

Public consultation - Update for units of measurement directive

Subject : EU Consultation on Units of Measurement Directive (80/181/EEC)

Dear Sirs

Please find attached our submission to your consultation on changes to the Units of Measurement Directive (80/181/EEC).

Please confirm receipt of our submission.

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Response to
Metrication proposals

Attachment :

THE SHOOTING SPORTS TRUST

THE GUN TRADE ASSOCIATION

Metric Only Measurement in Firearms

Submission

1. Derogations from an EU Directive allow the use of some non-metric measurements in the UK until 2010. Prior to that date the derogations will be reviewed.

2. Directives relating to metrication of measurements do not apply to the calibre designations of firearms and ammunition, which are not measurements but, in the words of the Permanent International Commission for the Proof of Small Arms, are “standard or commercial names”.

3. Any attempt to convert imperial calibre designations to metric measurements is fraught with technical difficulty and would result in danger to public safety.

4. Existing firearms and ammunition are required by international proof legislation to be marked with the original or accepted calibre designation, which may be metric or imperial.

5. The existing system is restricted to its own field and works well. Its existence does not affect the principal of metrication.

6. Containers of propellant powder for use by those who reload ammunition may currently be marked in metric or imperial weights. Because of the dominance of the USA in the market, the use of imperial measurements, or at the very least dual marking on these containers should continue. Where textbooks and other documents contain advice about the amounts of powder to be loaded, these should continue to be accepted in imperial units (grains) to avoid serious dangers arising from errors in conversion of units of weight.

7. Bullets used by reloaders are sold in packages with numeric measurements (100 or 50) but the calibre designation of the bullet should continue to be in the units, imperial or metric, used to designate the calibre and the weight of the individual bullet should continue to be shown in grains.

Support Paper

1. The designation of the calibre of a firearm or ammunition is not a measurement, but is simply a name that distinguishes one calibre from another even though the bore size of the firearm may be similar. The calibre designation, though expressed in inches or millimetres rarely coincides with any specific measurement of any part of a firearm. The name or designation of a calibre of firearm or ammunition is often arbitrarily chosen by those developing it, and often contains elements that are intended only to distinguish one cartridge from another for reasons of safety or perceived commercial advantage. To seek to change that name into a precise metric measurement is wholly illogical.

2. The nominal calibre of the firearm is normally clearly marked on the firearm itself by the manufacturer and, in countries that are signatories to the 1969 convention on the proof of small arms, is further marked by the proof authorities.

3. Firearms currently in use include antique firearms that may be of great age, but will still bear calibre designations. Firearms of current design and calibre may be more than 100 years old and still in regular use. There is a significant trade in these firearms, which are often of very high value. It would, to say the least, be inappropriate to re-mark such firearms with a new metric designation even if that were possible without serious consequences. The removal of existing non-metric marks would create serious conflict with the laws on proof of small arms.

4. Commercial ammunition is now subject to CIP controls that require type testing of ammunition manufactured in CIP countries or imported from other countries. Each cartridge must bear the mark of the manufacturer or person guaranteeing them, the calibre "in accordance with the relevant standard or commercial name of the ammunition". Shotgun cartridges must bear the size of the shot and the length of the case. Amongst other specified markings, the basic package of ammunition must bear the CIP mark and will invariably bear the calibre designation.

5. The imposition of a requirement for metric-only measurements in relation to firearms, components of firearms, ammunition and components of ammunition would:-

- create conflict with current CIP Regulations;
- isolate EC countries from much of the remainder of the world;
- seriously affect trade and cause inconvenience and confusion to users;
- in many cases, be a likely cause of danger to users;
- be impractical to apply to existing firearms and their ammunition;
- provide no benefit for citizens of EU countries;
- be impossible to apply to the United States and to other largely English speaking countries which together provide major export markets for EU manufacturers of firearms and ammunition and are also the world primary source of many classes of firearms ammunition and accessories.

6. Differing considerations apply to the imposition of metric-only measurements to different classes of firearms and ammunition and to components of ammunition.

Shotguns.

7. Shotguns are (with two minor exceptions) classified by a bore or gauge and not by a recognisable measurement, either metric or imperial. The system derives from a time when standard measurements did not exist. Artillery was measured by the weight of the lead ball that it discharged – eg a seven pounder. Small arms were measured by the number of lead balls of the size of the bore that would make up one pound of lead. Thus, a gun which fired balls that were twelve to the pound was a 12 bore.

8. The system is of great antiquity and pre-dates any form of metrication. It was standard in England long before the 17th century. A Militia Act of 1662 concerning muskets to be provided for the militia required “the gauge or bore to be of twelve bullets to the pound”.

9. Until the 19th century, this form of measurement was applied in the United Kingdom to rifles and pistols as well as to shotguns, but improved systems of measurement and the advent of breech loading firearms led to the introduction of cartridges that were given nominal imperial measurements of various sorts. These measurements rarely indicated actual dimensions.

10. For shotguns the bore or gauge measurement has displaced any other form of measurement throughout the world and become standardised. Proof houses in many European countries applied the bore system to their testing of guns. In the UK, the bore sizes were given imperial sizes and the European proof house applied metric dimensions, but these were within relatively wide parameters.

11. The requirements of international trade led to the establishment of a Permanent International Commission for the Proof of Small Arms which is now the recognised authority on matters including the dimensional measurements of small arms made in, or imported into, member countries.

12. Since 1978, the UK has recognised both imperial and metric measurements but CIP has now standardised on the use of metric measurements for all future proof purposes

13. The actual size of bore of a shotgun can vary significantly within current Rules of Proof. Ten different bores are currently recognised for shotguns ranging from 4 bore to 32 bore. There are two calibres that have a nominal measurement of 410 and 9mm. The 410 refers to nominal imperial measurement, but the abbreviation mark for inches is not shown as part of the designation.

14. The diameter of the chamber is specified in Rules of Proof. A 12 bore chamber (the most common) must have a minimum diameter of 20.30mm, with a chamber mouth of 20.65mm and a tolerance of 0.1mm. At 23cm from the breech face, the bore may measure from 18.2 to 18.9mm, and the diameter at the muzzle may be further constricted (choked) by varying amounts.

15. There is no single metric dimension that represents the bore or gauge of a smooth bore gun. The bore system is standardised throughout the world and is fully understood by manufacturers and users. Metric dimensional checks are imposed at proof in those countries that require proof. Those countries that do not (The USA, for example) have agreements that ensure conformity to the standards set by CIP.

16. The existing system is not merely standard in EU countries, but is world standard, and any change would divorce the EU from a world standard.

17. To impose a requirement for only a single metric measurement for marking shotguns made in the EU, and for the packaging for such shotguns from some date in the future would leave the billions of existing shotguns with the marks now in use and would cause confusion to users and seriously inhibit trade in those guns with the greater part of the world.

18. Serious problems would be encountered in relation to older shotguns, many of which are still in regular use and which may sell for very substantial sums of money. Antique shotguns form a very significant international trade within the EU and, in both directions, with many parts of the world. To seek to describe them solely in metric terms would be ludicrous.

Shotgun Ammunition

19. Shotgun ammunition is used in enormous quantities throughout the world. In the UK alone some 220 million cartridges are fired each year. Shotgun ammunition is loaded in many EU countries and is exported to every part of the world.

20. The standard dimensional and performance criteria for shotgun cartridges are set by CIP for those countries subscribing to the international proof system. In the United States the Sporting Arms and Ammunition Manufacturers' Institute (SAAMI) sets standards in conjunction with CIP. The standards set are therefore world standards and not those of any country or group of countries. Ammunition not conforming to this world standard simply could not be marketed on any scale.

21. Ammunition loaded in any country subscribing to the proof conventions, or imported into such a country is subject to mandatory type testing through the submission of samples to the Proof Authorities and the issuing of an approval.

22. The Proof Authorities require that the calibre be marked on the cartridge and any change to the manner in which the calibre was expressed would result in conflict with CIP.

23. Inner packaging will display the calibre of the cartridge, the length of the case, the shot size and the shot load. The calibre of the cartridge is universally displayed by the bore size and any change from that would seriously inhibit sales in non EU countries. Separate packaging would be required for exports to, and for imports from, non EU countries. Such changes would create conflict with CIP requirements.

24. The length of the cartridge is related to the chamber length of the gun and represents the length of the cartridge case after firing, including any part of the case that is crimped or folded over after loading. The use of cartridges that are too long for the chamber of the gun results in the case opening into the constricted part at the front of the chamber with the potential for generating significantly higher firing pressures. It is vital that any consumer recognises the length of the cartridge he is buying and matches it to the proof marks on his gun.

25. Current practices in relation to cartridge length include metric-only marking, dual-measurement marking and imperial measurements only depending on the intended market. A requirement that the imperial measurement should not be used would have serious effects for trade with many countries.

26. The amount of shot is similarly marked in both metric and imperial weights. Performance, recoil and inherent safety are affected by changes to shot charges. Flexibility in marking is essential for the various markets.

27. Shot sizes are marked on the cartridge itself and on the packaging. The most common method used is to mark a numerical size (No 6 shot or No 8 shot, for example) which is long established. There are minor differences between countries in the actual size of shot at some numeric levels but the consumer is familiar with these. In some instances a metric measurement of the shot pellets is used in conjunction with the numeric identifier, but the use of metric-only measurements of shot sizes would create serious sales resistance in many countries with significant effects on trade.

28. Shotgun cartridge dimensions and performance are currently regulated to world standards. The imposition of metric only designations would create confusion, adversely affect trade and, in some instance be a source of danger.

Rifles, Pistols and their Ammunition

29. Rifles and pistols are currently available and used in a vast number of different nominal calibres whose designations have been created largely to avoid confusion with other similar cartridges or to secure the design of a proprietary cartridges. In muzzle loading rifles and pistols, bore designations like those used on shotguns will be found and these have carried on in some breech loading firearms that are still in use.

30. Breech loading firearms will be marked for a specific cartridge, which may be designated by a number of factors, none of which represents an actual measurement of any part of the firearm. The purpose of the designation is to isolate one particular calibre of firearm and its ammunition from the many hundreds of very similar calibres that will be available at the same time.

31. Amongst older British rifle cartridges, many of which are still in use, there are some thirty that are of nominal 450 or 45 calibres. This is supplemented by over twenty American rifles in nominal 45 calibre. Bullet diameters vary from 0.457 inches to 0.451 inches and designations might include a name – 450 Musket, 500/45-Webley, 45 Winchester, 45 Martini Henry. It might include a series of numbers – 450 x 3¹/₄ inch or several other case lengths, or 500/450 No 1 (the latter having a 500 case necked to 450 and being the first in a series). In some instances the second set of figures denote the charge either in black powder or the smokeless powder used when the cartridge was developed – eg Winchesters in 45-60, 45-90 , 45-110 or the 30-30. Smaller cartridges include the various .22 rimfires which must be distinguished one from the other and from the .22 centre cartridges such as the .22 Hornet and the different 22 K Hornet, or the 222 Remington or 222 Magnum, or the 223.

32. In all instances, old or new, the cartridge to be acquired must match the markings on the rifle. There are situations in which an entirely wrong cartridge could be chambered into and fired in a wrong rifle or pistol with quite disastrous results. It is not possible to change the markings on all existing rifles and new rifles must be correctly marked for the cartridges for which they were chambered.

33. The most popular rifle for use against red deer in the UK is the 270 Winchester which uses a bullet of 0.277 inch diameter. Many such rifles, and much of the ammunition, are made in the USA. If converted to a metric measurement this would give either 6.8mm or 7mm depending on whether the nominal calibre or the bullet measurement was used. An enormous number of 6.5mm calibre rifles and

cartridges exist and most of them have a nominal bullet diameter of 0.264 inches whilst an even larger number of 7mm cartridges have a bullet diameter of 0.284 inches. The dangers of converting this very popular calibre into a metric designation are enormous.

34. The 303 British cartridge was standard for the British army from 1888 to 1957. It was, and still is, extensively used as a sporting rifle cartridge. Despite its nominal calibre, the bullet is of 0.311 inches diameter. Metrication could result in a nominal calibre of 7.6962mm or a 'bullet size' calibre of 7.8994mm effectively either 7.69mm or 7.9mm. A vast number of other cartridges fall into this general calibre area and any new designation could cause dangerous confusion.

35. The most appropriate course of action is to continue with the CIP's requirement for the "relevant standard or commercial *name* of the ammunition" which is most certainly not a measurement but a name.

Reloading Components

36. The process of reloading ammunition is much more widespread than is generally realised. In the UK alone some twenty million replacement primers are used each year. Many will be for blank cartridges, particularly for those used by re-enactors, but a vast amount of ammunition is reloaded by those who hunt game or are target shooters.

37. The process, briefly, involves re-sizing the cartridge case, replacing the primer, charging it with an appropriate amount of propellant and fitting a new bullet.

38. Primers are labelled by their application - "Large Rifle"- and with a number - "No 2¹/₂"- so that no question of metrication arises. Propellant powder is manufactured in a number of European countries but the primary producer is the United States. Lead bullets may be home cast, but jacketed bullets used for most purposes are once again predominately made in the USA. There are perhaps fifty propellant powders from different manufacturers and having different roles.

39. Reloading tools, particularly for metallic ammunition, are almost exclusively of American manufacture and manuals set out potential loads for a range of cartridges each using a number of different bullet weights. The manuals are published by powder manufacturers, bullet makers, reloading tool makers and others and, once again, the USA dominates the market.

40. In recent years manuals have been published by powder manufacturers Norma of Sweden and Vihtavouri of Finland. The 2004 Norma manual details loads for over eighty different cartridges each with a variety of bullet weights. The bullet weights are shown in grains avoirdupois with the metric equivalent shown in small type below. Powder weights are shown in grains. Norma use the abbreviation 'g' for grams and 'gr' for grains.

41. The 1994 first edition of the Vihtavouri manual details loads for 84 different cartridges with variations for different bullet weights. They show different tables of weight for metric and 'English' units using 'g' for grams and 'grs' for grains. From time to time other incorrect abbreviations have been used in other books and articles about reloading and the possibility for confusion between grams ('g', 'gm', 'gms') and grains ('gr', 'grs', etc) is very real.

42. Manuals published in the USA give all weights in grains and all measurement in inches. Given the dominance of the USA in this field much of the ammunition reloading in Britain will be with American powders and bullets, using

American weighing or volumetric equipment that is graduated in grains. Black powder used in older weapons is measured by volume, in older weapons this will be measured in drams.

43. A majority of users will be members of the public without laboratory equipment and with, perhaps, limited knowledge of conversion units and poor facilities for making these conversions accurately. They will be following manuals that give details of loads in drams for black powder and in grains for smokeless powders and bullets so that the potential for error is high and any change from established procedure will create serious risk. Selecting a table for a bullet of the wrong weight, failing to convert accurately or mistaking an abbreviation could, quite literally, be fatal.

44. Bulk propellant powder canisters are currently marked in metric units in Europe and in pounds from the USA, but these larger units are readily converted if that is necessary and cause no problem

45. The existing system for weighing bullets and powders has been in use for more than a hundred years or so and is well established. There is no reason to change it and every reason, including that of public safety, for maintaining the present system. Handloading has been shown to be a perfectly safe activity and billions of rounds of ammunition have been loaded and used over the years with little or no hazard. It would be quite wrong to increase the prospect of an accident.