

**WAR DEPARTMENT  
AIR CORPS, MATERIEL DIVISION**

**MEMORANDUM REPORT ON**

Pursuit One-Engine (YP-39), A.C. No. 40-30      LHS-BC  
Date February 5, 1941

SUBJECT: Acceptance Performance Test

SECTION..... Flying Branch.....

Contract No. AC-12635.....

Expenditure Order No. 430-4-25.....

SERIAL No. PHQ-M-19-1185-A.....

Purchase Order No. ....

A. Purpose

1. Report on tests conducted at the manufacturer's plant on Bell YP-39. Airplane equipped with Allison V-1710-37 engine and 3-bladed constant speed propeller, blade design No. 614CC1.5-21, blade angle range 21° to 51° at 42" radius. Gross weight as tested 6592 lbs., c.g. location wheels down 26.1% m.a.c.; radio antenna in place; propeller not equipped with cuffs; two exhaust stacks per cylinder; venturi tube for alternate source of gyro suction retracted; wheels up, wing flaps neutral, carburetor cold, mixture control in automatic rich position, prestone and oil cooler shutters set flush with cowling during level flight, wide open in climb except where otherwise stated; guns in place.

B. Test Results

1. High speed at critical altitude for military rated power is 368 mph at 1090 bhp at 3000 rpm at 13,600 ft. The high speed is the same with or without camouflage. The camouflage consisted of one primer coat of zinc chromate and two coats of dull lacquer.
2. High speed at critical altitude for normal rated power is 348 mph at 960 bhp at 2600 rpm at 13,000 ft.
3. Speed with prestone and oil cooler shutters closed at 5000 ft. at 960 bhp at 2600 rpm is 329 mph.
4. Cruising data at 13,000 ft.:

Speed MPH	R.P.M.	B.H.P.	% Normal Rated Power
308	2280	720	75
296	2210	620	64.6
278	2120	525	54.7
246	1920	415	43.2
202	1720	310	33.5

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 MEMORANDUM REPORT - No. PHQ-M-19-1185-A  
 February 5, 1941

5. Climb data:

Altitude	True	R.P.M.	B.H.P.	Rate of	Time of
	Speed			Climb	Climb
	MPH			Ft/Min	Min.
S.L.	153	3000	1090	3600	0
5000	166	3000	1090	3600	1.4
10,000	179	3000	1090	3600	2.8
13,600	188	3000	990	3410	3.8
15,000	191	2600	835	2260	4.6
20,000	201	2600	685	1580	7.3
25,000	211	2600	550	980	11.2
30,000	220	2600	430	440	18.7
S/C 33,300	226	2600	-	100	32.4
A/C 34,400	227	2600	-	0	-

Engine operation is rough at altitudes above 30,000 ft.

6. Determination of airspeed and altimeter errors. Airspeed head static openings located approximately 32" from left wing tip and 29" fore leading edge of wing at that point.

Indicated Airspeed MPH	Indicator		Airspeed		Altimeter
	Vs Water Column MPH	Calibrated Airspeed MPH	Installation Error MPH	Installation Error Ft.	
290	288	297	-9	-40	
260	258	266	-8	-30	
230	228	235	-7	-20	
200	198	204	-6	-10	
175	173	178	-5	0	
160	158	162	-4	0	

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