Day
4.	IFR Night
5.	Icing Conditions

Kinds of Operations Equipment List

POH 2-18

This airplane may be operated in day or night VFR, day or night IFR, and icing conditions when the required systems and equipment are installed and operable.

The following equipment list identifies the systems and equipment upon which type certification for each kind of operation was predicated. The systems and equipment listed must be installed and operable for the particular kind of operation indicated unless:

1. The airplane is approved to be operated in accordance with a current Minimum Equipment List (MEL) issued by the FAA.

Or:

2. An alternate procedure is provided in the Pilot's Operating Handbook and FAA Approved Flight Manual for the inoperative state of the listed system or equipment and all limitations are complied with.

Numbers in the Kinds of Operations Equipment List refer to quantities required to be operative for the specified condition. The list does not include all equipment required by the FAR Parts 91 and 135 Operating Requirements. It also does not include components obviously required for the airplane to be airworthy such as wings, empennage, engine, etc.

SYSTEM and/or EQUIPMENT

SYSTEM and/or EQUIPMENT	VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING CONDITIONS
ELECTRICAL POWER					
1. AC Volt/Freq Meter	1	1	1	1	1
2. Battery	1	1	1	1	1
3. Battery Charge Monitor System and Annunciator	1	1	1	1	1
4. BAT TIE OPEN Annunciator	1	1	1	1	1
5. DC Generator	2	2	2	2	2
6. L & R GEN OUT Annunciators	2	2	2	2	2
7. DC Load Meter	2	2	2	2	2
8. DC Voltmeter and Select Switch	1	1	1	1	1
9. L & R GEN TIE OPEN Annunciators	2	2	2	2	2
10. Inverter	2	2	2	2	2
11. INVERTER OUT Annunciator	1	1	1	1	1
ENGINE INDICATIONS					
1. ITT Indicator	2	2	2	2	2
2. Tachometer (Gas Generator)	2	2	2	2	2
3. Tachometer (Propeller)	2	2	2	2	2
4. Torque Indicator	2	2	2	2	2
ENGINE OIL					
1. Chip Detector System Including L & R CHIP DETECT Annunciators	2	2	2	2	2
2. Oil Pressure Indicator	2	2	2	2	2
3. Oil Temperature Indicator	2	2	2	2	2
ENVIRONMENTAL					
1. Bleed Air Shutoff/Flow Control Valve	2	2	2	2	2
2. ALTITUDE WARN Annunciator (Cabin)	1	1	1	1	1
3. Cabin Rate of Climb Indicator	1	1	1	1	1
4. Outflow Valve	1	1	1	1	1
5. Pressurization Controller	1	1	1	1	1
6. Differential Pressure/Cabin Altitude Indicator	1	1	1	1	1

SYSTEM and/or EQUIPMENT	VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING CONDITIONS
7. Safety Valve	1	1	1	1	1
FLIGHT CONTROLS					
1. Flap Position Indicator	1	1	1	1	1
2. Flap System	1	1	1	1	1
3. Trim Tab Position Indicator (Rudder, Aileron, Elevator)	3	3	3	3	3
4. Stall Warning System	1	1	1	1	1
FUEL					
1. Fuel Crossfeed System and FUEL CROSSFEED Annunciator	1	1	1	1	1
2. Fuel Flow Indicator	2	2	2	2	2
3. L & R FUEL PRESS Annunciators	2	2	2	2	2

SYSTEM and/or EQUIPMENT

SYSTEM and/or EQUIPMENT	VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING CONDITIONS
4. Fuel Quantity Indicating System	2	2	2	2	2
5. Firewall Fuel Shutoff Valve	2	2	2	2	2
6. Electric Boost Pump	2	2	2	2	2
7. Electric Transfer Pump	2	2	2	2	2
8. L & R NO FUEL XFR Annunciators	2	2	2	2	2
ICE AND RAIN PROTECTION					
1. Alternate Static Air System	0	0	1	1	1
2. Engine Auto-Ignition System and Annunciator	2	2	2	2	2
3. Engine Anti-Ice System and Annunciators	2	2	2	2	2
4. Heated Fuel Vent	0	0	2	2	2
5. Heated Windshield (Left)	0	0	0	0	1
6. Pitot Heat	0	0	2	2	2
7. Pneumatic Pressure Indicator	0	0	1	1	1
8. Stall Warning Heater	0	0	0	0	1
9. Surface Deicer System	0	0	0	0	1
10. Propeller Deicer System	0	0	0	0	1
11. Wing Ice Light (Left)	0	0	0	0	1
LANDING GEAR					
1. Landing Gear Position Indicator Lights	3	3	3	3	3
2. Landing Gear Handle Light	1	1	1	1	1
3. Landing Gear Aural Warning	1	1	1	1	1
4. Landing Gear Hydraulic Power Pack	1	1	1	1	1
5. Emergency Extension Hand Pump	1	1	1	1	1
6. HYD FLUID LOW Annunciator	1	1	1	1	1
LIGHTS					
1. Cockpit and Instrument Lighting System	0	1	0	1	0
2. CABIN DOOR Annunciator	1	1	1	1	1

SYSTEM and/or EQUIPMENT	VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING CONDITIONS
3. Landing Lights	0	1	0	1	0
4. Position Lights	0	3	0	3	0
5. Anticollision Lights System	0	1	0	1	0
6. BAG DOOR OPEN Annunciator	1	1	1	1	1
NAVIGATION INSTRUMENTS					
1. Airspeed Indicator (Left)	1	1	1	1	1
2. Altimeter (Left)	1	1	1	1	1
3. Magnetic Compass	1	1	1	1	1
4. Outside Air Temperature	1	1	1	1	1
OXYGEN					
1. Oxygen System	1	1	1	1	1
PROPELLER					
1. Prop Ground Fine System	2	2	2	2	2

Kinds of Operations Equipment List (Table, page 3 of 3)

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SYSTEM and/or EQUIPMENT

SYSTEM and/or EQUIPMENT	VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING CONDITIONS
2. Prop Reversing System Including Annunciator	2	2	2	2	2
3. Prop Governor Test Switch	1	1	1	1	1
4. Prop Overspeed Governor	2	2	2	2	2
VACUUM SYSTEM					
1. Instrument Air System	0	1	1	1	1
2. Gyro Suction Gage	0	1	1	1	1

NOTE

Table drawing reference: BT05156

12. V-SPEED DEFINITIONS (GENERAL REFERENCE)

Takeoff and Initial Climb

V-Speed	Name	Meaning
V1	Takeoff decision speed	Maximum speed at which a reject may be initiated; at or above it the takeoff must be continued.
Vr	Rotation speed	Speed at which the pilot rotates to raise the nose.
Vlof	Lift-off speed	Speed at which the aircraft first becomes airborne.
V2	Takeoff safety speed	Target climb speed with the critical engine inoperative.
V2min	Minimum takeoff safety speed	Lowest allowable V2 .
Vef	Engine-failure speed	Speed at which the critical engine is assumed to fail (certification).
Vmu	Minimum unstick speed	Slowest speed at which the aircraft can safely lift off.
Vfto	Final takeoff speed	Speed in the final takeoff / climb segment.

Climb Performance

V-Speed	Name	Meaning
Vx	Best angle of climb	Most altitude gained per distance over the ground.
Vy	Best rate of climb	Most altitude gained per unit of time.
Vxse	Best angle, single-engine	Vx with one engine inoperative (multiengine).
Vyse	Best rate, single-engine	Vy with one engine inoperative — the blue line .

Stall Speeds

V-Speed	Name	Meaning
Vs	Stall speed	Minimum steady flight speed at which the aircraft is controllable.
Vs0	Stall speed, landing configuration	Stall with full flaps and gear down — bottom of the white arc.
Vs1	Stall speed, clean configuration	Stall in a specified (usually clean) configuration — bottom of the green arc.
Vsr	Reference stall speed	Certification reference stall speed.
Vsse	Safe single-engine speed	Minimum speed for intentionally cutting one engine.
Vsw	Stall warning speed	Speed at which the stall warning activates.

Airspeed Indicator Limit Speeds

V-Speed	Name	Meaning
Va	Design maneuvering speed	Maximum speed for full or abrupt control inputs without overstress.
Vno	Maximum structural cruising speed	Normal operating limit — top of the green arc, start of the yellow arc.
Vne	Never-exceed speed	The red line — never exceed.
Vfe	Maximum flap-extended speed	Top of the white arc.
Vle	Maximum landing-gear-extended speed	Maximum speed flying with the gear down.
Vlo	Maximum landing-gear-operating speed	Maximum speed to extend or retract the gear.
Vmo / Mmo	Maximum operating limit speed / Mach	Maximum operating airspeed and Mach number.

Approach and Landing

V-Speed	Name	Meaning
Vref	Landing reference speed	Threshold-crossing speed, typically 1.3 x Vs0 .
Vapp	Approach speed	Target speed on final approach.
Vbg	Best glide speed	Speed for maximum glide distance (best lift-to-drag ratio).

Multiengine Control

V-Speed	Name	Meaning
Vmc / Vmca	Minimum control speed (airborne)	Minimum speed to maintain control with the critical engine inoperative — red radial line.
Vmcg	Minimum control speed (ground)	Minimum control speed on the takeoff roll.
Vmcl	Minimum control speed (landing)	Minimum control speed in the landing configuration.
Vmbe	Maximum brake energy speed	Maximum speed from which the brakes can absorb a rejected takeoff.

Design and Certification Speeds

V-Speed	Name	Meaning
Vb	Design gust-intensity speed	Turbulence-penetration design speed.
Vc	Design cruising speed	Certification design cruising speed.
Vd / Vdf	Design / demonstrated diving speed	Certification dive speed.
Vf	Design flap speed	Certification design flap speed.
Vh	Maximum level-flight speed	Maximum speed in level flight at maximum continuous power.

NOTE

These are certification design speeds. They are rarely referenced in day-to-day operations.

Airspeed Indicator Colour Markings

V-Speed	Name	Meaning
White arc	Flap operating range	Vs0 to Vfe .
Green arc	Normal operating range	Vs1 to Vno .
Yellow arc	Caution range	Vno to Vne — smooth air only.
Red line	Never exceed	Vne .
Blue line	Best rate, single-engine	Vyse (multiengine).
Red radial	Minimum control speed	Vmc (multiengine).

NOTE

The colour markings are defined by the V-speeds above, so a change to a limitation speed changes the arc.