U.S. Department of Transportation
Federal Aviation Administration

General Aviation Airworthiness Alerts

AC No. 43-16

ALERT NO. 238
MAY 1998

Improve Reliability-Interchange Service Experience

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, DC 20590

GENERAL AVIATION AIRWORTHINESS ALERTS

The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported as significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts' readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: FAA; ATTN: Designee Standardization Branch (AFS-640); P.O. Box 25082; Oklahoma City, OK 73125-5029.

AIRPLANES

BEECH

Beech; Model F-33A; Bonanza; Forward Wing Carry-Through Spar Structure Crack; ATA 5714

During an inspection of the wing carry-through spar structure in accordance with Airworthiness Directive (AD) 95-04-03, a crack was found.

AD 95-04-03 does not apply to this aircraft by serial number; however, the area was inspected as a safety precaution. The crack was approximately 1.3 inches long and was located on the right side in the middle section of the spar-web, lower bend radius. The crack traveled in a vertical direction following the bend radius. Since this aircraft was used for training purposes, the submitter speculated that this problem may have been caused by high operating time, high calendar time, and hard landings.

Part total time-10,840 hours.

Beech; Model BE35; Bonanza; Engine Mount Cracks; ATA 7120

During an annual inspection, the right rear engine mount bracket (P/N 35-45377) rivets were found loose.

After removal of the engine, both lower rear engine mounts were found cracked. The cracks were adjacent to the forward edge of the rear support member. Although aircraft time was not reported, the submitter stated high time contributed to these defects. It was suggested extra care be exercised when inspecting this area. The submitter stated that rotating and/or replacing the "Lord" mounts may alleviate this problem.

Part total time not reported.

Beech; Model A36; Bonanza; Engine Oil Leak; ATA 7910

This aircraft had an Allison Model 250B17C engine installed in accordance with Supplemental Type Certificate (STC) SA3523NM.

The pilot stated engine oil was dripping on the hangar floor. An inspection of the engine oil system disclosed that the oil tank was cracked. The crack was on the side of the tank and was approximately .125 inch long. There were two creases in the tank running in a vertical direction on both the forward and aft sides of the tank. It appeared the crack originated at the top of the forward crease. The oil tank is pressurized; therefore, even a small crack can cause a substantial amount of oil to be lost. The submitter recommended the oil tank be inspected at frequent intervals for creases, dents, cracks, and/or chafing.

Part total time-400 hours.

Beech; Model A36; Bonanza; Misrouted Rudder Cable; ATA 2720

During the first annual inspection, the right rudder cable assembly (P/N 36-524079-5) was found misrouted.

The cable had been installed over the top of the pulley guard at the aft pulley (P/N MS24566-4B) located at fuselage station 257.6. The “cable guard” caused some cable strands to break. The submitter stated this condition has existed since the aircraft was delivered from the manufacturer. A thorough receiving inspection should be conducted when a new or used aircraft is acquired.

Part total time-252 hours.

Beech; Model 58; Baron; Alternator Drive-Coupling Failure; ATA 2410

During an engine operational test, the left engine alternator malfunctioned.

Maintenance personnel discovered the alternator drive coupling had failed. The submitter stated there is not a life limit for the alternator drive coupling. When the unit fails, the internal gear and engine oil supply are contaminated with metal chips and other debris. This could cause a catastrophic engine failure. It was suggested that the manufacturer establish a life limit and more rigorous inspection criteria for the drive coupling. Also, the minimum equipment list (MEL) should not allow operation without an inspection of the drive coupling and the engine oil supply.

Part total time-5,000 hours.

Beech; Model 76; Duchess; Main Landing Gear Failure; ATA 3211

The pilot reported that after takeoff, the right main landing gear would not retract and could not be returned to the “down-and-locked” position. The aircraft landed with the nose and left main landing gear extended.

An inspection revealed the right main landing gear bolts attaching the upper shock strut assembly to the upper landing gear housing had failed. This allowed the gear to extend excessively and strike the wing skin during retraction. Bolts (P/N’s AN5-13A and AN5-16A) displayed evidence of severe stress in the threaded area. The submitter speculated this was due

to extended operation in a training environment. This submitter also found six other bolt sets in the fleet with stress damage on the threads. It is recommended these bolts be removed for inspection at frequent intervals.

Part total time not reported.

Beech; Model 200; King Air; Main Landing Gear Door Linkage Failure; ATA 3231

During a postflight inspection, the left main landing gear door swivel (P/N 101-810126-7) was found broken.

The universal action between the eye bolt (P/N AN 45) and the door link assembly (P/N 101-810126-5) was binding during activation of the landing gear door. This was determined to be the cause of this damage. Beech has issued a kit (P/N 101-8013-5) which corrects the binding problem. For more information, see Beech Service Instruction No. 1114.

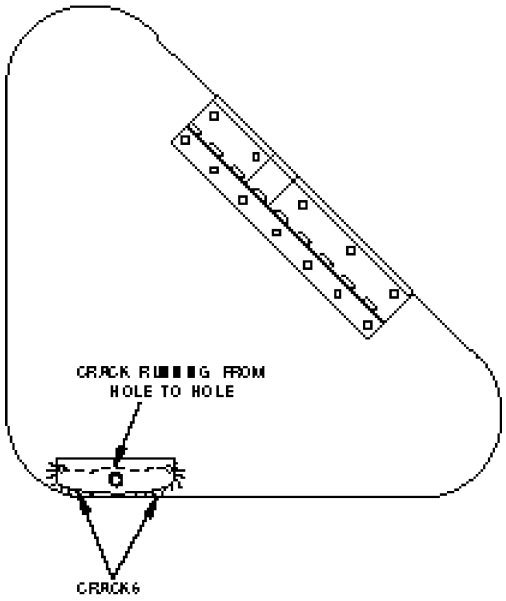
Part total time not reported.

Beech; Model 200; King Air; Defective Pilot's Storm Window; ATA 5610

During a scheduled inspection, it was discovered that the pilot's storm window was cracked.

The storm window (P/N 101-420080-1) had numerous cracks emanating from the latch assembly. (Refer to the following illustration.) One of the cracks traveled between two screw holes used to attach the latch. The submitter did not offer a cause or cure for this defect. It would be wise to thoroughly inspect this area during scheduled inspections.

Part total time not reported.



Beech; Model B300C; King Air; Fuel Cell Antisiphon Valve Damage; ATA 2810

Be aware that damage to the fuel cell antisiphon valve can occur during refueling operations.

When the fuel nozzle is inserted into the fuel filler port, the nozzle opens the antisiphon, valve-flapper door which rests against the upper flange (pan) inside the tank. This area of the antisiphon valve may be damaged (bent) by pressure from the fuel nozzle and/or rough handling of the nozzle. The flapper door cannot seal properly if the pan is bent, and the valve will be less effective. It is recommended fueling personnel exercise extreme care while handling the fuel nozzle.

Part total time not applicable.

Beech; Model B300C; King Air; Wing Skin Defect; ATA 5730

During a scheduled inspection, a crack and wrinkled skin (P/N 50-110025-93) were found on the right wing.

The damage was located on the upper wing surface outboard of the wing attachment at wing station 124.6 midway between the front and rear wing spars. The crack was approximately 1 inch long and resulted from the wrinkled skin. A review of the maintenance records revealed on two previous occasions (November 1993 and July 1995) wing skin wrinkles had been found at this location. On both occasions, the wing was inspected by a manufacturer's representative and found to be serviceable. This operator and the Beech representative are working together to provide a repair procedure.

Part total time not reported.

Beech; Model 400A; Beechjet; Interference With Electronic Equipment; ATA 3340

While in flight and while the yaw dampner was on, the crew noted both horizontal situation indicators (HSI) "off-flags" appeared, and the inverters fell off line.

While performing an inspection at the certified repair station, it was noted that the tail beacon lamp filament had "shorted out" at the base of the lamp (P/N 34-0226010-91). The submitter speculates this may have set up a radio signal that turned the inverters off. The submitter further states that when the beacon power is turned off, the problem disappears.

Since this is the second aircraft that the submitter has observed with the same problem, it is felt an "in-line" filter is needed to alleviate the problem.

Part total time not reported.

BELLANCA

Bellanca; Models 14-19, 14-19-2, 14-19-3; Cruisemaster; Elevator Trim Tab Flutter; ATA 5513

This article was submitted by the FAA Aircraft Certification Office (ACO), ACE-115C, located in Chicago, Illinois.

Five reports have been investigated concerning in-flight tail flutter and/or vibration problems. Bellanca and the ACO are concerned that Airworthiness Directive (AD) 53-16-1 and Bellanca

Service Bulletin (SB) 1 may not be adequate to prevent elevator trim tab failures. The trim tabs may be damaged by overtightening the taper pin fastener. Overtightening the taper pin may be the cause of some flutter/vibration problems. It was recommended that all operators of like aircraft immediately inspect the elevator trim tab system in accordance with AD 53-16-1 and Bellanca SB 1. Special attention should be given to the taper pin fastener. If any damage is found, it is suggested the trim tab be replaced prior to the next flight.

Earlier Bellanca models may not be affected; however, they should be inspected for the conditions previously stated. Bellanca Models 14-19-3A and the 17 series have a different trim tab system and should be inspected in accordance with AD 68-23-8 and Bellanca SB's 45 and 46.

Bellanca and the FAA are working together to coordinate a new Service Letter and possibly an AD to address this issue.

CESSNA

Cessna; Model 172P; Skyhawk; Cracked Cylinder Head and Piston Damage; ATA 8530

A flight was prematurely terminated due to a rough-running engine. Upon engine runup by a technician, it was noted the application of carburetor heat produced a barely-noticeable drop in RPM.

Overhauled magnetos were installed to replace the existing pair, and the aircraft was returned to service. Subsequent runup procedures revealed a barely-perceptible drop in RPM during the carburetor heat checks.

After approximately 2.2 hours of additional flight time, the engine began running rough again. Full power was applied resulting in smoother engine operation. The decision was made to terminate the flight. The control tower operator reported seeing smoke trailing from the engine as the aircraft approached for landing.

After a safe landing, an inspection revealed the engine had used 4 quarts of oil during the last 45 minutes of flight. Further inspection revealed nicks on the number one piston and cracks in the number one cylinder head (O320-D2J).

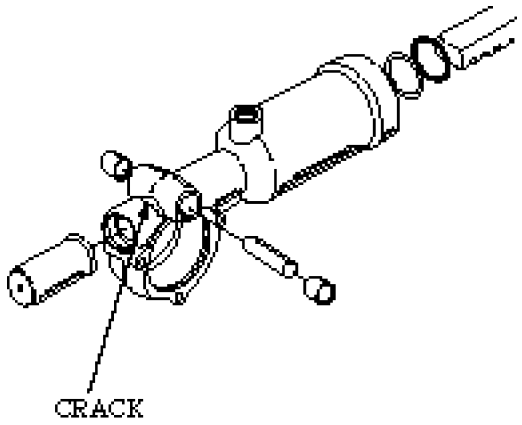
Part total time-1,620 hours.

Cessna; Model 172RG; Cutlass RG; Main Landing Gear Actuator Housing Cracks; ATA 3233

During a fleet inspection, it was discovered that twelve (12) main landing gear actuator housings (P/N 1281001-3) were cracked in the same area below the bearing cups (P/N S1997C7-8) on seven (7) different aircraft. All aircraft inspected had at least one actuator housing cracked in the same location. (Refer to the following illustration.)

Instances such as this should trigger the thought of a probable design flaw. Anyone coming in contact with this make and model aircraft should immediately look for similar indications of such cracking in this area. This report has been sent to the responsible FAA aircraft certification office for appropriate action.

Average part total time of all seven aircraft-5,750 hours.



FAA SAFETY RECOMMENDATION 97.149
Cessna; Models 172RG, R182, and 210; Nose Gear Actuator Downlock Pin Failure; ATA 3230

Several incidents have been reported of nose gear collapses on the noted Cessna aircraft which have been attributed to failures of nose landing gear actuator pins.

The downlock pins, which are “press fit” into the actuator bearing end and retained with the roll pin, have become loose and cracked and/or broken at the retaining groove internal to the actuator bearing end, making detection difficult.

A review by the responsible FAA Aircraft Certification Office has revealed the actuator bearing end and downlock pin designs meet the current criteria for expected loads, and the observed failure of the pin is inconsistent with design loads applied to an assembly in serviceable condition.

Investigation has determined that the probable cause is improper ground handling of the aircraft during towing and continued use of the actuator after damage has been incurred. Cessna has issued Recommended Service Bulletin (SEB) 95-20 which details inspection procedures and provides a more robust downlock pin that is less susceptible to failure due to exceeding landing, towing, or taxi load limits.

It is recommended, especially for aircraft that are regularly operated on rough surfaces or towed by a tug or tractor, that this SEB be complied with to assure the nose gear actuator downlock pins are not loose in the bearing end, and the actuator bearing end is not damaged.

Cessna; Model 182D; Skylane; Corroded Rear Spar Inboard Attach Blocks; ATA 5740

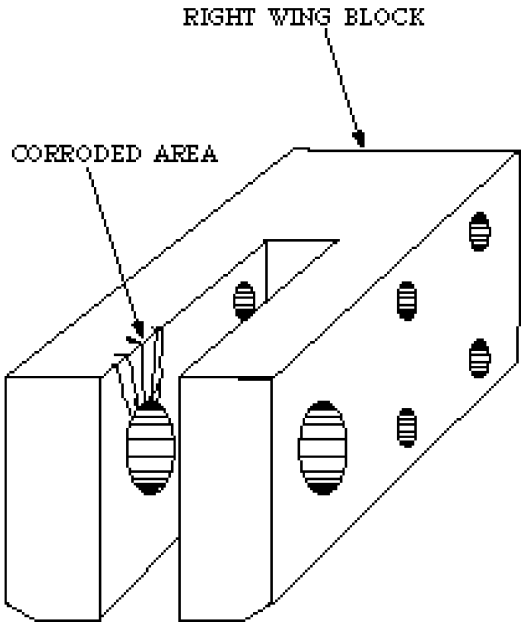
During a routine fuel tank installation, the technician discovered a potentially dangerous area of corrosion at the wing attach points.

Upon removing the wings for fuel tank installation, the submitter discovered “intergranular corrosion” on both the left and right inboard rear wing spar attach blocks. The specific area of corrosion was located above the large bolt hole and inboard of the face of the slot. The corrosion

was approximately 1/2 half inch wide and approximately 1/8 inch deep which weakened the integrity of the attach point. (Refer to the following illustration.)

The submitter speculates this problem may have been due to the electrolysis process caused by dissimilar metals acting upon one another. The submitter further suggests, future incidents of such problems may be eliminated by treating the blocks with either zinc chromate paint or Alodyne prior to installation.

Part total time-4,647 hours.



Cessna; Model R182; Skylane; Wing Flap Cable Bracket Wear; ATA 2700

During wing flap extension, the flap circuit breaker would trip.

An inspection revealed the “followup” cable had seized at the top. The submitter speculated that the factory may have slightly misaligned the upper cable attach bracket. Over time, this caused the internal cable to cut a groove in the outer housing. This cable misalignment set up added resistance in the worm drive mechanism (short shaft) that led to an electrical overload which repeatedly popped the circuit breaker.

The submitter offers the following method of inspection: (1) Unzip headliner, right hand overhead, and inspect “followup” cable for wear at the point where it enters the housing. (2) Lower flaps. (3) Remove bolt securing the actuating tube to the drive pulley and manually move the flaps up and down. (4) Feel for any added resistance which indicates drag to the “followup” cable due to bracket misalignment.

Part total time–9,693 hours.

Cessna; Model U206G; Stationair; Reinforcement on Horizontal Stabilizer Cracked; ATA 5511

During the aircraft's annual inspection, a crack was found in the aluminum reinforcement part (P/N 1232623-1) riveted to the left horizontal stabilizer's rear spar.

The replacement part (P/N 1232624-1) has been redesigned and is now fabricated from steel instead of aluminum. The submitter states this is the second left side reinforcement crack found on a Model 206.

The inspection process should include added vigilance in the left rear spar area, especially if the aircraft is known to have the "old designed" aluminum reinforcement.

Part total time–4,880 hours.

Cessna; Model P210N; Centurion; Landing Gear Component Failure; ATA 3230

While on final approach for landing, the pilot lowered the landing gear handle. The cockpit landing gear light indicated an unsafe left main landing gear. The prescribed emergency gear extension procedure was utilized to lock the gear down, and a landing was made without further incident.

Inspection revealed that the left hand interior shell had peeled back and had folded over. This prevented full travel of the leg assembly which, in turn, stopped the overcenter lock from engaging.

The submitter adds the composite rubber insert had become brittle with age which caused delamination and caused this problem. The submitter also added this was the second occurrence of the same problem in the Cessna 210-series aircraft found within 1 month.

This area deserves extra attention during inspections.

Part total time-814 hours.

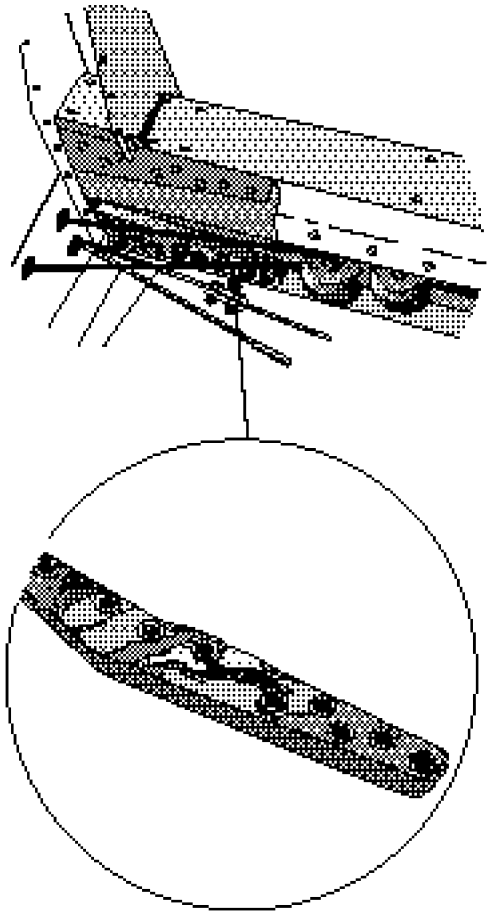
Cessna; Model 320A; Skyknight; Cabin Bulkhead Damage; ATA 5312

During an annual inspection, the rear cabin bulkhead support (P/N 0811075-10) was found buckled.

After disassembly and further inspection, a main structural fitting (P/N 0811276-3) was found severely corroded. The fitting was an integral part of the rear wing spar carry-through structure. The fitting surface had erupted due to intergranular corrosion and was structurally compromised. (Refer to the following illustration.)

This aircraft was manufactured over 30 years ago. The submitter speculated that the "fitting damage" was the result of "poor heat treatment" during the manufacturing process. This area deserves your full attention during scheduled inspections and maintenance.

Part total time-12,914 hours.

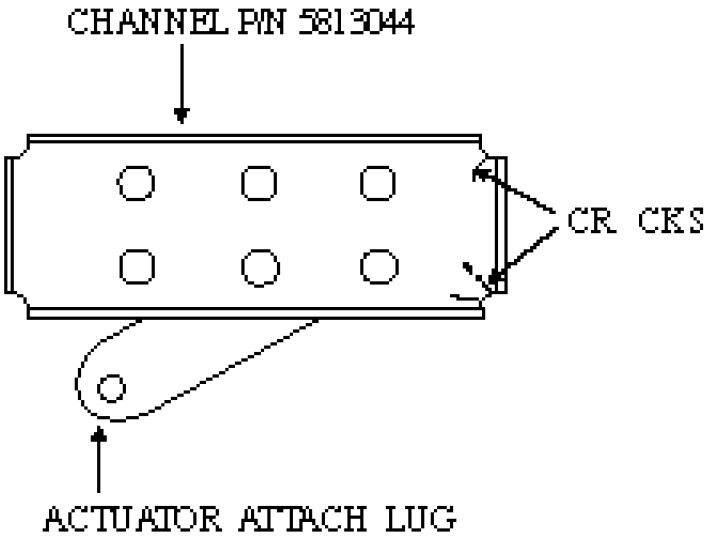


Cessna; Model 404; Titan; Nose Gear Actuator Attach Bracket Cracks; ATA 3230

During the installation of nose gear actuator attach lugs in compliance with a factory service bulletin, the technician noted structural cracks.

Both channels to which the lugs attach had cracks in the aft corner radii. (Refer to the following illustration.) The submitter speculates that one possibility for the cause could be incorrect rigging with insufficient preloading of the actuator against the drag brace which could have caused shock loads to be transmitted through the actuator to the attach structure.

Part total time–3,029 hours.



Cessna; Model 421; Failed Windshield; ATA 5610

The aircraft was “leveled off” after a climb to 23,000 feet above mean sea level, and the windshield on the right side of the aircraft failed and separated from the fuselage.

Upon landing it was discovered approximately 10 percent of the right side windshield (P/N 5111604-202) remained. The submitter speculated a crack may have originated at the attach hole in the lower right hand corner of the windshield and extended vertically straight to the top causing failure as the cabin pressure neared its maximum for that flight.

The submitter states prevention of similar incidents requires recurring inspections. Refer to the multiengine bulletin (MEB) 83-33R.

Part total time-7,500 hours.

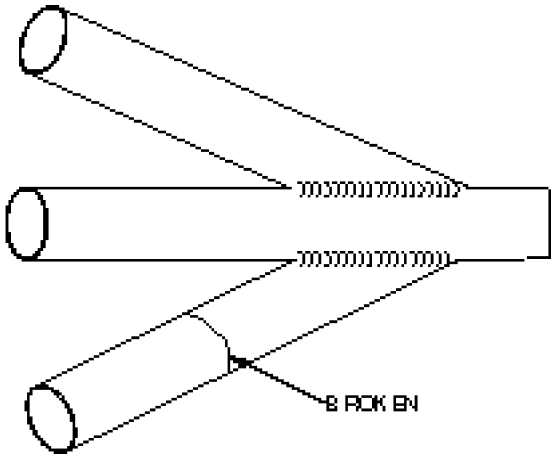
Cessna; Model 441; Cracked Engine Mount; ATA 7120

While performing an inspection to establish the cause of a rough-running engine, the submitter noticed a crack in the left engine mount tubing.

The specific location of the crack was on the lower tube of the upper inboard tubing cluster of the engine mount (P/N 5751006-1). (Refer to the following illustrations.)

The vigilance and situational awareness on behalf of this technician serves as a reminder of how important such practice is in the cause of saving lives.

Part total time-5,039 hours.



PIPER

Piper; Model PA 24-180; Archer; Defective Engine Mount Structure; ATA 5346

While conducting a scheduled inspection, an engine mount support tube was found cracked.

The crack was located on the lower horizontal .5-inch support tube between the center nose landing gear attachment point and the lower left engine mount point. There was no evidence of a hard landing or other problems related to this defect. The submitter did not offer a cause for failure and there was no recommendation to prevent recurrence. This area should receive your full attention during scheduled inspections and maintenance.

Part total time not reported.

Piper; Model PA 28-140; Cherokee; Defective Wing Flap System; ATA 2750

During a preflight inspection, the wing flaps were lowered to the “fully-extended” position. While inspecting the aircraft exterior, the pilot pulled down on the right wing flap surface and a “snapping” sound was heard. At the same time, the flap extended approximately 5 degrees beyond the “fully-extended” position. Attempts to raise the wing flaps using the control handle failed.

An investigation by maintenance personnel revealed the flap return spring (P/N 62820-00) had broken at the point where it was attached to the flap torque tube sprocket chain. This allowed slack in the chain, and the upper section of the chain dropped onto the sprocket jamming between the sprocket and the lower section of the chain. The submitter stated the sprocket tooth and the return spring share the same chain link when the flap control handle is pulled full aft. This “nicks” the return spring and eventually causes the spring to fail. It was suggested that the manufacturer design a different method of attaching the return spring to the chain.

Part total time-4,400 hours.

Piper; Model PA 28R-201; Arrow; Nose Landing Gear Failure; ATA 3230

The pilot reported hearing a “loud bang” during a landing approach, and the nose landing gear would not go to the “down-and-locked” position. When the nose gear tire contacted the runway, the nose gear retracted into the gear well.

The nose landing gear assembly on this aircraft uses two springs. The inner spring (P/N 67168-00) is installed inside the outer spring (P/N 67169-00). It was found that the inner spring had broken and jammed in the outer spring. This caused the outer spring to remain at approximately 11 inches instead of the proper closed length of 8 inches. This allowed the outer spring to bend in a “V” shape that prevented the nose gear from being pulled into the “down and locked” position. Breakage of the inner spring is a unique occurrence; however, this example demonstrates how critical these springs are to proper operation of the landing gear system. It is suggested that the manufacturer establish a replacement time for these springs. This suggestion and the report were sent to the responsible FAA aircraft certification office for appropriate action.

Part total time not reported.

Piper; Model PA 28-235; Cherokee; Fuel Leak; ATA 2820

During an annual inspection, fuel stains were found on the left main fuel tank supply line.

The line (P/N 65152-17) supplies fuel from the left main tank to the fuel control valve. There were two leak locations on the line. One appeared to have been leaking for some time while the other appeared to have developed recently. Both sites were wet with fuel and presented the possibility of fire, explosion, and/or engine failure. Evidence of fuel leakage, such as stains and odor, should be addressed.

Part total time-2,362 hours.

Piper; Model PA 31T; Cheyenne II; Tire Failure; ATA 3244

During a postflight inspection, a “bulge” was found on the inboard side of the left main landing gear tire tread and side wall area.

The tire (Goodyear size 6.50-10) was replaced. During the next takeoff, the right main gear tire lost a section of tread. The inboard section of tread was lost around the entire circumference of the tire. When the landing gear was retracted, the right inboard gear door bottom actuator fitting was broken by the loose tire tread. The resulting hydraulic fluid leak depleted the system, and it was necessary to use the emergency system to power the landing gear. The tire remained partially inflated, and a safe landing was made. Close attention to tire condition is recommended.

Part total time-187 hours.

Piper; Model PA 32RT-300T; Turbo Lance; Defective Aileron Control Rod; ATA 2711

During an annual inspection, an aileron control rod-end bearing was found worn.

After removal of the control rod (P/N 62766-00), the rod-end was discovered to be broken in the threaded area. A small hole had been drilled through the rod. The rod-end and the two parts were secured by a roll pin. It was evident a crack had originated at the roll pin hole and progressed to the point of separation. This report gives a good example of the need to look further than obvious defects for associated problems.

Part total time-2,335 hours.

Piper; Model PA 34-200T; Seneca II; Nose Landing Gear Failure; ATA 3230

During landing, the nose gear collapsed after contact with the runway.

An inspection revealed the nose gear downlock link assembly spring (P/N 95829-00) was weak and the downlock pin was worn approximately .005 inch. The cause of the incident was determined to be a combination of these two factors. This area deserves your full attention during scheduled inspections and maintenance.

Part total time-5,174 hours.

Piper; Model PA 34-200; Seneca; Nose Landing Gear Collapse; ATA 3222

During landing, the nose landing gear collapsed due to a “hard” landing.

An investigation disclosed the trunnion assembly (P/N 95723-00) had broken at the upper right attachment and pivot area. There was evidence of a small pre-existing crack adjacent to a weld and the fracture site. The submitter recommends removing the paint from the upper and lower trunnion weld areas each 50 hours of operation and visually inspecting with the aid of a magnifying glass.

Part total time-9,800 hours.

Piper; Model PA 34-220T; Vacuum Pump Failure; ATA 3700

After a new vacuum pump was installed, it failed after 98 hours of operation. The vacuum pump, Model 212CW, was manufactured by Airborne.

During an investigation it was determined the vacuum pump-to-gear drive shaft had “twisted” apart. There had been no prior sudden engine stoppage or internal engine problems which may have caused this defect. The submitter speculates the vacuum pump vane may have seized causing the pump to stop rotating while it was being driven by the drive shaft. The reason for seizure of the pump vane was not given.

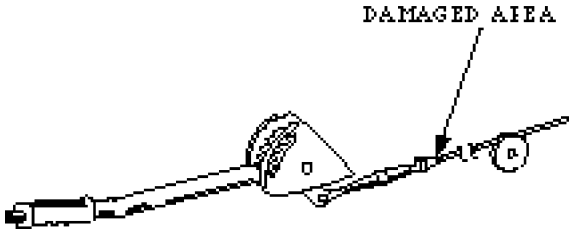
Part total time-98 hours.

Piper; Model PA 44-180; Seminole; Defective Wing Flap Control Cable; ATA 2750

When the wing flaps were selected to 10 percent during a preflight inspection, the flaps moved only slightly from the “up” position.

An inspection disclosed the wing flap cable (P/N 62701-101) was severely frayed. The cable was held together by only two cable strands. The frayed area was located just aft of the turnbuckle fitting attached to the flap control assembly. (Refer to the following illustration.) The location of the damaged area makes a thorough inspection very difficult. The submitter does not offer a cause for this defect; however, it seems likely that age and metal fatigue may have been contributing factors.

Part total time-7,100 hours.



STINSON

Stinson; Model 108-3; Voyager; Wing Spar Corrosion; ATA 5711

During a scheduled inspection, corrosion was found on the left and right rear wing spars.

The corrosion was determined to be intergranular and had progressed to a severe state. The damage rendered both rear wing spars unserviceable. Corrosion is the process of natural elements reverting to their original state. The metals and other products we produce from raw materials will, over time, complete their cycle back to the original state. We cannot stop corrosion, we can only inhibit its progress. Many of the older aircraft should be inspected thoroughly and frequently for the effects of corrosion and aging. Even though great pains are taken to protect the aircraft, the effects of the natural corrosive process will continue.

Part total time-2,308 hours.

HELICOPTERS

BELL

Bell; Model 206B III; Jet Ranger; Fuel Boost Pump Mounting Flange Corrosion; ATA 2822

When the fuel cell was removed, the mechanic noticed that the fuel boost pump mounting flange was “debonded” from its attachment.

This problem allowed the boost pump to “flex” when the fuel cell moved. Extensive corrosion of the aluminum mounting flange was evident. The submitter speculated this defect was caused by moisture being trapped between the fuel cell and the mounting flange. Also, it is possible that improper procedures were used while bonding the flange to the fuselage in the fuel cell cavity.

Part total time not reported.

Bell; Models 206L, L-1, and L-3; Long Ranger; Bellcrank Improperly Machined; ATA 6720

During the replacement of components, the submitter found the tail rotor could not be rigged for full pedal travel.

Further inspection revealed a bellcrank (P/N 206-001-763-1) and the rod assembly (P/N 206-011-751-101) were in contact with each other. This was caused by improper groove depth in the bellcrank assembly. The submitter inspected the remaining stock and found two other bellcranks with the same problem. The factory was notified.

Part total time-(0) new.

ROBINSON

Robinson; Model R44; Astro; Defective Lateral Trim; ATA 6730

While complying with the requirements of Airworthiness Directive (AD) 98-04-12, the lateral trim spring assembly was found pulled completely out of the mounting block and was hanging down against the lower skin.

The trim motor arm (P/N C581-1) was “frozen” on the spring shaft. An in-flight failure of this type could have led to loss of control and possibly a catastrophic crash. The replacement spring assembly lower bearing was staked into the mounting block. AD 98-04-12 does not address this area, and the submitter suggests the AD be revised to require immediate replacement of the spring assemblies.

Part total time-199 hours.

SIKORSKY

Sikorsky; Model S76A; Mark II; Excessive Pinion Roller Gage Wear; ATA 7260

The engine chip detector light illuminated in flight.

Inspection of the gearbox (P/N 23035179) revealed the number three and four pinion-bearing roller cages (P/N 23035917) were excessively worn. The submitter states the installed new-style roller cage is made of softer material and allowed additional wear.

The submitter has discontinued use of the new style bearing and has returned to using the old-style bearings.

Since metal contamination could have caused engine failure, this should be of particular concern when inspecting similar engine components.

Part total time-489 hours.

Sikorsky; Model S76A; Mark II; Corrosion of P2 Pipe; ATA 7270

During compliance with Service Bulletin (SB) 292750193(TU247A), a clamp (P/N 9562810760) was removed. Serious corrosion was found on the P2 air pipe which supplies compressor discharge air to the free turbine bearing labyrinth seal.

The submitter states failure of this externally-routed tube may have led to engine failure, possibly catastrophic in nature.

The SB incorporates an improved stainless steel clamp which should eliminate the corrosion problem. In light of the above problem, the submitter feels the SB's recommended modification should become mandatory.

Part total time-1,503 hours.

AGRICULTURAL AIRCRAFT

PIPER

Piper; Model PA 25-150; Pawnee; Defective Fuselage Structure; ATA 5310

While complying with the requirements of Airworthiness Directive (AD) 95-12-01, severe corrosion was found in an adjacent fuselage structure.

The corroded area was located in a structural tubing cluster just aft of the area required to be inspected by AD 95-12-01. This is the area used for attachment of the forward wing spar to the fuselage and is critical to structural integrity. The tubing cluster was found filled with a common sealant material which is distinguished by its "vinegar" odor. The hard, factory-installed sealant had been removed and replaced with sealant of an improper type. The "vinegar" odor of a sealant material indicates the presence of a mild acid which aids in the curing process. The acid in this material, when placed in contact with steel or aluminum, will cause corrosion to form. There are sealants available which do not use acid as a curing agent and do not propagate corrosion. It is recommended that maintenance personnel pay particular attention to the type of sealant material used and the structure to which it is applied.

Aircraft total time-3,006 hours.

AMATEUR, EXPERIMENTAL, AND SPORT AIRCRAFT

EMERAUDE

Emeraude; Wing Rib Separation; ATA 5343

The landing gear design (extended forward and attached to the main wing spar) places torsion on the main spar during landing. A hard, three-point landing or off-airport landing puts the main spar through a twisting motion. This twisting motion is somewhat restrained by the security of the wing ribs glued to the spar.

Part failure may be detected by listening for squeaks inboard of the gear, while rocking the wing during preflight. Other indicators are baggy or wrinkled fabric. In more advanced stages (with many ribs separated from the spar), a noticeable “wing low” appearance will be noticed while the aircraft is at rest on the ramp.

More indications of failure are the slight separation of the shear web from the spruce portion of the spar, a crack in the shear web (plywood on the face of the spar), or a space between the fuselage and the first outboard rib.

Part total time-1,100 hours.

FISHER

Fisher; Reduction Drive Belt Failure; ATA 8510

During a flight test, the propeller reduction drive belt (P/N 640BM50) failed. The belt failed shortly after takeoff with the engine at full power. Suddenly, the engine began to “rev up” to a higher RPM, and the propeller lost thrust.

Pieces of the belt drive lugs began hitting the windshield. All of the drive lugs “sheared off,” and a forced landing was initiated with minor damage to the aircraft. The belt was 4 years old and had only 52 hours of service at the time of the failure.

The submitter stated that the rubber deteriorated due to age.

Part total time-52 hours.

SUKHOI

Sukhoi; Model SU26M; Elevator System Structural Failure; ATA 2740

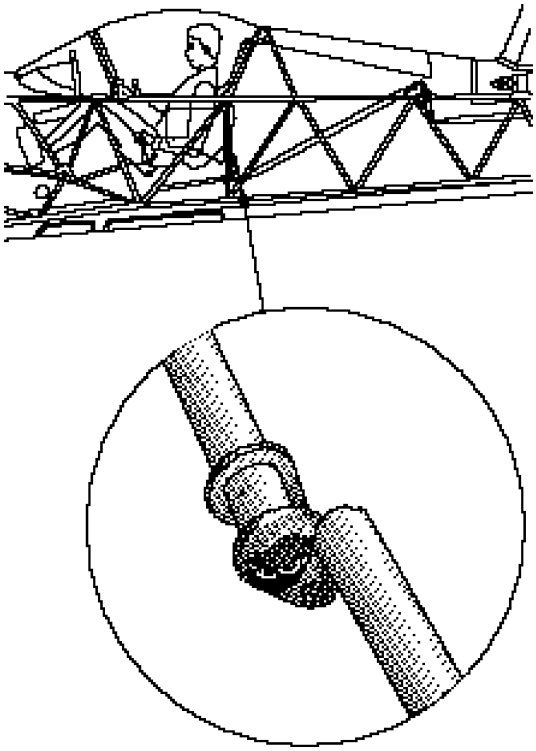
While flying an aerobatic routine, the owner/operator noted a degradation of control responsiveness. The “snaproll” did not appear to be as “crisp” as usual.

An inspection of the flight control system revealed the elevator idler support member was broken. The idler support was attached to the lower side of the pilot’s seat. (Refer to the following illustration.) The idler support is used as a pivot point and connection for two

push-pull rods. (One push-pull rod moves forward, and the other push-pull rod moves aft.) The failure occurred at a position adjacent to a weld attachment of the torque tube and idler support.

This aircraft is capable of unlimited aerobatics, and it is not uncommon to see plus or minus 10G indications. The submitter speculated this failure was caused by high “G loading” on the pilot’s seat-back structure.

Part total time-850 hours.



PROPELLERS AND POWERPLANTS

TELEDYNE CONTINENTAL

Teledyne Continental; Model TSIO 360; Engine Failure; ATA 8520

The pilot reported the engine failed during flight, and a safe landing was made. The engine was installed in a Piper Model PA 28R-201T aircraft.

An investigation disclosed the propeller could be moved approximately 20 degrees without any resistance from the engine. Further inspection revealed the crankshaft had broken at the number 2 cylinder connecting rod journal. The submitter did not offer the cause of this failure.

Part total time not reported.

UNAPPROVED PARTS NOTIFICATION 97-279

The following information was submitted for publication by the FAA Suspected Unapproved Parts (SUP) Program Office, AVR-20, located in Chantilly, Virginia.

SUP 97-279 deals with Teledyne Continental engine models IO470, TSIO520, IO360 and Textron Lycoming engine models TSIO540 and IO720. All owners, operators, and maintenance entities are advised that improper work may have been performed on the engines listed above by Aero Power, Inc. and/or Executive Aircraft engines of Cleves, Ohio between October 1996 and January 1997.

During an investigation, it was determined that both of these companies, located at 4817 East Miami River Road in Cleves, Ohio, were not performing work in accordance with accepted industry standards. Based on the investigation, the following discrepancies were found:

a. Current manufacturer's overhaul manuals and illustrated parts catalogs were not being used during overhaul of engines and accessories.

b. Used replacement parts were installed which did not meet the engine manufacturer's minimum service limit requirements.

c. Some of the nondestructive testing (NDT) was performed by individuals who had no formal training in NDT procedures using equipment which had not been currently calibrated.

d. Engine crankcase weld repairs were performed by a noncertified facility and the repairs were outside the scope of the manufacturer's overhaul manuals.

e. Engines were approved for return to service without the proper documentation of work accomplished e.g., service instructions, bulletin compliance, and AD compliance. Some of these engines were approved for return to service by uncertificated individuals.

Aircraft owners, operators, maintenance entities, parts distributors, suppliers, and manufacturers should determine if any work was accomplished on the referenced engines by either of the companies previously mentioned. The following actions are recommended:

a. The part or component should be inspected and checked for serviceability and conformity.

b. Particular attention should be given to the engine maintenance record entries, maintenance release tags, invoices, and any other documentation concerning parts related to the engine or accessories that were overhauled or repaired. Those items should be reviewed for authenticity and to substantiate the component's historical record.

c. If an engine experienced major problems such as complete engine failure, premature accessory failure, low cylinder compression, burnt valves, piston failure, metal in the oil screen, engine overheating indications, and/or other indications of improperly performed work, these findings should be reported to the local FAA Flight Standards District Office (FSDO).

Additionally, the Cincinnati, Ohio FSDO would appreciate any information regarding this subject. The address is: 4240 Airport Road, Cincinnati, OH 45226. The telephone number is: (513) 533-8110.

AIR NOTES

AIRWORTHINESS DIRECTIVES (AD'S) ISSUED IN MARCH 1998

98-04-30; Glaser-Dirks Flugzeugbau GmbH Model DG-500M gliders - requires inspecting propeller mounting plate for cracks.

98-05-04; American Champion 8GCBC airplanes - requires inspecting sides of front and rear wood spars.

98-05-05; Aeromot-Industria Mecanico Metalurgica Models AMT powered gliders - requires replacing main landing gear nuts and bolts.

98-05-14; Cessna T210N, P210N, and P210R airplanes - requires revising aircraft flight manual (AFM) procedures regarding icing conditions.

98-05-15; SIAI Marchetti, SF600 and SF600A airplanes - requires revising AFM procedures regarding icing conditions.

98-06-03; Extra Flugzeugbau GmbH EA-300 airplanes - requires removing elevator mass balance assemblies.

98-06-05; Industrie Aeronautiche e Meccaniche Piaggio P-180 airplanes - requires incorporating AFM supplements that include autopilot emergency disengagement procedures.

98-06-25; Fairchild SA226 and SA227 series airplanes - requires inspecting cargo door lower belt frames.

98-06-37; Alexander Schleicher ASK-21 sailplanes - requires replacing tow release cable assembly.

98-06-38; Alexander Schleicher ASK-21 sailplanes - requires drilling a drainage hole in elevator push rod.

97-25-08; General Electric CJ610 turbojet and CF700 turbofan engines - requires removal of turbine torque rings and compressor drive shafts.

IF YOU WANT TO CONTACT US

If you want to contact the staff of this publication we welcome your comments, suggestions, and questions. Also, you may use any of the following means of communication to submit reports concerning aviation-related occurrences.

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Please do not hesitate to contact us.

SUSPECTED UNAPPROVED PART (SUP) SEMINAR

As announced in previous editions of the Alerts, the Designee Standardization Branch, AFS-640, is once again presenting the Suspected Unapproved Part (SUP) seminar. A schedule of the seminars and information for requesting a SUP seminar in your area can be found below.

Seminar dates will be announced in the Alerts, the Designee Update newsletter, and on the Internet under FedWorld.gov. You may access the FedWorld BBS directly at (703) 321-3339. You may access the Alerts through the Internet, using the Regulatory Support Division, AFS-600, “HomePage” at the following address.

http://www.mmac.jccbi.gov/afs/afs600

The seminar will discuss the following:

1. Introduction to the policy of the Suspected Unapproved Part Program Office, AVR-20.
2. What is an approved part/unapproved part? How can approved parts be produced?
3. What is a suspected unapproved part?
4. How is a suspected unapproved part reported in accordance with FAA Order 8120.10A, Suspected Unapproved Parts Program, and utilizing FAA Form 8120-11, Suspected Unapproved Parts Notification?
5. How do you determine the status of parts?
6. What is the procurement process?
7. How do you use the Internet and FedWorld to find a list of unapproved parts?

The cost of this 8-hour seminar will be $60. The seminar may be used for the Inspection Authorization (IA) renewal training requirement specified in Title 14 of the Code of Federal Regulations (14 CFR) part 65, section 65.93(a)(4).

The seminar is open to the aviation industry. Anyone wishing to attend may telephone (405) 954-0138. Payment is required in advance by using VISA, MasterCard, or a check. **When scheduling attendance, please reference "AFS-75."**

SCHEDULE FOR SUSPECTED UNAPPROVED PART (SUP) SEMINARS

Seminar No.	1998	Location
759804	Apr 22	Charleston, WV
759805	May 13	Cleveland, OH
759806	Jul 15	Seattle, WA
759807	Jul 17	Anchorage, AK
759808	Aug 5	Ft. Lauderdale, FL
759809	Sep 16	Springfield, IL
759901	Oct 21	Rochester, NY
759902	Nov 18	Wichita, KS

The following is a list of ADDITIONAL SUP seminars which will be conducted during the month of June: Atlantic City, NJ on 6/2/98 and 6/3/98 and Minneapolis, MN on 6/16/98 and 6/17/98. You may register for the seminar by calling (405) 954-0138. These additional SUP seminars are 1-day, 8-hour seminars and can be used to meet IA renewal requirements.

If you require additional or special SUP seminars, please write to: FAA;
ATTN: Mr. Elmer Hunter (AFS-640); P.O. Box 25082; Oklahoma City, OK 73125. Depending on manpower and the availability of AFS-640 personnel, the requests for additional SUP seminars may be authorized. The cost for the additional SUP seminars is $60 per person. We would like a minimum of 40 attendees for a 1-day seminar and no more than 60 attendees. When the number of attendees is greater than 70, we will conduct two 1-day seminars. The registration process is the same as that previously discussed in this article. If you have specific questions regarding an additional SUP seminar, please contact Mr. Elmer Hunter at (405) 954-4099.

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For your convenience, FAA Form 8010-4, Malfunction or Defect Report, will be printed in every issue of this publication.

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FEDERAL AVIATION ADMINISTRATION

MALFUNCTION OR DEFECT REPORT

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ATA Code
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Enter pertinent data:	MANUFACTURER	MODEL/SERIES	SERIAL NUMBER
2. AIRCRAFT			
3. POWERPLANT			
4. PROPELLER			

5. SPECIFIC PART (of component) CAUSING TROUBLE

Part Name	MFG. Model or Part No.	Serial No.	Part/Defect Location

6. APPLIANCE/COMPONENT (Assembly that includes part)

Comp/Appl Name	Manufacturer	Model or Part No.	Serial Number

Part TT	Part TSO	Part Condition	7. Date Sub.

8. Comments (Describe the malfunction or defect and the circumstances under which it occurred. State probable cause and recommendations to prevent recurrence.)

Optional Information:

Check a box below, if this report is related to an aircraft

☐ Accident; Date _____ ☐ Incident; Date _____

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