

CONFIDENTIAL

WAR DEPARTMENT

AIR CORPS, MATERIEL DIVISION

MEMORANDUM REPORT ON

Pursuit One-Engine Hurricane, No. 2-2974

Date September 25, 1941

SUBJECT: Climb Data

SECTION: Flying Branch

SERIAL No. PHQ-M-19-1302

Contract No.

Expenditure Order No. 726-12

Purchase Order No.

A. Purpose

- Report on climb performance of Hurricane. Airplane equipped with Merlin XX engine and 3-bladed constant speed propeller. Gross weight as tested 6848 lbs.; c.g. wheels down 28.6% m.a.c.; gun ports uncovered (8 wing guns); wheels up; wing flaps neutral; cabin closed; carburetor air intake screen (snowguard) not in place; radiator flap in wide open position.

B. Test Results

- Climbs in low blower up to 13,000 ft. and high blower above with throttle open to 48.25" Hg. intake manifold pressure or wide when below. Climbing speeds for maximum rate used. It was necessary to interrupt the climb at 15,000 ft. and again at 22,000 ft. for 3 mins. in order to cool the engine. Free air temperatures at time of test averaged approximately 6° C. above standard air temperature. Army Air Corps requirement is that the engine should cool when the air temperature is 23° C. hotter than standard temperature.

Altitude Ft.	True		B.H.P.		Blower		Rate of Time of	
	Speed MPH	R.P.M.	Estimated from Power Charts	Throttle	Gear	Climb Ft./Min	Climb Min.	
0	148	2850	1110	Part	Low	3200	0	
5000	160	2850	1165	Part	Low	3200	1.56	
10,000	173	2850	1190	Wide	Low	3000	3.13	
15,000	187	2850	1100	Part	High	2400	4.98	
15,000	Time required to cool engine (3 min.)						7.98	
20,000	198	2850	995	Wide	High	2060	10.16	
22,000	200	2850	920	Wide	High	1840	11.18	
22,000	Time required to cool engine (3 min.)						14.18	
25,000	204	2850	820	Wide	High	1520	15.97	
30,000	207	2850	660	Wide	High	1010	19.97	
35,000	210	2850	530	Wide	High	500	26.85	
S/C 39,000	211	2850	-	Wide	High	100	42.59	
A/C 40,000	-	2850	-	Wide	-	-	-	

DATE

CHF. DIV.

TECH. EXC.

ADM. EXC.

C. O.

BUD. OFF.

EXP. ENG.

PROD. ENG.

CONTRACT

INSP.

MAINT. COMM.

I. P. S.

OTHERS

Flying Branch

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2. Climbs were made at 2850 rpm and 37.5" Hg. manifold pressure at the same airspeeds as in 1, in an attempt to make a sustained, fairly high power climb to altitude, but it was still necessary to make two stops to cool engine. Engine cooling is inferior to similar type Air Corps airplanes.

3. Results of take-off and landing tests will be reported by the Aircraft Laboratory.

4. Determination if airspeed indicator installation errors:

Indicated Airspeed MPH	Indicator Vs Water Column MPH	Calibrated Airspeed MPH	Airspeed Installation Error MPH
270	270	266.5	+3.5
240	240	237	+3
210	210	208	+2
180	180	178.5	+1.5
150	150	149	+1
120	120	121	-1

G. Remarks

1. Horse power figures estimated from Merlin XX Map Ref. 96846/40 furnished by British Air Commission.
2. Results of speed and range trials are listed in Memorandum Report No. PHQ-M-19-1291-A dated September 5, 1941.

Altitude Ft.	True Speed MPH	Estimated from P.M.P. Power Charts	Throttle Gear	Rate of Climb ft/min	Time of Climb min.
0	2850	1110	Part Low	3200	0
10,000	2850	1165	Part Low	LOUIS H. SIBILSKY	1.56
15,000	2850	1190	Wide Low	3000	3.13
19,000	2850	1100	Part High	2400	1.08
20,000	Time required to cool engine (3 min.)			GEORGE J. EPPRIGHT, Maj.	
22,000	198	975	Wide Acting	Flying Branch	
24,000	200	920	Wide High	Wm. E. Lamar, Lt.	
25,000	204	820	Wide High	F. O. CARROLL, Lt. Col.,	
30,000	207	660	Wide High	Chief, Exp. Engr. Section	
35,000	210	530	Wide High		

Chief, Exp. Engr. Section
(Attn: Flight Research Projects)
Chief, Prod. Engr. Section
(Attn: Project Officer)

Chief, Aircraft Laboratory
(Attn: Aerodynamics Unit)
Chief, Propeller Laboratory
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