GARRETT AVIATION SERVICES
FAA APPROVED AIRPLANE FLIGHT MANUAL SUPPLEMENT
TO
BEECH MODEL S35 BONANZA
BEECH MODEL V35 BONANZA
BEECH MODEL V35A BONANZA
BEECH MODEL V35B BONANZA
MODIFIED IN ACCORDANCE WITH STC SA1035WE

LOG OF REVISIONS

All Pages Page 2	**Rocco Lippis**	**November 18, 1969**	**Added Model V35B** **Revised I Limitations Para C Power Plant Instr.**
Page 3	**Rocco Lippis**	**November 9, 1971**	**Rephrased Paragraph "CAUTION" in Fuel System Procedures**
All Pages	Donald Armstrong **Mgr., Flt. Test Br., ANM-160L FAA, Los Angeles ACO Transport Airplane Directorate**	10-17-95	**Incorporation of NTSB Safety Recommendation (A-94-81). Adds complete loss of power, and partial loss of power procedures. Revises overboost procedures.**

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Raytheon Aircraft
MANDATORY SERVICE BULLETIN

35

No. 2688
ATA Code 72-40

SUBJECT: **ENGINE - CONTINENTAL TSIO-520-D TURBOCHARGED ENGINE OPERATIONAL PROCEDURES**

REASON: This Service Bulletin is being issued to announce the Garrett Aviation Services FAA Approved Flight Manual Supplement Revision dated October 17, 1995 (copy attached) for the airplanes modified in accordance with STC SA1035WE to install Continental TSIO-520-D Turbocharged engines. This FAA approved Flight Manual Supplement provides operational procedures augmented with new Emergency Procedures and is required to be in the airplane by FAR Part 91.9.

EFFECTIVITY: BEECHCRAFT Turbocharged Bonanza S35, V35, V35-TC, V35A, V35A-TC, V35B, V35B-TC, serials D-7140, and D-7310 through D-10403 that are equipped with a TSIO-520-D engine.

COMPLIANCE: Beech Aircraft Corporation considers this to be a Mandatory Service Bulletin and it must be accomplished as soon as possible after receipt of this Service Bulletin. The Federal Aviation Regulations require the airplanes specified in Effectivity be operated in accordance with this FAA approved Flight Manual Supplement.

An Airworthiness Directive has been requested on the matter covered by this Service Bulletin.

APPROVAL: Engineering data contained in this Service Bulletin is FAA Approved.

MANPOWER: The following information is for planning purposes only:

Estimated man-hours: 0.5 hour.

Suggested number of men: 1 man.

The above is an estimated time for incorporating the supplement and signing off the Airplane Log Book. This may be done by the pilot under FAR Part 43.3 (g).

MATERIAL: Garrett Aviation Services FAA Approved Flight Manual Supplement dated October 17, 1995.

SPARES AFFECTED: None.

WARRANTY CREDIT: None.

MANDATORY

No ECR, M

Issued: March, 1996

Raytheon Aircraft Company (RAC) issues Service Information for the benefit of owners and fixed based operators in the form of two classes of Service Bulletins. The first class, Mandatory Service Bulletins (red border) includes changes, inspections and modifications that could affect safety or crashworthiness. RAC considers compliance with these Service Bulletins to be mandatory. RAC also issues Service Bulletins with no border which are designated as either recommended or optional in the compliance section within the bulletin. In the case of recommended Service Bulletins, RAC feels the changes, modifications, improvements or inspections will benefit the owner/operator and although highly recommended, Recommended Service Bulletins are not considered mandatory at the time of issuance. In the case of optional Service Bulletins, compliance with the changes, modifications, improvements or inspections is at the owner/operator's discretion. Both classes are mailed to:

(a) RAC Authorized Service Centers.

(b) Owners of record on the FAA Aircraft Registration Branch List and the RAC International Owner Notification Service List.

(c) Those having a publications subscription.

Information on Owner Notification Service or subscriptions can be obtained through any RAC Authorized Service Center. As Mandatory Service Bulletins and Service Bulletins are issued, temporary notification in the Service Bulletin Master Index should be made until the index is revised. Warranty will be allowed only when specifically defined in the Service Bulletin and in accordance with the RAC Warranty Policy.

Unless otherwise designated, RAC Mandatory Service Bulletins, Service Bulletins and RAC Kits are approved for installation on RAC airplanes in original or RAC modified configurations only. RAC Mandatory Service Bulletins, Service Bulletins and Kits may not be compatible with airplanes modified by STC installations or modifications other than RAC approved kits.

991-39071 Rev 4/96

SPECIAL TOOLS: None.

WEIGHT AND BALANCE: None.

REFERENCES: None.

PUBLICATIONS AFFECTED: The FAA Approved Flight Manual(s) for the BEECHCRAFT Turbocharged Bonanza S35, V35, V35-TC, V35A, V35A-TC, V35B, V35B-TC V35A-TC, V35B, V35B-TC, serials D-7140, and D-7310 through D-10403 must include this supplement in order for the airplane to be in compliance with this Service Bulletin. The owner/operator is responsible to maintain the appropriate FAA Approved Flight Manual in a current configuration by incorporating this and all subsequent applicable revisions.

ACCOMPLISHMENT INSTRUCTIONS: Replace the existing Garrett Aviation Services Airplane Flight Manual supplement with supplement dated October 17, 1995. The pilot should become completely familiarized with all procedures listed.

RECORD COMPLIANCE: Upon completion of this Service Bulletin, make an appropriate maintenance record entry.

NOTE

If you are no longer in possession of this airplane, please forward this information to the present owner.

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The information in this document supersedes the basic manual only where covered in the items contained herein. For limitations, procedures and performance not contained in this supplement, consult the manual proper.

I. LIMITATIONS:

The following limitation are to be observed in the operation of this airplane equipped with a Continental TSI0-520-D Turbocharged engine.

A. Engine Limits:

Take-off and maximum continuous operation: 2700 rpm, full throttle: 285 hp.

B. Propeller:

Manufactured by McCauley Industrial Corporation

Hub	Blade
2A36C82	84B-2
3A32C76-T	82NB-2

Manufactured by Hartzel Propeller, Incorporated

Hub	Blade
PHC-A3VF-4	V8433-4R

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C. Power Plant Instruments:

Fuel Flow: Green Arc or Bank (operating range) 6.9 to 24.3 gph or 41.4 to 145.8 pph; Red Line (max) 18.2 psi; Red Line (min) 1.5 psi.

Manifold Pressure: Green Arc or Line (normal operating range) 15 to 32.5 in. Hg; Red Radial or Line (max) 32.5 in. Hg.

D. Airspeed Limits:

Above 22,500 ft. reduce VNE speed 5 mph per 1,000 feet.

Max. power continuous climb SL - 12,000 Ft. 112 IAS min. Above 12,000 ft. 125 IAS min.

E. Placards:

AUXILIARY FUEL PUMP OPERATION - "High boost, Off, Low Boost."

In full view of pilot: "Above 22,500 ft. reduce VNE speed 5 mph per 1,000 feet."

On engine control pedestal: "Alternate Air, Pull and Release", "Forward Cowl Flaps - Pull Open".

II. PROCEDURES:

NOTE: 1. This aircraft has not been evaluated by the FAA above 25,000 feet.

2. Flight operation is not recommended above 10,000 ft., unless a satisfactory oxygen supply is available for all occupants.

A. NORMAL:

FUEL SYSTEM - To start the engine: position throttle half open, turn auxiliary fuel pump switch to "High Boost". When the fuel flow reaches 8 gph, turn auxiliary fuel pump switch to "OFF". Reduce throttle to idle position. Engage starter, opening throttle approximately 3 to 4 turns. Hot engine starting: auxiliary fuel pump, momentarily to "High Boost" immediately before engaging starter; after engine starts turn auxiliary fuel pump switch to "Low Boost" as needed to purge vapor from system. Turn on "Low Boost" in climb above 8,000 feet altitude.

NOTE: In hot weather "Low Boost" should be used as needed during hot engine starts. Use "Low Boost" as needed to purge vapor during ground operation, take-off and climb.

CAUTION: Do not over-prime engine. In the event of flooding, place mixture in idle-cut-off and operate starter until excess fuel is removed, then repeat hot engine starting procedure. Auxiliary pump switch in "High Boost" position with engine driven pump operating may give over-rich mixture and as a result a slight or even a complete power loss may occur.

When switching tanks, if fuel tank is allowed to run completely dry, it may be necessary to turn auxiliary pump to "Low Boost" position and place mixture control to full rich to aid in restart. Close throttle as necessary to prevent engine overspeed on restarting; turn pump to "OFF" position after engine restarts.

OIL SYSTEM - **CAUTION** - When oil temperature is in the low operating range apply full throttle slowly to avoid engine overboost above 32.5 inches M.P.

MIXTURE CONTROL: Full rich for all powers above (75%). Seventy-five percent or below, lean to fuel flow gauge for power selected.

COWL FLAP: Rear cowl flaps to be open for take off and climb, closed for cruise. Front cowl flaps to be used as necessary to control engine temperatures, with rear cowl flaps open.

B. EMERGENCY:

WARNING - If a turbocharger failure is the result of a loose, disconnected and/or burned through exhaust, then a serious fire hazard exists. If a failure in the exhaust system is suspected in flight, shut the engine down and **LAND AS SOON AS POSSIBLE.** If a suspected exhaust system failure occurs before takeoff, **DO NOT FLY THE AIRCRAFT.**

Lubrication for the turbocharger and turbocharger control is supplied by the aircraft engine lubrication system. Failure of the turbocharger and/or turbocharger control lubrication system could cause loss of aircraft engine oil supply. If a suspected turbocharger or turbo-charger control lubrication system failure occurs, **LAND AS SOON AS POSSIBLE.** If a suspected turbocharger or turbocharger control lubrication system failure occurs before takeoff, **DO NOT FLY THE AIRCRAFT.**

NOTE: A turbocharger malfunction at altitude above 10,000 ft. could result in an overly rich mixture which could cause a partial power loss and rough running engine and/or a complete loss of engine power.

COMPLETE LOSS OF ENGINE POWER - If a suspected turbocharger or turbocharger waste gate control system failure results in a complete loss of engine power, the following procedure is recommended:

Mixture..... IDLE CUTOFF
Throttle..... CRUISE
Propeller..... FULL FORWARD
Mixture..... ADVANCE slowly until engine re-starts
Continue flight..... LAND AS SOON AS POSSIBLE

PARTIAL LOSS OF ENGINE POWER - If the turbocharger waste control fails in the **OPEN** position, a partial loss of engine power may result (**ENGINE REVERTS TO NORMALLY ASPIRATED OPERATION**). The following procedure is recommended if a suspected turbocharger/wastegate control failure results in a partial loss of engine power:

Throttle..... AS REQUIRED
Mixture..... AS REQUIRED
Propeller..... AS REQUIRED
Continue flight..... LAND AS SOON AS POSSIBLE

ENGINE POWER OVERBOOST - If the turbocharger wastegate control fails in the **CLOSED** position, an engine power overboost condition may be experienced. The following procedure is recommended for an overboost condition:

Throttle... REDUCE as necessary to keep manifold pressure within limits.

NOTE: Expect manifold pressure response to throttle movements to be sensitive.

Propeller..... AS REQUIRED
Mixture..... AS REQUIRED
Continue flight..... LAND AS SOON AS POSSIBLE

FUEL SYSTEM - Turn auxiliary fuel pump to "Low Boost" or "high Boost" as needed in case of loss of fuel pressure.

EMERGENCY DESCENT - Idle power, gear down I65 IAS.

Rocco Lippis
FOR: Charles R. Hawks, Chief
Aircraft Engineering Division WE100
Western Region
Federal Aviation Agency

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PAGE NUMBER	FAA APPROVAL	DATE OF REVISION	DESCRIPTION
Page 1 Page 2	Rocco Lippis	March 01, 1966	Revised Para A Engine Limits Revised Para D Airspeed Limits
Page 1 Page 2 Page 3	Rocco Lippis	May 11, 1966	Revised I Limitations Revised Para D Airspeed Limits Revised Para E Placards Revised II Procedures
Page 1 Page 2	Rocco Lippis	December 29, 1966	Revised I Limitations Para A Removed Manifold Pressure Limitations Para B Added Propeller
All Pages	Rocco Lippis	October 25, 1967	Added Model V35A

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