

**AFT FUSELAGE DIAGRAM**



## TAIL SECTION

The fuselage tail section, section 48, consists of the fuselage aft of station 2360. The tail section is non-pressurized and contains the aft pressure bulkhead, vertical and horizontal stabilizer attach-fittings and the auxiliary power unit (APU).

Bulkheads at stations 2412, 2517 and 2598 are used to support the vertical and horizontal stabilizers. A titanium bulkhead at station 2658 supports the forward end of the APU and isolates the APU for fire protection.

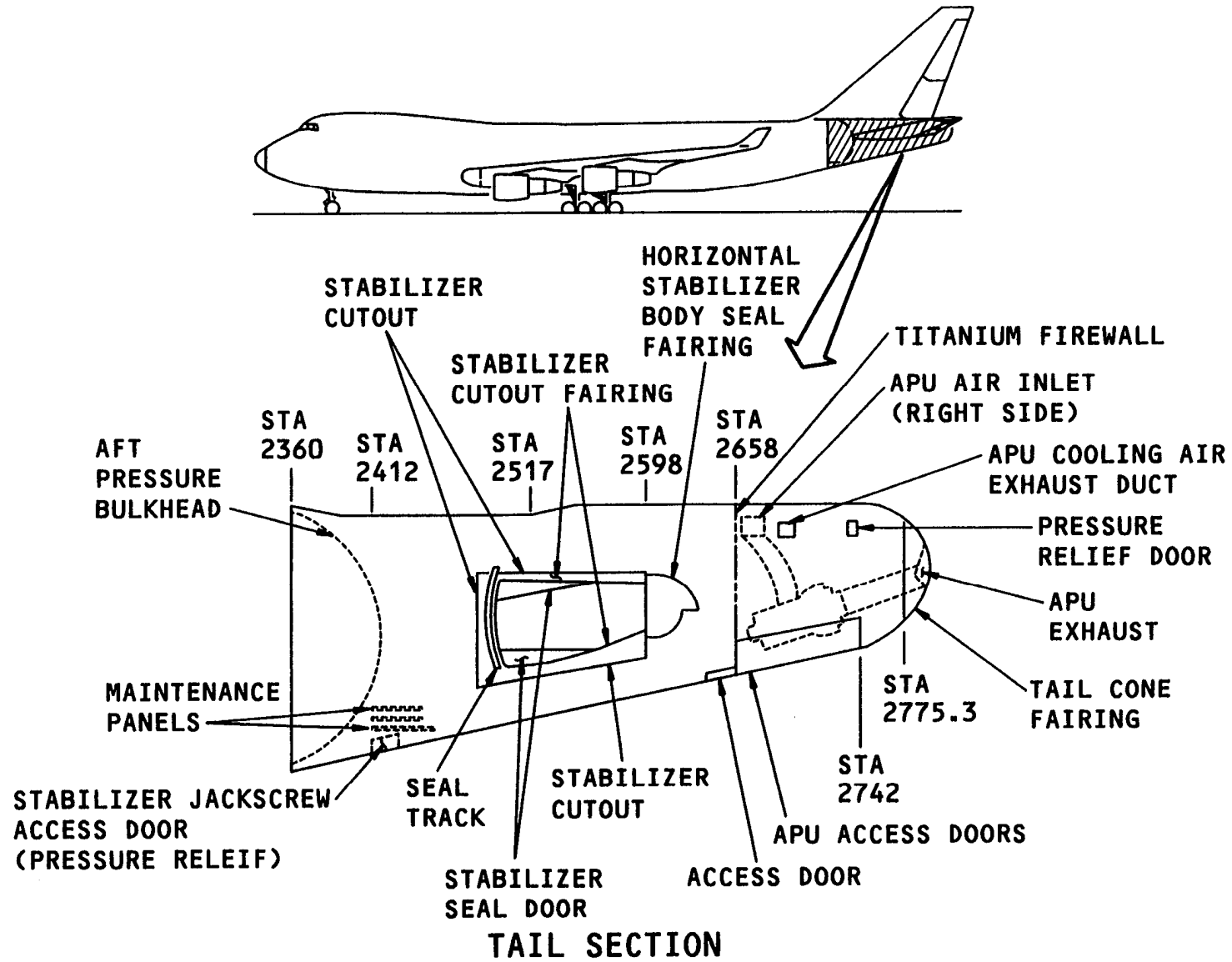
### Doors and Openings

Access to the section 48 interior is through three doors in the bottom of the fuselage. The forward door provides access to the stabilizer jackscrew and other equipment in the area. The door just forward of the APU access doors provides entrance to the horizontal stabilizer hinge area and the forward side of the APU firewall. Below the APU is a clamshell type door with two halves opening outwards to provide access to the APU. The tail section aft of station 2658 has various doors and openings to support operation of the APU. These are:

- APU air inlet door (right side)
- APU cooling air exhaust opening (left side)
- Two spring-loaded pressure relief doors (left and right)
- Two louvered vent openings (left side, not shown)
- APU exhaust duct (tail cone)

### Seal Doors

Stabilizer seal doors enclose a portion of the stabilizer cut out above and below the stabilizer center section. The seal door attaches to the stabilizer cut out fairing with two hinges. The other attach point on the door attaches to a link of the control mechanism that maintains the position of the seal door during movement of the stabilizer.





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## FUSELAGE CROSS SECTION

A cross-section view of the fuselage at body station 520, as viewed from the rear, shows three body decks as follows:

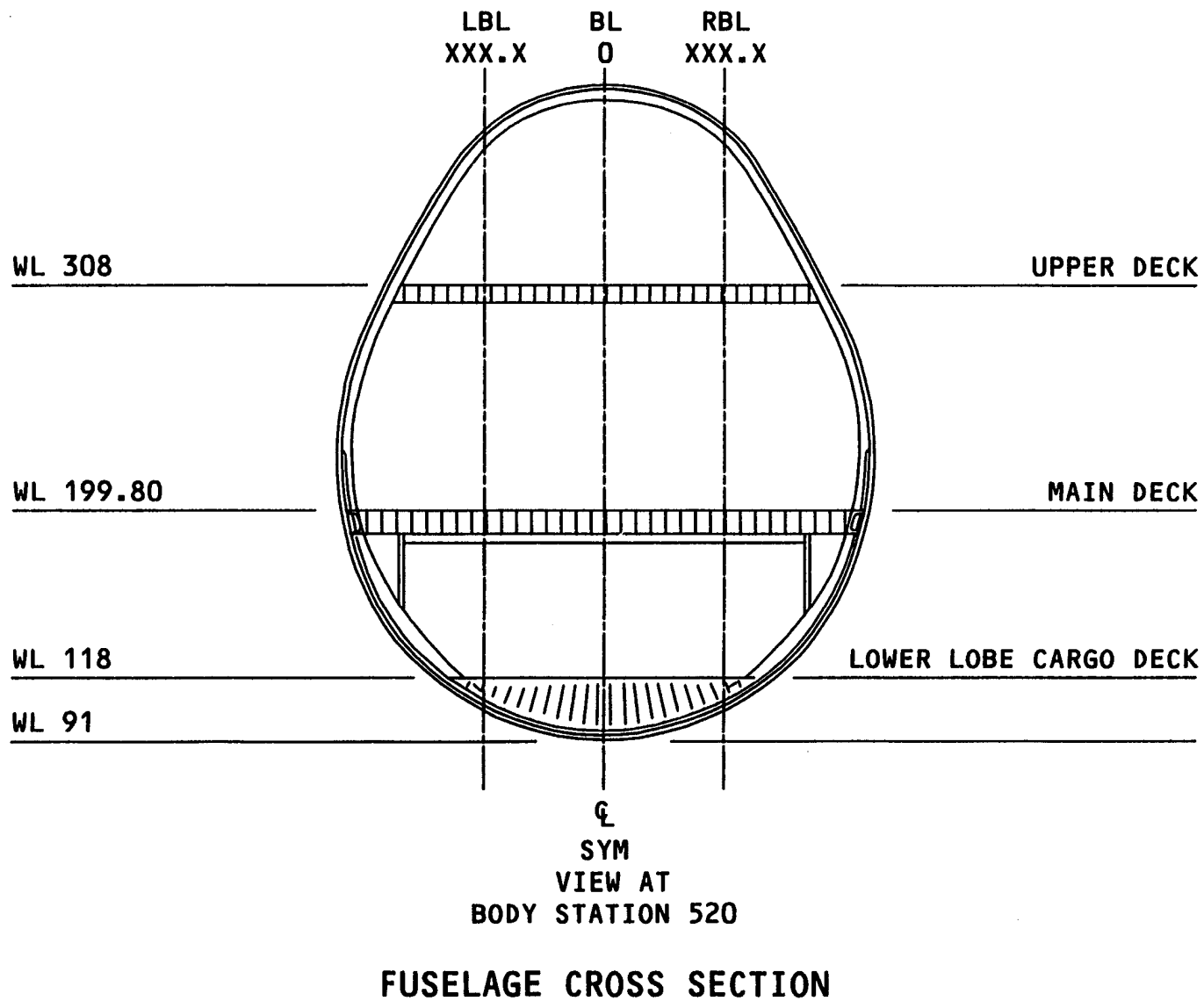
- Lower lobe cargo deck
- Main deck
- Upper deck

### Water Line

A water line is a horizontal line which establishes vertical distances from the bottom to the top of the airplane.

### Body Buttock Lines

Body buttock lines (or simply buttock lines) are vertical lines which establish lateral distance to the left and right of the body's vertical centerline. Left and right designations are always referenced facing forward in the airplane.





## DRAIN LOCATION AREAS

The drainage system on the 747-400 is similar to other jet transports. Through a network of plumbing, collectors and drains, fluids are removed from the internal structure of the airplane.

### Fuselage Drains

Drains are strategically located in the lower portion of the entire fuselage running from the nose to the tail. In extreme curves and angles of the tail, drainage is aided through the use of leveling compound, which prevents fluid pooling. Internal structure includes tubes, channels, dams and drain holes to direct the flow of fluids.

### Stabilizer Drains

The vertical stabilizer has drain ports in order to assure the removal of contaminating fluids. The horizontal stabilizer has many drains in the trailing edge of the stabilizer and just aft of the elevator leading edge.

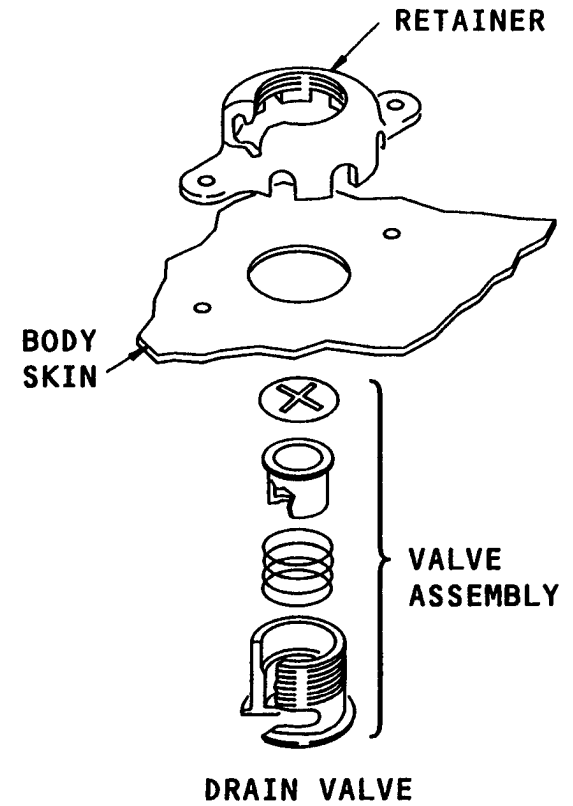
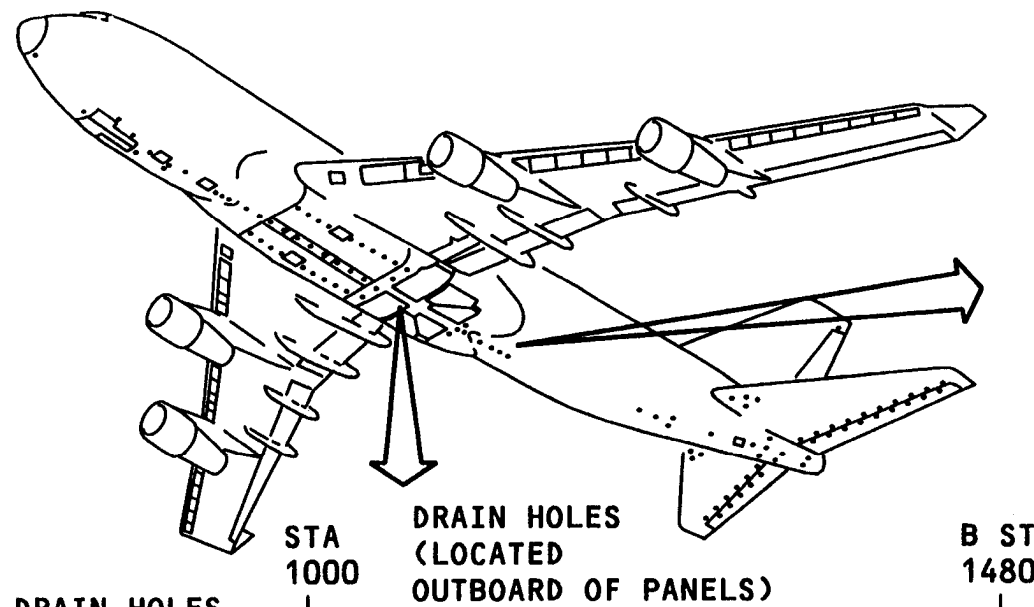
### Drain Valves

The airplane has some external drain valves. These valves are closed when the airplane is pressurized. When the airplane is on the ground and depressurized, the valves open and release all accumulated fluids. The external drain valve housings are riveted to the airplane skin. If any drain valve should fail, the valve assembly can be replaced.

### Maintenance Practices

Drain paths and drain holes must be inspected periodically to ensure they are clear of obstructions.

**CAUTION:** *WHEN CHECKING DRAINS WITH COMPRESSED AIR, ENSURE THAT PERSONNEL ARE WEARING PROPER EYE PROTECTION TO AVOID INJURY.*



DRAIN HOLES (SPACED RIGHT AND LEFT OF CENTERLINE)

FWD ←

EXTERNAL DRAIN FITTING

DRAIN HOLES

WING AND BODY GEAR WHEEL WELL DOORS

DRAIN HOLES (SPACED RIGHT AND LEFT OF CENTERLINE BETWEEN WHEEL WELLS) (SPACED AFT OF REAR SPAR)

### DRAIN LOCATION AREAS



## WING STRUCTURE

The wing surfaces develop aerodynamic forces for supporting the airplane in flight. The wing also stores fuel for flight, houses fuel system equipment, provides support for the engines and contains the flaps, spoilers and ailerons. The wings are swept back at 37.5 degrees and are of semi-monocoque construction. The right and left wings are joined by the wing center section which passes through the lower lobe section of the fuselage.

### Location References

Location references on the wing are indicated by a distance in inches from a base point along a specific reference line. The main reference lines for designating locations on the wing are the rear spar, inboard leading edge and the outboard leading edge. Wing stations (WS) are measured along the rear spar while the leading edge references are indicated by inboard leading edge stations (INBD LES) and outboard leading edge stations (OUTBD LES). Another location reference used on the wing is the distance from the center line of the fuselage designated as wing buttock lines (WBL).

### Main Frame Structure

The structure of the wing consists basically of the left wing box, the center wing box and the right wing box. Each wing structure is a network of forward, mid and aft spars interlaced with ribs and stringers. Wing skins are full length panels which vary in thickness from 20 mm at the root to 4 mm at the tip. The left and right wing boxes are similar in structure. The left and right wing boxes are cantilevered from the center wing box which is enclosed within the fuselage. The wings are permanently attached to the fuselage. The surfaces of the wing boxes and center wing box consist of three upper and five lower skin panels and front and rear spars. The left and right wing boxes extend from ribs at WBL 128 to the removable winglets.

### Access

Access into the wing structure is gained through removable access doors in the lower wing skin. Twenty-eight doors are installed in each wing. Nine of the doors are high impact resistance type and must be installed in specific locations. These are the inboard two of the inboard main fuel tanks and the inboard seven of the outboard main fuel tanks. Once inside the wings, further access is gained through holes, removable rib sections and removable structural access doors.

***WARNING: ENTRY INTO FUEL TANKS IS HAZARDOUS AND REQUIRES ADHERENCE TO THE SAFETY PROCEDURES***



