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AEROPLANE AND AIRCRAFT EXPERIMENTAL ESTABLISHMENT,

BOSCOMBE DOWN.

Airacobra A.H. 573
(Allison V.1710 E.4)

Preliminary Handling

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NOTE: This Report is compiled from pilot's notes after only a very few hours experience on the type. The aeroplane was passing through this Establishment on its way to a Service Unit, and an attempt has been made to cover as much ground as possible from the few flights completed. It is possible, therefore, that in the light of further experience, certain impressions may be altered and different opinions may later be expressed.

HANDLING TRIALS.

1. Cockpit:

1.1 Comfort and ease of entry: Entry to the pilot's cockpit is difficult on the ground especially when the engine is running (it has to be kept running at 1000 - 1200 R.P.M. to minimise vibration). One handhold is provided to pull oneself on to the main plane, but no further grip is available until the cockpit door offers a hold. A handhold midway between the door and the grip already provided would make the entry much easier. Entry into the cockpit itself is not easy as the roof is low and does not open. There is no method of keeping the door open while entering the cockpit, for which the use of both hands is very desirable. Any device which could be incorporated, would be an improvement.

The cockpit is small and only suitable for medium and small sized pilots, there being no head clearance for a tall pilot; it is understood that this is already appreciated and that the seat is being lowered.

Exit on the ground is not difficult, but in the air it is considered a satisfactory parachute exit would be very difficult compared with a type where the hood can be jettisoned. The cockpit is slightly less noisy than that of a Spitfire. The pilots have not had sufficient flying time on this aeroplane to comment on the heating of the cockpit. Two sliding windows are provided for ventilation. With both shut, no fumes or stuffiness were apparent in a flight of one hour.

1.2 View: The view is very good in all directions except straight ahead, where it is spoiled by the metal top of the bullet-proof windscreen and the metal frame of the cabin top. It would be greatly improved if it were possible to lower the position of the pilot. When flying in rain the forward view is completely obliterated by the film of water formed; there is no clear view panel fitted.

1.3 Controls: The elevator and rudder controls operate without undue friction but there is excessive friction in the aileron control which increases with the angle of movement. Full movement of all controls can be obtained when the pilot is dressed in complete flying clothing. The elevator trimming wheel is on the left hand side of the pilot, and is satisfactory. The indicator is not easily seen owing to its position which is close in to the seat. The rudder bias gear is a large knob situated to the rear of the elevator trimming wheel. Owing to the lack of space it is difficult to operate, but otherwise it is satisfactory. The aileron bias gear is situated forward of the elevator trimming wheel and low down on the left hand side of the cockpit. It cannot be reached by the pilot when he is strapped in tightly. After slackening the harness the pilot has to lean down to reach it. It would be better re-positioned higher. The throttle, mixture and airscrew controls are on one quadrant in the conventional manner and are satisfactory. There is no adjustable friction grip on the throttle which slips back a little. The petrol cock is badly positioned forward and to the right of the aileron bias, and is extremely difficult to reach even when the pilot's straps are released. The radiator shutter control is worked by a crank handle on the right side of the seat and is easy to operate.

The flaps are operated electrically by a 3-position tumbler switch situated in the front left corner of the cockpit. The indicator consists of a pointer moving over a scale graduated in quarters. Criticism is made of the fact that there is no alternative method of lowering or raising the flaps in the event of the electric failing.

The undercarriage is operated by a second 3-position tumbler switch next to the flap control, but, in this case, a second method of operation, consisting of manual control, is provided. A selector switch is provided and

the pilot selects
type of indicator
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the pilot selects either "electric" or "manual". There is the usual pictorial type of indicator, and, in addition, a visual indicator to show when the wheels are locked down. There is no indication that they are locked up.

1.4 Brakes: These are operated by pedals above the rudder bar, and are easy to operate. A locking device is provided for parking. The effectiveness of the brakes cannot be commented upon, as on this aeroplane trouble was experienced with them.

1.5 Instruments: No standard blind flying panel is fitted. All instruments are clearly visible and the layout is satisfactory.

1.6 Emergency exits: Exit from the aeroplane in the air can only be made through the door in the side of the cockpit. It is considered that it would probably be satisfactory, although there is some danger of hitting the tail plane.

2. Handling and Flying Qualities:

The aeroplane has been flown at an all-up weight of 7,850 lb. and C.G. 20.6 inches aft of the datum point.

2.1 Ground handling: Taxying is very easy and even over rough ground is comparatively smooth and comfortable. The shock absorbing qualities of the undercarriage are satisfactory. However, the handling of the aeroplane on the ground is entirely dependent on the efficiency of the brakes. In the event of them failing, it would be extremely difficult to control the aeroplane.

2.2 Take-off and initial climb: The take-off is straightforward, with a slight tendency to swing to the left as the engine is opened up. However, this can easily be checked by use of the rudder. The take-off speed is about 100 m.p.h. A.S.I. whilst the initial climb was made at about 140 m.p.h. A.S.I. The undercarriage can be raised as soon as the aeroplane leaves the ground, the time for the undercarriage to retract completely being about 15 seconds. There is no noticeable change of trim as the undercarriage is raised. The optimum flap setting for take-off has not been determined, and during the trials about 15° of flap was used. Raising the flaps gave rise to a slight sink, though this was not excessive.

2.3 Controls: The rudder and elevators are light, quick in response, and effective. The ailerons which are fabric covered, are light in normal flight but become very heavy in the dive at speeds in excess of 300 m.p.h. A.S.I. They are comparable with the fabric covered ailerons on a Spitfire Mk.I.

/Stability

shown before the aeroplane

2.4 Stability: Stability tests have not been carried out, but from pilot reports the aeroplane appears to be stable throughout the speed range.

2.5 Stalling speeds:

	A.S.I. (m.p.h.)
Flaps and undercarriage UP	105
" " " DOWN	88

There is no warning of the stall; at 105 m.p.h. A.S.I. there is a slight wallowing and then the nose drops gently. With flaps and undercarriage DOWN the left wing drops gently at the stall, followed by the nose.

2.6 Aerobatics: Very brief tests only have been carried out, but the pilots report that aerobatics can be done with ease, and are quite normal.

2.7 Approach and landing: The best gliding speed is about 110 m.p.h. A.S.I. with engine. The approach and landing is straightforward and easy. The landing should be carried out by holding the nose up as long as possible. In this way the touch down speed and landing run are much reduced. However, the aeroplane can be landed easily by flying it on to the ground for a three-point landing.

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speed range.



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