a

p

T

v

L

D

G

p-a

p-a

Tcos(p)-Dcos(p-a)-Lsin(p-a)=0 (1)

Tsin(p)-Dsin(p-a)+Lcos(p-a)-G=0 (2)

vec(cos(p),sin(p)) -> Rotated by –a -> vec(cos(p-a),sin(p-a))

(3)

(1), (3) -> Tcos(p)-D(cos(a)cos(p)+sin(a)sin(p))-L(-sin(a)cos(p)+cos(a)sin(p))=0

Tcos(p)-Dcos(a)cos(p)-Dsin(a)sin(p)+Lsin(a)cos(p)-Lcos(a)sin(p)=0

cos(p)(T-Dcos(a)+Lsin(a))+sin(p)(-Dsin(a)-Lcos(a))=0 (4)

(2), (3) -> Tsin(p)-D(-sin(a)cos(p)+cos(a)sin(p))+L(cos(a)cos(p)+sin(a)sin(p))-G=0

Tsin(p)+Dsin(a)cos(p)-Dcos(a)sin(p)+Lcos(a)cos(p)+Lsin(a)sin(p)-G=0

cos(p)(Dsin(a)+Lcos(a))+sin(p)(T-Dcos(a)+Lsin(a))-G=0 (5)

Let c1=Dsin(a)+Lcos(a), c2=T-Dcos(a)+Lsin(a)

(4)-> c2cos(p)-c1sin(p)=0

(5)-> c1cos(p)+c2sin(p)-G=0

(4)\*c1-> c1c2cos(p)-c1c1sin(p)=0 (7)

(5)\*c2-> c1c2cos(p)+c2c2sin(p)-Gc2=0 (8)

(7)-(8) -(c1c1+c2c2)sin(p)+c2G=0

Sin(p)=c2G/(c1c1+c2c2)

Very large T => subst p back to (4). If it cannot be satisfied, Thrust-weight ratio may be greater than 1.