

WAR DEPARTMENT
AIR CORPS, MATERIEL DIVISION

MEMORANDUM REPORT ON
P-40, A.C. No. 39-156

LHS-BC

Date May 15, 1940

SUBJECT: Speed Tests of P-40 Airplane

SECTION Flying Branch

Contract No. AC-12111

SERIAL No. PHQ-M-19-1084-A

Expenditure Order No. 430-4-21

Purchase Order No. _____

1. Purpose

- a. Report on speed tests of P-40 airplane conducted at the manufacturer's plant. Airplane equipped with Allison V-1710-33 engine and 3-bladed constant speed propeller, blade design No. 611001.5-12, blade angle range 24° to 49° at $42''$ radius. Gross weight with design military load is 6757 lbs., c.g. wheels up 26.5% a.s.c. Landing gear retracted, wing flaps neutral, cabin and ventilators closed, carburetor cold, blast tubes for synchronized guns in place, radio antenna removed. Radiator shutters in neutral position.

2. Factual Data. Tests made at 15,000 ft.

- a. The first speed test was made May 5. The high speed was 357.0 mph at 2960 rpm at 1090 bhp.
- b. The following changes were made on the airplane: Fairing installed in bottom of radiator exit duct to eliminate the hump at the junction of radiator shutters and cowl; bumps around wing gun openings were taken out, this included removal of wing gun locking pins and trunnion bolts and covering of those holes as well as ejection chute openings with a flat plate; a flush cover was installed over the gun openings in the leading edge of the wings; copper tubing used to measure air-flow through radiators was removed from the entrance and exit ducts; the original (single outlet per cylinder) XP-40 exhaust stacks were installed; work was done on the landing gear fairings to give a closer fit with the wheels retracted and the flush rivets were smoothed up. A high speed of 360.0 mph at 2960 rpm at 1090 bhp was obtained May 13.
- c. XP-40 exhaust stacks removed and P-40 stacks installed with the original outlet of 3.2 sq.in. increased to 4.0 sq.in., other conditions same as b., the high speed was 358.3 mph at 2960 rpm at 1090 bhp, obtained May 13.
- d. Same as c. with the exception of an 0.5" skirt on the propeller spinner to decrease the gap between the nose section and spinner. The high speed was 360.0 mph at 2960 rpm at 1090 bhp, obtained May 14.

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- e. An additional speed test was obtained May 14, with conditions as in d, but at 2600 rpm and 925 bhp; corresponding speed was 340.0 mph.

3. Conclusions

- a. The variation in speeds with changes made to the airplane are within the normal error in flight testing. However, this series of tests was made by the same pilot, under practically the same atmospheric conditions, with a comparatively short period of time between tests, and for those reasons the reported variations are more accurate than it is usually possible to obtain.

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