

# EQUIVALENT FLAT PLATE AREA

$$D = \frac{1}{2} \rho V^2 (S C_D)$$

THIS IS THE EQ. FLAT PLATE AREA (EPPA) IN GENERIC TERMS

$$\Rightarrow f = S C_D$$

Q How is this used?

A

FOR WING SHAPE

$$f = C_f S_{WET}$$

↑  
EPPA in ft<sup>2</sup>

OR

$$C_{Df} = C_f \frac{S_{WET}}{S_{REF}}$$

↑  
C<sub>Df</sub> is REF TO S<sub>REF</sub>

NOTICE IT'S NOT REFERENCED TO S<sub>REF</sub>

FOR BODY

$$f = C_f [ ] S_s$$

↑  
EPPA in ft<sup>2</sup>

↑  
BODY WETTED AREA

$$C_{Df} = C_f [ ] \frac{S_s}{S_B}$$

↑  
REF TO MAX X-SECTION AREA

$$C_{D0} = C_f [ ] \frac{S_s}{S_B} \frac{S_B}{S_{REF}}$$

↑  
REF TO S<sub>REF</sub>

f is REPORTED IN SUMMARY TABLE

C<sub>D0</sub> TERMS ARE REPORTED IN SUMMARY TABLE AFTER REFERENCED TO WING.

$$C_{D0} = \frac{f}{S_{REF}}$$

↑  
UNIFORM AREA

Q How is it used?

① BOOK KEEPING

② CAN BE USED TO COMPARE DRAG BEFORE REFERENCING BACK TO WING.