

ARMY AIR FORCES  
MATERIEL ~~CENTER~~ COMMAND

*Aircraft Design*

MEMORANDUM REPORT ON

ELS/mac/47

Date 4 December 1943

SUBJECT: Pilot's Comments on Tempest V  
British Fighter Airplane

SECTION Flight

Contract No. ....

Expenditure Order No. ....

SERIAL No. Eng-47-1658-C

Purchase Order No. ....

A. Purpose.

1. To submit pilot's comments on the Tempest V British Fighter airplane.

B. Factual Data.

1. Introduction.

The Tempest V fighter airplane, JN 729, equipped with a Sabre II A engine was flown by two Flight Section pilots at the Hawker factory, Slough, England.

The Tempest is the new and improved version of the Hawker Typhoon which has been in operational use for quite some time. The major difference between the two is the change to a new wing planform and section on the Tempest.

2. Weight and c.g. Information.

The airplane was flown at a gross weight of 11,500 pounds and c.g. at 27.3% m.a.c.

3. Flight Characteristics.

a. Cockpit Layout

The cockpit layout has not been altered considerably over the Typhoon, the major change being the incorporation of a sliding bulb canopy instead of the P-39 type side door plus a hinged overhead section. Late Typhoons are also being equipped with this canopy. The cockpit is shorter than those of our pursuit airplanes which places the gun sight in close to the eye. The wheel retraction controls are slightly awkward to manipulate and the wing flap and coolant shutter controls are confusing.

The engine controls are properly placed and smooth acting. The flight controls are well positioned and free with little friction on the ground.

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The instrument panel arrangement is commendable being made in three panels mounted in an arc. The gunsight interferes somewhat with the flight instrument panel.

b. Taxiing and Ground Handling.

The airplane is very pleasant to handle on the ground. Vision is excellent. The air brakes work well but are of lower capacity than our systems. The hand lever for the brakes was hard to grip properly.

c. Take-off and Initial Climb.

There is appreciable right hand swinging tendency on take-off but the rudder is sufficient to hold the airplane straight. Ground run is short and initial climb very good. Wheel retraction is smooth and fast. Acceleration up to best climb speed is quite satisfactory.

d. Climbs.

Visibility in the climb is satisfactory being limited over the nose and over the inboard wing sections. The indicated rate of climb up to 5000 feet was just under 4000 ft. per minute, using 3700 rpm and +7 pounds per square inch boost.

e. Handling & Control at Various Speeds.

The airplane handles pleasingly well over the entire speed range. All control forces were moderate and well coordinated up to speeds as high as were tested (450 because of weather). The present restricted diving speed is 540 IAS at low altitude.

f. Trim and Stability.

There is surprisingly little trim change with speed or power changes in comparison with the Typhoon. It will be noted that additional fin area has been added to the Tempest. Trimmer tabs seem to be adequate for all flight conditions. Longitudinal and direction stability are satisfactory. Lateral stability is marginal but adequate for this type of airplane.

g. Stalls and Stall Warning.

The indicated stalling speeds were 90 mph for the clean condition and 74 mph with gear and wing flaps down. Not much stall warning is present and the airplane tends to fall off to the right. There is a slight aileron snatch at the stall. A good accelerated stall (about 140 in a tight turn) of the "shudder" variety manifests itself.

h. Maneuverability and Aerobatics.

Aerobatics are easily accomplished and maneuverability is good although the turning radius is considerably larger than the Typhoon.

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i. Trim Changes when Operating Gear, Flaps, etc.

Extension of landing gear, wing flaps, or cooling flaps all cause gentle, nose-down pitching moments.

j. Noise and Vibration.

A remarkable improvement has been accomplished by eliminating from this Sabre installation the objectionable, high-frequency vibration that is present in the Typhoon.

k. Vision.

Vision is good for most conditions except for restrictions over the nose and leading edge of the wing.

The bubble canopy on this airplane is the finest one of its type ever seen by these pilots.

Three flat panels have been retained for the wind screen. This has been standardized by the fighter development people to eliminate distortion and maintain gunsight accuracy. The sliding canopy is a single piece affording unobstructed side, top, and rear view. The canopy has been opened in flight up to 300 IAS with no difficulty but will be restricted for tactical use to 250 IAS.

l. Approach and Landing.

Visibility is good for approach and landing. The landing itself is very pleasant using an approach speed of 105 to 110 IAS. Ground run is medium.

4. General Functioning.

a. Power Plant and Associated Equipment.

Present limit on the Napier-Sabre II A is 3700 rpm and 7 lbs/sq. inch boost. This rating gives approximately 2100 horsepower. The rating is being increased at this time to 3900 rpm and 9 lbs/sq. inch.

Maximum continuous cruising power is 3150 rpm and 4-1/2 lbs/sq. inch boost.

b. Hydraulic, Pneumatic and Electric Systems.

All equipment functioned properly during these flights.

c. Emergency Systems.

Emergency systems were not tried but appeared adequate and simple to operate.

5. Performance.

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A copy of Boscombe Down preliminary performance figures are on file in the Flight Test Branch and may be obtained by authorized departments.

C. Conclusions.

The Tempest V should prove to be a very excellent fighter airplane. It is easy to fly and exhibits very desirable fighter characteristics coupled with excellent performance. A four view photograph of the prototype Tempest V with the old type canopy is attached.

D. Recommendations

None

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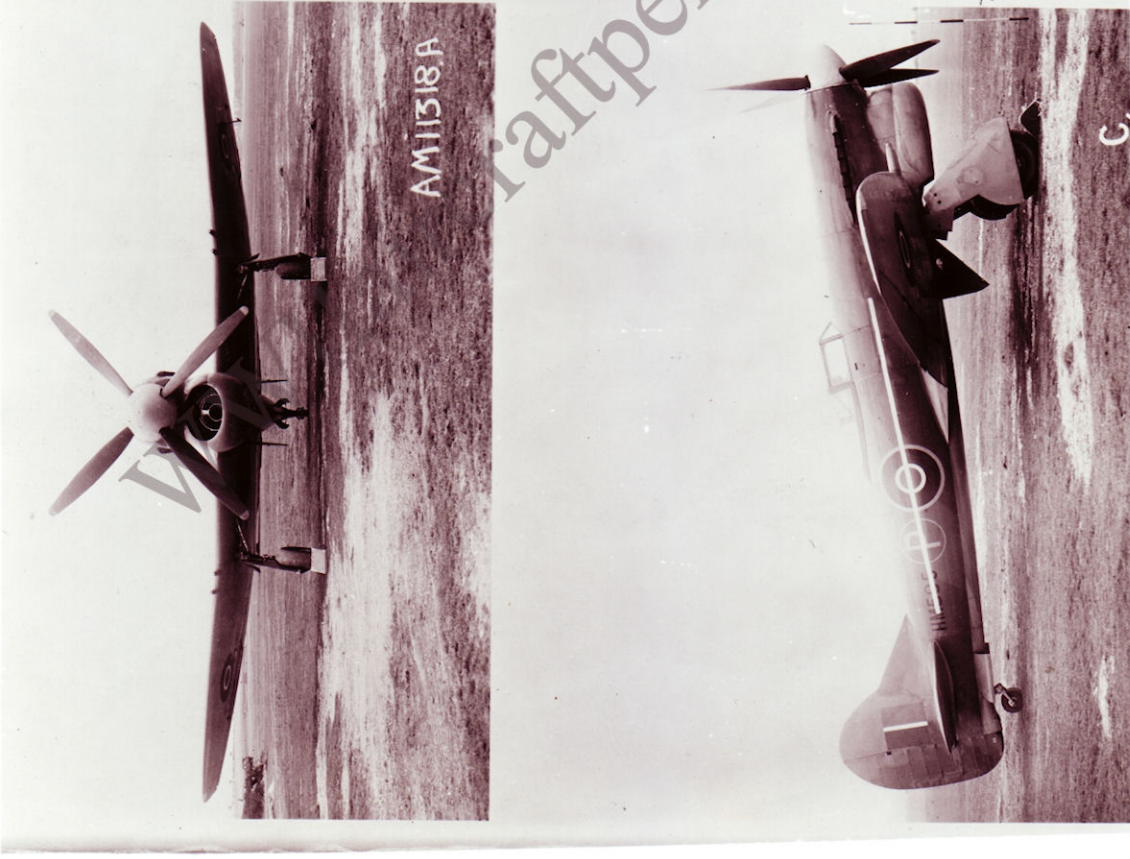


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B.

air performance



C



D

PROTOTYPE TEMPEST V (MILITARY STYLE CANOPY)