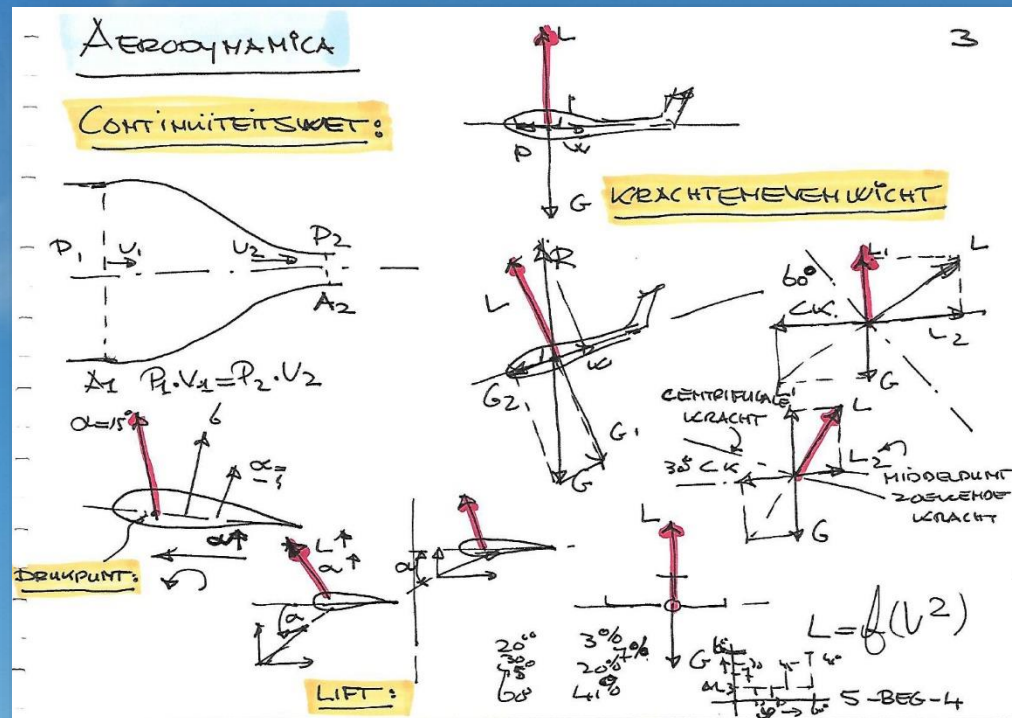


# Theorie van het Zweefvliegen

## Beginnelsen van het Zweefvliegen



# Beginnelsen van het Zweefvliegen

Martin W Smit

5

## 5 Beginnelsen van het Zweefvliegen

### Hoofdstuk indeling

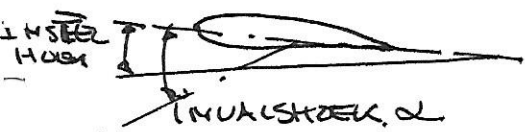
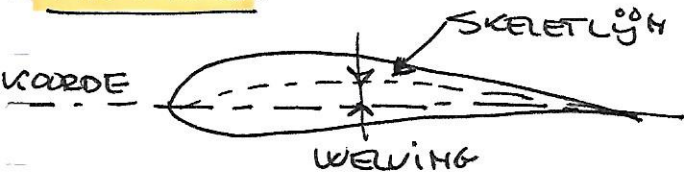
4	<b>5.1 Aerodynamica</b>
8	5.1.1 Draagkracht
13	5.1.2 Liftformule
14	5.1.3 Weerstand
20	<b>5.2 Vliegmechanica</b>
27	<b>5.3 Stabiliteit</b>
30	<b>5.4 Besturingssysteem</b>
30	<b>5.5 Beperkingen</b>
37	<b>5.6 Overtrek en Vrille</b>

# VLEUGELGEOMETRIE

**SLANKHEID** =  $\frac{\text{SPANWIJDE}}{\text{GEN. LENGTE}}$

$\lambda = \frac{S}{k_G} = \frac{S \cdot S}{k_G \cdot S} = \frac{S^2}{k_G \cdot S}$   
 (AREA)  $\rightarrow A$

**PROFIEL:**

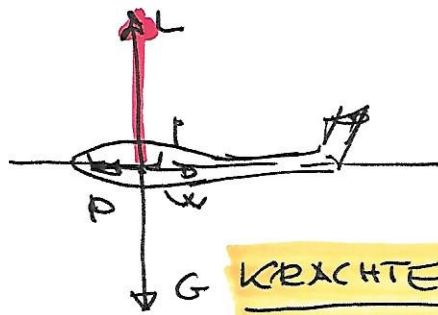
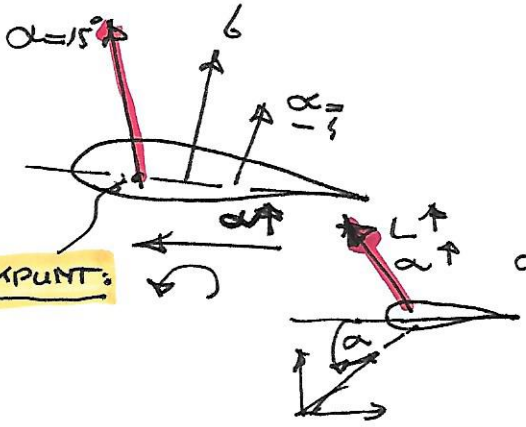


# AERODYNAMICA

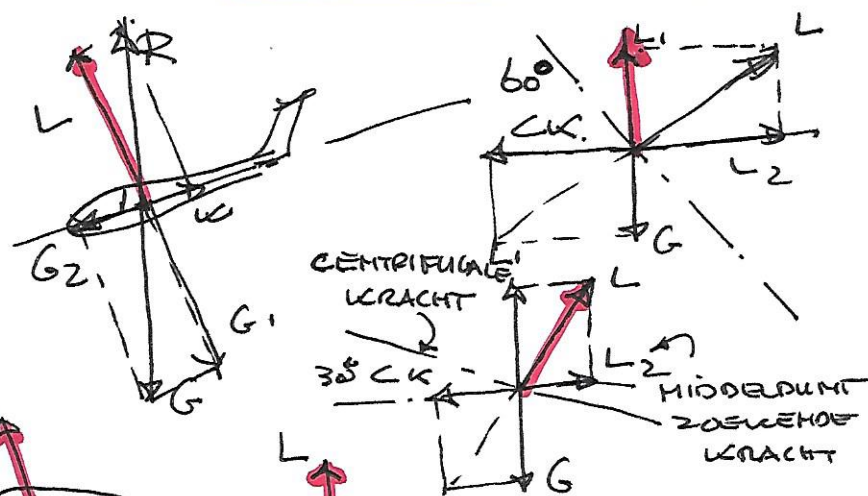
**CONTINUITEITSWET:**



$A_1 \cdot P_1 \cdot V_1 = P_2 \cdot V_2$



**KRACHTENEVENWICHT**



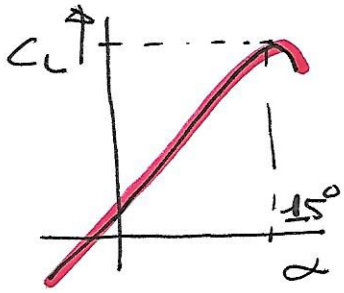
- 20%
- 30%
- 20%
- 41%
- 6%

$L = f(V^2)$



# LIFTFORMULE

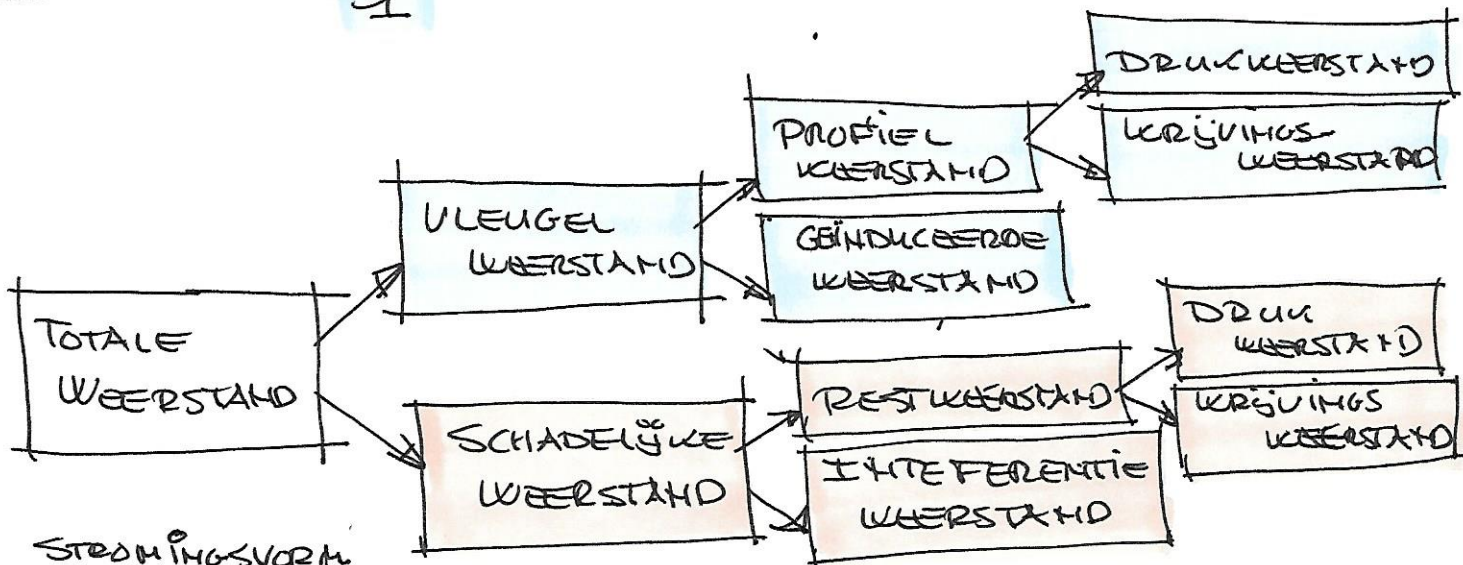
$$L = C_L \cdot \frac{1}{2} \rho U^2$$



$$U = U_{min} \cdot \sqrt{\frac{1}{\cos \alpha}}$$

# WEERSTAND

1



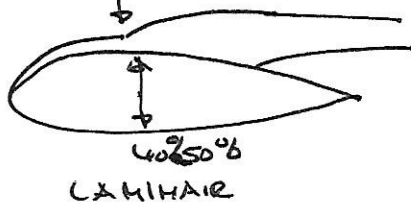
STROMINGSVORM

$$D = C_D \cdot \frac{1}{2} \rho U^2$$

OPPERVLAKTE  
RUWHEID

$\lambda_m < 0.02 \text{ m}$

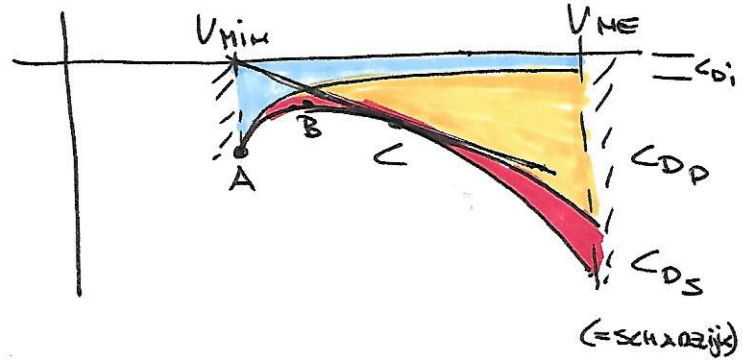
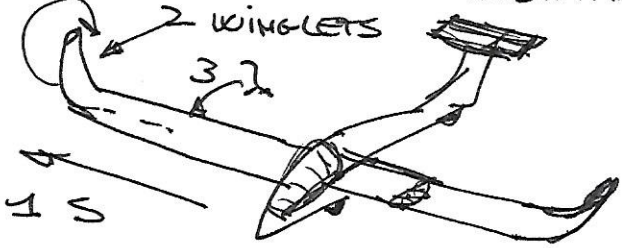
OMSLAGPUNT → U  
→ VORH  
→ RUWHEID



# WEERSTAND

2

## GEÏNOCULLEERDE WEERSTAND



5-BEG-18

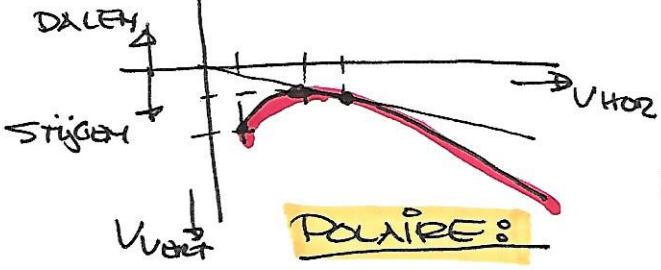
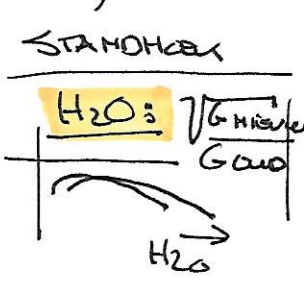
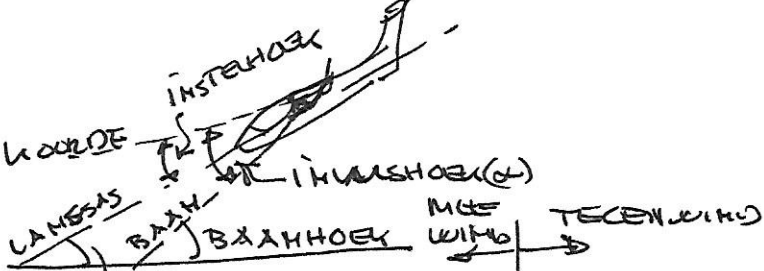
7

# VLIEGMECHANICA

## PRESTATIELEER:

STATIONAIRE VLucht

- RECHTJHIGE VL.
- BOCHT VL.

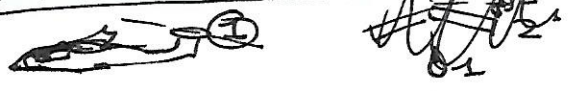


## VLIEGEIGENSCHAPPEN:

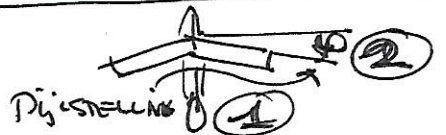
STABILITEIT:

- STABIEL
- INDIFFERENT
- ONSTABIEL.

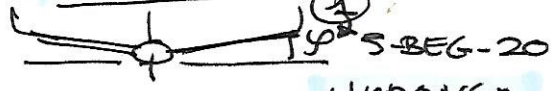
### LANGSTABILITEIT:



### RICHTINGSSTABILITEIT:



### ROLSTABILITEIT:



5-BEG-20

TURONG:

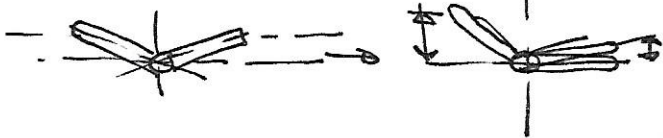
# STUURORGANEN

TRIM: KIELLUK  
VER

NEUW EFFECT:

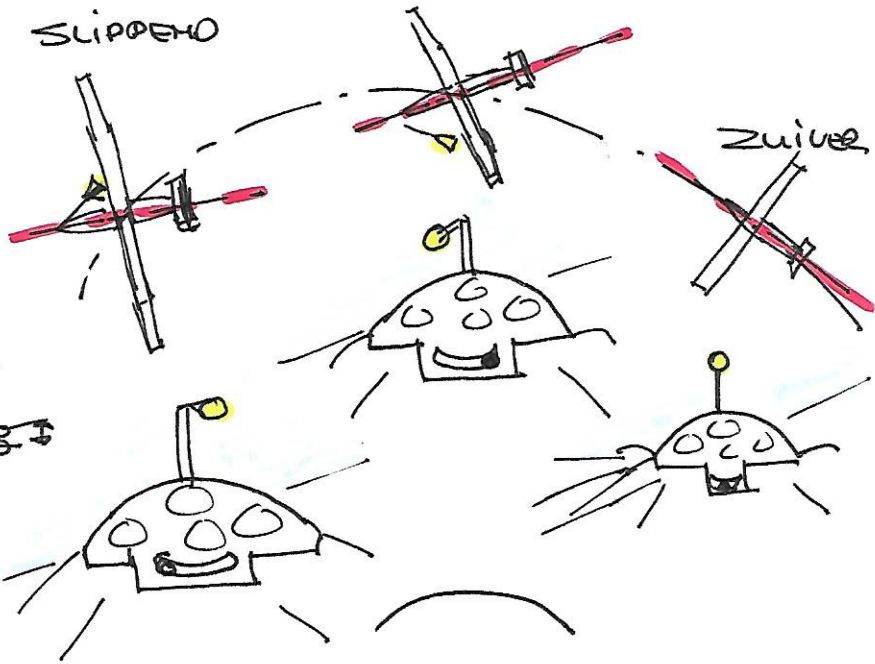
HAAK EFFECT:

DIFFERENTIALVER



SLIPPEND

SCHUIVEN



5-BEG-30

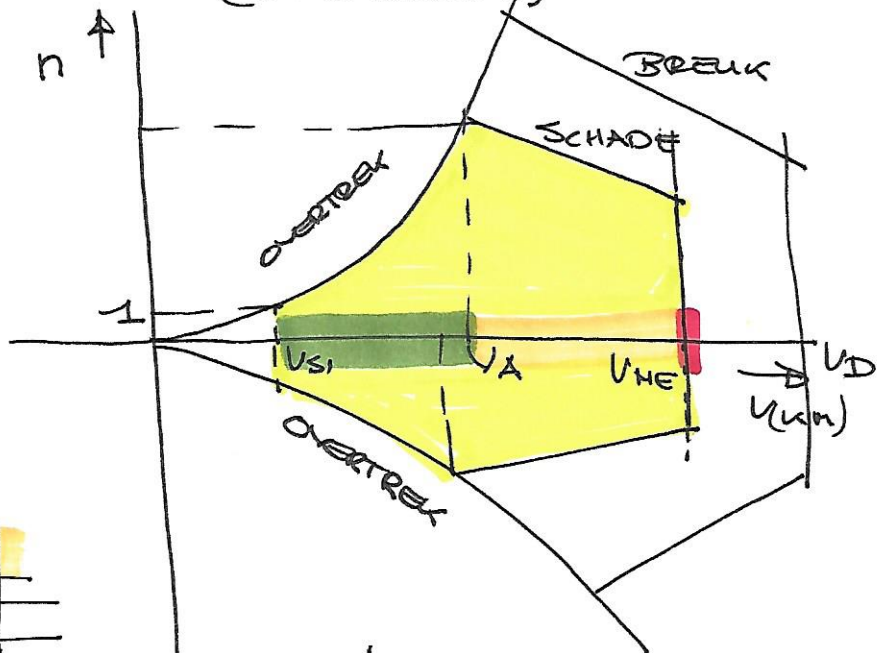
# BELASTINGFACTOREN

n = BELASTINGFACTOR

$$n = \left( \frac{V}{V_{STALL}} \right)^2$$

BELASTING → MANOUVEREER  
→ REMOUS

BELASTINGDIAGRAM:  
(= V-n DIAGRAM)



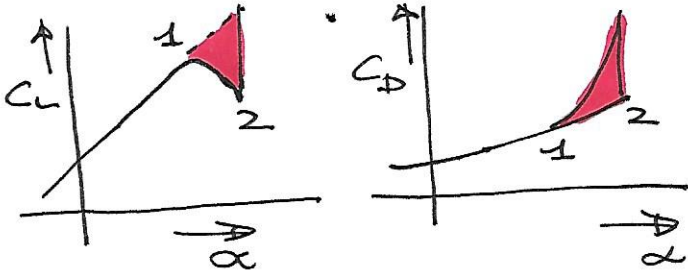
VA = MANOUVEREER Snelheid (URA = velocity rough air)  
VD = ONTWERPDUIK Snelheid

	Utility	AEROBATIC
VA+	+5,3	+7
VNE+	+4	+7
VA-	-1,5	-5
VNE-	-2,65	-5

5-BEG-33

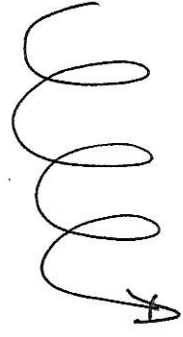


# Overtrek





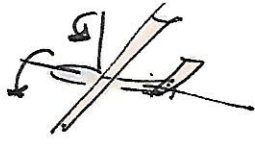
# Sprakeldek:

NIET-OVERTROKKEN.



ROLEN

# Verschijnselen:

- 1 -  $L \downarrow$  ~~↓~~
- 2 -  $D \uparrow$  ⇒ SCHUDDEN  

- 3 - 
- 4 -   
WEGSLIEN

5-BEG-37