CHAPTER

05

TIME LIMITS/ MAINTENANCE CHECKS

MD-80
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 05
TIME LIMITS/MAINTENANCE CHECKS

A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

05-EFFECTIVE PAGES

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GENERAL - DESCRIPTION AND OPERATION

1. Description

A. This chapter presents the unscheduled maintenance checks required when hard/overweight landings, rejected takeoff, overspeed, excessive maneuvers, turbulent (rough) air, high drag/side load, towing, lightning strike, bird strike, hail storm damage, wing fuel imbalance, or mercury spillage conditions have been encountered by the aircraft.

MAINTENANCE CHECKS

1. General

A. This procedure contains MSG-3 task card data.

TASK 05-00-00-210-801

2. Daily Walk-Around

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
12-16-01 P/B 301	TIRE PRESSURE - SERVICING
24-00-00 P/B 001	GENERAL - DESCRIPTION AND OPERATION

B. Prepare for the Daily Walk-Around

SUBTASK 05-00-00-943-001

(1) Statically ground aircraft.

(2) Ensure wheel chocks are properly installed.

(3) Ensure landing gear lockpins are removed.

(4) Energize the aircraft electrical power system. (GENERAL - DESCRIPTION AND OPERATION, PAGEBLOCK 24-00-00/001)

(5) Ensure that aircraft logbook is properly documented and required manuals are on board the aircraft.

(6) Check aircraft logbook, rectify all flight squawk items, and ensure airworthiness release is current. (ETOPS)

C. Daily Walk-Around

SUBTASK 05-00-00-610-001

(1) Verify that the following aircraft servicing requirements have been accomplished:

(a) Engine oil. (ETOPS)

(b) APU oil. (ETOPS)

(c) Hydraulic fluid. (ETOPS)

(d) CSD oil. (ETOPS)

(e) Crew oxygen. (ETOPS)

(f) Potable water.

(g) Toilet servicing.

(h) Fueling. (ETOPS)

(2) Perform an internal walkthrough check of the cockpit, passenger cabin, galleys and lavatories for obvious irregularities concerning the following:

(a) Cleanliness.

(b) Required aircraft logbook and manuals.

(c) Crew oxygen bottle for correct pressure. (ETOPS)

(d) Required emergency equipment. (ETOPS)

(e) Cabin temperature in a comfortable range.

(3) Perform an aircraft external walk around, check for obvious irregularities concerning the following:

(a) Nose and main landing gear tires and oleo struts.

(b) Check for tools, loose or damaged parts, foreign objects and fluid leaks in wheel wells.

1) Check hydraulic transfer pump vent line recovery bottle fluid level. (ETOPS)

(c) Access doors and panels.

(d) Wing external surfaces and installations.

(e) Foreign Object Damage (FOD).

(f) Fuselage external surface.

(g) Stabilizer horizontal and vertical surfaces.

(4) Perform the following ETOPS ONLY Checks.

(a) Check the fuel quantity in each fuel tank with the dripless dipsticks.

1) Provide information to flight crew for cross check.

(b) Operational check of fuel boost and transfer pumps.

(c) Operational check of fuel crossfeed valve.

(d) Operational check of AC cross-tie relay.

(5) Perform visual check of engines and nacelles with cowlings closed and latched (ETOPS).

(a) Evidence of FOD.

(b) Engine inlet.

1) Air intake/spinner.

2) Fan blades for free rotation by hand.

(c) Drain mast for obstruction and evidence of leakage.

(d) Cowlings for condition and security.

(e) Reversers for condition and evidence of leakage.

(f) Tail pipe area for metal deposits.

(g) Pylons for condition and FOD.

(6) Check landing gear tires for wear, condition and pressure. (TIRE PRESSURE - SERVICING, PAGEBLOCK 12-16-01/301, AOL 9-1135A, AOL 9-1802A and AOL 9-2203). Record pressures before servicing in spaces provided below (ETOPS).

NOTE: Service tires with dry nitrogen only (Ref: AD 87-08-09).

	LH MAIN		NOSE		RH MAIN	
	OUTBD	INBD	RIGHT	LEFT	OUTBD	INBD
INDICATED:						
SERVICED TO:						

D. Job Close-Up

SUBTASK 05-00-00-942-001

(1) Check APU drain hole and drain area for fuel leaks in accordance with Alert Service Bulletin A49-49. (GTCP36-280(D) APU only)

NOTE: Discontinue above inspection if fuel manifolds are replaced per SB A49-49.

(2) Ensure that cargo doors are properly closed and latched.

(3) Ensure that the parking and departure areas are clear of debris and obstructions.

(4) If ice and snow condition exist, immediately prior to departure, ensure that ice and snow removal procedures have been complied with.

(5) Remove static ground cables if required.

(6) Remove wheel chocks and external power, if required. (GENERAL - DESCRIPTION AND OPERATION, PAGEBLOCK 24-00-00/001)

(7) Make logbook entry to release aircraft for ETOPS dispatch (ETOPS ONLY).

END OF TASK

TASK 05-00-00-210-802

3. Service Check

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
12-11-03 P/B 301	FUEL LOADING - SERVICING
12-12-01 P/B 301	AUXILIARY POWER UNIT (APU) - SERVICING
12-12-02 P/B 301	CONSTANT SPEED DRIVE (CSD) TRANSMISSION - SERVICING
12-12-04 P/B 301	ENGINE OIL SYSTEM - SERVICING
12-13-01 P/B 301	HYDRAULIC RESERVOIRS - SERVICING
12-14-01 P/B 301	POTABLE WATER SUPPLY SYSTEM - SERVICING
12-14-02 P/B 301	WASTE DISPOSAL SYSTEM - SERVICING
12-15-01 P/B 301	OXYGEN - CREW SYSTEM - SERVICING
12-17-01 P/B 301	RAIN REPELLENT SYSTEM - SERVICING
24-00-00 P/B 001	GENERAL - DESCRIPTION AND OPERATION
32-11-02 P/B 301	MAIN GEAR STRUT - SERVICING
32-21-02 P/B 301	NOSEGEAR STRUT - SERVICING
32-40-00 P/B 201	WHEELS AND BRAKES - MAINTENANCE PRACTICES

B. Consumable Materials

NOTE: Equivalent replacements are permitted for the items that follow.

NOTE: It is possible that some materials in the Consumable Materials chart cannot be used for some or all of the necessary applications. Before you use the materials, make sure the types, quantities, and applications of the materials necessary are legally permitted in your location. All persons must obey all applicable federal, state, local, and provincial laws and regulations when it is necessary to work with these materials.

Reference	Description	Specification
D60015	Fluid - Hydraulic, Petroleum-base	DPM 366 (MIL-H-5606)
G60428	Wipers - Cleaning, Cotton, White	DMS 1820 T1A2

C. Prepare for the Service Check

SUBTASK 05-00-00-943-002

(1) Statically ground aircraft.

(2) Ensure wheel chocks are properly installed.

(3) Ensure landing gear lockpins are installed.

(4) Energize the aircraft electrical power system. (GENERAL - DESCRIPTION AND OPERATION, PAGEBLOCK 24-00-00/001)

(5) Review aircraft logbook, rectify all flight squawks, previously deferred discrepancies (ETOPS).

D. Perform Service Check

SUBTASK 05-00-00-610-002

(1) Engine oil (ETOPS). (ENGINE OIL SYSTEM - SERVICING, PAGEBLOCK 12-12-04/301)

NOTE: Oil tank must be serviced between 5 and 30 minutes after engine shutdown.

(2) APU oil (ETOPS). (AUXILIARY POWER UNIT (APU) - SERVICING, PAGEBLOCK 12-12-01/301)

WARNING: ALL CONTROL SURFACES ARE ACTUATED BY HYDRAULIC POWER AND CONTROLLED BY MECHANICAL AND/OR ELECTRICAL INPUTS. BEWARE OF CONTROL SURFACES AND LINKAGE AFFECTED BY HYDRAULIC POWER. BEFORE DISCONNECTING CONTROL CABLES OR LINKAGE TO SURFACE ACTUATOR VALVES, DEPRESSURIZE HYDRAULIC SYSTEMS. WHEN HYDRAULIC PRESSURE IS REQUIRED DURING MAINTENANCE PROCEDURES, MAKE CERTAIN THAT APPLICABLE CONTROLS ARE TAGGED TO PREVENT INADVERTENT OPERATION AND POSSIBLE INJURY TO PERSONNEL.

(3) Hydraulic fluid (ETOPS). (HYDRAULIC RESERVOIRS - SERVICING, PAGEBLOCK 12-13-01/301)

(4) CSD oil (ETOPS). (CONSTANT SPEED DRIVE (CSD) TRANSMISSION - SERVICING, PAGEBLOCK 12-12-02/301)

(5) Crew oxygen (ETOPS). (OXYGEN - CREW SYSTEM - SERVICING, PAGEBLOCK 12-15-01/301)

WJE 401-411, 414-427, 429, 861-866, 868, 869, 871-881, 883, 884, 886, 887, 891-893 PRE DC9-30-76

(6) Rain repellent (ETOPS). (RAIN REPELLENT SYSTEM - SERVICING, PAGEBLOCK 12-17-01/301)

WJE ALL

(7) Potable water. (POTABLE WATER SUPPLY SYSTEM - SERVICING, PAGEBLOCK 12-14-01/301)

NOTE: Check water drain valves for leakage.

(8) Toilet servicing. (WASTE DISPOSAL SYSTEM - SERVICING, PAGEBLOCK 12-14-02/301) (ETOPS)

NOTE: Check toilet drain valves for leakage.

(9) Fueling (ETOPS). (FUEL LOADING - SERVICING, PAGEBLOCK 12-11-03/301)

(a) Check fueling adapter flanges for cracks before refueling.

(b) Drain aircraft fuel tank sumps and perform water contamination check before refueling.

NOTE: Delete above check if elapsed time on the ground is less than 3 hours.

(c) Check auxiliary fuselage fuel tank cavity and shroud drain valves for accumulation of fuel (if installed) (ETOPS).

(10) Check ACM oil level.

(11) Check brakes for condition, wear, and evidence of leakage. (WHEELS AND BRAKES - MAINTENANCE PRACTICES, PAGEBLOCK 32-40-00/201, AD 92-09-03)

NOTE: Replace brake if wear pin is flush with housing.

(12) Nose and main landing gear wheel wells.

(a) Check oleo struts for cleanliness, leaks and proper extension. Wipe oleos with white cotton cleaning wipers, G60428 dampened with hydraulic, petroleum-base fluid, D60015. (NOSEGEAR STRUT - SERVICING, PAGEBLOCK 32-21-02/301) (MAIN GEAR STRUT - SERVICING, PAGEBLOCK 32-11-02/301)

(b) Check door for condition and security.

(c) Check system installations for condition, security, and leakage.

(d) Check hubcaps for security.

(e) Check shimmy damper reservoirs for condition, security, and proper servicing.

(13) No. 1 and No. 2 Engines (ETOPS).

(a) Check inlets and exhausts for foreign object damage (FOD) and metal deposits.

(b) Check all cowling access and latches for condition and security.

(14) Aft Accessory Compartment.

(a) Check system installations for condition, security, and leakage.

(b) Check hydraulic systems differential pressure indicators.

(c) Extend aft airstair and check for proper operation, condition, and security.

(15) Check APU area for evidence of fuel/oil leaks (ETOPS).

(16) Report APU hours on log page.

(17) Check forward, mid, and aft cargo compartments, cargo door seals, latches, and hinges for condition and security.

(a) Check compartment floor boards, sidewalls, and ceiling panels for condition and security.

NOTE: If sidewall repair or replacements are required, use only liner material meeting requirements of FAR 25, Fire Resistance material.

(b) Check cargo doors and cargo barrier door/nets for operation, condition, and security.

(c) Ensure all floor, ceiling, and sidewall seams are taped with fire resistant tape (replace any deteriorated tape).

(18) Check the radome, nose, forward and aft fuselage, empennage, wings, fillets, flight controls, engine nacelles, and cowling with emphasis on the following items, as seen from the ground.

(a) Access doors and panels for condition and security.

(b) Pitot tubes and static ports for obstructions and damage.

(c) Evidence of fluid leakage.

(d) Foreign object damage.

(19) Perform walk-around visual check of airframe, wings, and tail for condition, security and evidence of fluid leaks.

(20) Check gear view mirror, window indicating mechanism, and alignment strips for condition security and cleanliness.

(21) Check hydraulic reservoir fluid quantity, filters, and accumulator pre-charge pressure. Empty overfill jars as required.

(22) Check legibility of “DRY NITROGEN ONLY” placards installed on outboard side of outboard gear doors and adjacent to servicing point on strut. (Replace as necessary)

(23) Check oxygen blow out disk for security or missing. (Replace if missing)

(24) Check static dischargers for condition and security. (Replace as required)

(25) Drain fuel tank sumps, cavity drains, and fuel line shrouds (consult AMM for limits if fuel is found in drains or shrouds).

(26) Clean all surfaces of outflow valve.

(27) Check crew seats, seat belts, and harnesses for condition and operation.

(28) Check cockpit windows for condition and cleanliness.

(29) Check crew oxygen and smoke masks for condition and cleanliness.

NOTE: One set of the same manufacturer required at each crew position.

(a) Check crew oxygen bottle for correct pressure, condition, leakage, and security (service as required) (ETOPS).

(30) Check all required emergency equipment for condition, inspection date, and security.

(31) Check battery charger for proper operation.

(32) Check security of cockpit instrument panels including secondary latches on both the captain's and first officer's side.

(33) Check all cargo door-warning lights for proper operation (LIGHT ON when door OPEN).

(34) Check date on FMS NAV database, if applicable.

(35) Check rain repellent system annunciator (service as required if annunciator light is ON).

(36) Check cabin (including carpet, seat covers, etc.), galleys, and lavatories for general condition and cleanliness.

(37) Check passenger oxygen doors for condition and security.

(38) Check passenger seats and seat belts for condition.

(39) Check passenger cabin windows and shades for condition and cleanliness.

(40) Check forward entry door and aft service door assist handles for condition and security.

(41) Check flight attendants jump seats for condition and operation.

(42) Check empennage hydraulic accumulators (4 each) for condition, security, and proper pre-charge pressure.

(43) Check all emergency exits for condition, security, and proper operation.

(44) Check evacuation slides (PAX entrance door, FWD service door, AFT service door, empennage) for security, proper installation, and condition. Check air bottle pressure and proper instruction placards installed.

(45) Check all passenger cabin, entrance, service, and galley lights for proper operation.

(46) Check all cabin emergency flashlights for security and installation. Check that plastic tamper shield is installed. Check each flashlight to ensure that the flash interval of the L.E.D. does not exceed 10 seconds. Replace batteries or flashlights if unit is found defective.

(47) Check instruments for condition and clean bezels.

(48) Check cockpit lighting including standby and emergency lighting systems and spare bulb supply.

(49) Ensure that pitot, static, and angle of attack vane heater switches are in OFF position.

(50) Perform self-test of radio altimeter.

(51) Perform flight recorder operational check.

(52) Check voice recorder operation.

(53) Check communication headsets for proper operation and condition.

(54) Check audio control panels for proper operation and condition.

(55) Check passenger address system for proper operation.

(56) Check passenger cabin, galley, and lavatory lighting including standby and emergency lighting systems.

E. Job Close-Up

SUBTASK 05-00-00-942-002

(1) Install engine inlet covers, as required.

(2) Assure all access doors and inspection covers are secured upon completion of work.

(3) Ensure gear pins are properly stowed in their container located behind the F/O's seat.

(4) Ensure that aircraft maintenance logbook and all required forms are properly completed and signed off, including current airworthiness release (ETOPS).

(5) Remove completed log page and route to QC.

(6) Date accomplished _____.

——— END OF TASK ———

REUSABLE SCHEDULED MAINTENANCE TASKS - INSPECTION/CHECK

1. General

A. This procedure contains MSG-3 task card data.

TASK 05-21-01-210-801

2. General Visual Inspection - Zonal Program

A. General Visual Inspection

SUBTASK 05-21-01-210-001

(1) Do the general visual inspection.

NOTE: A general visual inspection (GVI) is a visual examination of an interior or exterior area, installation or assembly to detect obvious damage, failure or irregularity. This level of inspection is made from within touching distance unless otherwise specified. A mirror may be necessary to ensure visual access to all surfaces in the inspection area. This level of inspection is made under normally available lighting conditions such as daylight, hanger lighting, flashlight or drop-light and may require removal or opening of access panels or doors. Stands, ladders, or platforms may be required to gain proximity to the area being checked.

NOTE: Whenever physically possible, the zonal inspections will be conducted within touching distance unless otherwise stated in the task card. This includes (but not limited to) checking for evidence of degradation such as corrosion, chafing of tubing, loose duct support, wiring damage, cable and pulley wear, fluid leaks, inadequate drainage, and for other conditions which could lead to corrosion/damage. The extent of a zonal inspection is defined by the access required and the instructions provided with the task.

——— END OF TASK ———

TASK 05-21-01-210-802

3. General Visual Inspection - Structural Program

A. General Visual Inspection

SUBTASK 05-21-01-210-002

(1) Do the general visual inspection.

NOTE: A general visual inspection (GVI) is a visual examination of an interior or exterior area, installation or assembly to detect obvious damage, failure or irregularity. This level of inspection is made from within touching distance unless otherwise specified. A mirror may be necessary to ensure visual access to all surfaces in the inspection area. This level of inspection is made under normally available lighting conditions such as daylight, hangar lighting, flashlight or drop-light and may require removal or opening of access panels or doors. Stands, ladders, or platforms may be required to gain proximity to the area being checked.

(2) Record corrosion findings.

(a) Corrosion finding: Yes _____ No _____

(b) If yes in Step (2)(a), record specific area of corrosion on a non-routine form and list the non-routine(s) identification number(s) here _____.

(3) Record structural findings.

(a) Structural finding: Yes _____ No _____

(b) If yes in Step (3)(a), record specific area of structural cracking on a non-routine form and list the non-routine(s) identification number(s) here _____.

——— END OF TASK ———

TASK 05-21-01-210-803

4. General Visual Inspection - Systems and Powerplant

A. General Visual Inspection

SUBTASK 05-21-01-210-003

(1) Do the general visual inspection.

NOTE: A general visual inspection (GVI) is a visual examination of an interior or exterior area, installation or assembly to detect obvious damage, failure or irregularity. This level of inspection is made from within touching distance unless otherwise specified. A mirror may be necessary to ensure visual access to all surfaces in the inspection area. This level of inspection is made under normally available lighting conditions such as daylight, hanger lighting, flashlight or drop-light and may require removal or opening of access panels or doors. Stands, ladders, or platforms may be required to gain proximity to the area being checked.

——— END OF TASK ———

WJE 415-427, 429, 861-866, 868, 869, 871, 872, 891

TASK 05-21-01-210-804

5. General Visual Inspection - EROS Oxygen Mask

A. General Visual Inspection

SUBTASK 05-21-01-210-004

(1) Do the general visual inspection.

NOTE: A general visual inspection (GVI) is a visual examination of an interior or exterior area, installation or assembly to detect obvious damage, failure or irregularity. This level of inspection is made from within touching distance unless otherwise specified. A mirror may be necessary to ensure visual access to all surfaces in the inspection area. This level of inspection is made under normally available lighting conditions such as daylight, hanger lighting, flashlight or drop-light and may require removal or opening of access panels or doors. Stands, ladders, or platforms may be required to gain proximity to the area being checked.

NOTE: Whenever physically possible, the zonal inspections will be conducted within touching distance unless otherwise stated in the task card. This includes (but not limited to) checking for evidence of degradation such as corrosion, chafing of tubing, loose duct support, wiring damage, cable and pulley wear, fluid leaks, inadequate drainage, and for other conditions which could lead to corrosion/damage. The extent of a zonal inspection is defined by the access required and the instructions provided with the task.

WJE ALL

——— END OF TASK ———

TASK 05-21-01-211-801

6. Detailed Inspection

A. Detailed Inspection

SUBTASK 05-21-01-211-001

(1) Do the detailed inspection.

NOTE: A detailed inspection is an intensive examination of a specific item, installation or assembly, to detect damage, failure or irregularity. Available lighting is normally supplemented with a direct source of good lighting at an intensity deemed appropriate. Inspection aids such as mirrors, magnifying lenses or other means may be necessary. Surface cleaning and elaborate access procedures may also be required.

——— END OF TASK ———

TASK 05-21-01-211-802

7. Detailed Inspection - Structural Program

A. Detailed Inspection

SUBTASK 05-21-01-211-002

(1) Do the detailed inspection.

NOTE: A detailed inspection is an intensive examination of a specific item, installation or assembly, to detect damage, failure or irregularity. Available lighting is normally supplemented with a direct source of good lighting at an intensity deemed appropriate. Inspection aids such as mirrors, magnifying lenses or other means may be necessary. Surface cleaning and elaborate access procedures may also be required.

(2) Record corrosion findings.

(a) Corrosion finding: Yes _____ No _____

(b) If yes in Step (2)(a), record specific area of corrosion on a non-routine form and list the non-routine(s) identification number(s) here _____.

(3) Record structural findings.

(a) Structural finding: Yes _____ No _____

(b) If yes in Step (3)(a), record specific area of structural cracking on a non-routine form and list the non-routine(s) identification number(s) here _____.

——— END OF TASK ———

TASK 05-21-01-280-801

8. Special Detailed Inspection

A. Special Detailed Inspection

SUBTASK 05-21-01-280-001

(1) Do the special detailed inspection.

NOTE: A special detailed inspection is an intensive examination of a specific location similar to the detailed inspection except for the following differences. The examination requires some special technique such as non-destructive test techniques, dye penetrant, high-powered magnification, etc. and may require disassembly procedures.

——— END OF TASK ———

UNSCHEDULED MAINTENANCE CHECKS - DESCRIPTION AND OPERATION

1. General

A. During operation, the aircraft may be subjected to hard/ overweight landings, wing fuel imbalance, exceeding placarded speed of flaps and/or landing gear, exceeding design speeds excessive maneuvers, excessive turbulence, high drag/side load, unusual ground handling conditions, lightning strikes, bird strikes, hail storm damage, mercury spillage, or engine foreign object ingestion.

B. When any of these conditions are reported by the flight crew, a visual check of the airframe and a specific check of components and/or areas involved must be accomplished.

C. The checks are performed to determine and evaluate the extent of damage in the local areas of visible damage, and to the structure and components adjacent to the area of damage.

D. The checks are divided into two parts: an "A" check (generally external and primary indicators) and "B" check followup (may be in closed area). If damage is noted at any step during the "A" check, certain "B" check items must be accomplished. During the "B" check, a progressive check of the structure and systems in the local and adjacent areas of visible damage is performed. The "B" check is pursued only to the extent necessary to ascertain that no internal damage has occurred in these areas.

E. Portions of the aircraft must be checked when subjected to unusual ground handling conditions. Unusual ground conditions generally occur while the aircraft is being towed. These may result from surface conditions such as mud, soft sand, small obstacles, unsymmetrical fuel loading, or a combination of these conditions. For acceptable limits for unequal fuel loads, refer to TOWING AND TAXIING, CHAPTER 09.

F. When a lightning strike is reported a comprehensive check of the aircraft exterior is performed to locate possible damage. (PAGEBLOCK 05-53-00/601)

G. If a foreign object is ingested (suspected or actual) by the engine, a visual check must be accomplished. (PAGEBLOCK 05-54-00/601)

H. Refer to STATIONS, SUBJECT 06-40-00, Page 1, for station diagrams to assist in locating station numbers called out in TIME LIMITS/MAINTENANCE CHECKS, CHAPTER 05 checks.

I. If aircraft has experienced a high energy stop, the main landing gear axles must be checked.

J. If aircraft has experienced a high energy stop, the main landing gear wheels, brakes and tires must be checked. (PAGEBLOCK 05-57-00/601)

K. If mercury is spilled on/in the aircraft, the mercury and/or vapors must be removed. (MERCURY SPILLAGE - DETECTION - MAINTENANCE PRACTICES, PAGEBLOCK 05-55-00/201)

L. If aircraft has experienced a bird strike, accomplish a visual inspection of exterior surfaces. (PAGEBLOCK 05-51-08/601)

M. If aircraft has been exposed to volcanic ash either in the air or on the ground, it must be checked for damage. (PAGEBLOCK 05-58-00/601)

N. If aircraft experiences shimmy vibration of the main landing gear at ground speeds above 70 knots, the landing gear must be checked for damage.

O. If aircraft has been subjected to hail storms, either in the air or on the ground, the external surfaces must be inspected for damage. (PAGEBLOCK 05-51-11/601)

A AND B CHECK - DESCRIPTION AND OPERATION

1. General

A. The procedures, in this section, have the instructions to do an A-Check and B-Check inspection or check.

B. ”A” and “B” check requirements are performed to determine the extent of damage when any of the following pilot reported conditions have occurred:

(1) Severe Turbulence or Excessive Maneuver Conditions. (SEVERE TURBULENCE OR EXCESSIVE MANEUVER CONDITIONS, SUBJECT 05-51-02)

(2) High Drag/Side Loads or Unusual Ground Handling Conditions. (HIGH DRAG/SIDE LOADS OR UNUSUAL GROUND HANDLING CONDITIONS, SUBJECT 05-51-03)

(3) Hard or Overweight Landing. (HARD or OVERWEIGHT LANDING, SUBJECT 05-51-04)

(4) Overspeed - Clean Wing Exceeding Maximum Operating Limit Speed (Vmo/Mmo). (OVERSPEED - CLEAN WING EXCEEDING MAXIMUM OPERATING LIMIT SPEED (Vmo/Mmo) - INSPECTION/CHECK, PAGEBLOCK 05-51-05/601)

(5) Overspeed - Slats, Flaps, and Landing Gears (Exceeding Placarded Design Speeds). (OVERSPEED - SLATS, FLAPS, AND LANDING GEARS (EXCEEDING PLACARDED DESIGN SPEEDS) - CHECK, PAGEBLOCK 05-51-06/601)

(6) Wing Fuel Imbalance. (WING FUEL IMBALANCE - CHECK, PAGEBLOCK 05-51-07/601)

(7) Bird Strike Condition. (BIRD STRIKE CONDITION - CHECK, PAGEBLOCK 05-51-08/601)

(8) In-Flight Vibration. (IN-FLIGHT VIBRATION - CHECK, PAGEBLOCK 05-51-09/601)

(9) Hail Storm Damage. (HAIL STORM DAMAGE - CHECK, PAGEBLOCK 05-51-11/601)

C. In all except the Hard/Overweight-Hard Landing Inspection/Check the checks are divided into two parts:

- The "A" check (generally external and primary indicators) and "B" check a follow-up (may be in closed area). If damage is noted at any step during the "A" check, certain "B" checks must be accomplished.
- In the "B" check, a progressive check of the structure and systems in local and adjacent areas of visible damage is performed.

The "B" check is pursued only to the extent necessary to ascertain that no internal damage has occurred in these areas.

D. The Hard/Overweight-Hard Landing inspection check is divided into three parts. The A -1, A -2, and B checks each have specific purposes related to the need for the inspection and check. Further explanation of each of these checks is found in the General section of the procedure.

E. The airline operator is encouraged to submit damage reports as described in each procedure to Boeing Service Engineering for assistance in evaluation or repair.

SEVERE TURBULENCE OR EXCESSIVE MANEUVER CONDITIONS - INSPECTION/CHECK

1. General

A. This procedure has the inspection and check instructions for a pilot report of a severe turbulence or excessive maneuver condition.

B. This inspection is required when there is a pilot report of severe turbulence (including gusts). Severe turbulence (including gusts), can result in abnormal and abrupt changes in aircraft altitude, attitude, and airspeed.

C. This inspection is required when an excessive maneuver is reported. Excessive maneuvers are maneuvers that result in severe and abnormal aircraft altitude or attitude changes due to rapid or large flight control inputs, i.e. control column, rudder pedals or control wheel.

D. The changes in aircraft altitude, attitude, and airspeed caused by the above conditions can result in passengers and crew to be moved violently against their seat belts, and loose objects to move around in the aircraft.

E. The vertical acceleration load limits shown below are directly applicable to excessive maneuvers:

- With the flaps and slats retracted (clean wing) +2.5 G to -1.0 G
- With the flaps and slats extended +2.0 G to 0.0 G.

F. If damage is found, Boeing requests the airline operator submit to Boeing Service Engineering the data that follows:

(1) Load factor and airspeed read-outs from the flight recorder.

(2) Fuel, passenger, and cargo load distribution, aircraft gross weight, and center of gravity location at the time of the incident.

(3) The depth of all wrinkles in the pylon front spar bulkheads between the upper and lower spar caps, and a description of all other damage in the area of the bulkhead.

(4) The depth of all buckles in the fuselage skin or in the landing gear door jambs and landing gear door hinges.

G. The areas to be checked are grouped by major components as follows:

- Fuselage
- Wing
- Tail

H. Checks are divided into two parts: "A" check (generally external and primary indicators) and "B" check follow-up (may be in closed area). If damage is noted at any step during the "A" check, certain "B" checks must be accomplished. During the "B" check, a progressive check of the structure and systems in local and adjacent areas of visible damage is performed. The "B" check is pursued only to the extent necessary to ascertain that no internal damage has occurred in these areas.

2. "A" Check - Severe Turbulence or Excessive Maneuver - Condition

NOTE: If damage is noted at any step during the "A" check, accomplish corresponding "B" check of the area in question.

Table 601

Step	Area to be Checked	Check for
A.	Fuselage, (Figure 601, Figure 602, Figure 603)	
(1)	Bottom Center Section between Stations Y769 and Y1060.	Buckles, distortion, cracks, or loose or missing fasteners, and any other obvious indication of damage.

Table 601 (Continued)

Step	Area to be Checked	Check for
NOTE: Obvious buckles/wrinkles in this area are an indication of high loads and damage must be repaired before further flight.		
(a)	Keel web (Station Y940- Y1003).	Buckles, distortion, cracks, or loose or missing fasteners, and any other obvious indication of damage.
(b)	Fuselage bottom skin.	
(c)	MLG doorjamb "zee" area, aft end of MLG door hinge. (Station Y982)	
(2)	Engine pylon forward support bulkhead inside the fuselage (Fuselage station Y=1307).	Fractures, wrinkles, buckles distortion, cracks and any other obvious indication of damage.
(a)	Upper and lower spar caps.	
NOTE: If borescope is available, access in front of aft toilets. If borescope is not available, remove aft toilet shroud for access.		
(b)	Bulkhead web and doubler 2 inches (50.8 mm) above to 2 inches (50.8 mm) below spar caps.	Fractures, wrinkles, buckles distortion, cracks and any other obvious indication of damage.
NOTE: The bulkhead web is "failed" when any fracture exists in the web or doubler. Such failures must be repaired (replace web or doubler) prior to further flight. When wrinkles in the web/doubler exceed 0.125 inches (3.175 mm) in depth, (Figure 601, Sheet 3, Dimension A), contact Boeing Service Engineering with specific details for disposition or replace web/doubler. Wrinkles between the spar caps are normally diagonal (approximately 30 degrees to the horizontal plane) and the wrinkle peaks are normally 4 to 8 inches (101.6 to 203.2 mm) apart. (Figure 601, Sheet 3, Dimension B) A 6 to 12 inch (150 to 300 mm) straight edge would be satisfactory tool to measure the depth across the wrinkles.		
B.	Wing (Figure 605)	
(1)	Upper and lower wing skin external of fuel tank region.	Permanent skin wrinkles / buckles, fuel leaks, and/or missing fastener heads.
(2)	Slats.	Freedom of operation.
C.	Tail (Figure 604)	
(1)	External surfaces of vertical stabilizer and rudder.	Examine the exterior surfaces for wrinkles, buckles, tears, and missing fasteners. Check rudder freedom of operation.
(2)	Tip fairing top of vertical stabilizer.	Check the skin for wrinkles, buckles, tears, and missing fasteners.
D.	Vertical Stabilizer Leading Edge (Figure 606)	
(1)	Do a detailed visual inspection of the vertical stabilizer leading edge at splice station Zfs=52.267.	Inspect for loose, missing, or damaged fasteners from two rows above to two rows below the splice joint. Inspect the vertical stabilizer leading edge skin in the area of the fasteners for cracks and other anomaly. If no discrepancy is found, the inspection is complete. If a discrepancy is found, do repair in accordance with Structural Repair Manual or contact Boeing Service Engineering for evaluation. Do the “B” Check - Vertical Stabilizer Leading Edge.

Table 601 (Continued)

Step	Area to be Checked	Check for
E.	Horizontal Stabilizer (Figure 604)	
(1)	External surfaces of the horizontal stabilizer.	Examine the exterior surfaces for wrinkles, buckles, tears, and missing fasteners. Check elevator can be moved freely.
(2)	Elevator control surfaces.	Examine all exterior surfaces and leading edge for wrinkles, buckles, tears, and missing fasteners. Check elevator can be moved freely.

3. "B" Check - Severe Turbulence or Excessive Maneuver - Condition

NOTE: If damage is noted in "A" check, check internal structure in immediate area and also perform following:

Table 602

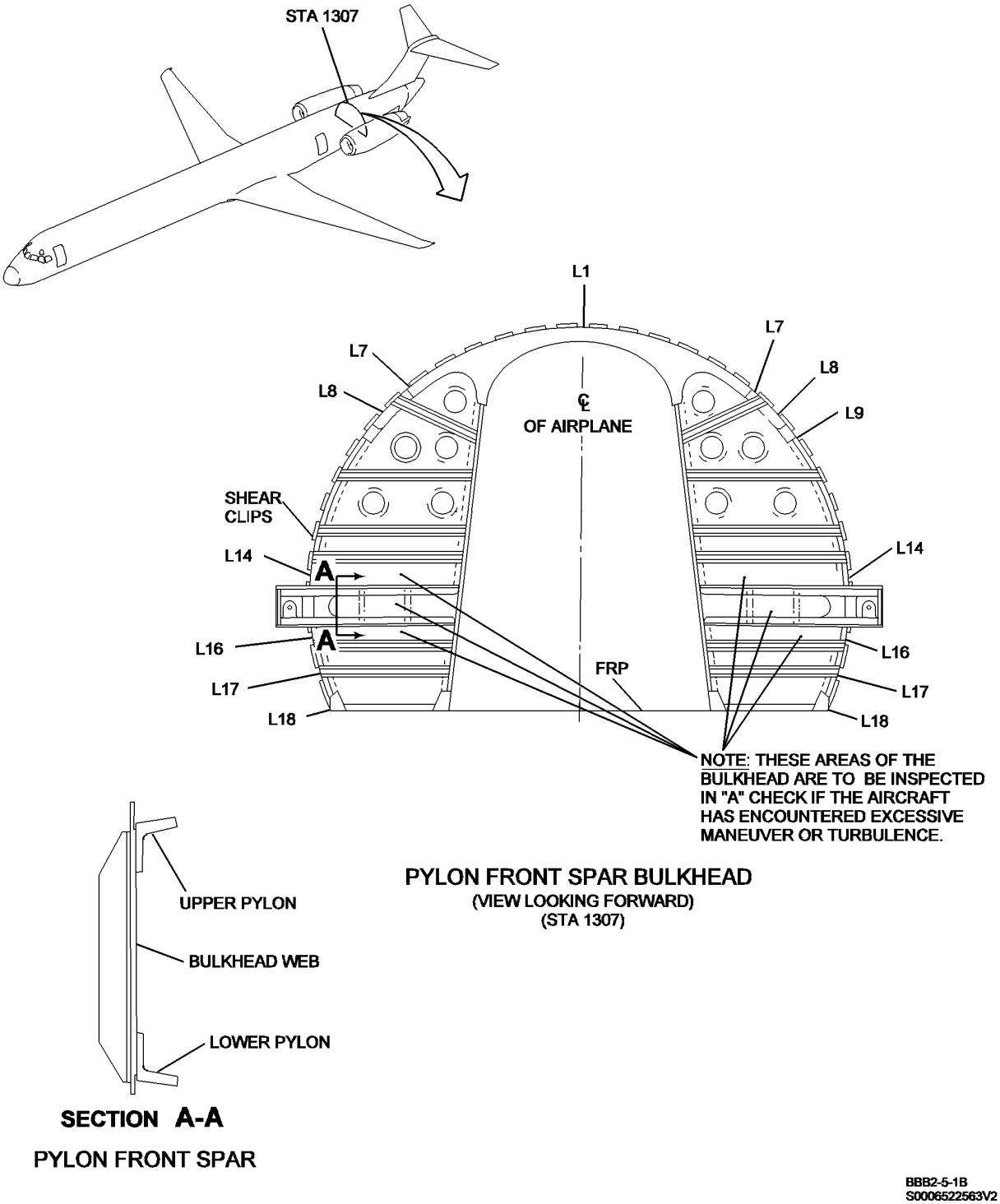
Step	Area to be Checked	Check for
A.	Fuselage (Figure 601, Figure 602, Figure 603)	
(1)	Exterior shell completely around fuselage (Station Y769-Y1003).	Cracks, buckles, wrinkles, and tears in skin.
NOTE: Obvious buckles/wrinkles in this area are an indication of high loads and damage must be repaired before further flight.		
(2)	MLG door, door latch mechanism, and supporting structure.	Cracks, distortion, buckles or elongated holes in hinge or latching mechanism supporting structure.
(3)	MLG support fitting, supporting structure (aircraft on wing jacks and gear put through retraction test) MLG door, door latch mechanism.	Interference between gear and structure; faulty operation of door and latching mechanism (clearances are critical) indications of deformations of pivot lugs, pivot pins, and other components; disassembly and detail check of gear components and supporting structure required to define damage.
(6)	Engine pylon front spar external of fuselage (Remove pylon leading edge for access).	Fractures, cracks, distortion, and any other obvious indication of damage.
(7)	Engine pylon front spar upper and lower engine mount lugs inside nacelle.	
(8)	Shear clips (Station Y1307).	
(9)	Engine pylon rear spar, upper and lower spar caps, web and doubler 2 inches (50.8 mm) above to 2 inches (50.8 mm) below spar caps (Station Y1381).	
NOTE: The bulkhead web is "failed" when any fracture exists in the web or doubler. Such failures must be repaired (replace web or doubler) prior to further flight. When wrinkles in the web/doubler exceed 0.125 inches (3.175 mm) in depth (Figure 601, Sheet 3, Dimension A), contact Boeing Service Engineering with specific details for disposition or replace web/doubler. Wrinkles between the spar caps are normally diagonal (approximately 30 degrees to the horizontal plane) and the wrinkle peaks are normally 4 to 8 inches (101.6 to 203.2 mm) apart. (Figure 601, Sheet 3, Dimension B) A 6 to 12 inch (150 to 300 mm) straight edge would be satisfactory tool to measure the depth across the wrinkles.		

Table 602 (Continued)

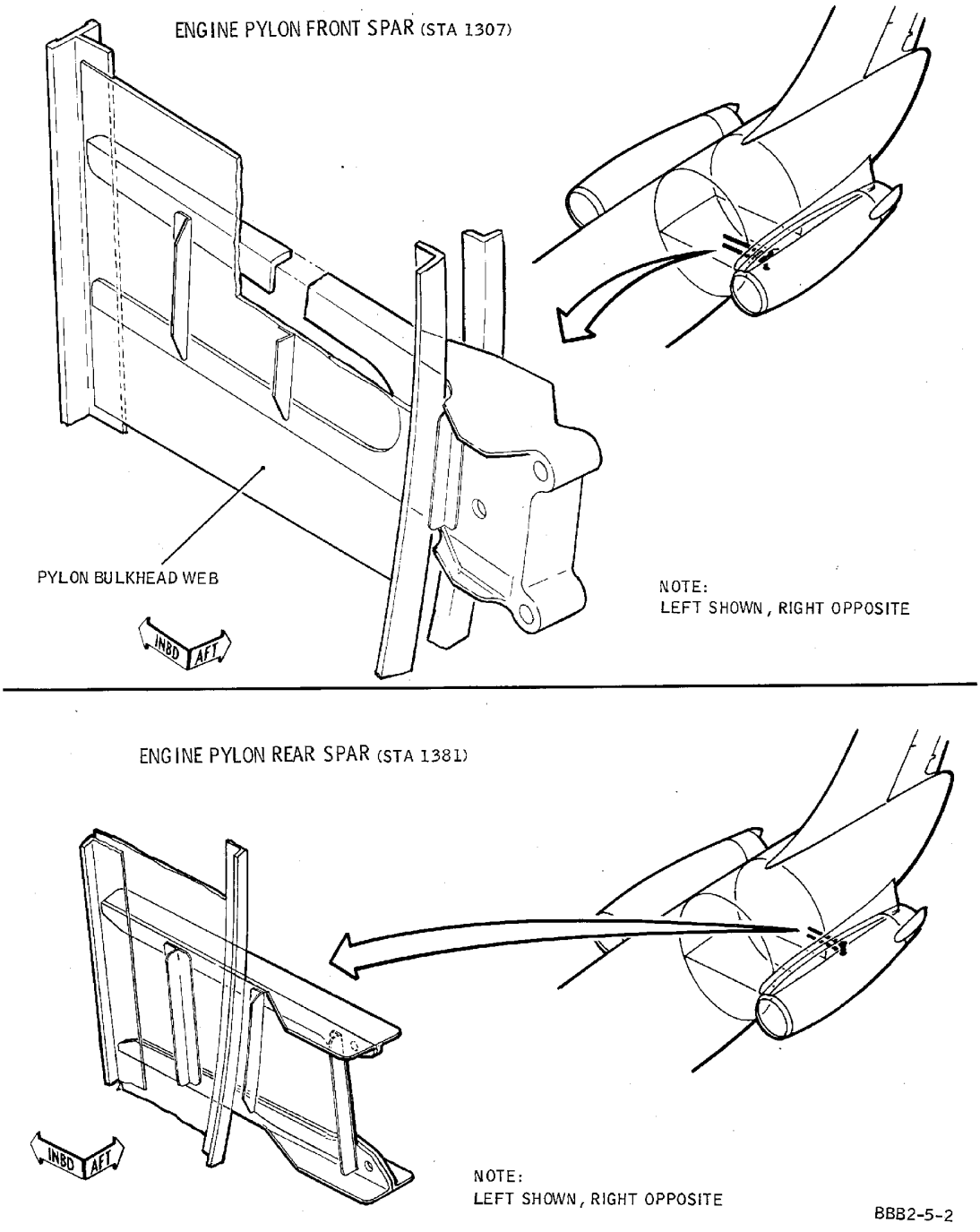
Step	Area to be Checked	Check for
(10)	Fuselage skin panels between window belt and cusp area of wing leading edge.	Buckles, wrinkles, and loose or missing attachments.
(11)	Cusp tee between frames fuselage station Y1060 and Y1338.	Inward buckling of cusp tee.
B.	Wing (Figure 605)	
(1)	Wing structure adjacent to any fuel leaks found.	Cracks and deformation in shear clips; cracked, bowed, and deformed stringers; spar web deformation, cracks or elongated holes; additional fuel leaks through spars or tank boundary bulkheads; bowed or buckled spar on bulkhead stiffeners; cracks in lower spar caps or lower bulkhead caps; and loose, bent, sheared, or missing attachments.
(2)	Leading edge slat tracks, track to slat attachments.	Fractures, cracks, distortion, and any other obvious indication of damage.
(3)	Leading edge slat track support ribs.	Buckling cracks, distortion, and loose or missing attachments.
C.	Tail (Figure 604)	
(1)	Vertical Stabilizer skin surfaces left and right side.	Examine all areas for buckling cracks, distortion, and loose or missing attachments.
(2)	Tip fairing (top of vertical stabilizer), spar caps and adjacent skin. At rear spar webs from pivot point Zrs 173 to below splices at Zrs 149 check adjacent skin, spar webs, and bulkheads.	Examine all areas for buckling cracks, distortion, and loose or missing attachments.
(3)	Leading edge spar of dorsal fin from aft of Y1437 to Zrs 34.	Check spar for deformation, cracks and other structural damage.
D.	Vertical Stabilizer Leading Edge (Figure 606)	
(1)	Left and right sides of the vertical stabilizer leading edge at splice station Zfs=52.267.	Do the high-frequency eddy current inspection of the bolt holes in the vertical stabilizer front spar cap forward leg. Do this inspection from six holes above to six holes below the station Zfs=52.267 splice, on left and right sides. See Non-Destructive Test Standard Practices Manual, Part 06 EDDY CURRENT. Do the X-ray inspection of the vertical stabilizer front spar cap aft leg. See Non-Destructive Test Standard Practices Manual, Part 02 X-RAY. If you find a discrepancy, contact Boeing Service Engineering for evaluation.
E.	Horizontal Stabilizer (Figure 604)	
(1)	Horizontal stabilizer external surface inboard of Xhs 103.8.	Wrinkles, buckles and loose or missing attachments.

Table 602 (Continued)

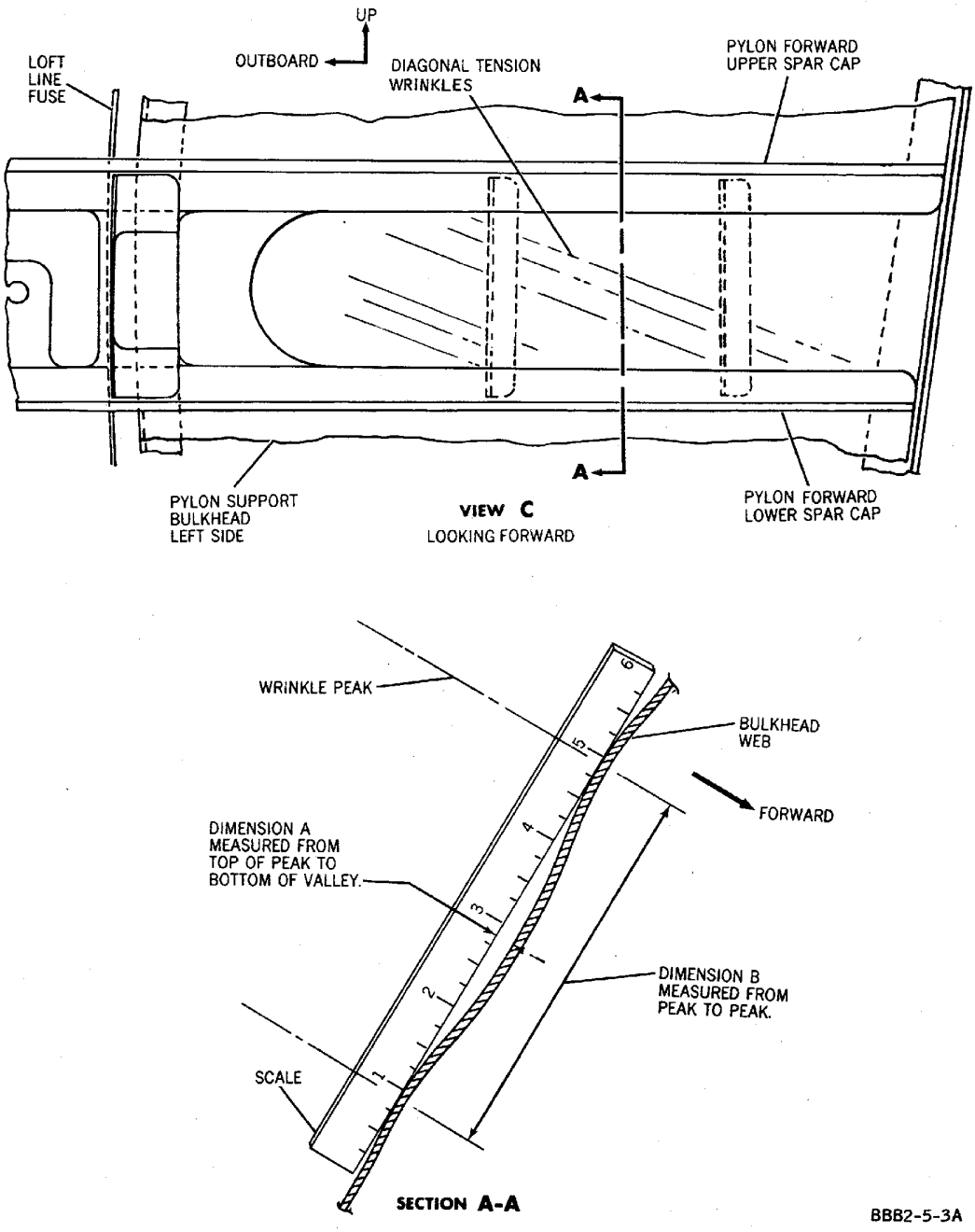
Step	Area to be Checked	Check for
(2)	Elevator spar assembly upper and lower spar cap and adjacent skins, spar web, and fittings attached to spar.	Examine all areas for buckling cracks, distortion, and loose or missing attachments.
(3)	Horizontal stabilizer center section bulkhead.	Elongated fastener holes, loose attachments and other deformations.
(4)	Horizontal stabilizer jack screw, support structure and attach fittings.	Elongated fastener holes, loose attachments, deformation and other forms of damage.



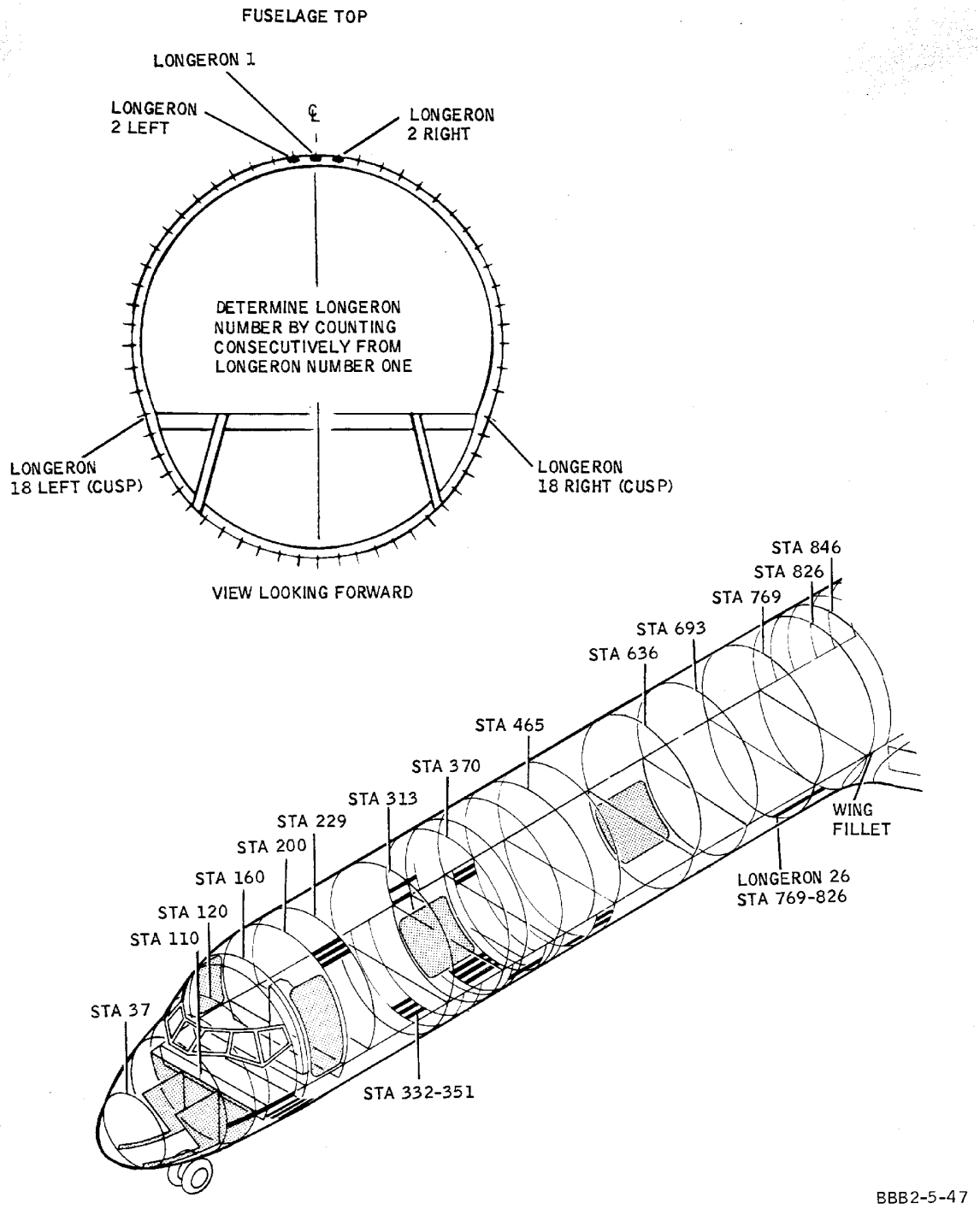
Engine Pylon and Spars - Check
Figure 601/05-51-02-990-801 (Sheet 1 of 3)



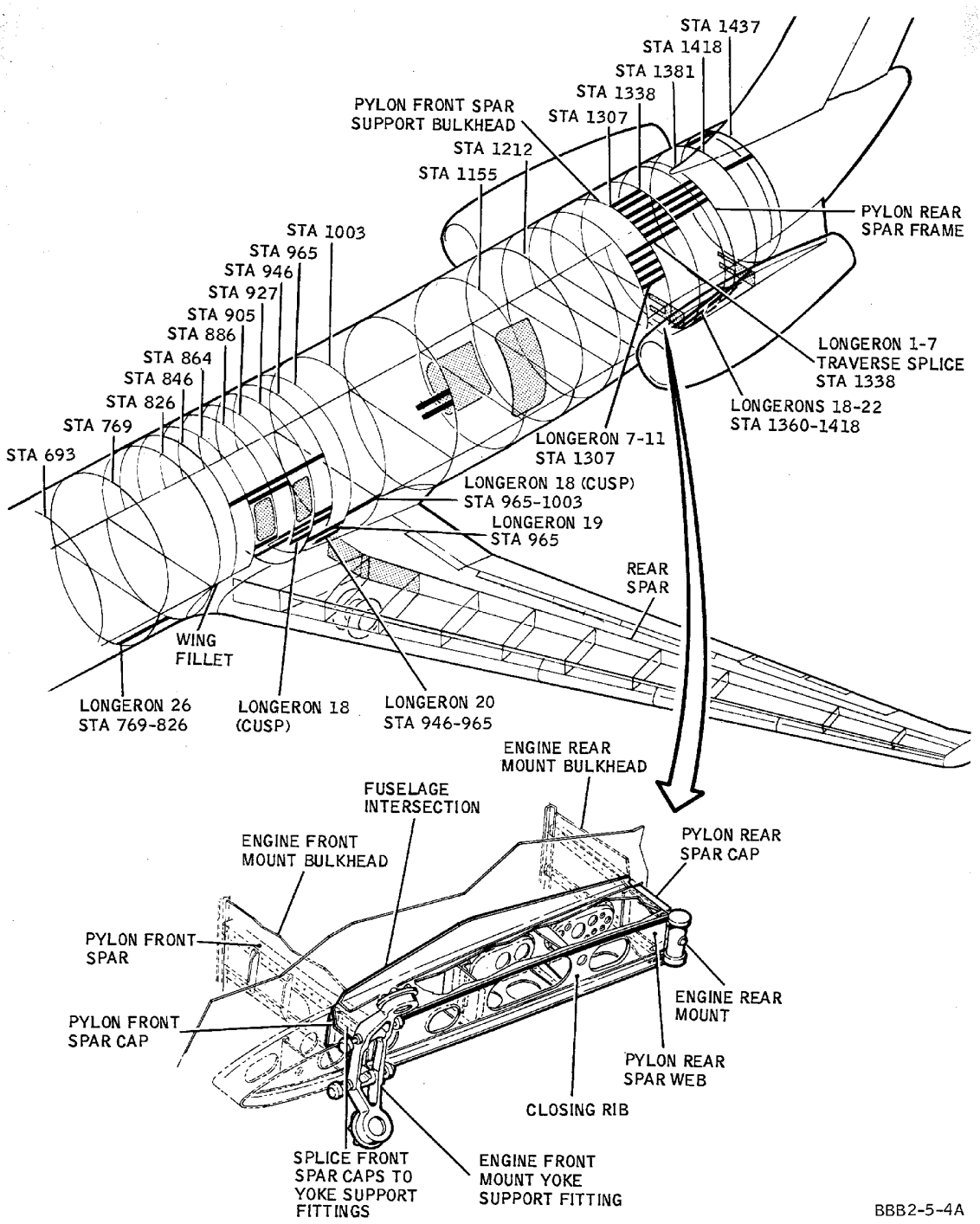
Engine Pylon and Spars - Check
Figure 601/05-51-02-990-801 (Sheet 2 of 3)



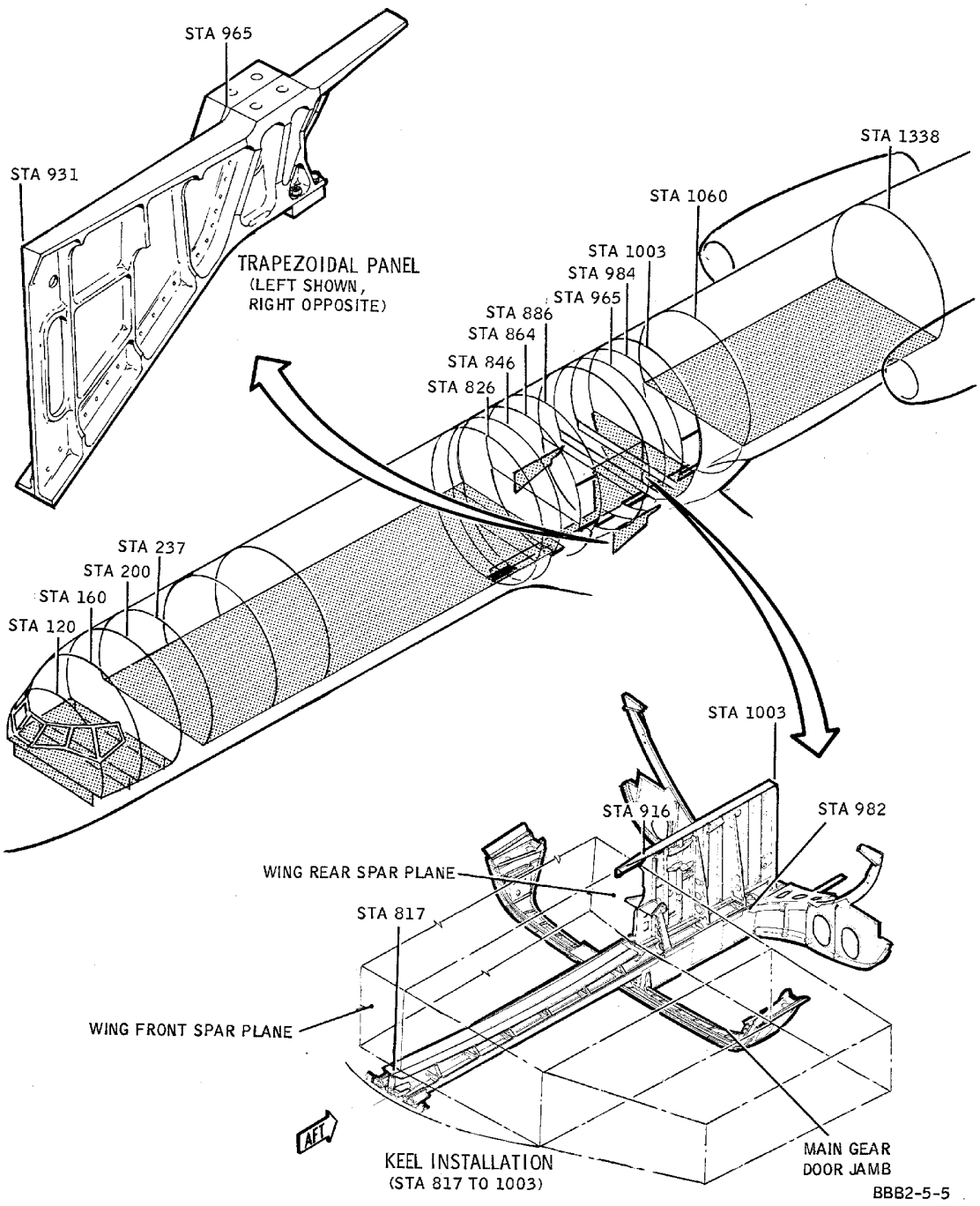
Engine Pylon and Spars - Check
Figure 601/05-51-02-990-801 (Sheet 3 of 3)



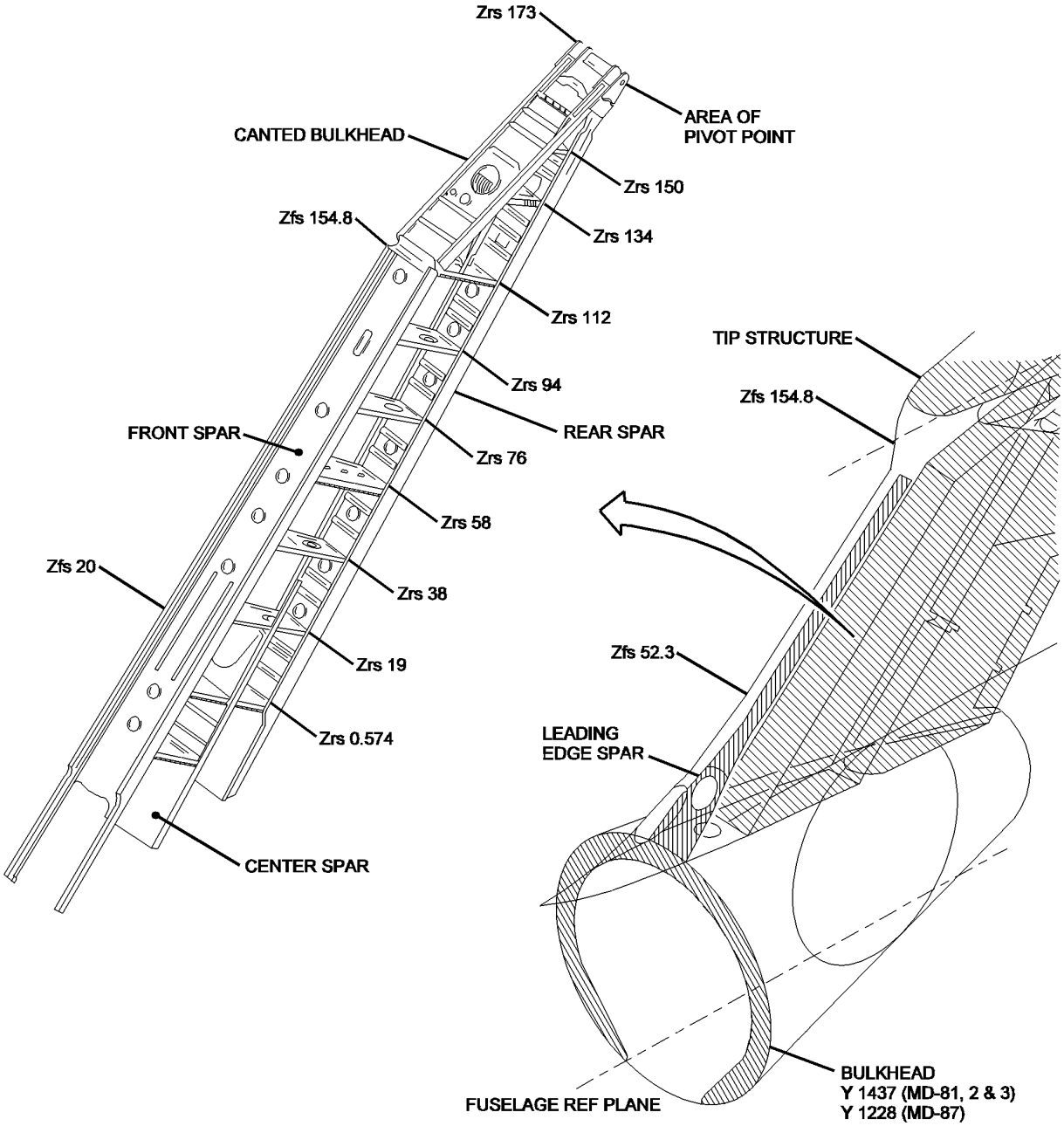
Fuselage - Check
Figure 602/05-51-02-990-802 (Sheet 1 of 2)



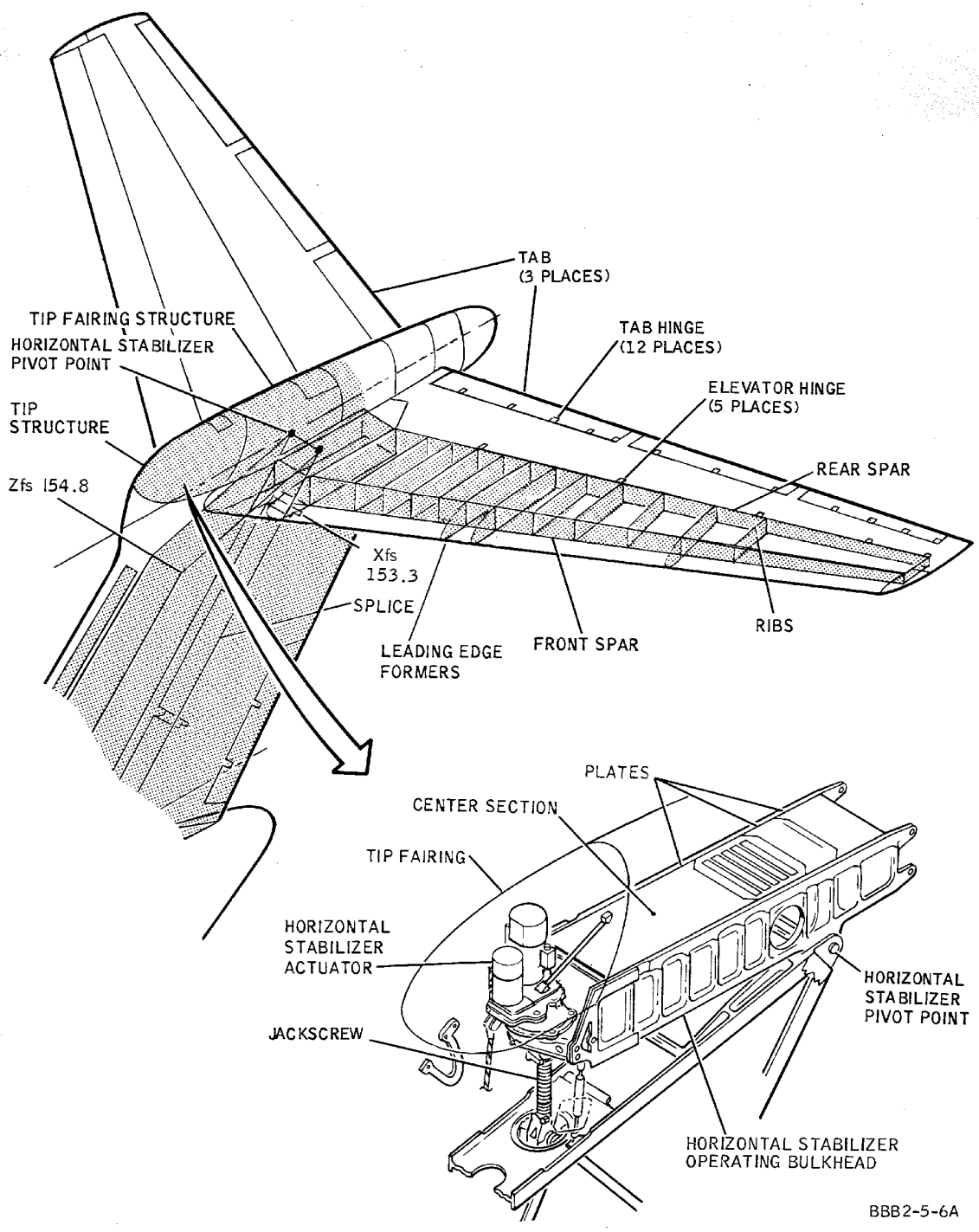
Fuselage - Check
Figure 602/05-51-02-990-802 (Sheet 2 of 2)



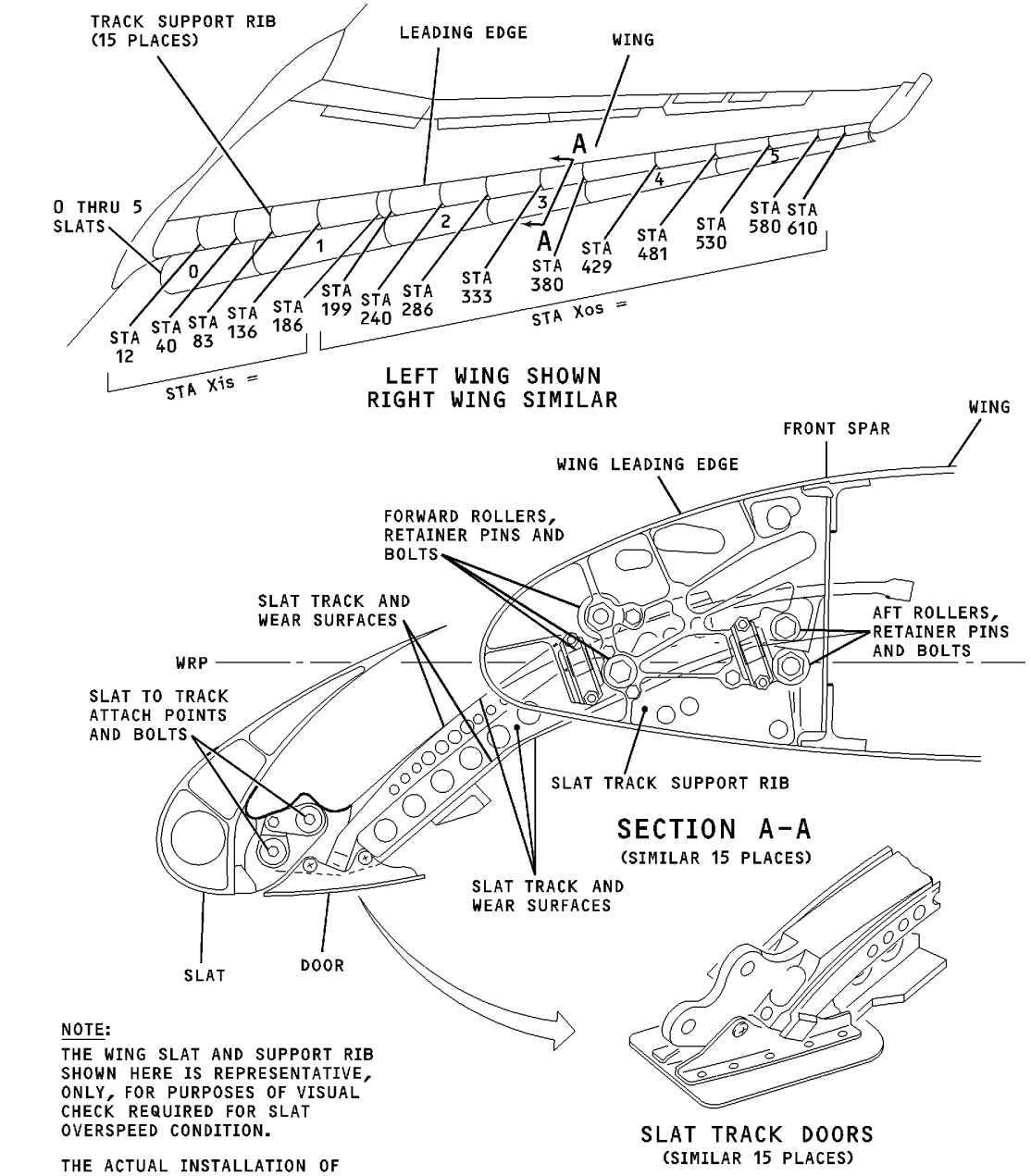
Main Landing Gear Area - Check
Figure 603/05-51-02-990-803



Vertical and Horizontal Tail - Check
Figure 604/05-51-02-990-804 (Sheet 1 of 2)



Vertical and Horizontal Tail - Check
Figure 604/05-51-02-990-804 (Sheet 2 of 2)



NOTE:

THE WING SLAT AND SUPPORT RIB SHOWN HERE IS REPRESENTATIVE, ONLY, FOR PURPOSES OF VISUAL CHECK REQUIRED FOR SLAT OVERSPEED CONDITION.

THE ACTUAL INSTALLATION OF TRACKS, ROLLERS AND ATTACHMENTS MAY VARY FROM THIS AT EACH WING LEADING EDGE STATION.

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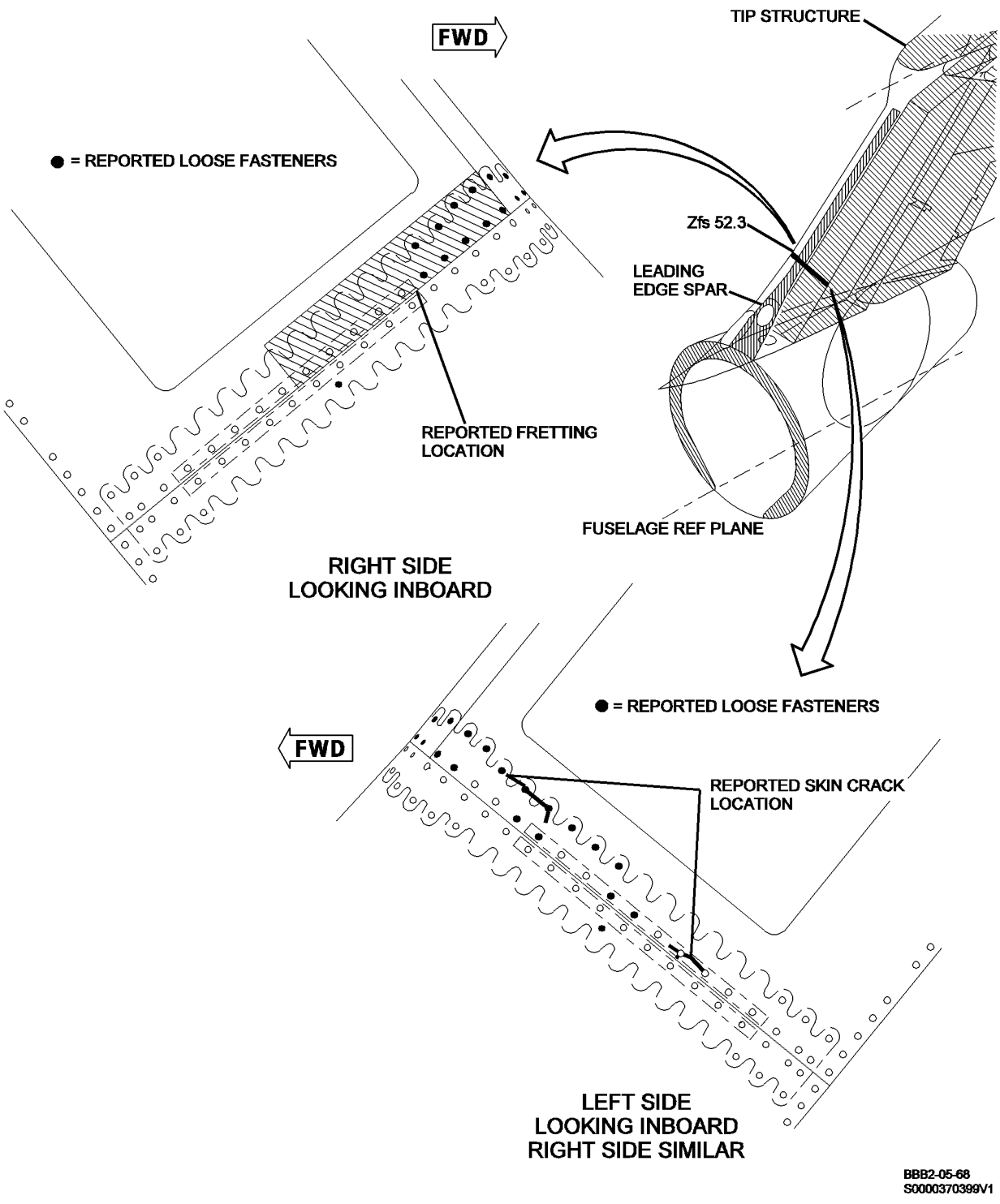
Wing Leading Edge Slats - Check
Figure 605/05-51-02-990-805



Vertical Stabilizer Front Spar and Skin Cracking - Check
Figure 606/05-51-02-990-811

HIGH DRAG/SIDE LOADS OR UNUSUAL GROUND HANDLING CONDITIONS - CHECK

1. General

A. This procedure has the instructions to do an inspection for a pilot reported high drag/side loads or unusual ground handling conditions.

B. A high drag/side load or unusual ground handling condition is defined to be a result of one or more of these pilot reported conditions:

- Skid or over-run from a prepared surface to an unprepared surface
- Land short of the prepared surface
- Landing with two or more tires deflated
- Ground operations of a heavy aircraft during push back, prior to takeoff or after landing on unstable surface conditions like ice, snow, mud, soft pavement or sand.

C. If the aircraft structural load limitation is thought to be exceeded, structural elements must be inspected for damage to prevent failure and to ensure integrity of the airframe and systems.

D. The areas to examine for damage are:

- The nose landing gear
- The main landing gear
- The wing
- The fuselage.

E. Checks are divided into two parts: "A" check (generally external and primary indicators) and "B" check followup (may be in closed area). If damage is noted at any step during the "A" check, certain "B" checks must be accomplished. During the "B" check, a progressive check of the structure and systems in local and adjacent areas of visible damage is performed. The "B" check is pursued only to the extent necessary to ascertain that no internal damage has occurred in these areas.

2. "A" Check - High Drag/Side Loads or Unusual Ground Handling Conditions

NOTE: If damage is noted at any step during the "A" check, accomplish corresponding "B" check of the area in question.

Table 601

Area to be Checked	Check for
A. Nose Landing Gear	
(1) Shock Strut Assembly	Flaking paint, cracks, distor tion, and fluid leakage.
(2) Torque and drag links	Flaking paint, cracks, and distortion.
B. Main Landing Gear	
(1) Shock strut assembly. (Figure 602)	Flaking paint, cracks, distor tion, and for leaking fluids
(a) Torque links	
(b) Trunnion lugs	
(c) Attachments of actuator piston	
(d) Side brace attachments	
(2) Side brace. (Figure 603)	Flaking paint, cracks, or distortion.
C. Wing	

Table 601 (Continued)

Area to be Checked	Check for
(1) Bolted attachment of MLG attach fittings to rear spar. (Figure 602)	
NOTE: View from aft side of spar.	
	Loose or failed attachments.
(2) Auxiliary spar (main landing gear area). Figure 602)	Buckles, loose or failed fasteners of spar caps and web.
(3) Rear spar web inboard and outboard of Xcw 104.5 (Figure 602)	Buckles between stiffeners.
(4) Main landing gear attach fitting	Cracks, tears, wrinkles, buckles, and loose or missing attachments.
(a) All wing inboard and outboard exposed attachment surfaces.	
(b) Upper and lower wing external skin doublers and bolts	
D. Fuselage	
(1) Nose landing gear support beams	Buckling of webs, stiffeners, and loose or missing attachments.
(2) Fuselage exterior shell from cusp (longeron 18) to bottom centerline (longeron 30) and from nose aft to Station Y370). (Figure 604).	Buckles, wrinkles, loose attachments, or other visual signs of skin stringer damage.
(3) Fuselage exterior shell from longeron 9 to bottom centerline (longeron 30).	
NOTE: Obvious buckles in this area are an indication of high loads and damage must be repaired prior to further flight.	
(a) Station Y370 to Y1321.	Gaps, tears, buckles, wrinkles, loose or missing attachments.
(b) MLG door area, especially at the edges of the door hinge near the aft end (Station Y982).(Figure 603)	Outward buckling of skin.

3. "B" Check - High Drag/Side Loads or Unusual Ground Handling Conditions

NOTE: If damage is noted in "A" check, check internal structure in immediate area and also perform following:

Table 602

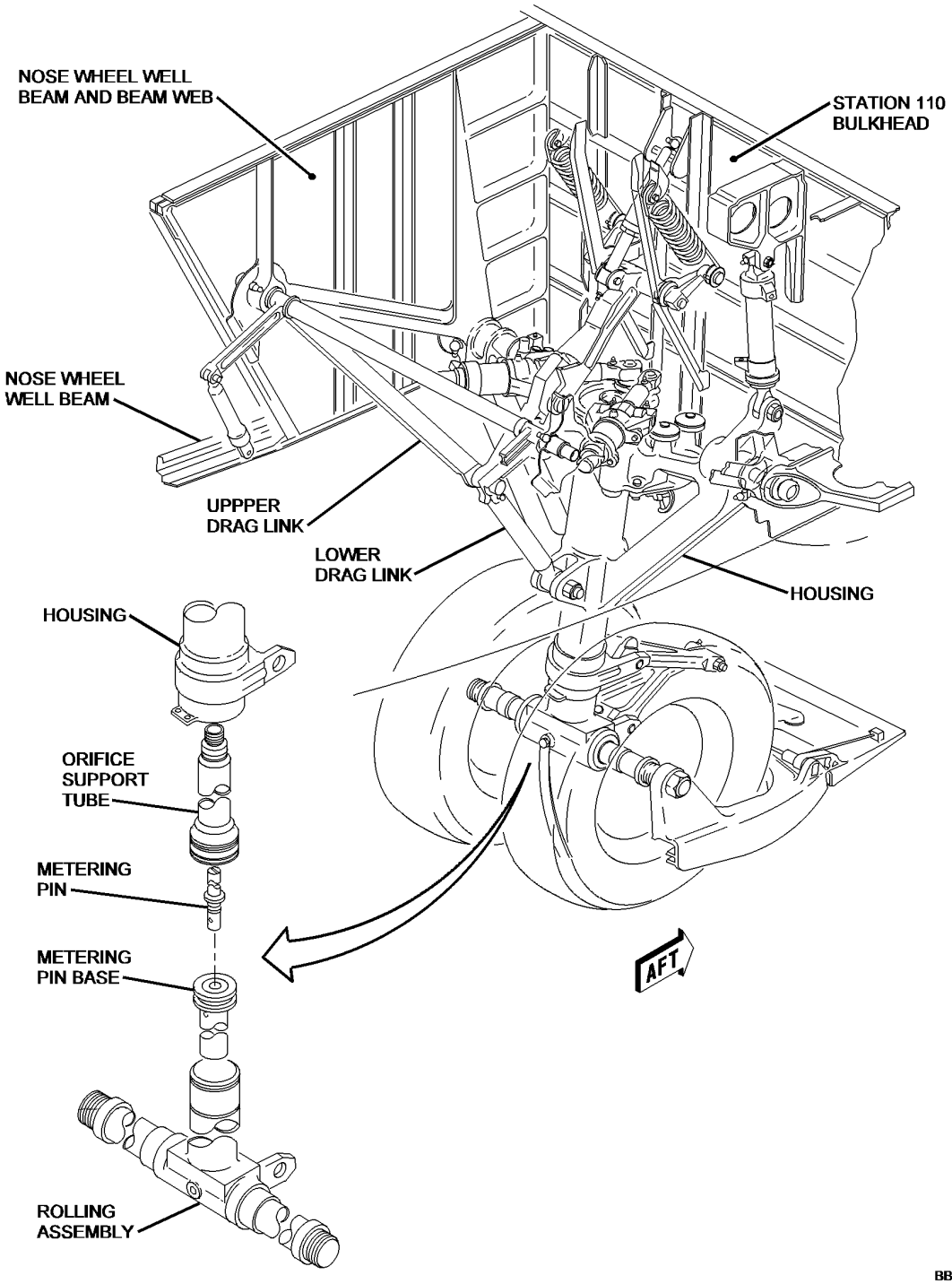
Area to be Checked	Check for
A. Nose Landing Gear	
(1) Raise nose of aircraft. (LIFTING AND SHORING, CHAPTER 07)	
(2) NLG support fitting, support structure; NLG door, door latching mechanism (raised nose of aircraft and gear put through retraction test).	Interference between gear and structure; faulty operation of door and latching mechanism (clearances are critical); indications of deformation of pivot lugs, pivot pins, and other components; disassembly and detail check of gear com ponents and supporting structure required to define damage.
B. Main Landing Gear	

Table 602 (Continued)

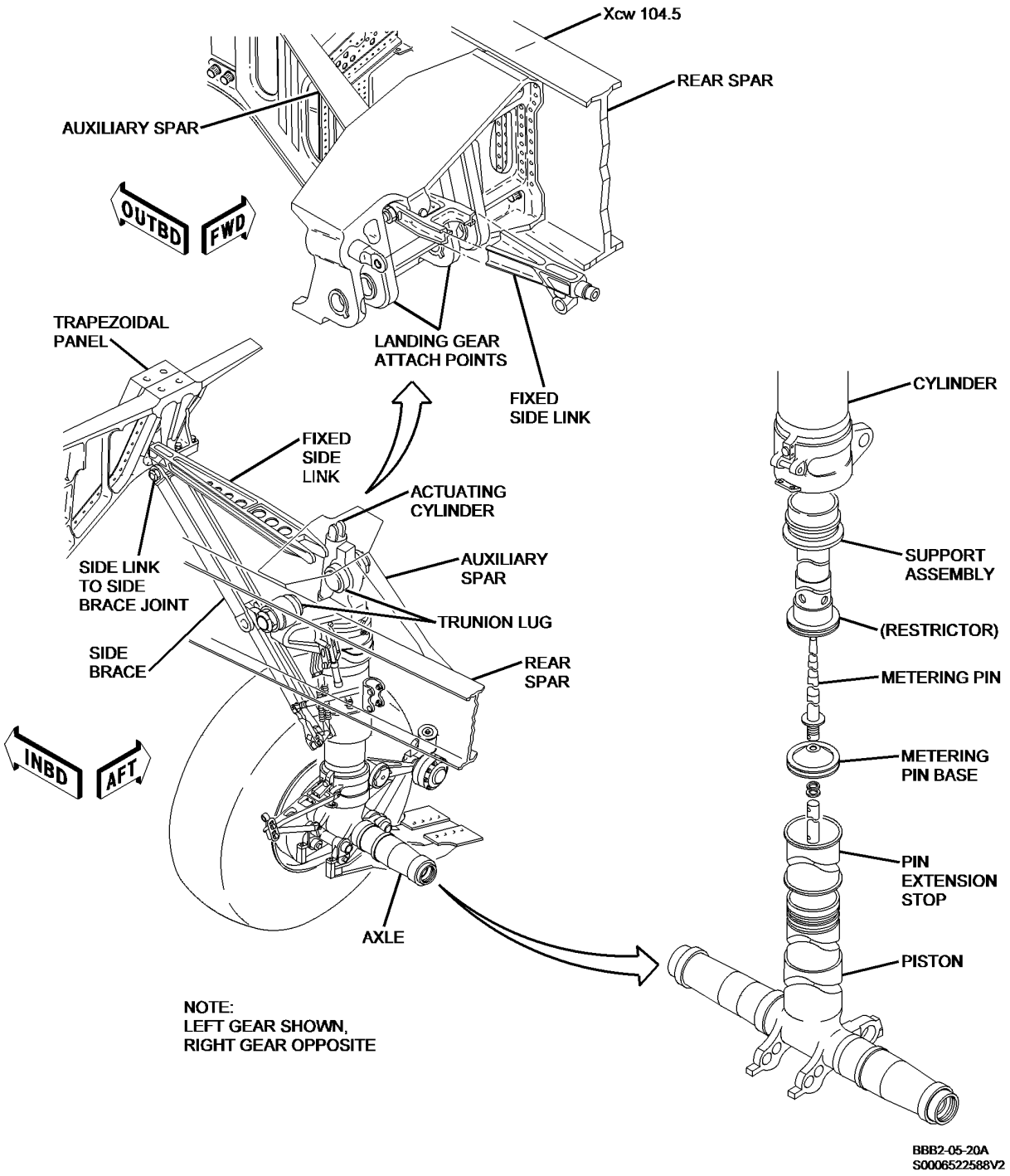
Area to be Checked	Check for
(1) Support aircraft on wing and aft jack points. (LIFTING AND SHORING, CHAPTER 07)	
(2) Remove MLG shock strut from cylinder. (LANDING GEAR, CHAPTER 32)	
NOTE: Precision inspection of orifice support tube for length and out-of-round condition of holes is required for a valid "B" CHECK.	
(3) MLG shock strut	
(a) Orifice support tube	Out of round, oblong holes, decreased length.
(b) Metering pin base	
(c) Piston extension stop	Cracking, bulging.
(d) All other internal parts	Any obvious damage.
(4) Fuselage at Station Y965 (Figure 603)	
(5) Trapezoidal panel fitting and attachments to fuselage frame.	Distortion, cracks, buckles, and loose or missing attachments.
(6) Wing rear spar (Figure 602)	Cracked lugs of the main gear attachment assembly.
(7) Remove MLG fixed side link (Ref. Figure 602)	
(8) Fixed side link.	Bends, cracks, and distortion.
(9) Fixed side link fillet radius at inboard end of link.	Cracks and distortion.
(10) Trapezoidal panel fitting and attachments to fuselage frame.	Buckles, cracks, distortion and loose or missing attachments.
C. Wing	
NOTE: Support the aircraft on wing and aft fuselage jack points. (LIFTING AND SHORING, CHAPTER 07)	
(1) MLG support fitting, support structure; MLG door and door latching mechanism (raised aircraft).	Misalignment, distortion, or interference during retraction and extension (clearances are critical). Looseness in trunnion lugs.
(2) Trapezoidal panel lower attach fitting. Figure 603).	Attachment to wing root bulkhead.
(3) Fixed side link attach points. Figure 602)	Cracks and distortion.
(4) Caps and web at bulkhead (Station Xcw 104.5)	Distortion, cracks, web buckling, and loose or missing attachments.
(5) Rear spar caps inboard and outboard of main landing gear fitting (from inside of wing)	Cracks, distortion, and loose or missing attachments.
(6) Remove MLG fixed side link Figure 602)	
(7) MLG fixed side link fillet radius at inboard end.	Cracks or distortion.
(8) Trapezoidal panel fitting and attachments to fuselage frame.	Buckles, cracks, distortion and loose or missing attachments.
D. Fuselage	
(1) Raise nose of airplane. (LIFTING AND SHORING, CHAPTER 07)	

Table 602 (Continued)

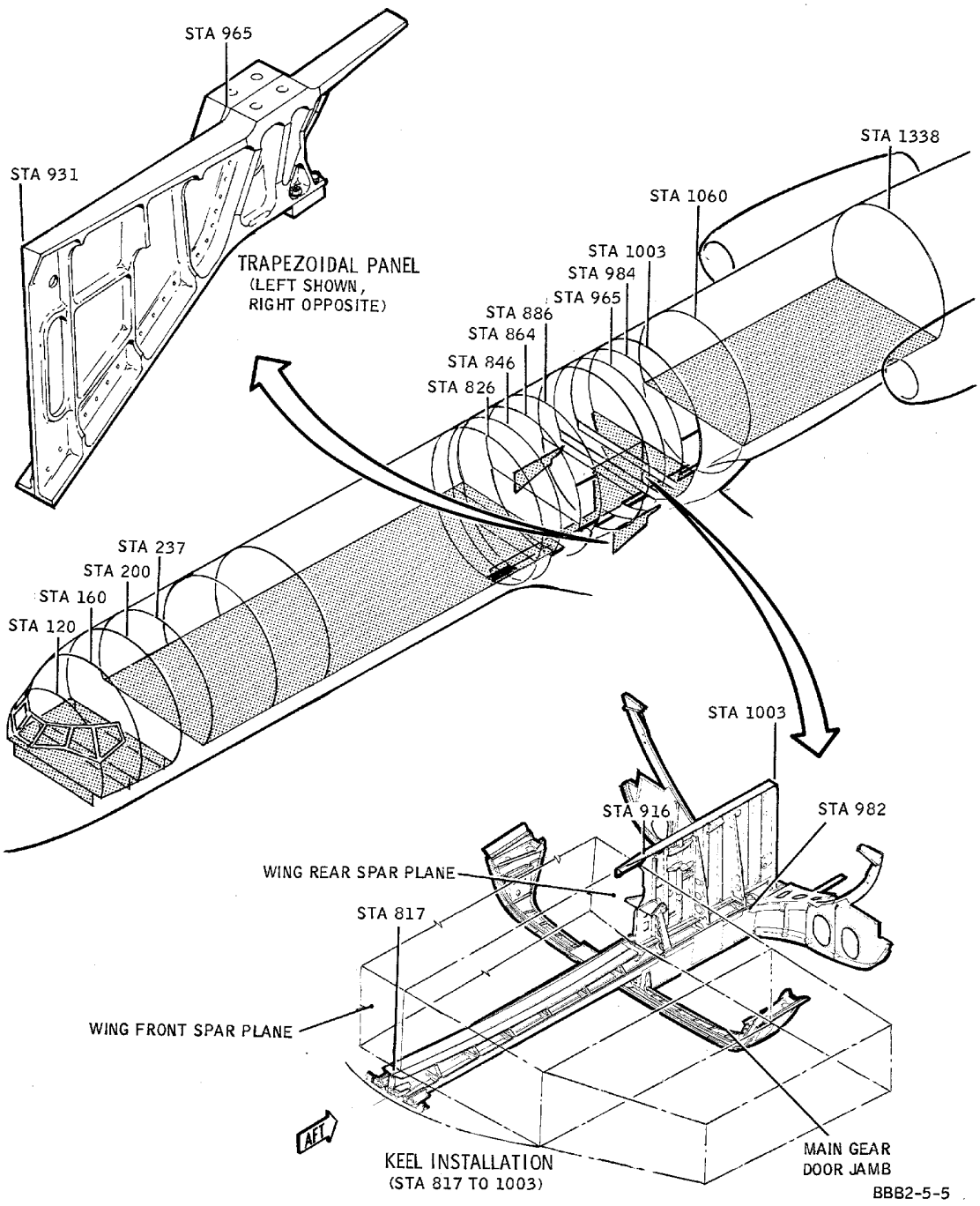
Area to be Checked	Check for
(2) Nosegear and nosegear door.	Misalignment, distortion, or interference during retraction and extension (clearances are critical).
(3) Cusp (longeron 18) tee inboard flange (Station Y1041 to Y1338).(Figure 604)	Buckles and any other obvious signs of damage.
(4) Trapezoidal panel fitting and attachments to fuselage frame. (Figure 603)	Distortion, cracks, buckles, and loose or missing attachments.



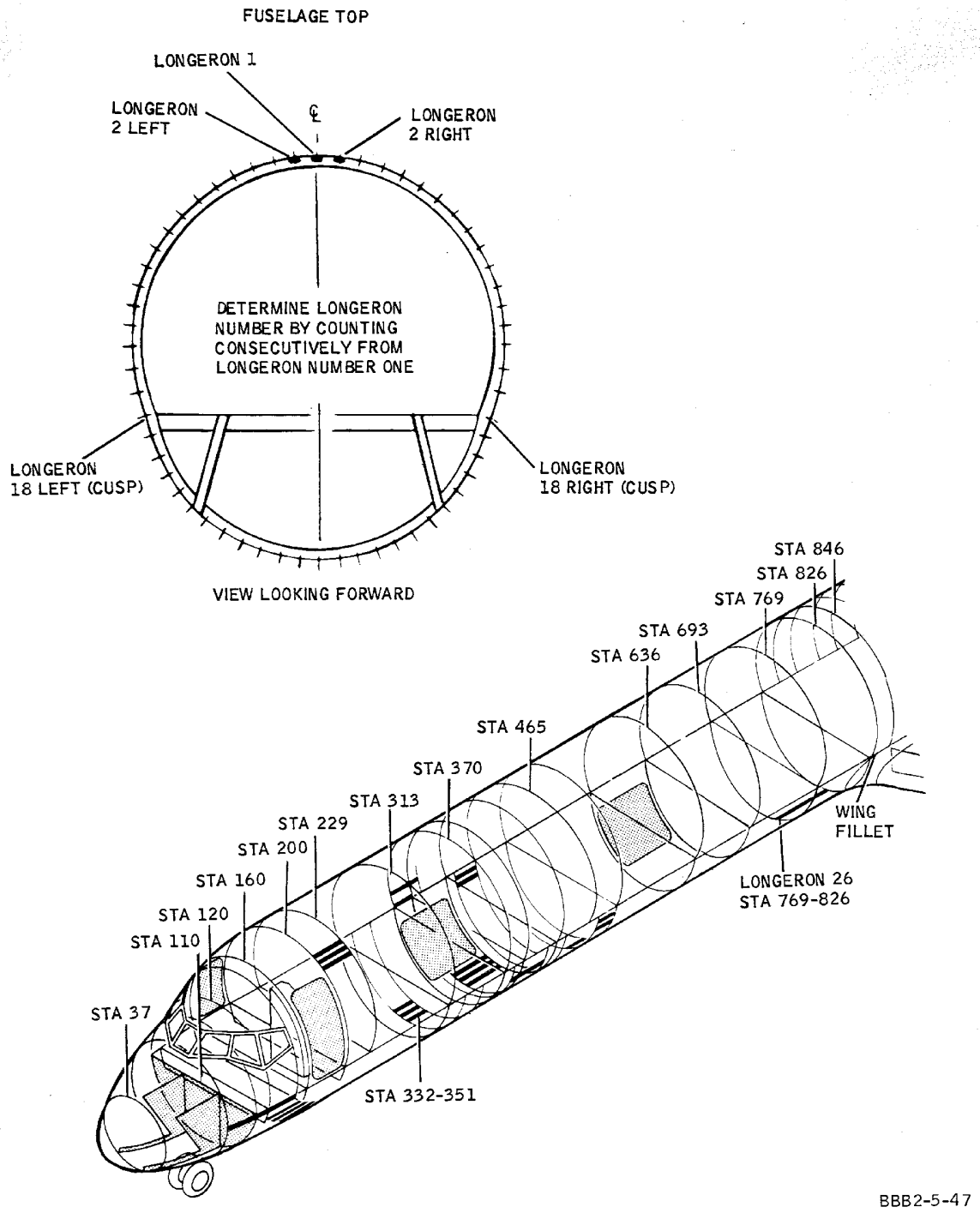
Nose Landing Gear -- Check
Figure 601/05-51-03-990-801



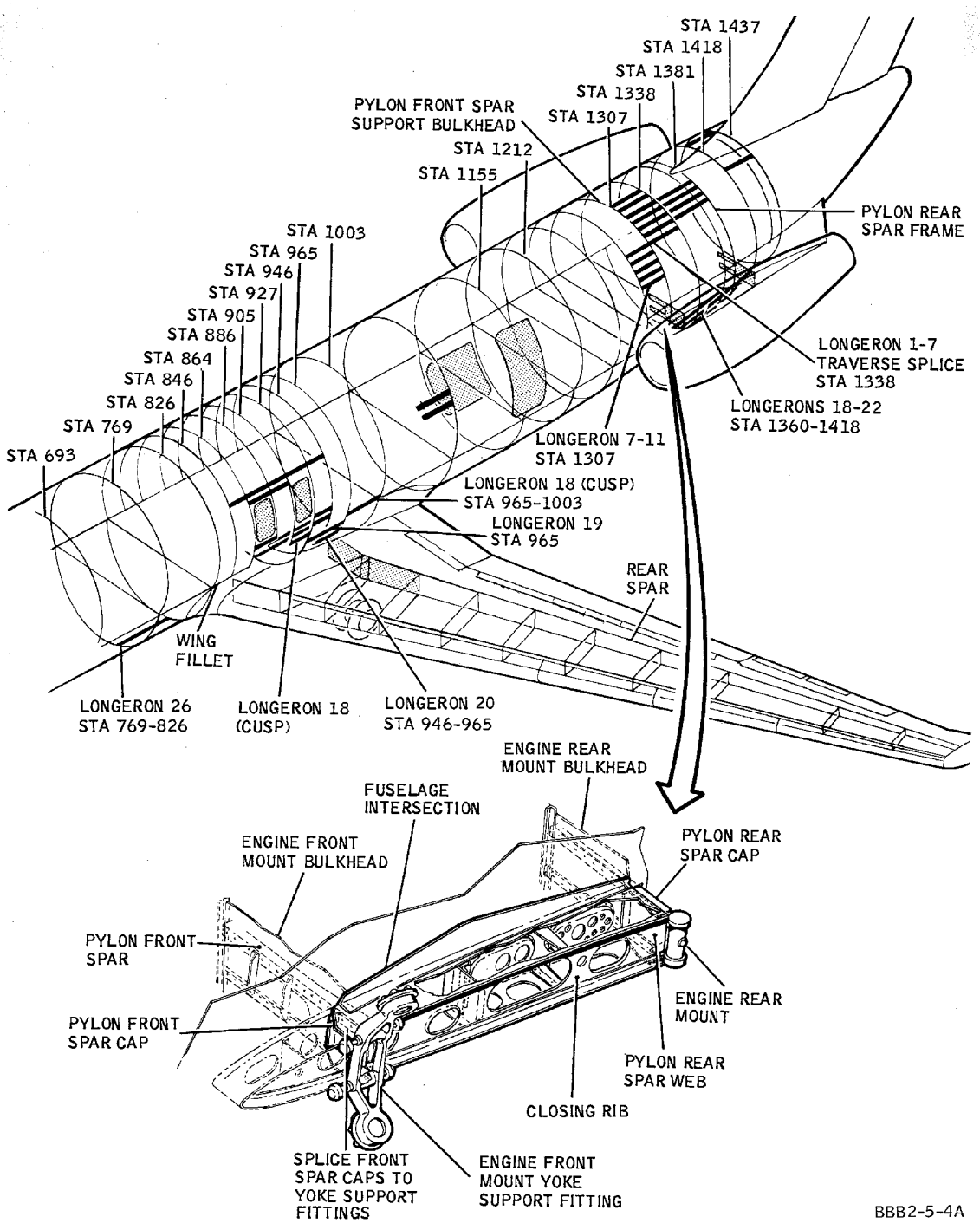
Main Landing Gear -- Check
Figure 602/05-51-03-990-802



Main Landing Gear Area -- Check
Figure 603/05-51-03-990-803



Fuselage -- Check
Figure 604/05-51-03-990-808 (Sheet 1 of 2)



Fuselage -- Check
Figure 604/05-51-03-990-808 (Sheet 2 of 2)

HARD or OVERWEIGHT LANDING - CHECK

1. General

A. This procedure has the instructions to do an inspection of the aircraft for a pilot-reported hard or overweight landing.

B. An overweight landing is a landing at a weight that is more than the maximum certificated landing weight.

C. A review of the recorded vertical load factor (VLF) and roll angle can provide inspection relief. When the VLF data are available, a check inspection for a pilot-reported hard or overweight landing is necessary when: (Figure 601)

(1) The peak (highest) recorded VLF (based on a sample rate greater than or equal to 8 samples per second) is more than the limits shown in the figure.

(2) The roll angle just prior to touchdown is more than 6 °.

(3) The nose gear touches down on the runway first, or a rapid pitch down (derotation) occurs after the main gear touches down.

(4) The recorded VLF and roll angle data for the landing are not available.

D. Use the relevant parameters from Flight Data Recorder (FDR) or other equivalent recording device, in conjunction with the landing VLF inspection limits chart to determine if there can be inspection relief. (Figure 601)

(1) Roll angle in degrees just prior to touchdown.

(2) The peak (highest) load factor (G's) value after touchdown.

(3) Landing weight for the reported landing.

E. For help in how to find the check inspection to use for the reported condition, use the landing inspection flow chart. This figure outlines the reported conditions that follow:(Figure 602)

(1) A reported hard or overweight hard landing - for all weights use the left column in the chart.

NOTE: The A-1 check inspection can be done while flight recorded data is reviewed.

(2) A reported overweight landing only, not reported as a hard landing, use the right column in the flow chart.

NOTE: The A-1 check inspection can be done while flight recorded data is reviewed.

(a) No inspection is required if the flight recorded data are in limits.

F. For a hard or overweight landing, the areas to examine for damage are:

- The nose landing gear
- The main landing gears
- The fuselage
- The wing and rear wing spar
- The horizontal stabilizer and elevators
- The vertical stabilizer and rudders
- The engine nacelles and pylons

G. This inspection is divided into three inspections:

(1) A-1 check inspection. This is a general visual inspection (GVI) based on the pilot reported hard or overweight landing. Do this inspection when: (Figure 601) (Figure 602)

- The pilot report is for a hard or overweight landing, or

- The pilot report is for an overweight landing and relevant parameters from flight recorded data are not available, or
- The pilot report is for an overweight landing and relevant parameters from the flight recorded data are not in limits.

(a) If no damage is found in the A-1 check inspection and the relevant parameters from the flight recorded data for the reported landing are in limits, no further inspection is necessary.

(b) If damage is found in the A-1 check inspection or if the flight recorded data is not available, the A-2 check inspection must be done.

(2) A-2 check inspection. An external detailed visual inspection (DVI) of specific structural areas and components that can be seen. Do the A-2 check when:

- Damage is found in the A-1 check inspection, or
- The relevant parameters from flight recorded data are not available for the reported landing, or
- The relevant parameters from flight recorded data for the reported landing are not in limits.

(a) If damage is found in the A-2 check inspection, do the applicable B check inspection steps for the damaged area or areas.

(3) B-check inspection. This is a more detailed visual inspection of a damaged area or component. Panel open up, component or structural disassembly, repair or replacement can be necessary. The operator should download the flight recorded data and submit this information to Boeing Service Engineering for further evaluation.

(4) The word damage in this procedure is used to identify the different types of damage that could be found (i.e. cracks, bulges, wrinkles, bent, twisted, missing, broken, and loose). This damage can be minor or very serious but could have no connection to a hard or overweight landing. Boeing must depend on the operators experience and good judgement to know if the damage found is a result of the reported hard or overweight landing or another anomaly.

- If the damage found in an A-1 and A-2 check inspection can be repaired with a component change or SRM repair, and is identified to not be an indication of the reported landing, no further inspection is necessary after repairs are completed.
- If the repair of the damage can be deferred with MEL or engineering approval, the aircraft can be released for service or permitted to return to a station where repairs can be made. If this is the situation, no further inspection of the area is necessary.
- If assistance is needed to evaluate if an immediate repair is necessary, or if it can be deferred, contact Boeing Service Engineering.

2. A-1 Check Inspection - Hard or Overweight Landing

A. Prepare for the Hard or Overweight Landing A-1 Check Inspection

NOTE: A general visual inspection (GVI) is a visual examination of an interior or exterior area, installation or assembly to detect obvious damage, failure or irregularity. This level of inspection is made from within touching distance unless otherwise specified. A mirror could be necessary to ensure visual access to all surfaces in the inspection area. This level of inspection is made under normally available light conditions such as daylight, hangar lighting, flashlight or drop-light and can require panel or door open-up.

(1) If time and equipment permits, down load the flight recorded system data.

(a) If this step will not be done, continue to this step: Paragraph 2.A.(3).

(2) Review the flight recorded system data with the landing vertical load factor (VLF) inspection limits and landing inspection flow charts. Use the landing Vertical Load Factor (VLF) limits chart as follows: (Figure 601) (Figure 602)

(a) For a reported hard or overweight hard landing go to VLF limit line for the hard or overweight hard landing.

(b) For a reported overweight only landing, not reported as a hard overweight landing, go to the VLF limit line for an overweight only landing.

(c) Go to the roll angle line of the chart, find the recorded roll angle (the roll angle in degrees prior to touch down) for the reported landing. Draw a line straight up to the applicable hard or overweight hard landing or overweight only landing weight line.

(d) Where the recorded roll angle and weight lines cross each other, draw a straight line from that point to the VLF line of the table. This is the maximum VLF value for this reported landing. Record this VLF.

(e) Compare the peak (highest) VLF value after touch down from the flight recorded data to the VLF value recorded from the chart.

(f) If the reported landing was a hard or overweight hard landing and the flight recorded VLF value is equal to or less than the VLF value recorded from the chart, do the A-1 check inspection. Continue to this step: Paragraph 2.A.(3).

(g) For all landing weights, if the flight recorded VLF value for a hard, overweight hard or overweight only landing is more than the VLF value recorded from the chart, do the A-1 and A-2 check inspections.

(3) If necessary, install a landing gear safety pin in each landing gear.

B. Aircraft Hard or Overweight Landing A-1 Check Inspection

(1) Do the A-1 check inspection with the table that follows:

Table 601 A-1 Check Inspection - Hard or Overweight Landing

STEP	Area to be Checked	Check for
A.	Nose and Main Landing Gear (Figure 603), (Figure 604)	
(1)	Examine each landing gear, strut and landing gear attach point.	• Broken linkages • Leaks from strut seals • Wheels and tires for damage.
B.	Fuselage (From the Ground) (Figure 609), (Figure 608), (Figure 605)	
(1)	Exterior skin of the fuselage.	Buckles, wrinkles, distortion, or cracks.
(2)	Keel web (station Y940- Y1003)	Buckles, distortion, cracks, or other obvious indications of damage.
(3)	Area around and between left and right primary and alternate static port plates	Wrinkles, buckles and distortion in the skin. If damage is found, do the inspection check of the primary static port plate. (STATIC PORTS - INSPECTION/CHECK, PAGEBLOCK 34-11-01/601) If damage found is in limits, the aircraft can remain in service.
(4)	Tail skid indicator pin	Ensure indicator pin is not pointed down (vertical). If pointed down, this is an indication of possible damage to the tail skid or tail skid support structure.

Table 601 A-1 Check Inspection - Hard or Overweight Landing (Continued)

STEP	Area to be Checked	Check for
C.	Wings (From the ground) (Figure 607)	
(1)	Bottom of each wing.	Permanent skin wrinkles, buckles, fuel leaks, and missing fasteners.
(2)	Extend and retract slats.	Slats move freely and do not bind.
D.	Empennage (From the Ground) (Figure 610)	
(1)	Bottom of left and right horizontal Stabilizer and elevators.	Wrinkles, buckles, and cracks.
(2)	Left and right vertical stabilizer and rudder surfaces.	Wrinkles, buckles, and cracks.
E.	Cabin Interior	
(1)	Passenger cabin	• Obvious damage to visible passenger or control cabin floors • One or more overhead stowage compartments are buckled or have fallen • One or more cabin ceiling sections are unlatched or have fallen.

(2) If damage is found in the A-1 check inspection, do the A-2 check inspection. (Paragraph 3.)

(3) If no damage is found in the A-1 check inspection and the inspection flow chart does not make the A-2 inspection check necessary, continue to job close-up. (Paragraph 5.)

3. A-2 Check Inspection - Hard or Overweight Landing

A. The A-2 check inspection is required when: (Figure 601), (Figure 602)

- Damage is found in one or more steps of the A-1 check inspection
- The relevant parameters of flight recorded data for a hard or overweight-hard landing are not reviewed
- The relevant parameters of flight recorded data for the reported landing are not in limits.

B. Prepare for the A-2 check inspection as follows:

(1) Install a down lock pin in each landing gear.

(2) Fully extend the flaps and slats.

(3) Use a ladder and aerial boom, manlift to examine the pylon and tail.

C. Do a detailed visual inspection with the A-2 check inspection table that follows:

Table 602 A-2 Check Inspection - Hard Or Overweight Landing

Step	Area to be Checked	Check for
A.	Nose Landing Gear (NLG) (Figure 603)	
(1)	Shock strut.	Flaking paint, cracks, distortion, and fluid leakage.
(2)	Wheel well support structure, beam and beam web.	Cracks and distortion .
(3)	Upper and lower drag links and their attach points	Breaks, cracks or distortion.
B.	Main Landing Gear (MLG) (Figure 604), (Figure 605)	

Table 602 A-2 Check Inspection - Hard Or Overweight Landing (Continued)

Step	Area to be Checked	Check for
(1)	Shock strut assembly.	Flaking paint, cracks, distortion, and fluid leakage.
(2)	Fixed side link, side brace, and their attach points at gear and trapezoidal panel.	Breaks, cracks or distortion.
C.	Fuselage (Figure 609), (Figure 606), (Figure 608), ()Figure 605	
(1)	Bottom center section between stations Y769 and Y1060.	Buckles, distortion, cracks, or loose or missing fasteners, and other obvious indication of damage. If buckling found in keel at station Y984 is more than 0.125 in. (3.175 mm) in depth, inspection of orifice support tube in the Main Landing Gear (MLG) strut is mandatory.
(a)	Keel web (station Y940- Y1003).	Buckles, distortion, cracks, or loose or missing fasteners, and any other obvious indication of damage.
(b)	Fuselage bottom skin.	Buckles, distortion, cracks, or loose or missing fasteners, and any other obvious indication of damage.
(c)	MLG doorjamb "zee" area, aft end of MLG door hinge (station Y984).	Buckles, distortion, cracks, or loose or missing fasteners, and any other obvious indication of damage.
(d)	Each lower cargo door sill area.	Crack in skin at forward and aft lower corners.
(2)	Engine pylon forward support bulkhead inside the fuselage (Fuselage station Y=1307).	Buckles, distortion, cracks, or loose or missing fasteners, and other obvious indication of damage. The bulkhead web is “failed” when any fracture exists in the web or doubler. Such failures must be repaired or replaced prior to flight. When wrinkles in the web/doubler exceed 0.125 in. (3.175 mm) in depth, contact Boeing Service Engineering for disposition or replace the web/doubler. Wrinkles between the spar caps are normally diagonal (approximately 30 degrees to the horizontal plane) and the wrinkle peaks are normally 4.0 in. (101.6 mm) to 8.0 in. (203.2 mm) apart.
NOTE: A 6 to 12 inch (150 to 300 mm) straight edge would be a satisfactory tool to measure the depth across the wrinkles.		
(a)	Upper and lower spar caps.	Fractures, wrinkles, buckles, distortion, cracks and any other obvious indication of damage.
NOTE: If borescope is available, access front of aft toilets. If borescope is not available, remove aft toilet shroud for access.		
(b)	Bulkhead web and doubler 2 inches (50.8 mm) above to 2 inches (50.8 mm) below spar caps.	Fractures, wrinkles, buckles, distortion, cracks and any other obvious indication of damage.
(3)	Tail skid strut and interior attach structure.	Cracks, distortion, and other visible damage.
D.	Wing (Figure 607)	
(1)	Slats.	Freedom of operation.

Table 602 A-2 Check Inspection - Hard Or Overweight Landing (Continued)

Step	Area to be Checked	Check for
(2)	Upper external wing skin fuel tank left and right wing.	Permanent skin wrinkles/buckles fuel leaks and/or missing fastener heads.
E.	Horizontal Stabilizer (Figure 610)	
(1)	Horizontal Stabilizer external surfaces	Buckles, wrinkles, and loose or missing attachments.
(2)	Elevator assembly external surfaces and leading edges.	Buckles, wrinkles, and loose or missing attachments.
(3)	Manually operate each elevator control surface through full travel.	Smoothness of operation. No binding is permitted.
F.	Vertical Stabilizer (Figure 610)	
(1)	External surfaces of vertical stabilizer and tip fairing at top of stabilizer.)	Wrinkles buckles tears, and missing fasteners.
(2)	Examine external surfaces of vertical stabilizer leading edge at splice station Zfs=52.267	- Vertical stabilizer leading edge skin in the area of the fasteners for : - Loose, missing, or damaged fasteners from two rows above to two rows below the splice joint - Cracks and other anomaly. - If no discrepancy is found, the inspection is complete. - If a discrepancy is found do the “B” Check - Vertical Stabilizer.
(c)	External surfaces of rudder.	Wrinkles buckles tears, and missing fasteners. Rudder moves freely through full travel left and right. No binding is permitted.
G.	Cabin Interior	
(1)	Overhead ceiling panel unlatched, cracked or fallen, remove panel.	Damage to structure and components that can be seen.
(2)	Overhead stowage compartment visible supports.	Damage to structure and components that can be seen.
(3)	Buckled, cracked, or damaged floors. Remove floor panel(s).	Damage to structure and components that can be seen below floor.

D. If damage is found in one or more steps of A-2 check inspection, do only B - check inspection steps that apply to area or areas where damage is found. (Paragraph 4.)

E. If no damage is found in A-1 and A-2 check inspections continue to job close-up. (Paragraph 5.)

4. B Check Inspection - Hard or Overweight Landing

A. Prepare for the hard or overweight landing B check inspection as follows:

(1) When one or more areas of structural damage is found, the airline operator is asked to submit to Boeing Service Engineering for evaluation the information that follows:

- The flight recorded data
- The fuel, passenger, and cargo load distribution
- The gross weight of the aircraft and the location of the Center of Gravity (CG) at the time of the event

- The nitrogen pressure (psi or kPa) in each landing gear strut, in a static condition (aircraft weight on wheels)
- The nitrogen pressure (psi or kPa) in each landing gear strut, with the struts fully extended (aircraft on jacks)

(2) Examine accessible internal structure in immediate area where damage is found.

(3) Do only the steps applicable for the B check area where more inspection is necessary, as follows:

(a) Lift the aircraft on wing and aft fuselage jacks. (WING AND FUSELAGE JACKING - MAINTENANCE PRACTICES, PAGEBLOCK 07-11-00/201)

(b) Install a 15 ft (5 m) to 30 ft (9 m) maintenance platform or lift equipment to access to the vertical fin, rudder, horizontal stabilizer or elevators.

(c) Install a 4 ft (1.2 m) to 8 ft (2.4 m) to access the top of a wing or engine pylon.

(d) open applicable lower engine pylon access panels for access to pylon structure. (PYLON AND APRON ZONES - DESCRIPTION AND OPERATION, PAGEBLOCK 06-27-00/001)

(e) Open wheel well doors of main or nose landing gear. (GENERAL - MAINTENANCE PRACTICES, PAGEBLOCK 32-00-00/201)

(f) Make the fuel system safe for maintenance to gain access to a fuel tank where damage is found. (GENERAL - MAINTENANCE PRACTICES, PAGEBLOCK 28-00-00/201)

B. Do the B-Check inspection steps, for area or areas where a discrepancy occurred, with the table that follows:

NOTE: Disassembly of a component for a detailed inspection must be performed in the appropriate shop and with the correct component CMM.

Table 603 B Check Inspection - Hard or Overweight Landing

Step	Area to be Checked	Check for
A.	Nose Landing Gear (NLG) (Figure 603)	
(1)	Damaged Wheel assemblies (disassemble).	Cracks, and bent edges to Wheel rim.
(2)	Remove shock strut (disassemble).	Strut piston bending or deformation; orifice support tube and plate deformation. A precision inspection of the orifice support tube for length and out-of-round condition of holes is required for a valid “B” check.
(3)	NLG wheel well left and right support beams, webs, and flanges.	Buckles, cracks, distortion, loose or missing fasteners or attachments.
(4)	Forward side of bulkhead at station Y110, attach structure and adjacent components.	Loose, broken or missing parts.
(5)	NLG support fitting, support structure; NLG door, door latching mechanism (use gear retraction test to do check).	Interference between gear and structure; faulty operation of door and latching mechanism (clearances are critical) indications of deformation of pivot lugs, pivot pins, and other components; disassembly and detail check of gear components and supporting structure required to define damage.
B.	Main Landing Gear (MLG) (Figure 604), (Figure 605)	
(1)	Wheel assemblies (disassemble).	Wheel rim deformation or cracks.

Table 603 B Check Inspection - Hard or Overweight Landing (Continued)

Step	Area to be Checked	Check for
(2)	Remove shock strut (disassemble).	Strut piston bending or deformation; orifice support tube and plate deformation. Orifice support tube, metering pin base, and other internal parts for cracks or deformation. A precision inspection of the orifice support tube for length and out-of-round condition of holes is required for a valid “B” check.
(3)	MLG support beams.	Buckling of webs, stiffeners; loose or missing attachments.
(4)	MLG support fitting, support structure; MLG door, door latching mechanism (use gear retraction test to do this check).	Interference between gear and structure; faulty operation of door and latching mechanism (clearances are critical) indications of deformation of pivot lugs, pivot pins, and other components; disassembly and detail check of gear components and supporting structure required to define damage.
(5)	Trunnion lugs and adjacent area of main gear attach fittings.	Looseness of trunnion lugs; cracks, buckling and distortion.
(6)	Wing rear spar, auxiliary spar and wing skin in region of MLG fitting.	Cracks, tears, buckles, and loose or missing attachments. Permanent skin wrinkles/buckles and/or missing fastener heads.
C.	Fuselage (Figure 609), (Figure 606), (Figure 605)	
(1)	Bottom center section between stations Y769 and Y1060	Buckles, distortion, cracks, or loose or missing fasteners, and other obvious indication of damage. If buckling found in keel at station Y982 is more than 0.125 in. (3.175 mm) in depth, inspection of orifice support tube in the Main Landing Gear (MLG) strut is mandatory.
(2)	MLG wheel well region, trapezoidal panel.	Buckled or distorted members, elongated fastener holes, and sheared/bent attachments.
(3)	MLG support bulkhead	Cracks, buckles and/or wrinkles in web; cracks, buckles and/or deformation of bulkhead caps and/or stiffeners; cracked or deformed shear clips; elongated fastener holes in all members; and loose, bent, sheared, or missing fasteners.
(4)	Exterior skin around fuselage (station Y679-Y1003).	Cracks, buckles, wrinkles, and tears in skin.
(5)	MLG door, door latch mechanism, and supporting structure.	Cracks, distortion, buckles or elongated holes in hinge or latching mechanism supporting structure.
(6)	MLG support fitting, supporting structure, MLG door, and door latch mechanism. Use gear retraction test to do this check.	Interference between gear and structure; faulty operation of door and latching mechanism (clearances are critical) indications of deformations of pivot lugs, pivot pins, and other components; disassembly and detail check of gear components and supporting structure required to define damage.

Table 603 B Check Inspection - Hard or Overweight Landing (Continued)

Step	Area to be Checked	Check for
(7)	Engine pylon forward support bulkhead inside the fuselage (Fuselage station Y=1307) in its entirety.	Buckles, distortion, cracks, or loose or missing fasteners, and other obvious indication of damage. The bulkhead web is “failed” when any fracture exists in the web or doubler. Such failures must be repaired (replace web doubler) prior to flight. When wrinkles in the web/doubler exceed 0.125 in. (3.175 mm) in depth, contact Boeing Service Engineering for disposition or replace the web/doubler. Wrinkles between the spar caps are normally diagonal (approximately 30 degrees to the horizontal plane) and the wrinkle peaks are normally 4.0 in. (101.6 mm) to 8.0 in. (203.2 mm) apart.
NOTE: A 6 to 12 inch (150 to 300 mm) straight edge would be a satisfactory tool to measure the depth across the wrinkles.		
(8)	Engine pylon front spar external of fuselage (remove pylon leading edge for access).	Fractures, cracks, distortion, and any other obvious indication of damage.
(9)	Engine pylon front spar upper and lower engine mount lugs inside nacelle.	Fractures, cracks, distortion, and any other obvious indication of damage.
(10)	Engine vibration isolators (engine does not require removal). PAGEBLOCK 71-20-02/601	Contact between inner core and outer retainer, alignment marks of forward units. Resilient element migration for aft units.
(11)	Shear clips (station Y1307).	Fractures, cracks, distortion, and any other obvious indication of damage.
(12)	Engine pylon rear spar, upper and lower spar caps, web and doubler between spar caps (station Y1381).	Fractures, cracks, distortion, and any other obvious indication of damage.
(13)	Fuselage skin panels between window belt and cusp area of wing leading edge.	Buckles, wrinkles, and loose or missing attachments.
(14)	Cusp tee between frames fuselage stations Y1060 and Y1338.	Inward buckling of cusp tee.
(15)	Inside tail cone.	Fractures, cracks, distortion, and any other obvious indication of damage.
(a)	Tail skid assembly.	Lug damage; such as, cracks, elongated holes, or Brinelling; deformation of attachments.
(b)	Tail skid strut assembly	Fluid leakage, cracks or deformation of attach points.
(c)	Formers and connecting beams between stations Y1381 and Y1401.	Buckled or distorted members; elongated fasteners; and bent, sheared, or missing fasteners.
D.	Wing (Figure 607)	
(1)	Wing internal structure adjacent to any fuel leaks found.	Cracks and deformation in shear clips; cracked, bowed, and deformed stringers; spar web deformation, cracks or elongated holes; additional fuel leaks through spars or tank boundary bulkheads; bowed or buckled spar on bulkhead stiffeners; cracks in lower spar caps or lower bulkhead caps; and loose, bent, sheared or missing attachments.

Table 603 B Check Inspection - Hard or Overweight Landing (Continued)

Step	Area to be Checked	Check for
(2)	Leading edge slat tracks, track to slat attachments.	Fractures, cracks, distortion, and any other obvious indication of damage.
(3)	Leading edge slat track support ribs.	Buckling, cracks, distortion, and loose or missing attachments.
E.	Horizontal Stabilizer (Figure 610)	
(1)	(1) Elevator spar assembly, upper and lower spar cap and adjacent skin, spar web, and fittings attached to spar.	Cracks, buckles, wrinkles, deformation, tears, and loose or missing fasteners.
F.	Vertical Stabilizer (Figure 610)	
(1)	Vertical stabilizer spar caps and adjacent skins.	Buckles, cracks, and loose or missing attachments.
(2)	Vertical stabilizer rear spar from pivot Zrs 173 to below splices at Zrs 149:	Buckles, cracks, and loose or missing attachments.
(a)	Adjacent skin	Buckles wrinkles, and loose or missing attachments.
(b)	Spar webs	
(c)	Bulkheads	
(3)	Horizontal stabilizer center section operating bulkheads.	Elongated fastener holes, loose attachments and any obvious forms of distortion.
(4)	Leading edge spar of dorsal fin from Y1437 aft and below Zrs 34.	Deformation, cracks and other obvious structural damage.
(5)	Horizontal stabilizer jack screw and jack screw fittings.	Deformation, cracks and other obvious structural damage.
(6)	Vertical stabilizer jack screw fittings and supporting bulkheads in vertical stabilizer.	Deformation, buckles, and loose attachments.
(7)	Examine vertical stabilizer leading edge at splice station Zfs=52.267	(a) Do an open hole high-frequency eddy current inspection of the bolt holes in the vertical stabilizer front spar cap forward leg. Do this inspection from 13.0 in. (330.2 mm) above to 13.0 in. (330.2 mm) below the station Zfs=52.267 splice, on left and right sides. See Non-Destructive Test Standard Practices Manual, Part 06 EDDY CURRENT. (b) Do the X-ray inspection of the vertical stabilizer front spar cap aft leg. See Non-Destructive Test Standard Practices Manual, Part 02 X-RAY. (c) If you find a discrepancy, contact Boeing Service Engineering for evaluation.
G.	Cabin Interior	
(1)	Floor structure and seat tracks in area of damage	Cracks, buckles and distortion.
(2)	Ceiling structure, interior support structure for ceilings, overhead stowage compartments and ducts in area of damage.	Cracks, buckles and distortion. Broken or disconnected ducts.

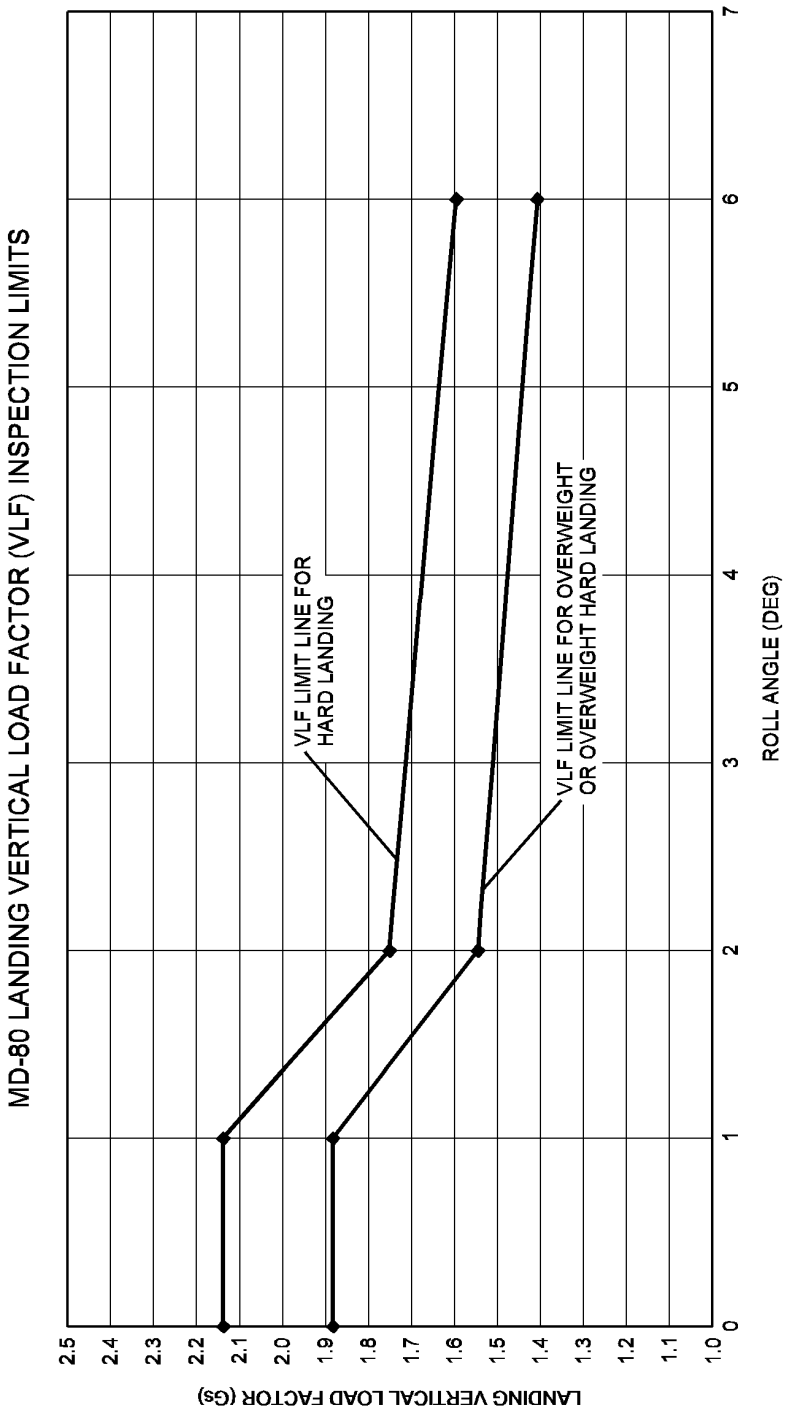
5. Job Close-Up - Hard or Overweight Landing

A. Job Close-up - Hard or Overweight Landing

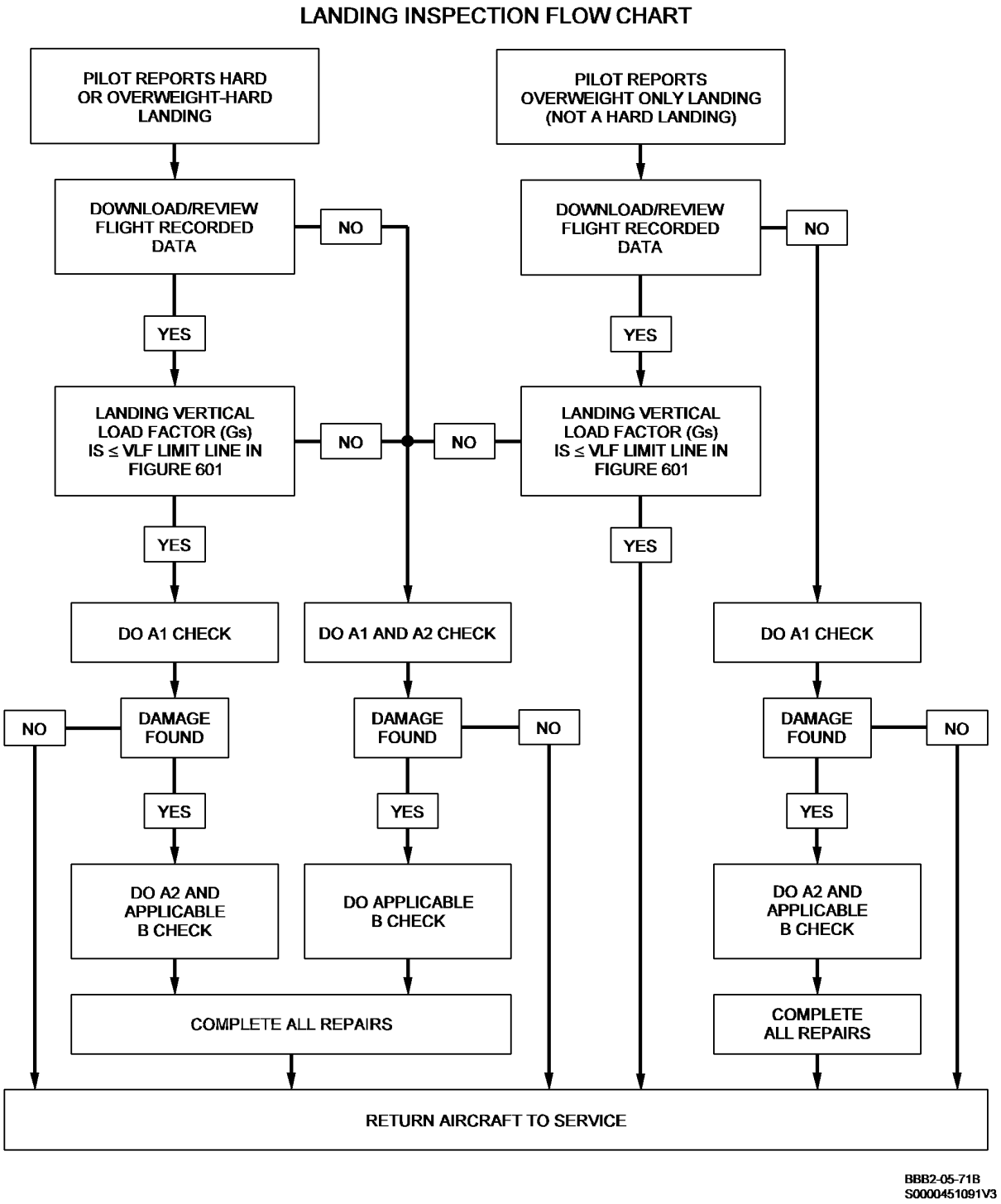
(1) If necessary, close all fuel tank access panels removed for inspection and repairs. (GENERAL - MAINTENANCE PRACTICES, PAGEBLOCK 28-00-00/201)

(2) Install the applicable access panels, floors, insulation, fillets and other structure.

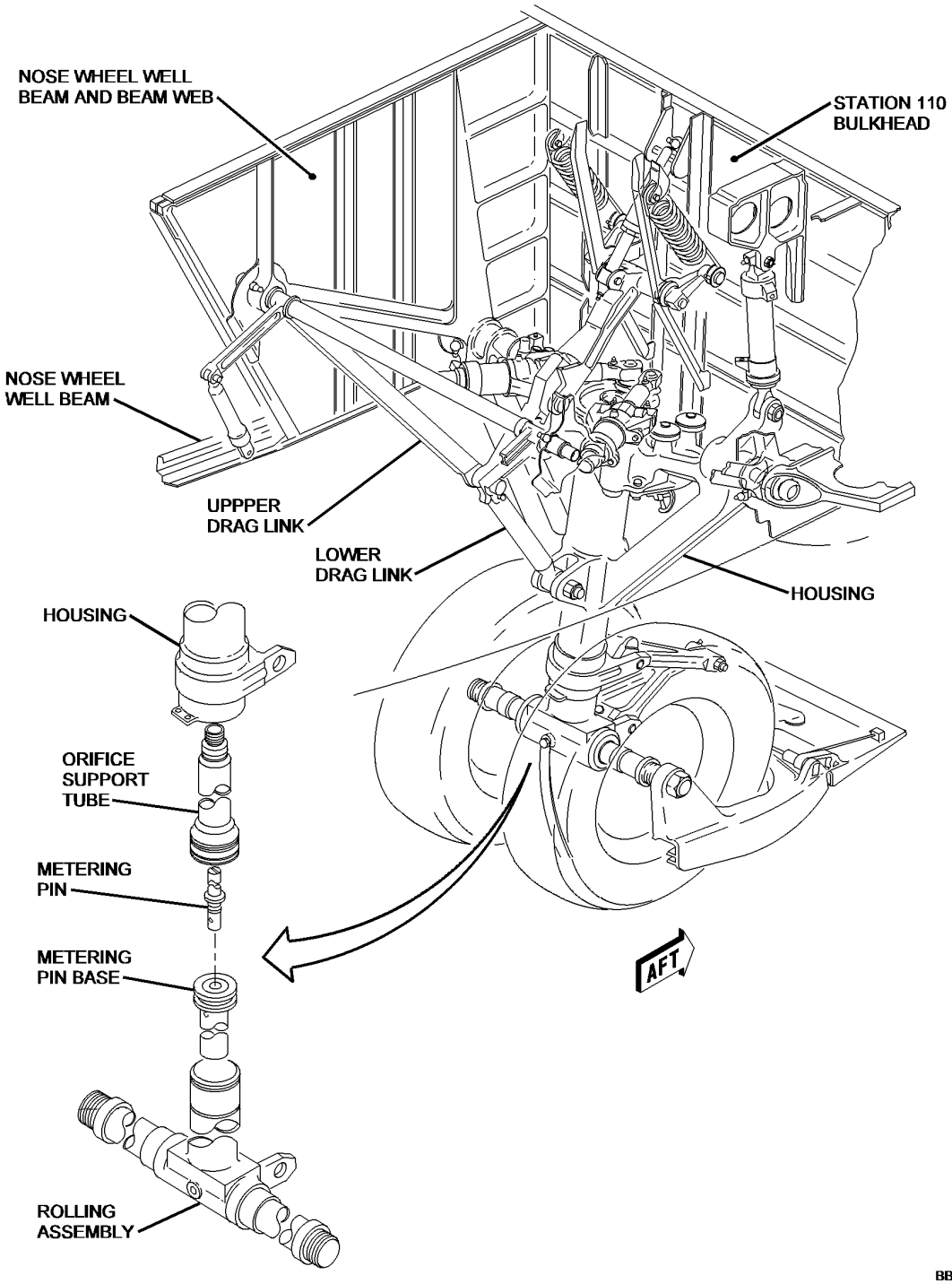
(3) Remove all the tools and equipment from the work area. Make sure that the area is clean.



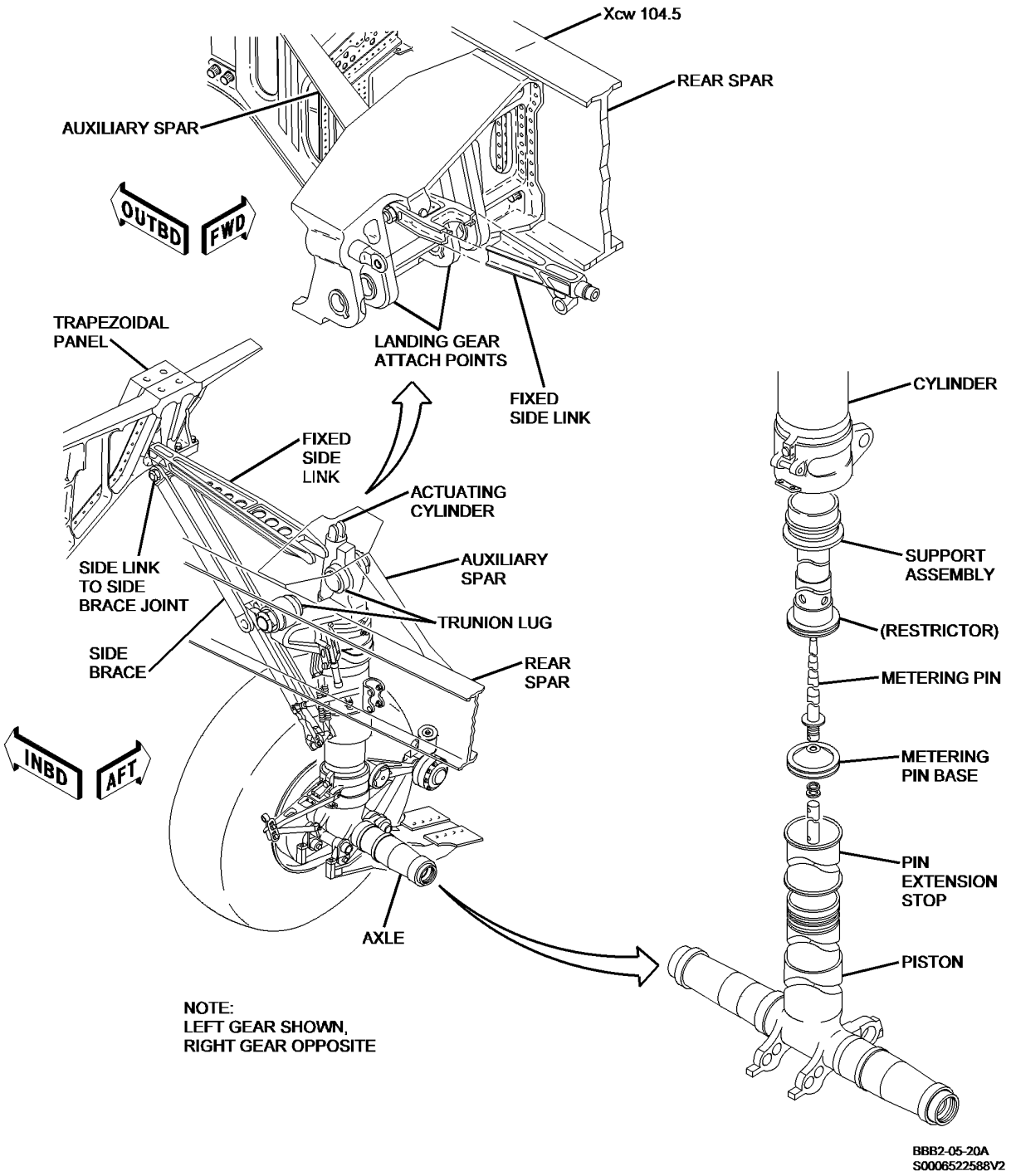
Landing Vertical Load Factor (VLF) Inspection Limits
Figure 601/05-51-04-990-826



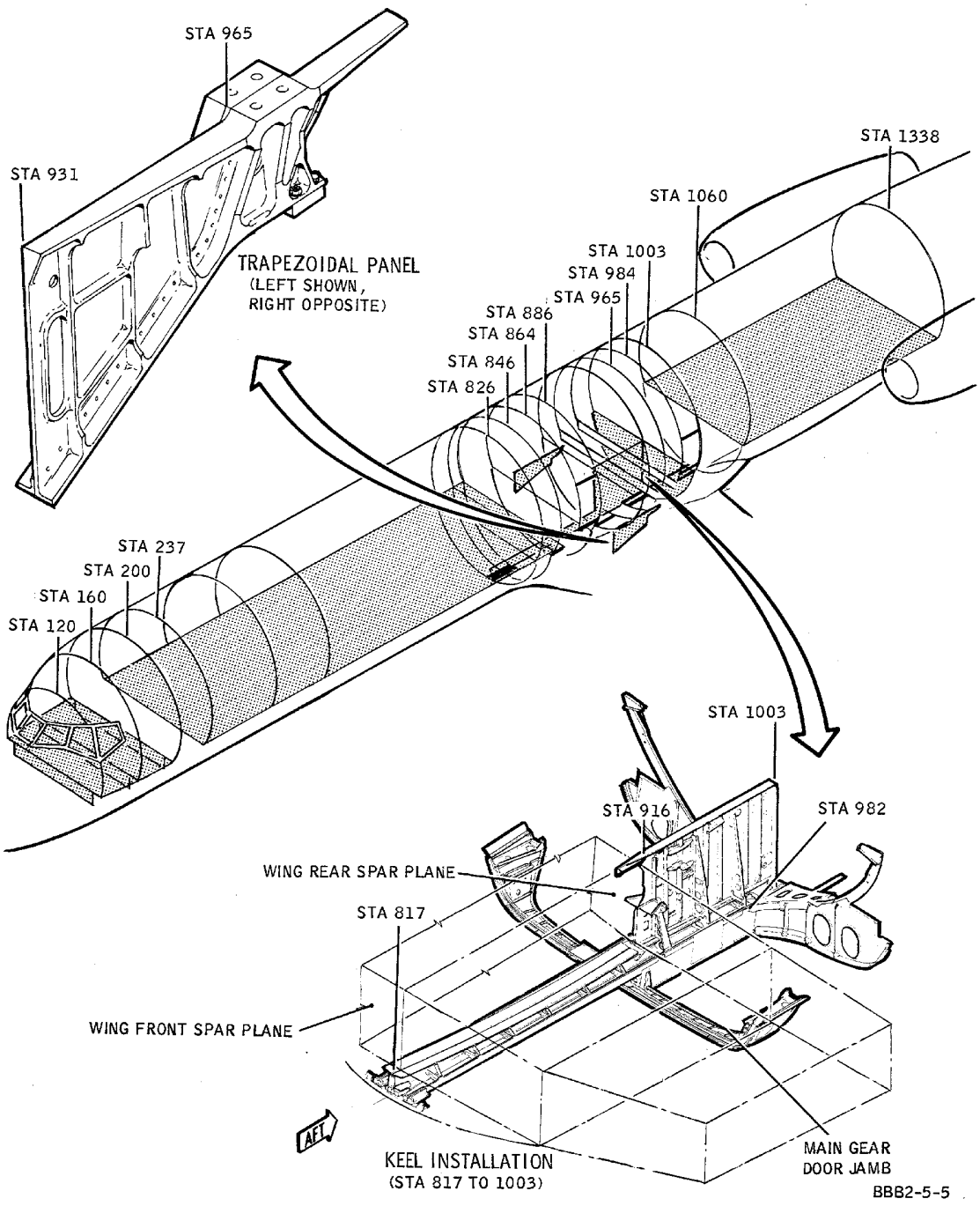
Landing Inspection Flow Chart
Figure 602/05-51-04-990-825



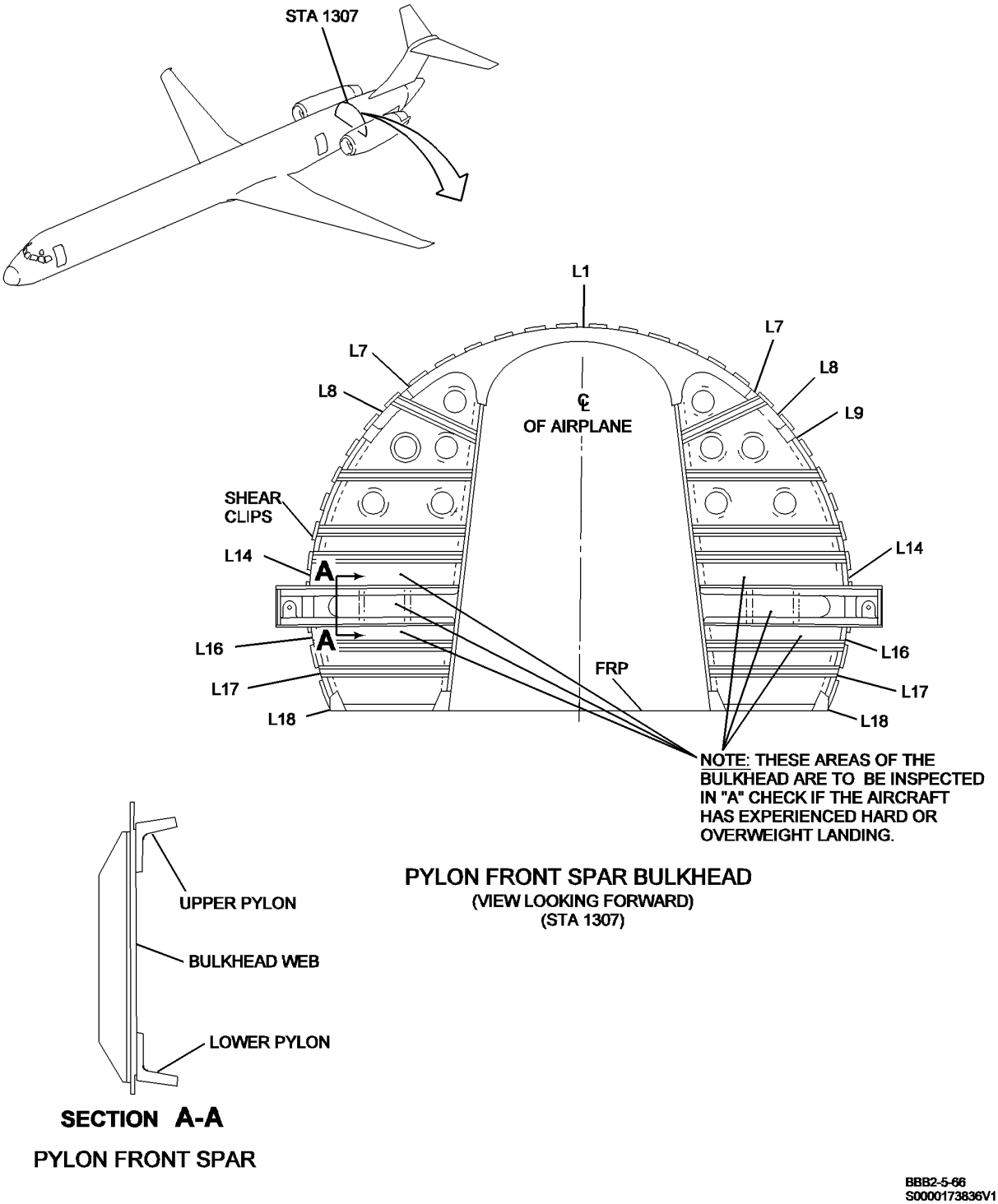
Nose Landing Gear -- Check
Figure 603/05-51-04-990-827



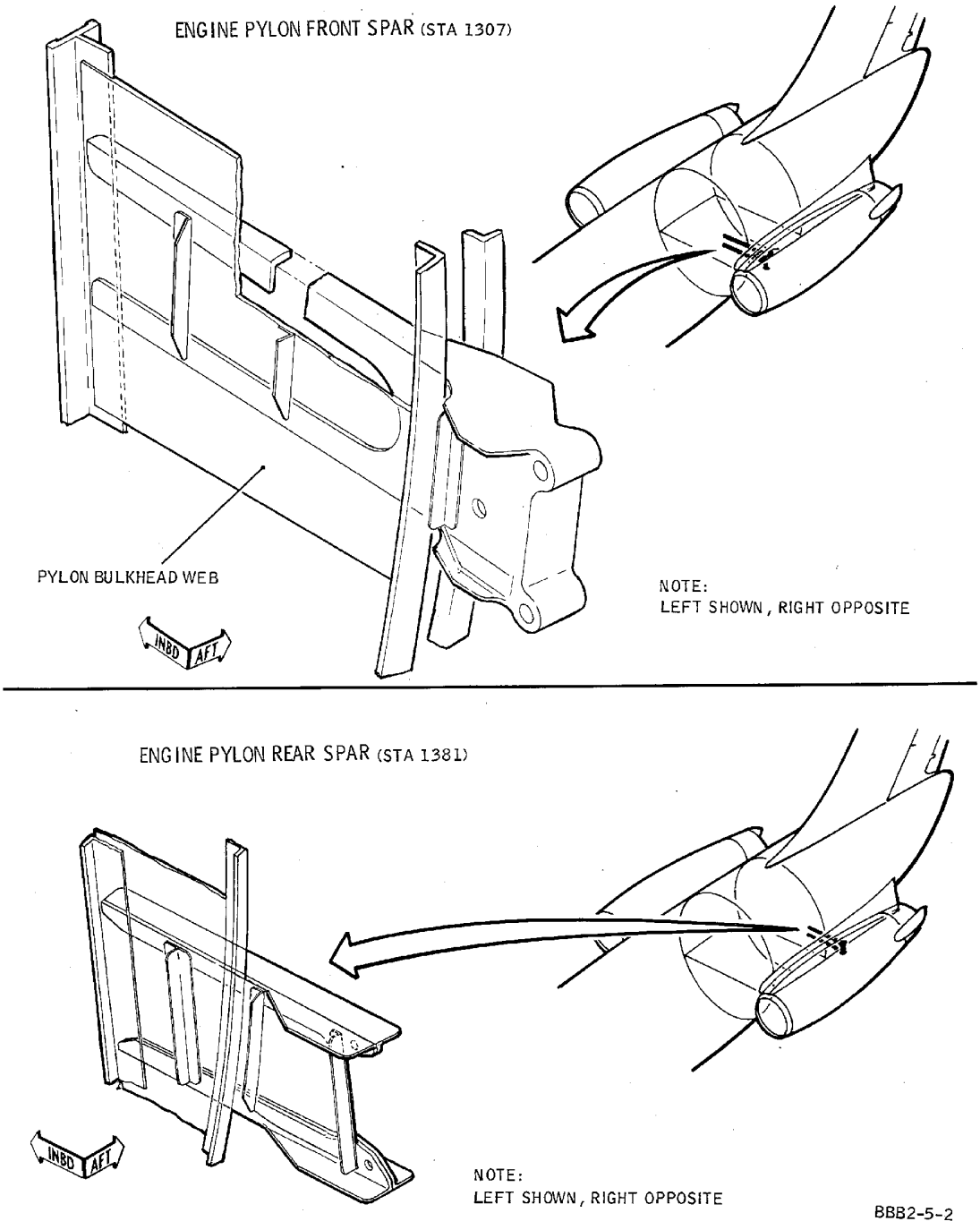
Main Landing Gear -- Check
Figure 604/05-51-04-990-828



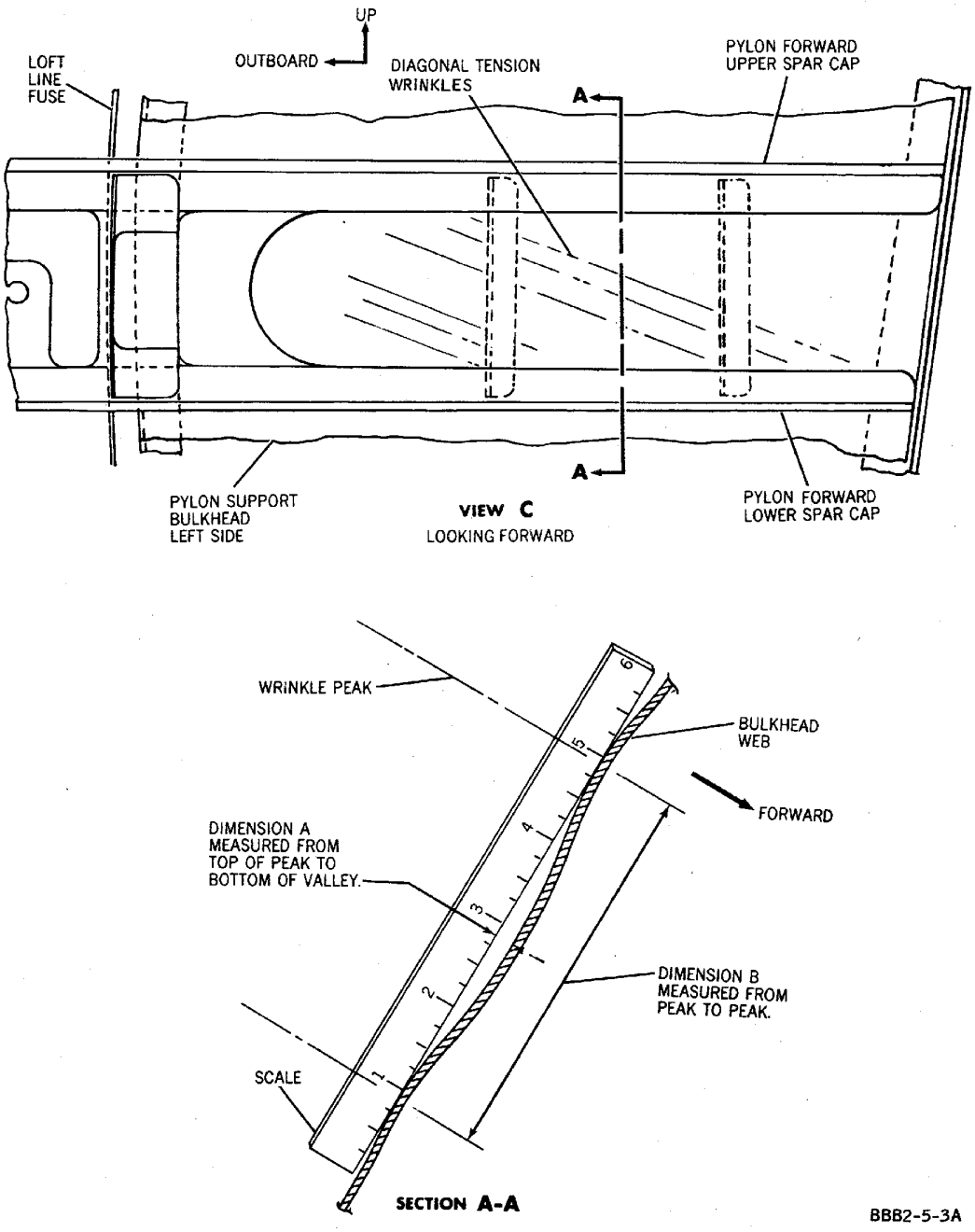
Main Landing Gear Area -- Check
Figure 605/05-51-04-990-834



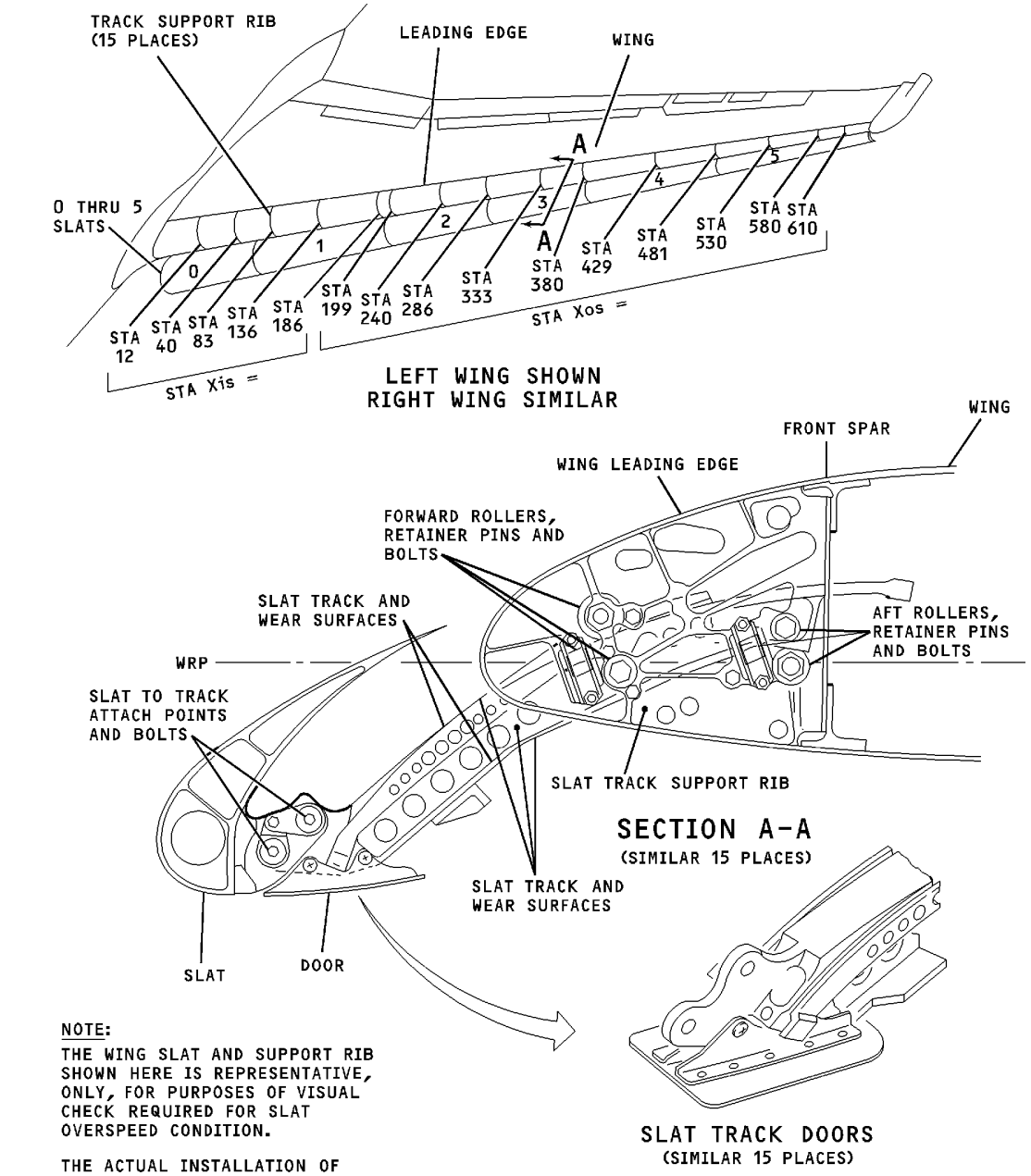
Engine Pylon and Spars -- Check
Figure 606/05-51-04-990-829 (Sheet 1 of 3)



Engine Pylon and Spars -- Check
Figure 606/05-51-04-990-829 (Sheet 2 of 3)



Engine Pylon and Spars -- Check
Figure 606/05-51-04-990-829 (Sheet 3 of 3)



NOTE:

THE WING SLAT AND SUPPORT RIB SHOWN HERE IS REPRESENTATIVE, ONLY, FOR PURPOSES OF VISUAL CHECK REQUIRED FOR SLAT OVERSPEED CONDITION.

THE ACTUAL INSTALLATION OF TRACKS, ROLLERS AND ATTACHMENTS MAY VARY FROM THIS AT EACH WING LEADING EDGE STATION.

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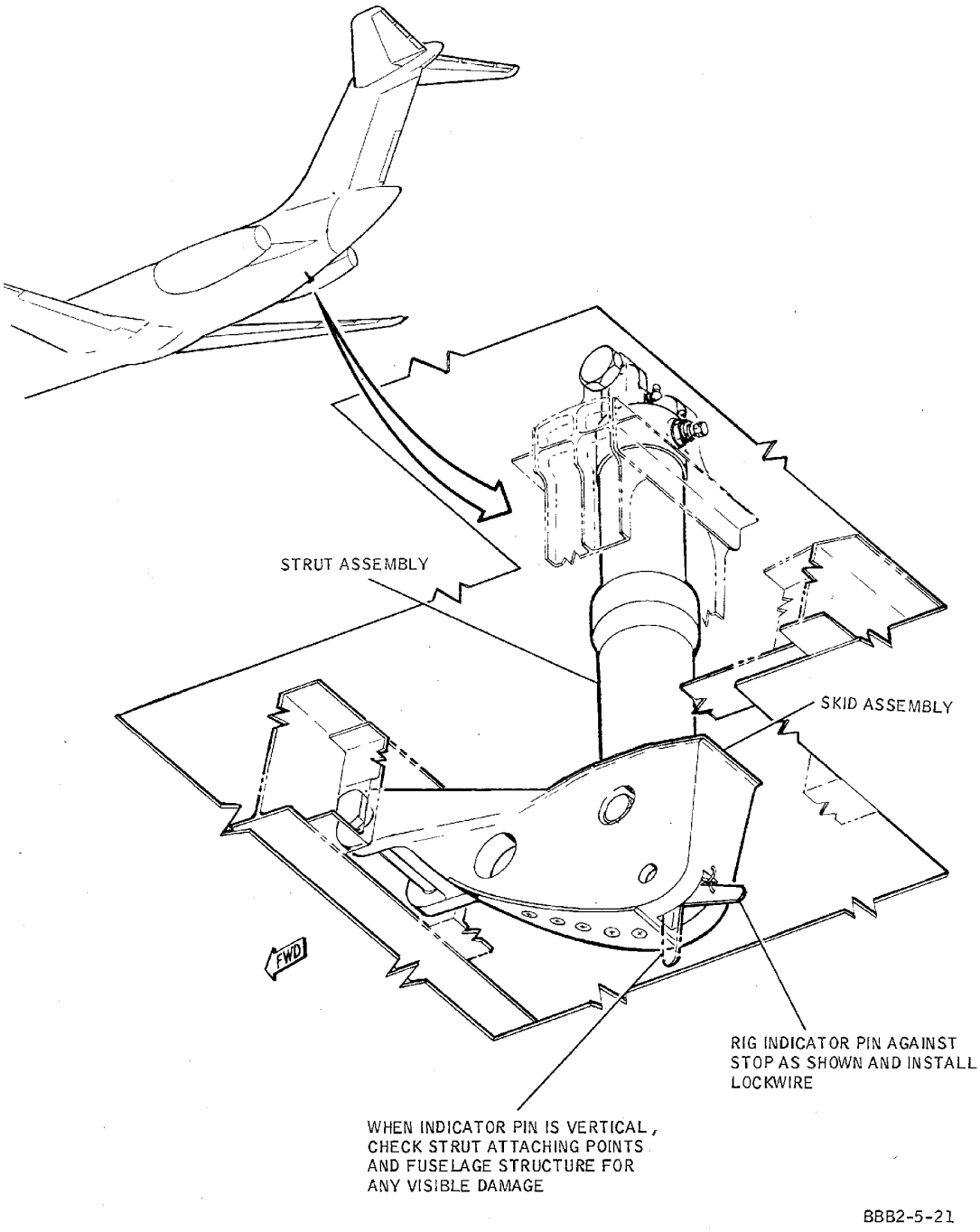
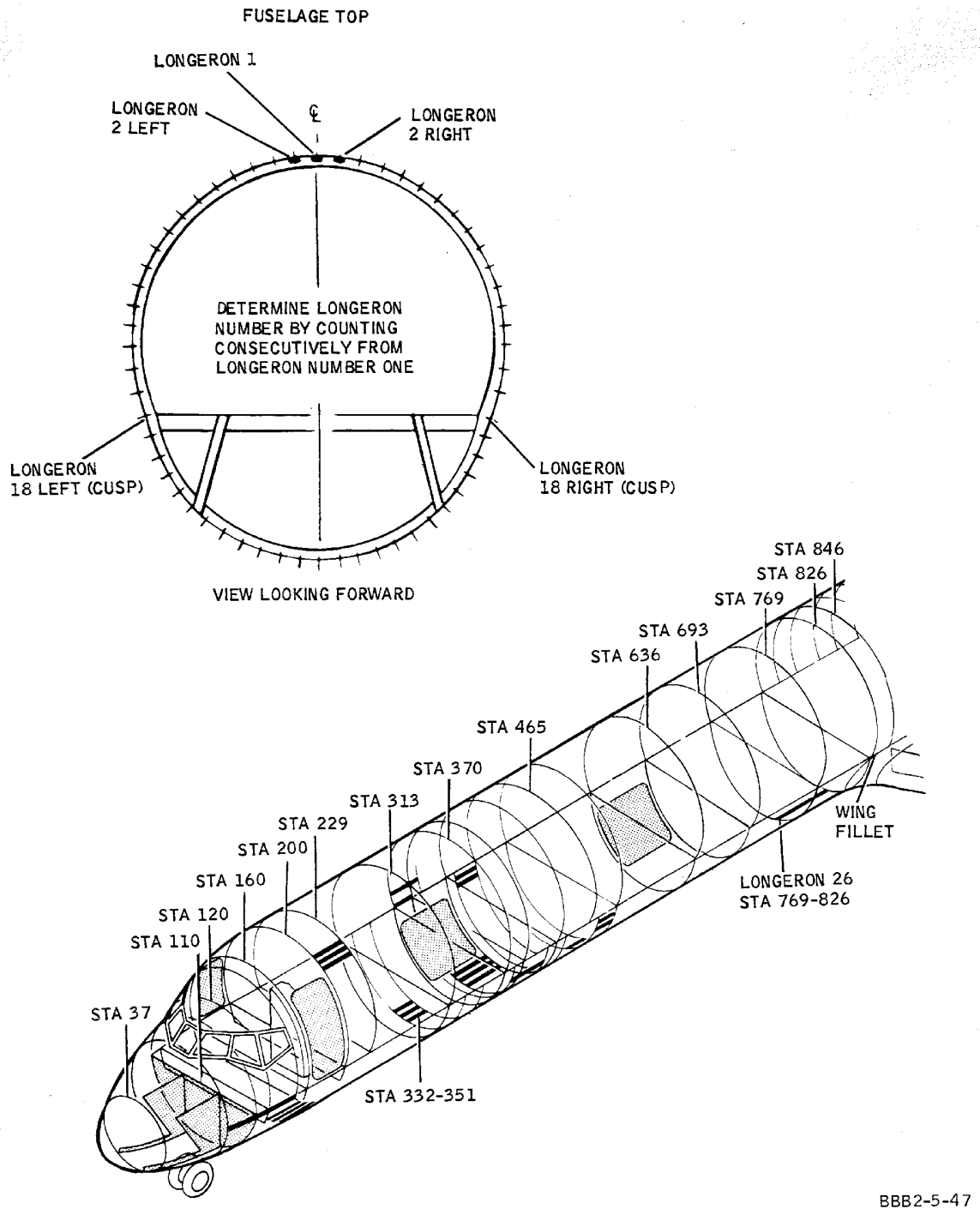
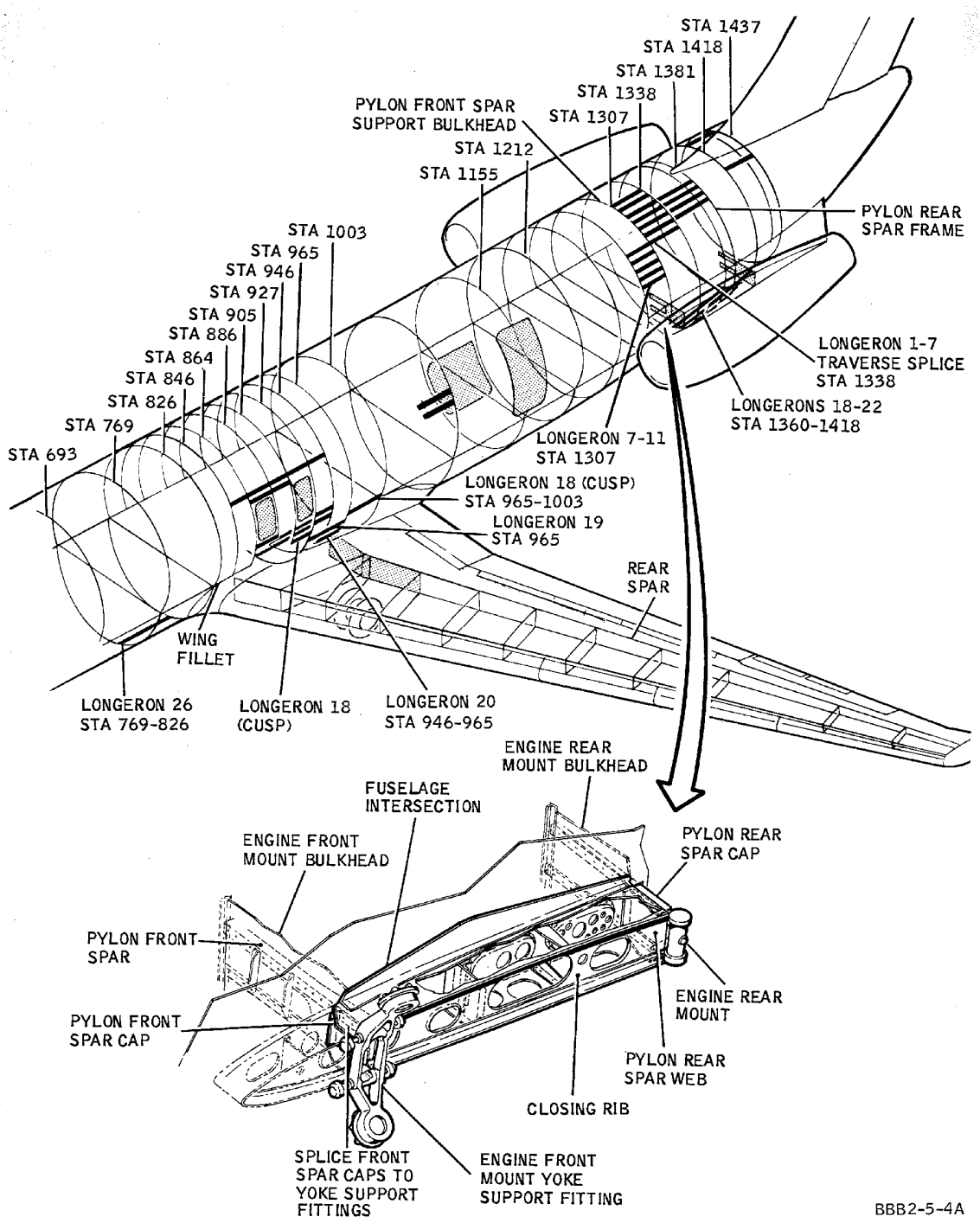
Wing Leading Edge Slats -- Check
Figure 607/05-51-04-990-830



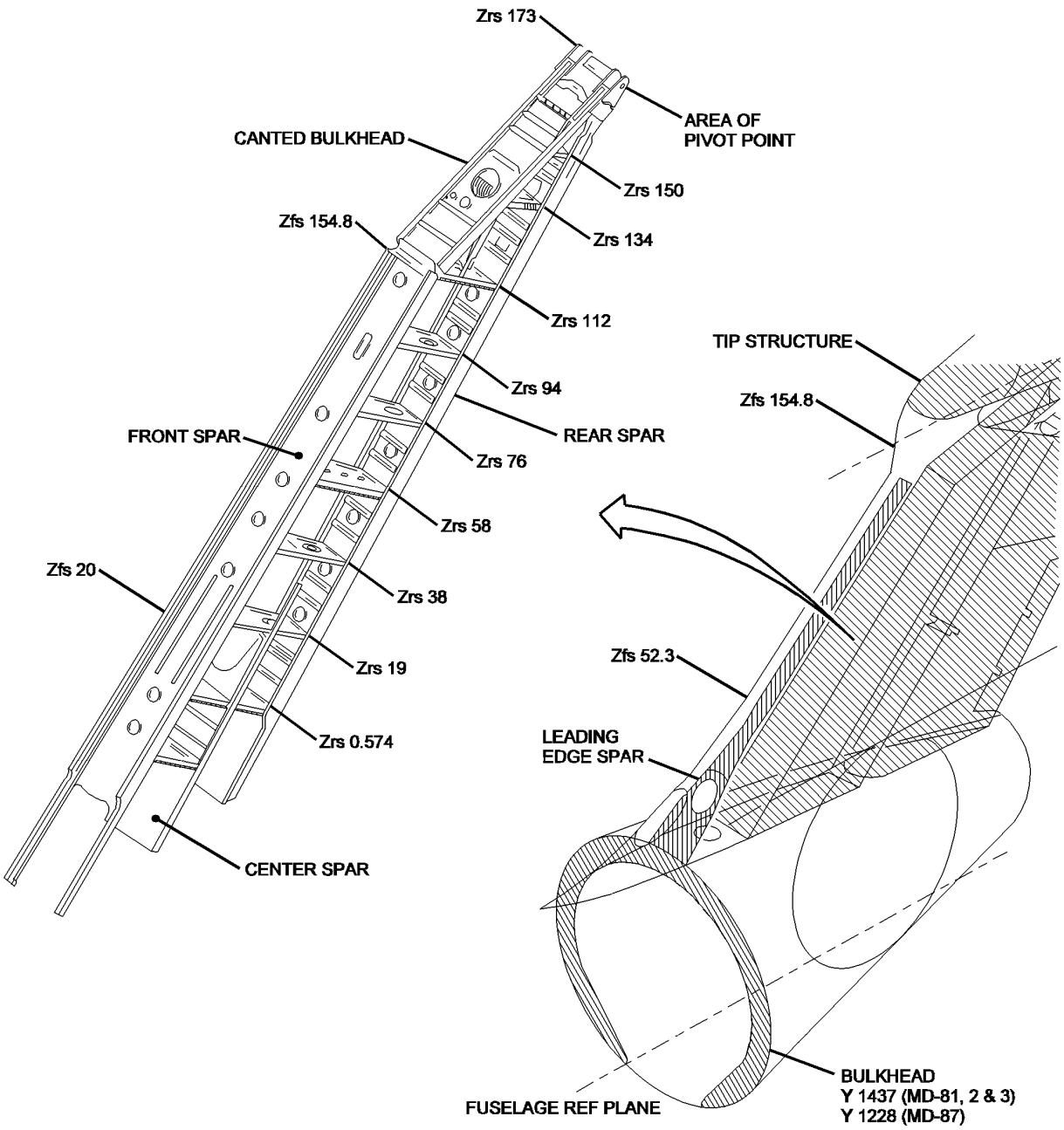
Tail Skid -- Check
Figure 608/05-51-04-990-831



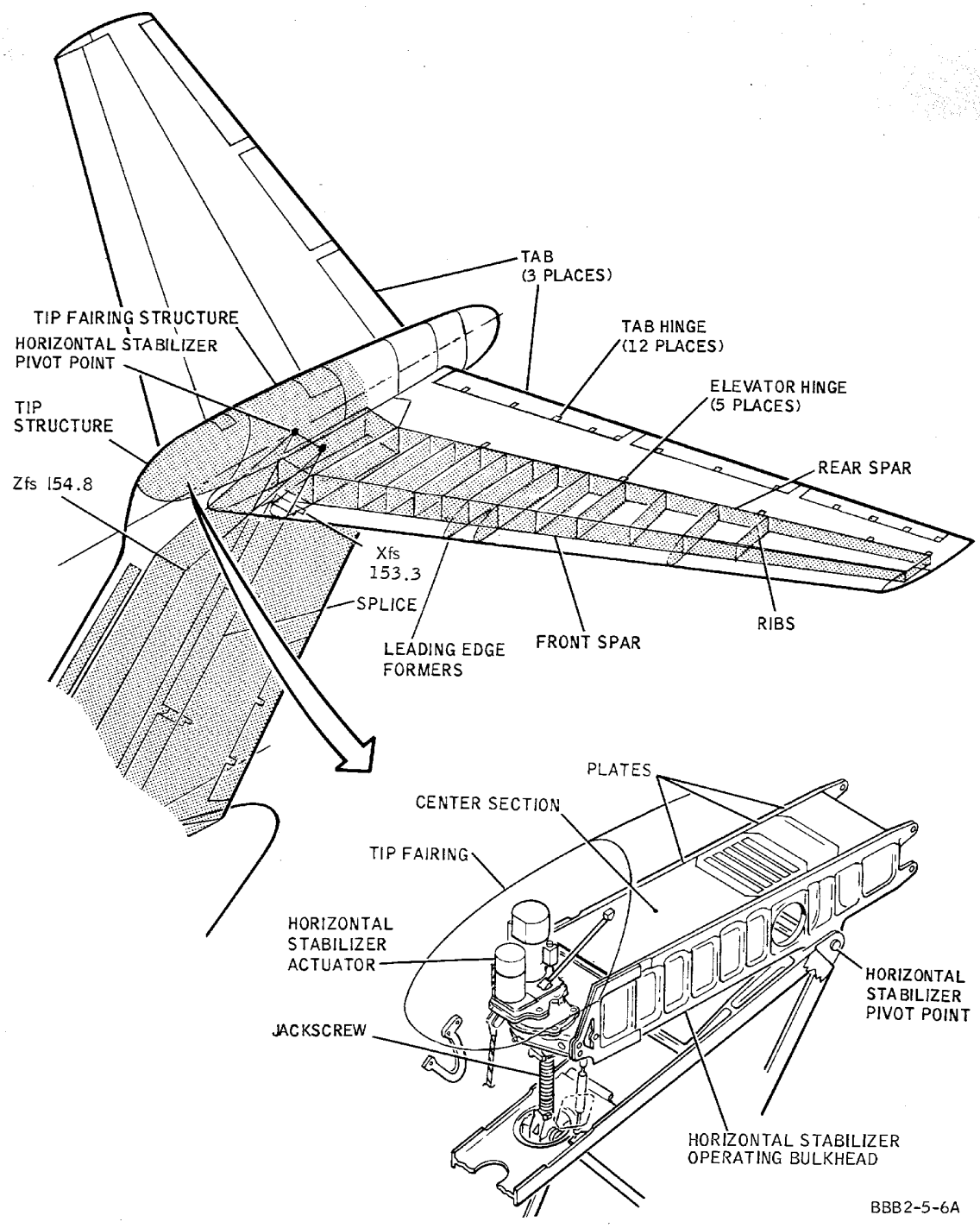
Fuselage - Check
Figure 609/05-51-04-990-832 (Sheet 1 of 2)



Fuselage - Check
Figure 609/05-51-04-990-832 (Sheet 2 of 2)



Vertical and Horizontal Tail - Check
Figure 610/05-51-04-990-833 (Sheet 1 of 2)



Vertical and Horizontal Tail - Check
Figure 610/05-51-04-990-833 (Sheet 2 of 2)

OVERSPEED - CLEAN WING EXCEEDING MAXIMUM OPERATING LIMIT SPEED (Vmo/Mmo) - INSPECTION/CHECK

1. General

A. This procedure has the inspection/check instructions for a flight crew report of an overspeed clean wing exceeding maximum operating limit speed (Vmo/Mmo).

B. The areas to be checked are grouped by major components as follows:

- Vertical Stabilizer
- Horizontal stabilizer.

C. Checks are divided into two parts: "A" check (generally external and primary indicators) and "B" check follow-up (may be in closed area). If damage is noted at any step during the "A" check, certain "B" checks must be accomplished. During the "B" check, a progressive check of the structure and systems in local and adjacent areas of visible damage is performed. The "B" check is pursued only to the extent necessary to ascertain that no internal damage has occurred in these areas.

2. "A" Check - Overspeed - Clean Wing Exceeding Maximum Operating Limit Speed (Vmo/Mmo)

NOTE: If damage is noted at any step during the "A" check, accomplish corresponding "B" check of the area in question (Paragraph 3.).

Table 601 "A" Check - Overspeed - Clean Wing Exceeding Maximum Operating Limit Speed (Vmo/Mmo)

Area to be Checked	Check for
A. Horizontal Stabilizer	
(1) Elevator assembly upper and lower skins.	Buckles, wrinkles, and loose or missing attachments.
(2) Elevator leading edge skins.	Buckles, wrinkles, and loose or missing attachments.
B. Vertical Stabilizer	
(1) Tip fairing (top of vertical stabilizer skin (Figure 601).	Wrinkles buckles tears, and missing fasteners.
(2) Examine vertical stabilizer leading edge at splice station Zfs=52.267	-Vertical stabilizer leading edge skin in the area of the fasteners for : - Loose, missing, or damaged fasteners from two rows above to two rows below the splice joint - Cracks and other anomaly. - If no discrepancy is found, the inspection is complete. - If a discrepancy is found do the “B” Check - Vertical Stabilizer.
(3) Examine rudder control surfaces.	Wrinkles buckles tears, and missing fasteners.

3. "B" Check - Overspeed - Clean Wing Exceeding Maximum Operating Limit Speed (Vmo/Mmo)

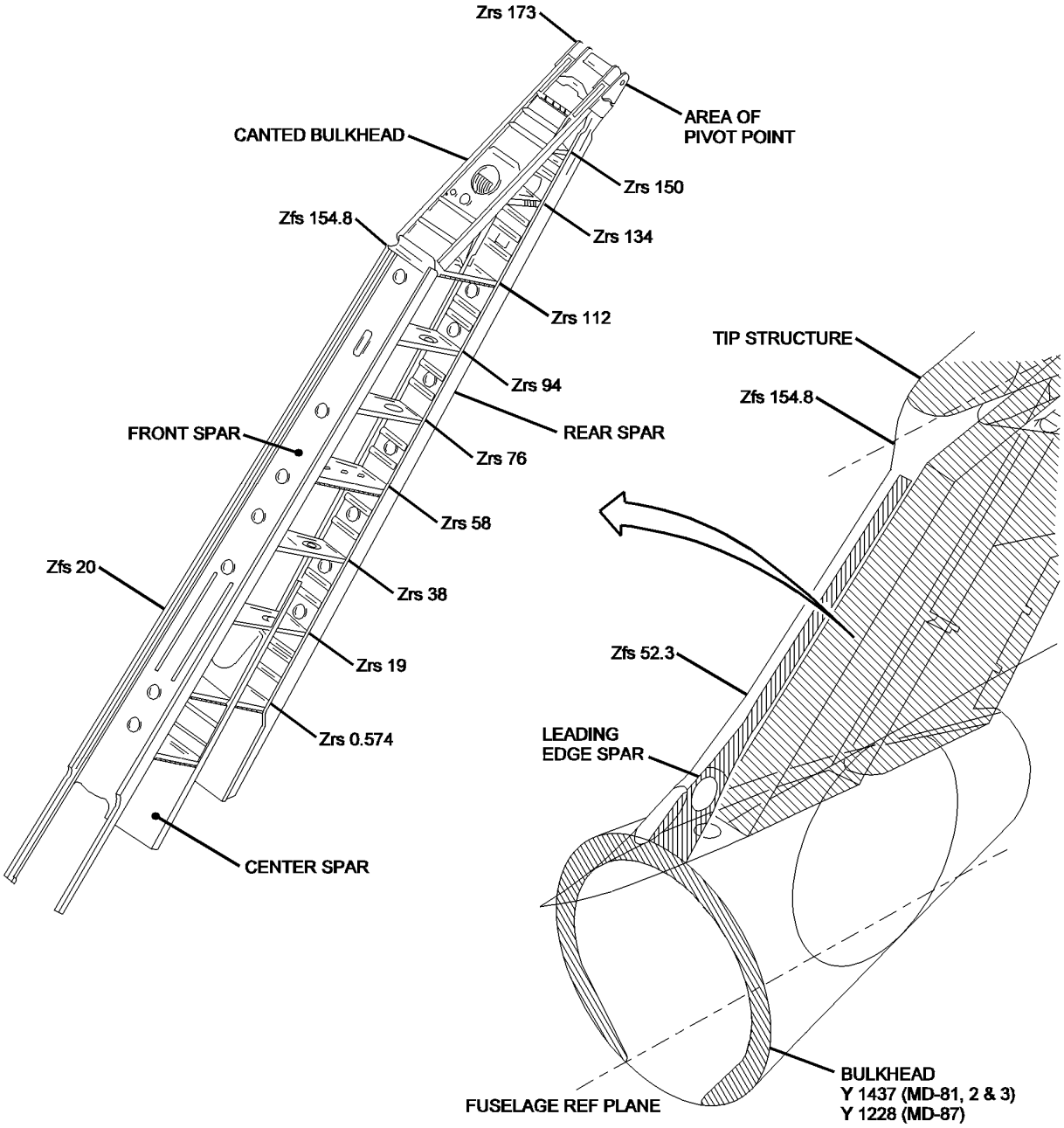
NOTE: If damage is noted in "A" check, check internal structure in immediate area and also perform following:

Table 602 "B" Check - Overspeed - Clean Wing Exceeding Maximum Operating Limit Speed (Vmo/Mmo)

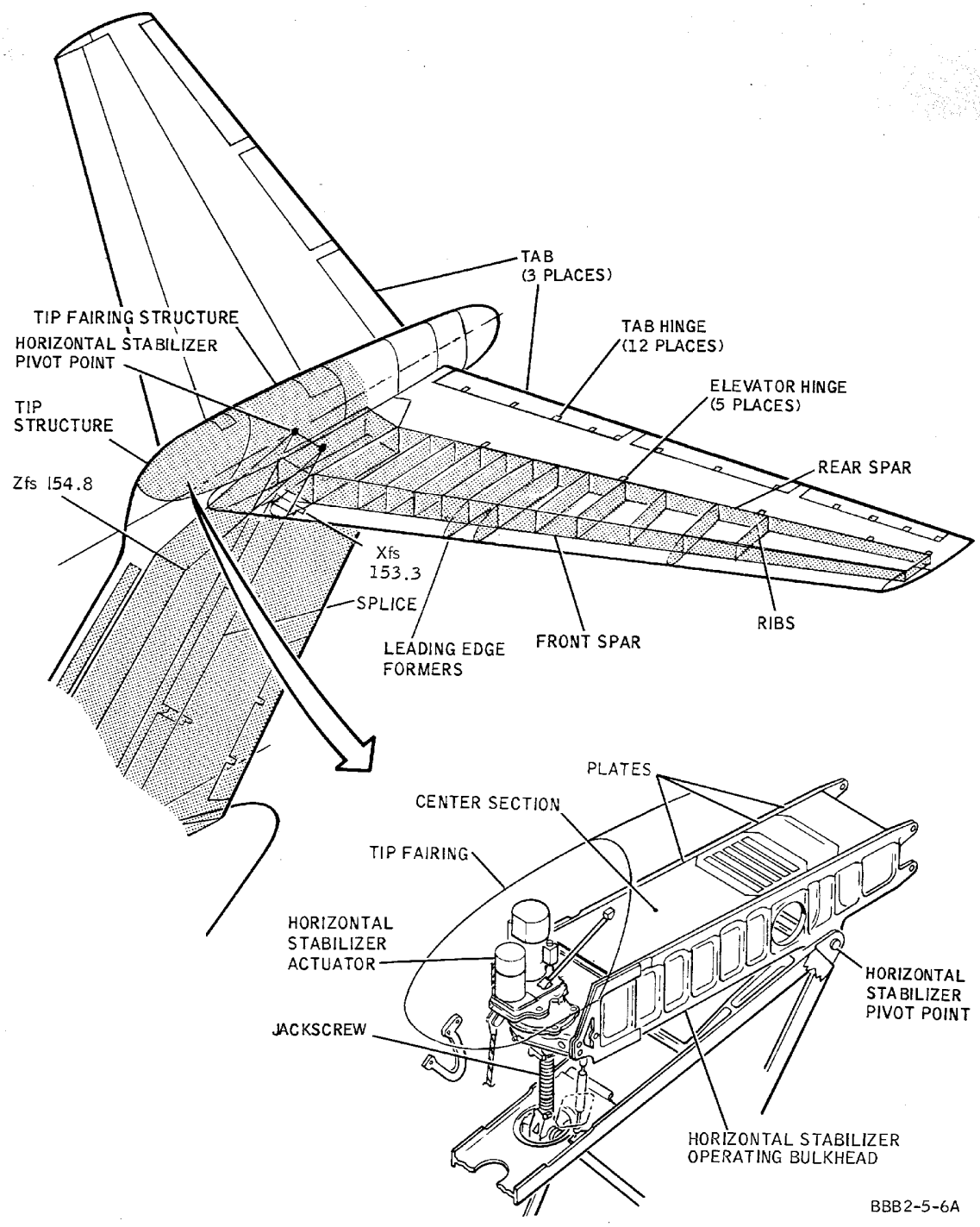
Area to be Checked	Check for
A. Horizontal Stabilizer	

Table 602 "B" Check - Overspeed - Clean Wing Exceeding Maximum Operating Limit Speed (Vmo/Mmo) (Continued)

Area to be Checked	Check for
(1) Elevator spar assembly, upper and lower spar cap and adjacent skin, spar web, and fittings attached to spar (Figure 601).	Cracks, buckles, wrinkles, deformation, tears, and loose or missing fasteners.
B. Vertical Stabilizer	
(1) Vertical stabilizer spar caps and adjacent skins (Figure 601).	Buckles, cracks, and loose or missing attachments.
(2) Vertical stabilizer rear spar from pivot Zrs 173 to below splices at Zrs 149:	
(a) Adjacent skin	Buckles wrinkles, and loose
(b) Spar webs	or missing attachments.
(c) Bulkheads	
(3) Horizontal stabilizer center section operating bulkheads (Figure 601).	Elongated fastener holes, loose attachments and any obvious forms of distortion.
(4) Leading edge spar of dorsal fin from Y1437 (81, 82, 83) Y1228 (87) aft and below Zrs 34.	Deformation, cracks and other obvious structural damage.
(5) Horizontal stabilizer jack screw and jack screw fittings (Figure 601).	Deformation, cracks and other obvious structural damage.
(6) Vertical stabilizer jack screw fittings and supporting bulkheads in vertical stabilizer.	Deformation, buckles, and loose attachments.
(7) Examine vertical stabilizer leading edge at splice station Zfs=52.267	(a) Do an open hole high-frequency eddy current inspection of the bolt holes in the vertical stabilizer front spar cap forward leg. Do this inspection from 13.0 in. (330.2 mm) above to 13.0 in. (330.2 mm) below the station Zfs=52.267 splice, on left and right sides. See Non-Destructive Test Standard Practices Manual, Part 06 EDDY CURRENT. (b) Do the X-ray inspection of the vertical stabilizer front spar cap aft leg. See Non-Destructive Test Standard Practices Manual, Part 02 X-RAY. (c) If you find a discrepancy, contact Boeing Service Engineering for evaluation.



Vertical and Horizontal Tail - Check
Figure 601/05-51-05-990-801 (Sheet 1 of 2)



Vertical and Horizontal Tail - Check
Figure 601/05-51-05-990-801 (Sheet 2 of 2)

OVERSPEED - SLATS, FLAPS, AND LANDING GEARS (EXCEEDING PLACARDED DESIGN SPEEDS) - CHECK

1. General

A. This maintenance procedure has the inspection/check instructions for the slats, flaps and landing gear (exceeding placarded design speeds).

B. This inspection is done after the flight crew has reported that the aircraft exceeded placarded speeds with the flaps, slats and landing gear in the extended position.

C. The areas that are examined for an overspeed condition are:

- The slats
- The flaps
- The landing gear

D. For purposes of a visual external check of the visible slat system installation and wing front spar area general condition due to a reported overspeed condition, excess deformation may be defined as follows:

(1) Any unusual indications of structural/mechanical stress such as; warping, yielding, looseness and/or cracks in structure, mechanical fasteners and components, gaps under heads of bolts, roller bearing retaining pins and other fasteners, obvious dimpling/scoring in slat roller wear surfaces on tracks, flat spots/dimples/scoring on roller bearing outer races or any other noted abnormality not specified here.

E. When there is a flap or slat overspeed, do the inspection of the flaps or slats as follows:

(1) If the overspeed was less than or equal to 5 knots, do the A check inspection in 100 flight hours or 25 cycles, whichever is later.

(2) If the overspeed was more than 5 knots but not more than 15 knots, do the A check inspection in 100 flight hours or 5 cycles, upon discovery of the event, whichever is later.

(3) If the overspeed was more than 15 knots, do the A check inspection before the next flight.

(4) The above does not apply to the landing gear.

F. Checks are divided into two parts: "A" check (generally external and primary indicators) and "B" check follow-up (may be in closed area). If damage is noted at any step during the "A" check, certain "B" checks must be accomplished. During the "B" check, a progressive check of the structure and systems in local and adjacent areas of visible damage is performed. The "B" check is pursued only to the extent necessary to ascertain that no internal damage has occurred in these areas.

2. "A" Check - Slats (Exceeding Design Speeds)

NOTE: Any indication of primary structural damage noted at any step during the Slat "A" check (external/visual), must be noted in appropriate records. More extensive checks should be conducted, as required, to assess extent of indicated damage.

No "B" check is specified for slats.

NOTE: If damage is noted at any step during the "A" check, accomplish corresponding "B" check of the area in question.

Table 601 "A" Check - Slats (Exceeding Design Speeds)

Area to be Checked	Check for
A. Slats (No "B" Check) (Figure 601)	
(1) Slat No. 0, slat track rib roller support and forward roller bolt (Station Xis 40).	Excess deformation.

Table 601 "A" Check - Slats (Exceeding Design Speeds) (Continued)

Area to be Checked	Check for
(2) Slat No. 1, slat track rib roller support and forward roller bolt (Station Xis 138).	Excess deformation.
(3) Slat No. 2, slat track rib roller support rib to lower spar cap (Station Xos 242).	Loose or missing attachments.
(a) Slat rib to track attach.	Excess deformation.
(4) Slat No. 3, slat supporting rib (Station XOS 333).	Cracks above forward track attachment just aft of deicing duct.
(a) Slat rib to track attach.	Excess deformation.
(5) Slat No. 3, slat track rib roller support (Station Xos 334).	
(a) Rib support between two forward track rollers.	Cracks or excess deformation.
(b) Rib lower spar cap attachment.	Loose or missing attachments.
(c) Bolt at forward roller.	Excess deformation.
(6) Slats No. 3 and 4, slat track rib roller support (Station Xos 383).	
(a) Rib web attachments between forward and aft roller supports.	Loose or missing attachments.
(b) Slat rib to track attach.	Excess deformation.
(7) Slats No. 4 and 5, slat supporting rib attachment to slat track (Station Xos 481).	Loose or missing attachments.
(a) Slat ribs to track attach.	Excess deformation.
(8) Slat No. 5, slat track rib roller support.	
(a) Rib to lower spar cap attachment (Station Xos 532).	Loose or missing attachments.
(b) Rib to lower spar cap attachment (Station Xos 581).	Loose or missing attachments.
(c) Rib to lower spar cap attachment (Station Xos 610).	Loose or missing attachments.

3. "A" Check - Flaps and Landing Gears (Exceeding Design Speeds)

NOTE: If damage is noted at any step during "A" check (visual/external), accomplish corresponding "B" check of the area in question (Paragraph 4.).

Table 602 "A" Check - Flaps and Landing Gears (Exceeding Design Speeds)

Area to be Checked	Check for
A. Flaps	
(1) Hinge fitting and attachments to flap (Figure 604) (Ref. Paragraph 4. B.(1)).	Deformation, cracks and loose attachments.
(2) Upper and lower panels adjacent to flex joint and adjacent to flap hinges (Ref. Paragraph 4. B.(1), (2), (4)).	Deformation, cracks, loose or missing attachments, buckles or tears.
(3) Upper and lower skins immediately adjacent to expansion joints at Xw = 47.45, Xfls = 187.4, Xfls = 235.1, Xfls = 304 (Ref. Paragraph 4. B.(3), (4)).	Buckles, wrinkles, tears, and loose or missing fasteners.

Table 602 "A" Check - Flaps and Landing Gears (Exceeding Design Speeds) (Continued)

Area to be Checked	Check for
(4) Flap leading edge skin stations (Ref. Paragraph 4. B.(6)).	Wrinkles, tears and loose or missing fasteners.
(5) Vanes, vane linkages and supporting structure (Ref. Paragraph 4. B.(6)).	Buckles, wrinkles, tears and loose or missing attachments.
(6) Skin splice areas - Panels at Xfls = 283 and Xfls = 267 (Ref Paragraph 4. B.(6)).	Buckles, wrinkles, tears, and loose or missing attachments.
(7) Flex joint, adjacent bulkhead, linkages and bearings (Ref. Paragraph 4. B.(5), (6)).	Deformation, cracks, loose or missing attachments.
(8) Control surfaces (Ref. Paragraph 4. B.(7)).	Freedom of operation.
B. Nose Landing Gear (Ref. Paragraph 4., C.)	
(1) Nosegear overcenter lock links (Figure 602).	Flaking paint, cracks, and distortion.
(2) Nosegear door assemblies.	Wrinkles, buckles, and loose or missing fasteners.
(3) Nosegear door operating mechanism.	Flaking paint, cracks, distortion, or leaking fluids.
C. Main Landing Gear (Ref. Paragraph 4., D.)	
(1) Main gear door assembly structure.	Buckles, wrinkles, loose, or missing fasteners.
(2) Main gear door latching mechanism; i.e., latch rollers, latch support, uplatch, and supporting structure.	Cracks, deformation, and missing fasteners.

4. "B" Check - Slats, Flaps, and Landing Gears (Exceeding Design Speeds)

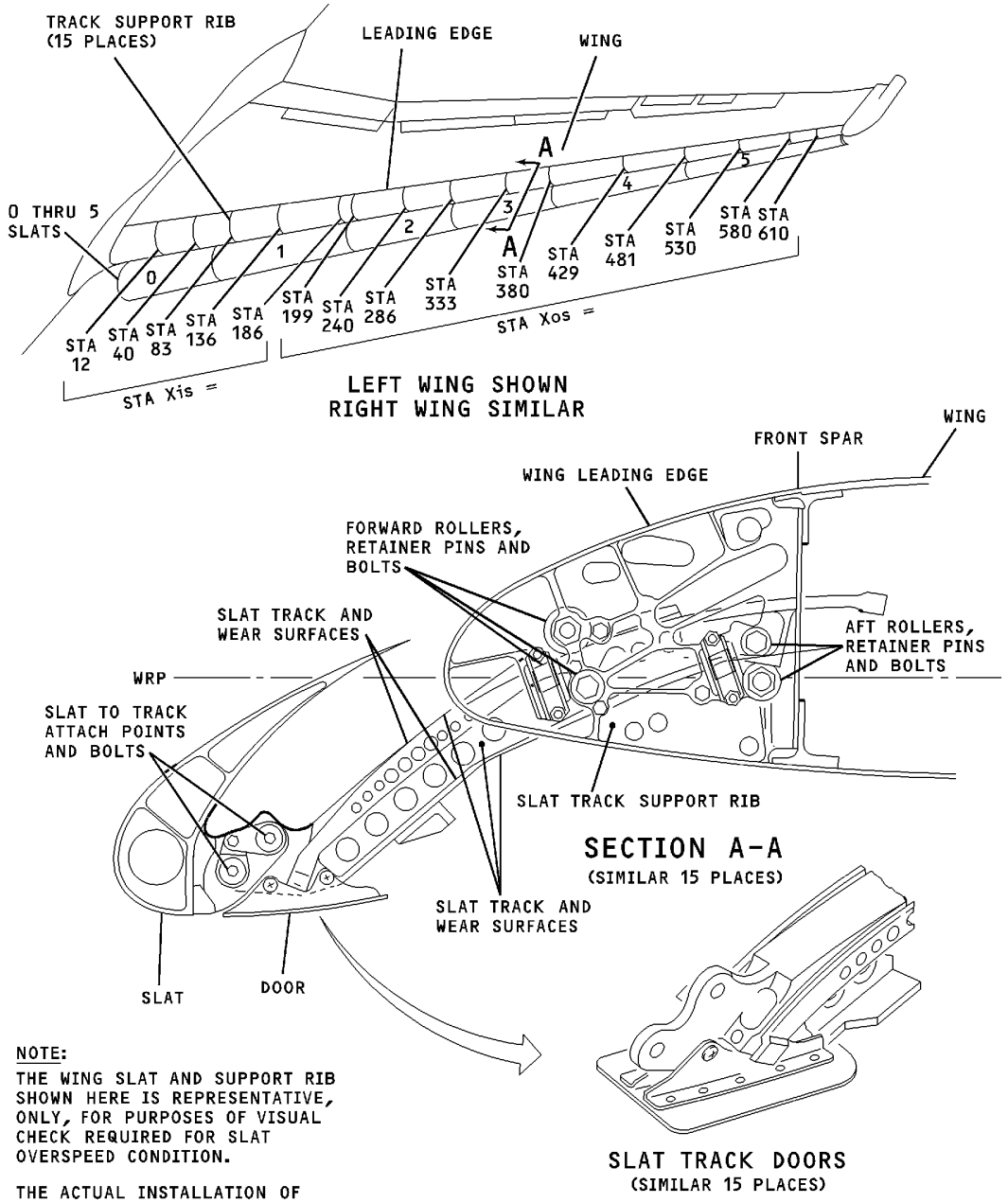
NOTE: If damage is noted in "A" check, check internal structure in immediate area and also perform following:

Table 603 "B" Check - Slats, Flaps, and Landing Gears (Exceeding Design Speeds)

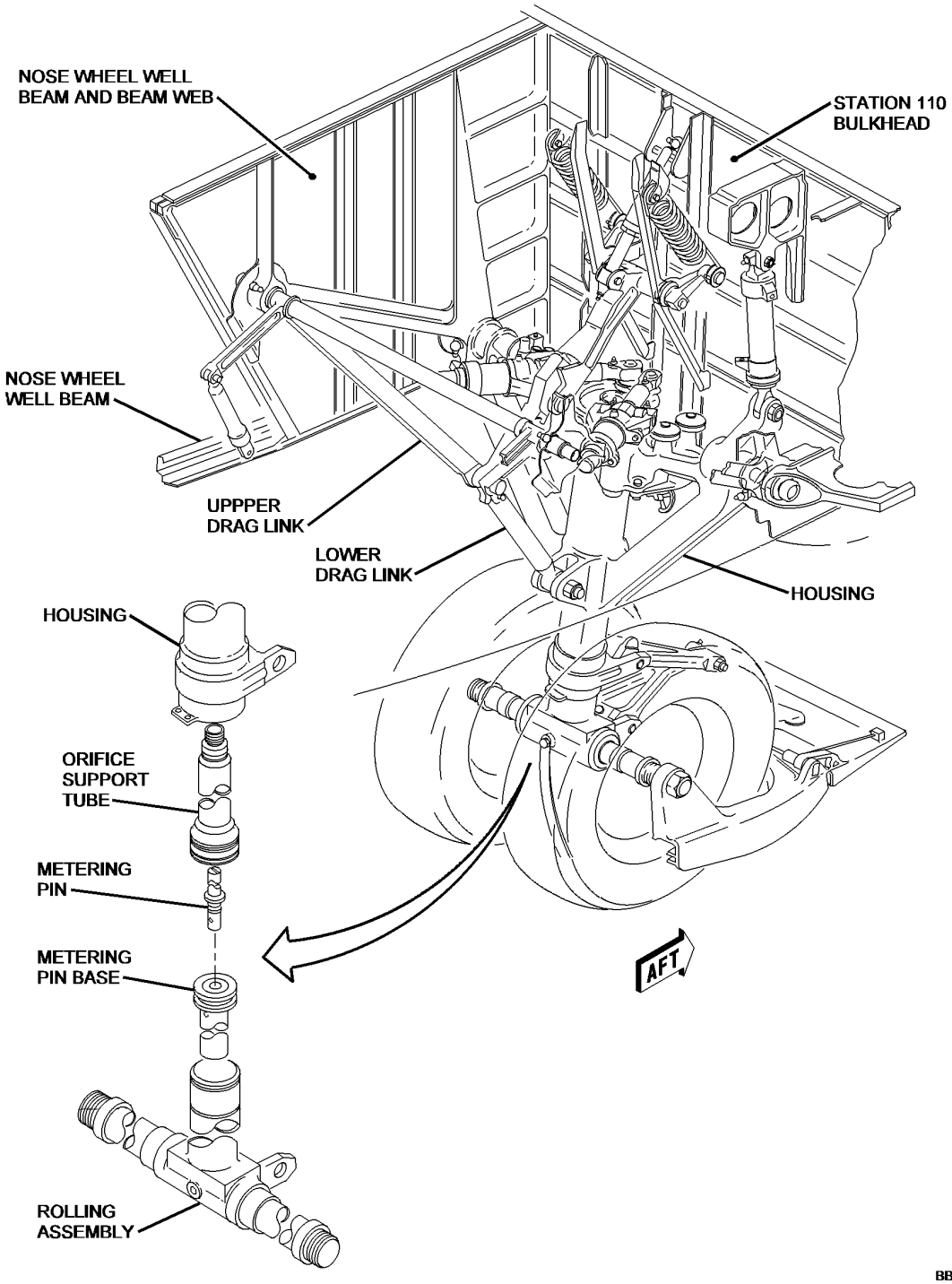
Area to be Checked	Check for
A. Slats: There is no "B" check for slats.	
B. Flaps	
(1) Caps, skins, webs and attachments at support bulkheads and adjacent hinge stations (Ref. Paragraph 3. A.(1), (2)).	Buckles, cracks and loose attachments.
(2) Adjacent spar caps, ribs and spar webs (Ref. Paragraph 3. A.(2)).	Deformation, cracks and loose attachments.
(3) Expansion joints and fittings at Xw = 47.45, Xfls = 187.4, Xfls = 235.1, Xfls =304 (Ref Paragraph 3. A.(3)).	Deformation, cracks, and loose attachments.
(4) Flap spar webs at hinge stations and ribs supporting expansion joint fittings (Ref. Paragraph 3. A.(3)).	Deformation, cracks, tears, buckles, and loose or missing attachments.
(5) Adjacent spar caps, ribs, and spar caps (Ref. Paragraph 3. A.(7)).	Deformation, cracks, and loose or missing attachments.
(6) Caps, skins, webs at adjacent support bulkheads (Ref. Paragraph 3. A.(4) through (7)).	Buckles, cracks and loose or missing attachments.
(7) Control cables (Ref. Paragraph 3. A.(7)).	Proper tension (Ref. FLIGHT CONTROLS, CHAPTER 27).
C. Nose Landing Gear (Ref. Paragraph 3., B.)	

Table 603 "B" Check - Slats, Flaps, and Landing Gears (Exceeding Design Speeds) (Continued)

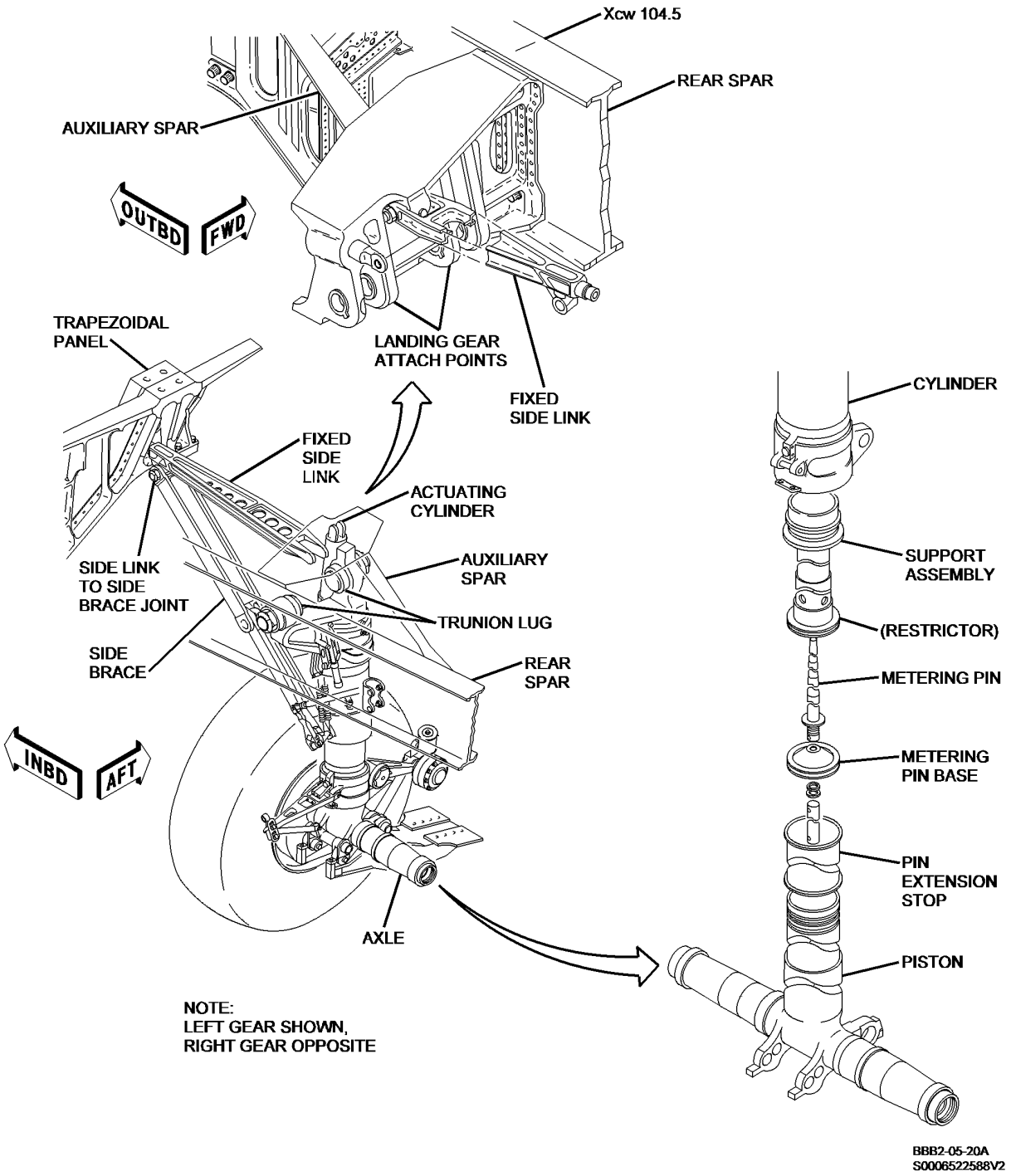
Area to be Checked	Check for
(1) Raise nose of airplane to enable retraction test (Ref. LIFTING AND SHORING, CHAPTER 07).	
(2) Nosegear and nosegear doors.	Misalignment, distortion, or interference during retraction and extension test.
D. Main Landing Gear (Ref. Paragraph 3.), C.)	
(1) Support the airplane on wing and aft fuselage jack points (Ref. LIFTING AND SHORING, CHAPTER 07)	
(2) Main landing gear and gear doors.	Misalignment, distortion, or interference during retraction and extension test.



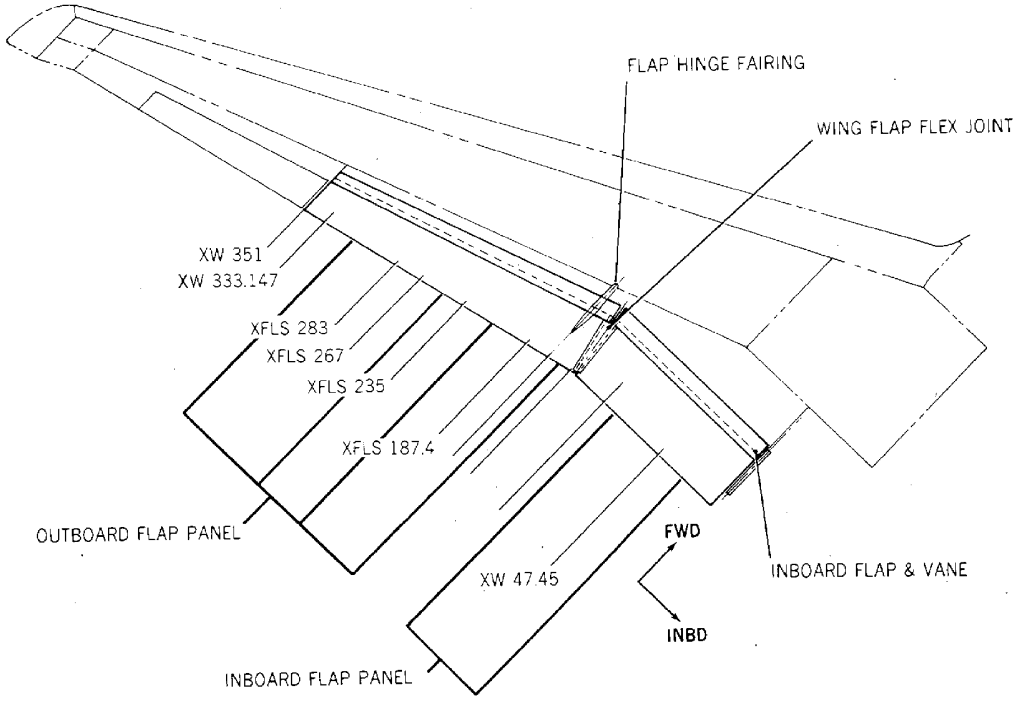
Wing Leading Edge Slats - Check
Figure 601/05-51-06-990-801



Nose Landing Gear - Check
Figure 602/05-51-06-990-802



Main Landing Gear - Check
Figure 603/05-51-06-990-803



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Wing Trailing Edge Flaps - Check
Figure 604/05-51-06-990-804

WING FUEL IMBALANCE - CHECK

1. General

A. This procedure has the instructions for the inspection and check for landing with a wing fuel imbalance. Included are:

- · A-Check inspection of the aircraft after a wing fuel imbalance (preliminary inspection for damage)
- · B-Check inspection of the aircraft after a wing fuel imbalance (follow-up inspection if damage is found in an A-Check inspection).

B. The wing fuel imbalance inspection/check is done when a wing fuel imbalance of 1500 lb (680 kg) or more is reported by the flight crew on landing.

2. A-Check Inspection of the Aircraft After Landing with a Wing Fuel Imbalance

A. Prepare for the Wing Fuel Imbalance A-Check Inspection

(1) Examine the left and right wing fuel quantity as follows:

(a) In the flight compartment, record the fuel quantity in the left and right fuel tanks.

(b) At the right wing, record the fuel quantity in the left and right fuel tanks, shown on the Load Select Display Unit (LSDU).

(c) Compare the fuel quantity for the left and right fuel tanks. Complete only the applicable steps that follow:

1) If the two fuel quantities recorded for the left wing do not agree, use the dripless sticks to find the correct fuel quantity in the left wing.

2) If the two fuel quantities recorded for the right wing do not agree, use the dripless sticks to find the correct fuel quantity in the right wing.

3) If the dripless stick readings show the quantity of fuel in the left and right wings is balanced or the fuel imbalance is less than 1500 lb (680 kg), go to job close-up.Paragraph 2.C.

a) If necessary, do a check of the fuel quantity system.INDICATING - MAINTENANCE PRACTICES, PAGEBLOCK 28-40-00/201

4) If the dripless stick readings show the quantity of fuel in the left and right tank is imbalanced by 1500 lb (680 kg) or more, continue this task.

WARNING: MAKE SURE YOU PUT "DO NOT OPERATE" TAGS ON THE AIRCRAFT COMPONENT/SWITCH/CONTROL BEFORE YOU DO WORK ON THE AIRCRAFT. THIS WILL HELP PREVENT INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Lower the flaps 40° and install a DO NOT OPERATE tag.

(3) Make the landing gear safe for maintenance. (GENERAL - MAINTENANCE PRACTICES, PAGEBLOCK 32-00-00/201)

B. A Check Inspection of Aircraft

(1) Do an A-check inspection of the wing as follows:

(a) Do a check of the upper and lower wing skin, in the fuel tank region, for the items that follow:

- Missing fastener heads
- Fuel leaks
- Permanent skin wrinkles or buckles.

(b) Do a check of the rear spar assembly, center wing, and front spar assembly areas from the airplane centerline to the wing-tip for the items that follow:

- Wrinkles, tears, cracks, and buckles in the spar web
- Deformation, cracks and buckles in the stiffeners and caps
- Fastener hole elongation in all the members
- Loose, sheared, bent and missing fasteners.

(c) Do a check of the slat drive cables (it is necessary to gain access to the leading edge) for the items that follow:

- Extended and/or broken cables
- Broken, cracked, or deformed pulleys
- Bent or broken pulley bolts, and cracked, bent or distorted brackets.

(d) Do a check of the slat drive mechanism for the items that follow:

- Stretched and/or broken cables
- Broken, cracked, or deformed pulleys
- Bent or broken pulley bolts, and cracked, bent or distorted brackets.

(e) Do a check of the fixed leading edge lower surface doors for the items that follow:

- Cracked or buckled doors, loose or broken fasteners, or elongated holes, specifically in the track support rib areas.

(f) Do a check of the slat track stop pins for the deformed or failed pins.

(g) Do a check of the leading edge slats for the items that follow:

- Slat track covers mismatch, and interference with the wing with the slats in the UP/RET position.

(h) Do a check of the leading edge slat structure for the items that follow:

- Skin or fastener damage, specifically in the area of the drive tracks.

(i) When an aircraft has experienced a fuel imbalance and where structural damage is found in the areas called out, it is requested that airline operators submit the data that follows, to Boeing Long Beach Service Engineering for evaluation:

- Load factor and airspeed read-outs from the flight recorder
- Fuel, passenger and cargo load distribution, aircraft gross weight and center of gravity location at the time of the incident
- Report all other significant structural discrepancies found during checks following the incident.

(j) If damage is found during a step of the A-check, do the B-check inspection for the same area.(Paragraph 3.)

(2) Do an A-check inspection of the wing mounted control surfaces as follows:

(a) Do a check of the aileron operation through a full cycle for the items that follow:

- Interference or binding due to the deformation of the structure, supports, or mechanism.

(b) Do a check of the external surfaces of the ailerons for the items that follow:

- Cracks, wrinkles, buckles, and elongated fastener holes in the skin
- Sheared, bent, loose, or missing attachments.

(c) Cycle the spoilers and do a check for the items that follow:

- Interference or binding due to deformations of structure, supports, or mechanism.

(d) Do a check of the external surfaces of the spoilers for the items that follow:

- Cracks, buckles, and elongated fastener holes
- Delamination (skin to core bond failure)
- Sheared, loose, bent, or missing fasteners.

(e) Do a check of the external surfaces of the slats for the items that follow:

- Cracks, buckles, wrinkles, and elongated fastener holes
- Sheared, loose, bent, or missing attachments.

(f) When an aircraft has experienced a fuel imbalance and where structural damage is found in the areas called out, it is requested that airline operators submit the data that follows, to Boeing Long Beach Service Engineering for evaluation

- Load factor and airspeed read-outs from the flight recorder
- Fuel, passenger and cargo load distribution, aircraft gross weight and center of gravity location at the time of the incident
- Report all other significant structural discrepancies found during checks following the incident.

(g) If damage is found during a step of the A-check, do the B-check inspection for the same area.(Paragraph 3.)

(h) If the aircraft still has a wing fuel imbalance, do a fault isolation of the imbalance. INDICATING, SECTION 28-40

C. Job Close-up

(1) Remove all the tools and equipment from the work area. Make sure the area is clean.

3. B-Check Inspection of the Aircraft After a Wing Fuel Imbalance Condition

A. Prepare for the Wing Fuel Imbalance B-Check Inspection

WARNING: MAKE SURE YOU PUT "DO NOT OPERATE" TAGS ON THE AIRCRAFT COMPONENT/SWITCH/CONTROL BEFORE YOU DO WORK ON THE AIRCRAFT. THIS WILL HELP PREVENT INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Lower the flaps 40° and install a DO NOT OPERATE tag.

(2) Make the landing gear safe for maintenance.GENERAL - MAINTENANCE PRACTICES, PAGEBLOCK 32-00-00/201

B. B -Check Inspection of Aircraft

(1) Do a B-check inspection of the wing main torque box structure, adjacent to fuel leaks or fastener damage found in the A-check, for the items that follow:

- Cracks and deformation in the shear clips
- Cracked, bowed, and deformed stringers
- Spar web deformation, cracks or elongated attachment holes
- Additional fuel leaks through the spars or the tank boundary bulkheads
- Bowed or buckled spar or bulkhead stiffeners
- Cracks in the spar caps or the bulkhead caps
- Bowed, buckled, wrinkled or cracked rib and bulkhead webs
- Loose, bent, sheared, or missing attachments.

(2) Do a B-check of the track support ribs for the items that follow:

- Elongation or out-of-round pin support boss.

(a) Do a check of the slat tracks, track stops and slat/track attachment hardware in the area of noted damage for the items that follow:

- Failed or deformed tracks, track support structure, track stops and slat to track attachment hardware
- Deformed or broken track stop pins in the fixed leading edge.

(b) Do a check of the slat ribs in the area of damage for the items that follow:

- Cracks or elongated holes in ribs.

(3) Do a B-check inspection of the wing mounted control surfaces (flaps, vanes, slats, spoilers, ailerons) as follows:

(a) Do a check of the aileron hinges and support structure for the items that follow:

- Cracks, deformation, and elongated holes in the hinges and fittings
- Sheared, bent, and loose hinge pins (and related hardware)
- Deformation, cracks, buckles, and elongated fastener holes in the support structure
- Loose, sheared, and missing attachments.

(b) Do a check of the aileron actuator fittings and support structure for the items that follow:

- Cracks and deformation
- Elongated and brinelled holes in lugs
- Deformation, cracks, buckles, and elongated fastener holes in the support structure
- Loose, sheared, bent, or missing fasteners.

(c) Do a check of the spoiler actuator hinge fitting and support structure for the items that follow:

- Cracks, deformation, and elongated holes in fittings
- Sheared, bent, and loose hinge pins (and related hardware)
- Deformation, cracks, buckles, and elongated fastener holes in the support structure
- Loose, sheared, and missing attachments.

(d) Do a check of the spoilers, the actuator hinge fittings and the support structure on each panel of the outboard spoiler assembly for the items that follow:

- Cracks, deformation, and elongated holes in fittings
- Sheared, bent, and loose hinge pins (and related hardware)
- Deformation, cracks, buckles, and elongated fastener holes in the support structure
- Loose, sheared, and missing attachments.

C. Job-Close-up

(1) Remove all the tools and equipment from the work area. Make sure the area is clean.

BIRD STRIKE CONDITION - CHECK

1. General

A. Examine the entire aircraft exterior especially wing leading edges, flaps and slats, engine inlets, and nacelles for impact damage when a bird strike is reported or suspected due to extreme possibility of multiple bird strikes. Aircraft configuration should be the same as when bird strike occurred, i.e., position of flaps, landing gear, etc. If flap position is unknown, examine trailing edge flaps and leading edge flaps and slats in fully extended position. Damaged areas should be marked for thorough examination and/or action when the exterior examination of the total aircraft is complete. Refer to Structural Repair Manual for repair of any impact damage.

2. Bird Strike Conditional Check

A. Examine wing, nacelle strut, and horizontal and vertical stabilizer leading edge fairing for displacement, distortion, fastener hole elongation or tear-out, flaking paint, skin cracks, and pulled or missing fasteners.

B. Examine pylon panels, doors, and structure for buckling, cracks, and pulled or missing fasteners.

C. Examine wing leading and trailing edge structure, panels, and doors for displacement, distortion, flaking paint, cracks, and pulled or missing fasteners. Examine both side of honeycomb panels for cracks, delamination, soft spots, and core damage.

D. Examine leading edge and trailing edge flap mechanism and trailing edge track fairing for distortion, cracks, misalignment, or other evidence of distress.

E. Check control surfaces for binding, excess free play, misalignment, distortion or displacement of skins, and pulled or missing fasteners.

F. Examine nose and main gear doors and linkage for distortion, cracks, and other evidence of distress.

G. Check pilot's windows for delamination, spalling, or cracks and adjacent structure for distortion, cracks, and pulled or missing fasteners.

H. Examine forward body nose section and radome for cracks, distortion, delamination, misalignment, displacement of skins, and pulled or missing fasteners.

I. Examine inside and outside of radome for honeycomb core damage and soft spots.

J. Examine nose cowl and nose dome for dents, cracks, buckling, pulled or missing fasteners, damage to acoustic panels, and damage to the Pt2 probe, or plugged Pt2 probe.

K. Examine engine for bent or broken fan and compressor blades, dented and cracked side cowls, oil leaks, plugged ram air CSD cooler (if installed). If there are any reports of abnormal engine operation, run the engine, to assure takeoff power is available.

IN-FLIGHT VIBRATION - CHECK

1. General

A. In-flight vibration may occur anywhere in the aircraft, and may be caused by a multitude of reasons.

B. The vibration may be caused by any component which becomes unbalanced aerodynamically or mechanically due to wear or damage.

C. This listing is not exhaustive, but contains some of the most commonly experienced occurrences.

D. This listing is not given in any particular order, and may not be construed as giving a direction for investigations as to the cause of the vibration.

Table 601 Airframe Vibration Check

Area to be Checked	Symptom	Check for
A. Airframe		
(1) Elevators	Vibration in tail area, more pronounced at high gross weights	Proper balance. (FLIGHT CONTROLS, CHAPTER 27)
(2) Elevator dampers	Vibration in cruise, aft fuselage	Signs of leakage. (FLIGHT CONTROLS, CHAPTER 27)
(3) Elevator fiberglass trailing edge	Vibration in control column above 250 kts	Delamination. Check that material meets drawing (dim.) specifications.
(4) Horiz. stab. fairing P/N 5912176	Vibration in forward cabin area	Cracks and/or looseness. (FLIGHT CONTROLS, CHAPTER 27)
(5) Horiz. stab. side load roller	General airframe vibration	Proper gap with vert. stab. Add/remove shims under roller fitting, as required.
(6) Static Plates	Loud noise and in- flight vibration at approx. seat row No. 12	Looseness or leakage (Ref. NAVIGATION, CHAPTER 34).
(7) Flight control surfaces	General airframe vibration	Installation, condition, looseness, and fair of control surfaces. Proper rig loads of cable systems. Install, adjust, lube, and rig as required.
(8) Flight spoiler	Vibration in 140-180 kt range with flaps at 26-30°	Interference between flight spoiler panel and flap vane. Check spoilers for correct preload. Check for sheared hinge pins. (FLIGHT CONTROLS, CHAPTER 27)
(9) Wing leading edge slats	General airframe vibration	Check installation, seals, cable tension, control mechanism, trailing edge wavi ness. Adjust, rig, lube, and functional test as required. (FLIGHT CONTROLS, CHAPTER 27)
(10) Wing trailing edge panels	General airframe vibration	Delamination
(11) Bent up trailing edge (BUTE) door	General airframe vibration	Door looseness, weak spring tension, worn pin holes in hinge.

Table 601 Airframe Vibration Check (Continued)

Area to be Checked	Symptom	Check for
(12) Flap movable and fixed vane installation	General airframe vibration	Cable tension, condition of track, link ages, bearings, security of flap and vane segments. Proper clearances between flap, vane, and structure, with flaps extended and retracted. Evidence of wear on rub blocks. Adjust and rig as necessary. (FLIGHT CONTROLS, CHAPTER 27)
(13) Wing flap hinge fairing	General airframe vibration	Looseness and/or non-faired condition.
(14) Overwing fillet	General airframe vibration	Proper preload of blade seal to wing upper panel. Clearance between metal seal retainer and wing upper panel. Check inner fairing support angles. Adjust position of fairing seal and/or retainer. Replace fairing support angles. (SRM 53-54-0)
(15) Nose landing gear doors	General airframe vibration	Door fair, preload, and rigging. Adjust forward door link as required. (LANDING GEAR, CHAPTER 32)
(16) NLG spray deflector	General airframe vibration (with gear extended)	Security of spray deflector. (LANDING GEAR, CHAPTER 32)
(17) Main landing gear doors	General airframe vibration	Proper fairing of doors with fuselage. (LANDING GEAR, CHAPTER 32)
(18) Radome	General airframe vibration	Rubbing against structure. (FUSELAGE, CHAPTER 53)
(19) Doors (main entry, service, emergency exit, cargo, E/E compartment)	General airframe vibration	Proper installation, fair, hinge alignment, and seals for air leaks. Adjust and functional test. (DOORS, CHAPTER 52)
(20) Air conditioning system (aircraft tail compartment)	Vibration in aft cabin	Security of air conditioning components and ducting. Ensure that mounting brackets/rods are tight. Security of pneumatic duct clamps. (AIR CONDITIONING, CHAPTER 21)

Table 602 Powerplant/Environmental Vibration Check

Area to be Checked	Symptom	Check for
B. Powerplant/ environmental		
(1) Engine mounts	General airframe	Condition of vibration isolators (two forward and one aft, each side). Alignment mark mismatch, and metal to-metal contact between inner core and retainer ring on for ward units. Migration of internal segments on aft units. Signs of damage on dynamic absorber. (POWER PLANT, CHAPTER 71)

Table 602 Powerplant/Environmental Vibration Check (Continued)

Area to be Checked	Symptom	Check for
(2) Engine. (POWER PLANT, CHAPTER 71, ENGINE, CHAPTER 72, ENGINE FUEL AND CONTROL, CHAPTER 73, AIR, CHAPTER 75, EXHAUST, CHAPTER 78, OIL, CHAPTER 79)	Vibration in aft cabin and/or vibration felt in throttles, fuel shutoff levers, and cockpit floor	(1) Visually check engine inlet and front fan blades for evidence of Foreign Object Damage (FOD).
		(2) Freedom of rotation by turning front fan by hand. Listen for abnormal sounds.
		(3) Visually check engine exhaust for evidence of damage.
		(4) Security and fair of engine nacelle doors.
		(5) Security and fair of thrust reverser.
		(6) Visually check pneumatic ducting, clamps, brackets, burn-through barrier, and engine plumbing lines for security and adequate clearance.
		(7) Visually check engine accessories (i.e. gearbox, fuel control unit, constant speed drive, and fuel pump) for security.
		(8) Borescope engine compressor, burner, and turbine sections.
		(9) Check fuel control unit transfer tube and restrictor. Replace if necessary. (Ref. Hamilton Standard SB 73-15, Gen No. 15, dated Oct 1/84).
		(10) Proper operation of pressurization and dump valve. Replace, if necessary.
		(11) Evidence of metal on chip detectors.
		(12) Evidence of contamination of fuel and oil filters.

HAIL STORM DAMAGE - CHECK

1. General

A. The external surfaces of an aircraft can be severely damaged if an aircraft is subjected to a hail storm. Hail can cause enough damage to the flight control surfaces to affect the aerodynamic performance of an aircraft. The strength of structural parts, such as skin panels and internal ribs, is also subject to being compromised due to hail storm damage.

B. In the event that a aircraft has been subjected to a hail storm, all external surfaces should be visually checked for any damage such as dents, dings, cracks, delamination, or any other similar types of damage. If any damage is discovered during the visual inspection, nondestructive testing inspections (NDI) should be performed to determine the extent of the damage and to verify that there is no internal damage within the subject area (Refer to the Nondestructive Testing Standard Practice Manual - NDTSPM).

C. Composite structure is known to reform itself after being dented. NDI inspections should be performed on any external flight surface composite structure for internal damage that would not be found during a visual inspection.

2. Damage Limits

A. If any dents are discovered in the aircraft external structure, they must be within the established damage limits of the DC-9/MD-80 Structural Repair Manual (SRM). External dent damage limits are provided in SRM 51-50-2. Aluminum honeycomb delamination limits are provided in SRM 51-50-3.

NOSE GEAR WATER DEFLECTOR - CHECK

1. General

A. This procedure has the instructions for the check of the nose gear water deflector.

B. An inspection of the nose landing gear water deflector is necessary when one or more of these events occur:

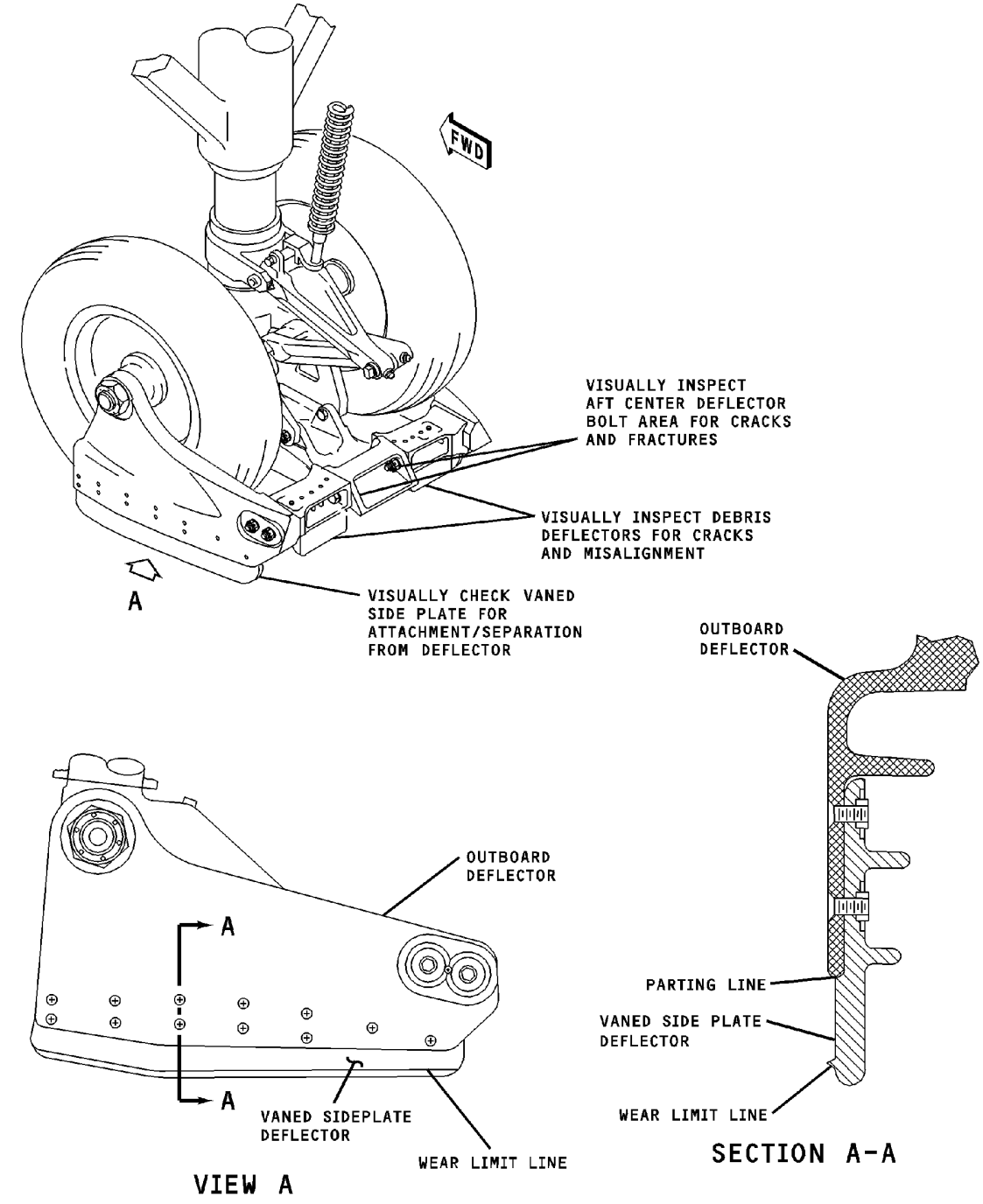
- Aircraft taxis over a barrier cable prior to or during takeoff
- Nosewheel hits an object on the runway or taxiway
- Nosewheel drops off the edge of a prepared surface
- Accidental tow bar disconnect.

C. Refer to NOSEGEAR WATER DEFLECTOR, SUBJECT 32-20-01 for removal and installation of nose gear water deflector.

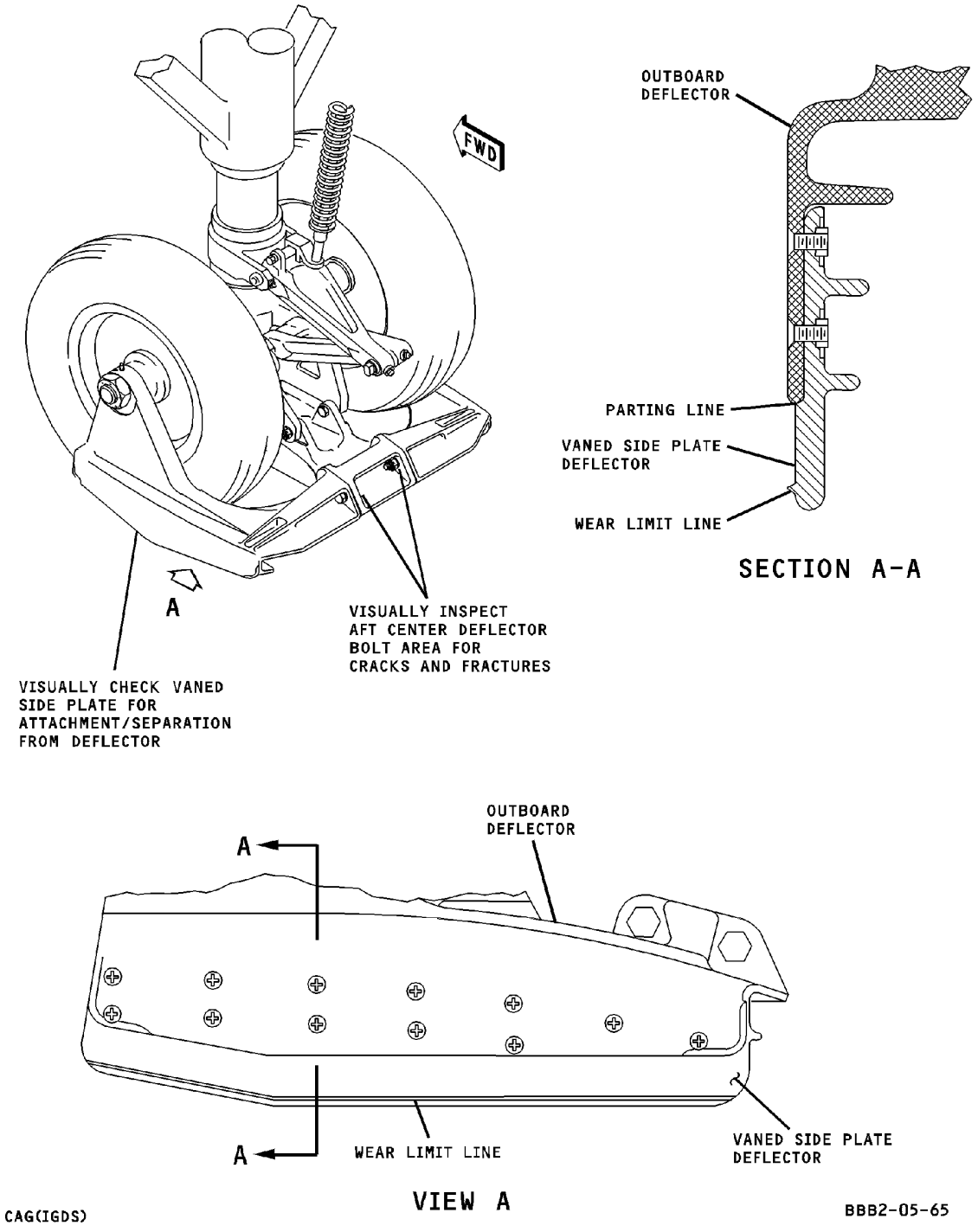
2. Check - Nose Gear Water Deflector

Table 601 Nose Gear Water Deflector - Check

Area to be Checked	Check For
A. Aircraft with metal nose gear water deflectors.	1. The area around four center bolts that attach outboard spray deflector supports to aft center spray deflector for cracks and fractures.
	2. The vaned side plate for attachment/separation from deflector.
B. Aircraft with polyurethane nose gear water deflectors.	1. The area around four center bolts that attach outboard to aft center deflector for cracks and fractures.
	2. The vaned side plate for attachment/separation from deflector.
	3. The debris deflectors for cracks and misalignment.
C. If damaged or separated, remove and replace affected part.	Replace the applicable nose landing gear water deflector part or parts. (NOSEGEAR WATER DEFLECTOR, SUBJECT 32-20-01)



Nose Gear Polyurethane Water Deflector - Check
Figure 601/05-52-00-990-801 (Sheet 1 of 2)



Nose Gear Polyurethane Water Deflector - Check
Figure 601/05-52-00-990-801 (Sheet 2 of 2)

LIGHTNING STRIKE - CHECK

1. General

A. When lightning strikes an aircraft, the aircraft forms a part of the lightning channel. The aircraft will have entrance and exit points, usually at the extremeties or at significant protrusions.

B. Skin damage may occur when lightning current transfers to and from the aircraft, resulting in burning, eroding, and pitting of metal. The damage can vary from small pit marks, barely visible, to removal of material up to approximately one inch square.

C. The flow of heavy lightning currents through the aircraft may cause momentary or permanent malfunctioning of electrical and electronic systems.

D. The aircraft is designed with general and specific lightning protection goals. In general, bonding is provided throughout the body of the aircraft to present low impedance paths between all metal sections. This will ensure adequate transfer of lightning currents without initiation of sparking at joints. Special lightning protective measures include, radome lightning strips, and lightning arresters for protection of the ADF sense antenna system.

E. When a lightning strike has been reported by the flight crew, it is essential that the aircraft be checked before it is returned for flight. The degree of damage determines the action to be taken.

2. Check-Lightning Strike

A. Nose Section

(1) Check exterior and interior of radome for damage.

(2) Check nose radome lightning protection strips for damage.

(a) If damage is noted, clean area and replace strips as necessary. (NOSE RADOME - LIGHTNING STRIPS - MAINTENANCE PRACTICES, PAGEBLOCK 53-51-02/201)

(3) Check radar reflector, feed horn, motor box, and all mounting structure for damage.

(a) If damage is noted, a bench check of radar system is required.

(b) If superficial pitting or burning of the mounting structure only is noted, perform functional check of radar system. (WEATHER RADAR SYSTEM, SUBJECT 34-41-00, Page 201)

(4) Check glideslope antenna for burning or pitting.

(a) Replace antenna if damage is noted. (GLIDESLOPE ANTENNA - MAINTENANCE PRACTICES, PAGEBLOCK 34-32-01/201)

B. Check Procedures - Fuselage

(1) Check complete fuselage for burning and/or eroding.

NOTE: If structure is damaged, it is requested that air-line operators submit findings to Douglas Aircraft Company Customer Service for evaluation.

(a) If damage is noted, repair per Structural Repair Manual.

(2) Check all antennas for damage.

(a) If damage is noted, perform functional check on affected system.

(3) Check tailcone and static discharger for damage.

(4) Aircraft with H.F. communications; check tailcone antenna, coupler and lightning arrestor for damage.

(5) Check bonding jumpers and bonding straps in the tailcone area to ensure bolts are tight and that the bonding straps, jumpers, and flanges have not been damaged.

(6) Check all pitot tubes and flight compartment windows for damage.

(7) Examine the pitot tubes, static ports and the areas around them for damage. Look for burns, punctures, paint discoloration and distortion of the skin. If damage is found, refer to SRM 51-10-03.

C. Check Procedures - Tail Section

(1) Check vertical stabilizer for burning, eroding, and loose or missing rivets.

(2) For non composite rudder assemblies, check rudder surfaces for burning and/or eroding.

(3) For composite rudder assemblies (P/N 5955501-1, -501, and -503), check rudder surfaces for burning and/or eroding.

(a) If damage is found, use the following requirements for aluminized flamed spray protected composite rudders.(SRM 51-70-01A)

1) The aluminum spray, which is applied 0.0004 - 0.0069 inch thick must be retained from a line 2.65 inches forward of the front spar line to a line 7.00 inches aft of the front spar line, extending vertically along the front spar plane. If the aluminum protection is damaged in an area 7.00 inches aft of the front spar line to the trailing edge, it can be removed and need not be replaced.

2) The aluminized flame spray protection is to remain in its entirety on the following components of the rudder assembly:

- Removable Panel (Right-Hand), P/N 5955532
- Door (Right-Hand), P/N 5955533
- Forward Fairing (Right-Hand), P/N 5955540
- Aft Fairing, P/N 5955541
- Rudder Tab Assembly, P/N 5955545

3) It is acceptable to continue revenue service if areas of missing aluminized flame spray are discovered on the rudder assembly outside of the region specified above, provided no loose pieces/sections of the aluminum project outward into the air stream. If any anomalies to the aluminum coating are found during inspection of the rudder, remove the discrepant aluminum coating until the remaining aluminum coating is secure to the substructure.

4) Upon removal of the lightning strike protection, the area should be cleaned and prepared, glazed and filled , then primed and top coated. (SRM 51-70-01A)

5) If damage is discovered to the aluminum flame spay within the region specified above, the aluminum protection should be replaced with either aluminum flame spray or with aluminum Astro Strike Screening. (SRM 51-70-01A)

6) The composite rudder balance limits are determined analytically to satisfy a flutter condition with a free floating surface. The limits are then adjusted in a nose-heavy direction to allow minor repairs in accordance with SRM 55-40-01. The rudder balance condition is unaffected by removal of the aluminum flame spray from a line 7.00 inches aft of the front spar line, extending to the trailing edge. If the rudder assembly is removed from the aircraft for rework, the rudder should be rebalanced and the control surface balance information properly recorded in accordance with SRM 55-40-01. If the rudder assembly is reworked on the aircraft, rebalance and record the control surface balance information the next time the rudder is removed. Generate a maintenance carry over to rebalance and record the control surface balance information not to exceed 3960 flight hours or 17 months.

(4) Check horizontal stabilizer for damage.

(5) Check all control surfaces for damage to surfaces and hinging mechanisms.

(6) Check static dischargers on tip and trailing edges of horizontal and vertical stabilizers for damage; replace if damaged.

D. Check Procedures - Wing Area

(1) Check wing tips for burning and/or eroding.

(a) If damage is noted, perform functional check of wing tip lighting system.

(2) Check fuel vent outlets (external and internal) for burning and/or eroding.

(3) Check all control surfaces and hinging mechanisms for damage.

(4) Check static dischargers on wing tips and trailing edges; replace if damaged.

E. Check Procedures - Pylon and Engine Pods

(1) Check pylons and engine nacelle areas for burning, eroding, and loose or missing rivets.

(2) Check access doors for obvious damage and security of fastenings.

F. Standby Compass

(1) The standby compass should be considered serviceable if corrected heading is within ±10 degrees of heading indicated by remote compass system. If standby compass is not within this tolerance after a lightning strike, standby compass should be tested. (STANDBY COMPASS, SUBJECT 34-21-01, Page 201)

G. Compass System (if installed)

(1) Both remote compass system Captain and First Officer have to be compared. If (synchronized) RMI-Compass Cards show difference, which is within tolerance of (A±4) degrees, following additional procedure has to be performed:

(a) Extend left hand landing light and check compass systems.

(b) Extend right hand landing light and check compass systems.

(c) Retract both landing lights and check compass systems again.

(2) If no error in indication is observed, no further tests have to be carried out.

(3) If one or both compass systems are out of tolerance, go to next step in sequence.

(4) Perform degaussing procedure on affected landing light(s). Repeat the above three steps. If landing light(s) cannot be degaussed satisfactorily, replace landing light(s). (WING LANDING LIGHTS - REMOVAL/INSTALLATION, PAGEBLOCK 33-41-02/401)

H. Check Procedures - Nose Landing Gear

(1) Check nose landing gear for damage.

(2) Check nosegear steering cylinders for damage.

(3) Check for burned spots on the piston chrome plate.

NOTE: Burned spots on the piston may result in leakage.

ENGINE-FOREIGN OBJECT DAMAGE - CHECK

1. General

A. For Foreign Object Damage checks, refer to ENGINE GENERAL, SUBJECT 72-00-00 and other related sections of that chapter.

MERCURY SPILLAGE - DETECTION - MAINTENANCE PRACTICES

1. General

A. This section provides for detection of Mercury Spillage and corrective measures to be followed.

B. Mercury amalgamates readily at room temperature with aluminum alloys if their naturally formed oxide films are removed or scratched. Once small area of aluminum has been amalgamated, rapid corrosion will occur if material is subsequently exposed to moist air or water.

C. Amalgamation of stressed aluminum alloy articles will result in cracking, since mercury penetrates into aluminum alloy selectively at grain boundaries, thus weakening material.

D. Stress corrosion cracking of Monel and nickel alloys in contact with mercury or mercury salts is possible. These materials when used in annealed condition are not susceptible to cracking in contact with mercury.

2. Equipment and Materials

NOTE: Equivalent substitutes may be used instead of the following listed items:

NOTE: It is possible that some materials in the Equipment and Materials List cannot be used for some or all of their necessary applications. Before you use the materials, make sure the types, quantities, and applications of the materials necessary are legally permitted in your location. All persons must obey all applicable federal, state, local, and provincial laws and regulations when it is necessary to work with these materials.

Table 201

Name and Number	Manufacturer
High capacity vacuum cleaner	
Glass container trap type	
Portable mercury vapor detector	
Calcium sulfide	

3. Safety Precautions

A. Every precaution shall be taken to prevent spillage of mercury. If spillage occurs the following procedures shall be followed:

(1) All unauthorized personnel shall be cleared from area to avoid skin contact or breathing of mercury vapor.

(2) If skin contact with mercury occurs, wash affected body parts with soap and water immediately.

(3) If clothing becomes contaminated with mercury, replace affected clothing with uncontaminated clothing immediately.

(4) Use portable mercury vapor detector to determine presence and extent of any mercury spill. Repeat checks during warmest time of day.

4. **Remove Mercury Spill - Vacuum Method**

WARNING: MERCURY IS AN AGENT THAT IS POISONOUS. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN MERCURY IS USED.

- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET MERCURY IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.
- TALK WITH LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR EMERGENCY SPILLS PROCEDURES.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

A. Manually sweep up any visible large quantities of mercury.

WARNING: DO NOT EAT, SMOKE, OR BLOW NOSE WITHOUT WASHING HANDS CAREFULLY WITH SOAP AND HOT WATER. MERCURY IS POISONOUS.

B. Thoroughly vacuum area, collecting any remaining mercury in trap type glass container.

C. Use portable mercury vapor detector to assure no free mercury remains in spill area of aircraft. If possible, repeat check after a period of 12 to 24 hours to ensure complete mercury removal.

D. Clean hands, clothing, and tools with soap and hot water after completion of cleanup.

5. **Remove Mercury Spill - Chemical Method**

WARNING: MERCURY IS AN AGENT THAT IS POISONOUS. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN MERCURY IS USED.

- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET MERCURY IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.
- TALK WITH LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR EMERGENCY SPILLS PROCEDURES.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

A. Sprinkle calcium sulfide liberally on area where mercury has fallen.

NOTE: Calcium sulfide reacts slowly with mercury to form a bulky residue.

B. Thoroughly vacuum area until all residue is removed.

C. Use portable mercury vapor detector to assure no free mercury remains in spill area of aircraft. If possible, repeat check after a period of 12 to 24 hours to ensure complete mercury removal.

D. Clean hands, clothing, and tools with soap and hot water after completion of cleanup.

6. Mercury Contamination Disposal

WARNING: MERCURY IS AN AGENT THAT IS POISONOUS. MAKE SURE ALL PERSONS OBEY ALL OF THE PRECAUTIONS WHEN MERCURY IS USED.

- USE IN AN AREA OPEN TO THE AIR.
- CLOSE THE CONTAINER WHEN NOT USED.
- DO NOT GET MERCURY IN THE EYES, ON THE SKIN, OR ON YOUR CLOTHES.
- DO NOT BREATHE THE GAS.
- TALK WITH LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR EMERGENCY SPILLS PROCEDURES.

WARNING: REFER TO THE APPLICABLE MANUFACTURER'S OR SUPPLIER'S MSDS FOR:

- MORE PRECAUTIONARY DATA
- APPROVED SAFETY EQUIPMENT
- EMERGENCY MEDICAL AID.

TALK WITH THE LOCAL SAFETY DEPARTMENT OR AUTHORITIES FOR THE PROCEDURES TO DISCARD THIS HAZARDOUS AGENT.

A. Upon completion of mercury spillage procedures, all potentially contaminated clothing, gloves, wipers, etc. must be disposed of in compliance with local, state and national regulations regarding disposal of mercury contaminated materials.

HIGH ENERGY STOP - INSPECTION/CHECK

1. General

A. This procedure has the inspection check instructions for a high energy stop.

(1) Do the inspection when the brake temperature overheat indicator light turns ON.

B. A high energy stop can cause heat damage to the Main Landing Gear (MLG) axles. It can also cause stress damage to aft lower wing skin/doublers and main landing gear attach fittings.

C. A high-energy stop accompanied by melted fuse plugs will require a check of the main landing gear axles for possible heat damage. If cadmium globules are found contact Boeing Service Engineering for disposition.

2. High Energy Stop Inspection

WJE 401-405, 409, 410, 884, 893

WARNING: WHEN A HIGH-ENERGY STOP OCCURS, THE TEMPERATURE OF THE TIRE AND WHEEL WILL CONTINUE TO INCREASE. THIS CAN CAUSE THE WHEEL FUSE PLUGS TO MELT AND DEFLATE ONE OR MORE TIRES. USE THE BTMS TO MONITOR THE BRAKE TEMPERATURE. DO NOT GO NEAR A GEAR UNTIL 15 MINUTES AFTER THE BTMS SHOWS THE BRAKE TEMPERATURE AT OR LESS THAN 305° C AND CONTINUES TO DECREASE. IF THE BTMS IS INOPERATIVE, WITH TIRES STILL INFLATED, DO NOT APPROACH THE GEAR FOR A MINIMUM OF 45 MINUTES.

WJE 406-408, 411, 415-427, 429

WARNING: IF AIRCRAFT HAS JUST EXPERIENCED HIGH-ENERGY STOP AND TIRES ARE STILL INFLATED, WAIT UNTIL ALL FUSE PLUGS HAVE MELTED AND TIRES ARE DEFLATED, OR AT LEAST 45 MINUTES BEFORE APPROACHING LANDING GEAR. EXPLOSIVE DEFLATION OF TIRES CAN CAUSE SERIOUS INJURY TO PERSONNEL. IF AIRCRAFT IS EQUIPPED WITH BRAKE TEMPERATURE MONITORING SYSTEM, WAIT UNTIL 15 MINUTES AFTER AIRCRAFT HAS STOPPED AND OBSERVE BRAKE TEMPERATURE READINGS. IF NONE OF READINGS EXCEED 400°C AND TEMPERATURES ARE FALLING, IT SHOULD BE SAFE TO APPROACH LANDING GEAR.

WJE ALL

A. Make sure that the landing gear wheels/tires are safe to approach as follows:

WJE 401-405, 409, 410, 884, 893

(1) With the BTMS, make sure that the brake temperature is less than 581°F (305°C) and continues to go down.

WJE 406-408, 411, 415-427, 429

(2) With the BTMS, make sure that the brake temperature is less than 752°F (400°C) and continues to go down.

WJE ALL

(3) If the BTMS is inoperative, with the aircraft stopped, 45 minutes must have passed before you approach the gear.

(4) If a chemical agent is used to extinguish a brake-area fire, thoroughly rinse extinguishing agent from the brakes and surrounding components once they have cooled. Use large amounts of low-pressure, clean water to rinse.

B. Do an inspection of the MLG, wing skin doubler and MLG attach fitting as follows:

Table 601

Step	Area to Check	Check for
(1)	Tire:	
	Examine tire for correct inflation and condition. (TIRES - MAINTENANCE PRACTICES, PAGEBLOCK 32-40-03/201)	If necessary, replace the tire.
(2)	Wheel:	
	Examine wheel for external damage and cracks. If a tire/wheel is removed for a brake change, examine the wheel fuse plugs.	If damage is found, replace the wheel. If a tire/wheel is removed for a brake change and one or more fuse plugs are partially melted, replace the tire/wheel assembly.
(3)	Brake:	
	Examine the brake for leaks and wear. If the tire is removed, examine the brake for broken discs and disc freedom of rotation.	If the brake is worn, leaking at the pistons or cannot be rotated, replace the brake.
(4)	Axle: Do this inspection only if a tire is deflated because a wheel fuse plug leaks or is melted due to a high energy stop.	
(a)	Painted area of axle that can be seen easily for burned or blistered paint caused by the heat.	If paint is burned or blistered from high heat, remove the applicable anti-skid transducer. Examine the inside diameter of the axle for burned or blistered paint. If inside diameter has burned or blistered paint, replace piston.
(b)	Bare metal area of axle sleeve for dark blue color caused by high heat. Cadmium plating under paint.	If burned or blistered paint is not seen, remove the axle sleeve. (Overhaul Manual Chapter 32) If burned or blistered paint is seen on the inside diameter with anti-skid transducer removed or on the outside diameter with the sleeve removed, replace the piston assembly. If cadmium globules or other indications of cadmium melting and re-solidification are found replace the piston.
(5)	Wing skin/doubler (aft of lower rear spar cap):	
	Loose or missing attachments.	Report specific damage data to Boeing for evaluation and repair.
(6)	Wing skin/doubler and fitting attachment holes:	
	Cracks.	Report specific damage data to Boeing for evaluation and repair.
(7)	MLG attach wing fitting lower surface:	
	Loose or missing attachments.	
	Cracks in attachment fitting.	If one or more cracks are found, replace fitting.
(8)	Wing rear spar-to-MLG attach fitting vertical and horizontal inboard and outboard faces:	
	Loose or cracked seals, loose or broken attachments, and fuel leaks.	Report specific damage data to Boeing for evaluation and repair.
(9)	Wing rear spar:	

Table 601 (Continued)

Step	Area to Check	Check for
	Cracks.	Report specific damage data to Boeing for evaluation and repair.

(1) If necessary, replace the wheel and tire. (MAIN GEAR WHEEL AND TIRE - MAINTENANCE PRACTICES, PAGEBLOCK 32-40-01/201)

(2) If necessary, replace the brake. (MAIN GEAR WHEEL BRAKES - MAINTENANCE PRACTICES, PAGEBLOCK 32-42-01/201)

(3) If necessary, replace the antiskid transducer. (ANTISKID SYSTEM WHEEL SPEED TRANSDUCER - MAINTENANCE PRACTICES, PAGEBLOCK 32-43-02/201)

(4) If necessary, replace the inner piston. (MAIN GEAR STRUT - REMOVAL/INSTALLATION, PAGEBLOCK 32-11-02/401)

(5) Remove all the tools and equipment from the work area. Make sure the area is clean.

LIQUID/CHEMICAL SPILLAGE - MAINTENANCE PRACTICES

1. General

A. Refer to SRM 51-10-3E for cleaning a liquid/chemical spill, including battery electrolyte.

VOLCANIC ASH/ABRASIVE PARTICLE DAMAGE - INSPECTION/CHECK

1. General

A. This procedure has the inspection/check instructions for the aircraft after exposure to volcanic ash or abrasive particles.

B. Engine sand and dust ingestion occurs when sandy material used for runway/taxiway traction enhancement goes into the engine. Sand or dust that goes into the engine can damage the engine core module, engine inlets and other areas of the engine.

C. Engine sand and dust ingestion occurs on the ground. The typical conditions that can cause engine sand and dust ingestion are use of high engine power, particularly with the thrust reverser deployed and low airspeed on snow/ice-covered runways or taxiways treated with traction enhancement material such as sand.

D. Volcanic ash is highly abrasive and somewhat corrosive. The ash significantly accelerates wear of moving parts. The particle size of the ash ranges from 100 microns down to 0.5 micron. Most aircraft filters are only effective for material 15 microns and larger. Therefore, ash may be ingested into critical aircraft systems.

E. Damage increases in proportion to ash density and duration of exposure. Therefore, maintenance and inspection frequencies should be increased accordingly.

F. When dry, the ash is similar to dry snow and loose sand. It is subject to vortices from the engines, and may be ingested, causing subsequent damage.

G. When wet, the ash makes ramps and taxiways slippery and these areas should be treated as icy surfaces. Corrosion may occur when the ash is in contact with wet metallic surfaces.

H. Abrasive particles are defined as particles that accelerate the wear on moving components. This includes, but is not limited to sand, fine dirt, and corrosion treatment bead blast particles.

2. Check - Sand, Dust or Volcanic Ash Damage

Table 601 Sand, Dust or Volcanic Ash Damage Check

Area to be Checked	Check for
A. Engines	
CAUTION: ENGINE INGESTION OF SAND, DUST OR VOLCANIC ASH CAN CAUSE OPERATIONAL PROBLEMS INCLUDING LOSS OF POWER. EVEN IF PROBLEMS ARE NOT EXPERIENCED RIGHT AWAY, ASH CONTAMINATION OF ENGINE SYSTEMS CAN RESULT EVENTUALLY IN PERFORMANCE DETERIORATION, BLOCKED COOLING AIR PASSAGES, AND ABRASIVE DAMAGE.	
(1) Rear compressor and 1st stage turbine blades checked with borescope	Excessive corrosion or erosion. Foreign object damage (FOD). Blockage of 1st stage turbine airfoil cooling holes. Buildup of sand, dust or ash deposits.
(2) Oil system	Clogged filters/strainers. Contaminated system. Damaged chip detectors.
(3) Air passages	Corrosion, erosion, dust clogged.
(4) Air inlets	Damage or excessive erosion. Acoustic panel dust coating.
CAUTION: DUST ACCUMULATION AND WATER WILL PLUG HONEYCOMB.	
(5) Exhaust areas	Damage or excessive erosion.

Table 601 Sand, Dust or Volcanic Ash Damage Check (Continued)

Area to be Checked	Check for
(6) Engine and CSD oil coolers.	Coolers plugged with dust.
NOTE: Rise in oil temperatures may be indicative of plugged oil coolers.	
NOTE: If necessary, (ENGINE GENERAL, SUBJECT 72-00-00) for detailed procedures of inspecting engine after ingestion of sand, dust or volcanic ash.	
B. Aircraft Structure	
(1) Windshields	Scratches, film of ash.
CAUTION: RAIN REPELLANT SHOULD NOT BE USED UNTIL WINDSHIELDS ARE WASHED.	
(2) Metal surfaces	Film of ash. Check for surface corrosion after cleaning. Surfaces should be frequently washed.
(3) Ventilation openings	Accumulation of ash.
(4) Air conditioning system	Contamination of oil in air cycle machine and turbo compressors.
(5) Hydro-mechanical	Ash dust in valves, heat exchangers, sense lines, other components. Clogged coalescer bags.
NOTE: All components exposed to ash should be cleaned and relubricated.	
(a) Pulleys	Abrasion and wear.
(b) Cables	Abrasion and wear, especially in areas that travel through bulkhead seals.
(c) Operating mechanisms	Excessive wear and abrading.
(d) Acme Screw and Nut	Contamination of grease.
NOTE: If contamination is found, clean the screw and the structural well below screw.	
(e) Linkages and bearings, moving parts in wheelwells	Excessive wear, dust accumulation, abrading.
(f) Slats, flaps, roller surfaces, any friction area.	Excessive wear, dust accumulation, abrading.
(g) Hydraulic actuators and landing gear pistons	Excessive wear, dust accumulation, abrading, scratches.
(h) Hydraulic reservoirs	Contamination (contaminate level - Class 5). Replace as required.
(6) Pitot and static ports	Plugged with ash or dust.
(7) Cracks, crevices, troughs, wheelwells, any place where dust and ash can accumulate.	Surface corrosion after area has been cleaned.
C. Fuel System	Contamination, clogging.
(1) Fuel filters (more frequent checks after ash/dust encounters).	
D. APU	Excessive wear due to dust and ash exposure.

HIGH WIND/GUST DAMAGE - INSPECTION CHECK

1. General

A. This procedure has inspection and check instructions for high wind/gust damage with aircraft on ground.

B. If high winds or gusts did not exceed 75 mph (65 knots) and all doors are closed, no special inspections are required. When high winds or gusts exceed 75 mph (65 knots), an inspection of all flight control surfaces is required.

C. Checks are divided into two parts: "A" check (generally external and primary indicators) and "B" check follow-up (may be in closed area). If damage is noted at any step during the "A" check, referenced "B" checks must be accomplished. During the "B" check, a progressive check of the structure and systems in local and adjacent areas of visible damage is performed. The "B" check is pursued only to the extent necessary to ascertain that no internal damage has occurred in these areas.

2. “A” Check - Aircraft High Wind/Gust Damage Inspection

A. High Wind/Gust Damage Inspection of Flight Controls

(1) Make an inspection of all wing and tail mounted control surfaces:

(a) Flaps

(b) Vanes

(c) Slats

(d) Spoilers

(e) Ailerons

(f) Elevators

(g) Rudders

(2) Visually inspect exterior surfaces of all flight controls for cracks, wrinkles, buckles, and loose or missing attachments.

(3) Visually inspect area of actuator attachment for looseness at each flight control.

(4) Visually inspect flap up-stops and surrounding backup structure on each flap and wing trailing edge for deformation and loose attachments.

(5) Operate all flight control surfaces through their full rotation and check for interference or binding due to deformation of structure, supports or mechanism.

(6) Do the “B” check inspection only in an area where damage is found.

B. High Wind/Gust Damage Inspection of Aircraft Doors

NOTE: If a door was closed and latched during the high wind or gust, no inspection is necessary of that door. These steps examine only the doors found open that open away from the aircraft fuselage or engine (i.e. passenger and service doors or engine cowling and stairs).

(1) Do an “A” check inspection of each door or stair found open during the high wind or gusts for damage as follows:

(a) Visually examine each door hinge, and door open and close mechanism for looseness, cracks and distortion.

(b) Visually examine the surface of the door skin for cracks, buckles, and loose or missing attach parts.

(c) Do an operational check of each door. Make sure that there is no interference or binding due to deformation of the door or fuselage structure, supports or mechanism.

(d) Do the “B” check inspection only in an area where damage is found.

3. “B” Check - Aircraft High Wind/Gust Damage Inspection

A. High Wind/Gust Damage Inspection of Flight Controls

(1) For flight control discrepancies found during an "A" check, visually inspect the actuator, attach fitting and support structure of that flight control for:

- Cracks
- Deformation
- Loose
- Sheared
- Bent
- Missing attachments
- Distortion.

(2) Inspect all hinge attach points for cracks, deformation, sheared, bent or missing attachments.

(3) If there is damage to a flight control, its structure or attach structure repairs must be made before flight. Refer to the DC-9/MD-80 Structural Repair Manual (SRM).

B. High Wind/Gust Damage Inspection of Doors

(1) For doors found damaged during the “A” check, do a detailed visual inspection of the fuselage structure around the door, the door structure and hinge. If necessary, replace or repair the damaged door components.

(a) If there is damage to the fuselage structure around the door or the door structure, refer to the DC-9/MD-80 Structural Repair Manual (SRM).