

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

**D'Shannon Products, LTD.
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20-GALLON TIP TANKS

INSTALLED ON

HAWKER BEECHCRAFT MODELS 33/35/36

STC SA02722CH

STC SA02723CH

STC SA153EA

RECORD OF REVISIONS

Revision Letter	Issue Date	Date Issued	By
IR (Initial Release)	04/10/2009	04/10/2009	J.H. McGarvey
A	10/09/2009	10/09/2009	David Braun, P.E. Removed requirement to replace fuel pumps at five year intervals. Added requirement to inspect fuel pump operation prior to each flight with fuel in tip tanks.
B	08/19/2011	08/19/2011	David Braun, P.E. Moved Inspection Procedures and Time Limitations from Chapter 4 to Chapter 5. Added aileron overbalance requirements to Chapter 1 and Chapter 5.
C	12/12/12	01/17/13	David Braun, P.E. Added STC SA153EA as an eligible STC to cover the approval of the 20 Gallon tank. Added information on trouble shooting, access, wiring. Moved time / life limited items to Airworthiness Limitations Section. Added statement that the 20 Gallon Tip Tanks are identical, except for interior volume, to the 15 Gallon Tip Tanks previously offered on STC SA153EA.

LIST OF REVISIONS:	Revision IR (Initial Release)	April 10, 2009
	Revision A	October 9, 2009
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CHAPTER 1 INTRODUCTION

1. Type Design Change: This type design change consists of the installation of the D'Shannon Products, LTD 20 Gallon Fuel Tip Tanks on the wing tips of Hawker Beechcraft Bonanza Model 33/35/36 pursuant to STC SA02722CH, SA02723CH or SA153EA. The 20 Gallon Fuel Tip Tank differs from the 15 Gallon Fuel Tip Tank approved on STC SA153EA only in its interior volume, accomplished by increasing its diameter and length. All other aspects of the 20 Gallon Fuel Tip Tank are essentially identical.

Some models require changes to the aileron overbalance. Reference D'Shannon Products, LTD installation manual KB1401-1 Revision H or later FAA Approved Revision, and §5.3 of this document for information.
2. Scope: The scope of this Instruction for Continued Airworthiness (ICA) focuses exclusively on Maintenance, Inspection & Airworthiness Limitations of this FAA-approved type design change.
3. Purpose: The purposes of this ICA are to apprise Owner/Operators who have modified their airplane pursuant to this type design change: (1) When, where & how to inspect; and (2) When to replace this type design to assure continued operational safety.
4. Arrangement: This ICA is a single document comprised of six (3) Chapters:
Chapter 1, Introduction;
Chapter 4, Airworthiness Limitations;
Chapter 5, Inspection Requirements, Overhaul Schedule & Troubleshooting.
5. Superseded Documents: This ICA supersedes the Hawker Beechcraft Bonanza Model 33/35/36 Maintenance documents only in the areas relating to aviation fuel management, maintenance of fuel components added by the modification, and aileron overbalance.
6. Applicability: This ICA is applicable to all eligible Serial Numbered Hawker Beechcraft Models 33/35/36 aircraft.
7. Precautions: Tip tank fuel is transferred into its respective main tank by an electric pump at a rate of approximately 15 gallons per hour. At higher power settings, fuel consumption may exceed the transfer rate to the main tank selected.

If for any reason it is necessary to land with more than ½ tank difference in tip tank quantities, the landing should be made with flaps in the up position.

Fuel consumption may exceed tip tank transfer rate. Initiate transfer with both mains at least ½ full. Monitor main tank gauges to prevent overflow.

Before flight, check the tip tanks for asymmetrical loading. If fuel tank capacities differ more than 1/4 tank, relocate fuel prior to takeoff.

8. Reference Documents D'Shannon Products, LTD installation manual KB1401-1 Revision H or later FAA Approved
FAA Advisory Circular 43.13-1B
FAA Advisory Circular 43.13-2A

9. Distribution: D'Shannon Products, LTD. will maintain a list of all Hawker Beechcraft /Operators that have purchased our 20 Gallon Fuel Tip Tanks, and should the need arise to modify this ICA, The AEG- accepted revision will be sent directly to all Owner/Operators. For Owner/Operators having internet access, the latest AEG- accepted revision to this ICA will be available for downloading from the D'Shannon Products, LTD. website: <http://d-shannon-aviation.com/>

CHAPTER 4 AIRWORTHINESS LIMITATIONS

TIME LIMITATIONS: Replace 5-years after installation, and every 5 years thereafter the following components:

- Drain Valve O-Ring
- Fuel Cap O-ring
- Tip Tank Fuel Connection Hoses

See 5.1 for more information regarding servicing these items.

The information contained herein supplements the basic Maintenance Manuals only in those areas listed, when the aircraft is modified in accordance with D'Shannon Products, LTD Installation Manual KB-1401-01, Rev NC, dated 04/04/09 or later FAA-approved revision.

The Airworthiness Limitations section is FAA approved and specifies maintenance required under §§43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

FAA Approved: _____ Date: _____

**Charles L. Smalley, Manager
Chicago Aircraft Certification Office
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Des Plaines, IL 60018**

CHAPTER 5 INSPECTION REQUIREMENTS, OVERHAUL SCHEDULE & TROUBLESHOOTING

1. INSPECTION REQUIREMENTS

At Annual:

Drain Valve	Drain tank fully at annual to check for dirt and other contaminants. Access to the drain valve is in the lower portion of the tip tank. The drain time can be decreased by removing the drain valve body from the drain valve fitting by unscrewing it. Visually Inspect & Replace O-Rings found to have cracks, deformation, or embrittlement. The large O-Ring is M83248/1-110 which seals the drain valve body. The smaller O-Ring is M83248/1-007 which seals the plug for the drain valve may only be accessed by driving out the small spring pin and removing the spring and drain plug from the subassembly. Additional required maintenance, service and adjustments must be made to comply with FAA Advisory Circular 43.13-1B Chapter 8 §2 dealing with fuel systems.
Fuel Transfer Pumps	The fuel pumps are installed in the wheel wells of the aircraft. Visually inspect for leaks through fuel pump connections with pump on. Additional required maintenance, service and adjustments must be made to comply with FAA Advisory Circular 43.13-1B Chapter 8 §2 dealing with fuel systems.
Fuel Transfer Solenoid Valve	The fuel transfer solenoid valves are located on the fuel pump bracket adjacent to the fuel pumps. Visually inspect for leaks through valve connections with pump on. Additional required maintenance, service and adjustments must be made to comply with FAA Advisory Circular 43.13-1B Chapter 8 §2 dealing with fuel systems.
Tip Tank Fuel Connection Hoses	The fuel tip tank connection hoses are between the wing and the tip tank. Remove the 28 screws and washers that secure the tip tank cuff to the wing and slide the tip tank outboard clean of the wing. Support the tip tank with a stand or other means. Visually Inspect & Replace any hoses found to have cracks, deformation, or embrittlement. The hose assembly is 350-4-0140 Additional required maintenance, service and adjustments must be made to comply with FAA Advisory Circular 43.13-1B Chapter 8 §2 dealing with fuel systems.
Tip Tank Vent	The fuel vent connector is a blade like device on the bottom outer surface of the tip tank. Check vent hole and pin hole on vent connector for any obstructions. Although removal of the vent connector is unlikely to be required for maintenance, the vent connector may be unscrewed from the vent fitting. Reinstall with sealant CS3204 class A. Additional required maintenance, service and adjustments must be made to comply with FAA Advisory Circular 43.13-1B Chapter 8 §2 dealing with fuel systems.
Tip Tank Surface	Check for cracks or deformation of the tip tank surface at annual. Additional required maintenance, service and adjustments must be made to comply with FAA Advisory Circular 43.13-1B Chapter 3.

Tip Tank Sight Strip

Inspect for clarity. The tip tank sight strip for fuel quantity gauging may cloud over time due to UV exposure. The sight strip clarity may be renewed by applying Armor-Dillo TS-1 per the package instructions. If this does not clear the sight strip, sand the affected area with 180 grit paper being careful not to penetrate the glass fibers in the underlaying mat. Apply a coat of such as Evercoat Premium Marine Resin if the glass fibers are exposed. Ref. FAA Advisory Circular 43.13-1B Chapter 3. Next, apply a coat of automotive clear coat to the affected area. The clear coat will protect the surface from the UV rays as well as smoothing the surface to make the sight strip translucent. Be sure to follow the manufacturer's recommendations for the clear coat, including any surface preparation (clean, wax and silicon free, and roughened with the proper grit paper) and mixing instructions for the two part catalyzed system you are using.

Tip Tank Caps

The tip tank fuel caps can be found on the top surface of the tip tank. Visually inspect & replace O-Ring MS29513-138 in the fuel cap base if found to have cracks, deformation, or embrittlement. A pair of O-Rings seal the rod assembly through the center of the cap. Remove the stainless steel cotter pin, remove the castellated nut keeping track of the number of turns, and the order of assembly of the washers, lock and spring. The two O-Rings nested in the cap are M83248/1-011. Reassemble and install a new stainless steel cotter pin. Additional required maintenance, service and adjustments must be made to comply with FAA Advisory Circular 43.13-1B Chapter 8 §2 dealing with fuel systems.

Electrical Components

Check that all bulbs and strobes are functioning correctly. The bulbs and strobes are accessed under the acrylic radome and fixed to an aluminum bracket which is accessible from both sides once the radome is removed by removing the four screws securing the radome to the tip tank forward bulkhead. The radome is handed and must be reinstalled to its original Tip Tank. Wiring connections are made via pin connections, and the wires may be fished through the conveying aluminum tubing to the mounting cuff area of the tip tank. Remove the 28 screws and washers that secure the tip tank cuff to the wing and slide the tip tank outboard clean of the wing. Support the tip tank with a stand or other means to gain access to this area. Wiring diagrams and information may be found in the installation manual KB-1401-1 Rev H or later FAA Approved Revisions. Additional required maintenance, service and adjustments must be made to comply with FAA Advisory Circular 43.13-2A.

Pre-Flight:

Tip Tank Fuel Load	Before flight, check the tip tanks for asymmetrical loading. If fuel tank capacities differ more than 1/4 tank, relocate fuel prior to takeoff.
Tip Tank Vent Fitting	Check vent hole and pin hole on vent fitting for any obstructions as part of the pre-flight check.
Tip Tank Surface	Check for cracks or deformation of the tip tank surface at Pre-Flight Inspection.
Tip Tank Caps	Make sure that the fuel caps are on and secure at Pre-Flight Inspection.
Tip Tank Fuel Pumps	During preflight with fuel in Tip Tanks, switch on Tip Tank fuel pumps and assure they are operating. Inspect connections for signs of leaks. After this check, turn Tip Tank fuel pump switch to the off position. If Tip Tanks do not contain fuel this preflight item may be disregarded.

2. OVERHAUL SCHEDULE No overhaul required for this type design change.

3. FLIGHT CONTROLS
Aileron Overbalance Requirements
Use the procedure in the Hawker Beechcraft Bonanza Model 33/35/36 Maintenance documents for aileron balance, except the aileron overbalance to be achieved is:
All 33 Models – 6.5 in-lb or greater
35 through P35 – Use overbalance in Hawker Beechcraft Maintenance Documents
S35 and After – 6.5 in-lb or greater
All 36 Models – 4.1 in-lb or greater

Additional overbalance information can be found in the installation manual KB-1401-1 Rev H or later FAA Approved Revisions.

4. TROUBLESHOOTING
The tip tank fuel transfer system is equipped with a solenoid shutoff system which is energized by the same circuit as the fuel pump itself. Monitor fuel transfer in flight and adhere to the asymmetrical fuel load precautions outlined in the applicable Airplane Flight Manual Supplement, if needed. If fuel transfer is observed not to occur, the system can be tested on the ground. Fuel gauging is provided by a sight strip on the side of the tip tank and visible to the cockpit; and by the optional fuel quantity gauging system. See the installation manual KB-1401-1 Rev H or later FAA Approved Revisions for information of the wiring and plumbing of the fuel transfer and optional gauging system.

Assure that there is fuel in the tip tank and space in the main tank to accept the fuel that will be transferred.

4. TROUBLESHOOTING (cont) Turn on the fuel transfer pump and observe that the pumps start the transfer process. Transfer is approximately 15 gallons per hour, so 10 minutes of transfer is plenty to observe. If the fuel does not transfer, check to make sure the fuel solenoid valve adjacent to the fuel pump is functioning. The fuel solenoid valve and the fuel pump may be tested individually in place by utilizing temporary hose connections and fuel supplies. Replace any components found to be defective.

If it is determined that the failure of the pump or solenoid is electrical in nature, and if the problem is found to be a lack of power at the device, trace the circuit back using the installation manual KB-1401-1 Rev H or later FAA Approved Revision for guidance.

If it is determined the pump and solenoid are functioning correctly, but the fuel does not transfer, open the fuel cap to eliminate a vacuum condition in the tank. If this solves the problem, clean the fuel vent system as described in this chapter. There is also a fuel pickup strainer in the tank, this item is not serviceable. However, 10 psi maximum air can be fed from the fuel outlet port located in the cuff of the tip tank with the fuel cap removed. If air is observed in the tank, the fuel pickup strainer is not obstructed, and the condition of the other fuel lines will have to be ascertained.

The fuel pump does not require fuel for cooling or lubrication and may be run indefinitely without damage with or without fuel present.

Leakage from the tip tank fuel cap in flight or on unlevel parking surfaces can be caused by a perished O-Ring, a loose fitting cap, or other misalignment. If replacing the O-Ring or adjusting the tension in the cap by adjusting the locking nut at the bottom of the rod connection does not eliminate the leakage, contact D'Shannon Products, LTD. for additional information. Do not overfill the tip tanks as fuel can expand with temperature and leak from the fuel vent.