Design, Analysis and Research Corporation (DARcorporation)

ERRATA: Airplane Design Part VI

Year of Print, 2004
(Errata Revised August 9, 2022)

Please check the website www.darcorp.com for updated errata

page 28, Line 3 — Should read ‘ ε_t = wing twist angle in radians, positive for wash-in …’

page 200, Figure 6.38 — Vertical axis units should be in 1,000 lb

page 205, Line 9 — Should read

‘ SHP_{av}	285	248	206	172	140
$\left(SHP_{av}\eta_{inl/inc} - P_{extr}\right)$	275	239	198	165	133
P_{av}	242	210	174	145	117’

page 212, Figure 7.5 — Vertical axis units should be in 1,000 lb

page 229, Equation (8.7) — Should read:

$$\Delta c_l = \eta_1 \left(c_{l_{\delta_{f1}}} \right)\left(\delta_{f1}\right)\left\{\frac{(c + c_1)}{c}\right\} + \eta_2 \left(c_{l_{\delta_{f2}}} \right)\left(\delta_{f1} + \delta_{f2}\right)\left(\frac{c'}{c}\right)$$

page 236 Figure 8.26 — Vertical axis values should be negative

page 239, Equation (8.19) — Should read: $\Delta c_{l_{\max}} = \left(c_{l_{\delta_{\max}}}\right)\eta_{\max}\delta_f\eta_\delta\left(\frac{c'}{c}\right)$

page 259, Line 9 — Should read ‘… leading edge flaps at $\alpha = 0$ may be estimated from:’

page 269, Equation (8.37) — Should read:

$$\eta_h = 1 - \left[\left\{\cos^2\left(\frac{\pi\, z_{h_{wake}}}{2\,\Delta z_{wake}}\right)\right\}\left\{2.42\sqrt{C_{D_{o_w}}}\right\} \Big/ \frac{x_{h_{wake}}}{\bar{c}} + 0.30\right]$$

page 269, Line 23 — Should read

‘where: $z_{h_{wake}} = a\sin\left(\gamma_h - \alpha - i_w + \varepsilon_h\right)$ (8.38a)

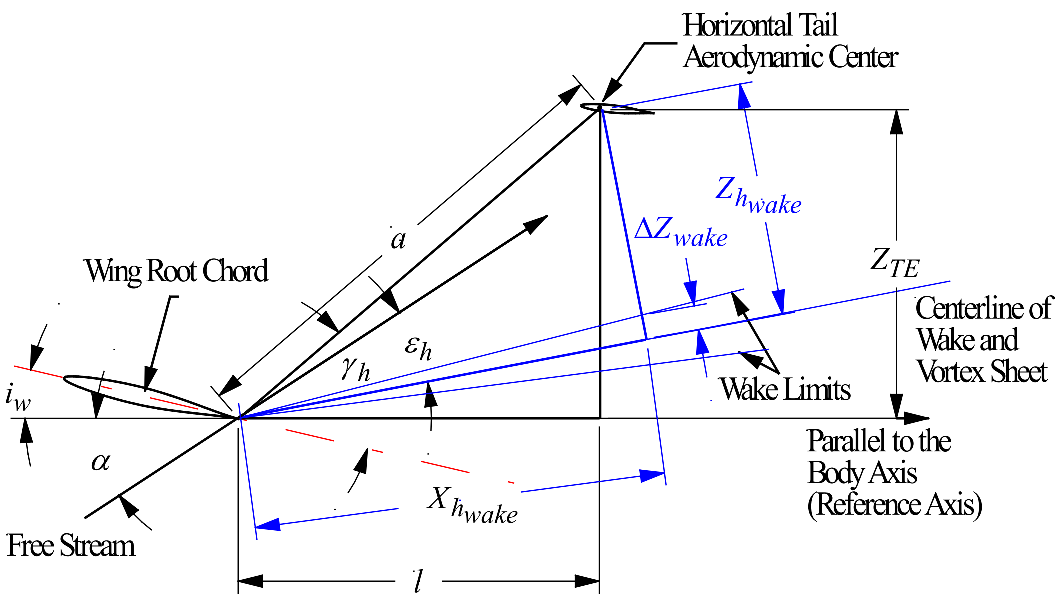
$$x_{h_{wake}} = a\cos\left(\gamma_h - \alpha - i_w + \varepsilon_h\right) \quad (8.38b)$$

with $a, \gamma_h, \varepsilon_h, i_w$ *and* α shown in Fig. 8.63.'

page 269, Equation (8.39) Should read: $\varepsilon_h = \varepsilon_{h_o} + \left(\dfrac{d\varepsilon_h}{d\alpha}\right)_{p.off} \alpha$

page 269, Equation (8.40) $\Delta z_{wake} = 0.68\bar{c}\sqrt{C_{D_{o_w}}\left(\dfrac{x_{h_{wake}}}{\bar{c}} + 0.15\right)}$

page 270, Figure 8.63 Should be



page 273, Figure 8.65c 'K_H' should be 'K_h'

page 273, Figure 8.65c '$\dfrac{2h_H}{b}$' should be '$\dfrac{2h_h}{b}$'

page 273, Figure 8.65c '$\dfrac{2l_H}{b}$' should be '$\dfrac{2l_h}{b}$'

page 273, Figure 8.65c '$K_H = \dfrac{1 - \dfrac{h_H}{b}}{\sqrt[3]{\dfrac{2l_H}{b}}}$' should be '$K_h = \dfrac{1 - \left|\dfrac{h_h}{b}\right|}{\sqrt[3]{\dfrac{2l_h}{b}}}$',

page 357, Table 9.1	Third row, second column '0.8' should be '-0.8'
page 390, Figure 10.16	'z_h= vertical distance…' should be 'z_h= vertical distance between the horizontal tail aerodynamic center to the fuselage center line'
page 398, Equation (10.44)	Should read: $$C_{n_{T_\beta}} = -\underset{i=1}{\overset{i=n}{Sum}}\left[\frac{\left\{\left(\frac{dC_N}{d\alpha}\right)_{p_i}\left(\frac{\pi}{4}\right)\left(D_{p_i}\right)^2\left(l_{p_i}\right)\right\}}{Sb}\right]$$
page 400, Equation (10.45)	Should read: $C_{n_{T_\beta}} = -\underset{i=1}{\overset{i=n}{Sum}}\frac{0.035 m_{a_i} l_{n_i}}{Sb\rho U_1}$
page 401, Line 19	Should read 'where: σ_{β_α} is the sidewash contribution due to angle of attack, in $\deg^{-1}$. It is found from Figures 10.30.'
page 401, Line 21	Should read 'α_f is the angle of attack of the fuselage, in $\deg$.'
page 401, Line 22	Should read 'σ_{β_Γ} is the sidewash contribution due to wing dihedral, in $\deg^{-1}$. It is found from Figures 10.31.'
page 401, Line 24	Should read 'Γ is the wing dihedral angle, in $\deg$, as defined in Figure 10.7.'
page 401, Line 26	Should read '$\sigma_{\beta_{\varepsilon_t}}$ is the sidewash contribution due to wing twist, in $\deg^{-1}$, as obtained from Figures 10.32.'
page 401, Line 28	Should read 'ε_t is the wing twist angle, in $\deg$, as shown in Figure 10.26.'
page 430, Figure 10.42	Vertical axis values should be divided by -4

page 435, Equation (10.89) Should read: $C_{D_{i_h}} = \frac{2C_{L_o}}{\pi Ae} C_{L_{\alpha_h}} \eta_h \frac{S_h}{S}$

page 435, Line 36 Should read 'where: C_{L_o} is the airplane zero-angle-of-attack lift coefficient follows from Eqn. (10.90).'

page 436, Equation (10.90) Should read:

$$C_{L_o} = C_{L_{o_{wf}}} + C_{L_{\alpha_h}} \eta_h \left(S_h/S\right)\left(-\alpha_{o_{L_h}} - \varepsilon_{o_h}\right) + \\ + C_{L_{\alpha_c}} \eta_c \left(S_c/S\right)\left(-\alpha_{o_{L_c}} - \varepsilon_{o_c}\right)$$

page 436, Line 3-7 Remove Line 3-7

page 439, Equation (10.97) Should read: $C_{D_{i_c}} = \frac{2C_{L_o}}{\pi Ae} C_{L_{\alpha_c}} \eta_c \frac{S_c}{S}$

page 439, Line 5 Should read 'where: C_{L_o} is the airplane zero-angle-of-attack lift coefficient follows from Eqn. (10.98).'

page 439, Equation (10.98) Should read:

$$C_{L_o} = C_{L_{o_{wf}}} + C_{L_{\alpha_h}} \eta_h \left(S_h/S\right)\left(-\alpha_{o_{L_h}} - \varepsilon_{o_h}\right) + \\ + C_{L_{\alpha_c}} \eta_c \left(S_c/S\right)\left(-\alpha_{o_{L_c}} - \varepsilon_{o_c}\right)$$

page 439, Line 8-12 Remove Line 8-12

page 461, Line 10 Following Line 10, should read 'For single vertical tail:

$$C_{y_{\delta_r}} = K_b C_{L_{\alpha_v}} \frac{S_v}{S} \left\{ \frac{c_{l_\delta}}{\left(c_{l_\delta}\right)_{theory}} \right\} \left(c_{l_\delta}\right)_{theory} \left(\frac{k'}{c_{l_{\alpha_v}}} \right) \left\{ \frac{\left(\alpha_\delta\right)_{C_L}}{\left(\alpha_\delta\right)_{c_l}} \right\} \eta_v \qquad (10.123a)\text{'}$$

page 461, Line 19 Following Line 19, should read 'For twin vertical tail:

$$C_{y_{\delta_r}} = 2\left(\frac{C_{y_{\beta_{v(wfh)}}}}{C_{y_{\beta_{v_{eff}}}}} \right) K_b C_{L_{\alpha_v}} \frac{S_v}{S} \left\{ \frac{c_{l_\delta}}{\left(c_{l_\delta}\right)_{theory}} \right\} \left(c_{l_\delta}\right)_{theory} \left(\frac{k'}{c_{l_{\alpha_v}}} \right) \left\{ \frac{\left(\alpha_\delta\right)_{C_L}}{\left(\alpha_\delta\right)_{c_l}} \right\} \eta_v \quad (10.123b)$$

Where: $\left(\dfrac{C_{y_{\beta_{v_{(wfh)}}}}}{C_{y_{\beta_{v_{eff}}}}} \right)$ is found from Figure 10.17'