RIGGING

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(Full page illustration of various bits of aeroplane rigging – shackles, airframe, barrel)

<u>RIGGING</u>



(Full page illustration of aeroplane rigging & wiring)

<u>RIGGING</u>



(Full page illustration of various bits of aeroplane rigging – wing sections)



(Illustration of aeroplane schematic & wiring)

- A C/S [illegible] wires
- B U/C "
- C Landing wires
- D Extension landing wires
- E King post or (cabane) Bracing wires
- F Flying wires
- G Auxiliary Flying wires
- H Extension " "

If flying wires in either front or rear bays fail, the lift is transferred from bay in which wires have failed to bay in which flying wires are still intact, the latter then transfers to fuselage (via [illegible] wires)



(Illustration of wing detail – leading & trailing edge, wiring etc)



(Illustration of detail of truing centre sections)

slip chean the air here bekins by asses spirally adownwords around fuelage scauses a down pressure on ball plane valeo opposes profo lorque Rudder Post - () Form ho is shut of fundage er is hinged to it (11) Ruchel (I) Forms attachment for pear span of tail plane to pig is to adjust. Control cables are most like to wear at fairleads of pulleys.

<u>Prop slip stream</u>: The air [illegible] by prop which passes spirally & downwards around fuselage & causes are down pressure on tail plane & also opposes prop torque. Rudder Post:

- (i) Forms No 11 strut of fuselage
- (ii) Rudder is hinged to it
- (iii) Forms attachment for rear span of tail plane

To rig is to adjust. Control cables are most likely to wear at fairlead & pulleys.



(Full page illustration)



(Detailed illustration of wing detail – wiring etc)



(Illustration of rudder)

Hight by the anofoic method: - is obtained by the forward motion of a place or accopoil through the air at an angle of meidence Lift varies as SiV2. Lift is the force at 1 to direction of notion Reasons for using a cambered planefi.e. a plane shaped like a brid's wing.):-() gives more lift because of air a deflected upwards at the leading (ii) Gives less drag because of less eddies being formed abecause the rear part of place gently tapers to a their lge.

<u>Flight by the Aerofoil method</u>: is obtained by the forward motion of a plane or "aerofoil" through the air at an "angle of incidence"

(Illustration of aerofoil)

Lift varies as SiV^2 Lift is the force at L to direction of motion <u>Reasons for using a cambered plane</u> (i.e. A plane shaped like a bird's wing)

- (i) Gives more lift because of air deflected upwards at the leading edge
- (ii) Gives less drag because unless eddies being formed & because the rear part of plane gently tapers to a thin edge

Drag: - is the name given to the forces wheel oppose the forward motion of mach through the an +always in the direction specifie to motion. This is composed of. (1) active drag caused by the places. (11) Passive drag Caused by the forward motion of the detrimental surfaces e.g. fuelage, undercarriage, mag shuts ele. (iii) this pretion caused by the pictures resistance of all surfaces to another through the air, Drag varies as 5 V2 Steps taken to reduce drag :-(1) active drag is reduced by - Camber (2) Massive drag -+by shaqqar. (3) Skin piction is reduced by polishing + Varnishing.

<u>Drag</u>: is the name given to the forces which oppose the forward motion of machine through the air & always in the direction opposite to motion.

This is composed of:

- (i) <u>Active drag</u> caused by the planes
- (ii) <u>Passive</u> drag. Caused by the forward motion of the detrimental surfaces e.g. fuselage, undercarriage, engine, struts etc.
- (iii) <u>Skin friction</u> caused by the frictional resistance of all surfaces to motion through the air.

Drag varies as SV²

Steps taken to reduce drag:

- (1) Active drive is reduced by: Camber
- (2) Passive drag " ": streamlining & by stagger
- (3) Skin friction is reduced by polishing & varnishing

ratio 20 20 Amelon rag. W WWW Jutal Foward plan Prisauce huder chue S metron above plane

<u>Lift; Drag Ratio:</u> is the ratio of Lift to Drag & expresses the efficiency of the plane

(Illustration of forces on plane creating drag)

6 schee io a back by the propell au than he an epeed it takes a el enal as the nota Causes: -Is ha drag on the parts of machine behand 1 the propeller a down pressure on the tail, 7. place torque party 3. Opposes propeller to scoring to the right a left. fu ouou Stils the 4. mach il

Propeller Slip Stream:

Is a stream of air forced back by the propeller at a greater speed than the air speed of the machine, it takes a slightly downward & spiral path in the <u>same</u> direction of rotation as the propeller. <u>It causes:</u>

- 1. Extra drag on the parts of the machine behind the propeller
- 2. <u>A down pressure on the tail plane</u>
- 3. Opposes propeller torque (partly)
- 4. Hits the fin on one side causing the machine to swing to the right or left

Forces acting on machine in horizental flightwhen L = G.] machine flues Flying speed: - The speed of the machine It which the lift force is equal to ' the force of pavily, the drag leing counteracted by the force of thrust. Landing effect - is the lowest speed at which the machine will fly without . loosing height Stalling: - is loosing flying speed + thereby loosing height on a skeep discent out of couhol.

Forces on machine in horizontal flight

(Illustration of forces on plane in horizontal flight)

Flying Speed:

The speed of the machine at which the lift force is equal to the force of gravity, the drag being counteracted by the force of thrust. Landing Speed:

is the lowest speed at which the machine will fly without losing height.

Stalling:

is loosing [sic] flying speed & thereby loosing [sic] height on a steep descent out of control.

actuating gear - This usually couses Ja wheel situated in the pelot's cockpit round which a coole news toa itted when to steel spar of 02 turing his whe raced or lowered the spar ellarie queut creasury angle on tall, Stalling .to loose flying ope cause machine to desee Controllebility + Stability: Controlabelity - is that quality of the aeroplane by reason of which direction valletude may bealled by the pelot. Matility: - is that quality in an acuplance by reaster of which it will return to its unal position derection + attitude when displaced without any action on the p the pilot.

Actuating gear:

This usually consists of a wheel situated in the pilot's cockpit round which a cable runs to a smaller wheel fitted to either front or rear main spar of tail plane & on the pilot turning his spar is either raised or lowered, consequently increasing or decreasing angle on tail plane.

Stalling:

is to loose [sic] flying speed & thereby cause machine to descend suddenly.

Controllability & stability:

<u>Controllability</u>: is that quality of the aeroplane by reason of which its direction & altitude may be altered by the pilot.

Stability:

is that quality in an aeroplane by reason of which it will return to its original position direction & attitude when displaced without any action on the part of the pilot.

I unetwind stability :- is stability about the vertical humang apis sis obtained by having more heel surface. the lunny axis than in po ugitudencie Stabelely! - is stability about antis vis obbarred the pansverse the bail plane in rear of the main places. This fail place is alw set at a less augle of meidence an deflected by the main planes than the angle of incidence of the u planes Heuselves. afelal stability." is the stability the longitudical axis n welling axis tis oblamed b (1) Lateral debedral angle. (ii) Alighty mon heel my are above centre of pravety them below.

<u>Directional stability:</u> is stability about the vertical turning axis & is obtained by the tail plane in rear of the main planes. This tail plane is always set at a less angle of incidence to the air deflected by the main planes than the angle of incidence of the main planes themselves.

Longitudinal stability: is stability about the transverse axis & is obtained by the tail plane in rear of the main planes. This tail plane is always set at a less angle of incidence to the air deflected by the main planes than the angle of incidence of the main planes themselves.

<u>Lateral stability:</u> is the stability about the longitudinal axis or rolling axis & is obtained by:

- (i) Lateral dihedral angle
- Slightly more keel surface above centre of gravity than below