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It should be noted that the reversal speeds quoted in this note have been worked out on a slightly different basis to that in previous reports^{1,2}. In the latter no correction has been made for compressibility, and the fractional loss in rolling velocity is then given by $1 - V_1^2/V_T^2$. On the new basis, besides getting rather more accurate values for the loss in rate of roll, the reversal speed deduced from flight measurements is directly comparable to that calculated from wing torsional stiffness tests and assuming incompressible fluid theory.

5. Conclusions

(i) The F.W.190 has very good rolling qualities over its whole speed range. In this respect it is about the same as the clipped wing Spitfire V.

(ii) The steady rate of roll at 400 m.p.h. E.A.S. for 50 lb. stick force is 75 degrees per second. This is almost up to the standard laid down in A.D.M.295.

(iii) The aileron reversal speed is about average: 760 m.p.h. E.A.S.

(iv) Kb_2 for the ailerons is -0.11, and does not vary appreciably over the speed range 200 m.p.h. to 400 m.p.h. E.A.S. or the angular range $\pm 10^\circ$.

REFERENCES

<u>No.</u>	<u>Authors</u>	<u>Title, etc.</u>
1	-	Interim note on fighter aileron comparison Spitfire and Mustang. R.A.E. Technical Note No. Aero 1001. August, 1942.
2	Alston.	Interim note on fighter aileron comparison - Typhoon. R.A.E. Technical Note No. Aero 1124 (Flight). January, 1943.
3		Effect of clipping the wings on the manoeuvrability of the Spitfire V. To be published shortly.

TABLE 1
Aerodynamic data. F.W.190

Wings

Gross wing area		205.5 ft. ²
Span, 2s		34.5 ft.
Mean chord		5.95 ft.
Aspect ratio		5.8
Taper ratio		2:1
Sweepback of $\frac{1}{4}$ chord line		3°
Dihedral		5°
Thickness/chord ratio	Root	0.132
	Tip	0.106

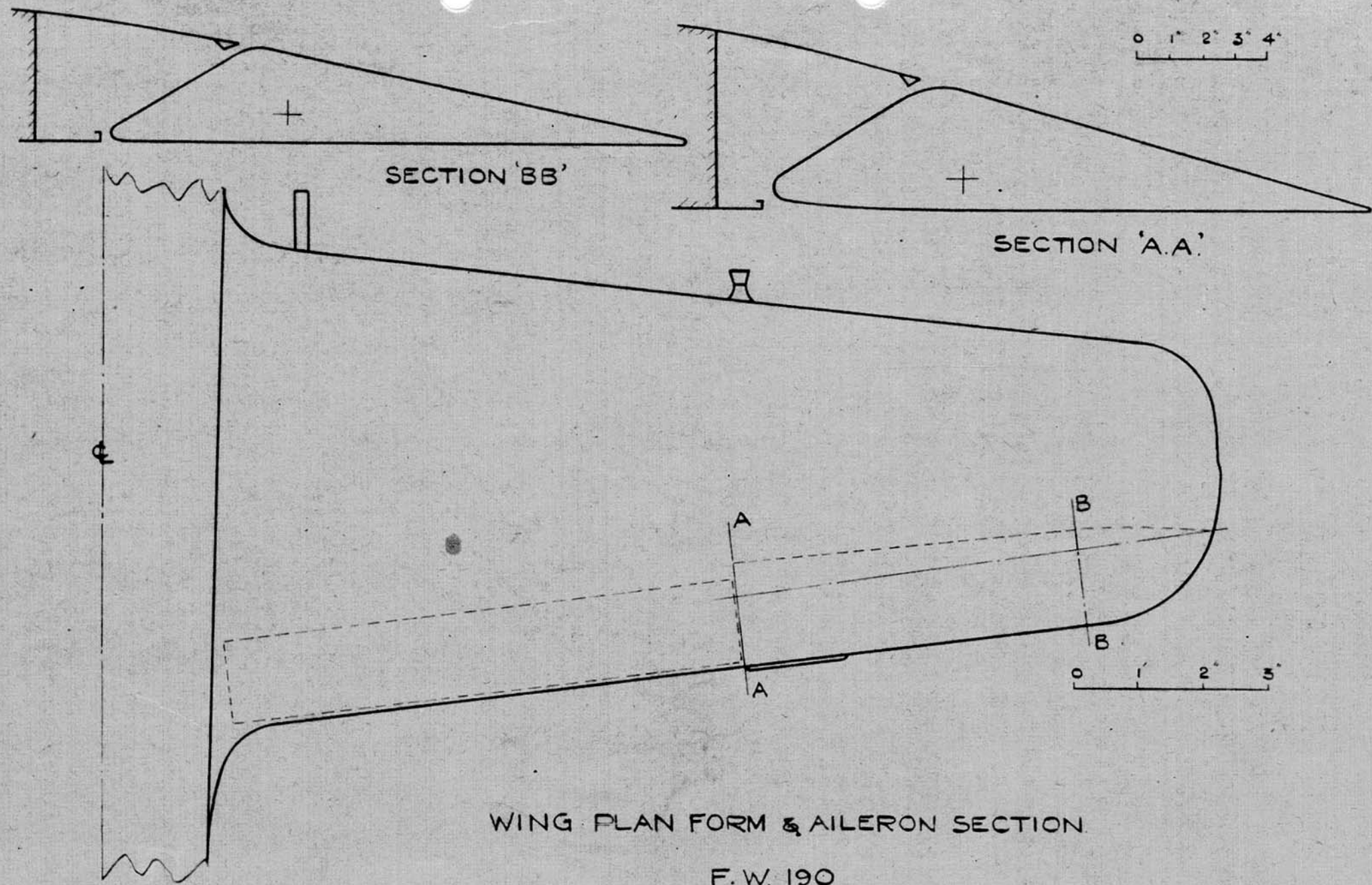
Ailerons

Type		Frise
*Aileron area/wing area (2 ailerons)		0.070
*Mean chord		0.97 ft.
*Mean chord/local wing chord		0.20
Spanwise limits (each aileron)		0.57s to 1.0s
*Percentage balance		40.5
Nose gap		0.3 in.
Shroud gap		0.25 in.
Trailing edge angle		14°
Stick gearing		3.2 deg. in. ⁻¹
Fixed trim tabs - chord		0.7 in.
	span (each)	18 in.
Maximum aileron angles		±17°
Droop (on ground)		0°

Aft of aileron hinge

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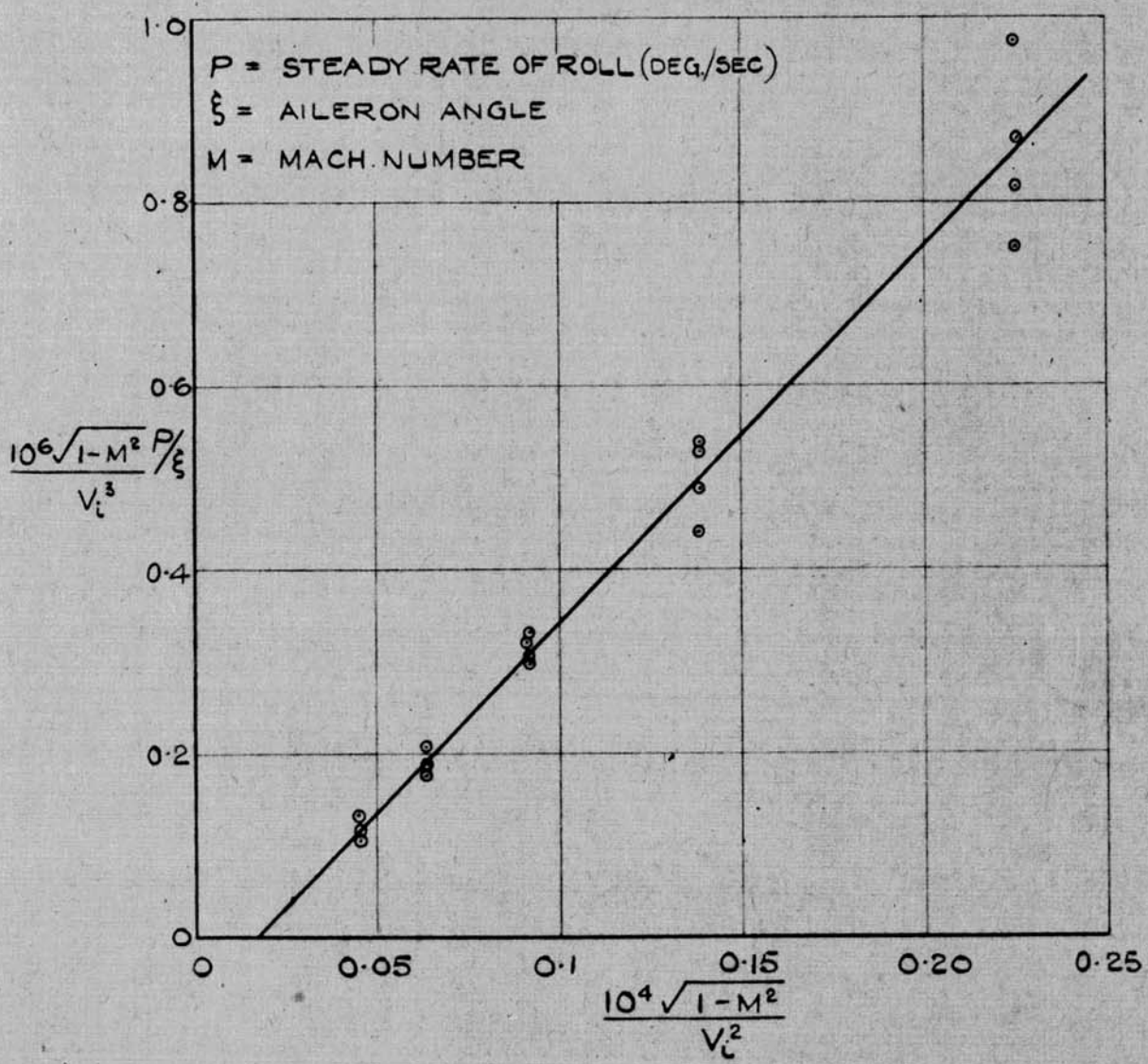


WING PLAN FORM & AILERON SECTION
F.W. 190

FIG 1

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 APP 27

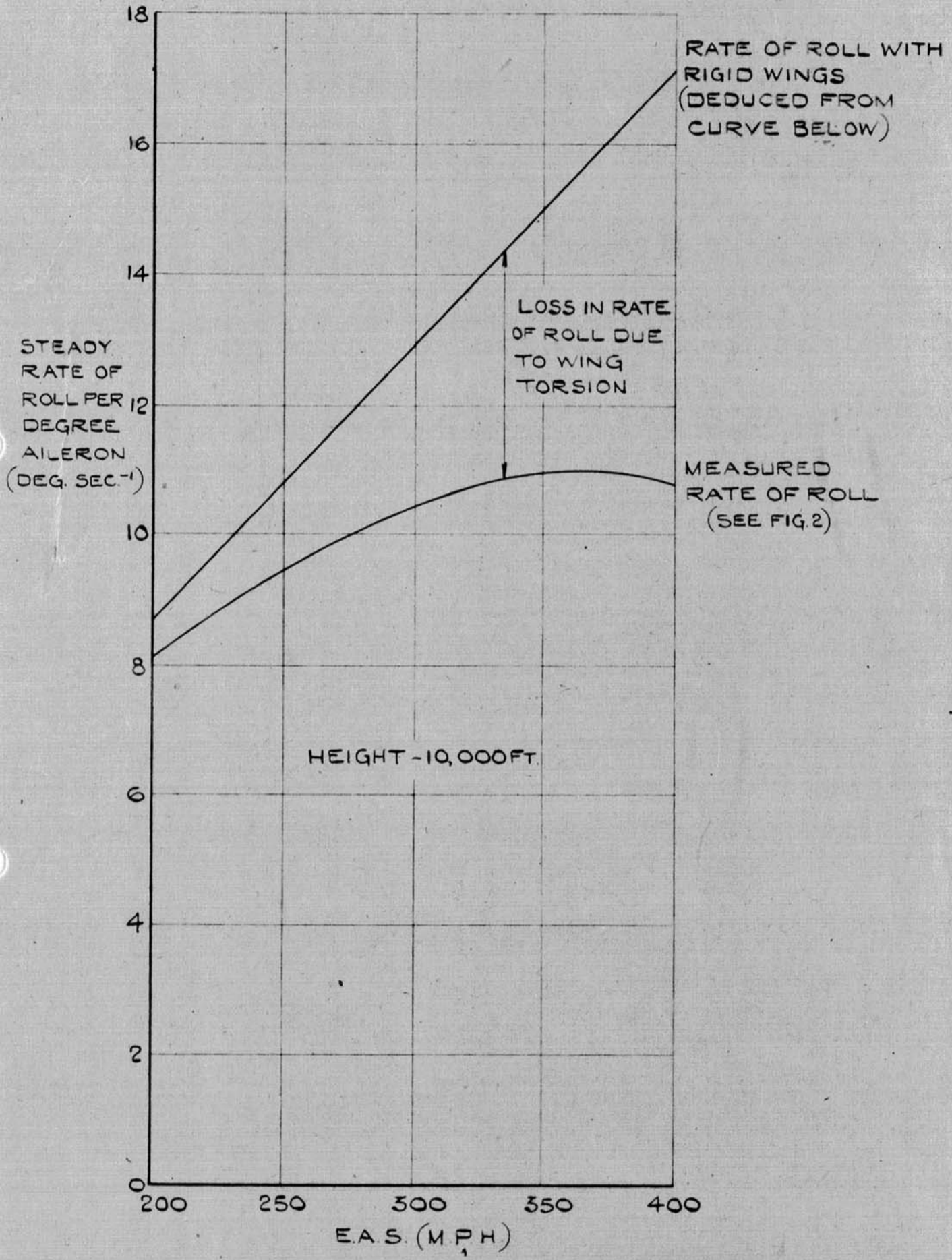
FIG. 2



STEADY RATES OF ROLL PER DEGREE AILERON ANGLE
 F.W. 190

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APP

FIG. 3



STEADY RATES OF ROLL PER UNIT AILERON ANGLE
F.W. 190