

Armstrong Whitworth Whitley

L'Armstrong-Whitworth A.W. 38 Whitley est un bombardier bimoteur britannique de la [Seconde](#) Guerre mondiale. Entré en service en mars 1937, le Whitley fut un des premiers bombardiers lourds de nuit de la RAF et son premier appareil à revêtement travaillant (Le [fuselage](#) seulement, la partie arrière de la voilure étant entoillée).

Origine

Deux ans après avoir rédigé la Spécification B.9/32 qui donna naissance aux [Vickers Wellington](#) et [Handley Page Hampden](#), L'Air Ministry lança un nouveau [cahier des charges](#) pour un bombardier de nuit bimoteur pouvant effectuer des missions secondaires de [transport](#). La Spécification B.3/34 insistait sur la facilité de construction pour faciliter la production du futur appareil, dont le nombre de pièces devait donc être le plus faible possible. Cet appareil fut développé dans un [temps](#) record sous la direction de l'ingénieur en chef d'Armstrong-Whitworth, J. Lloyd, et baptisé du nom d'un quartier de Coventry où se situait la principale usine du constructeur.



Le futur appareil faisait appel à des techniques de construction très modernes, puisque le fuselage avait une structure [monocoque](#) à revêtement travaillant en [alliage](#) léger. Les sections des profilés étaient standardisées, les courbes éliminées au maximum. Le résultat était un [monoplan](#) à aile basse cantilever de faible allongement et profil épais construit [autour](#) d'un longeron-caisson très résistant. Le revêtement du bord d'attaque et du caisson de voilure était métallique, fixé par des rivets à tête noyée, le bord de fuite entoilé. Cette voilure avait une incidence de 8,5° pour assurer une [course](#) au décollage et à l'atterrissage la plus courte possible, ce qui explique l'allure caractéristique en vol du Whitley : Les moteurs ayant une assiette relevée, le fuselage donnait l'impression de [piquer](#) en permanence. L'épaisseur du profil permettait d'installer dans le bord d'attaque les réservoirs principaux à l'extérieur des moteurs (841 litres par aile), et un réservoir d'huile entre chaque [moteur](#) et le fuselage. Derrière ce réservoir d'huile 14 cellules permettaient d'emporter autant de petites bombes. Le bord de fuite était occupé par des ailerons Frise et des volets de bord de fuite à [commande hydraulique](#).

Construit en trois sections, le fuselage avait une hauteur [dictée](#) par celles des tourelles Armstrong-Whitworth à commande manuelle installées à l'avant et à l'arrière, sans oublier la hauteur du [pare-brise](#) du poste de pilotage. Un réservoir de 700 litres était installé dans le fuselage, au-dessus du [longeron](#) de voilure, les deux soutes ventrales étaient fermées par des portes en bois à revêtement métallique ouvertes par le [poids](#) des bombes larguées et se refermant grâce à des sandows. Ces portes de [soute](#) à bombes valurent au Whitley le surnom de *Flying Barn Door* (Porte d'étable volante). L'équipage comprenait un pilote, un co-pilote-navigateur, un [opérateur](#) radio, un bombardier-mitrailleur avant et un mitrailleur arrière.



Tracté par deux moteurs 14 cylindres en double [étoile](#) Armstrong Siddeley Tiger IX de 795 ch entraînant des hélices tripales [de Havilland](#) à pas [variable](#), le premier prototype [K4586] effectua son premier vol le 17 mars 1936 à Baginton, piloté par A.C. Campbell Orde, chef pilote chez Armstrong-Whitworth. Atteignant 309 km/h à 2 130 m, capable de grimper à 4 570 m en 27,4 [minutes](#) et de parcourir 2 000 km à 258 km/h à cette [altitude](#), le Whitley répondait aux attentes de la RAF. Heureusement car 80 appareils avaient été mis en commande dès août 1935 pour rééquiper les unités de bombardement lourd. Le second prototype [K4587] fut remis au Royal Aircraft Establishment pour essais.



- Whitley II : Mis en service en janvier 1938, cette [seconde](#) version répondant à la spécification B.21/35 ne se distinguait de la précédente que par les moteurs, des Armstrong Siddeley Tiger VIII de 920 ch équipés de compresseurs à deux vitesses qui amélioreraient sensiblement les performances : à 4570 m la [vitesse](#) maximale passait à 346 km/h et la [vitesse de croisière](#) à 285 km/h pour une autonomie de 2 118 km et un [plafond](#) de 7 000 m. 46 exemplaires furent livrés, soldant la première [commande](#) de 80 appareils.



- Whitley III : Dès 1936 Armstrong-Whitworth avait reçu une seconde commande (no 522438/36) pour 80 bombardiers de nuit, répondant cette fois à la spécification B.20/36, qui mettait l'accent sur un renforcement de l'armement : La tourelle manuelle avant était remplacée par une tourelle motorisée Nash & Thomson, toujours équipée d'une unique Vickers de 7,69 mm, et une [gondole](#) rétractable, pivotant sur 360° et armée de 2 mitrailleuses Browning de 7,69 mm, installée à la base du fuselage arrière. En fait cette gondole pesait lourd et réduisait considérablement les performances quand elle était abaissée. Elle ne fut donc jamais utilisée en opérations, mais son puits se révéla très utile pour larguer des parachutistes. Les lance-bombes étaient également modifiés pour accepter des bombes de taille plus importante, le dièdre des panneaux extérieurs de voilure légèrement relevé, et l'avant du fuselage voyait apparaître une excroissance vitrée facilitant le travail du bombardier.

Un Whitley I [K7211] servit de prototype et les premiers exemplaires de série arrivèrent dans les escadrilles en août 1938. Le dernier exemplaire [K9015] fut livré fin 1938.

- Whitley IV : L'évolution des avions de combat ayant été extrêmement rapide entre 1935 et 1938, les Whitley III étaient pratiquement démodés au moment de leur entrée en service. Heureusement pour le Bomber Command, 40 Whitley IV [K9016/K9055], plus puissants et mieux armés, avaient également été commandés en 1936.

- On commença donc par renforcer la structure d'un Whitley I [K7208] pour pouvoir décoller à la [masse](#) maximale de 15 175 kg. La distance franchissable était alors de 3 125 km. Il fut ensuite remotorisé avec des moteurs 12 cylindres en V [Rolls-Royce Merlin](#) IV développant 1 030 ch au [décollage](#) et 990 ch en régime continu à 3700 m, entraînant des hélices à vitesse constante Rotol. Les performances de l'appareil étaient nettement améliorées par cette nouvelle motorisation : La vitesse maximale passait à 395 km/h à 4 950 m pour une vitesse de croisière de 346 km/h à 4 570 m, [altitude](#) atteinte en [tout](#) juste 16 [minutes](#). Les moteurs possédaient par contre un couple plus important, difficile à contrôler même en agissant à la fois sur les [gaz](#) et la dérive, et le Whitley IV décollait le plus souvent "en [crabe](#)".

Deux autres Whitley I, les [K7209] et [K7211], furent utilisés pour développer les autres spécificités de cette version. Le Whitley IV recevait en effet une tourelle arrière motorisée Nash & Thomson équipée de 4 mitrailleuses Browning de 7,69 mm. Enfin la capacité des réservoirs passait à 3 205 litres par installation de deux autres supplémentaires de voilure. Le Whitley IV pouvait donc parcourir 2 015 km avec ses réservoirs, mais l'ajout de réservoirs supplémentaires en [soute](#) permettait de [passer](#) à 2 900 km.

Whitley IVA : 7 Whitley IV motorisés sur chaîne avec des Merlin X développant 1 075 ch au décollage et 1 130 ch en régime continu à 1 600 m.

- Whitley V : 1938 vit la commande (no 75147/38) de 302 bombardiers supplémentaires à [moteur](#) Merlin X. Mais ce modèle, dont la masse au décollage pouvait atteindre 15 175 kg en surcharge, se distinguait par un fuselage allongé de 38 cm en arrière du stabilisateur pour améliorer le [champ](#) de tir de la tourelle arrière. L'empennage [vertical](#) était aussi redessiné et le bord d'attaque de l'aile doté d'un dégivrage pneumatique. Une commande supplémentaire (no 38599/39) de 150 appareils fut passée en 1939, mais le 15 mai 1940 le tout nouveau Ministère de la Production [aéronautique](#), dirigé par Lord Beaverbrook, et l'Etat major de la RAF s'accordèrent sur une liste de 5 avions à produire en priorité, dont le Whitley. 1 170 bimoteurs furent donc commandés (commande no 106962/40), la production passant à 12 machines par semaine début 1942. Au [total](#) 1476 Whitley V sortirent d'usine. C'est donc numériquement la série la plus importante.
- Whitley VI : [Projet](#) non réalisé de bombardier à [moteur](#) Merlin XX.
- Whitley VII : Fin septembre 1939 le No 58 Sqdn fut temporairement mis à la disposition du Coastal Command par le Bomber Command. L'autonomie considérable du Whitley présentait effectivement un intérêt pour les missions de reconnaissance maritime. Courant 1940 un Whitley V [P4949] fut donc modifié pour servir de prototype à une version spécifiquement destinée à la lutte anti sous-marine, et le premier [avion](#) équipé du [radar](#) de détection de navires de surfaces à longue portée A.S.V. Mk.II, dont les antennes étaient nettement visibles sur le fuselage. Ces antennes, conjuguées au [poids](#) de l'appareil, porté à 8 880 kg à vide et 15380 kg en charge, réduisaient la vitesse de croisière à 4 570 m à 307 km/h, mais la capacité de [carburant](#) passant à 5 000 litres, l'autonomie atteignait 3 700 km. Aménagé pour 6 hommes, le Whitley VII fut mis en service à l'automne 1941, 146 exemplaires ayant été commandés par avenant à la commande no 106962/40. Dès le 30 novembre 1941 un Whitley VII du No 502 Sqdn attaqua au large de Nantes le [sous-marin](#) U-71, qui parviendra à s'échapper (On a longtemps cru qu'il s'agissait du U-206, porté disparu à la même époque).

En service

Royal Air Force : Les premiers Whitley I furent livrés au No 10 Sqdn le 9 mars 1936 à Dishford, Yorkshire. Trois mois plus tard cette unité passait sous le contrôle du No 4 Bomber Group, dont tous les Squadrons furent équipés de Whitley. Les Whitley II arrivèrent à leur tour en unité (No 58 Sqdn) en janvier 1938, suivis en août des premiers Whitley III (No 50 Sqdn). En mai 1939 le No 10 Sqdn reçut les premiers Whitley IV, tandis que le No 78 Sqdn prenait en compte les Whitley IVA en août 1939. Enfin en décembre 1939 les No 10 et 51 Sqdn commencèrent leur rééquipement sur Whitley V.

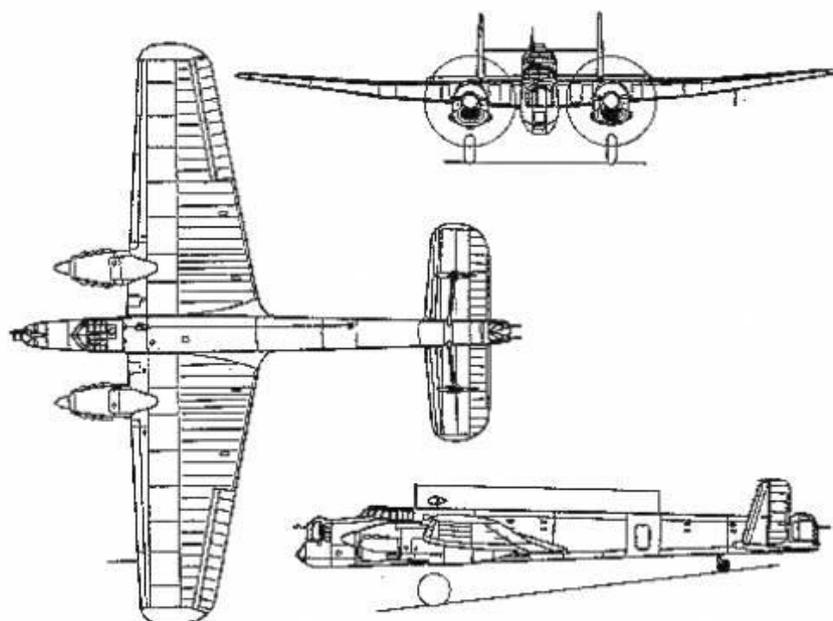
3 Whitley III du No 51 et 7 appareils du No 58 Sqdn, stationnés à Leconfield, réalisèrent la première mission de nuit du Bomber Command sur l'Allemagne, un lâcher de tracts sur les régions de Brême, Hambourg et la Ruhr le 1er septembre 1939. Durant la drôle de guerre les missions de ce type, baptisées 'bumphlet raids' par les équipages de No 4 Group furent nombreuses. Le 1er octobre 1939 trois Whitley IV du No 10 Sqdn effectuèrent un lâcher de tracts sur Berlin, réalisant la première mission 'de guerre' de la RAF sur la capitale allemande. Le 3 septembre 1939 le No 4 Bomber Group commandé par l'Air Commodore A.T.Harris est le seul groupe aérien spécialisé dans le bombardement de nuit dans le Monde. Il comptait 5 unités sur Whitley III et IV, seul le No 77 Sqdn ayant commencé à recevoir des Whitley V. 196 Whitley étaient en compte (32 Mk I, 43 Mk II, 76 Mk III, 33 Mk IV, 7 Mk IVA et 5 Mk V). Aux lâchers de tracts s'ajoutèrent désormais des reconnaissances sur les bases d'hydravion allemandes en Mer du Nord. Des mines flottantes furent également mouillées devant Sylt dans la nuit du 12 au 13 décembre 1939.

Dans la nuit du 19 au 20 mars 1940 trente Whitley V des No 10, 51, 77 et 102 Squadrons et 20 Handley Page Hampden du No Group bombardèrent la base d'hydravions de Hornum. Quand la Wehrmacht lança son offensive à l'Ouest le No 4 Group bombarda la gare de Mönchengladbach. Le 11 juin 1940 les Whitley des No 10, 51, 58, 77 et 102 Squadrons atteignirent des objectifs à Turin et Gênes, devenant les premiers appareils de la RAF à bombarder l'Italie. D'autres missions, tout aussi spectaculaires, furent réalisées sur des objectifs en Autriche, Tchécoslovaquie, Pologne. Le 29 avril 1942 un bombardement sur Ostende marqua la dernière utilisation du Whitley par le Bomber Command.

Dès 1939 le rayon d'action exceptionnel du Whitley intéressa le Coastal Command et, après un détachement du No 58 Sqdn fin septembre, le bombardier commença à remplacer les Avro Anson du No 502 Sqdn d'Aldergrove pour les missions de surveillance maritime. En mars 1941 le No 612 Sqdn, stationnant à Reykjavik, en Islande, fut équipé à son tour. Quelques mois plus tard arrivèrent au No 502 Sqdn les premiers Whitley VII. Le 30 novembre 1941 un Whitley VII du No 502 Sqdn détruisait dans le Golfe de Gascogne le U-206. C'était le premier sous-marin détruit par le Coastal Command, qui utilisera ce bimoteur en première ligne jusque fin 1942.

Retirés progressivement de première ligne, les Whitley continuèrent à rendre de bons services pour certaines opérations spéciales (parachutages divers à travers l'Europe occupée). La No 1 Parachute Training School de Ringway (Manchester), utilisa toutes les versions de l'appareil, sauf le Whitley VII, pour assurer l'entraînement des troupes aéroportées. Durant l'Opération Colossus, le 10 février 1941, une unité spéciale chargée de détruire un pont-aqueduc à Tragino, Italie, fut largué par des Whitley. L'Opération Bruneval, les 27 et 28 février 1942, qui permit aux troupes aéroportées de capturer une station radar Wurzburg complète, fit également appel aux Whitley.

La tourelle arrière remplacée par un treuil, le Whitley fut également utilisé comme remorqueur de planeurs d'assaut, en particulier à la No 21 Heavy Glider Conversion Unit de Brize Norton.



Constructeur Armstrong Whitworth

Rôle Bombardier de nuit

Premier vol 17 mars 1936

Mise en service mars 1937

Date de retrait 1946

Nombre construit 1 476

Équipage : 5

Motorisation

Moteur Rolls Royce Merlin X

Nombre 2

Type 12 cylindres en V

Puissance unitaire 1075 ch au décollage

Dimensions

Envergure 25,6 m

Longueur 21,5 m

Hauteur 4,57 m

Surface alaire 105,6 m²

Masses

À vide 8 785 kg

Avec armement 12 800 kg

Maximale 15 200 kg

Performances

Vitesse maximale 367 km/h

Plafond 5 356 m

Vitesse ascensionnelle 244 m/min

Rayon d'action 2 415 km

Armement

Interne 1 Mitrailleuse de 7,7 mm avant, 4 mitrailleuses de 7,7 mm arrière

Externe 3 175 kg de bombes



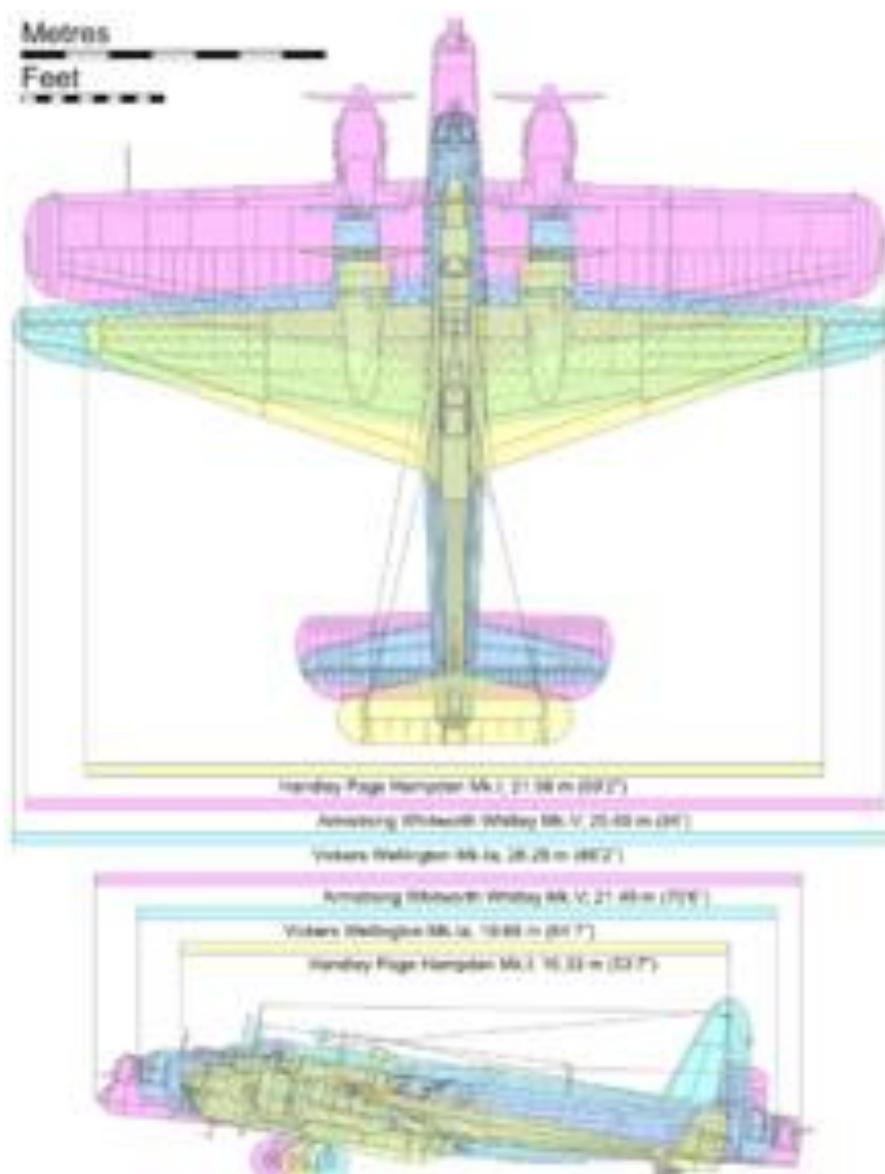
Source : <https://www.techno-science.net/glossaire-definition/Armstrong-Whitworth-Whitley.html>

version anglaise

The **Armstrong Whitworth A.W.38 Whitley** was a British medium [bomber](#) aircraft of the 1930s. It was one of three twin-engined, front line medium [bomber](#) types that were in service with the [Royal Air Force](#) (RAF) at the outbreak of the [Second World War](#). Alongside the [Vickers Wellington](#) and the [Handley Page Hampden](#), the Whitley was developed during the mid-1930s according to [Air Ministry Specification B.3/34](#), which it was subsequently selected to meet. In 1937, the Whitley formally entered into RAF squadron service; it was the first of the three medium bombers to be introduced.

Following the outbreak of war in September 1939, the Whitley participated in the first RAF bombing raid upon German territory and remained an integral part of the early British bomber offensive. In 1942 it was superseded as a bomber by the larger four-engined "[heavies](#)" such as the [Avro Lancaster](#).^[2] Its front-line service included maritime [reconnaissance](#) with [Coastal Command](#) and the second line roles of [glider-tug](#), [trainer](#) and transport aircraft. The type was also procured by [British Overseas Airways Corporation](#) as a civilian freighter aircraft. The aircraft was named after [Whitley](#), a suburb of [Coventry](#), home of [Whitley plant](#), belonging to Armstrong Whitworth.

Development



Scale [comparison diagram](#) of the trio of British twin-engine medium bombers at the outbreak of the Second World War; the Whitley (pink), the [Vickers Wellington](#) (blue) and the [Handley Page Hampden](#) (yellow).

In July 1934, the [Air Ministry](#) issued [Specification B.3/34](#), seeking a heavy [night bomber](#)/troop transport to replace the [Handley Page Heyford biplane](#) bomber. This combination bomber/transport was part of the RAF's concept of fighting wars in distant [British Empire](#) locations, where the aircraft would fly into the theatre of action carrying troops and then provide air support. John Lloyd, the Chief Designer of [Armstrong Whitworth Aircraft](#), chose to respond to the specification with the AW.38 design, which later was given the name *Whitley* after the location of Armstrong Whitworth's main factory. The design of the AW.38 was a development of the [Armstrong Whitworth AW.23](#) bomber-transport design that had lost to the [Bristol Bombay](#) for the earlier [Specification C.26/31](#). Lloyd selected the [Armstrong Siddeley Tiger IX radial engine](#) to power the Whitley, which was capable of generating 795 hp (593 kW). One of the novel features of the Whitley's design was the adoption of a three-bladed two-position [variable-pitch propeller](#) built by [de Havilland](#); the Whitley was the first aircraft to fly with such an arrangement. As Lloyd was unfamiliar with the use of [flaps](#) on a large heavy [monoplane](#), they were initially omitted from the design. To compensate, the mid-set wings were set at a high [angle of incidence](#) (8.5°) to confer good take-off and landing performance. Flaps were included late in the design stage, the wing remained unaltered; as a result, the Whitley flew with a pronounced nose-down attitude when at cruising speed, resulting in considerable drag.

The Whitley holds the distinction of having been the first RAF aircraft with a semi-[monocoque fuselage](#), which was built using a slab-sided structure to ease production. This replaced the tubular construction method traditionally employed by Armstrong Whitworth, who instead constructed the airframe from light-[alloy](#) rolled sections, pressings and [corrugated](#) sheets. According to aviation author Philip Moyes, the decision to adopt the semi-monocoque fuselage was a significant advance in design; many Whitleys surviving severe damage on operations. In June 1935, owing to the urgent need to replace biplane heavy bombers then in service with the RAF, it was agreed to produce an initial 80 aircraft, 40 being of an early *Whitley Mk I* standard and the other 40 being more advanced *Whitley Mk IIs*. Production was initially at three factories in Coventry; fuselages and detailed components were fabricated at Whitley Abbey, panel-beating and much of the detailed work at the former [Coventry Ordnance Works](#) factory, while wing fabrication and final assembly took place at [Baginton Aerodrome](#). During 1935 and 1936, various contracts were placed for the type; the Whitley was ordered "off the drawing board" - prior to the first flights of any of the prototypes. On 17 March 1936, the first prototype Whitley Mk I, *K4586*, conducted its [maiden flight](#) from Baginton Aerodrome, piloted by Armstrong Whitworth Chief Test Pilot Alan Campbell-Orde. *K4586* was powered by a pair of 795 hp (593 kW) Armstrong Siddeley Tiger IX 14-cylinder air-cooled aircraft radial engines. The second prototype, *K4587*, was furnished with a pair of more powerful medium-[supercharged](#) Tiger XI engines. The prototypes differed little from the initial production standard aircraft; a total of 34 production Whitley Mk I were completed.

Further development

After the first 34 aircraft had been completed, the engines were replaced with the more reliable two-speed-supercharged Tiger VIIIIs. *K7243*, the 27th production Whitley, is believed to have served as a prototype following modifications. The resulting aircraft was designated as the Whitley Mk II. A total of 46 production aircraft were completed to the Whitley Mk II standard. One Whitley Mk II, *K7243*, was used as a test bed for the 1,200 hp (890 kW) 21-cylinder radial [Armstrong Siddeley Deerhound](#) engine; on 6 January 1939, *K7243* made its first flight with the Deerhound. Another Whitley Mk I, *K7208*, was modified to operate with a higher (33,500 lb (15,200 kg)) [gross weight](#).

K7211, the 29th production Whitley, served as the prototype for a further advanced variant of the aircraft, the *Whitley Mk III*. The Whitley Mk III featured numerous improvements, such as the replacement of the manually operated nose turret with a single powered [Nash & Thompson](#) turret and a powered retractable twin-gun ventral "dustbin" [turret](#). The ventral turret was [hydraulically](#)-powered but proved to be hard to operate and added considerable drag, thus the Whitley Mk III was the only variant with it. Other changes included increased dihedral of the outer wing panels, superior navigational provision and the installation of new bomb racks. A total of 80 Whitley Mk III aircraft were manufactured.

While the Tiger VIII engine used in the Whitley Mk II and III was more reliable than those used in early aircraft, the Whitley was re-engined with [Rolls-Royce Merlin](#) engines in 1938, giving rise to the *Whitley Mk IV*. Three Whitley Mk I aircraft, *K7208*, *K7209* and *K7211*, were initially re-engined to serve as prototypes. The new engines are accredited with producing greatly improved performance. Other changes made included the replacement of the manually operated tail and retractable ventral turrets with a Nash & Thompson powered tail turret equipped with four [.303 in \(7.7 mm\)](#) Browning machine guns, the increasing of fuel tankage capacity, including two additional fuel tanks in the wing. A total of 40 Whitley Mk IV and Whitley Mk IVA, a sub-variant featuring more powerful models of the Merlin engine, were completed.

The decision was made to introduce a series of other minor improvements to produce the *Whitley Mk V*. These included the modification of the tail fins and rudders, the fitting of leading edge [de-icers](#), further fuel capacity increases, a smaller [D/F loop](#) in a streamlined [fairing](#) being adopted, and the extension of the rear fuselage by 15 in (381 mm) to improve the rear-gunner's field of fire. The Whitley Mk V was by far the most numerous version of the aircraft, with 1,466 built until production ended in June 1943.

The *Whitley Mk VII* was the final variant to be built. Unlike the other variants, it was developed for service with [RAF Coastal Command](#) and was thus furnished for maritime reconnaissance rather than as a general purpose bomber. A Whitley Mk V, *P3949* acted as a prototype for this variant. A total of 146 Whitley Mk VII's were produced, additional Whitley Mk V aircraft being converted to the standard. It had a sixth crew member to operate the new [ASV Mk II radar](#) system along with an increased fuel capacity for long endurance anti-shipping missions. Some Whitley Mk VII were later converted as trainer aircraft, featuring additional seating and instrumentation for flight engineers.

Early marks of the Whitley featured bomb bay doors, fitted on the fuselage and wing bays, that were held shut by [bungee cords](#); during bombing operations, these were opened by the weight of the bombs as they fell on them and closed again by the bungee cord. The short and unpredictable delay for the doors to open led to highly inaccurate bombing. The Mk.III introduced hydraulic doors which greatly improved bombing accuracy. To aim bombs, the [bomb aimer](#) opened a hatch in the nose of the aircraft, which extended the bomb sight out of the fuselage but the Mk IV replaced this hatch with a slightly extended transparent [plexiglas](#) panel, improving crew comfort.

Design



A Browning machine gun being installed in a Whitley's turret, 1940

The Armstrong Whitworth Whitley was a twin-engined heavy bomber, initially being powered by a pair of 795 hp (593 kW). [Armstrong Siddeley Tiger IX radial engines](#). More advanced models of the Tiger engine equipped some of the later variants of the Whitley; starting with the Whitley Mk IV variant, the Tigers were replaced by a pair of 1,030 hp (770 kW) [Rolls-Royce Merlin IV V12 engines](#). According to Moyes, the adoption of the Merlin engine gave the Whitley a considerable boost in performance. The Whitley had a crew of five: a pilot, co-pilot/navigator, a bomb aimer, a wireless operator and a rear gunner. The pilot and second pilot/navigator sat side by side in the cockpit, with the wireless operator further back. The navigator, his seat mounted on rails and able to pivot, slid backwards and rotated to the left to use the chart table behind him after take-off. The bomb aimer position was in the nose with a [gun turret](#) located directly above. The fuselage aft of the wireless operator was divided horizontally by the bomb bay; behind the bomb bay was the main entrance and aft of that the rear turret. The bombs were stowed in two bomb bays housed within the fuselage, along with a further 14 smaller cells in the wing. Other sources state there were 16 "cells", two groups of two in the fuselage and four groups of three in the wings, plus two smaller cells for parachute flares in the rear fuselage. Bomb racks capable of holding larger bombs were installed on the Whitley Mk III variant.

The early examples had a nose turret and rear turret, both being manually operated with one [Vickers 0.303 machine gun](#) apiece. On the Whitley Mk III this arrangement was substantially revised: a new retractable [ventral 'dustbin'](#) position was installed mounting twin [.303 in \(7.7 mm\) Browning machine-guns](#) and the nose turret was also upgraded to a [Nash & Thompson](#) power-operated turret. On the Whitley Mk IV, the tail and ventral turrets were replaced with a Nash & Thompson power-operated tail turret mounting four Browning .303 machine guns; upon the adoption of this turret arrangement, the Whitley became the most powerfully armed bomber in the world against attacks from the rear. The fuselage comprised three sections, with the main frames being [riveted](#) with the skin and the intermediate sections being riveted to the inside flanges of the longitudinal [stringers](#). Extensive use of [Alclad](#) sheeting was made. Fuel was carried in three tanks, a pair of 182 imp gal (830 L) tanks in the leading edge of each outer wing and one 155 imp gal (700 L) tank in the roof of the fuselage, over the spar center section; two auxiliary fuel tanks could be installed in the front fuselage bomb bay compartment. The inner leading edges contained the oil tanks, which doubled as radiant oil coolers. To ease production, a deliberate effort was made to reduce component count and [standardise](#) parts. The fuselage proved to be robust enough to withstand severe damage.

The Whitley featured a large rectangular-shaped wing; its appearance led to the aircraft receiving the nickname "*the flying barn door*". Like the fuselage, the wings were formed from three sections, being built up around a large box [spar](#) with the [leading](#) and [trailing edges](#) being fixed onto the spar at each [rib](#) point. The forward surfaces of the wings were composed of flush-riveted, smooth and unstressed metal sheeting; the rear 2/3rds aft of the box spar to the trailing edge, as well as the [ailerons](#) and [split flaps](#) was fabric covered. The inner structure of the split flaps was composed of [duralumin](#) and ran between the ailerons and the fuselage, being set at a 15–20 degree position for taking off and at a 60 degree position during landing. The tailplanes employed a similar construction to that of the wings, the fins being braced to the fuselage using metal struts; the [elevators](#) and [rudders](#) incorporated servo-balancing [trim tabs](#).

Operational history



Whitley Mk.V production, 1941

On 9 March 1937, the Whitley Mk I began entering squadron service with [No. 10 Squadron](#) of the RAF, replacing their Handley Page Heyford biplanes. In January 1938, the Whitley Mk II first entered squadron service with [No. 58 Squadron](#) and in August 1938, the Whitley Mk III first entered service with [No. 51 Squadron](#). In May 1939, the Whitley Mk IV first entered service with No. 10 Squadron and in August 1939, the Whitley Mk IVA first entered service with [No. 78 Squadron](#). By the outbreak of the Second World War, seven squadrons were operational, the majority of these flying Whitley III or IV aircraft, while the Whitley V had only just been introduced to service; 196 Whitleys were on charge with the RAF. At the start of the war, [4 Group](#), equipped with the Whitley, was the only trained night bomber force in the world. Alongside the [Handley Page Hampden](#) and the [Vickers Wellington](#), the Whitley bore the brunt of the early fighting and saw action during the first night of the war, when they dropped [propaganda leaflets](#) over [Germany](#). The propaganda flight made the Whitley the first aircraft of [RAF Bomber Command](#) to penetrate into Germany. Further propaganda flights would travel as far as [Berlin](#), [Prague](#), and [Warsaw](#). On the night of 19/20 March 1940, in conjunction with Hampdens, the Whitley conducted the first bombing raid on German soil, attacking the [Hörnum seaplane](#) base on the [Island of Sylt](#). Following the Hörnum raid, Whitleys routinely patrolled the [Frisian Islands](#), targeting shipping and seaplane activity.



Merlin-powered prototype *K7208* (converted Whitley Mk I), circa 1938

Unlike the Hampden and Wellington, which had met Specification B.9/32 for a day bomber, the Whitley was always intended for night operations and escaped the early heavy losses received during daylight raids carried out upon German shipping. As the oldest of the three bombers, the Whitley was obsolete by the start of the war, yet over 1,000 more aircraft were produced before a suitable replacement was found. A particular problem with the radar-equipped Mk VII, with the addition of the drag-producing aerials, was that it could not maintain altitude on one engine. Whitleys flew a total of 8,996 operations with Bomber Command, dropped 9,845 tons (8,931 tonnes) of bombs and 269 aircraft were lost in action.

On the night of 11/12 June 1940, the Whitley carried out [Operation Haddock](#), the first RAF bombing raid on Italy, only a few hours after Italy's declaration of war; the Whitleys bombed [Turin](#) and [Genoa](#), reaching northern Italy via a refuelling stop in the [Channel Islands](#). Many leading World War II bomber pilots of the RAF flew Whitleys at some point in their career, including [Don Bennett](#), [James Tait](#), and [Leonard Cheshire](#). On the night of 10/11 February 1941, six Whitley Vs of 51 Squadron led by Tait took part in [Operation Colossus](#), the first airborne operation undertaken by the British military, delivering paratroops to attack the Tragino Aqueduct in southern Italy. The Whitley was not always popular with paratroopers as they exited via a bin like chute in the floor. If this was not timed correctly the airflow would drag the paratrooper out resulting in nasty injuries to the face against the lip of the chute known as a Whitley kiss. On the night of 29/30 April 1942 No. 58 Squadron, flying Whitleys, bombed the [Port of Ostend](#) in Belgium. This was the last operational mission by a Whitley-equipped bomber squadron. In late 1942, the Whitley was retired from service as a frontline aircraft for bomber squadrons and was shifted to other roles. The type continued to operate delivering supplies and agents in the Special Duties squadrons (138 and 161) until December 1942, as well as serving as a transport for troops and freight, a carrier for paratroopers and a tow aircraft for [gliders](#). In 1940, the Whitley had been selected as the standard paratroop transport; in this role, the ventral turret aperture was commonly modified to be used for the egress of paratroopers. [No. 100 Group RAF](#) used Whitleys to carry [radar](#) and [electronic counter-measures](#). In February 1942, Whitleys were used to carry the paratroopers who participated in the [Bruneval](#) raid, [code named Operation Biting](#), in which German radar components were captured from a German base on the coast of France.

Long-range Coastal Command Mk VII variants were among the last Whitleys remaining in front-line service, remaining in service until early 1943. The first [U-boat](#) kill attributed to the Whitley Mk VII was the sinking of the [German submarine U-751](#) on 17 July 1942, which was achieved in combination with a [Lancaster](#) heavy bomber. Having evaluated the Whitley in 1942, the [Fleet Air Arm](#) operated a number of modified ex-RAF Mk VIIIs from 1944 to 1946, to train aircrew in Merlin engine management and fuel transfer procedures.

Civilian service

In April/May 1942, the [British Overseas Airways Corporation](#) (BOAC) operated 15 Whitley Mk V aircraft which had been converted into freighters. The conversion process involved the removal of all armaments, the turret recesses were faired over, additional fuel tanks were installed in the bomb bay, the interior of the fuselage was adapted for freight stowage, and at least one aircraft was fitted with an enlarged cargo door. The type was typically used for night supply flights from [Gibraltar](#) to [Malta](#); the route took seven hours, and would often require landing during Axis air attacks on their arrival at Malta. Whitley freighters also flew the dangerous route between [RAF Leuchars](#), Scotland and [Stockholm](#), Sweden. The Whitley consumed a disproportionately large quantity of fuel to carry a relatively small payload and there were other reasons making the type less than ideal, so, in August 1942, the type was replaced by the [Lockheed Hudson](#) and the 14 survivors were returned to the RAF.

Variants



A Whitley prototype, circa 1936



Personnel loading 250lb bombs into a Whitley Mk V of [No. 502 Squadron](#), 1940

Following the two prototypes ([K4586](#) and [K4587](#)), at the outbreak of the war the RAF had 207 Whitleys in service ranging from Mk I to Mk IV types, with improved versions following:

Mk I

A.W. Type 188. Powered by 795 hp (593 kW) [Armstrong Siddeley Tiger IX](#) air-cooled [radial engines](#), 4 degrees of [dihedral](#) incorporated into each outer wing panel, with earlier aircraft being retrospectively modified: 34 built.

Mk II

A.W. Type 197 (some Type 220). Powered by 920 hp (690 kW) two-speed [supercharged](#) Tiger VIII engines: 46 built.

Mk III

A.W. Type 205. Powered by Tiger VIII engines, retractable "dustbin" ventral turret fitted aft of the wing root armed with two [.303 in \(7.7 mm\) machine guns](#), hydraulically operated bomb bay doors and ability to carry larger bombs: 80 built.

Mk IV

A.W. Type 209. Powered by 1,030 hp (770 kW) [Rolls-Royce Merlin IV](#) [inline](#) liquid-cooled engines, increased fuel capacity, extended bomb-aimer's transparency, manually operated tail and retractable ventral turrets replaced with a single [Nash & Thompson](#) powered tail turret equipped with four .303 in (7.7 mm) Browning machine guns, produced from 1938: 33 built.

Mk IVA

A.W. Type 210. Mk IV variant powered by 1,145 hp (854 kW) Merlin X engines made by fitting Merlin X engines on last Mk IV's on production line: seven built.

Mk V

A.W. Type 207. The main wartime production version based on the Mk IV, modified straight-edged [fins](#), leading edge de-icing, tail fuselage aft or [empennage](#) extended by 15 in (381 mm) to improve the tail gunner's field of fire.^[2] First flew in December 1938, production ceased in June 1943: 1,466 built.

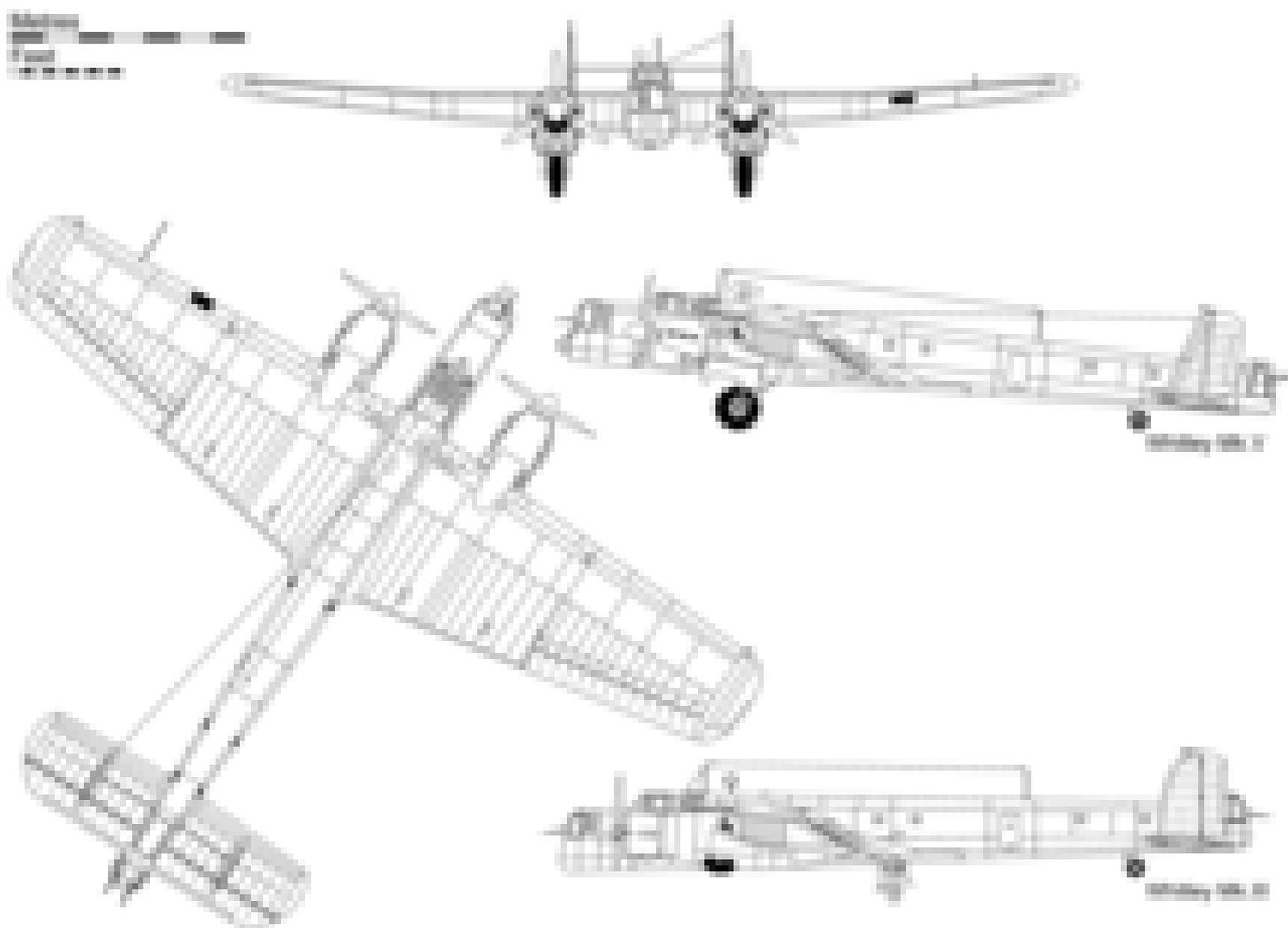
Mk VI

Proposed [Pratt & Whitney G.R.1830 Twin Wasp](#)-powered version of Mk V in case of Merlin production shortfall: none built.

Mk VII

A.W. Type 217. Designed for service with [Coastal Command](#) and carried a sixth crew member, capable of longer-range flights (2,300 mi/3,700 km compared to the early version's 1,250 mi/2,011 km) having additional fuel tanks fitted in the bomb bay and fuselage, equipped with [Air to Surface Vessel \(ASV\) radar](#) for anti-shipping patrols with an additional four 'stickleback' dorsal radar masts and other antennae: 146 built. Being heavier and less efficient with its aerials, this Mk could not maintain altitude on only one engine.

Specifications (Whitley Mk V)



Merlin-powered Whitley Mk.V drawing with inset profile of the Tiger-powered Mk III with retractable "dustbin" turret.



A preserved rear fuselage section at the [Midland Air Museum](#), 2006

General characteristics

- **Crew:** 5
- **Length:** 70 ft 6 in (21.49 m)
- **Wingspan:** 84 ft 0 in (25.60 m)
- **Height:** 15 ft 0 in (4.57 m)
- **Wing area:** 1,137 sq ft (105.6 m²)
- **Empty weight:** 19,300 lb (8,754 kg)
- **Max takeoff weight:** 33,500 lb (15,195 kg)
- **Powerplant:** 2 × [Rolls-Royce Merlin](#) X liquid-cooled [V12 engines](#), 1,145 hp (854 kW) each

Performance

- **Maximum speed:** 230 mph (370 km/h, 200 kn) at 16,400 ft (5,000 m)
- **Range:** 1,650 mi (2,660 km, 1,430 nmi)
- **Ferry range:** 2,400 mi (3,900 km, 2,100 nmi)
- **Service ceiling:** 26,000 ft (7,900 m)
- **Rate of climb:** 800 ft/min (4.1 m/s)

Armament

- **Guns:** ** 1 × [.303 in \(7.7 mm\) Vickers K machine gun](#) in nose turret
 - 4 × [.303 in Browning machine guns](#) in tail turret
- **Bombs:** Up to 7,000 lb (3,175 kg) of bombs in the fuselage and 14 cells in the wings, typically including
 - 12 × 250 lb (113 kg) *and*
 - 2 × 500 lb (227 kg) bombs
 - Bombs as heavy as 2,000 lb (907 kg) could be carried

