Multi-Engine Turboprop Communiqué

Communiqué ME-TP-0024
January 2021

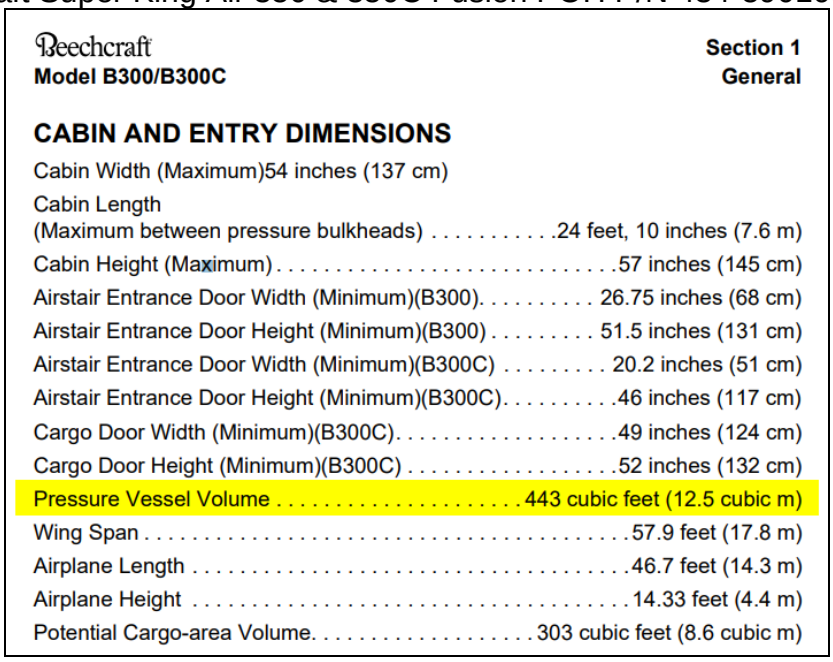
ATA 00 – Transporting dry ice inside the pressure vessel
Effectivity: Beechcraft King Air 200/300 series

Technical support has received many inquiries about transporting dry ice inside the pressure vessel for the purpose of transporting COVID-19 vaccines.

Transporting dry ice inside the pressure vessel can be a concern due to the fact that dry ice sublimates gaseous CO2 which will replace oxygen interfering with the breathing abilities of the occupants. The Federal Aviation Administration (FAA) has published two documents on this subject as guidance to operators. They are AC 91-76A and SAFO 20017. These documents provide some formulas to determine the safe amounts of dry ice that can be transported based on the size of the pressure vessel and the cabin air exchange rate for the particular aircraft.

Refer to the Multi-Engine Turboprop Communiqué ME-TP-0018 for information regarding the cabin air exchange rate and the Pilot's Operating Handbook (POH), General Section, for information about the cabin volume. See sample below.

From Beechcraft Super King Air 350 & 350C Fusion POH P/N 434-590169-0003



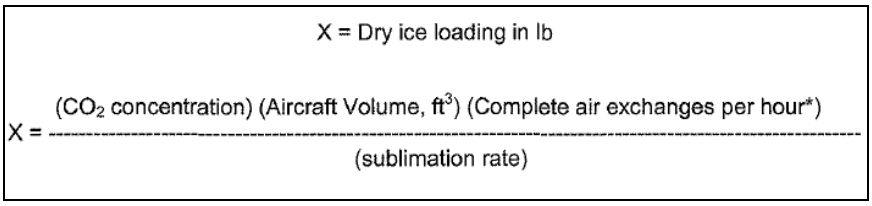
Beechcraft
Model B300/B300C

Section 1
General

CABIN AND ENTRY DIMENSIONS

Cabin Width (Maximum)	54 inches (137 cm)
Cabin Length (Maximum between pressure bulkheads)	24 feet, 10 inches (7.6 m)
Cabin Height (Maximum)	57 inches (145 cm)
Airstair Entrance Door Width (Minimum)(B300)	26.75 inches (68 cm)
Airstair Entrance Door Height (Minimum)(B300)	51.5 inches (131 cm)
Airstair Entrance Door Width (Minimum)(B300C)	20.2 inches (51 cm)
Airstair Entrance Door Height (Minimum)(B300C)	46 inches (117 cm)
Cargo Door Width (Minimum)(B300C)	49 inches (124 cm)
Cargo Door Height (Minimum)(B300C)	52 inches (132 cm)
Pressure Vessel Volume	443 cubic feet (12.5 cubic m)
Wing Span	57.9 feet (17.8 m)
Airplane Length	46.7 feet (14.3 m)
Airplane Height	14.33 feet (4.4 m)
Potential Cargo-area Volume	303 cubic feet (8.6 cubic m)

From AC 91-76A hazard associated with sublimation of solid carbin dioxide (dry ice) aboard aircraft:



$$X = \text{Dry ice loading in lb}$$

$$X = \frac{(CO_2 \text{ concentration})\ (\text{Aircraft Volume, } ft^3)\ (\text{Complete air exchanges per hour*})}{(\text{sublimation rate})}$$

Example:
CO_2 concentration: 0.005 (example only)
Sublimation rate: 2% (example only, refer to AC 91-76A)
Aircraft volume: 443 ft^3 (per POH 434-590169-0003 section 1)
Air exchanges per hour: 21 (per ME-TP-0018)

Dry ice loading in lb = .005 * 443 * 21 / 2% = 2326 lbs of dry ice

ATA 7- Aircraft jacking with full load of fuel

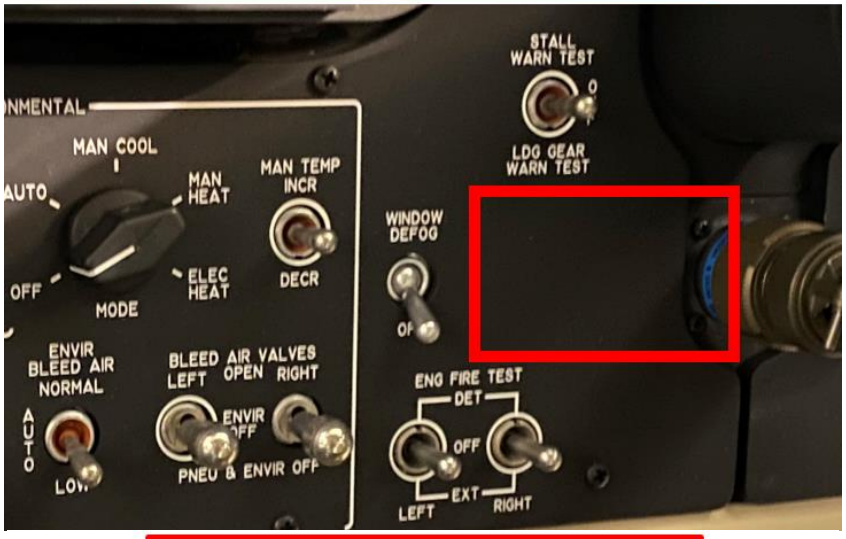
Effectivity: All

Technical support gets asked whether Beechcraft King Air aircraft, including the extended range models, can be placed on jacks with a full load of fuel. Under the design criteria from the certification process, Beechcraft King Air aircraft can be placed on jacks with a full load of fuel. The Maintenance Manual provides guidance in chapter 7 in a form of a CAUTION which reads, “The fuel must be evenly distributed in both wings to make sure stability while the airplane is on jacks.”

ATA 21- Beechcraft King Air 360 cabin differential
Effectivity: Beechcraft King Air FL-1201, FL-1234; FM-98 and after

With the introduction of the eKAPS II digital pressurization system at FL-1201, FL-1234 and after and FM-98 and after, Textron Aviation offers operators the choice of an aircraft to have either a 6.5 psi or 7.0 psi max cabin differential cabin. The easiest way to differentiate the 6.5 aircraft from the 7.0 aircraft are the CABIN ALT WARN switch or lack thereof. The 7.0 aircraft have both CABIN ALT WARN switch removed (see location in 7 psi photo). This switch was installed in the B300 prior to the eKAPS II system. The 6.5 eKAPS II aircraft will remove the test switch, but the silence switch will remain (see location in 6.5 psi photo).

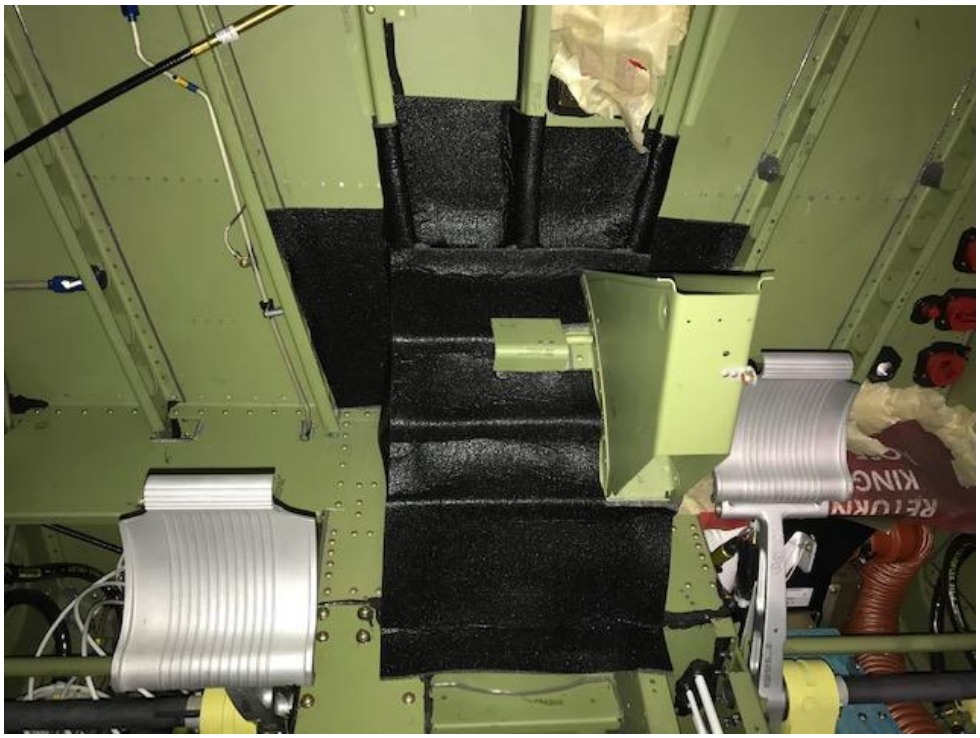
King Air 360 with 7 psi Max Cabin Differential



King Air 360 with 6.5 psi Max Cabin Differential

ATA 25 – Black insulation material pedestal area between rudders
Effectivity: All

The black insulation and acoustical material used just forward of the pedestal between the rudder pedals is part number 101-531057-601. This part number will provide a sheet which is then cut to fit the area as shown in the picture below.



ATA 26 – The red bleed air warning lights illuminate when de-ice boots are activated
Effectivity: Beechcraft King Air 200/300/B300 series

The crew may report that the red bleed air warning lights temporarily come ON followed by the MASTER WARNING light when the de-ice boots are activated. The scenario on how this can occur and troubleshooting tips follow.

The bleed air warning system (red annunciator) and the de-ice boots rely on the pneumatic system to operate. The 18 psi supplied by the pneumatic system and regulated by the pneumatic regulator supplies the air and pressure to inflate the boots and to keep the bleed air warning system sense lines pressurized which in turn activates the pressure switches to keep the red BLEED AIR FAIL lights OFF.

When the de-ice boots are activated there is a drop in pneumatic pressure as the system inflates the boots. If this drop in pressure reaches about 2 psi the bleed air warning switches will activate triggering the MASTER WARNING light. As the de-ice boots inflate, the pneumatic pressure builds up again turning the BLEED AIR FAIL light OFF. We need to find out why the pneumatic system pressure is dropping so low as the system is designed to handle the inflation of the de-ice boots without a significant

pressure drop to affect the other systems in the aircraft. Following find a list of possibilities.

- Pneumatic pressure is low. Run the engines to 70 to 80 percent. The pneumatic gauge should read 18+/- 1 psi;
- Check for a loose connection at the de-ice boots;
- Check for a loose connection throughout the run of the bleed air warning system sense lines. Refer to the appropriated Maintenance Manual chapter 26 for the schematic showing the routing of the sense line;
- Check the entire run of the bleed air sense line for small pin hole or small melted spot on the sense line; a small hole on the sense line may keep the pressure on the sense line above 2 psi during normal operation until the de-ice boots are activated. If the crew reports that this is happening on one side only, you will only have to focus your search on the side reported. This is the most probable cause.
- Check the bleed air sense switch, it should activate around 2.0 psi.

ATA 32 – Beechcraft King Air landing gear axle damage limits

Effectivity: All

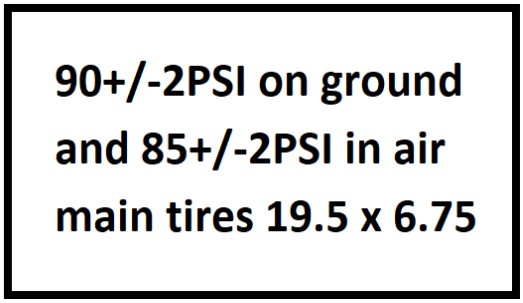
The Beechcraft King Air Component Maintenance Manual does not provide any axle damage limits. Damage to the axle can vary greatly and they should be reviewed in a case by case basis. Damage to the axles are reviewed by engineering through the structures team. When you contact the structures team, they will ask you to do the following.

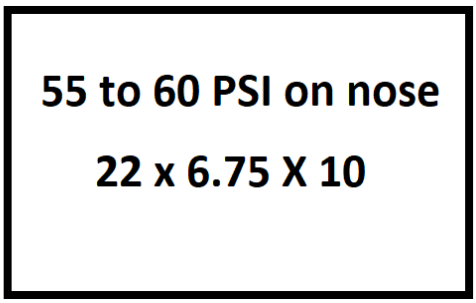
Note: With the intent of saving you some time we have included the preliminary steps that the structures team will required before they can assist:

1. Locally strip cad plate in damage areas;
2. Locally blend and polish smooth, removing minimum amount of material necessary to clear all damage and achieve a smooth profile. Maintain 5:1 minimum blend slope and 63 RMS (or better) surface finish;
3. Magnetic particle inspect the axle per ASTM E1444, using acceptance criteria per MIL-STD-1907 Grade A;
4. Use Ultrasonic NDT method to determine remaining wall thickness within the blend area(s); and
5. Complete and submit a Structural Damage Report (SDR) form along with post blend data (wall thickness/blended area dimensions) and photographs of blend areas. The form is found at https://ww2.txtav.com/service/tasdaq and requires login with your customer account. Contact team structures at Structures@txtav.com or technical support at teamturboprop@txtav.com for assistance.

ATA 32- Placarding tire pressure
Effectivity: All

It is of utmost importance to verify that the tire pressures are kept at the proper inflation pressures. This ensures longevity of the tread and proper safe operation of the wheel assembly. To make the task easier for maintenance personnel servicing the tires you can placard the tire pressure on a pressure sensitive tape made locally. Suggested placards should be placed on the inside of the affected gear doors (location as desired). Below is a suggested format. These can be made any size and font as desired. Consult the appropriate Maintenance Manual for the correct tire pressures for the model.





ATA 34 – Loss of GPS signal

Textron Aviation has received reports of operators losing GPS signal while the aircraft is on the ground taxiing, parked on the ramp, or kept in a hanger. A loss of GPS signal will affect operations of multiple systems including; transponder operation, ADS-B operation, FMS navigation, FMS operation, etc. Depending on the avionics suite installed in the aircraft, different annunciations will be displayed when GPS signal is lost. For example, a loss of GPS signal in a Collins Aerospace equipped aircraft will usually present itself as a transponder failure, while a Garmin equipped aircraft will present GPS loss as an ADS-B failure.

It has been determined that these signal losses are usually caused by local interference. This interference may come from: (1) hangers and other structures located in the area, (2) local GPS repeaters, or (3) GPS jamming.

Should you experience an issue with any of these systems, position the aircraft at least 100 feet away from any hanger, structure, repeaters, etc. Request any hanger doors in close proximity be closed, if possible, to prevent a repeater from interfering with the GPS signal.

You may also notice that while taxiing past certain facilities or areas of an airport, you may receive a message or fault associated with a loss of GPS signals. Lots of electronic devices emit frequencies that are stronger than GPS signals and can overwhelm the relatively low power of a GPS signal. These devices can be anything from automatic door openers, security systems or many other electronic devices. The FCC regulates the output frequencies and power levels of these systems, but they can interfere with a GPS signal when in close proximity. While in flight these sources of interference are far too weak to cause an issue.

ATA 57- Wing bolt washer-MTL-57-01 and AD 2020-25-01 clarification
Effectivity: When applicable

Textron Aviation issued MTL-57-01 to alert operators of the installation of Preload Indicating Washer (PLI) that would reach its torqueing value too early which is needed for the application in the lower forward wing fitting. The FAA has issued a corresponding Airworthiness Directive (AD), 2020-25-01. The purpose of this article is to provide additional clarity around the serial effectivity for the Multi-Engine Turboprop Letter (MTL) and AD.

MTL-57-01 and AD 2020-25-01 are applicable to the aircraft listed in the model effectivity that have had kits 90-4077 or 101-4024 installed. Notice that C90A, C90B and C90GTs are not listed although they also carry the LJ prefix on the serial number. This MTL is NOT applicable to aircraft with the clevis type lower forward wing fitting, only aircraft with the bathtub style wing fitting.

Kit 90-4077 replaces the center section lower main spar cap and the outboard wing spar assemblies. The wing fittings on this spar system are integral to the spar caps.
Kit 101-4024 replaced the original steel wing bolts with Inconel wing bolts. This kit is associate with Service Instruction 1235 published in November,1982.

Once it has determined if one or both of these kits has been incorporated then inspection of the washers using the colors mentioned in the MTL is needed to determine applicability. The color of the washer is irrelevant outside of these kits.

ATA 71- Engine mounts Beechcraft part numbers vs. vendors'
Effectivity: All

The Beechcraft King Air Illustrated Parts Catalog provides the part numbers of the engine mounts using the Beechcraft part number. When looking for replacement parts or damage limit information you must refer to the King Air Component Maintenance Manual (CMM) but you may need to know the vendor's part number for either Barry Control Aerospace or Lord Corporation.

Following find a cross reference between the Beechcraft part number and the vendor part number to help you find the correct CMM. As a reminder, each engine must have the same brand of engine isolators.

Beechcraft part number	Vendor part number
50-389133-3	LM-412-SA11
50-389133-9	5906-2SA1
50-389133-11	5906-2SA4
50-389133-13	LM-427-SA1
50-389133-15	5906-2SA5
50-389133-17	LM-427-SA7
114-389031-15	93880-9
117-389012-1	93880-18
114-389031-17	93880-19
129-389001-7	95596-1

ATA 76 – Autothrottle programming cable
Effectivity: Beechcraft King Air FL-1201, FL-1234 & after; BY-393 & after

IS&S Thrustsense Autothrottle Ops & install manual 1D-88129 is available on the Instructions for Continued Airworthiness page on http://txtavsupport.com. Appendix B has the procedure for system data loading that may be necessary if an autothrottle component is replaced. A cable is required to connect the RS-485 serial interface from a PC to the maintenance port of the autothrottle standby unit.

Textron Aviation has a cable available for this interface, part number PR00145715, or a harness can be fabricated as follows:

1) USB to serial adapter, ICUSB422 or equivalent. Set DIP switch 1 to the RS-485 setting;
2) M24308/2-1F or equivalent 9-pin dsub plug with socket contacts;
3) M24308/4-4F or equivalent 37-pin dsub jack with pin contacts; and
4) Approx. 6 feet of 22 gage wire, twisted shielded if available.

This cable connects to the pedestal maintenance port 3456J2 shown in WDM 34-25-01.