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SIDESLIPPING

AIM

To teach the student how to sideslip an aeroplane.

INSTRUCTIONAL GUIDE

Sideslipping is still taught as some aeroplanes are not equipped with flap and the manoeuvre can be used if there is a flap failure or engine fire.

Aeroplanes fitted with flaps are normally not side slipped with flap extended except in an emergency. When sideslipping is taught in such aeroplanes these manoeuvres should be demonstrated and practiced with the flaps retracted.

Whilst the student is learning how to use the controls during a sideslip the manoeuvre should be practiced at height.

The student should be shown and convinced of the effect of sideslipping on the relationship between heading and track. This can be done by sideslipping along a railway track, straight road or some similar feature on the ground.

PRE-FLIGHT BRIEFING CONSIDERATIONS

A sideslip is a manoeuvre in which the aeroplane is in a banked attitude with the natural tendency to yaw reduced or prevented.

Explain that a sideslip is not a normal condition of flight. The lateral stability of the aeroplane tends to reduce the angle of bank; the ailerons must therefore be used to maintain the desired angle of bank. The directional stability tends to turn the aeroplane into the direction of the slip (refer the student back to the further effect of aileron). The rudder is used to prevent or reduce this tendency. The ailerons are usually effective for their purpose but on many aeroplanes the rudder is unable to counteract the weathercock stability even at small angles of bank. The limiting factor in a sideslip is therefore usually rudder.

APPLICATION IN FLIGHT

The practical applications of the sideslip are:

- (a) sideslip into wind; and
- (b) slipping turn

Brief the student on the method of use of the controls in each of the sideslips you intend to teach. Demonstrate the method of entry - bank with aileron - rudder to prevent yaw - elevators to maintain speed. Stress that during the recovery airspeed must be maintained. Also point out that plenty of height is necessary to ensure safe recovery due to the inertia of the aeroplane.

AIRMANSHIP

As always a good lookout must be maintained.

A safe airspeed must be maintained during the whole manoeuvre and especially during the recovery. Flight manual limitations and/or pilot operating handbook recommendations on sideslipping must be complied with.

Ensure the student is aware of the possibility of fuel starvation in a prolonged sideslip with a low fuel quantity and the 'low wing' fuel tank selected.

AIR EXERCISE

- (a) Effect of controls during a sideslip
- (b) Sideslipping into wind
- (c) Slipping turn



EFFECT OF CONTROLS DURING A SIDESLIP

Bank the aeroplane and apply opposite rudder to counteract the tendency to yaw and to control the direction of descent.

Keep the bank constant and maintain the correct nose position, and thus speed, by use of the elevators. Adjust the rudder pressure as necessary to maintain direction.

Point out to the student the instrument indications, especially the state of unbalance and the rate of descent.

To obtain a greater rate of descent, increase the angle of bank. Notice that more rudder is needed to overcome the tendency to yaw. A limit is reached when full top rudder is applied and if the bank is further increased the nose of the aeroplane will yaw towards the lower wing. To recover, level the wings with aileron, control the yaw with rudder, use the control column to maintain the correct gliding speed.

When the student is competent at performing this exercise at altitude carry out the practical applications of the sideslip at low level.

SIDESLIPPING INTO WIND

Choose a line feature, such as a railway line or a road, which is into wind. Put the aeroplane into a sideslip so that it tracks parallel to the selected feature, pointing out that the heading of the aeroplane is at an angle to its path over the ground and that any change in the angle of bank or the amount of rudder being used will produce a flight path which is not parallel to the line feature. Recover as before.

THE SLIPPING TURN

Put the aeroplane into the glide on the base leg of a simulated or actual circuit and roll into a gliding turn. Apply sufficient opposite rudder to cause a slip, controlling the angle of bank with the ailerons and the speed with the elevators and turn until lined up with the selected landing path.

Demonstrate that a slipping turn may also be commenced by banking and sideslipping the aeroplane then controlling the rate of turn with rudder and elevators.

Recovery from the slipping turn is as from a gliding turn but even more height must be allowed for recovery owing to the rate of descent normally being higher than in a straight sideslip.

COMMON FAULTS

Students often apply too much rudder for the angle of bank utilized. Explain that only sufficient rudder should be used in relation to the angle of bank.

Since a common tendency is to lose speed during the recovery, emphasize the need to monitor the IAS during the recovery.