The .303 British Service Cartridge

BY ROY TIBBETT

INTRODUCTION

The .303 British Service cartridge, commonly known as the .303 or .303 British was adopted by British along with the Lee - Metford Rifle in 1888 and was the standard British Service cartridge for the Rifle and Machine Gun for over 100 years and was used by the armies of the British Empire and Commonwealth in two World Wars and many other conflicts. It was a rimmed, bottle shaped and slightly rounded, and pierced with a flash hole through the centre. There was a gradooved seat on top of the rim to locate the cartridge in the chamber. The rim was 0.540" in diameter and 0.050" thick, the case was 1.250" long and the bullet seated and a chamfered pressed of about 0.04" deep and 0.04" wide.

Cordite was used as propellant from .303 one first the adopted cordite cartridge, the Cordite Mk I, Mk II, Mk III, Mk IV, Mk V, Mk VI, Mk VII, Mk VIII, Mk IX, Mk X, Mk XI, Mk XII, Mk XIII, Mk XIV, Mk XV, Mk XVI, Mk XVII, Mk XVIII, Mk XIX, Mk XX, Mk XXI, Mk XXII, Mk XXIII, Mk XXIV, Mk XXV, Mk XXVI, Mk XXVII, Mk XXVIII, Mk XXIX, Mk XXX, Mk XXXI, Mk XXXII, Mk XXXIII, Mk XXXIV, Mk XXXV, Mk XXXVI, Mk XXXVII, Mk XXXVIII, Mk XXXIX, Mk XXXX, Mk XXXXI, Mk XXXXII, Mk XXXXIII, Mk XXXXIV, Mk XXXXV, Mk XXXXVI, Mk XXXXVII, Mk XXXXVIII, Mk XXXXIX, Mk XXXXX, Mk XXXXXI, Mk XXXXXII, Mk XXXXXIII, Mk XXXXXIV, Mk XXXXXV, Mk XXXXXVI, Mk XXXXXVII, Mk XXXXXVIII, Mk XXXXXIX, Mk XXXXXX, Mk XXXXXXI, Mk XXXXXXII, Mk XXXXXXIII, Mk XXXXXXIV, Mk XXXXXXV, Mk XXXXXXVI, Mk XXXXXXVII, Mk XXXXXXVIII, Mk XXXXXXIX, Mk XXXXXXX, Mk XXXXXXXI, Mk XXXXXXXII, Mk XXXXXXXIII, Mk XXXXXXXIV, Mk XXXXXXXV, Mk XXXXXXXVI, Mk XXXXXXXVII, Mk XXXXXXXVIII, Mk XXXXXXXIX, Mk XXXXXXXX, Mk XXXXXXXXI, Mk XXXXXXXXII, Mk XXXXXXXXIII, Mk 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RNRA – Rhodesia National Rifle Association. On nitro-cellulose loaded .303 Mk 7z Ball cartridges made by FNM of Moscavide, PORTUGAL.
R-P – Remington Arms Co, Bridgeport, Conn., UNITED STATES OF AMERICA. Known to have produced nitro-cellulose loaded .303 cartridges in:
180 & 215 gr jacketed soft point sporting ammunition
RR or RRCO – Ross Rifle Co, Montreal, CANADA. Produced .303 Mk 7 ball ammunition in cases believed to be made by Eley
RTS – Richard Threlfall and Sons, UNITED KINGDOM. On explosive anti – Zeplin cartridges.
R.W – Rudge Whitworth Ltd., Tyseley, UNITED KINGDOM. This company represents the only new commercial ammunition manufacturer put into business by the Government as a result of demand in the 1914- 18 war. They received their first Government contract for the supply of Mk 7 Ball ammunition in 1915 and continued to produce until the end of 1918 at their new factory at Tyseley. Manufactured .303 cartridges from 1915 – 1918 in:
Ball, Cordite Mk 7
Dummy, Drill Mk 5
Incendiary Buckingham (VII.B), B Mk 1, B Mk 2Z
Tracer SPG (VII.G) Mk 1Z
SAAF – Small Arms Factory Footscray, AUSTRALIA. Known to have produced .303 cartridges with this headstamp April 1921 to December 1923, although some also produced in March 1924. Also manufactured Mk VI Dummy cartridges
SBR – Sellier & Bellot, Riga, LATVIA. Known to have produced .303 ball cartridges c 1937
SFM – Societe Francaise des Munitions, Issy – les – Moulineaux, FRANCE. Known to have manufactured nitro-cellulose loaded .303 ball cartridges for export pre 1939
SMI – Societa Metallurgica Italiana, Campo Tizzoro, ITALY. Known to have produced nitro-cellulose loaded 7.7 x 56R ammunition which is interchangeable with the .303 cartridge in:
Ball
Tracer
SR – Royal Ordnance Factory, Spennymoor, Durham, UNITED KINGDOM. This factory was part of the 1939-45 war emergency expansion plan. It began production of .303 ammunition in 1941 initially with the headstamp code of two arrows replacing these in 1942 with the code SR. The Spennymoor ammunition was filled at the Royal Ordnance Factory, Aycliffe, Durham. Known to have produced .303 cartridges in:
Ball Mk 7 and 8Z
Blank L Mk 5
Incendiary B Mk 6, B Mk 6Z, B Mk 7 and B Mk 7Z
TM.B – Pirotechnia di Bologna, ITALY. Known to have produced nitro-cellulose loaded 7.7 x 56R ammunition, which is interchangeable with the .303 cartridge in:
Tracer
Ball
T.BLAND & SONS – Commercial .303 ammunition loaded by T. Bland & Sons, London, UNITED KINGDOM in ball and sporting configurations
U or SAM – South African Mint, Pretoria, SOUTH AFRICA. Used code U from 1939 – 1961 and SAM thereafter. When U used with a diamond this indicates manufacture in a subsidiary factory at Kimberley. Known to have manufactured .303 cartridges in:
Ball, Cordite Mk 7
Jacketed soft point sporting ammunition
Semi Armour Piercing F Mk 1
Tracer G Mk 2
US – United States Cartridge Co, Lowell, Mass., UNITED STATES OF AMERICA. Known to have produced nitro-cellulose loaded .303 Ball Mk 7 cartridges during the period 1914 – 1918.
VE – Cartoucherie de Valence, FRANCE. Known to have produced nitro-cellulose loaded .303 Ball cartridges
VIS – Atelier de Chargement de Vincennes, FRANCE. Known to have produced nitro-cellulose loaded .303 Ball cartridges 1923
VPT – Valtion Patruunatehdas, Lapua, FINLAND. Known to have produced Ilmavoimat Konekivaarin Patruuna Kal. 7.70 machine gun cartridges, which are interchangeable with the .303 cartridge in:
Special Ball
Special Armour Piercing
W or WRA – Winchester Repeating Arms Co., New Haven, Conn., UNITED STATES OF AMERICA. Known to have produced nitro-cellulose loaded .303 cartridges:
Ball, Mk 7 for 1914 – 1917 military contracts
Ball, Mk 7Z (American WW2 Contract Pattern)
Scott multiball (duplex) cartridge
180 gr jacketed soft point sporting ammunition
WCC – Western Cartridge Co., East Alton, Ill., UNITED STATES OF AMERICA. Known to have produced nitro-cellulose loaded .303 cartridges in:
Ball, Mk 7Z (American WW2 Contract Pattern)
W-W – Winchester Western Division of Olin Industries, New Haven, Conn., UNITED STATES OF AMERICA. Known to have produced nitro-cellulose loaded .303 cartridges in:
180 gr Jacketed soft point sporting ammunition
y – Toyokawa Naval Arsenal, JAPAN. Known to have produced nitro-cellulose loaded Imperial Japanese Navy Year Type 92 Machine Gun ammunition which is interchangeable with the .303 cartridge in:
Armour Piercing
Ball
Incendiary, phosphorus filled
Tracer
ZV – Zbrojovka Brno, Brno, CZECHOSLOVAKIA. Known to have produced .303 cartridges in:
Ball, Mks 7 and 8Z. This ammunition is known to have been commercially exported by the manufacturer post 1950 to Afghanistan and India

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CHINA is known to have produced some 7.7mm rimmed ammunition for use in captured Japanese machine guns from 1945 onwards. This cartridge is interchangeable with the .303 British cartridge.
EGYPT is known to have produced .303 ball ammunition at the Government Arsenal Shoubra, United Arab Republic and Factory No 10 at Alexandria, Egypt.
ETHIOPA is known to have produced .303 ball cartridges c 1959
FINLAND is known to have produced .303 inch cartridges in various loadings including Armour Piercing, Ball, Incendiary, Tracer and Drill rounds
FRANCE manufactured several variants of the .303 cartridge, including: Ball, Tracer, Armour piercing, Armour piercing / Tracer and Incendiary rounds
IRAQ is known to have produced .303 Ball cartridges
ISRAEL is known to have manufactured .303 ball cartridges at the Government Arsenal, Tel Aviv, Israel, c 1948
JAPAN is known to have manufactured nitro-cellulose loaded Imperial Japanese Army Year Type 89 Machine Gun ammunition, which is interchangeable with the .303 cartridge, without any headstamp codes in:
Armour Piercing
Tracer
JAPAN is also known to have manufactured nitro-cellulose Imperial Japanese Navy Year Type 92 Machine Gun ammunition, which is interchangeable with the .303 cartridge, at their Aichi Naval Arsenal, Toyokawa Naval Arsenal and Yokosuka Naval Arsenal in the following configurations
Armour Piercing,
Ball
High Explosive, (Violet Primer)
Incendiary, Phosphorus
Tracer
SPAIN manufactured .303 ammunition and used it on a limited scale during and after the Civil War of 1936 – 39

COLOUR CODING OF .303 AMMUNITION

Colour coding appears in several forms on small arms ammunition. The most common system with the .303 cartridge used coloured bullet tips or colour around the annulus of the primer cap. Other methods include colouring of part or the whole of the cartridge case. Originally colour markings arose from the need to make a quick visual check of the arrangements in a machine gun belt and they are now almost universally applied. Most countries do not, unlike Britain, identify the bullet by the headstamp, so such colour markings are often the only way to identify the bullet in use. As a general rule the absence of a colour coding indicates a standard ball cartridge.

BELGIUM – used bullet tip code
Bullet Type
Incendiary – Light blue tip
Tracer – Red tip
FINLAND – used bullet tip code
Bullet Type
Armour Piercing – Light blue tip
ITALY – used both bullet tip and annulus codes
Bullet type
Armour Piercing – Green annulus
Armour Piercing Incendiary (Phosphorus filled) – Blue tip
Armour Piercing Incendiary (Thermite filled) – Green tip
Observation – Black tip
Tracer – Red tip
JAPAN – Used annulus code
Bullet Type
Armour Piercing – White annulus
Ball – Black annulus
High Explosive – Purple annulus
Incendiary – Green annulus
Tracer – Pink / red annulus
UNITED KINGDOM AND COMMONWEALTH COUNTRIES BEFORE c 1955, ie Australia, Canada, India, New Zealand, and South Africa – used bullet tip and annulus code from about 1918 onwards
Bullet Type
Armour Piercing – Green tip, Green annulus
Ball – Purple annulus
Incendiary – Blue tip, Blue annulus
Observing – Black tip, Black annulus
Proof – Yellow annulus
Tracer Short Range – White tip, Red annulus
Tracer Dark Ignition – Grey tip, Red annulus
Tracer Long Range – Red tip, Red annulus

When cap annulus colours were first introduced in 1918 the Ball Mk VIIz had the annulus coloured black while the Ball Mk VII had the entire cap area coloured purple. This distinction was abandoned in May 1920 and thereafter all ball rounds had the purple annulus.

Coloured bands on the cartridge case are not common but the following have been used:

One inch blue band – Reduced charge ball to simulate stoppages in Vickers aircraft guns.
Quarter inch blue band – Practice tracer
Quarter inch green band – Canadian made tracer
Wide green band at equator of case – Canadian made Match Ball (1922)
Six purple bands around equator of case – Canadian Match Ball (1926)
Ball round with case blackened quarter inch back from the mouth – Short Range Practice Mk 1 (1895 – 1897), or Mk 2 (1899 – 1912)
Case completely blackened with brass dummy bullet – Blank with mock bullet Mk 6
Blank case all black – Rifle grenade blank Mk 2
Blank, front half black – Rifle Grenade, Ballistite
Blank, front and rear thirds black – Rifle grenade Mk 4 for Grenade No 85
Blank, rear half black – Rifle grenade blank Mk 7z or Smoke discharger Mk 1T
Ball, reddened case – Proof round Mks 1 to 3

In addition to colour coding, British and Commonwealth .303 ammunition had a letter code pre 1955 to denote the type of bullet as well as the type of propellant charge. These should not be confused with the manufacturer's identification code.

A A On cartridges c 1917 indicated a Pomeroy explosive incendiary Mk 2 bullet
B denoted an Incendiary bullet
C on early pre 1912 cartridges denoted a Cordite propellant charge
D denoted a Drill round
E denoted a Smoke bomb projector
F denoted a Semi armour piercing bullet
G denoted a Tracer bullet
H denoted Grenade Discharger
K On cartridges c 1918 indicated a Brock explosive incendiary bullet
L denoted Blank
O denoted an Observation bullet
P denoted a practice round
Q denoted a proof round
R denoted an Explosive bullet
U denoted a Dummy round
W denoted an Armour piercing bullet
Z indicated a nitro-cellulose propellant charge in the cartridge

UNITED STATES OF AMERICA – Used the same annulus colour coding as United Kingdom for ammunition supplied under contract to the British Government during both the First and Second World Wars.

Bibliography
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Identification Manuals Nos 1, 2, 3, and 4 on the .303 British Service Cartridge by B.A. Temple
The Cartridge Guide by Ian V. Hogg
Collectors Cartridge Catalogue No 29 by Conjay Arms Company Ltd
Whitney's Heritage, A Study of Cartridges Manufactured by The Colonial Ammunition Company in New Zealand. By Barry W. Gracia
Personnel communications

Other web links on .303 ammunition:
An article on WW2 fighter armaments
An extensive website on the Vickers machine gun
An article on the WW2 fighter gun debate
An article on handloading for the .303

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