

Figure C-A2.1 3D View of the Beech 99 Aircraft  
(Source: [www.aviastar.org/index2.html](http://www.aviastar.org/index2.html))

**Geometric Parameters and Typical Flight Conditions (see Appendix B, Aircraft 3)**

$Alt. = 5,000 \text{ ft}$ ,  $Mach = 0.31$

$V_{P_1} = 340 \text{ ft/sec}$ ,  $\bar{q}_1 = 118.3 \text{ lbs/ft}^2$ ,  $\alpha_1 = 0^\circ$

$S = 280 \text{ ft}^2$ ,  $\bar{c} = 6.5 \text{ ft}$ ,  $b = 46 \text{ ft}$

$\bar{x}_{CG} = 0.16$ ,  $W = 7,000 \text{ lb}$

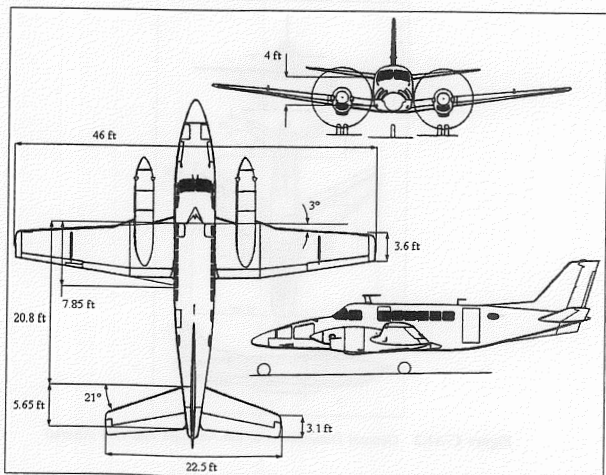


Figure C-A2.2 General Dimensions of the Beech 99 Aircraft

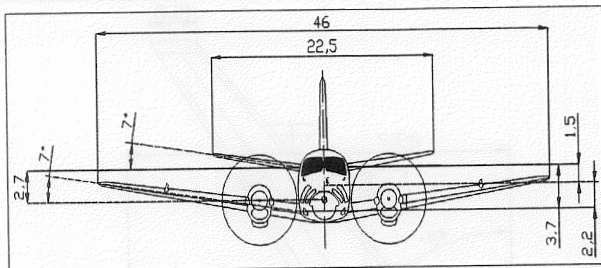


Figure C-A2.3 Front CAD View of the Beech 99 Aircraft

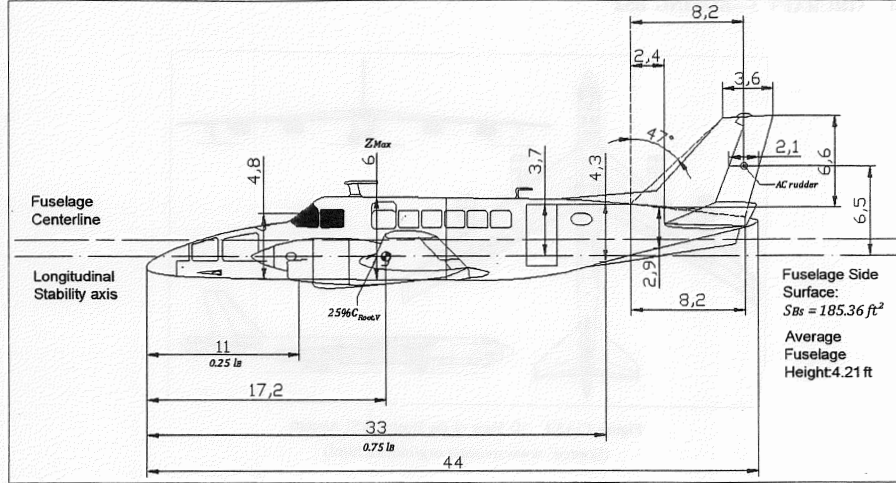


Figure C-A2.5 Side CAD View of the Beech 99 Aircraft

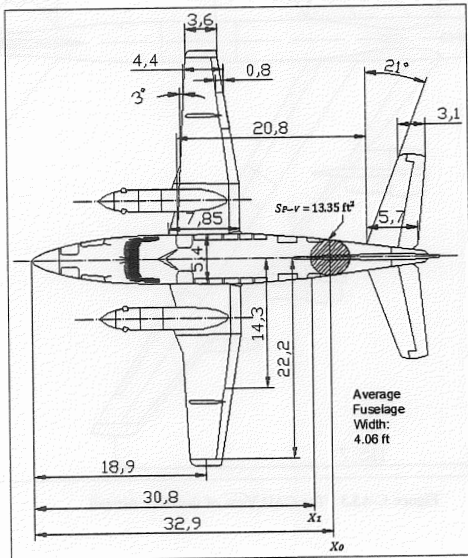


Figure C-A2.4 Top CAD View of the Beech 99 Aircraft

Table C-A2.1 Geometric Parameters for the Aerodynamic Modeling of the Beech 99 Aircraft

Geometric Parameters	B99 Aircraft	Geometric Parameters	B99 Aircraft
$A$ [ft]	18.9	$X_{HV}$ [ft]	2.4
$b$ [ft]	46	$X_{WHr}$ [ft]	20.8
$b_H$ [ft]	22.5	$X_1$ [ft]	30.8
$b_V$ [ft]	6.8	$y_{A_f}$ [ft]	14.3
$\bar{c}$ [ft]	6.5	$y_{A_O}$ [ft]	22.2
$\bar{c}_{Alleron}$ [ft]	0.8	$y_{R_f}$ [ft]	0
$\bar{c}_R$ [ft]	2.1	$y_{R_f}$ [ft]	6.8
$\bar{c}_{Wing(atAlleron)}$ [ft]	4.4	$y_V$ [ft]	3.7
$c_r$ [ft]	7.9	$Z_H$ [ft]	-1.5
$c_{r_H}$ [ft]	5.7	$Z_{R_S}$ [ft]	6.5
$c_{r_V}$ [ft]	8.2	$z_1$ [ft]	4.8
$c_T$ [ft]	3.6	$z_2$ [ft]	4.3
$c_{T_H}$ [ft]	3.1	$Z_{H_S}$ [ft]	-2.7
$c_{T_V}$ [ft]	3.6	$z_{max}$ [ft]	6
$d$ [ft]	6	$Z_W$ [ft]	2.2
$l_b$ [ft]	44	$Z_{WHr}$ [ft]	3.7
$l_{eg}$ [ft]	17.2	$\Gamma_H$ [deg]	7
$r_1$ [ft]	2.9	$\Gamma_w$ [deg]	7
$S$ [ft <sup>2</sup> ]	280	$\varepsilon_H$ [deg] (assumed)	2
$S_{B_S}$ [ft]	185.3	$\varepsilon_w$ [deg] (assumed)	2
$S_{f_{AVG}}$ [ft <sup>2</sup> ]	13.4	$\Lambda_{LE}$ [deg]	3
$S_{P-v}$ [ft <sup>2</sup> ]	13.4	$\Lambda_{LE_H}$ [deg]	21
$w_{max}$ [ft]	5.4	$\Lambda_{LE_V}$ [deg]	47
$X_{AC_R}$ [ft]	8.2		