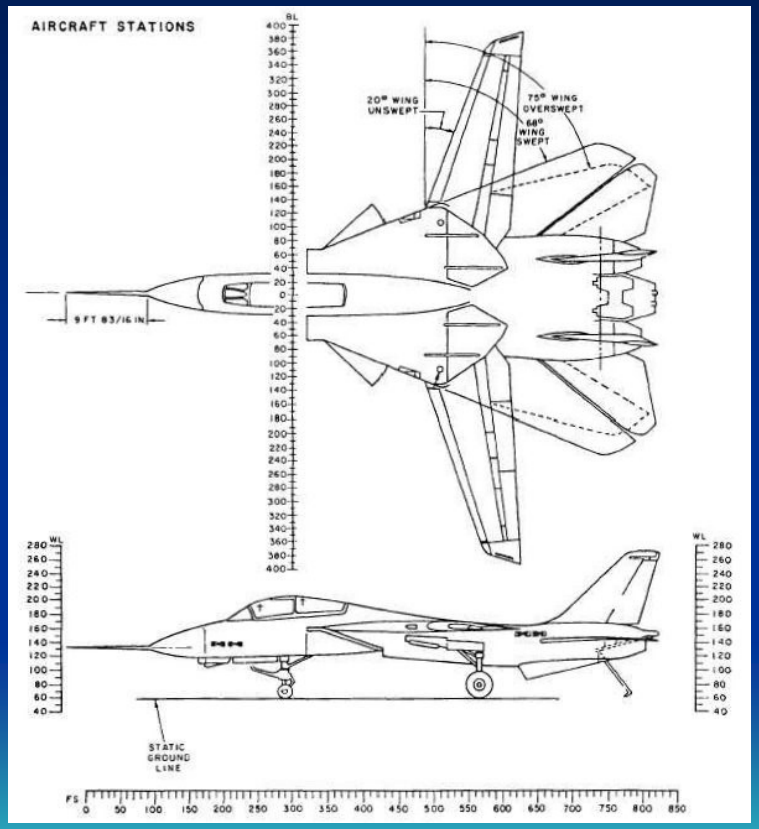
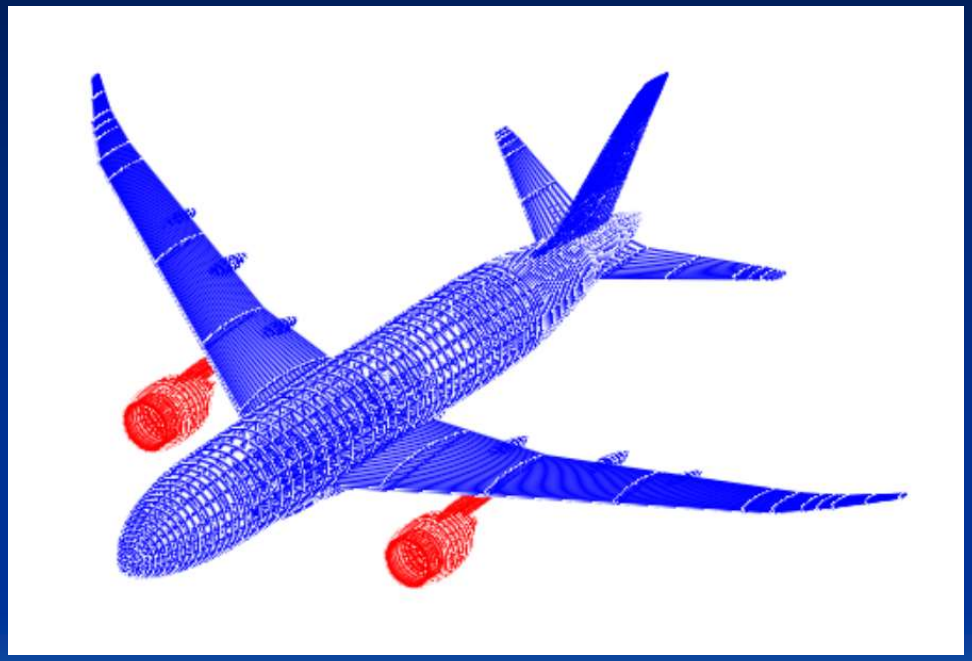
Chapter 7
Configuration Layout and Loft

Drawing Axes and Cutting Planes

- X-axis (+ve aft): Fuselage Station (FS)
- Y-axis (+ve to starboard): Butt line (BL)
- Z-axis (+ve up): Waterline (WL)



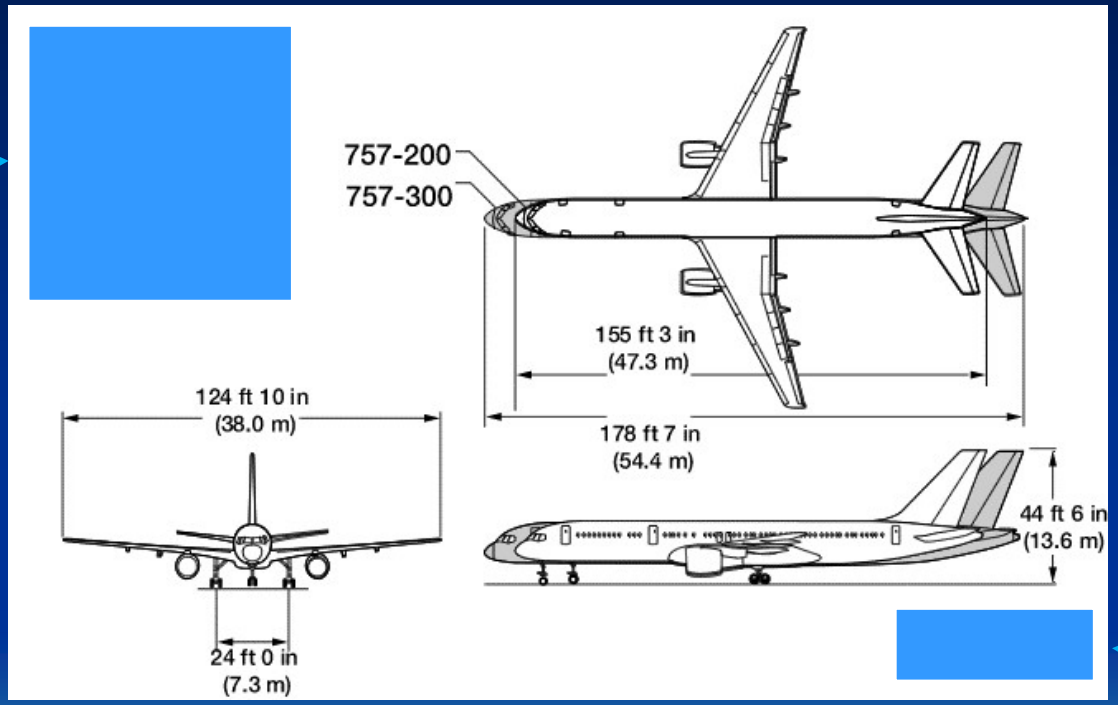
Outer Mold Line (OML)



- OML is definition of the outer surface of aircraft

Third-Angle ProjectionThree View

Put Characteristics Block here



Put Title Block here

Characteristics Block

Goes in top LHS of three-view

Characteristic	Wing	Horiz. Tail	Vert. Tail
Area (sq ft)			
Aspect Ratio			
Span (ft)			
Root Chord (ft)			
Tip Chord (ft)			
Taper Ratio			
M.A.C. (ft)			
Λ @ ¼ chord (^{0})			
t/c root			
t/c tip			
Dihedral (^{0})			

Design Takeoff Gross Weight (lb):

Engine Type:

Installed Takeoff Thrust SLS Std Day (lb):

Drawing Title Block

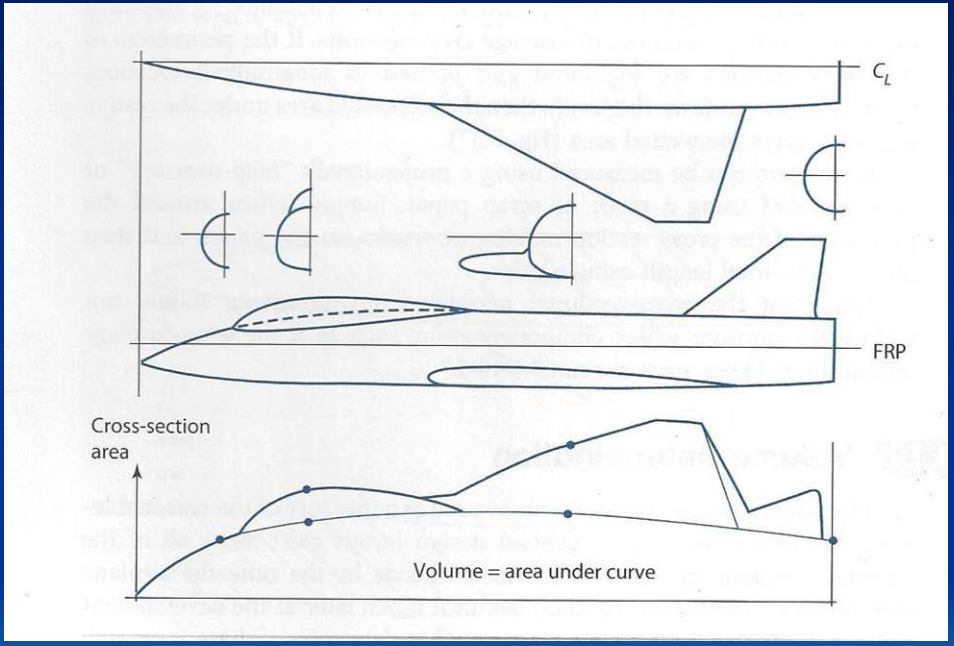
Goes in bottom RHS of drawing

Drawing Title	
Configuration Number	*Drawing Number*
Drawn By:	Approved:
Scale:	Revision No:
Date:	Revision Date:
Company Name	

Source: Schaufele

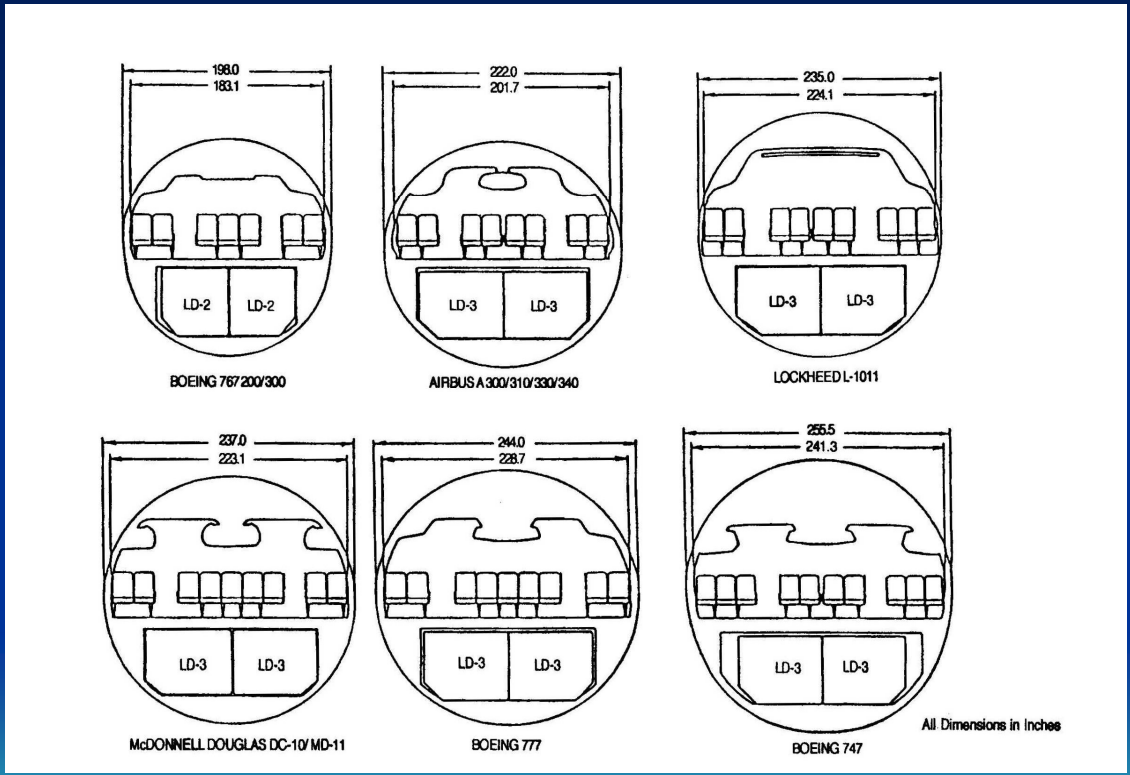
Area Distribution Plot

- For supersonic aircraft, want to approximate Sears-Haack body



Fuselage Cross Section

- Select fuselage diameter based on
  - Number of seats per row
  - Selected seat width
  - Required aisle width



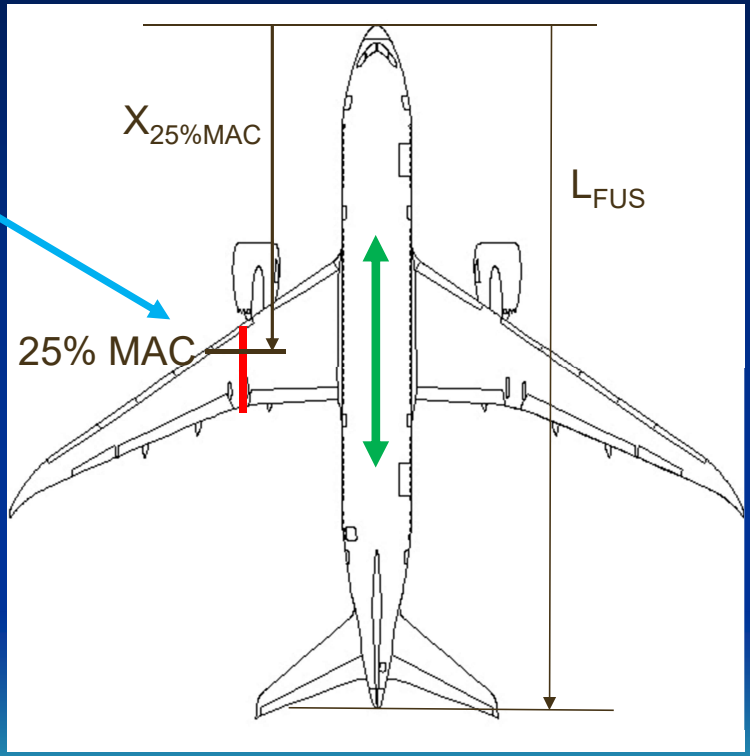
Source: Schaufele

Locating Fuselage Relative to Wing

25% MAC is aerodynamic reference point

Type of Aircraft	$X_{25\%MAC}/L_{FUS}$
Personal/Utility	0.35
Commuter	0.42
Regional Turboprop	0.42
Business jets	0.56
Jet transports – aft engines	0.55
Jet transports – wing engines	0.46
Military fighter/attack	0.59

Source: Schaufele



Configuration Layout and Loft
The End