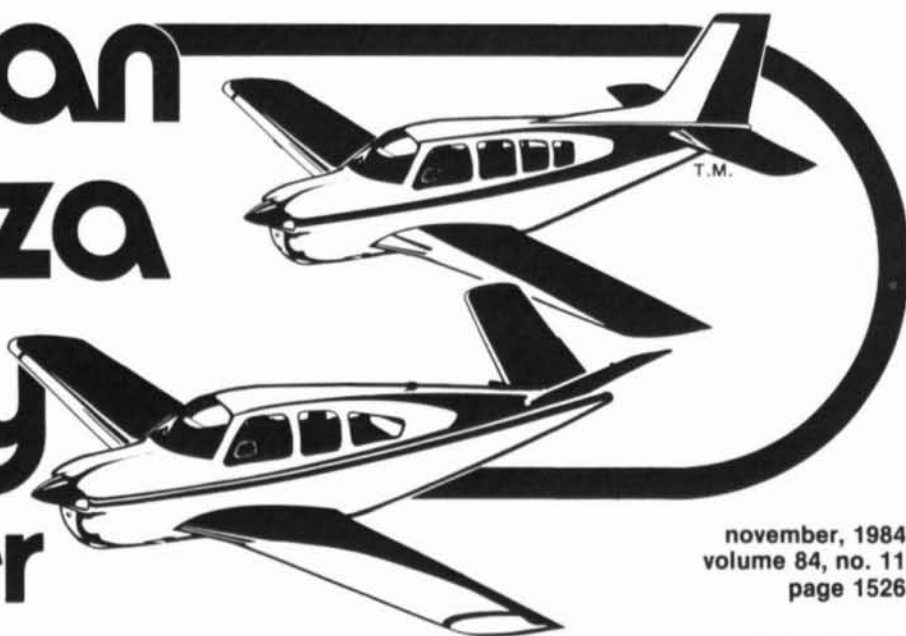


# American Bonanza Society newsletter



november, 1984  
volume 84, no. 11  
page 1526

© 1984 ABS, Inc.

V35B, D9169, 9009Q  
Owned by Bruce O. Nicholes  
Boardman, Oregon





# BONANZA OF THE MONTH

I would like to nominate my favorite Bonanza for "Bonanza of the Month."

It is a 1970 V-35-B (N 9009Q). I now have 1650 T.T. on this bird and the engine has never been touched except to change oil and spark plugs. The last 723 hours we have had a low of 68 pounds and oil consumption averages one quart per seven hours. I sure recommend Phillips Multiviscosity, it's great. We feel we'll fly several more hundreds of hours before we need to overhaul. It pays to operate your engine properly.

The aircraft has been painted with Im-

ron in the 1984 A-36-TC color scheme.

Zero Nine Quebec has the original upholstery which is still in like-new condition. In my opinion, only Beech builds with this lasting quality.

We have changed some of the radio equipment — have retired one of the original MK-16 Nav/Com's and replaced it with a KMA-24 audio system, KY-197 Com, KN 53 Nav, KN 72 Omni/Loc with Glideslope, K1525A Pictoral Nav, and Century II B coupled to the KN 53 Nav, KN-62 DME, AT-50 Transp with Mode C., KR-85 ADF and Mark 16 Nav/Com with Glideslope.



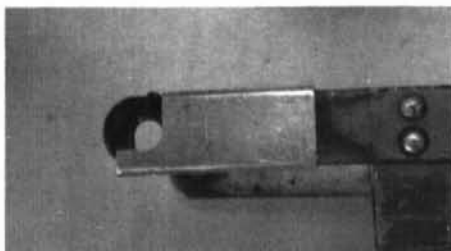
N9009Q's Instrument Panel

## BONANZA "T" TOW BAR FIX

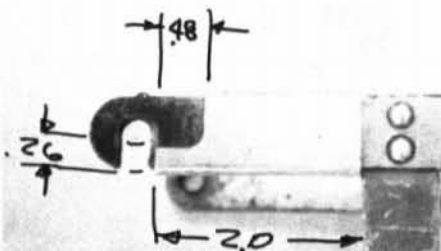
An easy way to fix the Bonanza "T" tow bar so it won't slip off the nose wheel pins is as follows: Take a 2" piece of any soft aluminum tubing 3/4 O.D. — .035 wall and flatten with a small mallet, drive it over either end of the tow bar and tap the tube on all sides while on the bar until it slides freely. Remove and notch to cover the open end of the slot as shown. Re-install and add to the tow

bar a small weld button, drive pin or screw so the slide will not come off. To strengthen the bars that are bolted together, remove the screws and drive a hard wood dowell in the tube just past the screw holes, re-drill the wood and assemble. Now the screws can be tightened against the wood and not come loose.

Al Nelson  
ABS #6228



"T" Tow Bar Finished Product



"T" Tow Bar Fix Measurements

I feel we have a very fine bird which gives us very dependable transportation. With its equipment and all the help ATC gives you, IFR is easy.

Zero Nine Quebec in the picture is flying over a strip-farmed wheat field in the Pacific Northwest at Boardman, Oregon.

Bruce O. Nicholes  
ABS #2206

## PREVENTIVE MAINTENANCE

Preventive maintenance on your aircraft makes good sense for several reasons. By keeping your airplane in good airworthy condition, you may well avoid a costly repair bill or, possibly, an accident. You also get to know your airplane better, and sometimes save a little money, too.

But along with the desire to perform preventive maintenance comes a great deal of responsibility. And, according to the FAA, pilots often misunderstand the Federal Aviation Regulations that govern what preventive maintenance can be legally performed by an owner.

Also, there have been a number of recent changes in the rules concerning preventive maintenance.

The related FARs as of October 28, 1983 are Part 1, Definitions and Abbreviations, Section 1.1; Part 43, Maintenance, Preventive Maintenance, Rebuilding, and Alterations; Part 61, Certification: Pilots and Flight Instructors, and Part 145, Repair Stations.

The holders of mechanic and repairmen certificates, persons working under the supervision of these mechanics and repairmen, repair stations certificated under Part 145, and air carriers certificated under Parts 121, 127, and 135 are authorized to perform

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION	
(Required by 49 U.S.C. 3605)	
1. TITLE OF PUBLICATION American Bonanza Society Newsletter	2. ISSUE DATE 10/25/84
3. FREQUENCY OF ISSUE Monthly	4. ANNUAL SUBSCRIPTION PRICE \$5.00
5. COMPLETE MAILING ADDRESS OF OWNER, PUBLISHER, OR BUSINESS MANAGER PO Box 12886, Wichita, KS 67222	6. COMPLETE MAILING ADDRESS OF THE POSTMASTER PO Box 12886, Wichita, KS 67222
7. COMPLETE MAILING ADDRESS OF THE EDITOR PO Box 12886, Wichita, KS 67222	8. COMPLETE MAILING ADDRESS OF THE MANAGER PO Box 12886, Wichita, KS 67222
9. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
10. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
11. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
12. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
13. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
14. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
15. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
16. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
17. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
18. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
19. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
20. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
21. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
22. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
23. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
24. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
25. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
26. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
27. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
28. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
29. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
30. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
31. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
32. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
33. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
34. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
35. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
36. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
37. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
38. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
39. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
40. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
41. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
42. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
43. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
44. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
45. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
46. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
47. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
48. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
49. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
50. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
51. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
52. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
53. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
54. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
55. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
56. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
57. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
58. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
59. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
60. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
61. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
62. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
63. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
64. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
65. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
66. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
67. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
68. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
69. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
70. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
71. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
72. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
73. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
74. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
75. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
76. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
77. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
78. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
79. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
80. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
81. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
82. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
83. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
84. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
85. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
86. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
87. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
88. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
89. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
90. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
91. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
92. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
93. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
94. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
95. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
96. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
97. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
98. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
99. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	
100. I, the undersigned, certify that I am the owner, publisher, or business manager of the above-named publication, and that I am a resident of the United States of America.	

preventive maintenance. For purposes of this discussion, though, we'll consider preventive maintenance only from the owner operator's point of view.

FAR Part 1, Section 1.1 defines preventive maintenance as "...simple or minor preservation operations and the replacement of small standard parts not involving complex assembly operations."

Part 43, Appendix A, paragraph (C) contains the list of those functions determined by the FAA to meet this definition. (Space does not permit a listing of those functions here, but pilots should have ready access to the FARs.)

Further, because of differences in aircraft, a function may be preventive maintenance on one aircraft, but not on another. To provide for this, paragraph (C) contains the limitation, "provided it does not involve complex assembly operations" on the aircraft involved. Owners and pilots must use good judgment in determining that a specific function may appropriately be classified as preventive maintenance.

Note: A pilot may *not* perform preventive maintenance on aircraft used under Parts 121, 127, or 135, *even when the pilot owns the airplane.*

In addition to those individuals named earlier, the holder of a pilot certificate issued under Part 61 may perform preventive maintenance. Section 43.7 of the FARs limits the privilege to persons holding at least a private pilot certificate, and Section 43.5 prohibits operation of the aircraft unless it's approved for return to service. Further, pilots may only approve for return to service preventive maintenance *which they themselves have accomplished.*

Pilots also must adhere to certain performance standards when performing preventive maintenance. Specifically, Part 43.13 requires preventive maintenance to be accomplished using methods, techniques, and practices acceptable to the FAA Administrator. These are normally set forth in the manufacturers' maintenance manuals; however, some may be found in the advisory circulars published by the FAA. FAR 43.13 requires the use of the tools, equipment, and test apparatus necessary to assure completion of the work "in accordance with accepted industry practices."

Moreover, FAR 43.13 requires that any special equipment recommended by the manufacturer or its equivalent must be used in a manner acceptable to the FAA. This provision is directly applicable to maintenance rather than to preventive maintenance. However, because it may come into play, owners and pilots should be aware of it.

Lastly, FAR 43.13 requires that the work performed and the materials used are to be such as to ensure that, when

the work is completed, the item worked on is at least equal to its original condition.

Caution must be exercised because some functions which appear to be simple tasks may, in fact, be quite complicated. Care should be taken to ensure that the manufacturer's instructions are understood and that the function is within the individual's capability, within the definition of preventive maintenance, and that it is listed in paragraph (C) of Appendix A of Part 43.

Preventive maintenance *must* be recorded in accordance with Section 43.9 of FAR 43. This is done by entering in the maintenance record, of the item worked on, the following:

1. a description of the work performed. This should indicate what was done and how it was done.
2. the date of completion of the work performed.
3. the kind of airmen certificate exercised and the certificate number.

Affixing a signature to the entry constitutes approval for return to service.

Adhering to these preventive maintenance procedures is a good idea at any time, but particularly now, because the FAA's recently announced safety audit of general aviation. If you're into performing preventive maintenance,

be absolutely sure you know what you're doing and have the permission of your F.B.O. to do so; (some F.B.O.'s frown on pilots independently performing any maintenance on aircraft while based at their facility); and that you carefully follow the FAA's regulations.

*This article was provided by AVEMCO Insurance Company.*

## MARK YOUR CALENDAR...



### AMERICAN BONANZA SOCIETY NEWSLETTER

(ISSN 0003-1178)

published by

#### AMERICAN BONANZA SOCIETY

A New York Non-Profit Corporation, Organized January, 1967

Publication Office

Mid-Continent Airport, PO Box 12888, Wichita, Kansas 67277

Cliff R. Sones, Associate Director

#### BOARD OF DIRECTORS

	Term Expires
Harry G. Hadler, President 159 "C" Street, SE, Ardmore, OK 73401	1987
John E. Pixton, Vice President 2125 Guerneville Rd., Santa Rosa, CA 95401	1987
Charles R. Gibbs, Secretary 1226 LeBaron Ave., Jacksonville, FL 32207	1985
Joseph A. McClain, III, Treasurer P.O. Box 15731, Tampa, FL 33684	1986
John R. Funk R.R. #1, Bement, IL 61813	1986
Glenn H. Kool 3340 South Zuni Street, Englewood, CO 80110	1985
Robert C. Loudon 264 Harker Street, Mansfield, OH 44903	1986
John M. McCutcheon 7139 Via Solana, San Jose, CA 95135	1987
Donald L. Monday 4288 North Clubhouse Dr., Camarillo, CA 93010	1987
John F. Russo 616 Washington St., Toms River, NJ 08753	1986
Michael Zelenock, MD 8731 Thorntree Drive, Grosse Ile, MI 48138	1985

#### PAST PRESIDENTS

B.J. McCianahan, MD, ABSL 1	1967-1971
Frank G. Ross, ABSL386	1971-1973
Russell W. Rink, ABSL4	1973-1975
Hypolite T. Landry, Jr., MD, ABSL1449	1975-1976
Calvin B. Early, MD, PhD, ABSL1797	1976-1977
Capt. Jesse F. Adams, USN(RET), ABSL772	1977-1978
David P. Barton, ABSL534	1978-1979
Alden C. Barrios, ABSL3326	1979-1980
Fred A. Driscoll, Jr., ABSL2976	1980-1981
E.M. Anderson, Jr., ABSL33	1981-1983
Donald L. Monday, ABSL9904	1983-1984

The American Bonanza Society Newsletter is published monthly by the American Bonanza Society at the Wichita Mid-Continent Airport, PO Box 12888, Wichita, KS 67277. The price of a yearly subscription is included in the annual dues (\$20) of Society members. Second-class postage paid at Wichita, KS.

The Society and Publisher cannot accept responsibility for the correctness or accuracy of the matters printed herein or for any opinions expressed. Opinions of the Editor or contributors do not necessarily represent the position of the Society. Publisher reserves the right to reject any material submitted for publication. Copy submitted for publication shall become the property of the Society and shall not be returned.

Circulation 7,023

ANNUAL DUES: US — \$20  
Canada & Mexico — \$20(US)  
Foreign — \$40(US)

Phone 316/945-6913  
POSTMASTER: Send change of address. Form #3529 to:  
AMERICAN BONANZA SOCIETY  
PO Box 12888  
Wichita, KS 67277



# Colvin's Corner

**J. Norman Colvin**

*Retired Beech Project Engineer  
on Bonanzas and Barons  
ABS Technical Consultant  
Service Clinic Inspector*



## YOUR CHUCKLE FOR TODAY

Two signs posted on the instrument panel. On the pilots side the sign read "No Smoking" and on the passenger side the sign read "If You Smoke, Please Step Outside".

## WINSTON SALEM SERVICE CLINIC

We have just completed a service clinic in Winston Salem, NC at Piedmont Aviation, where we inspected 37 airplanes. Piedmont Aviation is a long time Beech Dealer.

They have a fine service shop, an excellent engine overhaul shop, a good avionics shop and a good propeller shop. This service shop is one of a kind in that to get to the shop, you must taxi across a busy highway. Don't worry, they have a guard on duty to stop automotive traffic.

Norm

## SHOULDER HARNESS INSTALLATION

Dear Norm;

We are the owners of a V35-A Bonanza (D-8733) which we have owned and flown for almost 2 years and have accumulated about 300 hours of time since our possession.

We would like to know what the alternatives are regarding installation of shoulder harnesses in the front seats. This airplane does not now have nor has it ever had harnesses in it. We know that Beech markets a kit for installing harnesses (app. \$750 + install) but have been told that this kit finishes with a lot of belts hanging from the ceiling when not in use. There are probably other kits available but do they provide for an attachment point higher than that of the front seat occupants' shoulders? We've been told that this mounting position is necessary to prevent spinal crush in the event of a rapid forward deceleration.

We particularly like the installation in the later model Beech which utilize a single shoulder strap attached from the fuselage wall beside the occupants' shoulders. I think that converting to this

system would be cost prohibitive, however, considering the complexity of the installation (belts, retractors, hard points, etc.)

Paul Funk  
ABS #15514

Dear Mr. Funk,

*There is no easy way to install a shoulder harness. Beech offers two kits part #35-5034-1P Beige at \$513.00 and kit #35-5034-3P Black at \$634.00. Installation will cost as much as the kit.*

*I think Aircraft Modification & Upholstery, Hangar 3, Lunken Airport, Cincinnati, OH 45226, phone 513/321-5576, has a kit and Aviation Enterprises at 213/429-5949 also offers a shoulder harness.*

*I'm not sure but Beryl D'Shannon phone 1-800-328-4629 may have one.*

*I would prefer a harness that attaches near the floor, it would install easier.*

Norm

## AILERON TRIM PARTS

Dear Norm:

I have a B-33 Deb. S/N CD-720 and have installed a dual yoke. Our problem is that the aileron trim is broken (internal spring). As Beech will only sell me the entire assembly and not just the spring, can you help me?

Richard A. Strawn  
ABS #5414

Dear Mr. Strawn,

*The unit was originally built by Aircraftmen in Oklahoma City, but they are no longer in business, so I cannot help you in securing parts.*

*You might possibly pick up a used unit in some salvage yard. Star Air at 913/238-2708 might possibly have such a unit or spring.*

Norm

## HOT ENGINE START PROBLEM

Dear Norm:

I have called you for (excellent) advise several times and we met at Elliott Beechcraft — Moline several years ago. You constantly are revered by all ABS members, but I must contest your response to Mr. Ralph Drake (September '84) re: "Hot Engine Start Problem" on the E-225.

I have endured this for 8 years on my E-225, and a number of mechanics have shook their respective heads and changed the subject. Only one, Mr. Jim Baker, Clark Aircraft at Keokuk, has offered a theory i.e., front crankshaft gear seizes when engine is hot.

I have learned to live with it, by pulling prop thru backwards for several blades, then climb in, cross my fingers, and hope the engine catches on first compression stroke — if not, plan to wait 1-2 hours until engine cools, then everything is normal.

When hot, the engine is so stiff that you don't feel compression, only the unbelievable internal friction, or drag. I have the E-80 starter, 35 amp Willard battery, perfect cables, but no starter will handle this torque. Jim Baker keeps the ignition system in top condition so that I am rarely caught but as Mr. Drake states, only a cool down will relieve the severe drag.

Any thoughts from yourself or the field on this one?

Maurice Klee  
ABS #9741

Dear Mr. Klee:

*I would completely rule out the front crankshaft seals since it would tear up when you move the propeller by hand.*

*I would suspect the starter drive hanging up. Next time this binding occurs, loosen the starter, I'm sure you will find it hanging up.*

*It would also be a good idea to check or replace the starter relay. This would have nothing to do with the stiff engine but would improve starter operation.*

Norm

## LOW FUEL PRESSURE IN COLD WEATHER

Dear Norm:

During cold weather starts in my Bonanza, serial #D-9108, the engine driven fuel pump does not seem to be able to supply enough fuel until the engine warms up, this could take a minute or 2, and requires the use of the electric boost pump. If the boost pump is turned off, the engine will die from fuel starvation.

Is this normal? If not, what do you recommend.

Harvey J. Berk, P.E.  
ABS #10620

Dear Mr. Berk,

The engine driven fuel pump is the only moving part in your fuel delivery system. It is possible that the pressure relief valve within the pump may be sticking or the unmetered fuel pump pressure is low. In any event, the engine driven fuel pump should be checked.

To check unmetered fuel pressure, a special fuel line is installed between the engine driven pump and the fuel metering valve. A pressure gauge is teed into the line. With the engine idling 500 to 600 RPM, unmetered pressure should be 28 to 31 PSI. If pressure is off and then is adjusted as specified, then thirty days or so later, pump pressure varies, replace the pump.

Two other points to check. Look for wear in the fuel metering arm linkage, if it is excessive, it could affect idle mixture. Check idle mixture. With the engine idling 500 to 600, pull steadily out on the mixture control to the idle cut off position. Watch the tachometer. Just before the engine quits, the tach should increase 25 RPM. If you get less or none, idle mixture is too lean. If you get more, it is too rich.

Norm

## SEAT RECLINING PROBLEM

Dear Norm:

I read your column regularly and have been impressed that it has helped many members solve their various mechanical problems. I have been hoping that someone would write about the same problem that I have with a seat adjustment in my 1969 V35A Bonanza but I am now ready to write about it myself in the hope that it is a simple problem that I can fix myself.

Several months ago the right front seat was put in the reclining position and after that it never would stay in the upright position. Upon inspection of the problem it appears that when the lever is depressed on the left side of the seat, the spring loaded wedge which moves

against the stop on the base of the seat-back does not retract as it does on the rear seats. I have not attempted to take the seat out or to take the mechanism apart but I assume that either a spring inside has broken or the mechanism is somehow stuck or misaligned. I would appreciate it if you would let me know how best to fix this problem and send me or publish a diagram of this seat reclining mechanism.

Bruce H. Littman  
ABS #16356

Dear Mr. Littman,

I'm afraid your problem is not a simple one. The actuator part number 60-530051-1 is the most likely source of trouble and if so should be replaced.

There are two gears, part number 60-530054-1 and 60-530041-1 that could be binding, but the actuator is the most likely source of trouble. I have referred to page 2-68E of the Model M35 and after parts catalogue.

Your Beech dealer will need to know your airplane serial number when ordering parts.

I trust that the above information will be of help.

Norm

## BONANZA H MODEL

Dear Norm,

My son, Daniel, has arrived back into the States and has started reading your book, it's EXCELLENT. We still don't have more information on the Bonanza H model, its engine and carburetor that got ice and forced a dead stick landing. I have heard that the H model caused Beech many problems.

What's the deal and information on a complete set of bulletins on the H model?

Vasil M. Markoff  
#ABS 12439

Dear Mr. Markoff,

The only trouble encountered with the H35 was in the IO-470-G engine. We could not control the propeller due to excessive oil leakage in the front transfer bearing. Because of this leakage, there was marginal oil pressure to the propeller. Beech added counter weights to the propeller blades which reduced the need for high oil pressure to the prop so the propeller would change pitch slower but could be controlled. When the engine was overhauled, a closer tolerance transfer bearing would correct the problem and the blade counterweights could be removed. The H35 was the last of the carburetor engines. The carburetor was the only

one used with the altitude compensator and it worked well. The engines long induction pipe caused problems. By the time the carefully mixed fuel air ratio flowed through the long induction air pipes and reached the front cylinders, the fuel vapor would condense and would dilute the oil on the cylinder walls, causing the ring and cylinder trouble. This became such a problem that Beech offered a fuel injection kit to replace it.

Pressure carburetor type engines are not inclined to ice. The induction systems on Beech airplanes, including those with fuel injection, contain alternate air door which allows the engine to have an alternate source of air in the event the induction air filter should ice over or covered by some other means. In such an event, the alternate air door will automatically open, allowing heated air from the engine compartment to enter the engine.

The condition encountered by Daniel is one in ten thousand condition where moisture passed through the induction air filter without freezing. This moisture collected inside the induction system and froze, freezing the alternate air door closed which made the door inoperative, defeating its purpose.

Starting with about the S35, a control was added and marked "alternate air." This control, when pulled, would force the alternate air door open, even though it was frozen closed. This would have avoided the forced landing.

Beech does not offer bulletins on just the H35, they cover all models. Bulletins can be ordered from any Beech Dealer.

Norm

## STC INFORMATION REQUEST

If any of our members has received a one time STC approval for 80 octane auto fuel use in a fuel injected E-225 engine, please contact fellow ABS member, Phil Gomez, 2208 Beech Drive, Oswego, NY 13126, phone 315/343-2072 or your ABS headquarters.

## AILERON CONTROL ARM CHAIN FAILURE

We have received a report that the chain inside the aileron control arm broke. This occurred when the airplane was banked. Fortunately, the airplane was equipped with dual controls and the broken chain did not jam so the airplane was landed without incident. The spring that secures the splice link came off allowing the side link to slip off. This allowed the chain link to separate.

This is really an isolated incident but one that could have had serious consequences. It would be a good idea to inspect these chain linkages at your next annual.

Norm



# USED PARTS LIST



The previously owned parts business is booming. If you have spare parts laying around let us know because there are other ABS members who need the parts. We would ask that when you dispose of a part, you let us know, this will save prospective buyers from making an unnecessary call. Call Norm Colvin at ABS Headquarters for phone listings.

Wing Tips from J35  
E35 Main Gear Doors  
Main Gear Actuator Arms  
Brittain BSA-4 Auto Pilot  
Goodyear Brakes  
Air Skeg  
G35 Wings Including Tanks  
RH Stabilizer  
Cabin Door  
Top & Bottom Cowling  
Cowl Flaps  
Tail Cone  
Exterior Battery Box  
Main Gear  
Nose Gear  
N35 Wing Tips  
Beech Instrument Panel Kit  
New Glareshield  
Late Model Control Wheel  
Flotorp Prop Spinner  
New Vacuum Pump  
Sentative Altimeter  
Prop Governor  
One Piece Windshield  
Pair of New Exhaust Stacks  
Single Arm Throw Over Yoke & Wheel  
E185 Crankshaft  
E225-8 Crankshaft  
M35 Fuselage Complete  
F33 Fuel Gages & Circuit Boards  
RH Main Gear  
Rudder (F33) Flap  
Gear Motor (29 HRSTT)  
V35 Wing Tips  
Complete Instrument Cluster P35  
Fuel Transmitters P35  
5th Seat P35  
Alcor 50 AMP Alternator Kit  
20 Gal. Fuel Tank  
M35 Fuselage with Large Gear Box  
Instrument Cluster Cover M35  
Right Wing, Left Wing  
Wing Leading Edges RH  
Ailerons LH & RH  
Stabilizer L & R  
Complete Fuselage  
Cabin Doors  
Hartzell 3 Blade Prop (IO-520-B)

Wing Fillet  
Pair Magnetium Wing Flaps  
535 Landing Gear Motor  
6 Probe Alcor  
L & R Wings  
Engine Cowl  
Windows for Rear Seat Passengers  
Two Piece Windshield  
Baggage Door  
Nose Gear  
Main Gear L & R  
E225-8 Engine 588 (SMOH)  
Mufflers  
215-213-84 Prop Blades  
Engine Primer for E225-8  
E225-8 Engine Zero Time  
Oil Cooler Tank  
36 E 14 Starter  
P & 5 C Carburetor  
Damaged P35 Wing  
Stabilizers  
Single Probe EGT  
Partial IO-470 Engine  
Landing Gear, Gear Box  
Flap Motor  
Starter Adapter  
278-100 Propeller (Damaged)  
278 Prop Back Plate and Spinner  
Puritan-Bennet 2 Man Oxygen System  
SGRN-25 Bendix Magneto  
Woodward Governor  
Aileron & RH Flap  
Fuel Boost Pump for H thru M35  
Fuselage Fuel Tank  
McCauley 2 Blade Prop Blade  
Prop Governor for Electric Prop  
Cowling from H35  
LH & RH Stabilizer  
Hartzell Spinner & Back Plate for  
Three Blade Prop  
278-100 Beech Propeller & Governor  
Six Inch Wheel  
10 Gal. Rebuilt Fuel Cell  
Brittain Auto Pilot Wing Leveler  
Landing Gear, Gear Box & Motor 26 Hrs.  
215 Beech Propeller Parts  
Set of Exhaust Silencers J-35  
"V" Antenna  
Overhead Air Duct P35  
Oil Cooler Tank A35  
Duct Wing Root to Cabin & RH Grill  
Rear "V" Tail Attack Fitting  
Sixth Seat Like New  
RH Side Cowl Plate  
Two Wing Tips M-35  
Two Engine Side Cowl  
1 Stabilizer A-35  
E185-8 Engine 1575 SMO  
PS 5 BO Carburetor 60 Hrs.  
Since Overhaul

Complete Tactair Auto Pilot  
Beech Large Third Window Kit  
Nose Strut Casting  
Landing Gear, Gear Box  
Aileron Control Cables  
Shimmy Damper  
New Master Brake Cyl. & Hose  
RH Main Gear C-35  
20 Gal. Auxiliary Fuel Tank  
Two Bendix Magnetoes for  
E225-8 Engine  
Crankshaft for E185-8  
Landing Gear Motor for C-35  
Single Throw Over Yoke with  
Trim Control  
Two Rotating Beacons 14 Volt  
2 Thin Back Parachutes  
24 Volt Electromec Voltage Regulator  
Complete G-35 for Parts  
Three Long Range Cabin Ferry Tanks  
MAG Ailerons  
Scott Oxygen System  
Glareshield  
Oil Air Separator  
Windshield  
Compass  
LH Stabilizer Tip  
Seats, Front & Back H thru C-35  
Two Seats Late Style  
"A" thru "G" Wing Tips  
Glareshield V-35  
Tail Cone A thru P  
215 Prop Spinner  
215 Prop Motor  
Beryl Tip Tank Fuel Transmitters  
Fuel Selector Valve M-35  
Wing Leading Edge for 33 or 35  
with 40 Gal. Tank  
IO-470-C Engine Run Out  
Oil Cooler for IO-520 Engine  
RH Ruddervator Slight Damage  
One Prop Blade for Beech 215 Prop  
Main Gear Drag Legs  
Oil Air Separator M-35  
Exhaust Manifolds E225-8  
Rajay Turbo Kit, Complete for IO-470-N  
LH Exhaust Manifold 35-950005-1  
Delco Starter Motor for  
IO-470 (no drive assy.)  
Set Goodyear Wheels 650x8 and Brakes  
Harrison Oil Cooler for O470 or IO-470  
Engine  
Set Door Latch Assy. for Late Model  
Bonanza  
Set Wing Tips for 1963-82  
Airborne Dry Air Pump Model 212 CW  
(6) Chrome Cylinders for E-185-11  
Engine



# News and Views

## BONANZA SKILLS POLISHED

The latest Bonanza Pilot Checkout Program of the season was held in Wichita September 14, 15, and 16. Judging from the reactions of the attendees and instructors alike, it was a great success.

Seventeen students began the course on Friday afternoon with four hours of ground school, and they finished Saturday about 6:00 P.M. after four more hours of ground school and four hours flying. A second group of seven began Saturday morning and finished by noon Sunday. Some of the attendees flew their own planes from as far away as San Diego and New Jersey. That shows a tremendous commitment to flight safety, and you can bet the instructors had a lot of respect for that.

The ground school was taught by Sam James, myself, and special guest star Norm Colvin. Sam gave four hours of lectures on enroute procedures, short and soft field technique, emergency procedures, and Bonanza accident statistics. Do you know there is a short field technique Beech used to recommend in its old handbooks that can cut hundreds of feet off your takeoff distances? Do you know what the leading cause of fatal accidents in Bonanzas is? If not, maybe you should have been there.

My lectures were on the handbook, flying by the numbers and the Bonanza maneuver-gust envelope. Does flying at the published maneuvering speed guarantee that you can't exceed the Bonanza's 4.4 limit load factor? Or, how should you adjust your thinking about V<sub>no</sub>, the top of the green, when flying at light weights? If you don't know the answers to these questions, you definitely should have been there.

Of course, most members left the highlight of the ground school session was Norm's two hour lecture on Bonanza systems. What could be better than sitting with a group of ten or fifteen Bonanza addicts listening to the leading authority on systems? You'd have loved it.

The flight instructors in this program are a uniquely qualified lot. Almost all of the instructors are long time ABS members, most are Bonanza owners, and all are highly experienced Bonanza pilots. This time we had CFIs from Beech flight test and engineering, a group of very talented Bonanza instructors from Indianapolis, several excellent people from the Wichita area, and the real "veterans" Ken Pearce, Bill Hale, John Howard, and myself, who had instructed already at Oxnard and Denver. You

would have to meet these people to appreciate the enthusiasm they have for this program and the pride they take in doing their jobs. One flight with one of these people and you would never take another local CFI Cessna ace for a ride again.

The flying itself is divided into two sessions of two hours each, and I'm sure the members would agree that it is a real workout. The object is **not** to put the pilot to the test, a trial by fire, these are not rating rides and the instructor will not be failing the engine "just to see how you react." The object is to fine tune your knowledge of the Bonanza's flight characteristics, systems, and capabilities. And as such, the instructor functions as an advisor and safety pilot — but you can bet that he'll be "advising" you to look into every corner of the Bonanza's envelope.

Have you cranked the gear down lately? You have, well we'll do it under the hood this time. Crank ten times and trim. Fly the airplane. Have you ever tried flaps 20° on takeoff? Let's see if we get a shorter roll. Do you know how much altitude you would lose doing a 180° turn, if the engine failed on takeoff? Let's look at it at altitude. Do you have to pull or push on the yoke in a spiral recovery? Take a look, think about it. Ever have the door pop open on takeoff? Let's try it and see how it flies.

Add to all that a lot of slow flight, stalls, short and soft field practice, go arounds, partial panel, approaches, flying by the numbers, unusual attitudes, etc., and you begin to get a feel for what goes on at these sessions.

After the program closed Sunday, Sam James, Bill Hale, Ken Pearce, John Howard, former ABS President Frank Ross, and myself talked at length about the future of the program. Next year's sessions promise to be even better. We expect to: (1) lengthen the schedule, perhaps from Friday afternoon to Sunday afternoon for everybody, (2) include some videotape presentations for individual study, (3) provide a home study package to be completed in advance, (4) lengthen the flight portion, and much, much more. If you have any suggestions for the future of this program, please let us know.

Starting with the efforts of former Executive Director John Frank, Jr., and continuing with the contributions of Sam James, Cliff Sones, and the Board, the ABS has now gotten the Pilot Checkout Program off the ground and set on course for what promises to be a very bright future. There is a tremendous need for programs such as this in

general aviation, and the ABS can be very proud of taking the lead and setting the standard. It is our hope to one day have every ABS member, in fact every Bonanza pilot, go through this course. You owe it to those who trust you at the controls.

John Eckalbar  
ABS #11623

Dear Mr. Hadler:

Last weekend was the ABS Bonanza Pilot Checkout Program in Wichita. What a bonus!

I would not have gone if I hadn't thought it would be good, but it far exceeded my expectations. The classroom and flight instructors were highly professional, skilled and cared whether you learned.

Count me in for this time next year.

Mrs. Kathryn C. Hach  
ABS #15248

To: Cliff R. Sones

At last I have found some time to write, and now I believe I have had time to consider more fully the experience of the "Bonanza Pilot Checkout Program" and I want to be sure that I have thanked you for the consideration showed to me in my unusual scheduling request.

I was really impressed for the first time when I found that the students in the class were from all over the U.S., as far away as Florida, New York, California, Texas, and Minnesota. We had two others from Kansas, but I was the only Wichitan in a class held in Wichita. I was impressed the second time when I heard that our instructors came from California, Indiana, Colorado, Missouri, and only four were from Wichita. Again, I was impressed with the professional attitudes and high quality of John Eckalbar and Sam James, and of the others I visited with. Finally, I was impressed with the extreme variation in experience in the students, which ranged from practically no time in Bonanza's or any aircraft to over 5,000 hours.

It was a compliment to our program and instructors that the FAA qualified us for their "wings" award.

It was a privilege for me to be allowed to sit in on part of the re-cap that Sam and John were having with the instructors as to how the program could be improved. They felt their schedule was tight and hectic for them and their students, but they still accommodated my exception which made my time every effectively used. I got the best proficiency review I have had since I got my multi-engine rating.

I particularly liked the response when

I asked what would motivate the instructors (I forgot the impressive fact that all the instructors owned Bonanzas) to come to Wichita for the program. The answer was, "You can't imagine how much fun it is to have such motivated students, and such great airplanes, which are well-maintained, and superbly equipped."

From what I have said so far you can tell I think the program was great. I don't believe that there is a Bonanza pilot that couldn't profit from taking the course, and I know it will be an even better course in the future. I believe I'll try to take it again for my next bi-annual flight review in two years, and thereafter. I think this is a service we hoped we could make available to our members way back in the early '70s as we looked to the future of the ABS.

Congratulations to you and to the ABS!

Frank G. Ross  
ABSL #386

Dear Cliff:

I wanted to tell you how much I learned and enjoyed the recent Bonanza school in Wichita. My situation is evidently typical of a lot of Bonanza owners and pilots. You purchase a Bonanza, get a one to two hour check ride and fly away, not really knowing what this fine airplane will do or not do.

I use my Bonanza on some business trips, but mostly I'm just a weekend hobby flyer, so you will understand why I was so enlightened by the school. Sam and John did an outstanding job of classroom instruction and, of course, meeting and listening to Norm Colvin was a thrill. Alan Kelly from Indianapolis was my flight instructor. Alan was a very good instructor and also quite personable.

The ABS should be very proud of this school. It would be my opinion that not only week-end types like myself learn an immense amount, but extremely experienced pilots would also. My recommendation to all Bonanza pilots, regardless of their experience, is to attend this school. We would all be safer pilots.

Lowell Slocum  
ABS #14541

Dear Mr. Hadler:

I attended an American Bonanza Society pilot checkout program which was conducted on September 14 and 15, 1984, in Wichita. I was very impressed with the thoroughness of the program and the quality of the flight instruction.

I hope that the American Bonanza Society will continue to sponsor this type of program.

Gregory J. Siemann  
ABS #17690

## CONTINENTAL MOTORS FUEL INJECTION

(Continued from October issue)

### FUEL MANIFOLD VALVE

The manifold valve (Fig. 4-15) is sealed by the factory to indicate that it should not be worked on. The valve serves a dual purpose: to close off fuel to the cylinders when mixture is in the idle cut-off position, and it is the distribution point for the fuel lines to the cylinder. The valve body is made in two parts: the main body (Fig. 4-16) and a cap (Fig. 4-17) that is held in place by a series of machine screws. Inside the valve and below the cap is a very fine 20-micron screen and below the screen there is a rubber diaphragm that is attached to a rather fine spring. The top side of the diaphragm chamber is vented to atmosphere (Fig. 4-18). The vent hole is in the cap. This hole should be positioned to the side or back, never forward.

### TROUBLE SHOOTING THE MANIFOLD VALVE

Watch for fuel stains around the vent hole in the cap. Fuel stains tell you that there is a hole in the rubber diaphragm. The diaphragm should be replaced.

At engine shutdown, the engine diesels or won't quit. This tells you that the fuel shut-off valve (Fig. 4-19) in the manifold is not closing. If the engine won't start, the valve in the manifold valve is stuck closed.

### FUEL DELIVERY LINES

As stated earlier, the six fuel delivery lines that emanate from the manifold valve are all the same length. The lines are stainless steel with brazed-on end fittings. On rare occasions, these lines have been known to break, but in all probability they should show a crack long before they broke in two. Had they been inspected, the total failure could have been avoided.

I suppose it is possible for one of these lines to plug up but I have never heard of one doing so.

There is a seventh line coming out of the manifold valve. This line runs to the fuel pressure gage. On some of the earlier installations this line came off the metering valve. We will talk more about this later.

### FUEL FLOW CHANGE AFTER ENGINE CHANGE

When you changed engines the fuel flow instrument in the instrument panel wasn't changed so the difference indicated in fuel flow is somewhere in the engine. If the engine runs good, chances are that the engine-drive fuel pump pressure is set correctly. The most logical place to look for the fuel reading

difference is in the fuel manifold valve that sits on the top crankcase. This is the valve that distributes fuel to the various cylinders. The easiest but most expensive way to correct the trouble is to replace the valve. This might not correct the trouble, so remove the top valve cap. It is held in place with a series of cap screws. Remove the rubber diaphragm. There is a spring (Fig. 4-19A) on the diaphragm shaft that controls diaphragm pressure to the pressure gage. A friction-loaded collar on the valve stem controls spring tension that controls fuel pressure reading. If fuel pressure at the gage reads high, move the collar up the shaft to lower the reading on the gage. Move the collar down to increase spring tension for the fuel flow gage to read higher. Move the collar only a few thousandths of an inch at a time.

### FUEL NOZZLES

Fuel nozzles are calibrated and marked to deliver a given volume of fuel at a given fuel pressure. Nozzles are lettered like A, B, C. All "A" lettered nozzles will flow the same volume of fuel at a given pressure. All "B" lettered nozzles flow the same volume of fuel but the volume is different than nozzles lettered A or C.

Since the same fuel flow of all nozzles in a given engine is important, all nozzles in a given engine are of the same letter. Manifold valves are lettered and their lettering should be mated to nozzle letters.

The brass main nozzle body (Fig. 4-21) has a very small calibrated hole (Fig. 4-22) in the bottom end. This is the fuel delivery end. Farther up the nozzle body are several holes (Fig. 4-23) that are open to the fuel stream and to atmosphere.

A fairly coarse screen (Fig. 4-20) fits over the outside diameter, and a shroud (Fig. 4-24) that is considerably larger than the nozzle body, is swedged to the nozzle body. The result of the shroud size is a space between the shroud and screen that is open to atmosphere (Fig. 4-25).

As the engine is started, fuel flows through the nozzle, creating a certain degree of suction which draws air into the fuel stream through the vent holes in the side of the fuel nozzle body. This air entering the fuel, atomizes the fuel to help in atomization in the cylinder. This air flow into the fuel stream is effective only up to around 1700 RPM.

When you overprime or on hot days when fuel boils in the fuel delivery lines, fuel will escape through the vent holes in the nozzle body and will cause dirt and fuel stains to accumulate around the nozzle base and around the shroud. While the stains and dirt are unsightly, it does not mean that the nozzle is dirty.



## TROUBLE SHOOTING NOZZLES

Fuel nozzles will occasionally plug up. This can be detected by a cylinder miss or rise in temperature if you have a six-probe EGT.

Fuel nozzles should be checked for flow every 100 hours or annual inspection. To check flow, remove one nozzle at a time from the cylinder. Connect the nozzle to the fuel delivery line and turn on the fuel boost pump. If fuel flows out of the nozzle in a straight stream, it is clean. If the stream turns to one side, it is dirty.

Catch the fuel in a small can; check all six nozzles in the same manner. If the nozzles appear dirty, soak them in solvent for a couple of hours and blow them dry with compressed air. Clean the nozzle orifice in the same way. Never use a wire or similar object to clean the nozzle orifice, just compressed air.

## FUEL FILTER SYSTEM

The fuel-injected Bonanza has four filter screens in the fuel system. There is a rather coarse screen in the fuel inlet hose in the fuel tank. There is a very fine 20-micron screen in the main sump drain in the left-hand fuselage belly. There is a third screen of 20-micron size in the metering valve body and the fourth screen which has 20-micron mesh is in the manifold valve. There are additional filters on the market that attach to the fuel manifold valve and fuel lines to give further filtering. My personal opinion is, they are not needed since a 20-micron screen opening is smaller than the diameter of a human hair.

## FUEL VAPOR

In hot weather fuel is inclined to

vaporize in the lines. When it does, you may get erratic engine operation and a fluctuating fuel pressure gage. When this occurs at high power or in cruise, turn the fuel boost pump on momentarily. This will move out the vapor and smooth out the engine.

It is unwise to turn the boost pump to high boost since it will cause the engine to run extremely rich. If you are anything below full power, don't use high boost. Never use the boost pump during takeoff or landing.

## FLUCTUATING FUEL PRESSURE

When fuel pressure fluctuates, either on your carburetor or fuel-injected engine, it is most likely caused by vapor somewhere in the fuel system. Sometimes vapor is trapped in the line that connects to the fuel pressure gage. The line can be bled by loosening the line "B" nut at the fuel pressure gage and by turning on the boost pump or by pumping the wobble pump. Catch the escaping fuel in a cloth. If bleeding the line temporarily corrects the problem but after a short while it reoccurs, drain the gasoline from the line and fill the line with hydraulic fluid. The hydraulic fluid will stay in the line and will not vaporize so will cause the gage to read steady.

There are other areas that can cause fluctuating fuel pressure. An erratic pressure relief valve in the engine-driven fuel pump will cause pressure to fluctuate. A partially restricted vapor return line or orifice in the engine-driven fuel pump will affect fuel flow. A worn "O" ring seal in a wobble pump or electric boost pump can allow air to enter the fuel system.

If a fuel line has been modified where a larger diameter section of line has been installed, vapor will build in this larger line, so go back to the standard size line.

It is not uncommon for vapor to appear during climb-out on a hot day. This is especially true if you fly a Baron. The vapor can be cleared out by turning on low boost pump. Never turn the boost pump to high position on anything other than high power; it will enrich fuel mixture to the point the engine may quit.

## FLUCTUATING FUEL PRESSURE ON A COOL DAY

On a cool day you are cruising at 10,000 feet and your EGT suddenly starts to climb. The engine roughens slightly and you get fluctuation in the fuel pressure gage. If you were building up ice in the induction system, you would lose power but mixture should tend to enrich, so you enrich the mixture and EGT reflects the change and cools down.

As a precaution, check the in-line filter in the metering valve body, then check the *unmetered* fuel pump pressure. If you find fuel pump pressure out of tolerance, adjust it back to tolerance. If it fluctuates, replace the pump because the pressure relief valve in the pump is acting up. If you re-adjust pump pressure, check it again in about 30 days. If it is out of tolerance again, replace the pump.

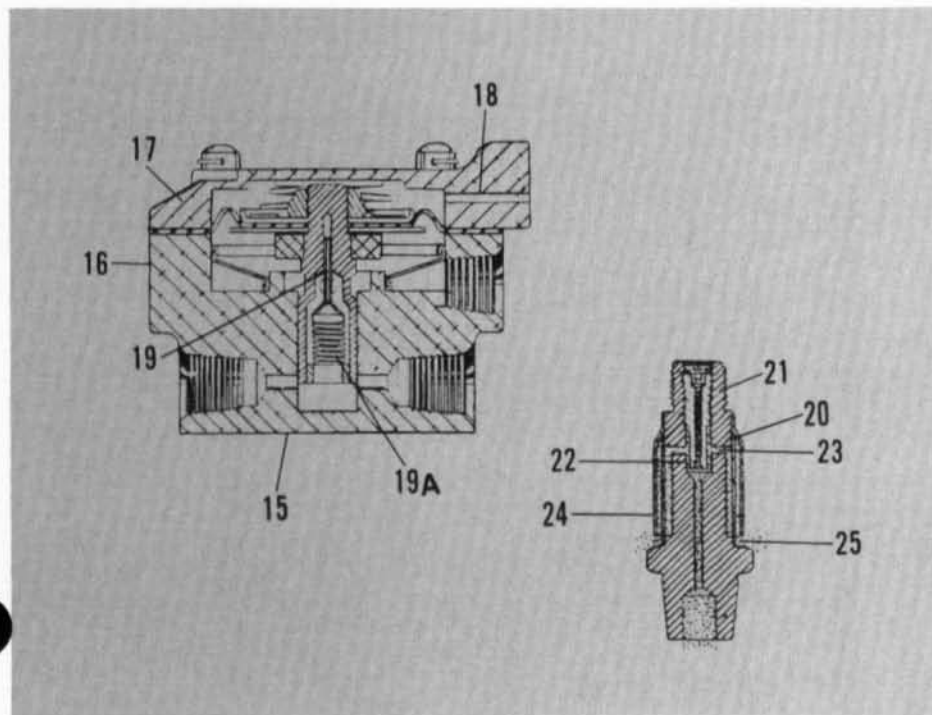
If the engine gradually leans without fuel pressure fluctuation, the fuel mixture control may be creeping closed. Loosen the nut on the back side of instrument panel and tighten the knurled nut on the front side to add more friction to the mixture control.

One more thing to check. Look at the vent hole in the manifold valve cap. If you see the fuel stains around the hole, the diaphragm is ruptured and should be changed.

## IDLE MIXTURE

Idle mixture setting affects fuel flow throughout the range. To check for correct mixture, have normal engine temperature. Idle engine at 550 to 600 RPM. Pull out on mixture control in a steady but not too rapid pull. As the engine quits, watch the tachometer hand. If mixture is correct, you will get 25 RPM increase. If there is no increase, mixture is too lean. If you get more, it is too rich. To correct, adjust the spring-loaded nut on the throttle metering arm linkage. Back off on the nut to lean, tighten to enrich. Once you adjust this nut, you will have to adjust the RPM screw which is in the same area.

*Text reprinted from Colvin's Clinic by J. Norman Colvin.*



Fuel Injection System Figure 4

## TELEDYNE CONTINENTAL SERVICE BULLETIN

**SUBJECT:** ENGINE PRESERVATION  
FOR ACTIVE AND STORED AIRCRAFT  
**MODELS AFFECTED:** ALL MODELS

Gentlemen:

Engines in aircraft that are flown only occasionally tend to exhibit cylinder wall corrosion more than engines in aircraft that are flown frequently.

Of particular concern are new engines or engines with new or freshly honed cylinders after a top or major overhaul. In areas of high humidity, there have been instances where corrosion has been found in such cylinders after an inactive period of only a few days. When cylinders have been operated for approximately 50 hours, the varnish deposited on the cylinder walls offers some protection against corrosion. Hence a two step program for flyable storage category is recommended.

Obviously, even the proper steps must be taken on engines used infrequently to lessen the possibility of corrosion. This is especially true if the aircraft is based near the sea coast or in areas of high humidity and flown less than once a week.

In all geographical areas the best method of preventing corrosion of the cylinders and other internal parts of the engine, is to fly the aircraft at least once a week, long enough to reach normal operating temperatures, which will vaporize moisture and other by-products of combustion. In consideration of the circumstances mentioned, TCM has listed three reasonable minimum preservation procedures, that if implemented, will minimize the detriments of rust and corrosion. It is the owners responsibility to choose a program that is viable to the particular aircrafts' mission.

Aircraft engine storage recommendations are broken down into the following categories:

- A. Flyable Storage (Program I or II)
- B. Temporary Storage (up to 90 days)
- C. Indefinite Storage

### A. Flyable Storage (Program I or II)

Program I- Engines or cylinders with less than 50 operating hours:

- a. Propeller pull thru every 5 days as per paragraph A2; and
- b. Fly every 15 days as per paragraph A3.

Program II- Engines or cylinders with more than 50 operating hours to TBO if not flown weekly:

- a. Propeller pull thru every 7 days as per paragraph A2; and
- b. Fly every 30 days as per paragraph A3.

- 1. Service aircraft per normal airframe manufacturer's instructions.

- 2. The propeller should be rotated by hand without running the engine. For 4 and 6 cylinder straight drive engines, rotate the engine six revolutions, stop the propeller 45° to 90° from the original position. For 6 cylinder geared engines, rotate the propeller 4 revolutions and stop the propeller 30° to 60° from the original position.

### CAUTION...FOR MAXIMUM SAFETY, ACCOMPLISH ENGINE ROTATION AS FOLLOWS:

- a. Verify magneto switches are "OFF"
  - b. Throttle position "CLOSED"
  - c. Mixture control "IDLE CUT-OFF"
  - d. Set brakes and block aircraft wheels
  - e. Leave aircraft tie-downs installed and verify that the cabin door latch is open
  - f. Do not stand within the arc of the propeller blades while turning the propeller.
3. The aircraft should be flown for thirty (30) minutes, reaching, but not exceeding, normal oil and cylinder temperatures. If the aircraft cannot be flown it should be represerved in accordance with "B" (Temporary Storage) or "C" (Indefinite Storage). Ground running is not an acceptable substitute for flying.

NOTE...If "b" in each program cannot be accomplished on schedule due to weather, maintenance, etc., pull the propeller thru daily and accomplish as soon as possible.

It is necessary that for future reference, if required, the propeller pull thru and flight time be recorded and verified in the engine maintenance record/log with the date, time and signature.

### B. Temporary Storage (up to 90 days)

#### 1. Preparation for Storage

- a. Remove the top spark plug and spray preservative oil (Lubrication Oil- Contact and Volatile Corrosion- Inhibited, MIL-L-46002, Grade 1) at room temperature, through upper spark plug hole of each cylinder with the piston in approximately the bottom dead center position. Rotate crankshaft as each pair of opposite cylinders is sprayed. Stop crankshaft with no piston at top dead center. A pressure pot or pump-up type garden pressure sprayer may be used. The spray head should have ports around the circumference to allow complete coverage of the cylinder walls.

NOTE...Shown below are some approved preservative oils recommended for use in Teledyne Con-

tinental engines for temporary and indefinite storage:

MIL-L-46002, Grade 1 Oils:

NOX RUST VCI-105

Daubert Chemical Company  
4700 S. Central Avenue  
Chicago, Illinois

PETROTECT VA

Pennsylvania Refining Company  
Butler, Pennsylvania

- b. Re-spray each cylinder without rotating crank. To thoroughly cover all surfaces of the cylinder interior, move the nozzle or spray gun from the top to the bottom of the cylinder.
- c. Re-install spark plugs.
- d. Apply preservative to engine interior by spraying the above specified oil (approximately two ounces) through the oil filler tube.
- e. Seal all engine openings exposed to the atmosphere using suitable plugs, or moisture resistant tape, and attach red streamers at each point.
- f. Engines, with propellers installed, that are preserved for storage in accordance with this section should have a tag affixed to the propeller in a conspicuous place with the following notation on the tag: "DO NOT TURN PROPELLER-ENGINE PRESERVED"

### 2. Preparation for Service

- a. Remove seals, tape, paper and streamers from all openings.
- b. With bottom spark plugs removed from the cylinders, hand turn propeller several revolutions to clear excess preservative oil, then re-install spark plugs.
- c. Conduct normal start-up procedure.
- d. Give the aircraft a thorough cleaning and visual inspection. A test flight is recommended.

### C. Indefinite Storage

#### 1. Preparation for Storage

- a. Drain the engine oil and refill with MIL-C-6529 Type II. Start engine and run until normal oil and cylinder head temperatures are reached. The preferred method would be to fly the aircraft for thirty (30) minutes. Allow the engine to cool to ambient temperature. Accomplish steps "1.a." and "1.b." of Temporary Storage.

NOTE...MIL-C-6529 Type II may be formulated by thoroughly mixing one part compound MIL-C-6529 Type I (Esso Rust-Ban 628, Cosmoline No. 1223 or equivalent) with three parts new lubricating oil of the grade recommended for service (all at

room temperature). Single grade oil is recommended.

- b. Apply preservative to engine interior by spraying MIL-L-46002, Grade 1 oil (approximately two ounces) through the oil filler tube.
2. Install dehydrator plugs MS27215-1 or -2, in each of the top spark plug holes, making sure that each plug is blue in color when installed. Protect and support the spark plug leads with AN-4060 protectors.
3. If the engine is equipped with a pressure type carburetor, preserve this component by the following method. Drain the carburetor by removing the drain and vapor vent plugs from the regulator and fuel control unit. With the mixture control in "Rich" position, inject lubricating oil, grade 1010, into the fuel inlet at a pressure not to exceed 10 psi until oil flows from the vapor vent opening. Allow excess oil to drain, plug the inlet and tighten and safety the drain and vapor vent plugs. Wire the throttle in the open position, place bags of desiccant in the intake and seal the opening with moisture resistant paper and tape, or a cover plate.
4. If the carburetor is removed from the engine, place a bag of desiccant in the throat of the carburetor air adapter. Seal the adapter with moisture resistant paper and tape or a cover plate.
5. The TCM fuel injection system does not require any special preservation preparation. For preservation of the Bendix RSA-7DA1 fuel injection system, refer to the Bendix Operation and Service Manual.
6. Place a bag of desiccant in the exhaust pipes and seal the openings with moisture resistant tape.
7. Seal the cold air inlet to the heater muff with moisture resistant tape to exclude moisture and foreign objects.
8. Seal the engine breather by inserting a dehydrator MS27215-2 plug in the breather hose and clamping in place.
9. Attach a red streamer to each place on the engine where bags of desiccant are placed. Either attach red streamers outside of the sealed area with tape or to the inside of the sealed area with safety wire to prevent wicking of moisture into the sealed area.
10. Engines, with propellers, installed, that are preserved for storage in accordance with this section should have each propeller tagged in a conspicuous place with the following notation on the tag: "DO NOT

# TURN PROPELLER-ENGINE PRESERVED."

## PROCEDURES NECESSARY FOR RETURNING AN AIRCRAFT TO SERVICE ARE AS FOLLOWS:

1. Remove the cylinder dehydrator plugs and all paper, tape, desiccant bags, and streamers used to preserve the engine.
  2. Drain the corrosion preventive mixture and re-service with recommended lubricating oil.
- WARNING...When returning the aircraft to service do not use the corrosion preventive oil referenced in paragraph C.1.a. for more than 25 hours.**
3. If the carburetor has been preserved with oil, drain it by removing the drain and vapor vent plugs from the regulator and fuel control unit. With the mixture control in "Rich" position, inject service type gasoline into the fuel inlet at a pressure not to exceed 10 psi until all of the oil is flushed from the carburetor. Re-install the carburetor plugs and attach the fuel line.
  4. With bottom plugs removed, rotate propeller to clear excess preservative oil from cylinders.
  5. Re-install the spark plugs and rotate the propeller by hand through the compression strokes of all cylinders to check for possible liquid lock. Start the engine in the normal manner.
  6. Give the aircraft a thorough cleaning, visual inspection and test flight per airframe manufacturer's instructions.

AIRCRAFT STORED IN ACCORDANCE WITH THE INDEFINITE STORAGE PROCEDURES SHOULD BE INSPECTED PER THE FOLLOWING INSTRUCTIONS:

1. Aircraft prepared for indefinite storage should have the cylinder dehydrator plugs visually inspected every 15 days. The plugs should be changed as soon as their color indicates unsafe conditions for storage. If the dehydrator plugs have changed color in one-half or more of the cylinders, all desiccant material on the engine should be replaced.
2. The cylinder bores of all engines prepared for indefinite storage should be re-sprayed with corrosion preventive mixture every six months, or more frequently if bore inspection indicates corrosion has started earlier than six months. Replace all desiccant and dehydrator plugs. Before spraying, the engine should be inspected for corrosion as follows: Inspect the interior of at least one cylinder on each engine through the spark plug hole. If cylinder shows start of rust, spray cylinder corrosion preventive oil and turn prop over six times, then re-spray all cylinders. Remove at least one rocker box cover from each engine and inspect the valve mechanism.



## AMERICAN BONANZA SOCIETY MEMBERSHIP APPLICATION

Name \_\_\_\_\_ (please print)  
 Street \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Model Bonanza Owned \_\_\_\_\_ Serial # \_\_\_\_\_ N# \_\_\_\_\_

Membership is open to anyone seriously interested in Bonanzas. Mail application along with annual dues to:  
 AMERICAN BONANZA SOCIETY, Mid-Continent Airport,  
 P. O. Box 12888, Wichita, KS 67277 (316) 945-6913

Annual Membership		ABS Air Safety Foundation Contribution (Tax Deductible) .....	\$ .....
US/CANADA/MEXICO .....	\$20	FOREIGN MEMBERS .....	\$20
+ Voluntary Building Fund Contribution (Tax Deductible) .....	\$20	Processing Fees .....	\$60
TOTAL DUE .....	\$40	TOTAL FOREIGN .....	\$60
TOTAL AMOUNT OF CHECK ENCLOSED .....			\$ .....



# 1984 CHAPTER CALENDAR

## ROCKY MOUNTAIN CHAPTER

Serving: Colorado, Kansas, Nebraska, North Dakota, South Dakota, Montana, Utah and Wyoming

CONTACT: LEE LARSON, 10458 Pearl Way, Northglenn, Colorado 80233, 303/452-8479

## SOUTHEAST CHAPTER

Serving: Alabama, Florida, Georgia, South Carolina, North Carolina, Virginia, Mississippi and Tennessee

CONTACT: PAUL OGLE, 1133 Wembley Road, Greenville, SC 29607, 803/288-7464.

## WESTERN CHAPTER

Serving: Arizona, California, Idaho, Nevada, Oregon, Washington and Alaska

CONTACT: ALDEN BARRIOS, 1436 Muirland Drive, LaJolla, California 92037, 619/459-5901

## MID-ATLANTIC CHAPTER

Serving: Washington, D.C., West Virginia, Maryland, Delaware, Pennsylvania, Virginia

CONTACT: ROBERT BLOCH, 3513 Gardenvue Road, Baltimore, Maryland, 301/486-2610

## NORTH CENTRAL CHAPTER

Serving: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Wisconsin, Ohio and Kentucky

CONTACT: TED GORTON, 224 W. Jefferson Blvd., Suite 517, Southbend, Indiana 46601, 219/232-1852.

## SOUTHWEST CHAPTER

Serving: Arkansas, Louisiana, New Mexico, Oklahoma and Texas

CONTACT: WILLIAM H. WISNER, 10106 Inwood Road, Dallas, TX 75229, 214/276-9447

## NORTHEAST CHAPTER

Serving: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland and West Virginia

CONTACT: JOHN KILBOURNE, 444 East 75th, 8-F, New York, New York 10021, 212/573-3093, 861-3254



## ABS PRODUCTS PRICE LIST & ORDER FORM

### adlog Maintenance

Record Keeping System

S/N \_\_\_\_\_ Make \_\_\_\_\_ Model \_\_\_\_\_ QUANTITY \_\_\_\_\_ AMOUNT \$ \_\_\_\_\_  
N \_\_\_\_\_ Eng Model \_\_\_\_\_ Prop Model \_\_\_\_\_

Bonanza ABS Price ..... \$44.80

Contact ABS office for prices on other models

Norm Colvin's Book ..... 34.95  
"Colvin's Clinic"

Larry Balls' Book ..... 17.00  
"Those Incomparable Bonanzas"

Pewter Bonanzas' ..... 49.95

2-Blade prop 3-Blade prop  
(Check One)

Newsletter Sets ..... 90.00  
(Binder Included)

Binders ..... 7.00

Lapel Pins ..... 5.00

Patches ..... 2.50

Hats ..... 6.00

Shirt ☐ Men's ☐ Women's ..... 20.00  
☐ White ☐ Yellow ☐ Lt. Blue ☐ Gray ☐ Beige ☐ Navy

S \_\_\_\_\_ M \_\_\_\_\_ L \_\_\_\_\_ XL \_\_\_\_\_  
(Check One)

Sweater ..... 28.00  
☐ White ☐ Yellow ☐ Lt. Blue ☐ Gray ☐ Beige ☐ Navy

M \_\_\_\_\_ L \_\_\_\_\_ XL \_\_\_\_\_  
(Check One)

T-Shirt ..... 7.00  
(White Only)

S \_\_\_\_\_ M \_\_\_\_\_ L \_\_\_\_\_ XL \_\_\_\_\_  
(Check One)

POSTAGE & HANDLING—Add \$2.50 (\$4.00 for adlog)

(No Postage & Handling required for patches only)

\$ \_\_\_\_\_

TOTAL ..... \$ \_\_\_\_\_

Please enclose total amount with this form to: AMERICAN BONANZA SOCIETY  
MID-CONTINENT AIRPORT / PO BOX 12888 / WICHITA, KANSAS 67277

NAME \_\_\_\_\_

AMOUNT PAID \_\_\_\_\_

ADDRESS \_\_\_\_\_

CHECK \_\_\_\_\_

CITY/STATE/ZIP \_\_\_\_\_

VISA # \_\_\_\_\_ (exp. date)

ABS # \_\_\_\_\_

MASTERCARD # \_\_\_\_\_ (exp. date)