



**PHYSICAL SURVEY REPORT
AMERICAN AIRLINES
B727-223 ADV
REG. N859AA S/N 21086**

AGING AIRPLANE STRUCTURAL MODIFICATION AND INSPECTION PROGRAM

The service bulletins applicable to this program are recommended inspections or modifications of the manufacturer. Previously, in most cases, accomplishment of any action per service bulletins was optional to the operator. However, in order to ensure the long-term structural integrity of aging airplanes, the industry has recommended actions per specific bulletins and developed a structural modification and inspection program. The FAA has made this program mandatory by issuing the following Airworthiness Directives:

Airworthiness Directive 90-06-09, effective April 17, 1990
Airworthiness Directive 94-05-04, effective April 21, 1994
Airworthiness Directive 94-07-08, effective April 28, 1994

Within the program there are service bulletins contained in two (2) different sections, Section 3 and Section 4. Section 3 lists service bulletins for which specific *modifications* are required while Section 4 lists service bulletins for which only specific *inspections* are required.

Specifically, Airworthiness Directive 90-06-09 and 94-05-04 relate to Section 3. The philosophy behind the development of Section 3 of the Aging Airplane Structural Modification and Inspection Program is to accomplish terminating actions (modifications) instead of relying solely upon inspections to maintain airworthiness. The schedule by which the Section 3 modifications are accomplished varies depending on the aircraft's age, cycles, and individual applicability to each service bulletin. The initial recommendations of the industry Structures Task Group are reflected in the requirements of Airworthiness Directive 90-06-09. Subsequently, following four (4) years of additional experience, this group put forward additional requirements that are mandated by Airworthiness Directive 94-05-04.

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continued

Airworthiness Directive 94-07-08 relates to Section 4. Service bulletins listed in Section 4 had insufficient history of in-service failures to warrant placement in Section 3 and, therefore, the Structures Task Group recommended repetitive structural *inspections* to ensure the integrity of the 727 fleet. Recently, this has become mandatory by the release of Airworthiness Directive 94-07-08.

The maximum allowable initial inspection of these structural areas is required based on the inspection threshold specified in the program. If no threshold is specified, the inspections are required by July 28, 1995 or by the corresponding service bulletin phase-in period in accumulated flight cycles or time-in-service measured from July 28, 1995.

For the status of service bulletins mandated by airworthiness directive 94-07-08, refer to the AD Summary section of this report.

**AGING AIRPLANE
STRUCTURAL MODIFICATION PROGRAM AD 90-06-09 AND 94-05-04
B727-223 ADV**

REG. No. N859AA S/N 21086 L/N 1248 Variable No. QA158

Effective: August 31, 2001 TAT: 68,147 TAC: 42,313

Service Bulletin	Subject	Threshold	Modification Status
AD 90-06-09			
32-258	Main landing gear drag strut upper attach fuse bolt inspection and replacement	Modify by 12-31-92	Terminated on 3-8-92 per AAL EO H4157XX
52-022	Galley, forward entry and cargo door cut-out revision	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
52-028	Body door stop fitting replacement	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
52-079	Main cargo door skin inspection and modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
52-094	E & E compartment door inspection, repair, and modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
52-102	Forward and aft cargo door upper and lower stop fitting inspection and replacement	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
52-104	No. 3 cargo door stop fitting inspection and replacement	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
52-109	Forward and aft lower cargo door stop fitting inspection and replacement	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
52-124	Main cargo door cam support fitting inspection and replacement	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
52-126	Aft cargo door frame inspection and modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-041	Installation of stringer to body frame tie clips – body crown	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-045	Forward and aft cargo door body frame door stop cut-out reinforcement	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-054	Mid-cabin galley door body skin hinge cut-out reinforcement	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable

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53-055	Body station 1183 bulkhead reinforcement	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Terminated on 3-8-92 at TAC 28,185 per AAL EO H3058CX
53-059	Stringer to body frame attachment reinforcement – forward lower body	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-061	Body station 1183 pressure bulkhead vertical I-beam reinforcement	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-062	Body station 740 bulkhead forging inspection, modification, and repair	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-063	Galley and service door lower corner threshold re-work	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-065	Nose gear wheel well forward bulkhead and sidewall reinforcement strap installation	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Open
53-068	Forward cargo compartment sidewall frame reinforcement	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-072	Body skin longitudinal lap joint corrosion inspection and modification	See AD 91-06-06	SB was deleted per Revision F. Requirements are addressed by AD 91-06-06.
53-080	Stringer replacement, left body station 259.5-303.9 and clip and radius filler installation right body station 294.5	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-082	Upper body skin bonded tear strap inspection and modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-084	Body skin bonded circumferential doubler inspection and modification, stations 259, 360, 441, and 1080	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-085	Body skin bonded doubler and tripler inspection and modification	Modify by 20 years of airframe age or by 4-17-94, whichever occurs later	Not Applicable
53-086	Control cabin E-F window post inspection and modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable

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53-089	Body station 950 bulkhead web replacement	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-092	Forward lower body fatigue life improvement – body stations 277 to 720	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-109	Body crown skin circumferential joint bonded doubler inspection, repair, and preventative modification – BS 1080	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-116	Body station 870 – stringer 18A joint inspection, repair, modification, and body fitting replacement	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-124	Main wheel well pressure floor inspection and repair	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Open
53-126	Body station 950 bulkhead fitting modification, repair, and replacement	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-128	Fuselage forward lower body corrosion inspection and repair at stringer 27, 28, and BBL 0 doubler	Modify by 20 years of airframe age or 4-17-94, whichever occurs later	Not Applicable
53-134	Inspection and reinforcement of BS 910 floor beam	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-136	Forward galley doorway reinforcing doubler inspection and re-work	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-144	Lower body skin inspection and repair, BS 360 to 481	Modify by 20 years of airframe age or by 4-17-94, whichever occurs later	Not Applicable
53-145	Nose wheel well forward bulkhead sidewall and top panel reinforcement	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Terminated on 3-8-92 per AAL EO H4087CK
53-147	BS 940 floor beam inspection, repair, and modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-149	Main wheel well pressure floor inspection, modification, and repair	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Terminated on 3-8-92 per AAL EO H4097AX

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53-153	Forward entry doorway forward frame inspection and reinforcement	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Open
53-159	Aft lower body bonded skin panel inspection, repair, or replacement	Modify by 20 years of airframe age or by 4-17-94, whichever occurs later	Not Applicable
53-163	Body station 950 fitting inspection at water line 210	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-166	Fuselage – forward entry doorway structure at lower sill – inspection, modification, and repair	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-168	Fuselage – mid galley doorway skin inspection, repair, and preventative modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-169	Fuselage - No. 3 cargo doorway – forward frame crack inspection, repair, and modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-171	Fuselage – station 1183 bulkhead web crack repair and preventative modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Open
53-173	Fuselage – aft pressure bulkhead vertical beam, body station 1183 inspection, repair, and modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-175	Fuselage – station 1183 bulkhead, buttock line 8, vertical beam and web inspection, modification, and repair	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Open
53-176	Fuselage – skin panel inspection, modification, and repair, BS 950C to BS 1010 between stringers 14L and 26L	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-178	Fuselage – BS 1183 – stringer 3A tension bolt replacement	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Open
53-181	Fuselage – BS 1183 vertical beam BL 46.93 – inspection, repair, and modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Open
53-182	Fuselage – BS 1183 bulkhead BL 26.83 vertical beam inspection, repair, and modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Open

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53-187	Fuselage – forward cargo door cut-out aft lower corner inspection, modification, and repair	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
53-188	Fuselage – forward galley door cut-out inspection, modification, and repair	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Open
55-048	Fin front spar forging repair and modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
55-056	Fin upper closure rib fittings inspection and replacement	Modify by 20 years of airframe age or by 4-17-94, whichever occurs later	Not Applicable
55-060	Fin front spar terminal fitting inspection and repair	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
55-062	Horizontal stabilizer center section rear spar fitting inspection and repair	Modify by 60,000 cycles or 20 years of airframe age, whichever occurs first or by 4-17-94, whichever occurs later	Not Applicable
55-069	Horizontal stabilizer center section front spar clevis inspection	Modify by 60,000 cycles or 20 years of airframe age, whichever occurs first or by 4-17-94, whichever occurs later	Not Applicable
55-071	Fin tension tie rib attach point re-work	Modify by 20 years of airframe age or by 4-17-94, whichever occurs later	Not Applicable – SB applies only to Group 1 airplanes
55-073	Horizontal stabilizer jackscrew gimbal support fitting inspection	Modify by 20 years of airframe age or by 4-17-94, whichever occurs later	Not Applicable
57-103	Wing rear spar terminal fitting inspection and modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
57-107	Wing center section front spar web inspection and modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
57-112	Wings – rib upper chord at BL 70.5 inspection, re-work, and repair	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Open
57-113	Wing center section upper stiffener modification and repair	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable

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57-127	Inspection and replacement of wing outboard ribs	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
57-130	Wing leading edge slat actuator support structure inspection and modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
57-134	Slat track-to-slat attach bolt replacement	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Open
57-159	Outer wing upper stringer inspection, modification, and repair	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Open
57-171	Wings – leading edge slat downstop modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Open
57-172	Wings – flight surface slat track roller bearing bolt inspection and modification	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Open
57-175	Wing rear spar terminal fitting inspection, modification, and repair	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Not Applicable
57-178	Wings – inboard trailing edge flaps inboard track – track modification and repair	Modify by 60,000 cycles or 4-17-94, whichever occurs later	Terminated on 3-8-92 at TAC 28,185 per AAL EO H4090BX
78-086	Lightweight thrust reverser inspection and actuator assembly and clamshell door crank arm re-work	Modify by 12-31-92	Not Applicable
AD 94-05-04			
32-340	Landing gear – main landing gear doors and flap tracks – door hinge and inboard track modification	Modify by 60,000 cycles or 4-21-98, whichever occurs later	Open
53-089	Station 950 bulkhead web replacement	Modify by 60,000 cycles or 4-21-98, whichever occurs later	Not Applicable
53-186	Fuselage – main frame – forward entry doorway fuselage skin crack	Modify by 60,000 cycles or 4-21-98, whichever occurs later	Open

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Service Bulletin	Subject	Threshold	Modification Status
53-200	Fuselage – longitudinal lap joint lower skin at stringer 14 from BS 441-to 719 modification	Modify by 60,000 cycles or 4-21-98, whichever occurs later	Not Applicable
53-202	Fuselage – aft pressure bulkhead BS 1183 BBL 17.8 vertical beam modification	Modify by 60,000 cycles or 4-21-98, whichever occurs later	Open
53-203	Fuselage – forward lower body skin corrosion inspection and repair	Modify by 20 years of airframe age or by 4-21-98, whichever occurs later	Terminated on 4-12-90 per AAL EO H4129XX
53-204	Fuselage – skin at Stringer 1 from BS 1090 thru 1110 – crack inspection and repair	Modify by 60,000 cycles or 4-21-98, whichever occurs later	Open
54-017	Nacelles / pylons – engine attach fittings – engine No. 1 and 3 aft mount support fittings inspection and replacement	Modify by 60,000 cycles or 4-21-98, whichever occurs later	Open
57-130	Wing leading edge slat actuator support structure modification	Modify by 60,000 cycles or 4-21-98, whichever occurs later	Open
57-177	Wing – front spar center section web modification	Modify by 60,000 cycles or 4-21-98, whichever occurs later	Open
57-180	Landing gear – main gear doors and flap tracks – door hinge and inboard track inspection / modification	Modify by 60,000 cycles or 4-21-98, whichever occurs later	Open

This report lists all service bulletins currently required by Airworthiness Directive 90-06-09, amendment 39-6488 and Airworthiness Directive 94-05-04, amendment 39-8842.

Service bulletin 727-53-198 was added to Section 3 of the Boeing Document D6-54860 revision F dated 1/9/92. The Boeing document recommends structural modification incorporation prior to 60,000 cycles.