

= General Aircraft Hotspur =

The General Aircraft GAL.48 Hotspur was a military glider designed and built by the British company General Aircraft Ltd during World War II . When the British airborne establishment was formed in 1940 by order of Prime Minister Winston Churchill , it was decided that gliders would be used to transport airborne troops into battle . General Aircraft Ltd were given a contract by the Ministry of Aircraft Production in June 1940 to design and produce an initial glider for use by the airborne establishment , which resulted in the Hotspur .

Conceived as an " assault " glider which necessitated a compact design and no more than eight troops carried , tactical philosophy soon favoured larger numbers of troops being sent into battle aboard gliders . Due to this , the Hotspur was mainly relegated to training where it did excel and it became the basic trainer for the glider schools that were formed .

The Hotspur was named after Sir Henry Percy , a significant captain during the Anglo - Scottish wars who was also known as " Hotspur " .

= = Development = =

= = = Operational requirements = = =

The German military had pioneered using airborne formations , conducting several successful airborne operations during the Battle of France in 1940 , including the Battle of Fort Eben - Emael . Impressed by the success of German airborne operations , the Allied governments decided to form their own airborne formations . This decision would eventually lead to the creation of two British airborne divisions , as well as a number of smaller units . The British airborne establishment began development on 22 June 1940 , when the Prime Minister , Winston Churchill , directed the War Office in a memorandum to investigate the possibility of creating a corps of 5 000 parachute troops . When the equipment to be used by the airborne forces was under development , War Office officials decided that gliders would be an integral component , to transport troops and heavy equipment .

On 21 June 1940 the Central Landing Establishment was formed at Ringway airfield near Manchester ; although tasked primarily with training parachute troops , it was also directed to investigate using gliders to transport troops into battle . It had been decided that the Royal Air Force and the Army would cooperate in forming the airborne establishment , and as such Squadron Leader L.A. Strange and Major J.F. Rock were tasked with gathering potential glider pilots and forming a glider unit ; this was achieved by searching for members of the armed forces who had pre - war experience of flying gliders , or were interested in learning to do so . The two officers and their newly formed unit were provided with four obsolete Armstrong Whitworth Whitley bombers and a small number of Tiger Moth and Avro 504 biplanes for towing purposes .

As this unit was in the process of being formed , in June the Ministry of Aircraft Production contracted General Aircraft Ltd to design and produce an initial glider type for use by the airborne establishment . It would be used for both assault and training purposes , and would be capable of transporting eight airborne troops . The glider had to be capable of a long approach during landing , due to the prevailing belief at the time that gliders would have to be released a considerable distance from the target and glide in to ensure the sound of the towing aircraft did not alert the enemy . It therefore had to be aerodynamically stable , but also cheap and easy to construct as it would only be used once . The Hotspur was intended to have an operational range of 100 miles (160 km) when released at high altitude , although in practice this was reduced to 80 miles (130 km) when released from a height of 20 000 feet (6 100 m) .

= = Design = =

The GAL.48 was primarily designed by F.F. Crocombe (team leader) to the Air Ministry

specification X.10 / 40 , and was to be similar in design to the German DFS 230 assault glider which had been used in the Battle of the Netherlands . The first prototype of the glider , designated GAL.48 and which would receive the service name Hotspur Mk I , flew in November , only four months after General Aircraft Ltd had been given the requirement for the glider . An initial order of 400 Hotspurs was placed with General Aircraft Ltd in September by the Ministry of Aircraft Production , nearly two months before the prototype first flew .

The Hotspur Mark I was constructed from wood and was designed to accommodate eight fully armed airborne troops . Its wingspan was 62 feet (18 @. @ 90 m) and it was 39 feet 3 @. @ 5 inches (11 @. @ 98 m) in length . With a full load (approximately 1 @, @ 880 pounds (850 kg)) , it weighed approximately 3 @, @ 600 pounds (1 @, @ 600 kg) . The Mk I was distinguished from its other variants by the addition of cabin portholes along its fuselage , and hooks on the nose and tail to allow multiple Hotspurs to be towed together . The two pilots , and later the pilot and instructor when the Hotspurs were used as training gliders , sat in tandem in the cockpit . It had a jettisonable undercarriage , and its unusual fuselage functioned like a lid ; once the Hotspur had landed , the troops inside would throw off the top half of the fuselage and then climb out of the lower half , much like leaving a small boat . A total of 18 Hotspur Mk Is were produced , 10 by GAI and eight by Slingsby Aircraft .

The first operational Hotspur arrived at the Central Landing Establishment between February and April 1941 , with 15 being delivered by 22 August . Towing trials began in February 1941 with a Boulton & Paul Overstrand bomber .

= = = Further development = = =

Even as the initial 400 gliders were being produced , several problems with the Hotspur 's design were uncovered , the primary one being that the glider did not carry sufficient troops . Although it had been designed to transport eight airborne troops and a cargo of 1 @, @ 880 pounds (850 kg) , this was found to be inadequate . Tactically it was believed that airborne troops should be landed in groups far larger than eight , and the number of aircraft therefore required to tow the gliders needed to land larger groups would be unfeasible ; there were also concerns that the gliders would have to be towed in tandem if used operationally , which would be extremely difficult during nighttime and through cloud formations . Its disappointing glide ratio was also a contributing factor to reevaluate the assault glider concept .

Due to the limitations inherent in the Hotspur design , the decision was made to continue with the development of several other types of gliders , including a 15 @-@ seater which would become the Airspeed Horsa and a tank @-@ carrying glider , which would become the General Aircraft Hamilcar . The Hotspur remained in production primarily as a training aircraft and as a " stop @-@ gap " in case the other programmes failed .

Three variants on the original Hotspur Mk I were created . The first was the heavily modified Mk II (Specification X.22 / 40 and X.23 / 40) , which was redesigned partially to address changes in operational requirements and also to bolster the ground handling of the initial series of aircraft . In operations , rather than releasing the glider from a long distance away and allowing it to glide gently to the ground , it was decided that the towing aircraft would approach the landing zone and only then release the glider , requiring a more robust glider . The Hotspur Mk I wings had also shown considerable flex and the type had proved difficult to handle on the ground . In order to reduce stresses on the airframe , the fuselage was strengthened and wings were " shortened " by over eight ft each , resulting in a wingspan of 45 feet 10 @. @ 75 inches (13 @. @ 99 m) with the tips made square @-@ cut and ailerons moved from the end of the wings to an inset position .

While maintaining its original all @-@ wood construction and overall fuselage and empennage dimensions , the Mk II incorporated a modified fuselage which included altering the cockpit enclosure and a " deeper " canopy . Instead of using the " lid " (where the two pilots still boarded via the hinged Plexiglass canopy) , two side doors were added from which troops would enter and depart . The seating was re @-@ arranged , and a braking parachute added to the rear . Its other dimensions remained the same , however , with a length of 39 feet 3 @. @ 5 inches (11 @. @ 98 m

) and a gross weight of approximately 3 @, @ 600 pounds (1 @, @ 600 kg) , with eight airborne troops and some 1 @, @ 880 pounds (850 kg) of equipment .

A total of 50 of the early @-@ production Mk IIs were modified into trainers as the Mark III , by adding dual controls and instruments for the student pilot and an externally braced tailplane .

The third variant of the Hotspur was the GAL.48B " Twin Hotspur " , which did not progress past the prototype phase . The Twin Hotspur was a 1942 attempt to create a glider capable of carrying 15 airborne troops as an interim glider until production of the Horsa reached sufficient levels . It was created by connecting two Hotspur fuselages together , using a constant @-@ chord centre wing section of 12 feet (3 @. @ 66 m) length , and a constant @-@ chord tailplane . Two pilots sat tandem @-@ style in the port fuselage . In August 1942 , the sole " Twin Hotspur " prototype (MP486) underwent testing , towed behind an Armstrong Whitworth Whitley tug . The project was abandoned before production could begin , primarily because the glider 's flight characteristics were criticised by its pilots .

= = Production = =

When Hotspur production ended in early 1943 , a total of 1 @, @ 015 gliders had been produced . The primary sub @-@ contractor , Harris Lebus was responsible for 996 Mk IIs and Mk IIIs while the parent company produced only 10 Mk Is and a single Mk II prototype . Slingsby was the only other sub @-@ contractor involved in production with eight Mk Is completed .

= = Operational history = =

Due to changing operational requirements , no Hotspurs were used in combat operations , and were instead exclusively used for training purposes ; it was the glider in which all pilots belonging to the Glider Pilot Regiment received their initial instruction . Although relatively heavy with a high sink rate , the Hotspur exhibited good flying characteristics and could even be flown aerobatically , allowing novice pilots to quickly gain proficiency . The first glider pilots were curiously named " glider coxswains " .

Glider pilots first trained at an Elementary Flying Training School on de Havilland Tiger Moths or Miles Magisters before converting to glider training . At the Glider Schools , a Hotspur MK III was first employed for dual instruction with the rear seats weighted for ballast and only the instructor and student aboard . The gliders were usually towed by Hawker Hector or Hawker Audax biplanes (later Miles Master and Westland Lysander " tugs ") during training . Some 8 to 11 dual @-@ instruction flights usually preceded the student 's first solo flight . At Operational Training Glider Schools , the flights were made with troops instead of ballast in Hotspur MK IIs . Release at high altitudes and night @-@ flying was also part of the training .

A total of 250 Hotspurs were retained for operational use if they were required , but the rest were used as training gliders . In 1942 , 22 Hotspur Mk IIs were sent to Canada , eventually six were redeployed to the United States Navy and one to the United States Army Air Forces .

In the build @-@ up to Operation Overlord in early 1944 , a scheme was considered in which Hotspurs would have been used to transport cargo and equipment . A Canadian fighter squadron - 401 Squadron - was selected for trials , the intention was to enable faster redeployment of fighter squadrons by using gliders to carry spare pilots , ground crew and essential supplies . The squadron operated the Supermarine Spitfire IX , some of which were modified to tow gliders by means of a tow @-@ point attached to the tail wheel ; some pilots were trained to fly the Hotspur , including fighter ace Don C. Laubman . The Spitfires were found to be reasonably effective as glider tugs , although their engines were prone to overheating because the glider 's maximum tow speed was 160 miles per hour (260 km / h) , comparatively slow for a Spitfire . Despite this , the scheme was judged to be practical , although it never saw operational use .

At war 's end , the type was retired and relatively few Hotspurs were preserved for display .

= = Variants = =

Hotspur Mk I

Single prototype , production run of 18 aircraft

Hotspur Mk II

Production series , modified with reduced wingspan , inset ailerons , new seating arrangement , deeper cockpit canopy , side doors , braking parachute ; fuselage strengthened

Hotspur Mk III

Production series , dual controls and instruments , external tailplane bracing

Twin Hotspur

Two standard Hotspur fuselages and outer wing panels joined together with common centre section and tailplane ; single prototype made . This variant did not enter series production .

= = Operators = =

United Kingdom

British Army

Royal Air Force

Canada

Royal Canadian Air Force

United States

United States Army Air Forces

United States Navy

= = Survivors = =

A Hotspur Mark II (HH268) replica is on display at the Museum of Army Flying in Hampshire , England . The front fuselage of a Hotspur was preserved at the Parachute Regiment And Airborne Forces Museum in Aldershot prior to the museum 's 2007 closing , in anticipation of a move to the Imperial War Museum Duxford .

= = Specifications (Hotspur Mk II) = =

Data from The Encyclopedia of Weapons of World War II

General characteristics

Crew : 2

Capacity : 8 troops

Length : 39 ft (11 @ . @ 89 m)

Wingspan : 45 ft 10 ¾ in (13 @ . @ 99 m)

Height : 10 ft (3 @ . @ 05 m)

Wing area : 272 ft ² (25 @ . @ 3 m ²)

Empty weight : 1 @ , @ 661 lb (753 kg)

Max. takeoff weight : 3 @ , @ 598 lb (1 @ , @ 632 kg)

Performance

Maximum speed : 90 mph (145 km / h)

Landing speed : 56 mph (90 km / h)

Range : 83 miles from a 20 @ , @ 000 ft release (134 km from a 6 @ , @ 100 m release)

Wing loading : 13 @ . @ 23 lb / ft ² (64 @ . @ 6 kg / m ²)