

BOULTON PAUL

WORDS STUART HADAWAY

SEEING IN THE DARK

From the autumn of 1941, Defiants received Airborne Interception (AI) radar for night combat. The transmitters were behind the turret, while the receiver and screen were in the cockpit.



The RAF's turret fighter was doomed to fight a war for which it wasn't designed

Based on a 1930s concept for intercepting unescorted German bombers crossing the North Sea, the Boulton Paul Defiant was doomed to fight a different war. The fall of France meant that their targets would instead be flying shorter distances, within range of escorting fighters of a comparable size to the Defiant, but which would not be weighed down with a turret and extra crewman. Although they enjoyed a few initial successes during the Dunkirk evacuation and the Battle of Britain, instead of becoming 'bomber destroyers', they rapidly became easy prey themselves.

With a gunner to concentrate on firing the guns while the pilot focussed on flying, and two pairs of eyes to scan the skies, the Defiant was a good idea which broke down in practicalities. Co-ordinating effectively between the crew was difficult, and the pilot had the difficult job of constantly working out how to manoeuvre to allow his gunner the best shot, making an already difficult task immensely complicated. For a while, the Defiant became an acceptable night fighter, although this was a stop-gap until better, multi-engine aircraft came along.

The last surviving Defiant can be viewed at the RAF Museum, Hendon, London



DEFIANT

RETRACTABLE FARING

The upper portion of the fuselage could be retracted in action, giving the turret a greater range of movement. When not in combat, the faring improved the Defiant's aerodynamics.

ONLY ARMAMENT

The gun turret was the Defiant's only weapon. It was heavy and cramped; the gunner had to wear a 'GQ Parasuit' – a body suit with the parachute built into the lining – rather than a conventional parachute. Even so, survival rates were low.

ADVANCED WING

The wings were built in sections, and were a simplified version of the elliptical design used on the Spitfire. They were more advanced than the Hurricane's wings but much quicker to build than those of the Spitfire.

BOULTON PAUL DEFIANT

COMMISSIONED:	1937
ORIGIN:	BRITISH
LENGTH:	10.8M (35FT 4IN)
WINGSPAN:	12M (39FT 4IN)
RANGE:	748KM (465 MILES)
ENGINE:	ROLLS ROYCE MERLIN MK. II 770KW (1,030HP)
CREW:	2
PRIMARY WEAPON:	4 X .303IN (7.7MM) BROWNING MACHINE GUNS IN A BOULTON PAUL A MK. ID TURRET

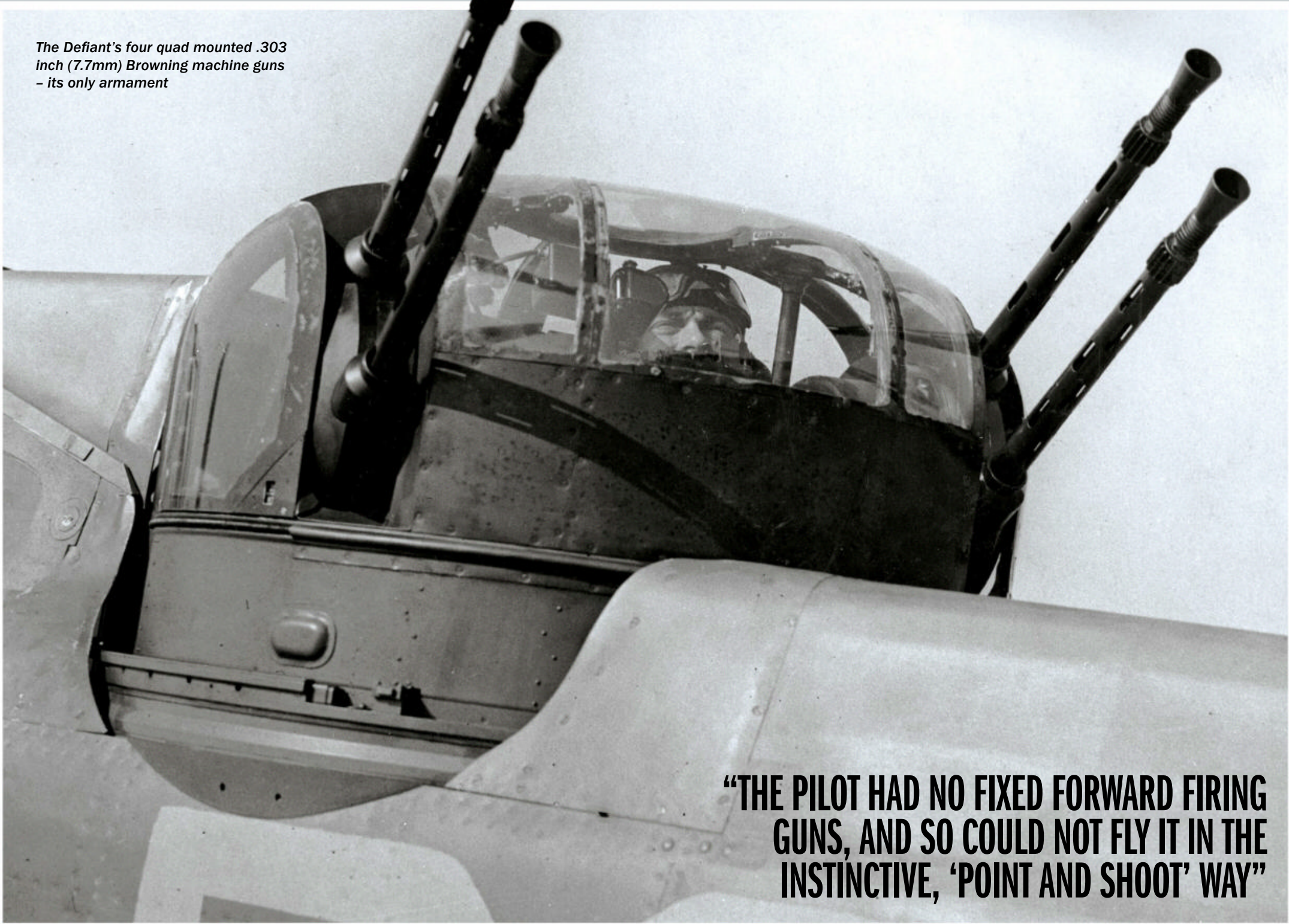
Illustrations: Alex Pang

Boulton Paul Defiant Mk.Is

“INSTEAD OF BECOMING ‘BOMBER DESTROYERS’, THEY RAPIDLY BECAME EASY PREY THEMSE VES”



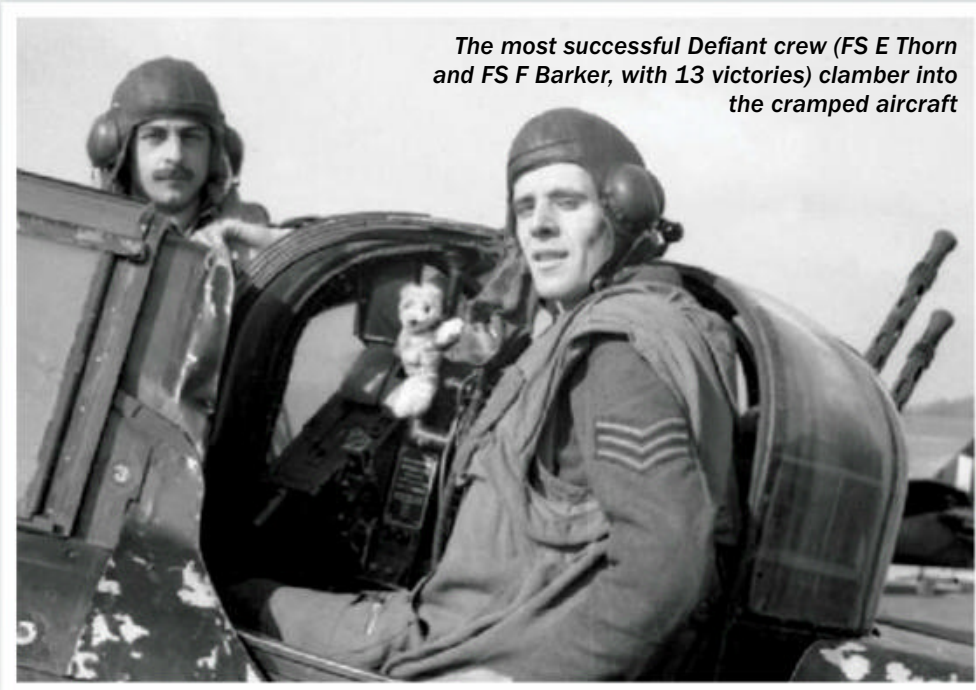
The Defiant's four quad mounted .303 inch (7.7mm) Browning machine guns – its only armament



“THE PILOT HAD NO FIXED FORWARD FIRING GUNS, AND SO COULD NOT FLY IT IN THE INSTINCTIVE, ‘POINT AND SHOOT’ WAY”

ARMAMENT

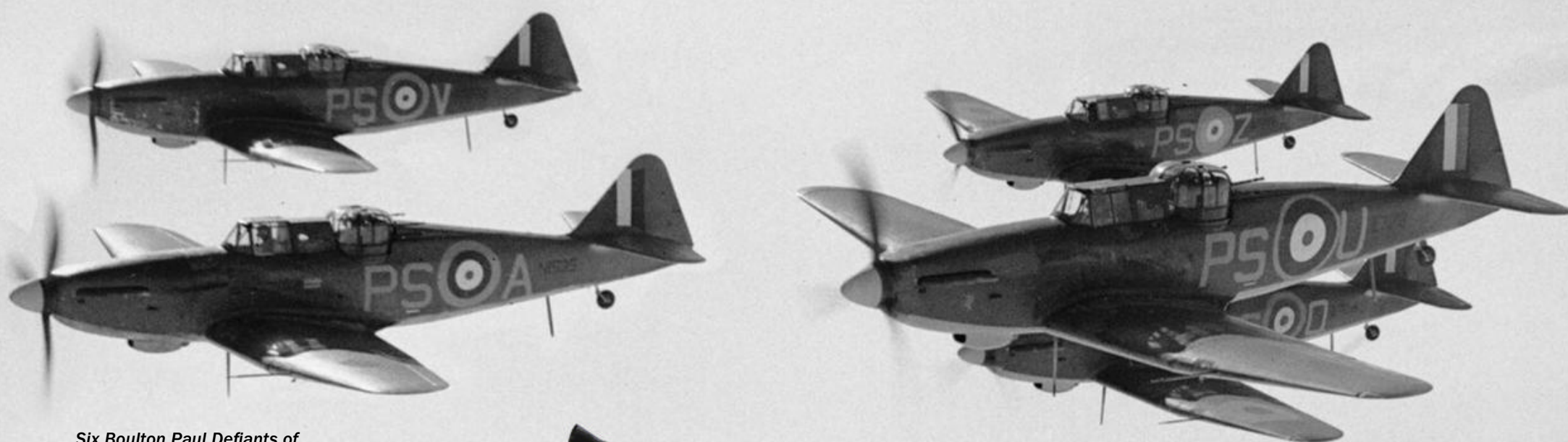
The Defiant was equipped with four .303in/7.7mm Browning machine guns in a Boulton Paul A Mk. II hydraulic turret. With the gunner and ammunition, it added 370kg (815lb) in weight to the aircraft. It could be locked to fire forwards (at 19° elevation), controlled by the pilot (who did not have a gunsight). Unlike the great fighters that inspired it, like the Bristol F2b Fighter, the pilot had no fixed forward firing guns, and so could not fly it in the instinctive, ‘point and shoot’ way. Instead, flying became a constant running exercise in mental trigonometry.



The most successful Defiant crew (FS E Thorn and FS F Barker, with 13 victories) clamber into the cramped aircraft



A gunner in his ‘GQ’ parasuit about to clamber into his cramped turret



Six Boulton Paul Defiants of No. 264 Squadron, flying in loose 'vic' formation

DESIGN

The Defiant was a conventional single-engine day fighter by design, with the addition of the turret behind the cockpit. A monocoque stressed skin structure, it had a reinforced structure to support the weight of the turret. The retractable faring also complicated the rear fuselage, but overall the design was very straight forward. The aircraft was designed to be built in sections and then assembled. This allowed extensive sub-contracting of parts, making construction relatively fast and simple.



The turret area of the Defiant needed extra structural support, and a mechanism to retract the faring (as here) to allow complete movement of the guns



Image: Alan Wilson

The RAF Museum dismantle their Defiant in 2016 for conservation, showing some of the modular structure of the type

RAF ground crew working on the engine of a Boulton Paul Defiant, 1941

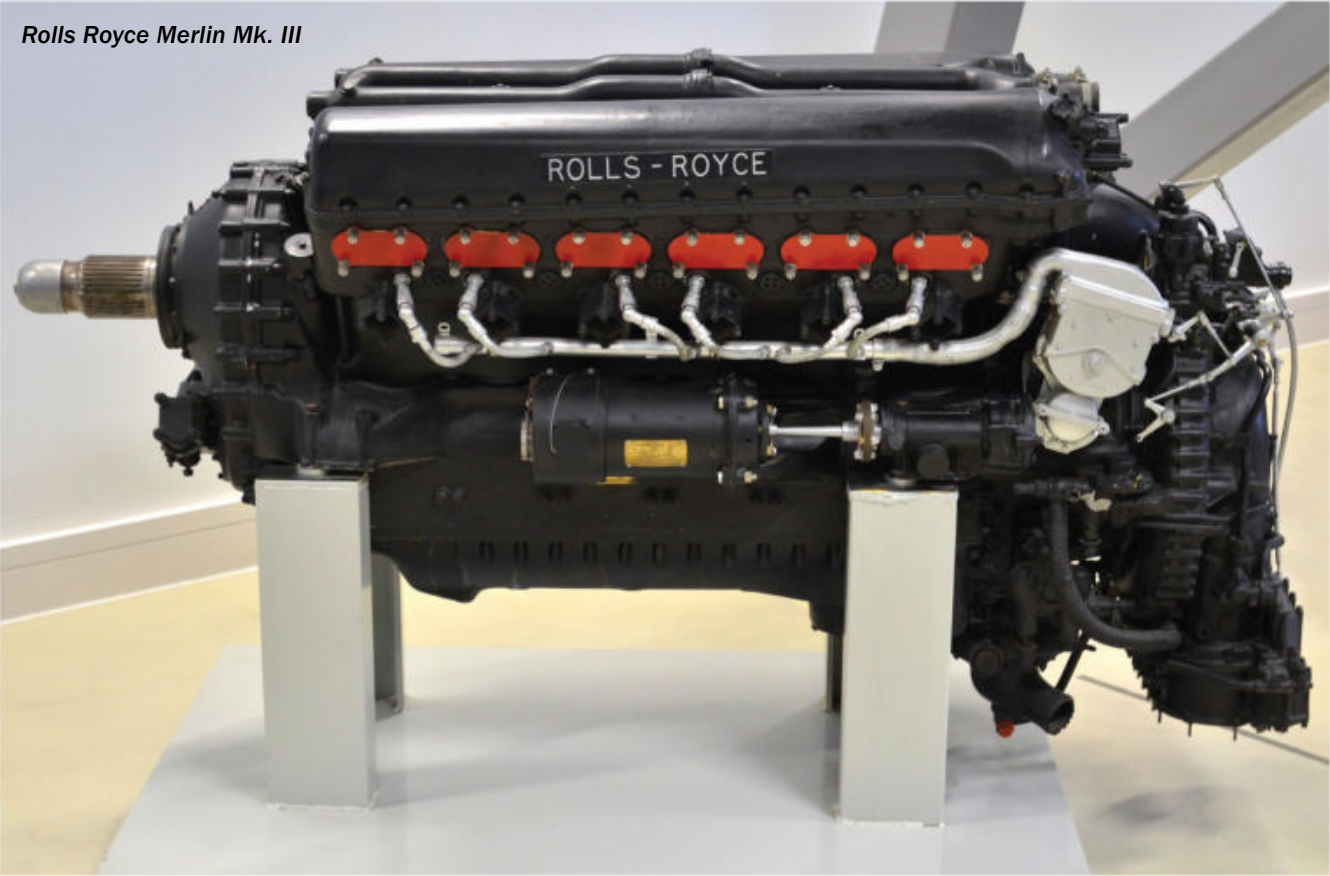


ENGINE

The Defiant Mk. I used a Rolls Royce Merlin Mk. III, a 770kW (1,030hp) 12 cylinder inline engine that was the first Merlin to have a standardised propeller shaft suitable for either de Havilland or Rotol propellers. It was the

same engine used in the Supermarine Spitfire and Hawker Hurricane, but unlike those two excellent fighters it was expected to haul much heavier weights in the Defiant, impairing performance. Later, the Defiant Mk. II and IIIs had more powerful Merlin Mk. XX 1,280 hp (954 kW) engines.

Rolls Royce Merlin Mk. III



COCKPIT

The cockpit layout was basically that of the standard day fighter type, cramped but functional. The throttle was on the left and the most essential flight instruments were in a central panel surrounded by the less vital ones around the edges. The major differences were the lack of a gun sight, and the control column was attached to the frame of the adjustable seat, so the column moved up and down with the seat. Later, an Airborne Interception receiver and screen were included for the pilot to operate the air-to-air radar.



Image: Alan Wilson

Apart from a few modifications and the lack of a gunsight, the Defiant's cockpit followed standard RAF single-seat fighter layout.



A formation of Defiants of
No. 264 Squadron, August 1940

SERVICE HISTORY

The Defiant Mk. I entered service with No. 264 Squadron, Royal Air Force, in December 1939, and became operational the following March. All too quickly, the type was sent into action over the English Channel and the north coast of Europe in late May and early June, with some success but not without significant losses. As the war moved to British skies in July and August 1940, losses continued to mount

even as more squadrons became operational. In mid-August, the Defiants were withdrawn from day use, and switched to night fighting.

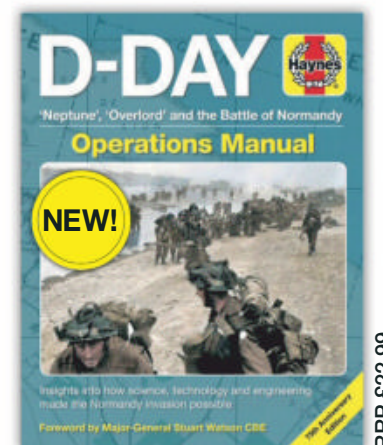
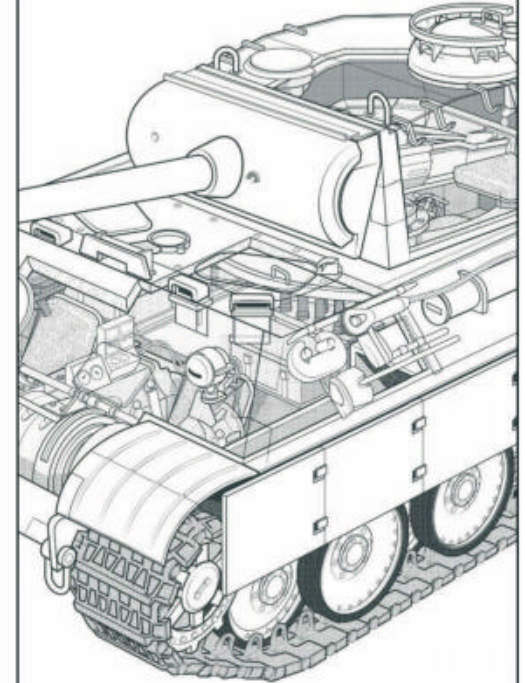
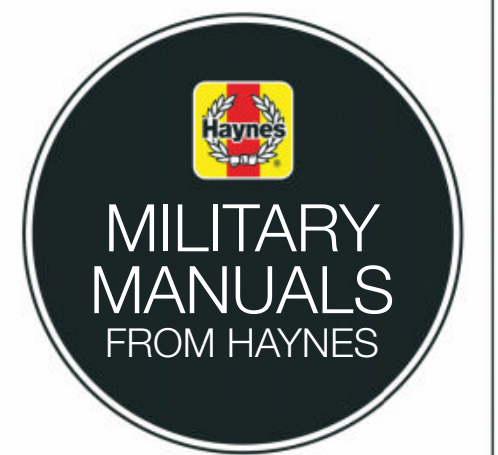
Although less than ideal as night fighters they were capable, and the best available for some time. Over the summer of 1942 they were replaced by faster, twin-engined aircraft. From mid-1942, Defiants were used in an Air/Sea Rescue role (for about a year) and as target-tugs until May 1945, when the type was withdrawn from service.

“AS THE WAR MOVED TO BRITISH SKIES IN JULY AND AUGUST 1940, LOSSES CONTINUED TO MOUNT EVEN AS MORE SQUADRONS BECAME OPERATIONAL. IN MID-AUGUST, THE DEFIANTS WERE WITHDRAWN FROM DAY USE, AND SWITCHED TO NIGHT FIGHTING”



A Boulton Paul Defiant TT1 target tug

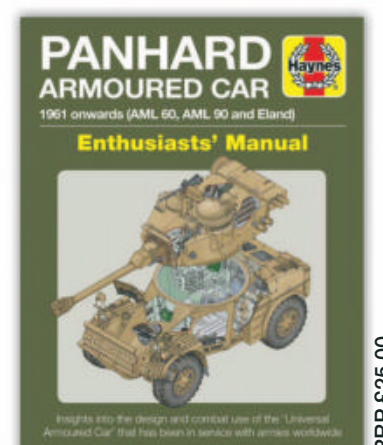
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