

## SUMMARY OF PERFORMANCE OF VARIOUS MARKS OF KITTYHAWK

	P.40E	P.40F	P.40K	P.40M	P.40N
Span	37' 3 $\frac{1}{2}$ "	37' 3 $\frac{1}{2}$ "	37' 3 $\frac{1}{2}$ "	37' 3 $\frac{1}{2}$ "	37' 3 $\frac{1}{2}$ "
Length	31' 8 $\frac{3}{4}$ "	31' 7-9/16"	33' 3-23/32"	33' 3-23/32"	33' 4" <sup>25/32</sup>
Gross wing area	236	236	236	236	236
Engine - Make.	Allison V1710-39	Merlin V1650-1	Allison V1710-73	Allison V1710-81	Allison V1710-81
<u>Airscrew.</u>	Curtiss electric C.S. 11'0" dia. 6/.5 235 rpg.	Curtiss electric C.S. 11'0" dia. 6/.5	Curtiss electric C.S. 11'0" dia. 6/.5 235 rpg.	Curtiss electric C.S. 11'0" dia. 6/.5 235 rpg.	Curtiss electric C.S. 11'0" dia. 4/.5 235 rpg.
<u>Wings</u>					
Bombs.					
Fuselage	500	500	500	500	500
Wings	2/300		6/30	6/30	2 x 250
<u>Fuel.</u>					
Main	123	131	131	131 +	100
Aux.	43, 83	43	43, 62 or 83	43 or 62 or 83 =	43, 62 or 142
<u>Oil.</u>					
Main	13.3	13.3	13.3	13.3	6.66
<u>Weight.</u>					
Tare	6,220	6,482	6,200	6,200	5,800
Mean	8,678	8,979	8,400	8,400	7,400
Gross weight	9,500	9,373	9,300	9,300	8,000
<u>Power Plant.</u>		M.	S.		
Rated	1,000 @ 9,900	1080 @ 1010 @ 9500 16000	1,000 @ 11,000	1,000 @ 13,800	1,000 @ 13,800
Military	1,150 @ 10,800	1240 @ 1120 @ 11500 18,500	1,150 @ 11,800	1,360 @ S.L.	1,125 @ 14,600
Max. cruising	750 @ 15,000	810 @ 758 @ 9500 16,000	670 @ 14,800	705 @ 17,600	705 @ 17,600
Econ. cruising	520	720 @ 677 @			
<u>Max. speed</u>		9500 16,000	475 @ 15,000	480 @ 15,000	480 @ 15,000
Max.	340 @ 12,500	347 @ 354 @ 14,700 20,400			362 @ 15,000 378 @ 10,550 (war emergency).
S.L.		312			
Max. cruising		34,300			38,200
Service ceiling	30,600				
<u>Climb.</u>					
Max. rate	1,840	2,370 S.L.	2,500	2,100	2,680 @ 15,000 /2....

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	P.40E		P.40F		P.40K		P.40M		P.40N	
	M.	S.	M.	S.	M.	S.	M.	S.	M.	S.
<u>Climb Contd.</u>										
Max. rate	1,840		2,370 S.L.		2,500		2,100		2,680 @ 15,000	
Time to 10,000'	5.5		5		4.9		4.7		4.72 to 15,000	
" " 20,000	13		10.9		11.2		10.2		6.89	
Take-off distance (50' screen) yds.	750		785 @ 8,910 lbs. (1/4 flap)		1,000 @ 9,300 160		650 @ 8,400 lbs.		500 yds.	
<u>Range (Main tanks).</u>										
Fuel carried	123		131		131	131	131	131	100	
Fuel allowance	20		17		30	30	33	30	25	
Bombs carried	500				500	Nil	500	Nil		
Gross weight	8,678		8,980		9,274	8,734	9,274	8,734	7,400	
Height	15,000		10,000		15,000	15,000	15,000	15,000	12,000	
True speed	246		203		223	240	220	230	210	
Fuel cons. (g.p.h.)	38		29.2		37	35	38	35	30	
Endurance	2.72		4.0		2.79	2.82	2.82	3.0	2.65	
Range (abs. miles)	670		815		630	670	620	695	550	
<u>Range (Main and aux.)</u>										
Fuel carried	206		174		193		193		162	
Fuel allowance	20		19		33		33		30	
Gross weight	9,377		9,375		9,093		9,093		8,000	
Height	14,000		10,000		15,000		15,000		12,000	
True speed	226		205		223		220		205	
Fuel consumption (gph)	38		30		37		38		33	
Endurance	4.9		5.3		4.32		4.48		4.28	
Range (abs. miles)	1,110		1,085		975		985		875	

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Description	CURTISS AEROPLANE DIVISION CURTISS-WRIGHT CORPORATION BUFFALO, N. Y.			
	H-81A-2 TOMAHAWK P-40	H-87A-12 KITTY HAWK P-40D	H-87A-3 KITTY HAWK P-40E	WAR HAWK P-40F
Aileron Throw	18.8° up	18.7° up	18.7° up	18.7° up
Elevator Throw	10.7° down	10.6° down	10.6° down	10.6° down
	30° up	30° up	30° up	30° up
Rudder Throw	20° down	20° down	20° down	20° down
	30° right	30° right	30° right	30° right
	30° left	30° left	30° left	30° left
Prop. Setting - Take-off	2950 RPM	3000 RPM	3000 RPM	3000 RPM
Prop. Setting - Cruising	2250 RPM	2250 RPM	2250 RPM	2650 RPM
Prop. Setting - Vmax. Crit. Alt.	2950 RPM	3000 RPM	3000 RPM	3000 RPM
Skin Thickness - Wing	.020-.064	.020-.064	.020-.064	.020-.064
Skin Thickness - Fuselage	.025-.051	.025-.040	.025-.040	.025-.040
Armor Plate	None	3/8" For'd. 5/16" aft	3/8" For'd. 5/16" aft	3/8" For'd. 5/16" aft
Fuel Tank Protection	None	Internal Rubber lined	Internal Rub. Lined	Internal Rub. Lined
Materials - Skin	24ST Alclad Ten. Str. 56,000	24ST Al. Alloy T.S. 62,000	24ST Al. Alloy T.S. 62,000	24ST AL. A T.S. 62,000
- Rivets	External A - 17ST	External A - 17ST	External A - 17ST	External A - 17ST
- Stringers	24ST Al. Alloy Extrus. T. Str. 57,000	24ST Al. Al. Extrus. T.S. 57,000	24ST Al. Al. Extrus. T.S. 57,000	24ST Al. Al. Extrus. T.S. 57,000
- Bulkheads	24ST Alclad T.S. 56,000	24ST Al. Al. T.S. 62,000	24ST Al. Al. T.S. 62,000	24ST Al. Al. T.S. 62,000
Engine	Allison V-1710-19	Allison V-1710-39	Allison V-1710-39	Rolls-Royce V-1650-1
Propeller	Curtiss Const. Speed	Curtiss Const. Speed	Curtiss Const. Sp.	Curtiss Const. Sp.
Propeller Diameter	11'0"	11'0"	11'0"	11'0"
Wing Loading	29.7 lb/ft. <sup>2</sup>	32.4 lb/ft. <sup>2</sup>	33.6 lb/ft. <sup>2</sup>	34.2 lb/ft. <sup>2</sup>
Power Loading	6.23 lb/hp	6.69 lb/hp	6.91 lb/hp	7.23 lb/hp
Wing Area	236 sq.ft.	236 sq.ft.	236 sq.ft.	236 sq.ft.
Special Features	Liquid Cooled Engine Flush Type Riveting Stressed Skin Construction	Oil Tank Cannon Mtg. provisions Gun Fire Re- sistant Wind- shield	Pend. Type Oil Tank Cannon Mtg. provisions Gun Fire Re- sistant Wind- shield	Pend. Type oil tank Cannon Mtg. provisions Gun Fire Resistant Windshield
	Flares & Ret. Ldg. Light Cockpit Spot lights 2-50 Cal. guns & 2-30 Cal. gn.	Armor Plate Fore & aft Fluorescent Inst. Lighting 4-50 cal. guns & 2460 rds. ammunition	Armor Pl. Fore & aft Fluorescent Inst. Light. 6-50 Cal. guns & 1686 rds. ammunition	Armor Pl. Fore & aft Fluorescent Inst. Light. 6-50 Calgn & 1686 rds. ammunition
	Removable Wing Tips	Internal Lined Fuel Tanks Emergency Hyd. system	Int. Lined Fuel Tanks Emergency Hyd. System	Int. Lined Fuel Tanks Emergency Hyd. System

NOTE: The H-81A's and H-87A's have different weights from the above due to the different requirements of the British for equipment and furnishings.

Export Airplane	Weight Empty	Full Operational Load	Gross Weight - F.O.I.
H-81A-2	5600 lbs.	2178 lbs.	7778 lbs.
H-87A-3	5897 lbs.	2497 lbs.	8394 lbs.

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**WIL CARPENTER**      **CURTISS AEROPLANE DIVISION**  
**CURTISS-WRIGHT CORPORATION**  
**BUFFALO, N. Y.**      **KITTY HAWK CONFIDENTIAL**

Description	Sim. to H-81-A	Sim. to H-81-A	Sim. to H-87-A-2 & H-87-A-3	Sim. to H-87-A-2 & H-87-A-3
	P-40	P-40D	P-40E	P-40F
	Actual Data	Calc. Data	Calc. Data	Calc. Data
V <sub>max</sub> at — Feet	<b>TOMAHAWK</b> 365 MPH at 15,000 ft.	<b>KITTY HAWK</b> 369 MPH at 15,000 ft.	<b>KITTY HAWK</b> 366 MPH at 15,000 ft.	<b>WAR HAWK</b> 370 MPH at 22,000 ft.
V <sub>cruse</sub> at — Feet 75% power	315 MPH at 15,000 ft.	310 MPH at 15,000 ft.	308 MPH at 15,000 ft.	300 MPH at 15,000 ft.
V <sub>stall</sub> -Flaps Down-Sea Level	72.5 MPH	80 MPH	80 MPH	82 MPH
Max. rate of Climb at Sea Level	2900'/min.	2920'/min.	2840'/min.	2370'/min
Time to Crit. Alt. — Feet	5.5 min to 15,000 ft.	5.7 min to 15,000 ft.	5.8 min to 15,000 ft.	6.9 min to 15,000 ft.
Service Ceiling	30,000 ft.	29,300 ft.	29,100 ft.	32,000 ft.
Endurance at V <sub>max</sub> 92% power	1.9 hrs. on 180 gal.	1.56 hrs. on 148 gal.	1.56 hrs. on 148 gal.	2.03 hrs. on 148 gal.
Endurance at V <sub>cruse</sub> 75% power	3.0 hrs. on 180 gal. fuel	2.32 hrs. on 148 gal.	2.32 hrs. on 148 gal.	2.56 hrs. on 148 gal.
Cruising Range 75% power	945 miles	720 miles	716 miles	768 miles
Weight Empty	5381 lbs.	5770 lbs.	5922 lbs.	6190 lbs.
Normal Gross Weight	6789 lbs.	7689 lbs.	7952 lbs.	8111 lbs.
Normal Useful Load - Pilot	200 lbs.	180 lbs.	180 lbs.	180 lbs.
Fuel	120 gal. 720#	120 gal. 720#	120 gal. 720#	120 gal. 720#
Oil	13 gal. 98#	16 gal. 120#	16 gal. 120#	16 gal. 120#
Armament	2-50 Cal. & 400 rds. 261# + 109#	4-50 Cal. & 2000 rds. 786#	6-50 Cal. & 1410 rds. 901#	6-50 Cal. & 1410 rds. 901#
Armor Plate	None	113#	109#	134#
Max. Fuel - Main Tanks	180 gal.	148 gal.	148 gal.	148 gal.
Max. Fuel - Aux. Belly Tank	None	52 gal.	52 gal.	52 gal.
Max. Oil	12 gal.	20 gal.	20 gal.	20 gal.
Motors	2-50 cal. syn. 2-30 cal. Wing	4-50 Cal. Wg.	6-50 Cal. Wg.	6-50 Cal. Wg.
Munition Max.	200 rds/50 Cal. gun 500 rds/30 Cal. gun	615 rds/gn	235 rds/gn	235 rds/gn
Normal Engine Power	1000 Hp at 2600 at 10,000'	1000 HP at 2600 at 10,800'	1000 HP at 2600 at 10,800'	1010 HP at 2650 at 16,000'
Emergency Eng. Power	1090 HP at 2950 at 15,000'	1150 HP at 3000 at 15,000'	1150 HP at 3000 at 15,000'	1122 HP at 3000 at 19,000'
Coolant Temp.	121°C. max.	121°C. max.	121°C. max.	120°C. max.
Oil Temp.	95°C. max	95°C. max	95°C. max	90°C. max.
M1 Pres.	55-70 lb/in <sup>2</sup>	55-70 lb/in <sup>2</sup>	55-70 lb/in <sup>2</sup>	60-80 lb/in <sup>2</sup>
Del Pres.	12-14 lb/in <sup>2</sup>	12-14 lb/in <sup>2</sup>	12-14 #/in <sup>2</sup>	12-14 #/in <sup>2</sup>
Max. RPM Take-off	2950 RPM	3000 RPM	3000 RPM	3000 RPM
Max. RPM Cruising	2600 RPM	2600 RPM	2600 RPM	2650 RPM
Wing Span	37' 3 1/2"	37' 3 1/2"	37' 3 1/2"	37' 3 1/2"
Overall Length	31' 8 1/2"	31' 3 1/2"	31' 8 1/2"	31' 7-9/16"
Height-Tail Down	10' 8"	10' 8"	10' 8"	10' 8"
W.T. Tire	30" Sm. Cont.	30" S.C.	30" S.C.	30" S.C.
W.T. Tire Pressure	41 lb/in <sup>2</sup>	41 lb/in <sup>2</sup>	41 lb/in <sup>2</sup>	41 lb/in <sup>2</sup>
M.W. Tire	12 1/2" S.C.	12 1/2" S.C.	12 1/2" S.C.	12 1/2" S.C.
M.W. Tire Pressure	45 lb/in <sup>2</sup>	45 lb/in <sup>2</sup>	45 lb/in <sup>2</sup>	45 lb/in <sup>2</sup>
Geo Pressure one load	Strut is extended 2 inches under one load			

\* Contractor has submitted to B.P.C. proposal for use of 85 U.S. Gal Tank

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## COMPARATIVE DETAILS OF BOOMERANG, SPITFIRE VC, HURRICANE II, KITTYHAWK P40E AND AIRACOBRA.

	UNIT	BOOMERANG	SPITFIRE VC	HURRICANE	KITTYHAWK P40E	AIRACOBRA
Australian Designation		A46			A29	A53
Manufacturer		C.A.C. Aust.	Supermarine	Hawker	Curtiss Wright	Bell A/C. Corp.
Purpose		I.-Fighter	I.-Fighter	Fighter-Bomber	I.-Fighter	I.-Fighter.
Span	ft.in.	36' 0"	36' 9 $\frac{1}{2}$ "	40.0	37' 3 $\frac{1}{2}$ "	34' 0"
Length	ft.in.	25' 6"	30' 0"	31' 6"	31' 8 $\frac{1}{2}$ "	30' 2"
Track	ft.in.	8' 6"	5' 8 $\frac{1}{2}$ "	7' 10"	8' 2 $\frac{1}{2}$ "	11' 4"
Wing Area	sq.ft.	225	242.0	258.0	236	213
Tare Weight	lb.	5,373	6,048	5,675	6,220	5,363
Normal Weight	lb.	7,000	6,495	7,080	8,500	7,400
Overload Weight	lb.	7,600 (8150)	6,970	7,580	9,500	8,089
Fuel: main tanks	I.Gals.	165	84	97	123	113
aux. tanks	I.Gals.	65	30	86	43 or 83	83
Oil: main tanks	I.Gals.	14		7 $\frac{1}{2}$	10.8	13.3
Armament: forward fuse						
forward wings						
bombs	lb.	2/33&2/20mm.	4/20 mm.	12/0.303 (IIB)	6/0.303 6/5	2/0.5&1/37or20m. 4/0.303
Engine: make		Pratt&Whitney	Rolls Royce	Rolls Royce	General Motors	General Motors.
name		Twin Row Wasp	Merlin	Merlin	Allison	Allison
series		S3C4-G	45 <sup>746</sup>	XX	V-1710-39	V1710-39
normal rated power	h.p.	1,100	1,235/17,750	1,260/12,250		
take off power	h.p.	1,200		1,175/20,000	1,000	1,000
Performance: Top speed	mph.	300/15,000'	375/17,750'	1,280	1,150	1,150
Service Ceiling	ft.	34,000'	36,800'	325/20,000'	340/12,500'	368/15,000'
Take off (50')	yds.	600	570	35,600'	30,600'	31,500'
(Climb 20,000')	min.	9.2	7.3	490	900	1,000
(Weight	lb.	7,358	6,495	9.0	13	12
Maximum Bomb (a) (Bomb	lb.	0	0	7,080	8,412	7,777
(Fuel	Gals.	165	84	1,000	500	600
Maximum Fuel (b) (Bomb	lb.	0	0	47	123	85
(Fuel	Gals.	230	114	0	0	0
Operational Speed	mph.	230	114	183	206	196
Altitude	ft.	230	230	210	255	248
Fuel consumption	Gals./Hr	15,000	17,750	20,000	14,000	11,000
Absolute Endurance (a)	hrs.	38	38	44	39	39
Range (a)	miles	3.8	2	2.1	2.6	1.7
Absolute Endurance (b)	hrs.	870	430	450	675	420
Range (b)	miles	6.0	2.8	4.1	4.75	4.5
	miles	1,380	640	860	1,220	1,120

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