

REPORT ON INVESTIGATION OF TURNING CIRCLES OF  
M.E.109, SPITFIRE AND HURRICANE

by

Wing Commander G.H. STAINFORTH

200 and

1. I was flying at 2000 metres at 160 - 240 m.p.h. In each case the Hurricane started behind the Messerschmitt and the Messerschmitt went into the turns as quickly as possible and tried to out-turn the Hurricane on the level or slight downward spiral at about 3-4G. Tightening up beyond a certain point resulted in the slots opening unevenly and lateral flicking and slowing down of the rate of turn. The maximum rate of turn was obtained with the slots just about opening, either both just closed or both just open, and at the maximum rate of turn the Hurricane remained close to my tail. In each case the throttle was opened fully after the turn was started and for one or two turns the airscrew pitch was set to give 2600 - 2700 r.p.m., i.e. 11.30 on the clock-face pitch indicator, as for take-off.

2. I then started two or three more runs on the tail of the Hurricane, and was out-turned within about one complete turn. Attempts were made to fly straight away in order to leave the Hurricane far enough behind to turn round quickly, gaining height to make an attack before the Hurricane was close enough to turn on to my tail; but this took too long, as the Messerschmitt only gained about one mile in about 30 miles and so the turn was made too close, with the result that the Hurricane succeeded in getting on my tail straight away.

3. The Messerschmitt appears to be only slightly faster than the Hurricane; in fact the Hurricane was not apparently flying full throttle.

4. These runs were then repeated in exactly the same way against the Spitfire as follows:-

1, 2 and 3 at 160, 220 and 240 m.p.h.

We then repeated the first run with the Messerschmitt starting on the Spitfire's tail but the Spitfire out-turned the Messerschmitt almost as easily as the Hurricane. A converging attack was then made, each aircraft attempting to get on the other's tail. The result was the same, the Spitfire quickly gaining the advantage and getting on the tail of the Messerschmitt. Increasing the speed in a downward spiral would not have had any advantage as the opposing aircraft would also have done the same. The rate of turn obtained was the maximum possible in every case. The effect of putting flaps down about 10° was tried but this had little, if any, effect.

5. It was found that if an attempt was made <sup>(a)</sup> to dive on the opposing aircraft at high speed, pulling up at it when it started the turn, or <sup>(b)</sup> an attempt to dive away from it in trying to escape, and then pulling up to turn round at it, the slots would open singly even at very high speeds, with the result that the aircraft did a violent flick, almost on its back, in a spiral dive.

Archives of M. Williams

6. Water temperature remained very high during these tests - over 120°C.

7. Although the aileron control was very good up to moderate speeds -- the aircraft is generally extremely unmanoeuvrable owing to -

- (a) Its large turning circle.
- (b) Impossibility of tightening up the turn, <sup>owing</sup> ~~due~~ to the uneven opening of slots, and the tendency of the wings to stall unevenly, resulting in flick, and the slowing down of the rate of turn.
- (c) Extremely heavy aileron control at high speed.

8. No advantage was found, <sup>(180°)</sup> in attempting to flick during the turn in order to turn ~~300°~~ rapidly (with slight loss of height, the object being to pull up from underneath the opponent from a favourable position) because a tight pull-up could not be done for the reasons described above.

9. The pilot of the Spitfire reports that he had no difficulty in "sitting on" the Messerschmitt's tail, but could, in fact, have steepened up his speed quite a lot more and got well on the inside. He was at +5 boost - almost full throttle.

tightest of his turn.

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