



*Curtiss*

No. 6595-A

HAWK 75-A  
PURSUIT AIRPLANE

CURTISS-WRIGHT CORPORATION

Export Sales Division

30 ROCKEFELLER PLAZA • NEW YORK CITY, U. S. A.

*Curtiss*

HAWK 75-A PURSUIT AIRPLANE

KÄYTTÖTOIMISTO

No. 6895-A

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OHJEKIRJA  
Käyttötöimistö

*Mercantile*



Koneosasto

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★ DETAIL ★  
SPECIFICATIONS

*for*

**CURTISS HAWK 75-A  
AIRPLANE**

*Single Engine Pursuit*

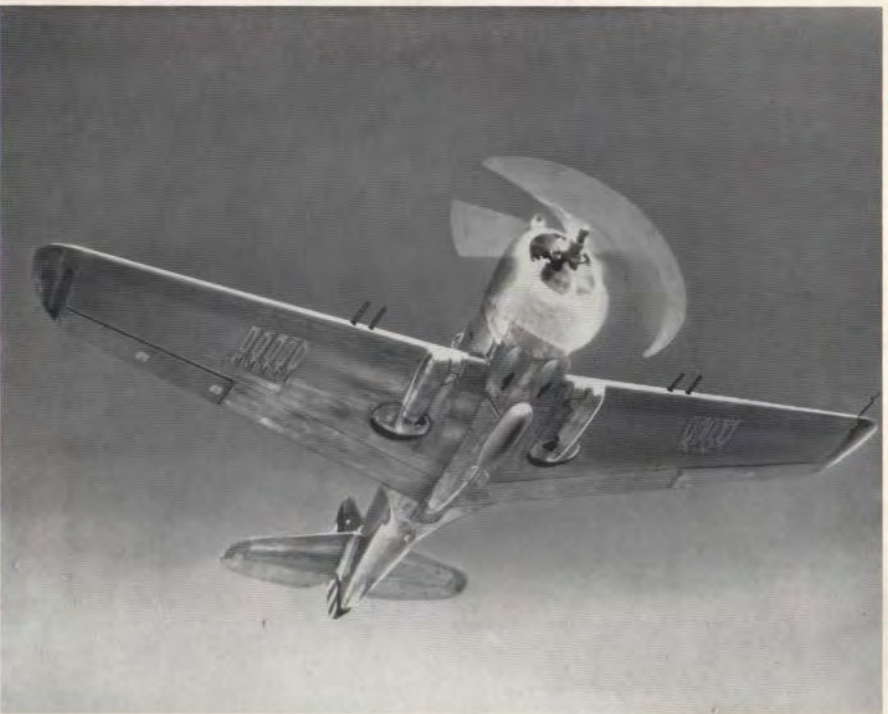
CURTISS-WRIGHT CORPORATION • CURTISS AEROPLANE DIVISION  
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EXPORT SALES DIVISION

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*Quill*  
HAWK 75-A PURSUIT AIRPLANE






**DETAIL SPECIFICATIONS  
FOR  
CURTISS HAWK 75-A**

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HAWK 75-A PURSUIT AIRPLANE



# *Curtiss* HAWK 75-A PURSUIT AIRPLANE



## INTRODUCTION

THE CURTISS HAWK 75-A Airplane described herein is a single engine low wing pursuit type monoplane of all metal construction with a retractable landing gear. It is a development from the P-36 airplane currently in use by the U. S. Army Air Corps. The Airplane is powered by a Wright Cyclone engine and equipped with a Curtiss constant speed propeller.


As a normal pursuit airplane, in accordance with U.S. Army practice, the Hawk 75-A contains provisions for one .30 caliber and one .50 caliber Colt machine gun mounted in the fuselage and synchronized to fire through the propeller disc.

Optional features include provision for two forward-firing .30 caliber Colt machine guns, one mounted in each wing panel outside the propeller disc—thereby making a four-gun pursuit or attack airplane. Other optional gun arrangements, for installation of various types of Oerlikon, Madsen and Vickers guns in the fuselage and wings, are described briefly under Armament Equipment.

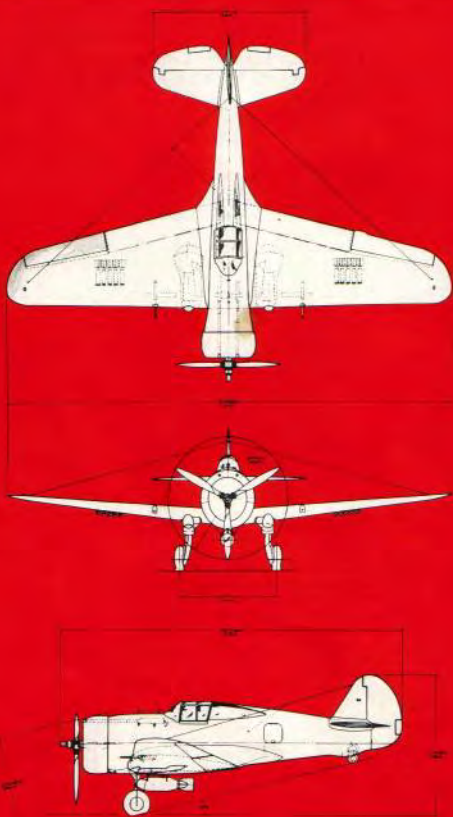
Bomb racks are installed, mounted flush with the lower surface of each wing, to carry 10-25 lb. chemical, or 10-30 lb. fragmentation, or 6-50 lb. demolition bombs. Additional racks may be installed to carry 100-lb. and 500-lb. bombs.

## SPECIFICATION

The design and workmanship of the Hawk 75-A are in general compliance with the requirements of the United States Army Air Corps in the construction of P-36 airplanes. Materials used are of Army specifications or equivalent thereto. The design of the airplane has been worked out carefully and the airplane thoroughly service tested. Should this specification fail to establish clearly any points concerning the Hawk 75-A airplane, the existing design of the airplane shall maintain. As improvements are determined by the Curtiss-Wright Corporation, they will be incorporated in the design of the airplane and the specification modified accordingly.



*Curtiss* HAWK 75-A PURSUIT AIRPLANE





# HAWK 75-A PURSUIT AIRPLANE

## CHARACTERISTICS

(With Wright Cyclone GR-1820-G105A Engine)

PERFORMANCE		ENGLISH	METRIC
Maximum Speed			
Critical Altitude	19,000 ft. (5790 m.) high blower gear	303 mph	488 km/hr
	8,200 ft. (2500 m.) low blower gear	290 mph	467 km/hr
Sea level		258 mph	413 km/hr
Cruising Speed			
Upper critical altitude		260 mph	418 km/hr
Stalling Speed (Sea Level)		68.5 mph	110.4 km/hr
Service Ceiling		32,800 ft.	10,000 m.
Absolute Ceiling		33,700 ft.	10,270 m.
Time of Climb			
	1000 m. (3280')	1.02 min.	
	2000 m. (6560')	2.17 min.	
	3000 m. (9840')	3.52 min.	
	4000 m. (13,120')	5.15 min.	
	5000 m. (16,400')	6.93 min.	
	6000 m. (19,680')	8.83 min.	
	7000 m. (22,960')	11.19 min.	
Cruising range at 19,000 ft. altitude	(105 gal. gas)	677 mi.	1092 km
Cruising range at 19,000 ft. altitude	(163 gal. gas)	1040 mi.	1674 km
Cruising range at 19,000 ft. altitude at 200 m. p. h.—322 km/hr.	(163 gal. gas)	1348 mi.	2170 km

The above performance guarantees are based on flight testing by methods currently employed in the U. S. and outlined in Curtiss Report No. 6849, which by this reference is made a part of this specification.

The above figures are guaranteed with tolerance of 3% on speed and 5% on time of climb, ceiling and range, and 300 meters on critical altitude, and are based on the airplane equipped with a Wright Cyclone GR-1820-G105A engine and Curtiss Constant Speed Propeller, and with normal gross weight.

## WEIGHT

### NORMAL WEIGHT EMPTY

Wing Group	842 lbs.	381.9 kg.
Tail Group	112 lbs.	50.8 kg.
Body Group	515 lbs.	233.6 kg.
Landing Gear	572 lbs.	259.4 kg.
Power Plant	1985 lbs.	900.4 kg.
Fixed Equipment	457 lbs.	207.3 kg.
<b>TOTAL WEIGHT EMPTY</b>	<b>4483 lbs.</b>	<b>2033.4 kg.</b>

### NORMAL USEFUL LOAD

Pilot	200 lbs.	90.7 kg.
Fuel (105 U. S. gal. 397 lit.)	630 lbs.	285.8 kg.
Oil (10 U. S. Gal. 37.8 lit.)	75 lbs.	34.0 kg.
Fuselage Guns (1-.30, 1-.50 cal. Colt)	174 lbs.	78.9 kg.
Radio-Receiver and Transmitter	112 lbs.	50.8 kg.
Oxygen	15 lbs.	6.8 kg.
Signal Pistol	3 lbs.	1.4 kg.
<b>TOTAL USEFUL LOAD</b>	<b>1209 lbs.</b>	<b>548.4 kg.</b>

### NORMAL GROSS WEIGHT

5692 lbs. 2581.8 kg.

The above Total Weight Empty is guaranteed within a tolerance of 3%.





# HAWK 75-A PURSUIT AIRPLANE

## CHARACTERISTICS

(With Wright Cyclone GR-1820-G105A Engine)

### AREAS

	ENGLISH	METRIC
Total Wing Area (Incl. Aileron)	236.0 sq. ft.	21.93 sq. m.
Stabilizer (incl. 3.56 sq. ft. Fuselage)	28.8 sq. ft.	2.67 sq. m.
Fin	7.0 sq. ft.	0.65 sq. m.
Aileron (incl. 4.24 sq. ft. Balance & Trim Tab)	18.41 sq. ft.	1.71 sq. m.
Elevator (incl. 3.8 sq. ft. Balance & Trim Tab)	19.20 sq. ft.	1.78 sq. m.
Rudder (incl. 1.94 sq. ft. Balance & Trim Tab)	13.74 sq. ft.	1.27 sq. m.

### MISCELLANEOUS

Wing Airfoil Section (Root)	NACA 2215	
Wing Airfoil Section (Tip)	NACA 2209	
Chord (Root)	9.0 ft.	2.74 m.
Chord (Tip)	3.86 ft.	1.17 m.
Wing Span	37.3 ft.	11.37 m.
Length Overall	28.8 ft.	8.78 m.
Height	9.25 ft.	2.82 m.
Tread (Landing) Gear	8.08 ft.	2.46 m.

### LOADINGS

With Normal Gross Weight (Pursuit)	5692 lbs.	2581.8 kg.
Wing Loading	24.1 lbs./sq. ft.	118.0 kg/sq. m.
Power Loading (High Blower, 18,000 ft. alt.)	7.59 lbs./hp	3.44 kg/hp
Power Loading (Low Blower, 8000 ft. alt.)	6.32 lbs./hp	2.87 kg/hp

### DESIGN LOAD FACTORS

(Normal Gross Weight)		
All positive Angles of Attack (U. S. Analysis Methods)	12	
Landing Load Factors	7.0	
The maximum permissible true indicated diving speed is	445 mph.	716.2 km/hr.

### ENGINE CHARACTERISTICS

	Low Blower Gear	High Blower Gear
Wright Cyclone GR-1820-G105A (Spec. 564-A)		
Horsepower max. at critical rammed alt.	900	750
Horsepower at takeoff (2350 r.p.m.)	1100	
Horsepower max. at cruising (1900 r.p.m.)	625	625
Horsepower max. at sea level (2300 r.p.m.)	900	
Compression Ratio	6.3:1	6.3:1
Blower Ratio	7.14:1	10:1
Propeller Gear Ratio	16:11	16:11
Propeller Diameter (3 blade)		10 ft. 6 in.



# HAWK 75-A PURSUIT AIRPLANE

## CHARACTERISTICS

(With Pratt & Whitney Twin Wasp S3C3-G Engine)

5C3-G

PERFORMANCE	ENGLISH	METRIC
Maximum Speed		
Critical Altitude 15,300' (4650 m.)	323 mph	520 km/hr
Sea Level	263 mph	423 km/hr
Cruising Speed		
Upper critical altitude	264 mph	425 km/hr
Stalling Speed (Sea Level)	70.0 mph	112.7 km/hr
Service Ceiling	33,300 ft.	10,150 m.
Absolute Ceiling	34,120 ft.	10,400 m.
Time of Climb (Using take-off power for first five minutes)		
1000 m. (3280')	1.05 min.	
2000 m. (6560')	2.11 min.	
3000 m. (9840')	3.24 min.	
4000 m. (13,120')	4.54 min.	
5000 m. (16,400')	5.95 min.	
6000 m. (19,680')	7.64 min.	
7000 m. (22,960')	9.77 min.	
Cruising range at critical altitude (15,300'-4650 m.)	(105 gal. gas)	612 miles 985 km
Cruising range at critical altitude (15,300'-4650 m.)	(163 gal. gas)	942 miles 1516 km
Cruising range at critical altitude at 200 m. p. h.—322 km/hr.		
	(163 gal. gas)	1230 miles 1980 km

The above performance guarantees are based on flight testing by methods currently employed in the U. S. and outlined in Curtiss Report No. 6849, which by this reference is made part of this specification.

The above figures are guaranteed with tolerance of 3% on speed and 5% on time of climb, ceiling and range, and 300 meters on critical altitude, and are based on an airplane equipped with a Pratt & Whitney Model S3C3-G, geared engine, specification 5052-A and Curtiss Constant Speed Propeller and with the airplane loaded to normal gross weight.

## WEIGHT

### NORMAL WEIGHT EMPTY

Wing Group	835 lbs.	378.6 kg.
Tail Group	117 lbs.	53.1 kg.
Landing Gear	543 lbs.	246.2 kg.
Body Group	567 lbs.	247.1 kg.
Power Plant	2170 lbs.	984.1 kg.
Fixed Equipment	481 lbs.	218.2 kg.
<b>TOTAL WEIGHT EMPTY</b>	<b>4713 lbs.</b>	<b>2127.3 kg.</b>

### NORMAL USEFUL LOAD

Pilot	200 lbs.	90.7 kg.
Fuel (105 U. S. gal. 397 lit)	630 lbs.	285.8 kg.
Oil (10 U. S. gal. 37.8 lit)	75 lbs.	34.0 kg.
Fuselage Guns (1-30, 1-50 cal. Colt)	174 lbs.	78.9 kg.
Radio—Receiver and Transmitter	112 lbs.	50.8 kg.
Oxygen	15 lbs.	6.8 kg.
Signal Pistol	3 lbs.	1.4 kg.

### TOTAL USEFUL LOAD

<b>TOTAL USEFUL LOAD</b>	<b>1209 lbs.</b>	<b>548.4 kg.</b>
<b>NORMAL GROSS WEIGHT</b>	<b>5922 lbs.</b>	<b>2675.7 kg.</b>

The above Total Weight Empty is guaranteed within a tolerance of 3%.



# HAWK 75-A PURSUIT AIRPLANE

## CHARACTERISTICS

(With Pratt & Whitney Twin Wasp S3C3-G Engine)

### AREAS

Total Wing Area (Incl. Aileron)	236.0 sq. ft.	21.93 sq. m.
Stabilizer (Incl. 3.56 sq. ft. Fuselage)	28.8 sq. ft.	2.67 sq. m.
Fin	7.0 sq. ft.	0.65 sq. m.
Aileron (Incl. 4.24 sq. ft. Balance & Trim Tab)	18.41 sq. ft.	1.71 sq. m.
Elevator (Incl. 3.8 sq. ft. Balance & Trim Tab)	19.20 sq. ft.	1.78 sq. m.
Rudder (Incl. 1.94 sq. ft. Balance & Trim Tab)	13.74 sq. ft.	1.27 sq. m.

### MISCELLANEOUS

Wing Airfoil Section (Root)	NACA 2215	
Wing Airfoil Section (Tip)	NACA 2209	
Chord (Root)	9.0 ft.	2.74 m.
Chord (Tip)	3.86 ft.	1.17 m.
Wing Span	37.3 ft.	11.37 m.
Length Overall	28.8 ft.	8.78 m.
Height	9.25 ft.	2.82 m.
Tread (Landing) Gear	8.08 ft.	2.46 m.

### LOADINGS

With Normal Gross Weight (Pursuit)	5922 lbs.	2675.7 kg.
Wing Loading	25.1 lbs. sq. ft.	122.5 kg. sq./m.
Power Loading (at 15,300 ft. alt.)	6.23 lbs. hp	2.83 kg/hp

### DESIGN LOADING FACTORS

(Normal Gross Weight)

All positive Angles of Attack (U. S. Analysis Methods) 11.5

Landing Load Factors 6.8

The maximum permissible true indicated diving speed is 455 mph 716.2 km/hr

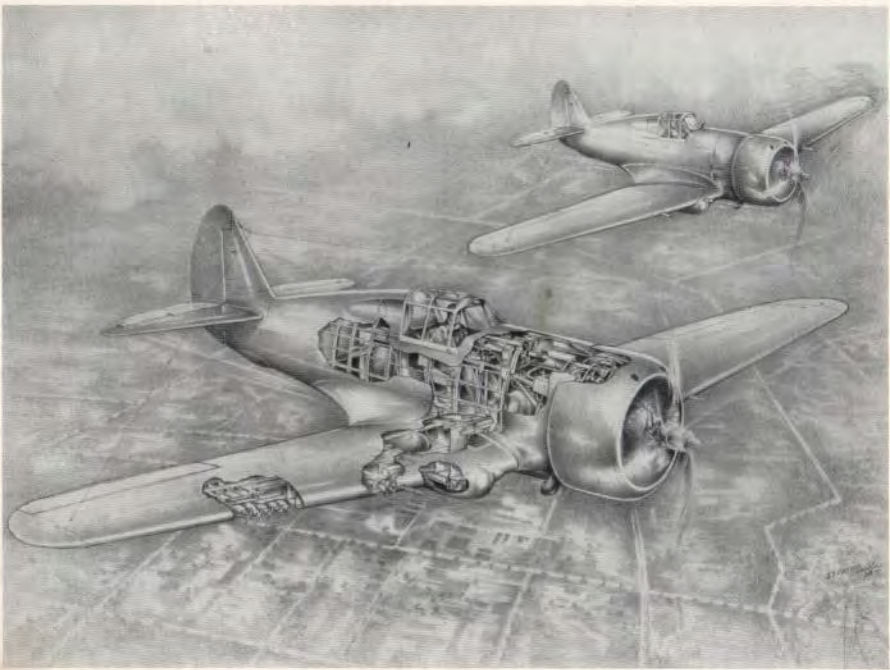
The airplane can be furnished with standard load factors at an increase in weight and price.

### ENGINE CHARACTERISTICS

Pratt & Whitney Twin Wasp S3C3-G geared (Spec. 5052-A)		
Horsepower max. at critical rammed alt.	950	900
Horsepower at takeoff (2700 r.p.m.)	1100	1050
Horsepower max. at cruising (2200 r.p.m.)	700	650
Horsepower max. at sea level (2700 r.p.m.)	950	
Compression ratio	6.7:1	6.7:1
Blower Ratio	8.0:1	7.15:1
Propeller Gear Ratio	16.9	16.9
Propeller Diameter (Curtiss 3 Blade)	10'-1 1/4"	

S3C3-G

*Quinn*  
HAWK 75-A PURSUIT AIRPLANE





# HAWK 75-A PURSUIT AIRPLANE

## GENERAL CONSTRUCTION

### WINGS

The wings are all metal with multiple spars, having an internal structure of longitudinal stiffeners, shear spars, and fore and aft bulkheads which are riveted to the skin. They are constructed in four separate units; right and left wing panels, and right and left wing tips. The right and left hand panels are bolted together at the center line with a series of bolts. The tips are readily detachable by means of screws. The covering is Alclad aluminum alloy of the stressed skin type riveted to the stiffeners, spars and bulkheads. Flush type riveting is used from the leading edge aft to web No. 3 on the upper surface, and aft to web No. 2 on the lower surface. From web No. 3 and No. 2 aft the rivets are of the modified brazier head type. The panel is tapered in planform and in thickness. The airfoil section used is the N. A. C. A. 2215 at the root and N. A. C. A. 2209 at the tip.



The panels contain two fuel tanks located near the centerline so their loadings are concentrated near the center of gravity.

Circular recesses are provided in the lower surface of the wing to provide housings for the wheels when in the retracted position.

All metal, split type trailing edge, hydraulically operated flaps are used. They operate through a range of 45° from the lower surface of the wing. The operating mechanism permits any desired degree of flap position within the specified range. They extend approximately from the centerline of the airplane to 122 inches outward from the centerline and have approximately 34.8 square feet of total area. Two Type A-3 bomb rack beams are installed, one in each panel, set so that they are flush with the lower surface.

The ailerons are of fabric covered aluminum alloy structure, supported by ball-bearing hinges and operated by control cables. No external horns or push-pull rods are used. The ailerons are statically, dynamically and aerodynamically balanced, in accordance with U. S. Army Air Corps requirements, and have a fixed tab on one aileron, adjustable on the ground for lateral trim. A non-skid walkway, composed of carborundum and formica sprayed on to a base of glue, is provided on each panel alongside of the fuselage.

### TAIL GROUP

1. **Horizontal Stabilizer . . .** This surface is of the full cantilever fixed type. It is of multicellular construction, composed of webs and bulkheads and completely covered with Alclad aluminum alloy stressed skin. The skin is riveted to the structure from the leading edge back to web No. 2 with flush type riveting and from web No. 2 aft, with modified brazier head rivets. The webs are riveted to a vertical rib running fore and aft at the center of the structure. It is attached to the fuselage by means of 8 forged aluminum alloy attachment fittings.

# Quirt's HAWK 75-A PURSUIT AIRPLANE



mic balance. A lead weight riveted to the beam extends forward of the hinge line on the outer-portion of the surfaces providing static and dynamic balance in accordance with U. S. Army Air Corps requirements.

High aspect ratio tabs inset in the trailing edge of the elevator provide longitudinal trim and are in lieu of an adjustable stabilizer for landing. These tabs are adjustable from the pilot's cockpit. Ball bearings are used throughout.

**4. Rudder . . .** Materials and types of construction of the rudder are the same as for the elevator. A trim tab, controlled from the pilot's cockpit, is inset in the trailing edge for directional trim. The rudder is also dynamically, aerodynamically and statically balanced, in accordance with U. S. Army Air Corps requirements. Ball-bearing hinges are used throughout.

## FUSELAGE

The fuselage is all metal, semi-monocoque construction covered with Alclad aluminum alloy stressed skin. The skin is riveted to, and reinforced by, transverse bulkheads and longitudinal stringers and reinforcements. It is fabricated in two sections, upper and lower, and then riveted together. Its attachment to the wings is by means of bolts.

The fuselage behind the cockpit is reinforced to protect and support the airplane in the event the airplane should be nosed over. This condition necessitates strengthened transverse bulkheads in the fuselage directly in back of the pilot. In addition to the bulkheads the fuselage is so constructed as to withstand loads up to 6g for the nose-over condition.



# *Quirt's* HAWK 75-A PURSUIT AIRPLANE

Access to the interior of the fuselage aft of the pilot's cockpit is obtained through the baggage compartment door on the left side of the fuselage. An access door for servicing the tail wheel oleo and controls is provided on each side of the fuselage. The "I" beam along the centerline of the under surface of the wing at its center junction is sufficiently strong and so constructed as to serve as a protective skid in the event of a landing with the wheels retracted.

## FILLETS

Fillets are provided at the intersection of the wing and fuselage and at the intersection of the tail and fuselage surface.

The wing-fuselage fillet is a concave, aluminum alloy, spot welded surface, and is attached by means of screws.

The fillets for the tail surface to fuselage junction are constructed in four sections of aluminum alloy. The parts are formed in a press providing the desired contour, and are attached to their surfaces by means of screws.

## LANDING GEAR

The landing gear, including the tail wheel, is fully retractable by means of an electrically operated hydraulic pump. A hand pump is also provided for emergency operation. Either pump also operates the flaps.

The system is so constructed that the flaps and landing gear may be operated either individually or together.

The front portion of the landing gear hinges at a point under the main wing beam and folds back and up, with the wheels rotating approximately 90°, allowing them to fit into the wings in a horizontal position on a plane parallel to the plane of the wings.

Towing rings and jack pads are provided on the gear itself.

The tail wheel is fully retractable into the fuselage with doors so constructed as to close the opening when the wheel is drawn into the fuselage. The tail wheel operates simultaneously and by the same pump as the main landing gear. The tail wheel is steerable with the rudder through approximately 35 degrees. It is so constructed as to allow it to disengage itself when side pressure is imposed and to swivel through 360 degrees. An adjustable friction device to prevent shimmy is provided.

There are two warning indicators installed in the pilot's cockpit. One is a Klaxon horn to indicate when the wheels are not in the fully extended position. It is actuated by the throttle when in the partially closed position. Another visual indicator shows the position of the landing gear at all times.

**Wheels and Tires . . .** Roller bearing wheels are used on both the landing gear and tail wheel. 27-inch, 6-ply smooth contour tires and puncture-proof tubes are used on the main gear. On the tail wheel, a 10-inch smooth contour tire and tube are used.

**Brakes . . .** The brakes are of the hydraulic type. They are individually operated by brake cylinder units mounted on the pilot's rudder pedal support structure. A parking lock for the brakes is provided.



**COCKPIT AND CABIN**

The windshield is made in three pieces of non-shatterable glass. Behind the windshield, there is a sliding enclosure over the cockpit to form a completely enclosed cabin for the pilot. Provision is made so that the pilot can control the enclosure by a hand crank which opens, closes, or locks the cabin in one of many intermediate positions. An external control makes it possible to operate the enclosure from the outside of the airplane. One side of the sliding enclosure is so constructed as to provide for a quick release of the glass and serve as an emergency exit.



The cockpit is heated by warm air from a preheating chamber constructed on the shroud which surrounds the exhaust collector ring. The air is taken from a point in front of the engine cylinders and conducted through the heater to the lower front portion of the cockpit. Cool air may be permitted to enter the cockpit at the same orifice in place of heated air if desired, by means of a push-pull lever in the cockpit. The cool air is taken from an orifice in the lower leading edge of the wing and conducted to the cockpit. Both heated and cool air are free from exhaust or gas fumes.

The pilot's seat and safety belt are adjustable.

The floor of the cockpit is the upper surface of the wing. It is continuous across the lower portion of the fuselage.

All equipment operated by the pilot is conveniently located so as to have maximum accessibility.

All fuel gauges are lighted and located in the view of the pilot.

All guns are fired by means of a trigger located on the pilot's control stick.

Bomb controls are so installed as to release the bombs, safe or armed, selectively or in salvo, regardless of the number or kind of bombs.

An indirectly lighted instrument board is provided with light intensity controlled by a rheostat.

**ENGINE INSTALLATION**

A flame tight firewall constructed of stainless steel separates the pilot's cockpit from the engine compartment. Forward of the firewall there are four steel fittings attached to the fuselage for engine mount attachments. The fittings support a welded chrome molybdenum engine mount of tubular construction. The engine is mounted in nine (9) rubber mounts on the steel tubular ring. All lines, wiring, etc. are provided with quick detachable fittings at the firewall to facilitate rapid engine change.

The engine cowling consists of an engine ring cowl of aluminum alloy, split in two halves, upper and lower, to provide quick removal.

The exhaust manifold is constructed of heat and corrosion





# HAWK 75-A PURSUIT AIRPLANE

resistant steel. There is a shroud around the manifold, fabricated of spot welded stainless steel.

The engine compartment has large removable door cowls on each side to provide access for inspection and servicing. A detachable cowl is also provided at the top of the compartment for access to the power plant accessories and guns.

## POWER PLANT

The airplane is powered with a Wright "Cyclone", GR-1820-G105A engine, rated without ram air at 900 horsepower at 2300 r.p.m. at 6500 feet when in low blower gear, and 750 horsepower at 2300 r.p.m. at 18,000 feet when in high blower gear of the two-speed supercharger.

## PROPELLER

The propeller is a Curtiss 3-blade, electrically controlled, constant speed propeller. It has such features that the pilot may control the r.p.m. and pitch automatically while operating on constant speed, or he may switch to a fixed pitch and change to the pitch desired by means of an electric switch. Provision for feathering is included in the propeller, but the electric circuit which provides this feature is not normally connected on single engine airplanes.

## SCOOPS AND DUCTS

1. **Carburetor air . . .** The air intake is of the ramming type, collecting the air in a high pressure area in front of the engine, by a scoop riveted to the ring cowl. The air is conducted to the carburetor through a sealed duct.
2. **Magneto Blast Tubes . . .** Two blast tubes have their opening in front of the engine to convey cold air to the magnetos.
3. **Oil Cooler Scoop . . .** The oil cooler is supplied with cold air by a duct leading from the lower leading edge of the ring cowl.

## FUEL SYSTEM

Three fuel tanks of welded aluminum alloy construction are provided with a total capacity of 163 U. S. gallons (617 liters). Two of the tanks mounted in the wings are flat sided with internal baffles for strength and rigidity. A third, the fuselage tank, consists of two pressed ends welded to a central strip, forming an oval shaped tank. The wing tank capacities are 42 gallons and 63 gallons, respectively. The fuselage tank capacity is 58 gallons.

Standard fuel system valves and controls are used throughout the system. A manually operated wobble pump remote control handle is located on the left side of the cockpit in a readily accessible position. Fuel quantity gauges are furnished for each tank. The gauges for the wing tanks are located directly above their respective tanks. The fuselage tank gauge is located on the instrument board. Each gauge is adequately lighted for night readings. The fuel pump is an engine driven pump with a bypass and relief valve. There is a fuel pressure warning light installed on the instrument board to warn the pilot when the pressure becomes low. All fuel lines are made of aluminum alloy with standard hose connections in accordance with the U. S. Army Air Corps practice.

## OIL SYSTEM

The oil tank is of welded aluminum alloy construction, internally strengthened by one baffle. It is installed forward of the firewall. It has a normal capacity of 10 gallons (37.8 liters) and a maximum capacity of 14 gallons (52.9 liters) with additional foaming space. The cooler is automatically controlled, using a spring loaded relief valve. Tubing and connections for the oil system are of the same specifications as the fuel system.

**ELECTRIC EQUIPMENT**

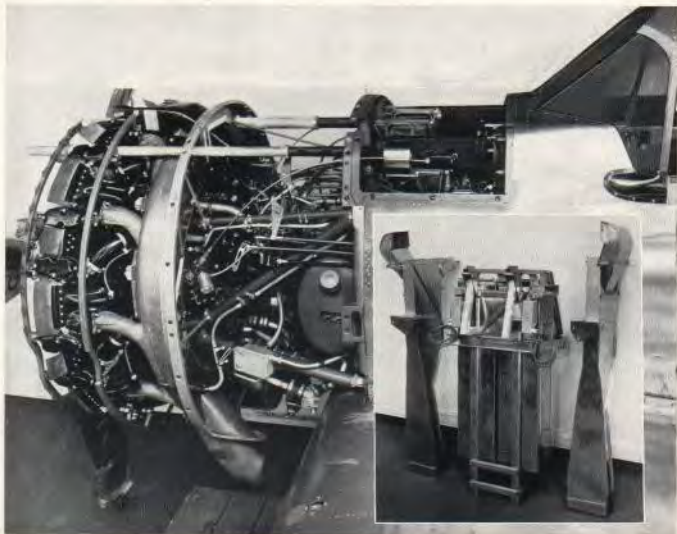
Electrical units receive their power supply from a battery and an engine driven generator.

1. **Starter** . . . The starter is of the hand inertia type.
2. **Lights** . . . Navigation lights are installed in the upper and lower surfaces of each wing tip and on both sides of the vertical stabilizer. Four instrument panel lights, the intensity of which may be varied by adjustment of a rheostat, furnish illumination of the instruments for night flying. Individual cockpit lights illuminate the compass and fuel tank gauges and are for reading maps at night.
3. **Battery** . . . The battery is encased and sealed in a molded, rubber lined, leakproof case, vented by tubing to the atmosphere outside of the fuselage. It is installed in the fuselage near the baggage compartment door.

All electric wiring is shielded and bonded in accordance with the U. S. Army Air Corps practice. Suitable fuses are provided to protect the electrical system.

**ARMAMENT**

1. **Guns** . . . Provision is made for the installation of one .30 caliber and one .50 caliber Colt machine gun mounted in the fuselage, one on each side and forward of the instrument panel with the charging handles within reach of the pilot. The right hand .50 caliber gun mount may be used for the alternate installation of a Fairchild 16 mm gun camera.



2. **Ammunition boxes . . .** The ammunition boxes and feed and ejection chutes for these guns are fabricated of spot welded stainless steel. They have a capacity of 200 rounds of .50 caliber or 600 rounds of .30 caliber ammunition, depending on the size of gun for which they are intended.
3. **Synchronizers . . .** Standard mechanical synchronizers mounted on the engine connect to the gun trigger mechanism to permit firing through the propeller disc.
4. **Rounds Counters . . .** Rounds counters, visible to the pilot, are installed to indicate the number of remaining rounds of cartridges to be fired from each fuselage gun.
5. **Sight . . .** A ring and bead sight is provided at the level of the pilot's eye on the centerline of the fuselage forward of the windshield. The ring is adjustable both vertically and laterally.
6. **Firing mechanism . . .** An electric trigger is mounted in the pistol grip on the control stick for firing all guns. A selector switch is installed in the cockpit if the alternate wing guns are used. This switch has four points: (1) Wings guns only, (2) Fuselage guns only, (3) All guns together, (4) No guns. When the charging handle of a gun is latched out, that gun is prevented from firing. This gives the pilot full control of the fire power. Wing guns are described later under "Alternates".
7. **Link and Shell Retrievers . . .** The ejection chutes of the fuselage guns lead to a compartment in the wing in which the fired cases and used links are collected.

### **B O M B S**

One A-3 bomb rack beam is installed in each wing. This beam is mounted flush with the wing and located far enough outboard to clear the propeller when the bombs are dropped during a steep dive. The racks are removable and are not carried during flight test as they constitute an overload condition.

The control handle in the cockpit operates the release for the bombs either selectively or in salvo. The number of bombs carried on the two beams may be distributed as follows:

10-30 pound fragmentation—or 10-25 pound chemical—or 6-50 pound demolition.



### **B A G G A G E   C O M P A R T M E N T**

In the fuselage there is a baggage compartment large enough to accommodate luggage, tools and engine cover for cross-country flying. The metal lining of the compartment is quickly and easily removable to permit easy access to the radio and flare installations, and to facilitate inspection of controls inside the fuselage.



**RADIO**

Space is provided in the cockpits for the installation of a two-way radio. Provision for the installation of a particular type radio specified by the customer will be made for a nominal extra charge.

**PYROTECHNICS**

1. **Flares** . . . Racks, controls and release handles are installed to carry two large A-8 Type parachute flares in the fuselage just forward of the baggage compartment door opening. Doors in the fuselage are provided through which the flares drop when released by the pilot.

2. **Signal Pistol** . . . Cartridge clips and space for a signal pistol mounting are provided in the cockpit.

**OXYGEN**

Brackets and supports for mounting a one-man oxygen tank are installed in the rear section of the fuselage. A support is provided in the cockpit for installation of the regulator. The type of regulator must be specified by the customer.

**PROTECTIVE COATINGS AND FINISH**

The airplane will be highly polished leaving the natural aluminum external finish. No external paint is applied except for lettering and insignia.

The protection of the structure against corrosion and the finishing is in accordance with standard methods of the United States Army Air Corps.

In general all the parts of aluminum or aluminum alloy, except those noted as follows, are submitted to an anodic treatment in detail after cleaning and before applying the primer. The following parts will not be anodized:

Aluminum alloy castings.

Aluminum alloy parts for the oil and fuel tanks.

Aluminum alloy tubing for oil and fuel lines, instrument and power plant installations.

Aluminum alloy forged parts which have a diameter or thickness greater than 3.2 mm (1/8").

Aluminum alloy sheet and/or aluminum tubing for carrying electric conductors and control cables.

All Alclad aluminum alloy materials.

In general all steel parts, including rivets and washers, are cadmium plated. The following steel parts are not cadmium plated:

Parts manufactured of corrosion resistant steel or stainless steel.

Large welded structures, such as the engine mount.

Cables and springs.

Parts or pieces of parts which function as bearings or journals.

Cable or steel lock-washers.

In general all the parts will be painted with the specified coat or coats of primer immediately after the anodic treatment or after the cadmium plating or the cleaning, but before assembly. After the assembly, the coats of paint are applied as called for. The parts or surfaces not easily accessible after assembly can be painted with one or more coats of the specified final painting before assembly.



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All Alclad parts are finished with one coat of shop coating (Lionoil, primer or equivalent) before assembly. All non-Alclad parts are finished with one coat of metal primer before assembly. Interior surfaces including Alclad in wings and tail are finished with a coat of aluminum enamel after assembly. The interior of the fuselage is finished with one coat of aluminized zinc chromate primer (green color) in accordance with U. S. Army Air Corps practice.

The outside surfaces have a natural bright finish in accordance with United States Army Air Corps practice.

The cloth covered surfaces of the ailerons and tail are finished with pigmented nitrate dope in the color which will be indicated by the customer.

The insignia to be painted on the airplanes will be determined by the customer who will advise the Curtiss-Wright Corporation of same at the proper time.

## NORMAL EQUIPMENT

### POWER PLANT

- 1 Wright Cyclone 9-cylinder radial air-cooled geared G105A engine, complete with all necessary equipment and accessories
- 1 Shroud type carburetor air intake heater and control
- 1 Exhaust manifold
- 1 Engine-driven fuel pump
- 1 Relief valve
- 1 Primer pump
- 1 Fuel cock and selector
- 1 Oil temperature regulator
- 1 Right and left gun synchronizer unit
- 1 Vacuum pump
- 1 Hand inertia starter with integral booster coil
- 1 Constant speed propeller governor
- 1 Constant speed 3-blade propeller
- 1 Combination fuel strainer and wobble pump

### ARMAMENT

- 2 Fuselage gun mounts
- 2 Ammunition boxes and supports (1-.30 and 1-.50 cal.)
- 2 Gun mounting posts, detachable type
- 2 Gun trunnion mounting posts, detachable type
- 2 Sets, case and link ejection chutes
- 2 Link and shell retrievers (fuselage guns only)
- 2 Round counters (fuselage guns only)
- 2 Blast tubes
- 1 Electric trigger control
- 2 Gun synchronizer impulse tubes
- 1 Control stick pistol grip
- 1 Ring and bead sight
- 2 Bomb release handles, 1-L-13 modified for selectivity and 1-A-3 for salvo
- 2 Sets bomb rack controls
- 2 A-3 bomb rack main beams

### INSTRUMENTS

- 1 Air speed indicator
- 1 Altimeter, sensitive type
- 1 Compass
- 1 Bank and turn indicator
- 1 Climb indicator

- 1 Directional gyro
- 1 Tachometer and shaft
- 1 Engine gauge unit (oil temperature, oil pressure, fuel pressure)
- 1 Fuel gauge, fuselage tank
- 2 Fuel gauges, wing tanks
- 1 Thermocouple, head temp. for No. 1 cylinder
- 1 Suction gauge
- 1 Clock
- 1 Airspeed head
- 1 Fuel pressure warning unit
- 1 Carburetor adapter thermometer
- 1 Manifold pressure gauge
- 1 Landing gear and flap indicator

### ELECTRIC EQUIPMENT

- 1 Generator 25 amp., control box and ammeter
- 1 Switch for navigation lights
- 1 Switch for instrument lights
- 2 Rheostats for instrument and compass lights
- 1 Battery and container
- 6 Navigation lights
- 1 Set propeller controls
- 1 Set fuses
- 1 Electric hydraulic pump

### PYROTECHNICS

- 2 Flare containers
- 2 Flare release handles, brackets, cables, etc.

### MISCELLANEOUS EQUIPMENT

- 1 Map case
- 1 Hand fire extinguisher
- 1 Fire extinguisher support
- 1 Pilot's safety belt
- 1 Pilot's life preserver cushion
- 1 Baggage compartment
- 1 Set brackets and supports for oxygen equipment
- 1 Relief tube

### EXTRA LOAD

- 1 Engine cover
- 1 Tool kit
- 1 Engine handbook
- 1 Airplane handbook



## ALTERNATES - EXTRA EQUIPMENT

Alternates and extra equipment listed below are offered at the customer's option at additional cost.

Allowance for change in weights and performance must be made.

### GUNS

1. **Fuselage . . .** Provision for a .30 caliber Colt Gun may be substituted for the .50 cal. on the right hand mount.

Complete provision for one Madsen 7.35 mm and one 11.35 mm fixed gun with boxes for approximately 600 and 200 rounds of ammunition respectively.

Complete provision for one 8 mm and one 12.7 mm fixed Vickers gun with provisions for approximately 385 and 175 rounds of ammunition respectively.

2. **Wing Guns . . .** This equipment includes complete provisions for two additional forward firing .30 caliber machine guns mounted one in the right and one in the left wing outside the propeller disc—thereby making a four-gun pursuit or attack airplane. A 500 round ammunition box may be provided for each gun of the .30 caliber size, loaded through a door on the top of the wing. The guns are mechanically charged by a cable and pulley system through two handles located in the cockpit. They may be fired electrically by a solenoid attached to the gun and controlled through the gun selector switch and pistol grip on the control stick.

These guns may be mounted quickly in position through the openings provided in the leading edge of the wing. Their trunnion adapters are guided by a cradle which supports and automatically locks the gun in position. These plunger locks are disengaged by pulling down and slightly turning their ring type handle, which extends below the wing surface.

A door is provided above each gun for bore-sighting and for clearing jams. The gun is adjustable laterally and vertically through its cradle mounting post, which is accessible through a large door below the gun.

Covers for the gun opening in the leading edge of the wing are supplied in a plain type for use when the gun is removed, and an extended type when the gun is installed but not being used.

Alternate wing gun installations may be obtained by substituting any of the following guns in place of the 2—.30 caliber Colt installations described above.

- 4—.30 cal. Colt guns (two mounted in each wing) (500 rounds of ammunition each)
- 2—.50 cal. Colt guns (one mounted under each wing) (200 rounds of ammunition each)
- 2—6.5 mm or 8.0 mm Madsen Guns (one mounted in each wing) (500 rounds of ammunition each)
- 2—8 mm Vickers guns (one mounted in each wing) (500 rounds of ammunition each)
- 2—23 mm Madsen guns (explosive projective); (one mounted under each wing) 100 rounds of ammunition each)
- 2—20 mm Oerlikon guns (explosive projective); (one mounted under each wing) (75 rounds of ammunition each)

### ARMOR

A pilot's protective shield of 1/4" armor plate may be installed at the rear of the pilot's seat.

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## **BOMBS**

Additional bomb racks and controls may be provided to carry two 100-pound bombs, one under each wing inboard of the regular bomb racks. These bombs are far enough outboard to clear the propeller disc if released in a dive.

An additional rack and controls may be provided to carry one 500 lb. bomb under the fuselage.

## **RADIO**

Complete provision can be made for the installation of the radio at additional cost. This provision will include installing all necessary parts for the radio installation, including complete "V" type antenna, fuses, terminals, special clips, conduits and special generator.

The radio will be completely installed in the airplane and ground tested at additional cost at the customer's option.

## **ELECTRICAL**

An electric starter with integral booster coil can be provided.

A Grimes retractable landing light can be furnished. This light is inset and flush with the wing when retracted.

## **OXYGEN**

The supports for the oxygen installation are furnished with the normal airplane. Oxygen tanks, regulator and lines will be provided at the customer's option and installed by the contractor.

## **SEAPLANE**

An Edo twin float installation will be provided at the customer's option.

## **EMERGENCY LIFE RAFT**

An inflatable rubber life raft will be furnished if desired by the customer.

## **MISCELLANEOUS**

A pressure fire extinguisher of the CO<sub>2</sub> type controlled from the cockpit with the CO<sub>2</sub> bottle located in the rear section of the fuselage can be installed.

An outside air thermometer, with the instrument head mounted on the instrument board may be furnished.

An exhaust gas analyzer cell can be installed forward of the fire wall. The instrument can be mounted on the instrument board.

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## VARIOUS LOADINGS

The performance figures tabulated on page 7 are obtained from actual flight tests with normal pursuit loadings. The figures were obtained with a useful load of 1209 pounds (548.4 Kilos). With a very slight reduction of speed, climb and load factors, a useful load of 2425 lbs. (1100 Kilos.) is permissible.

The maximum useful load of 2425 lbs. may be distributed as follows:

Pilot	200 lbs.	90.7 kg.
Fuel (163 U. S. gal.—617 lit.)	978 lbs.	443.6 kg.
Oil (14 gal.—52.9 lit.)	105 lbs.	47.6 kg.
Fuselage guns (1-.30 1-.50 cal. Colt)	174 lbs.	78.9 kg.
Bombs 1-500 lb., 2-100 lb., 6-25 lb.	850 lbs.	385.7 kg.
Radio	112 lbs.	50.8 kg.
Oxygen	15 lbs.	6.8 kg.
Signal Pistol	3 lbs.	1.3 kg.
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TOTAL	2437 lbs.	1105.4 kg.

This loading gives a cruising range of approximately 915 miles, or 1472 km. If flares and wing guns with ammunition are desired, 166 lbs. of fuel or bombs shall be left out.

The Pursuit-Attack equipment that may be used gives a typical useful loading of 1670 lbs. or 757.5 kg. is as follows:

Pilot	200 lbs.	90.7 kg.
Fuel (105 U. S. gal. 397 liters)	630 lbs.	285.8 kg.
Oil (10 U. S. gal. 37.8 liters)	75 lbs.	34.0 kg.
Fuselage guns (1-.30, 1-.50 cal. Colt)	174 lbs.	78.9 kg.
Wing guns (2-.30 cal. Colt)	111 lbs.	50.4 kg.
Wing bombs (10-30 lb. or 6-50 lb.)	300 lbs.	136.1 kg.
Radio	112 lbs.	50.8 kg.
Oxygen	15 lbs.	6.8 kg.
Signal pistol	3 lbs.	1.3 kg.
Landing flares (2)	50 lbs.	22.7 kg.
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TOTAL	1670 lbs.	757.5 kg.

With the Pursuit-Attack loading, the range is approximately 597 miles or 961 km.

## PACKING AND SHIPPING

The Curtiss Hawk 75-A is packed in two boxes for export shipment. Cases are weather and moisture proofed and all parts are braced rigidly so as to insure that no damage will result from handling. Loose parts are carefully packed with the airplane.

Approximate weights and case sizes are as follows:

BOX No. 1	BOX No. 2
Fuselage and Engine	Wing, Empennage, and Propeller
Length . . . . . 26'0"	Length . . . . . 35'6"
Width . . . . . 5'4"	Width . . . . . 4'0"
Height . . . . . 7'	Height . . . . . 10'0"
Gross . . . . . 5440 lbs.	Gross . . . . . 7700 lbs.
Tare . . . . . 2615 lbs.	Tare . . . . . 5825 lbs.
Net . . . . . 2825 lbs.	Net . . . . . 1875 lbs.
Cubic Feet, 970.7	Cubic Feet, 1400