American Bonanza Society
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<www.bonanza.org>

BEECH BONANZA • DEBONAIR • TRAVEL AIR • BARON

PREPURCHASE SURVEY CHECKLIST

This survey highlights areas of special emphasis when evaluating a Beech Bonanza, Debonair, Travel Air or Baron prior to purchase, based on maintenance history and decades of ABS Service Clinic experience. Use this form to supplement your mechanic's prepurchase procedures. The results of your prepurchase survey may reveal elements of negotiation for your eventual purchase of the airplane. Additional information or items may affect the suitability of a particular airplane, or its eventual selling price.

I. Logbook/Paperwork Survey

Some checks may be completed before the date of airframe inspection

In the airplane	*Checked*	*Notes*
Airworthiness certificate matches aircraft registration and is properly displayed		
Registration is in aircraft, and matches aircraft markings and serial number		
Registration matches name and current address of registered owner		
Pilot's Operating Handbook and/or Flight Manual appropriate to the aircraft model and serial number is available in the airplane		
POH supplements for all installed equipment are in the airplane		
Current aircraft weight and balance data is available in the airplane		
Aircraft equipment list matches "spec sheet" and physical check of the airplane's installed equipment		

Airframe Logbook	*Checked*	*Notes*
Airframe logbooks since manufacture are available		
Compare total airframe time to advertised and to tachometer/Hobbs meter		
Confirm date and proper sign-off of latest annual inspection		
Confirm currency and expiration date of 24-month static system check		
Confirm currency and expiration date of 24-month transponder check		
Check for current ELT battery, and confirm ELT battery replacement date		
Confirm STCs, 337s, "yellow tags" and logbook entries for installed equipment		
If airplane has been painted since new, check documentation that control surfaces were removed and properly balanced before reinstallation (If static wicks are mounted on controls, they must have been balanced with wicks installed)		
Verify weight and balance was updated after any aircraft paint or new interior		
Verify damage history and, if damage occurred, documentation of repair		

Engine Logbook(s)	*Checked*	*Notes*
Current engine and logbook(s) is/are available.		
Compare total engine time and calendar years since overhaul, and time since "top" overhaul as applicable, to advertised and to tachometer/Hobbs		
Check STCs, Forms 337, "yellow tags" and logbook entries for equipment		
Review trends in cylinder differential compression checks		
If oil analysis was performed, check frequency, results and trends of reports		
(IO-520 AND -550 ENGINES WITH GEAR-DRIVEN ALTERNATORS): Check whether alternator has been rebuilt with bearing change within the last 500 operating hours		
(AIRPLANES WITH DRY PNEUMATIC PUMPS): Check whether pump has been overhauled or replaced within the last 500 operating hours (Barons certified for flight in icing conditions must have pumps overhauled or replaced at 600 hours to retain certification)		

Propeller Logbook(s)	*Checked*	*Notes*
Current engine and logbook(s) is/are available.		
Compare propeller time/years since overhaul to advertised and tach/Hobbs		
Check for propeller overhaul or re-lube within last six years		
(BEECH ELECTRIC PROPELLERS): Verify pitch change bearing lubrication within last 250 operating hours, and at no more than 250 hour intervals prior to most recent		

Propeller Logbook(s) (continued)	*Checked*	*Notes*
Verify damage history and, if damage occurred, documentation of repair		
Crosscheck any indication of prop strike history against engine log(s) for evidence of engine tear-down and inspection		
Crosscheck any indication of prop strike history against airframe log(s) for evidence of a gear collapse or gear up landing, and proper repairs		

Miscellaneous Records	*Checked*	*Notes*
Check for a current Airworthiness Directives list, and crosscheck against airframe, engine and propeller logs to confirm AD compliance (www.faa.gov <www.faa.gov/>)		
Check airframe, engine and propeller logs Service Bulletin compliance		
Crosscheck NTSB records for accident history <www.ntsb.gov/ntsb/query/asp>		
Conduct an aircraft title search (web search provides multiple services)		
Verify most recent 30-day VOR accuracy check (to use for flight check)		
Using actual airplane weight and balance data, calculate of your several "typical" flights to see if airplane is within weight and c.g. limits at full down to zero fuel loadings		

II. Airframe Survey

Concurrently or following log/paperwork checks, or while discrepancies are being resolved

Exterior Inspection	*Checked*	*Notes*
Conduct a thorough preflight inspection using the POH or Flight Manual checklist		

WITH YOUR PREPURCHASE SURVEY MECHANIC, CONTINUE WITH A DETAILED CHECK EMPHASIZING AREAS COMMONLY NEEDING ATTENTION

Engine Compartment	*Checked*	*Notes*
Check cylinders for leaks or cracks, especially around injector nozzles (fuel injected engines) and spark plug holes		
Check for cracks on top of the crankcase and at cylinder base bolts		
Check for leaks of unknown origin on the lower and rear parts of the case (such leaks may indicate a crankcase crack)		
Check alternator for evidence of oil or carbon from the vent tube		
Check condition of baffles, especially hard, cracked or missing pieces		
Check rubber engine mounts for sagging or cracking		
Check engine mount heat deflectors for wear, and for cutting into mount legs		
Check hoses, clamps and brackets for broken, kinked, loose or missing items		
Look for cracked, broken or missing grommets at fuel injector lines brackets		
Check for any unexplained fuel or oil leaks or stains		
Check for any loose or missing rivets in the engine compartment(s)		
Check for any corrosion in the engine compartment(s)		

Exhaust System	*Checked*	*Notes*
Check for cracks, leaks or dents in the exhaust system		
Check for missing mounting nuts or studs at the cylinder attach points		
Look for loose, bent, collapsed or missing clamps at front and back of muffler		
Check exhaust manifold and tailpipe for corrosion		
Check for worn or missing rubber grommets on tailpipe hangers at firewall		
Check angles on firewall for wear and looseness		
Check for missing, bent or distorted muffler flame cones		
Check muffler exterior for dents, heat warp, holes or cracks		

Cowl Flaps	*Checked*	*Notes*
Check that cowl flaps fit well and do not contact firewall(s) or rub cowling(s)		
Check cowl flaps for excessive looseness, wear, cracks or breaks		
Check for damage to the cowl flap hinge lines		
(BARONS AND TRAVEL AIRS): Check for rubbing between cowl flaps and breather lines		
(MANUAL COWL FLAPS): Check smooth operation of cockpit cowl flap control (Bonanza/Debonair: Binding may indicate friction between cowl flap and nose wheel tubes. Friction here may lead to the inability to extend the nose wheel)		
(ELECTRIC COWL FLAPS): Verify operation of cowl flap motors and actuators		

Cowling and Cowl Doors	*Checked*	*Notes*
Check doors for proper fit all around, and any damage due to rubbing against engine components or baffling, or at the front of the cowling		
Inspect cowling hinge area for damage from being blown open beyond limits		
Check general condition of cowl doors and nosebowl (95s: fiberglass nosebowls)		
Verify all cowling latches/Dzus fasteners are in place and working properly		

Propeller(s)	*Checked*	*Notes*
Check spinner(s) for cracks, dents or damage (FAA does not permit chromed spinners)		
Check spinner bulkhead(s)/backplate(s) for cracks, dents or damage		
(ELECTROTHERMAL PROPELLER): Check condition of wiring, brush blocks, slip rings and hold-down boots		
(ALCOHOL PROPELLER): Check condition of plumbing, slinger ring(s) and rubber prop leading edge boots		
Check propeller blades for security, cracking, nicks or other damage		

Nose Landing Gear	*Checked*	*Notes*
Check for leaks, visible corrosion or rust on the nose landing gear strut		
Check for nose tire cupping, cracks in the tire, excessively worn tread, flat spots or chord showing		
Check for pitting or corrosion on the chromed part of the strut		
Check for looseness in the nose strut mounting, piston or barrel		
Check shimmy damper for security and inspect for bends or leaks		
Check tow pin area for damage		
Check for any cracks, dents, bends or corrosion of the wheel well sheet metal		
Look for bent, loose or missing rivets or bolts		
Check condition of boots for nosewheel steering and retraction		
Check for bent nose wheel steering mechanism or gear door pushrods		
Check nose gear doors and hinges for bends, wrinkles or excessive wear		
Check for bends in the nose gear door pick up arm		
Check for grooved, bent or missing nose gear pickup pin on V-brace		

Main Landing Gear (check both gear legs and wells)	*Checked*	*Notes*
Check for tire cupping, cracks in tires, excessively worn tread, flat spots or chord showing		
Check for grooves in brake discs and the condition of brake pads		
Look for hard, stiff, kinked or leaking brake hoses		
Check for security of the outer main gear doors, and for cracks or loose nuts or rivets at the strut connections and door hinges		
Check for rusted, pitted or worn areas on the chromed part of the piston		

Main Landing Gear (check both gear legs and wells) (continued)	*Checked*	*Notes*
Look for fluid or other signs of strut leaks		
Check for any looseness of the gear on its mounts		
Look for bends, dents, or looseness in surfaces, linkages, arms and brackets		
Check for close fit and any fraying of uplock cable at uplock roller end		
Check for evidence of gear rubbing on doors or wheel well		
Check for rust on the springs associated with the gear uplock mechanism		
Check uplock roller for freedom to roll		
Check that inner gear doors retract fully against underside of the wing		

Retraction Tests	*Checked*	*Notes*
Conduct a full gear retraction test		
Check gear rigging tolerances, including down tensions, free play in the gear box, uplock clearance and any sign of bent extension arms		
Check gear transit speed (14V 11-13 seconds, 28V 4-8 seconds)		
Check for looseness in lift leg joints or pivots when gear is at mid-travel point		
Check for looseness in nose gear rod ends and actuator arm when gear is at mid-travel point		

Wings	*Checked*	*Notes*
Sight across the top and bottom of the wing, checking for dents, wrinkles or paint blistering (Paint blistering may indicate corrosion of wing skins, spars or other internal structure)		
Check for ground-down rivet heads (Flattened rivets may indicate damage from sanding if the airplane was not fully stripped before repainting)		
Check that installed wingtip is correct for the model of airplane, or approved as indicated in the airframe log		
Check tip tanks, if installed, for dents, signs of leaks, delamination of fiberglass, proper fit and condition of fuel caps, proper venting, and opaqueness of visual fuel level indicator windows		
Inspect ailerons for dents, wrinkles, pinholes, corrosion "blistering," or missing or touched-up paint that might indicate damage or corrosion		
Check aileron attach screws for security and any corrosion		
Check aileron is mounted properly (stainless steel screws are not approved)		
Look for paint overspray in the aileron gaps, or rough or missing paint on the aileron leading edges (Such may indicate ailerons were not removed for balancing)		
Check aileron trim connections, and that trim is flush with aileron when cockpit indicator indicates "zero" or "neutral" (left only; 95, all Baron, A/B36 1984 and after)		
With flaps extended, check signs of contact or damage on flap leading edge		
Check attach bolt "bathtub" fittings for corrosion, standing water or evidence of past standing water, paint stripper, or rusty or corroded wing attach bolts		
Check bathtub fittings for correct cover and cover attachment		
Check drain holes under wings beneath bathtub fittings for obstructions		
Check for evidence of fuel leaks on the top and bottom of wing		
Check for proper length and slant of fuel vents, and broken or missing vent lines (33, 35, 36 [except 36TC]: Fuel vents must be at least 1¾ inches below wing, canted forward 10 degrees with 45-degree scarf pointed forward)		
Crosscheck serial numbers from fuselage, ailerons, flaps and logbooks. Differing serial numbers may indicate replacement due to prior damage.		

Tail	*Checked*	*Notes*
Check fuselage in tail area for any wrinkles, dents, bends, loose rivets, corrosion or other damage		
Check tail tie-down area for evidence the airplane has been pulled by tie-down ring with excessive force		
Check all fixed surfaces for corrosion, pinholes, cracks, wrinkles, dents or other damage		
Look for paint overspray inside elevator/ruddervator/rudder wells, or rough or missing paint on control surface leading edges (Such may indicate controls were not removed for balancing)		
Check pitch trim tabs, pushrods and hinges for proper mounting and security • "Straight" 35, Travel Airs and Barons have no camber to the trim tabs • A35 - G35 have cambered trim tab with contour on the bottom • H35-V35B, all 33 and 36 have cambered trim tab with contour on top		
Check pitch and (95, all Barons) rudder trim tab is flush with control surface when cockpit indicator is in the "zero" or "neutral" position		
Check for unpainted, bent, wrinkled, pinholed, creased or corroded surfaces		
Check control surface security and condition of hinges		
Check for excessive play at bearings or rod ends		
Check control horns for looseness, corrosion or bends		
(33, 36, 95, ALL BARONS): Look for looseness or movement near rudder attach points		
Check fixed stabilizers for security, and listen for unusual noises when fixed surfaces are pushed up and down		

Cabin Area	*Checked*	*Notes*
Check for crazed or cracked windows, or windows turning bluish-white in color		
Look for cracked, broken, discolored or distorted window moldings		
Check for proper mounting and hardware if windows/doors have been replaced		
Check fit of forward door, and that hinges do not move when door is moved up and down Check smooth operation of door, and proper operation of door hold-open rod		
Check operation and security of rear and/or cargo doors, and (95, all Barons) nose baggage door		
Inspect forward door hinge plates for signs of overextension		
Look for signs of interior leaks around door and window frame seals		
Check cabin sidewalls for corrosion under windows, doors, pilot's storm window		
Check for proper operation of openable windows		
Check proper operation and then security of emergency exits		
Check proper installation and operation of seat belts and shoulder harnesses		
Check proper installation and operation of seats and adjustment mechanisms		
Check that manual landing gear hand crank is accessible, snaps into cranking position, and restows properly		
Check that fuel selector valve(s) move easily between all positions including "off" and (95, all Barons) "crossfeed" • Check proper operation of "off" position safety stops" • Travel Air and Model 55 Barons prior to TC-1608 have a mechanical stop that prevents simultaneous selection of "crossfeed" on both engines"		

While Engine is Warm (May follow flight survey)	*Checked*	*Notes*
Conduct borescope check of all cylinders		
Conduct differential compression check of all cylinders		
Inspect oil screens/filters for metal or other contamination		

III. Flight Survey

After other surveys complete, discrepancies resolved and airplane deemed airworthy

If possible, bring the survey mechanic along on a flight evaluation. If mechanic is not available, bring a knowledgeable observer to record data and assist with traffic avoidance and flight safety. Conduct your survey flight in day, VFR conditions in the immediate vicinity of the airport. Conduct all phases of your survey flight using checklists from the Pilots Operating Handbook/Flight Manual or other Beech-savvy source.

Flight Survey	*Checked*	*Notes*
Check manifold pressure gauge(s) for ambient pressure indication before start		
Check all instruments against tolerance for IFR flight after start/during taxi		

Flight Survey (continued)	*Checked*	*Notes*
Functionally check the autopilot system and all methods of disconnect (See POH supplement for autopilot preflight checks and disconnect procedures)		
Check operation of flaps, preselects and indicating systems were installed		
Confirm expected manifold pressure and rpm at full throttle at takeoff (MP as per POH/supplement for turbocharged engines; approx. 1" < ambient normally aspirated		
Check fuel flow is at or above redline at takeoff power (reduce 1.5 gph per 2,000 feet above sea level for normally aspirated engines)		
IF EQUIPPED WITH FUNCTIONING AUTOPILOT, RECOMMEND ENGAGING AUTOPILOT DURING FUNCTIONAL CHECKS		
Complete all operations through level-off at a safe altitude in cruise configuration		
If possible, check tachometer indication using hand-held tach checking device		
(NORMALLY ASPIRATED): Check manifold pressure at full throttle against expectations from POH for the altitude and propeller speed		
(TURBOCHARGED): Check for no MP "drift" with changes in altitude and/or propeller speed below critical altitude		
Compute True Air Speed and compare to POH expectations		
Using a "flow pattern" across the cockpit (for instance, from left to right), operationally check all instruments, avionics and indicators. Check magnetic compass for proper fluid fill and operation. Turn on and off all switches (unless doing so presents a safety hazard) to check equipment		
Check for false StormScope™/StrikeFinder™ indications (if installed; false plotsmay indicate poorly grounded electrical equipment)		
Conduct VOR check and compare to 30-day VOR check log		
Slow (as necessary) to or below landing gear extension speed and cycle the landing gear. Time the gear cycle; check electrical indications and the landing gear position indicators (14V: 7-11 one-way cycling time. 28V: 4-8 seconds)		
(IF AIRCRAFT AND GROUND EQUIPMENT PERMITS): Fly a coupled ILS approach to test both the ILS receivers (including marker beacons) and autopilot coupling		

Review all notes and discrepancies from this survey and the mechanic's own inspection procedures as you make your purchasing decision, and/or negotiate repairs and adjustment to sale price with the seller/broker/agent.

This is a product of the American Bonanza Society Technical Services. Please address comments/suggestions to <bonanza8@bonanza.org>.

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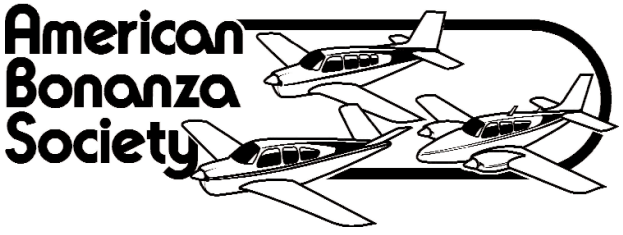
PREPURCHASE SURVEY CHECKLIST



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