

Typical WWII shell cases found while archaeological field walking and metal detecting – how to identify the source and date of manufacture from the head stamps.

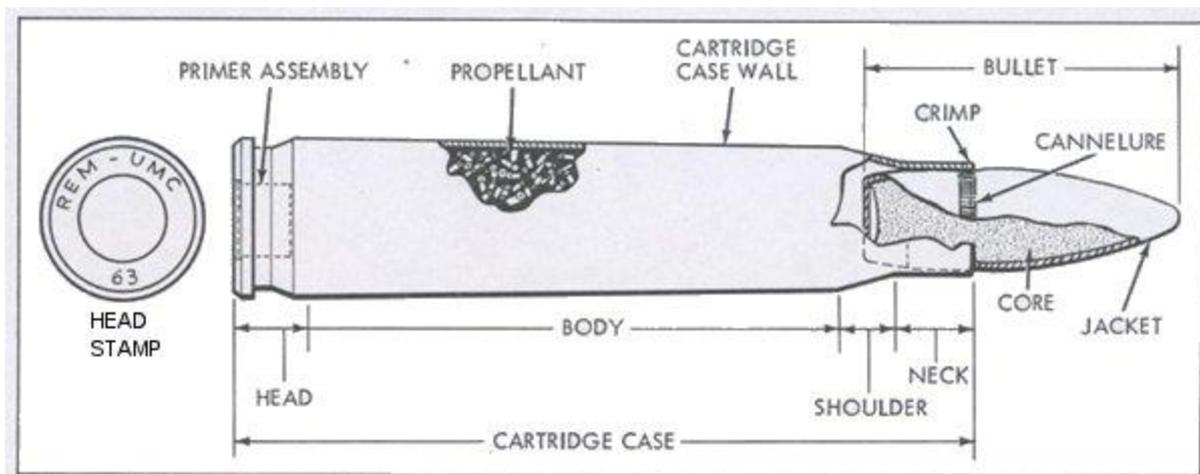


The information used in this document was obtained from a Wikipedia article at https://en.wikipedia.org/wiki/List_of_military_headstamps and from Stephen Taylors excellent podcasts at <https://stephentaylorhistorian.com/>

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During the Second World War the British Commonwealth and American military were responsible for many of the shell casing finds discovered in our area. These include both British .303 and 20mm rounds plus American 50cal (0.5 inch) rounds. A major area of interest are the numerous air bases so prevalent in East Anglia, such as Duxford and Bassingbourn. Many of the shell casings are related to the RAF and American Air Force activities but also to small arms firing at firing ranges by the Armies of both forces.

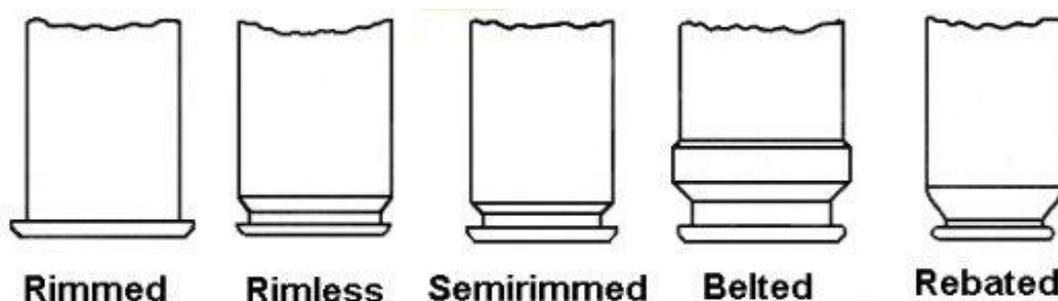
It is very unusual to recover the bullets themselves from the shells but shell casings survive in ploughed soils. The important part of the shell casing is the primer end of the casing where the head stamps can reveal details of the manufacturer and the date of manufacture. Live or practise rounds may, on occasion, be found intact and appropriate care must be taken with live rounds.



The sizes of the various rounds, as shown on the cover, are the first clues – the .British 303 round being considerably smaller than the American 50cal round. The 20mm cannon shell being appreciably larger than the other two rounds.

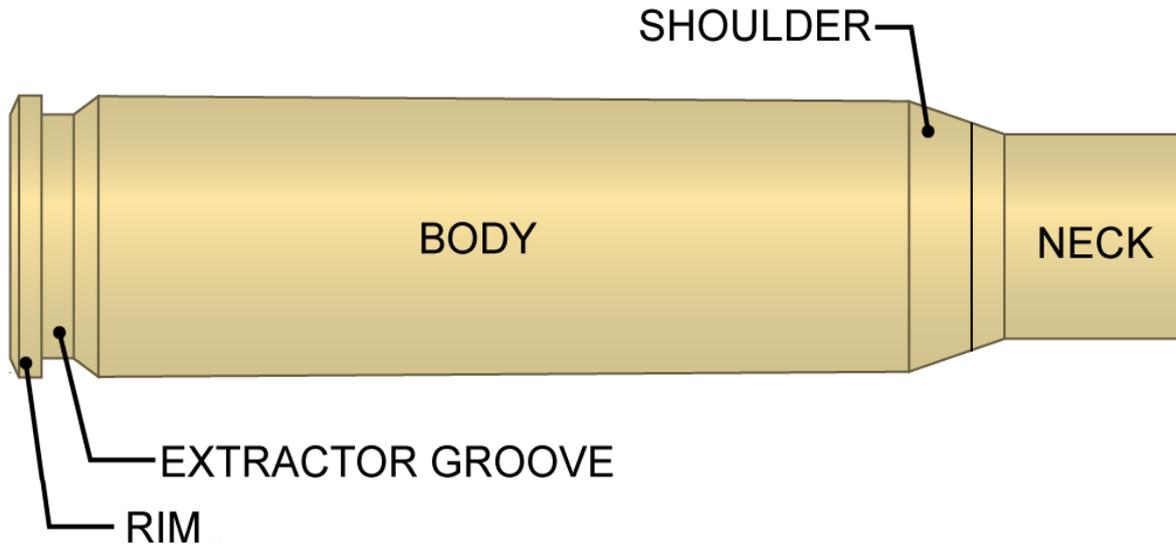
The next point of interest is the head stamp on the primer end of the shell casing. Here various codes and characters help define the manufacturer and disclose the date of manufacture. All the ammunition used in the war was manufactured in a number of different countries which used different coding systems but this article will concentrate on those made in the UK and America.

After the headstamp, the rim is also important and there are various types of rim.



A rimmed cartridge case has a rim that is wider than the main body of the cartridge. A rimless cartridge case has the rim which is the same diameter as main body but also

has an extraction groove used to remove the cartridge from the gun. Semi-rimmed cartridge cases have a rim very slightly larger than the diameter of the cartridge case plus the extraction groove. Belted cartridge cases have a raised 'belt' positioned just above the extraction groove for extra strength. Rebated cases have a rim smaller in diameter than the cartridge case.



Cartridge bodies generally come in three basic shapes.

- (1) Straight body – the diameter is generally the same along its length. Mostly used in shotgun and hand gun cartridges.
- (2) Bottle-neck – the most common military type where the body is reduced in diameter at the shoulder and neck to that of the bullet, as shown in the figure.
- (3) Tapered- where the cartridge case is gradually reduced in diameter along its length.

British .303 shell headstamps

During the life of the 303 cartridge it evolved through several steps. The original 303 Powder Mark I cartridges (between 1889 and 1890) had the manufacturers code RL, (Royal Laboratory, Woolwich), the letters separated by a War Department (broad) arrow at the 12 o'clock position. The last two digits of the year of manufacture generally appeared at the 9 and 3 o'clock positions. The Powder Mark II ball round was manufactured between 1891 and 1893 and showed only the manufacturer and mark number, along with a broad arrow.

In 1891 the higher velocity Cordite Ball Mark I round was introduced, leading to a headstamp with the manufacturer identifier at 12 o'clock, letter 'C' (for cordite) at 7 o'clock and mark number at 5 o'clock. Production switched entirely to cordite rounds in 1907/8 and the 'C' was dropped. The headstamp altered the same year to include the year of manufacture, shown as the last two digits of the year at the 2 o'clock position. The next change came during WW1 with the appearance of different versions. These were identified in the headstamp by adding a suffix after the mark number, so B=Incendiary, G=Tracer, R=Explosive and W=Armour piercing

The use of the suffix to the Mark VII headstamp continued until 1926, when an identifier letter and Mark number replaced the suffix system. So, for instance, the Armour-Piercing headstamp VIIW became W I (W Mark I). At the beginning of 1945 Roman numerals were replaced with Arabic numerals, so the VII became 7.

Two other letters could appear on a 303 headstamp - the letter 'Z' denoted the propellant was nitro-cellulose. The letter 'T' was used to denote a black powder fill used for special loads, most notably blanks,

The final evolution of the 303 headstamp came in 1954 when the NATO 'L..A..' system was adopted. The 'L' number showed the type of store and the 'A' number reflected the modification level. For instance, the British L2A2 7.62mm ball round had the code L2 identifying it as 7.62mm ball, and the A2 showed it was the second mark.

The photos shown some typical examples



The left hand example shows a round made in the Royal Laboratory, Woolwich, the letters separated by a War Department (broad) arrow at the 12 o'clock position. The date shows the round to have been made in 1928 and the round type was a Mark VII.

The centre example was around made by the Ministry of Supply Factory in Spennymoor, Yorkshire. The date was 1943 and it is a Type VII Incendiary round. The right hand photo is a CAFG find from Ickleton also made in the Royal Laboratory, Woolwich and dated 1918. The W indicates an armour piercing round.

British 20mm shell headstamps.

They all follow the same pattern of a letter 'code' which represents the manufacturer, a date stamp and a calibre. The headstamp shown here on the left was made by I.C.I., otherwise known as Kynoch in Standish, UK which is represented by the K2 marking. The date is 1944 and the calibre is 20mm. The headstamp on the right was found by CAFG near Orwell and is stamped 1942, the year of manufacture, and K2, which indicates that it was also produced by Kynoch at Standish. They were used by the RAF in various fighter aircraft during WWII.



American 50cal shell headstamps

Headstamps on 50cal shells show the manufacturer 'code' and the last two digits of the year. The exception is 1944 which is always represented by a single '4'. So on these cartridges on the left you have LC 43 and SL 4 (LC is Lake City Ammunition Plant from the year 1943 and SL is St Louis Ordnance Plant from 1944). The headstamp on the right is a 50cal found at Ickleton by CAFG, this was also made at St Louis but in 1943. These rounds were used by both the US Army and the Air Force and this calibre is still in use today.



United Kingdom manufacturing codes

↖ = UK Government Property. Formerly the badge of the Sidney family, the broad arrow (or "Devil's Claws") symbol was appropriated by the British government to indicate the item was government issue.

FF = *Filling Factory*.

GCF = *Government Cartridge Factory* (1918–1919).

ROF = *Royal Ordnance Factory*.

SAA = *Small Arms Ammunition Factory* (1940–1946).

- ↖ (used 1940–1941) – ROF Radway Green SAA (ROF 13). After 1941 the use of the broad arrow was dropped and switched to the letters "RG".
- ↖ ↖ (used 1940–1941) – ROF Spennymoor SAA (ROF 21). After 1941 the use of the 2 broad arrows was dropped and switched to the letters "SR".
- ↖ ↖ ↖ (used 1940–1941) – ROF Steeton SAA. After 1941 the use of the 3 broad arrows was dropped and switched to the letters "ST".
- **B, BE, E, & BPF** (1940–1946) – *Royal Ordnance Factory Blackpole* SAA (ROF 20), Blackpole, Worcester, Worcestershire, UK. This Cadbury Bros. Ltd. factory was temporarily converted into an ordnance plant for the war effort.
- **G18F1, C18F1** (1918) – *Government Cartridge Factory No.1 (production overseen by Birmingham Metal and Munitions Co.)* – Blackheath, Staffordshire. The digits "18" are the last two digits of the year of production.
- **G##F3, C##F3** (1918–1919) – *Government Cartridge Factory No.3 (production overseen by Kings Norton Metal Co.)* – Blackpole, Worcestershire. The ## are the last two digits of the year of production.
- **HN** (1942–1945) – *ROF Hirwaun*, Hirwaun, Rhondda Cynon Taf, South Wales, UK.
- **RG** (1940–present) *Royal Ordnance Factory Radway Green* – Radway Green, Cheshire; England, United Kingdom.
- **R^AL** *Royal Laboratory* (1696–1965). – Woolwich, Greenwich, London, United Kingdom.
- **RNADC** *Royal Naval Armaments Depot*, Caerwent, Wales, United Kingdom.
- **ST** *Royal Ordnance Factory Steeton*, Steeton, West Yorkshire
- **SWN** *Royal Ordnance Factory Swynnerton*. Swynnerton, Staffordshire, United Kingdom.
- **TH** – *ROF Thorp Arch*, Thorp Arch, West Yorkshire, England, UK
- **ASL** *Aerator Systems Ltd.* (?-1918) – Sutton, South London, London, UK. Made 8mm Lebel cartridge cases for France during World War I.
- **BBC** – *Barking Brassware Co.* Barking, Essex, UK
- **BMARC, BMARCo** – *British Manufacturing and Research Company*, Grantham, Lincolnshire.
- **BMM** *Birmingham Metals and Munitions Co.* – Birmingham, UK. Made 8mm Lebel cartridges for France during World War I.
- **C & H** *Curtis & Harvey Ltd.* (1820–1942) – Hounslow, Scottish Borders, Great Britain. Made smokeless powder for the Lee-Enfield. Manufactured high-quality "fast-burning" black-powder and black powder cartridges until 1973, when it ran out of the specialized charcoal to produce it. Had its head office in London and its factory in Hounslow, later acquiring powder mills in Bedfont, North Feltham, and Tonbridge. It was later acquired by Explosive Trades Ltd. in 1918 (later diversified into Nobel Industries in 1920), which was later made a component of Imperial Chemical Industries when it was formed in 1926. It was reorganized as part of the ICI (Explosives) division in 1932 and merged into ICI in 1942, but survived as an ICI brand until the factory closed in 1973.
- **C-P** *Crompton Parkinson Co. Ltd.*, Doncaster, Yorkshire, U.K.
- **E, EB** *Eley Brothers* (1866–present) – Edmonton, London, UK.
- **GB** *Greenwood and Batley* – Leeds, Yorkshire, UK.
- **GKB** (1884? – ?) – *George Kynock & Co. of Birmingham* (later *Kynoch Ltd.* in 1896). Made percussion caps from 1862 and metallic cartridges from 1884.
- **H** – *Hall Telegraph Co.*
- **K** *Kynoch Factories, Imperial Chemical Industries Ltd.* – Birmingham, UK.

- **K** – **Kynoch & Co**, Witton, Birmingham, UK.
- **K2** (1943–1944) – **I.C.I. (Kynoch)**, Standish, Greater Manchester, Lancashire, UK
- **K3** – There was no Kynoch factory designated K3.
- **K4** (1942–1944) – **I.C.I. (Kynoch)**, Yeading, Middlesex, UK.
- **K5** (1944) – **I.C.I. (Kynoch)**, Kidderminster, Worcestershire, UK.
- **KN** – **Kings Norton Metal Company** – Kings Norton, Birmingham, Worcestershire, UK.
- **P&S** – **Platers & Stampers Ltd.** (1936–1959) – Burnley, Lancashire.
- **RC, RCC, & RH** (1941–1945) – **Raleigh Cycle Co.**, Carlton, Nottingham.

US manufacturing codes

Manufacturing sites were Government organisations although civilian contractors were also used.

- **AO** or **KS** **Allegheny Ordnance Plant** (Kelly Springfield) (1943–1945) – Cumberland, Maryland; Operated by Kelly-Springfield Tire Co., a division of Goodyear Rubber. Conversion back to rubber tyre production began in 1944.
- **CB** **Curtis Bay Ordnance Depot** (CBOD) (1917–1957) – Baltimore, Maryland. Used to store, examine, overhaul, and repack ammunition.
- **DEN** **Denver Ordnance Plant** (1941–1945) – Denver, Colorado: a division of Remington Arms.
- **DM** **Iowa Army Ammunition Plant** (January 1942 to July 1945) – Des Moines, Iowa: a division of US Rubber Co.
- **EC** **Evansville Ordnance Plant (Chrysler)** (June 1942 to April 1944) – Evansville, Indiana: a division of Chrysler-Plymouth. They manufactured brass-cased ammunition. From 1943 to 1944 it manufactured steel-cased .45 ACP ammunition.
- **ECS** **Evansville Ordnance Plant (Chrysler-Sunbeam)** (1942–1944) – Evansville, Indiana: a division of Sunbeam Electric Manufacturing Company. Chrysler bought the plant to keep up with demand. It loaded cartridges made at the Evansville-Chrysler plant and then packed them for shipment. In November, 1943 it was the first plant to package ammunition in vacuum-packed metal cans. In the Spring/Summer of 1944 it was employed in inspecting and repacking .45 ACP and .30 Carbine ammunition.
- **EW** **Eau Claire Ordnance Plant** (August 1942 to December 1943) – Eau Claire, Wisconsin, a division of US Rubber Co.
- **FA** **Frankford Arsenal** (1816–1977) – Philadelphia .
- **HAW** **Hawthorne Naval Ammunition Depot** (1926–1977) – Hawthorne, Nevada, USA.
- **HW-** **Hawthorne Army Ammunition Plant** (1977–present) – Hawthorne Nevada, USA. From 1977 to 1992 it was designated the *Hawthorne Army Ammunition Plant* (HWAAP) and from 1992–present it was redesignated the *Hawthorne Army Ammunition Depot* (HWAD).
- **KOP** **Kingsbury Ordnance Plant** (1941–1945; 1950–1959) – Kingsbury, Indiana.
- **LC** **Lake City Ordnance Plant** (operated by Winchester Arms) (1941–1945; 1951-Present) – Independence, Missouri; A sub-contractor originally owned by Remington Arms. Currently owned by the US Government and operated by Northrop Grumman Innovative Systems.
- **LM** **Lowell Ordnance Plant** (1942–1943) – Lowell, Massachusetts
- **LOD** **Letterkenny Ordnance Depot** (1942–present) – Letterkenny, Franklin County, Pennsylvania. It was renamed Letterkenny Army Depot in August 1962.
- **LOP** **Louisiana Army Ammunition Plant** (1942–1996) – Doyline, Webster Parish, Louisiana, USA.
- **LS** **Lone Star Army Ammunition Plant** (1941–2009) – Texarkana, Texas, USA.
- **M** **Milwaukee Ordnance Plant** (August 1942 to December 1943) – Milwaukee, Wisconsin: Operated by US Rubber Co.
- **P, PC, PCC** **Kings Mills Ordnance Plant (Peters Cartridge Company)** (1942–1944) – Kings Mills, Ohio: A sub-contractor owned by Remington Arms from 1934 to March,

1944. It was converted to only produce .30 Carbine ammunition in 1943 and produced more than Lake City by 1944. It was closed down in March, 1944 to consolidate production at more centrally-located plants.

- **PBA Pine Bluff Arsenal** (1941–present) – Pine Bluff, Arkansas, USA.
- **ROP Redstone Ordnance Plant** – Huntsville, Alabama (1941–1949). Combined with the Huntsville Depot facility to form Redstone Arsenal in 1949.
- **SL St. Louis Ordnance Plant** (November 1941 to June 1945) – St. Louis, Missouri.
- **SND Seneca Ordnance Depot** (1941 - 1990s) - Seneca, NY.
- **TW Twin Cities Ordnance Plant** (1942–1945; 1950–1957; 1965–1976; 2002–2005) – Minneapolis.
- **U or UT Utah Ordnance Plant** (March 1942 to December 1943) – Salt Lake City; a division of Remington Arms.

US Civilian Contractors

- **FC or FCC Federal Cartridge Corporation** (1917-?) – Anoka, Minnesota
- **NC National Brass & Copper Tube Co.** (1917–1918) – Hastings-on-Hudson, New York. Manufactured .303 British ammunition during World War I.
- **OMF Saint Marks Powder Co.** (*A division of Olin-Mathieson*) – Saint Marks, Crawfordville, Florida. Made ball powder for their ammunition factories. It was sold to General Dynamics in 1998.
- **RA Remington Arms Company** – Bridgeport, Connecticut
- **RA H Remington Arms Company** – Hoboken, New Jersey.
- **RHA Co. Robin Hood Ammunition Company** (1898-1915; 1915–1917?) – Swanton, Vermont. Founded in 1898 by Vermont governor Edward Curtis Smith along with Canadian investors as the Robin Hood Powder Company. It was originally located in a factory near the Missisquoi River but was later moved to Swanton in 1909 due to its location near railroad lines. Bought out by Remington in 1915 (becoming Remington-UMC Swanton but retaining the old headstamp) when it received a wartime contract to produce rifle ammunition for the French government. Remington closed the plant at the end of the war when the French contract was ended.
- **US, USCCO United States Cartridge Company** (1867–1936?) – Lowell, Massachusetts. Manufactured .303 British ammunition during World War I. Bought out by National Lead Company in 1911. Western Cartridge Company closed the Lowell plant in 1927 and moved its machinery to East Alton, Illinois. Western Cartridge would make the ammunition and US Cartridge would distribute it under their brand name.
- **SMC Symington Manufacturing Company** - Headquarters at Baltimore, Maryland and production at Rochester, New York. One of its peacetime products was machinery for making autocannon and artillery shells. It made autocannon rounds.
- **TZ Texas Foundries Inc.** (1976–2009) – Lufkin, Texas.
- **W, WC, or WCC Western Cartridge Company** – East Alton, Illinois. Manufactured .30-'06 Springfield ammunition during World War I and World War II.
- **WMA Winchester Military Ammunition** (Winchester Arms Co.)
- **WRA Winchester Repeating Arms Company** (*a division of Western Cartridge Company*) – New Haven, Connecticut. Manufactured 303 British ammunition during World Wars I and II .