$$THP_{a,L} = \frac{88}{33000}\left[\frac{\sigma A_D V^3}{391} + \frac{391\left(\frac{W}{b_e}\right)^2}{\pi\sigma V}\right]$$

$$THP_{a,L} = \frac{88}{33000}\left[\frac{\sigma A_D V^2}{391} + \frac{391\left(\frac{W}{b_e}\right)^2}{\pi\sigma (V)^2}\right] \cdot V$$

$$THP_{a,L} = \frac{88}{33000}\left[\frac{\sigma A_D V^2}{391} + \frac{391 W^2}{\pi\sigma V^2 {b_e}^2}\right] \cdot V$$

Which is similar to Formulas 23, but where to from here to obtain a fundamental understanding of its origin?

$$THP_{a,L} = \frac{88}{33000}\left[DS + \frac{391 W^2}{\pi\sigma V^2 {b_e}^2}\right] \cdot V$$

From Relation 5:

$$\begin{aligned} THP_a &= \frac{A_D {V_{max}}^3}{146625} \\ &= \frac{A_D {V_{max}}^2}{146625} V_{max} \end{aligned}$$

Given that air pressure ratio at sea level = 1 and,

$$\frac{1}{146625} v = \frac{88}{33000}\frac{1}{391}$$

$$THP_a = \frac{88}{33000}\left[\frac{\sigma A_D {V_{max}}^2}{391}\right] V$$

$$A_D = C_{D,0} S$$

$$THP_a = \frac{88}{33000}\left[\frac{\sigma\ C_{D,0}\ S\ {V_{max}}^2}{391}\right] V$$