

Sten Machine Carbine

By Peter Antill (CART Sealion Information Officer)

In 1940, the UK desperately needed a sub-machinegun, not having an indigenous example and so while the Government ordered Thompson SMGs from the United States, the Royal Air Force decided to adopt an SMG for airfield defence. They were joined by the Admiralty who were also desperate for such a weapon. The resultant design was a direct copy of the German MP28 Bergmann (examples of which were to hand) which was subsequently named the Lanchester, after George Lanchester of the Sterling Armaments Company of Dagenham. As it turned out, only the Admiralty would receive the weapon, despite it being a well-designed, solid piece of kit, (remaining in Navy service until the 1960s), for at the eleventh hour, the design for a new SMG appeared, one which was adopted by the Army and the Air Force.

This design, the first two prototypes of which were called the 'Machine Carbine, N.O.T. 40/1' and '40/2', was conceived by Major Reginald V. Shepherd (Inspector of Armaments, Ministry of Supply) and Mr Harold J. Turpin of the Royal Small Arms Factory (RSAF) Enfield and first fired on 10 January 1941. It was a relatively simple piece of kit, being a blowback-operated sub-machinegun, firing from an open bolt with a fixed firing pin on the face of the bolt. This means that the bolt remains to the rear when the weapon is cocked and on pulling the trigger, the bolt flies forward under pressure from the spring, stripping a round from the magazine to feed into the chamber which is immediately fired, all in the same action. It has no breech locking mechanism; the rearward movement of the bolt is attenuated only by the main spring and the inertia of the bolt. The basic operating principles are similar to those found on many other weapons, including the German MP40, Soviet PPSH-41 and American M3 'Grease' gun. Like these weapons it shared a number of advantages and disadvantages in that it was relatively cheap and simple to manufacture and put



a significant amount of short range firepower in the hands of the infantry, complimenting the standard issue bolt-action rifles which at best could manage fifteen rounds a minute and were not really suited to close combat. The use of the open bolt and pistol ammunition (9mm Parabellum) limited effective range to around 100m.

Author's photograph from the Infantry Weapons Collection (IWC) at Warminster, showing the very first Mk. 1 Sten Gun (top), a Mk.2 (middle) and a Mk. 5 (bottom).

The weapon was very quickly given the name 'STEN', the word being an acronym of 'S' from Shepherd, 'T' from Turpin and 'EN' from either Enfield (where RSAF was located) or England, depending on which source is consulted. The first ever STEN Mk. 1 was hand-made by Turpin at the Philco Radio Works (part of the multi-national Philips Radio Co. based in Eindhoven, Holland) at Perivale, Middlesex and is held by the Infantry Weapons Collection, Infantry and Small Arms School Corps, Warminster. It had a conical flash hider and a fine finish, as well as a wooden foregrip, forward handle and part of the stock was wood as well. The prototypes had



the butt stock made from rectangular section strip with two-sided wooden grips retained together by wood screws, heads to the right. The forty-six pilot models made at RSAF Enfield used the same stock. It had a vertical strip behind the grip plates to attach the rifle sling. The production guns used the 2 tubes and a flat butt plate, again with a vertical bar behind the grip area for mounting a rifle sling. The barrel jacket (sleeve) had four rows of eight holes. After production started, the Mk. 1* emerged, this being the first simplification, with the foregrip, the wooden furniture and the flash hider being deleted to ease production. Captured examples of the Mk. 1 and 1* were designated the MP.748(e) in German service and around 300,000 were made by the Singer Manufacturing Co. in Scotland.

Some more weapons at the IWC at Warminster. The top two are Lanchester SMGs, followed by Stens – a Mk 1*, a silenced Mk II (Mk IIS), a Mk II and a Mk III.

While the Mk 1 and 1* were primarily made for ground troops or those engaged in airfield security, the next version, the Mk. 2 was initially produced to equip the airborne units. The initial trials were conducted between 29 June and 1 July 1941 and the first contract being given to the Canadian Long Branch factory in August 1941 for 17,000 units. However, they were quickly made available to the nascent resistance movements that were forming in Europe, with over 2.6 million being made during the war. ROF Fazakerley made approximately 1,950,000, Theale made 95,000, BSA made 404,383 and Long Branch (Ontario, Canada) made 133,947. The barrel was removable and projected several inches out of the barrel sleeve, the shroud having three sets of three holes. The magazine housing on the Mk, 2 could be swung 90 degrees and the butt removed to help its storage in a container, being hidden when not in use or being worn underneath a parachute harness, although you'd have to watch for damage to the housing and make sure the magazine was aligned properly when returned to its normal position. A silenced version of the Mk, 2, the Mk. 2(S) was produced for clandestine operations and had a shortened barrel enclosed in an integral silencer, which was extremely effective, reducing the ambient



noise to very low levels. Most seem to have been assembled at RSAF Enfield. Contemporary manuals suggested using the Mk. 2(S) in semi-automatic mode as much as possible, as sustained automatic fire would shorten the service life of the silencer very quickly. Later on, a collar was added to the change lever to prevent them being fired on fully automatic. The Mk. 2 had the designation of MP.749(e) in German service. The versions made in the Long Branch factory in Ontario, Canada, generally had a skeleton stock rather than a strut stock.

PM Winston Churchill firing a Mk. 2 STEN at Shoeburyness on 13 June 1941. (Wikimedia Commons)

The Mk. 3, initially produced for the ground forces, was first issued in April 1942, and had a production run of over 876,000 weapons. It was given the designation MP.750(e) in German service and was manufactured by Line Brothers Ltd, of Merton, London. It was essentially an even simpler version of the Mk. 1 and was made of pressed steel, even the barrel being pressed into a rifled mandrel giving a work hardened tube that only needed the chamber reamed to complete it. The top flange incorporated the foresight with a handy aiming rib running along the top of the gun. It also had an ejection port stop to stop a user's little finger inadvertently wandering into said port and while not generally incorporated onto later Stens, was quite often added as an 'ad hoc' modification by individual users. The only downside to the Mk. 3 was that, with a non-removable barrel, wear and tear to the barrel itself or dents to the outer casing could not be fixed and so the entire gun had to be scrapped. It also featured a fixed magazine housing for improved reliability. It was the Mk. 2 and Mk. 3 Stens that would gradually take over from the Thompson in Home Guard and indeed, Auxiliary Unit service. Even the Mk.3 went on to be used by every arm of the service including the airborne forces and was even supplied to the resistance. They were dropped into Europe in a stout box containing the gun, eight magazines, a sling, pull-through and oil bottle, weight, two gauzes and a magazine filler.

The Mk. 4 (an unofficial designation) was only produced as a prototype, being very small and near pistol size and had a different configuration with a conical flash hider, a rear pistol grip, a very light stock and a short barrel.

The Mk. 5 was first issued in February 1944 and with the war going in the Allies' favour, the finish was far better than the Mk. 3 or even the Mk. 2. Changes included a wooden pistol grip, a vertical wooden foregrip (deleted on later models), a fitment

for a small bayonet and a No. 4 Lee Enfield foresight. While production standards had improved quickly after the weapon had entered production, the Mk. 5 was easily the best of the series with an overall high quality of manufacture and finish. Previous versions had been 'chemically stained' (i.e. chemically blued using cyanide which had health and safety implications) but for the Mk. 5, a new process was invented that saw the components cleaned to bare metal, dipped in phosphate to form a deep gray rustproof finish and then painted with a hard, deep satin black paint. It is this finish that is still being used today. In use by most combat arms, the bandolier issued (especially to paratroopers) carried seven magazines. The Mk. 5 became the standard British Army sub-machinegun after World War II and in the 1950s when the British Army went over to the 'L' designation system, the Sten Guns were known as the L50 (Mk. 2), L51 (Mk. 3) and L52 (Mk. 5). Some 527,428 Mk. 5s were produced at ROF Theale and ROF Fazakerley.

The main problem with the Sten gun was not the overall quality of the weapon (bar some initial teething problems that all weapons have) as it was manufactured to tight tolerances, but the magazines. They had a double column, single feed arrangement



(most modern magazines have a double column, double feed arrangement with rounds moving to the left and right as they are inserted). This meant that any dirt or foreign matter that made its way into the area where the two columns merged could cause a stoppage, as could damage to the magazine lips, which required an exact 8° angle to function correctly. Filling a magazine required a loading tool – the magazines were a derivative of those from the 50-round Lanchester SMG (and were interchangeable), in this case shortened to take 32-rounds, but generally only loaded with 30 to save stress on the spring. Indeed, the weapon could be fired without lubrication, an advantage in desert environments such as in the North African campaign, where lubricating oil tends to attract dust and sand.

. . . and some more Stens at the IWC, Warminster – this time a Mk. 4 (only achieved prototype status), 5 and silenced Mk. 5 – a Mk. 5(S).

There were a large number of foreign-made copies and variants of the Sten gun. The Canadian Mk. 2 has already been mentioned but they were made in Norway, Denmark (in small numbers from local factories, such as a bicycle repair shop just south of Copenhagen), Poland (at least twenty-three underground workshops) and even Germany, who produced around 28,000 weapons known as the *Gerät Potsdam* in late 1944 – virtually an exact copy of the Mk. 2, down to the markings, for special operations purposes. They also produced the MP3008 in early 1945, to equip the

Volkssturm, the main difference being that the magazine was held vertically below the weapon. The Australians built the Mk. 1 and Mk. 2 Austen SMG at the Lithgow Small Arms Factory. It was very similar to the Sten but had twin pistol grips and a folding stock similar to the MP40. Although over 20,000 were made, it never achieved a great deal of success as it was in competition with the Owen SMG.

The Sten gun saw service during the Korean War and the numerous conflicts of the early Cold War period. It was used in British service as late as the early 1960s border campaign in Northern Ireland by the RUC, in the early 1970s in Vietnam by US Special Forces and in the 1971 India-Pakistan War. The two most famous uses of the Sten gun were firstly, the assassination of Reinhard Heydrich on 27 May 1942, where the weapon of Warrant Officer Jozef Gabčík jammed (Heydrich was mortally wounded by a grenade). Secondly, the assassination of Indira Ghandi on 31 October 1984 by two of her bodyguards, Satwant Singh and Beant Singh, with Satwant emptying the 30-round magazine at the Prime Minister.

Specification (Mk. 2)

Calibre: 9mm Parabellum (9x19mm)

Length: 763mm (30in)

Length of Barrel: 196mm (7.7in)

Weight: 3.2kg (7.1lbs)

Magazine: 32-round box

Rate of Fire: 500-600rpm

Muzzle Velocity: 365m/s (1,198fps)

Bibliography and Further Reading

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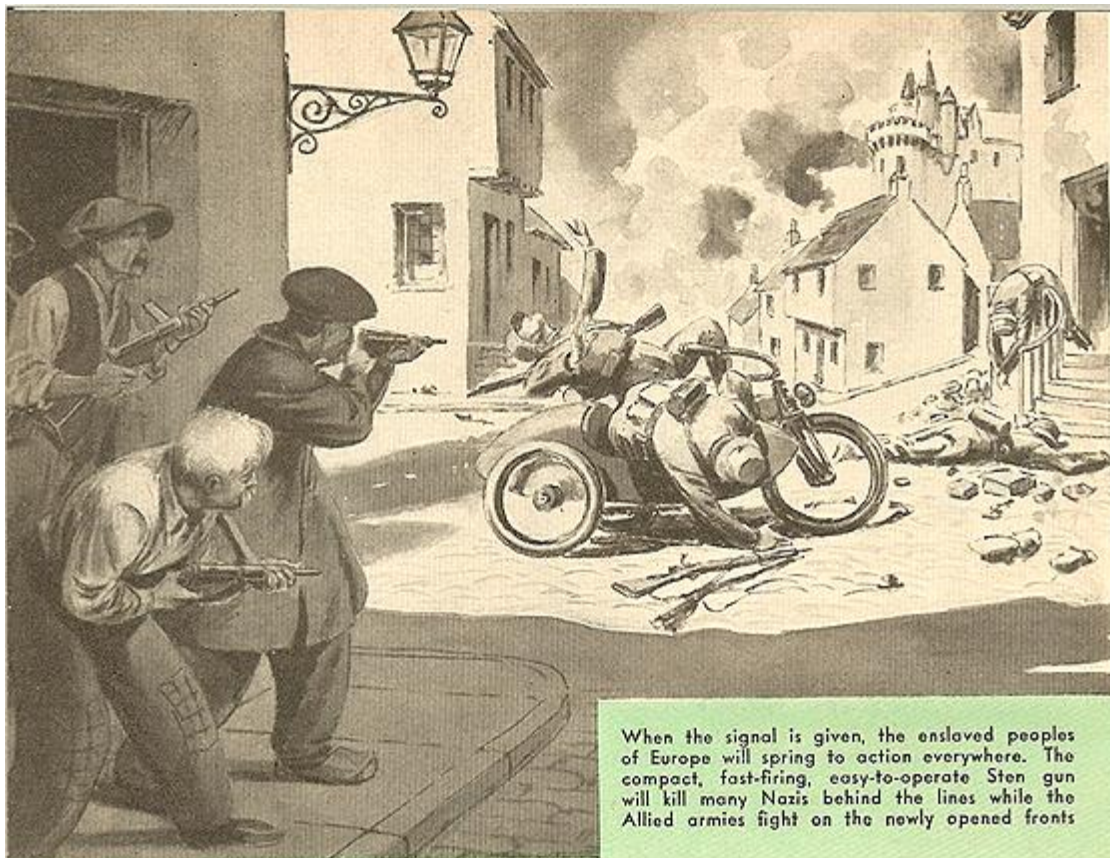
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When the signal is given, the enslaved peoples of Europe will spring to action everywhere. The compact, fast-firing, easy-to-operate Sten gun will kill many Nazis behind the lines while the Allied armies fight on the newly opened fronts

Sten Gun To Be Forerunner

THOUSANDS WILL BE PARACHUTED TO GUERRILLAS

"A HUNK of pipe—with a door spring in it," is the apt description given the new British Sten submachine gun, which soon may be plummeting from the skies over Europe into the eager arms of Frenchmen,

Poles, Czechs, and others who want to fight their way out of slavery.

Faced with the problem of producing in quantities a gun simple enough to be operated by the untrained peasants who will become Europe's new guerrilla fighters, British ordnance experts threw out all previous notions of armament making and came up with this gun (P.S.M., Sept. '42, p. 65; Jan. '43, p. 131) that made orthodox military thinkers gasp. But even the skeptics gave in when they saw the ugly duckling in action. Capable of firing 500 to 550 rounds a minute, this sturdy, six-pound package of dynamite can be operated by a child. It doesn't even require oiling. It has



Sighted from the shoulder or shot freehand from the hip, the gun has a 32-round magazine and fires 500-550 rounds a minute. It is easily dismantled for convenient carrying



British paratroopers also tote the Sten gun. When dropped behind enemy lines, they need a light weapon they can bring into operation fast

Parachutes will drop the cheaply built Stens to the peoples' armies, along with the bullets to fire in them. But enemy munition dumps will also be a handy source of supply as the gun shoots many Axis types of ammunition

Drawings by B. G. SEIELSTAD

of Invasion BEHIND AXIS LINES

only two machined parts, the bolt and the barrel; every other part is the cheapest kind of stamping. Firing is accurate up to 100 yards.

What's more, engineers thoughtfully designed the Sten to fire all types of 9-mm. Parabellum ammunition and most other shells of the same caliber. Guerrilla fighters will be thankful for this foresight when the "big push" comes and they begin to take over enemy ammunition caches, for they will be able to load Sten magazines with cartridges made for German Schmeisser and Bergmann submachine guns, the Italian Beretta machine carbine, and a wide range of Axis service rifles and carbines.

Because the total cost of the carbinelike weapon is under fifteen dollars, they can be made in huge quantities for generous distribution where they will do the most good



"Invasion guns" are turned out fast on assembly line of this Canadian factory. Some are already waiting for action in secret underground arsenals in Europe

