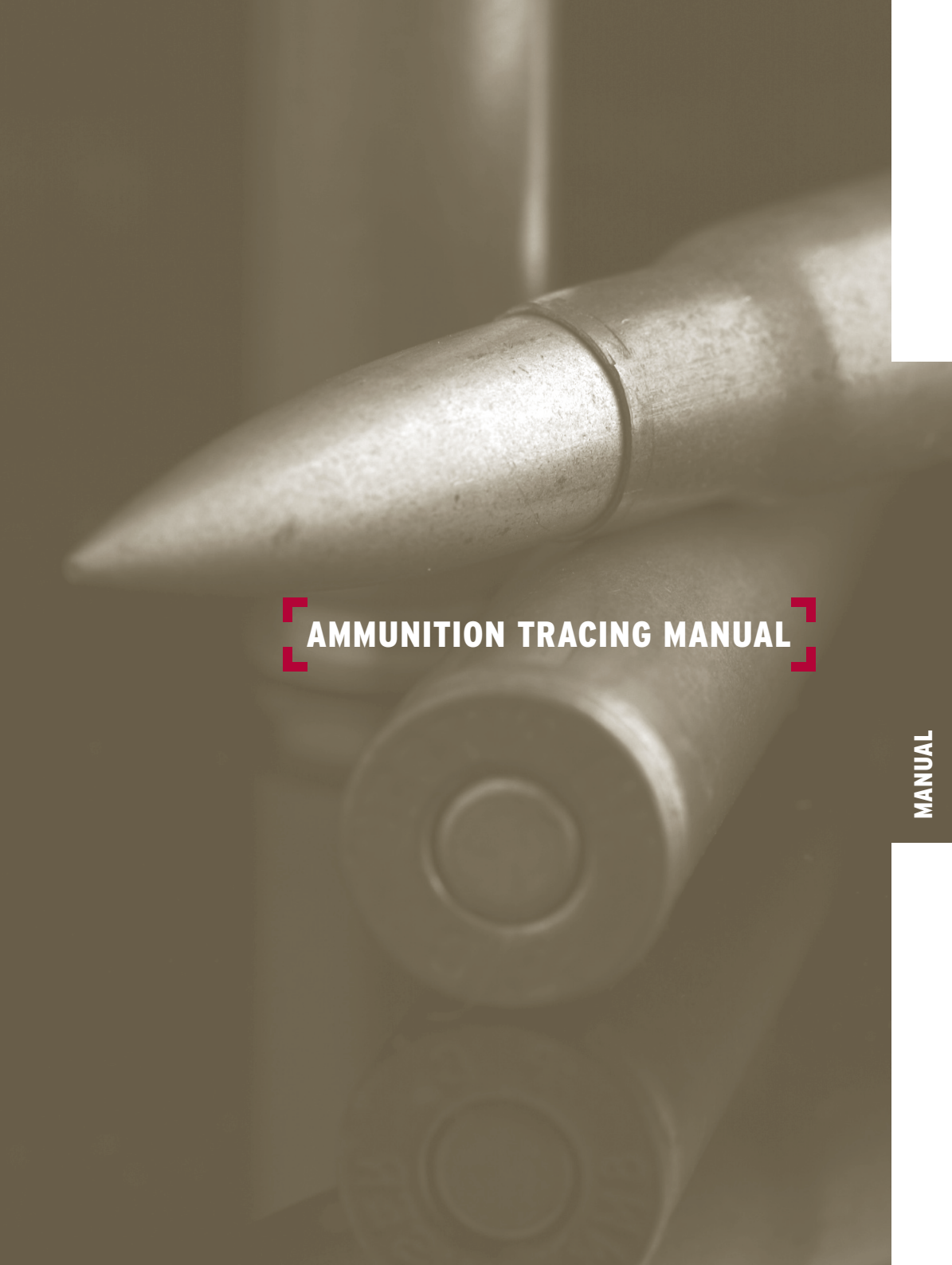




[AMMUNITION TRACING MANUAL]

MANUAL

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AMMUNITION TRACING MANUAL

A Guide to Using the Small Arms Survey Ammunition Tracing Kit

This manual is designed to be used together with the Small Arms Survey's Ammunition Reporting Forms and Ammunition Tracing Protocols. The manual is designed for people who come into contact with illicitly proliferating ammunition, but who may have little technical knowledge of the subject.

Before using the manual, carefully read the Small Arms Survey's Ammunition Tracing Protocols (ATP), which provide important safety and methodological information about the process of tracing ammunition.

A. Introduction to using the Ammunition Tracing Kit

This kit is made up of several parts that are designed to show someone how to record useful information about ammunition accurately and simply, and to ensure that anyone recording this information does so with proper care for his or her own safety and that of others.

The kit includes:

1. Ammunition Tracing Protocols, which highlight important safety issues and provide guidelines for data handling and analysis;
2. Ammunition Reporting Forms, to record specific types of ammunition; and
3. this Ammunition Tracing Manual, which shows people how to complete the reporting forms rapidly and reliably, and gives the procedures for sending information to the Small Arms Survey.

The kit is designed to enable anyone with access to illicitly proliferating ammunition to send relevant information to the Small Arms Survey accurately and in a way that permits comparative analysis. The steps to follow when sending information to the Survey are:

1. Carefully read the Ammunition Tracing Protocols before investigating any ammunition.
2. Record the required information about the ammunition using one of the ammunition reporting forms—either ARF(L) or ARF(S).
3. Complete the ARCS cover sheet and attach it to whichever of the reporting forms you have used.
4. Send the reporting forms and cover sheet, together with any supporting information, photographs, and documentation, to the Small Arms Survey.

The Small Arms Survey will analyse the information you have provided and return the findings to you, together with any suggestions for further investigation or requests for you to clarify particular details in your reports.

B. Types of ammunition that may be recorded safely

B.1 Cartridge-based small arms ammunition

NOTE: The Small Arms Survey is interested in receiving information about:

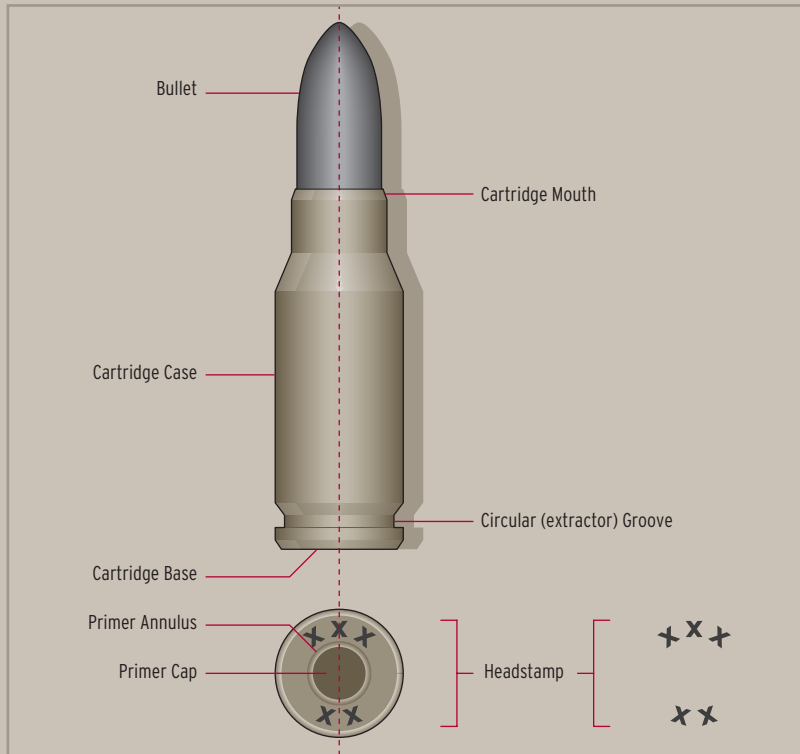
-  **live** ammunition (i.e. ammunition that has not been fired, where the bullet is still joined to the cartridge case); and
-  **spent** ammunition (i.e. ammunition that has been fired, where only the cartridge case is left).

IMPORTANT: Any information in addition to that about live or spent rounds of ammunition can provide important clues to the origin of ammunition, including: ammunition magazines, machine gun belts, clips or links from machine gun belts, and ammunition packaging (such as wooden and cardboard boxes). Packaging marks (text and symbols), in particular, are useful for obtaining manufacturer and lot/batch number information. Information on these items can be entered in the notes section of the ARCS cover sheet (Section 5). Ideally,

Box 1 Components of a small calibre cartridge

A cartridge is a complete round of ammunition, consisting of a projectile (bullet) and cartridge case. The cartridge case contains the propellant and the primer (including the primer cap). Most small calibre cartridges are stamped with text or symbols—the 'headstamp'—which may specify combinations of manufacturer, calibre, or date information. The headstamp can be found on the base of the cartridge case.

Figure 1 Components of a small calibre cartridge



photographs of these items should also be taken and sent to the Small Arms Survey.

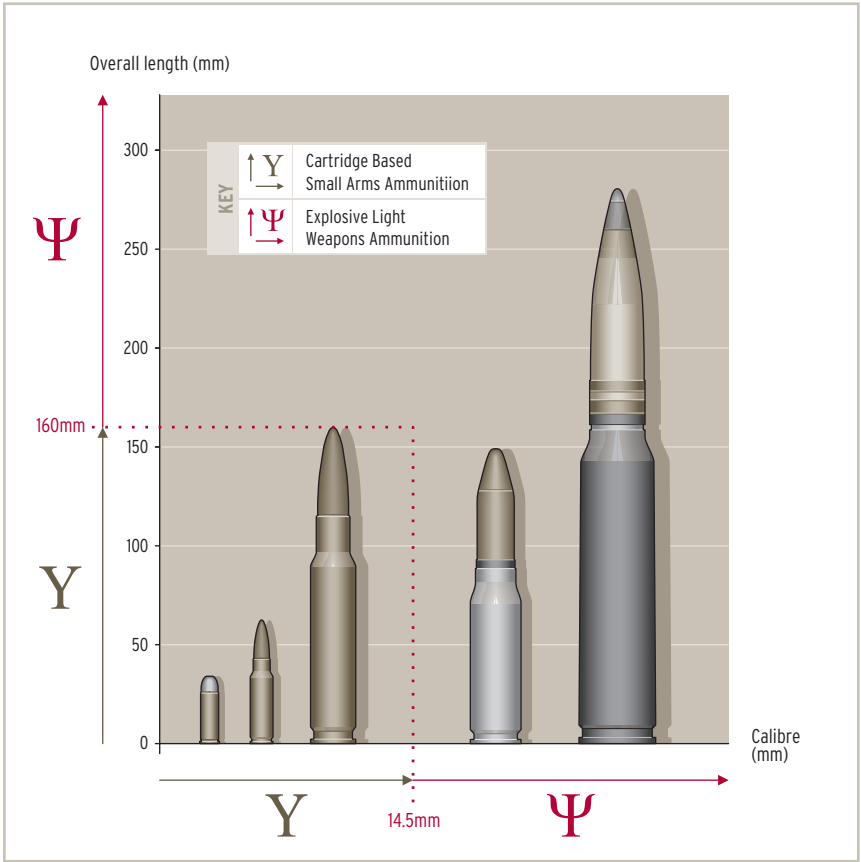
Cartridge-based small arms ammunition includes ammunition for:

- pistols and revolvers;
- sub-machine guns;

- rifles and assault rifles;
- light machine guns;
- heavy machine guns; and
- sniper and anti-materiel rifles.

Small calibre cartridge-based ammunition ranges from the smallest cartridges to those of 20 mm calibre (but usually less than 14.5 mm calibre). The bullets are generally inert (i.e. the bullets themselves do not explode), and complete rounds of small calibre ammunition are designed to be durable (i.e. long-lasting) and stable. This type of ammunition is indicated by the letter Y in Figure 2, below.

Figure 2 Identifying cartridge-based small arms ammunition and explosive light weapons ammunition



Provided that the ammunition has not deteriorated (i.e. shows signs of severe damage or corrosion), cartridge-based small arms ammunition can be safely (although carefully) handled by untrained people and recorded using the ARF(L) and ARF(S) reporting forms.

Larger types of cartridge-based ammunition (such as cannon and recoilless rifle ammunition) may look similar to cartridge-based small arms ammunition. These munitions, however, may have explosive warheads, and people handling them must *not* assume that they are safe or stable. These types come in the category of **explosive light weapons ammunition** (to identify them, see Figure 2, where they are indicated by the letter Ψ). *You should not approach or handle them unless you are permitted to do so by a qualified ammunition technical officer.*

Do not approach or handle cartridge-based ammunition unless you are permitted to do so by a qualified ammunition technical officer if . . .

. . . its overall length (from bullet tip to cartridge base) is larger than 160 mm

or

. . . it is larger than 14.5 mm in calibre

or

. . . the bullet/projectile is completely painted.

B.2 Identifying explosive light weapons ammunition

There are many types of explosive light weapons ammunition. They include ammunition for:

- single shot, rotary, and automatic grenade launchers;
- mortars;
- unguided recoilless rifles and rocket launchers; and
- guided, man-portable missile systems.

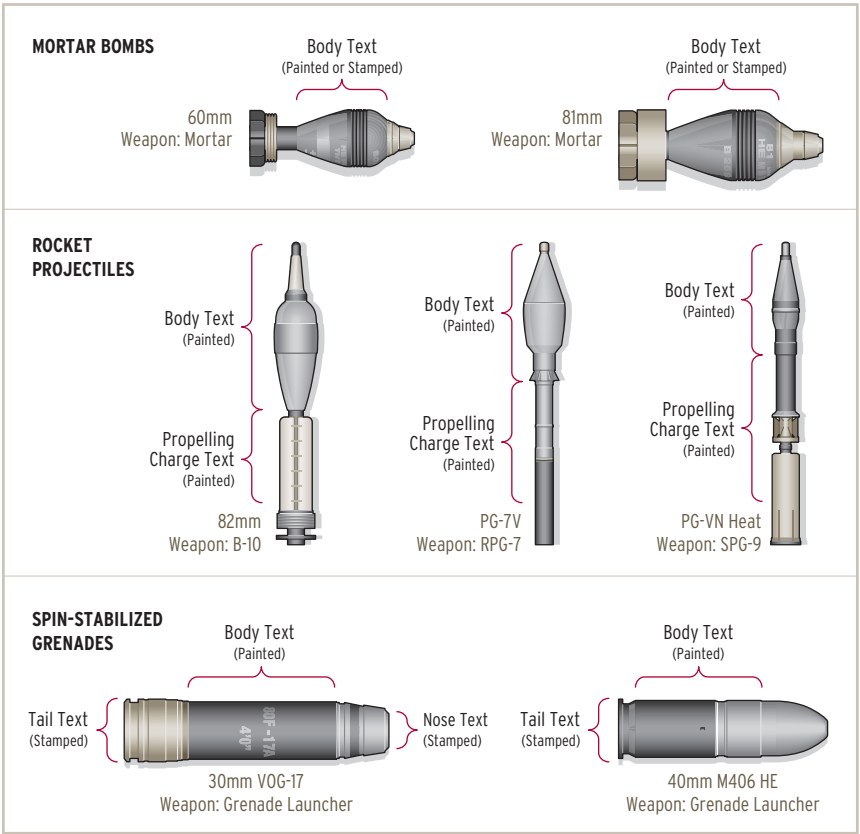
This ammunition can usually be distinguished from cartridge-based small arms ammunition because of its size—i.e. its larger overall length or calibre (see Figure 2)—and because it is often ‘missile’ shaped or has stabilising fins and other protrusions.

Explosive light weapons ammunition can initiate (combust or explode) when handled if it has been poorly maintained and monitored. We strongly advise you *not to approach or touch* this kind of ammunition unless you are permitted to do so by a qualified ammunition technical officer.

B.2.1 Recording information about explosive light weapons ammunition

Because this type of ammunition has many different designs (see Figure 3, below), it is not possible to supply a standard reporting form for explosive light weapons ammunition. The Small Arms Survey recommends that you do the following *under the guidance of a qualified ammunition technical officer*:

Figure 3 Selected types of explosive light weapons ammunition and positions of marking information



Using the ARCS cover sheet and an ARF(S) short reporting form:

1. Photograph the ammunition in question (making sure that any symbols, numbers, and colour codes can be clearly seen in the photographs).
2. State in the notes section (Section 5) of the ARCS cover sheet that the ammunition in question is explosive light weapons ammunition.
3. Enter the photograph numbers and (if relevant) the position of the object in the photograph in field 4 of the ARF(S) short reporting form.

Alternatively:

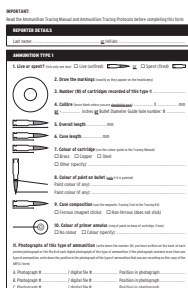
1. Draw the ammunition in the notes section of the ARCS cover sheet.
2. Make sure that you accurately copy any symbols, numbers, or colour codes, and use arrows to show their position on the sketch.

C. The reporting forms

This manual is designed to be used with Ammunition Reporting Forms **ARF(L)** and **ARF(S)**, in addition to the Ammunition Reporting Cover Sheet **ARCS**. These documents can be found in the Forms section of this Kit.

The **ARF(L)** long reporting form is a detailed form designed to record *all* relevant information about any type of small calibre ammunition, whether live or spent, that you might find. We recommend that you use this reporting form wherever possible because it provides detailed information that allows the Small Arms Survey to cross-reference ammunition characteristics and therefore better identify the types and origins of the ammunition in question.

AMMUNITION REPORTING FORM (LONG) ARF(L)



The reporting form is relatively quick to use when there are very few types of ammunition in a given sample (for the definition of a sample, see Section C.1.1, below). However, should you find many different types of ammunition in one sample (i.e. more than 10 types), then we recommend that you use the shorter ARF(S) reporting form.

Even if you are identifying a large sample of ammunition, we recommend that you use the ARF(L) reporting form in the following circumstances:

- if you have little knowledge of small calibre ammunition and are unfamiliar with its various characteristics (particularly calibres); or
- if you are knowledgeable, but find samples that you believe require detailed analysis (i.e. rarely found, rarely documented, or non-standard types of ammunition).

ARF(S) is a shortened version of ARF(L), and is designed to record the *minimum* information necessary to trace ammunition. It is useful to use when there are very many (i.e. more than 10) types of ammunition in one sample.

The ARF(S) short reporting form uses a tally system for recording the number of rounds of a particular type of ammunition in a sample. This method of counting is useful when magazines contain many different types of ammunition, or when you are working through loose (unboxed) ammunition that may be of different origins.

We recommend that you use ARF(S) under the following circumstances:

- if you have basic technical expertise in the process of identifying ammunition; or
- if you believe that the ammunition in question is easily identifiable and simply needs counting.

ARCS is a standard cover sheet that is designed to record general information about the circumstances in which the ammunition was found and recorded.

ARCS is used to record information concerning the location where the ammunition was recorded and its users. The information contained within ARCS is therefore potentially sensitive and is handled separately by the Small Arms Survey from the information in the ARF(L) and ARF(S) reporting forms.

A new ARCS should be used every time a sample of ammunition is recorded and sent to the Small Arms Survey. For example, use a new ARCS cover sheet when recording ammunition from:

If you need to (i.e. if there are many different types of ammunition to record in one sample), you may attach more than one ARF(L) or ARF(S) reporting form to one ARCS cover sheet. (See the instructions in the ARCS for details.)

Please staple, or securely fasten, all reporting forms and supporting photographs, documentation, etc. to the ARCS cover sheet.

This manual provides step-by-step instructions for completing each form. The Small Arms Survey recommends that you first read the instructions for completing the ARF(L) reporting form, as these instructions explain the rationale behind the forms, in addition to providing useful background information on small calibre ammunition.

C.1 The ARF(L) reporting form

The following sections illustrate, step-by-step, what you have to do to complete the ARF(L) reporting form.

To assist you, an example of a completed ARF(L) reporting form can be found in Annexe 1 at the end of this manual.

C.1.1 Before you begin

When we talk about a **sample** of ammunition, we mean a number of rounds of ammunition (which may be of different types) that are from the same location (place) or are linked to the same event (e.g. a particular attack) or particular user, and are recorded on the same date.

First, it is necessary to divide whatever sample of ammunition you have into groups of the same type of ammunition, because you will have to record information about each type in a separate section of the reporting form (the sections labelled 'Ammunition Type 1', 'Ammunition Type 2', etc.). Divide the ammunition up using the following steps:

Step 1: Divide the ammunition according to size.

Step 2: Sub-divide each group from Step 1 according to colour (brass, copper, steel, etc.).

Step 3: Sub-divide each group from Step 2 according to the *exact* markings on the headstamp (to find the headstamp, see Figure 1 in Box 1, above).

Figure 4 Comparison of headstamp marks



Each of the groups of ammunition that you now have will be a separate type of ammunition.

CAUTION: Look very carefully for small differences in headstamp marks. The cartridges in Figure 4, above, have a very similar headstamp, but are stamped with a '02' and '03', respectively. Note also the asterisk-shaped dot on the right-hand headstamp and the different coloured primer annulus. Group together only those rounds that are the same in every detail.

The ARF(L) reporting form features sections numbered 'Ammunition Type 1', 'Ammunition Type 2', etc. Once you have divided the sample into different types of ammunition, complete *one section for each one* of the types of ammunition you have just identified (see Figure 5, overleaf).

C.1.2 Explanation of the reporting form's fields

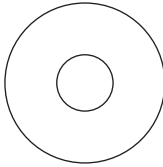
1. Live or spent? (tick only one box)

A **live** cartridge is one that has not been fired. The bullet will be firmly attached to the cartridge case. The primer cap will not have been struck by the firing pin (although it may have an indentation if the cartridge has been loaded and unloaded many times).

Figure 5 An example of a section in the ARF(L) long reporting form used to record one type of ammunition

AMMUNITION TYPE 1

1. Live or spent? (tick only one box) ☐ Live (unfired)  or ☐ Spent (fired) 



2. Draw the markings (exactly as they appear on the headstamp)

3. Number (#) of cartridges recorded of this type #

4. Calibre (leave blank unless you are absolutely sure) X mm
or inches or Bullet Diameter Guide hole number: #



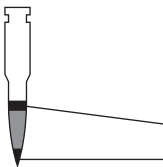
5. Overall length mm



6. Case length mm



7. Colour of cartridge (see the colour guide in the Tracing Manual)
☐ Brass ☐ Copper ☐ Steel
☐ Other (specify):



8. Colour of paint on bullet (only if it is painted)
Paint colour (if any):
Paint colour (if any):



9. Case composition (use the magnetic Tracing Tool in the Tracing Kit)
☐ Ferrous (magnet sticks) ☐ Non-ferrous (does not stick)



10. Colour of primer annulus (ring of paint on base of cartridge, if any)
☐ No colour ☐ Colour (specify):

11. Photographs of this type of ammunition (write down the number (#) you have written on the back of each printed photograph or the file # of each digital photograph of this type of ammunition. If the photograph contains more than one type of ammunition, write down the position in the photograph of the type of ammunition that you are recording on this copy of the ARF(L) form)

A. Photograph # / digital file # Position in photograph

B. Photograph # / digital file # Position in photograph

C. Photograph # / digital file # Position in photograph

A **spent** cartridge has been fired. It will have no bullet, and the cartridge case will be empty of propellant.

INSTRUCTIONS: Tick only the appropriate box next to ‘Live’ or ‘Spent’.

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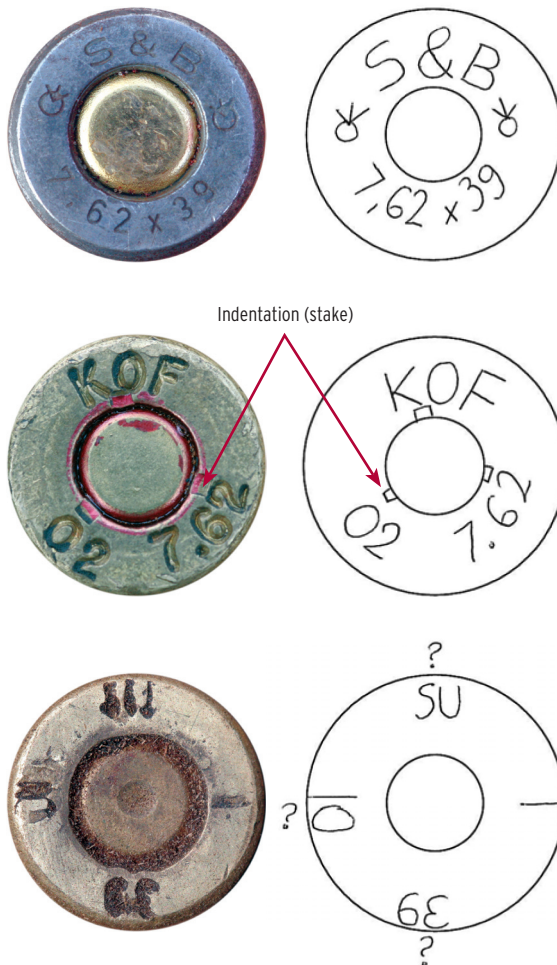
2. Draw the markings (exactly as they appear on the headstamp)

The headstamp is put on the cartridge at the time of manufacture. It is the fastest and easiest way to identify the cartridge's manufacturer. For this reason, it is important to make the most accurate drawing of the stamp as possible.

Points to note:

- Try and copy the headstamp font (i.e. copy the exact shape of the letters).
- Try and keep the spacing between letters, marks, etc. as it appears on the headstamp.

Figure 6 Drawing the headstamp



NOTE: The three indentations (or 'stakes') around the primer cap are copied in the sketch. This is important because they provide information on manufacturing techniques.

NOTE: The marks on this headstamp are very unclear, so they are labelled with a question mark (?) in the drawing. This example shows the need for many reports of poorly marked types of ammunition, which together enable us to accurately identify the markings on the headstamp.

- Try and copy letters, numbers, and marks in the exact positions in which they appear on the headstamp.
- Include any points, dots, dashes, stars, and symbols.
- If you are unsure of any letter, number, or mark, label it with a question mark.

3. Number (#) of cartridges recorded of this type

Please include in this field the number (#) of cartridges *of the same type* (i.e. with the same shape, size, colour, and headstamp) that you have recorded in this copy of the reporting form.

For clarity, please use both numbers and words: # 13 (THIRTEEN)

4. Calibre (leave blank unless you are absolutely sure)

Please do not guess the calibre. A mistake may mislead later analysis. The numbers on the headstamp do not necessarily identify the calibre of the ammunition.

INSTRUCTIONS:

If you are sure of the calibre, please enter it as follows, depending on whether it is in mm or inches:

7.62 x 51 mm or inches

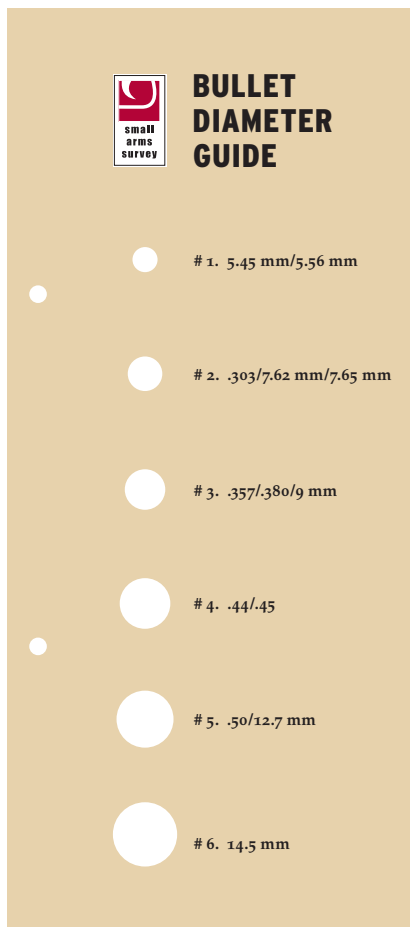
Alternatively:

 x mm or 308 inches

If you are unsure of the calibre, use the Bullet Diameter Guide to identify the calibre (see Figure 7).

Place the bullet into the hole that corresponds to the bullet's diameter.

Figure 7 The Bullet Diameter Guide



The bullet should pass through the hole as far as the cartridge mouth.

Enter the corresponding hole number (#1, #2, etc.) in the space provided.

CAUTION:

Measure the diameter of the **bullet**, not the cartridge case or cartridge mouth.

Do not force the bullets into the holes.

NOTE: The Bullet Diameter Guide may become oily with use. If this happens, clean it in warm, soapy water. Do not use solvents to clean the guide, as these may remove the printed markings.

5. Overall length

Overall length is the distance from the tip of the bullet to the base of the cartridge (see Figure 8). You need only record the overall length for live (unfired) cartridges.

Figure 8 Overall length of a round of ammunition

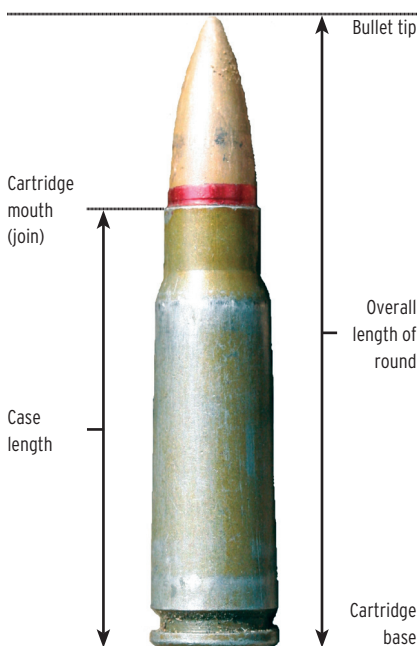


Figure 9 Headstamp and profile of a shotgun cartridge



Box 2 Shotgun cartridges

Shotgun cartridges look different to most other small arms cartridge-based ammunition (see Figure 9). They are usually headstamped, but often have text or symbols printed on the (usually plastic) cartridge case. In addition to recording the headstamp, it is useful to record the information on the cartridge case in the notes section of the ARCS cover sheet:

5. NOTES SECTION

Please use this space to provide any other relevant information: Ammunition in the
ARF(L) section 'Ammunition Type 1' appears to be a white metal, coated
in a brown lacquer or wash

6. Case length

For both live and spent ammunition, the case length is the distance from the cartridge mouth to the cartridge base. All live cartridges show a distinctive join between the bullet and the cartridge (see Figure 8). This information is not applicable to, or required for, shotgun cartridges.

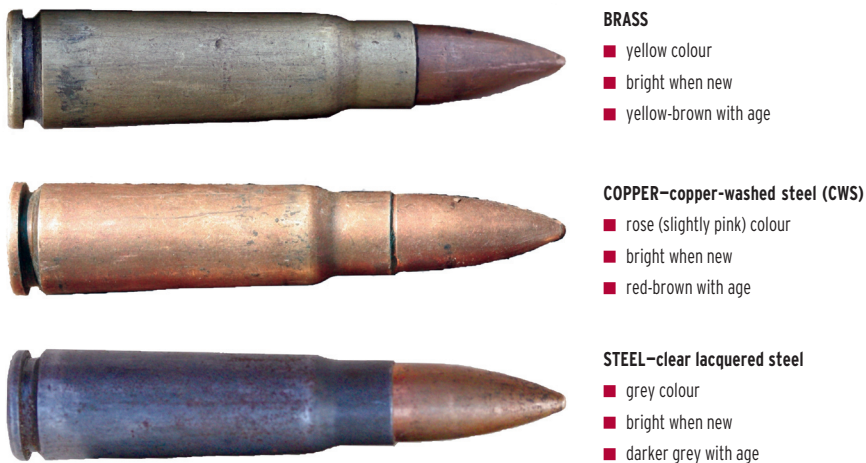
7. Colour of cartridge

Case colours vary considerably according to the metal that the cases are made of and the effects of aging (see Figure 10, below). The most common cartridge case finishes are:

- brass;
- copper-washed (copper-plated) steel (CWS);
- steel (with a clear lacquer applied to prevent oxidization); or
- coloured lacquer applied to steel (usually olive green/brown).

The well-worn examples in Figure 10 illustrate the three basic colours that are most common for military cartridges.

Figure 10 Common case colours of military cartridges



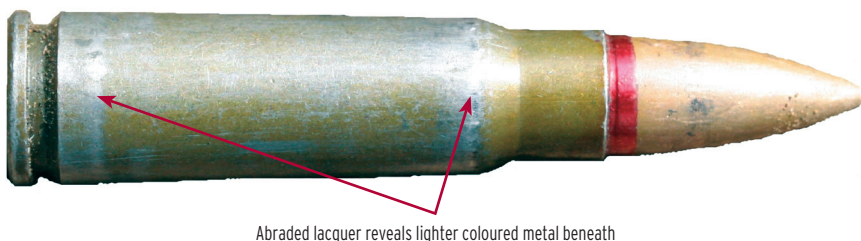
INSTRUCTIONS:

Tick the box next to the label that describes the cartridge colour most closely. If you are unsure of the colour, please leave this section blank.

For other colours, either write the colour down in the space provided or use the notes section (Section 5) of the ARCS cover sheet (see the example provided overleaf).

For example, some cartridge cases are 'washed' (plated) in a different metal (often copper or nickel) or lacquered in several different colours. Well-worn cartridges will often display the base metal where the wash or varnish has been worn away by use (see Figure 11). It is difficult to describe this kind of appearance in a few words, and therefore it is best if you provide this information in the notes section of the ARCS cover sheet.

Figure 11 Abraded lacquer (steel beneath) on a 7.62 x 39 mm round



EXAMPLE: USING THE NOTES SECTION OF THE ARCS

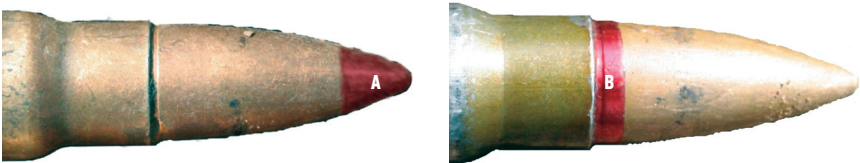
5. NOTES SECTION

Please use this space to provide any other relevant information: *Ammunition in ARF(L)*
Ammunition type 1 appears to be a white metal coated in a brown laquer or wash

8. Colour of paint on bullet (only if it is painted)

Manufacturers often mark bullet tips, and the joins (join seals) between the bullet and cartridge case, with paint to distinguish different types of ammunition. Different countries use various colours and coding systems. Usually, bullets are either marked (see Figure 12) on the tip (A) or along the join where the bullet meets the cartridge (B).

Figure 12 Paint markings on bullets



INSTRUCTIONS:

Enter the colour or colours of the paint (if there is paint) next to the appropriate part of the bullet diagram. If the bullet is unpainted, please leave these sections blank.

9. Case composition (use the magnetic Tracing Tool in the Tracing Kit)

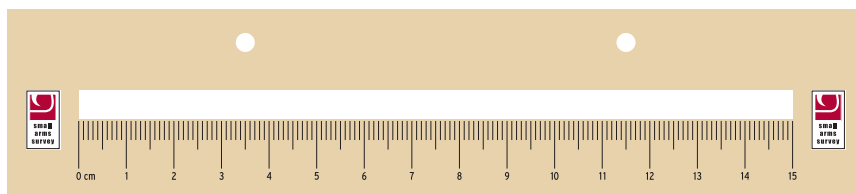
Here you identify what metal the cartridge case is made of. This information can be used to help distinguish between types of unmarked or similarly marked cartridges. A magnet can be used to identify ferrous (steel) cartridges from non-ferrous (copper, brass, and other base metals) cartridges, even if plating or lacquers have been applied to the cartridge in the manufacturing

process. A magnetic Tracing Tool is provided with the Tracing Kit for you to use here.

INSTRUCTIONS:

- Place the magnetic Tracing Tool (see Figure 13) against the cartridge case (*not* the bullet).
- If the magnet sticks to the case, then tick the box labelled 'Ferrous (magnet sticks)'.
- If the magnet does not stick to the case, then tick the box labelled 'Non-ferrous (magnet does not stick)'.

Figure 13 The magnetic Tracing Tool



NOTE: The magnetic Tracing Tool may become oily with use. If this happens clean it in warm, soapy water. Do not use solvents to clean the Tool, as these may remove the printed markings.

10. Colour of primer annulus (ring of paint on base of cartridge, if any)

Manufacturers often colour the ring of sealant between the primer cap and the primer annulus in order to specify the type of cartridge (i.e. ball or tracer) or to designate specific production batches of ammunition.

For an illustration of the primer annulus, please see Figure 1 in Box 1 of this manual, above.

INSTRUCTIONS:

- If the cartridge does not have a coloured annulus, tick the box labelled 'No colour'.
- If the cartridge has a coloured annulus, write down this colour in the space provided.

11. Photographs of this type of ammunition (write down the number (#) you have written on the back of each printed photograph or the file # of each digital photograph of this type of ammunition. If the photograph contains more than one type of ammunition, write down the position in the photograph of the type of ammunition that you are recording in this section of the reporting form)

CAUTION: Photographing military materiel can make people or the authorities suspicious and may be prohibited under national law. We advise you to seek advice from appropriate national or local authorities before you photograph weapons and ammunition.

Taking a photograph is the most effective way to record ammunition characteristics for later analysis. Good photographs accurately record headstamp marks, manufacturing features (such as depth of stamping, cartridge case composition, and bullet tip marks), and the relative size of the object in question—features that cannot be reproduced using pen and ink.

Taking clear photographs can be difficult, particularly when photographing ammunition in strong or bright light, in awkward positions, or with a camera that is not designed for macro or ‘close-up’ photography.

NOTE: Please try to include only one type of ammunition in each photograph. Since you have first divided the ammunition sample up into different ammunition types, this is also the easiest way of taking the photographs. However, you may find it necessary for practical reasons to photograph several types of ammunition in one photo. For this reason, the sections in ARF(L) and ARF(S) allow you to identify the position of a particular type of ammunition in a photograph that contains many types.

General instructions for taking photographs

- Do not photograph ammunition against white or reflective surfaces, because the camera’s automatic exposure settings may make the object seem dark.
- Rest your arms on or against a firm surface of some kind (e.g. a tree or a rock or a table) to stop the camera from shaking, which may make the photograph blurred.

Taking photographs using an auto-focus camera

The Small Arms Survey recommends that you do the following when using a digital or 35 mm auto-focus camera.

1. Turn off the flash.
2. Make sure the round of ammunition or cartridge that you are photographing is clearly lit, but not in very bright light.
3. Do not use the zoom function.
4. Move the camera towards the object (to a minimum distance of approximately 150 mm).
5. Half depress (push down) the shutter release button in order to auto-focus.
6. If the camera does not auto-focus, move it a little further away from the object and carry out Step 5 again. Keep doing this until the camera does auto-focus and you can take the picture.

Photographing cartridge-based small arms ammunition

Photographs should ideally include at least one photograph of the headstamp (see Box 3, below) and one photograph of the cartridge from the side.

Figure 14 Photographing using the Ammunition Tracing Tool

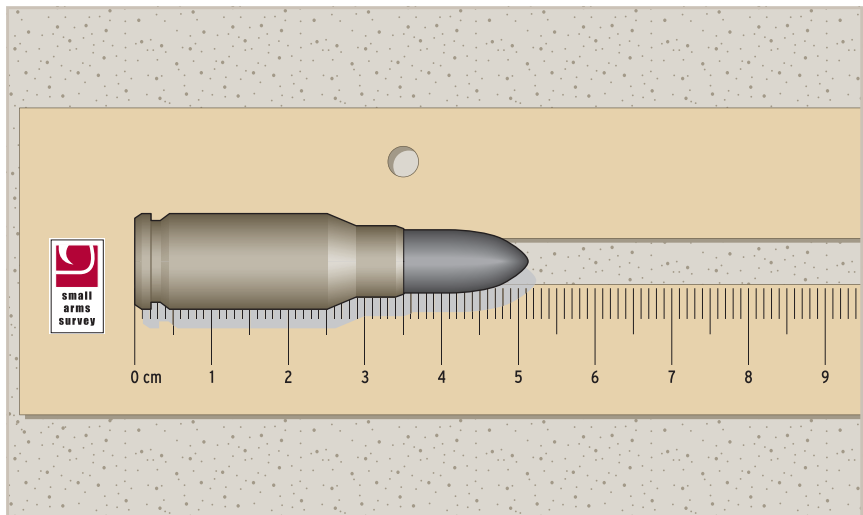
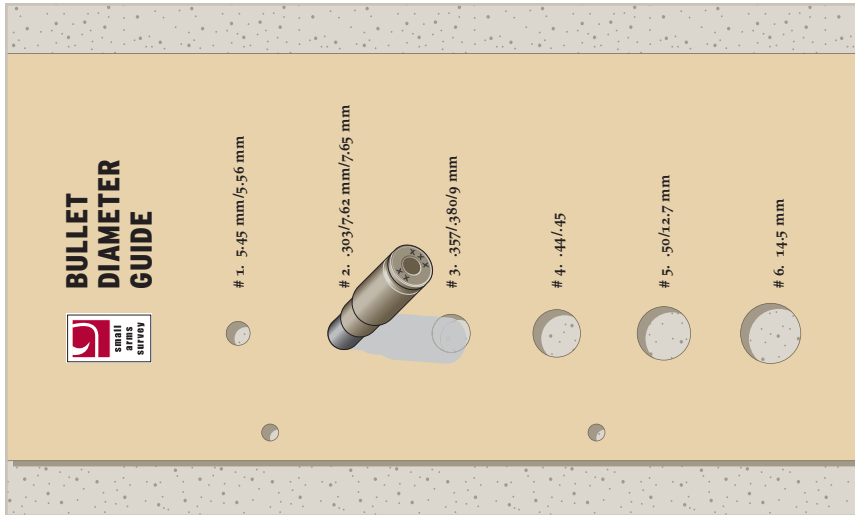


Figure 15 Photographing using the Bullet Diameter Guide



The Ammunition Tracing Tool (see Figure 14) is designed to provide a scale against which to photograph cartridge-based small arms ammunition in order to clearly identify its size. Place the round of ammunition in the tool's central groove, with the base of the cartridge aligned with the 'o' mark, and take the photograph according to the instructions in Box 3.

The Bullet Diameter Guide (see Figure 15) is designed to provide a clear background against which to photograph ammunition headstamps. First place the bullet (not the cartridge case) into the corresponding hole and then take the photograph by following the instructions in Box 3.

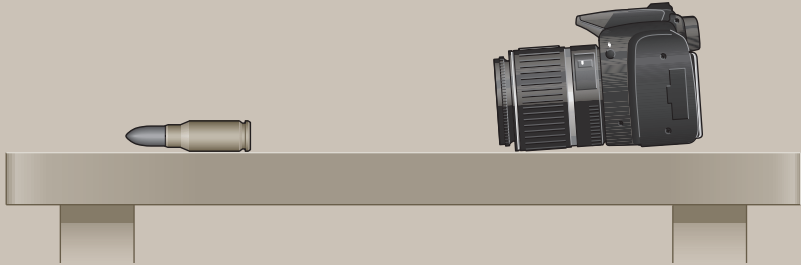
Sending photographs to the Small Arms Survey

- If you are sending printed photographs, label the back of the photograph with your initials and a different number (#) for each photograph, then write the photograph number in the space provided in field 11 of the reporting form (see the line numbered A in the example below).
- If you are using a digital camera, write down the file number (#) in the space provided in field 11 of the reporting form (see the line numbered B in the example below).

Box 3 How to photograph headstamps

Indoor photography

- Light the headstamp from the side using a lamp, or position the cartridge close to a window or door (side lighting shows up stamped marks better).
- Arrange the ammunition on a table or flat surface. Rest the camera on the surface while taking the photograph from the same level as the object, as in the illustration below.



Outdoor photography

- Shade the ammunition from very bright sunlight. The best conditions occur when the sun lights the object at an angle from the side (i.e. early morning or late afternoon).
- Push the bullet or mouth of the spent cartridge into soft ground and, in order to prevent the camera from shaking even slightly, use a bag or other stable, raised object to lean on while photographing downwards onto the headstamp, as in the illustration below.



- If either digital or printed photographs include more than one type of ammunition in a photograph, indicate the position in the photograph of the type of ammunition that you are recording on this copy of the reporting form (see the lines numbered A and B in the example below). If the photograph contains only one type of ammunition, leave the 'Position' section blank.

EXAMPLE OF FIELD 11:

11. Photographs of this type of ammunition (write down the number (#) you have written on the back of each printed photograph or the file # of each digital photograph of this type of ammunition. If the photograph contains more than one type of ammunition, write down the position in the photograph of the type of ammunition that you are recording on this copy of the ARF(L) form)

A. Photograph # 12 / digital file # _____ Position in photograph 2nd from right

B. Photograph # _____ / digital file # 00108 Position in photograph 3rd from left

C. Photograph # _____ / digital file # _____ Position in photograph _____

C.2 The ARF(S) reporting form

The following sections provide, step-by-step, the stages required to complete the ARF(S) reporting form.

To assist you, an example of a completed ARF(S) reporting form can be found in Annexe 2 at the end of this manual.

C.2.1 Before you begin

Complete *one section of the* ARF(S) reporting form for each type of ammunition (see Figure 16).

Draw the markings on the headstamp in the diagram of the headstamp on the left of the form.

C.2.2 Explanation of the reporting form's fields

1. Live or spent? (tick only one box)

A live cartridge is one that has not been fired. The bullet will be firmly attached to the cartridge case. The primer cap will not have been struck by the firing pin (although it may have an indentation if it has been loaded and unloaded many times).

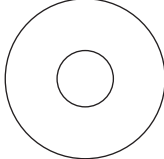
A spent cartridge has been fired. It will have no bullet and the cartridge case will be empty of propellant.

INSTRUCTIONS: Tick only the appropriate box next to 'Live' or 'Spent'.

Figure 16 An example of one section in the ARF(S) reporting form used to record one type of ammunition

AMMUNITION TYPE 1

1. Live or spent? (tick only one box) ☐ Live (unfired)  or ☐ Spent (fired) 



2. Calibre (leave blank unless you are absolutely sure) X mm
or • inches or Bullet Diameter Guide hole number: #

3. Tally (||||) the # of cartridges recorded of this type

4. Photographs of this type of ammunition (write down the number (#) you have written on the back of each printed photograph or the file # of each digital photograph of this type of ammunition. If the photograph contains more than one type of ammunition, write down the position in the photograph of the type of ammunition that you are recording on this copy of the ARF(L) form)
A. Photograph # / digital file # Position in photograph
B. Photograph # / digital file # Position in photograph
C. Photograph # / digital file # Position in photograph
D. Photograph # / digital file # Position in photograph

2. Calibre (leave blank unless you are absolutely sure)

Please do not guess the calibre. A mistake may mislead later analysis. The numbers on the headstamp do not necessarily identify the calibre of the ammunition.

INSTRUCTIONS:

If you are sure of the calibre, please enter it as follows:

..... 7.62 X 51 mm or • inches

Alternatively:

..... X mm or • 308 inches

If you are unsure of the calibre, use the Bullet Diameter Card to identify the calibre. (See instructions on how to do this in the discussion of field 4 in Section C.1.2 of this manual.)

CAUTION:

- Measure the diameter of the bullet, not the cartridge case or cartridge mouth.
- Do not force the bullets into the holes.

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3. Tally (||||) the # of cartridges recorded of this type

The tally system allows you to enter information for one type of ammunition, continue to record different types of ammunition, and return to this section of the reporting form should you find the first type of ammunition again.

This method is suited to recording large, disorganized stocks that may contain many types of ammunition (e.g. during disarmament, demobilization, and reintegration [DDR] processes or when recording ammunition from individuals who have acquired their ammunition piecemeal).

4. Photographs of this type of ammunition (write down the number (#) you have written on the back of each printed photograph or the file # of each digital photograph of this type of ammunition. If the photograph contains more than one type of ammunition, write down the position in the photograph of the type of ammunition that you are recording in this section of the reporting form)

See instructions on how to take photographs in Section C.1.2 of this manual, in the discussion of field 11 of the ARF(L) reporting form.

C.3 The ARCS cover sheet

The ARCS cover sheet provides contextual information about the ammunition sample recorded in the reporting forms (i.e. information about the circumstances in which this ammunition was found, and who its users are/were).

The information contained in ARCS is vital for analysis, because, when combined with other reports, it enables the Small Arms Survey to work out how illicit trade or transfers take place in any given region, including:

- the local users of particular types of ammunition (and therefore who these users may trade with);
- where particular types of ammunition are most common (and therefore also where they are not common);
- any variations in the types of ammunition circulating in a given region, which might suggest new trade routes or suppliers; and

- background information, which may provide information about the illicit market, such as trading centres or transportation routes.

C.3.1 Before you begin

The ARCS cover sheet is designed to give contextual information about *one sample* of recorded ammunition only. Remember that a sample of ammunition is defined as:

A number of rounds of ammunition (which may be of different types) that are from the same location (place) or are linked to the same event (e.g. a particular attack) or particular user, and are recorded on the same date.

POSSIBLE SCENARIOS:

1. The ammunition was found on the ground in several different locations.
Use *one* ARCS sheet (and attached reporting forms and supporting documentation) for *each location* (e.g. town, village, place in a rural area) in which the ammunition was found.
2. The ammunition was recorded from several armed groups.
Use *one* ARCS sheet (and attached reporting forms and supporting documentation) for *each of the groups* (e.g. rebel group A, rebel group B, etc.) from whom the ammunition was recorded.
3. The ammunition was recorded from two or more individuals in the same group.
Use *the same* ARCS sheet (and attached reporting forms and supporting documentation) for the ammunition recorded from *all the individuals*.

CAUTION: Do not combine on the same ARCS sheet samples from different groups or different locations, or samples that were recorded on different dates. Combining samples will make the information inaccurate and render later analysis difficult or impossible.

C.3.2 Explanation of the cover sheet's fields

1. Reporter information

This gives information about you, the person who is reporting the information. You may wish to remain anonymous. If so, please tick the box *and* provide your initials in the space provided.

Note: You do not have to use your own initials, but please use the same initials on all attached reporting forms, photographs, and documentation.

Note: If you choose not to include a postal address for correspondence, we ask that you at least provide an anonymous email address. All information sent to the Small Arms Survey is verified by contacting the person who sends it. If we cannot contact you, we will not be able to use the data that you have provided.

2. Location where the ammunition was recorded

Nearest town: If you are unable to provide exact coordinates, please give the name of a settlement (e.g. a village or town) that is listed in publicly available maps.

Administrative region/district: Please provide a first order (i.e. first national sub-division) administrative region. For example, if the country is first divided into regions, and then into smaller districts, provide the region name.

Country: Please use the country's commonly used name in the case of conflicting sovereignty claims.

GPS coordinates (if available): Please provide coordinates as they appear on the GPS unit (e.g. N. 03.88304; E. 034.57018).

Other relevant information about the location: Please use this space to provide detailed information about the location in which you recorded the ammunition.

For example: 'The ammunition was recorded about 5 km south of village X in the direction of town Y.'

3. Status of the ammunition when recorded

It is very important to specify the status of the ammunition when you recorded it. This information is essential for any later analyses that may be performed

using the data. See the Ammunition Tracing Protocols for a detailed explanation of what is required here.

The ammunition was: (tick one box only, then enter the date when the ammunition was recorded or found)

Tick the appropriate box, and then enter the date on which the ammunition was recorded (1) or found (2).

Exact circumstances in which ammunition was recorded and why (please be as precise as possible)

Use this space to explain why you were recording the ammunition in question and under what circumstances. You may wish to provide the following information:

1. The names of the group(s) from which the ammunition was recorded, for example:

- spent cartridges found after a fight between Group X and Group Y;
- cartridges used by Group X in an attack on civilians; or
- inspection of Group Y's ammunition stocks (here the ammunition is not related to a specific incident, like an attack).

2. The circumstances in which the ammunition may have been used, for example:

- in a roadside ambush or robbery;
- to carry out human rights abuses; or
- not used.

3. The circumstances in which you recorded the ammunition, for example:

- recorded during a visit to the scene of a crime or violent incident;
- recorded during a visit to a particular group; or
- found in a cache during a peacekeeping operation.

4. Source of the ammunition

If the user/s was/were present during the recording, specify the group to which he/she/they belong/s: (do not give names of persons)

Please try to be as specific as possible. For example: Group X, or splinter group of Group Y, or civilian.

Did the user specify how he/she had come into possession of the ammunition?

Please tick the appropriate box. If the answer is yes:

Supplier (belongs to which group?): If known, specify the group that supplied the user with the ammunition.

Supplier location (town, district, country): If known, specify the area where the supplier group is/was located at the time when the ammunition was supplied.

Any other relevant information about the reported supplier or supply chain:

Please be as specific as possible and include all relevant information, such as:

- how the user acquired the ammunition;
- who provided it and when;
- any other people/groups/organizations mentioned as part of the supply chain; and
- any background information, such as price or quantities supplied.

5. Notes section

Please use this section to provide additional information, including:

- information about markings on the ammunition itself; and
- information about any additional material you have identified, such as ammunition magazines, machine gun belts, clips or links from machine gun belts, and ammunition packaging (e.g. wooden and cardboard boxes), as well as any marks on the packaging (both text and symbols).

Please describe as accurately as possible what you are talking about here. Photographs of the object would be very helpful. Please number each photograph and say which number photograph you are talking about when you refer to a particular item of ammunition.

6. Contents of your report

This is a checklist, which enables the Small Arms Survey to make sure that it has received all of the information that you have attached to the reporting forms. Please fill in the number of:

- reporting forms you have attached to this ARCS cover sheet;
- the number of printed photographs you have attached to this ARCS cover sheet; or
- the number of digital photographs you have attached to this ARCS cover sheet (and intend to send by email to: weaponsID@smallarmssurvey.org).

IMPORTANT: If you send the report by post, please check that *all* ARF(L) or ARF(S) reporting forms, photographs, and additional notes or documentation (if required) are labelled with your name or initials.

D. Sending your report to the Small Arms Survey

Send your report to the Small Arms Survey by:

Email

Email scanned or PDF forms to: weaponsID@smallarmssurvey.org

Please put WEAPONS ID in the subject line of the email.

To avoid confusion, please attach only one ARCS cover sheet (with relevant photographs, notes, and supporting documentation) to each email. If you are sending information about more than one sample of ammunition, please use a separate ARCS cover for each sample, attach all reporting forms, photographs, notes, etc. related to that particular sample to it, and send it in a different email.

Post

Mail the forms and supporting photographs, notes, and documentation to:

Weapons ID, Small Arms Survey, 47 Avenue Blanc, CH-1202, Geneva, Switzerland

Don't forget to label all reporting forms, photographs, notes, and supporting documentation with your name or initials.

Fax

Include a first page (before the actual forms) with the heading on it: WeaponsID.

Fax the reporting forms and supporting documentation to: +41 22 732 27 38

If possible, try to fax your photographs as well, and if they are unclear, we will contact you and ask you to send them to us by post.

Electronic versions of the ARF(L), ARF(S), and ARCS can be downloaded from: www.smallarmssurvey.org/weaponsID

- Go to the Web page.
- Click on the link.
- Save the document.
- Print the reporting forms and cover sheet and enter the information by hand or complete the forms electronically.
- Mail, email, or fax the forms with supporting photographs, documentation, etc. to the Small Arms Survey.

Annexe 1

Completed examples of two sections in the ARF(L)

The following two sections in the ARF(L) reporting form record information from the three live rounds of ammunition displayed here. For the purposes of this example, they were recorded from one location/event/user, and therefore make up one ammunition sample. The sample in question has been divided by type (10; 95 and 71; 99), and a separate section of the ARF(L) reporting form has been completed for each type of ammunition.



AMMUNITION REPORTING FORM (LONG) **ARF(L)**

IMPORTANT:

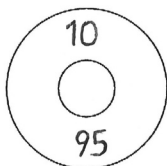
Read the Ammunition Tracing Manual and Ammunition Tracing Protocols before completing this form

REPORTER DETAILS

Last name: or Initials:

AMMUNITION TYPE 1

1. Live or spent? (tick only one box) ☒ Live (unfired)  or ☐ Spent (fired) 



2. Draw the markings (exactly as they appear on the headstamp)

3. Number (#) of cartridges recorded of this type # 1 (ONE)

4. Calibre (leave blank unless you are absolutely sure) X mm
or inches or Bullet Diameter Guide hole number: # 2



5. Overall length 56 mm



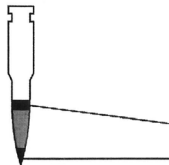
6. Case length 39 mm



7. Colour of cartridge (see the colour guide in the Tracing Manual)

☐ Brass ☒ Copper ☐ Steel

☐ Other (specify):



8. Colour of paint on bullet (only if it is painted)

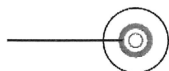
Paint colour (if any):

Paint colour (if any):



9. Case composition (use the magnetic Tracing Tool in the Tracing Kit)

☒ Ferrous (magnet sticks) ☐ Non-ferrous (does not stick)



10. Colour of primer annulus (ring of paint on base of cartridge, if any)

☒ No colour ☐ Colour (specify):

11. Photographs of this type of ammunition (write down the number (#) you have written on the back of each printed photograph or the file # of each digital photograph of this type of ammunition. If the photograph contains more than one type of ammunition, write down the position in the photograph of the type of ammunition that you are recording on this copy of the ARF(L) form)

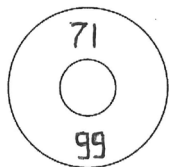
A. Photograph # / digital file # 0095 Position in photograph CENTRE

B. Photograph # / digital file # Position in photograph

C. Photograph # / digital file # Position in photograph

AMMUNITION TYPE 2

1. Live or spent? (tick only one box) ☒ Live (unfired)  or ☐ Spent (fired) 



2. Draw the markings (exactly as they appear on the headstamp)

3. Number (#) of cartridges recorded of this type # 2 (Two)

4. Calibre (leave blank unless you are absolutely sure) 7.62 x 39 mm
or inches or Bullet Diameter Guide hole number: #



5. Overall length 55 mm



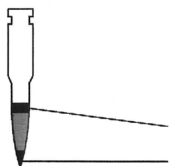
6. Case length 38.5 mm



7. Colour of cartridge (see the colour guide in the Tracing Manual)

☐ Brass ☒ Copper ☐ Steel

☐ Other (specify):



8. Colour of paint on bullet (only if it is painted)

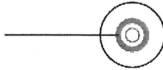
Paint colour (if any):

Paint colour (if any):



9. Case composition (use the magnetic Tracing Tool in the Tracing Kit)

☒ Ferrous (magnet sticks) ☐ Non-ferrous (does not stick)



10. Colour of primer annulus (ring of paint on base of cartridge, if any)

☐ No colour ☒ Colour (specify): RED

11. Photographs of this type of ammunition (write down the number (#) you have written on the back of each printed photograph or the file # of each digital photograph of this type of ammunition. If the photograph contains more than one type of ammunition, write down the position in the photograph of the type of ammunition that you are recording on this copy of the ARF(L) form)

A. Photograph # / digital file # 0095 Position in photograph 1+3 FROM LEFT

B. Photograph # / digital file # Position in photograph

C. Photograph # / digital file # Position in photograph

Annexe 2

Completed examples of two sections in the ARF(S)

The following two sections in the ARF(S) reporting form record information from the three live rounds of ammunition displayed here. For the purposes of this example, they were recorded from one location/event/user, and therefore make up one ammunition sample. The sample in question has been divided by type (10; 95 and 71; 99), and a separate section of the ARF(S) reporting form has been completed for each type of ammunition.



AMMUNITION REPORTING FORM (SHORT) ARF(S)

IMPORTANT:

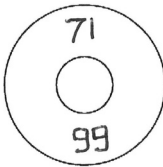
Read the Ammunition Tracing Manual and Ammunition Tracing Protocols before completing this form

REPORTER DETAILS

Last name: or Initials:

AMMUNITION TYPE 1

1. Live or spent? (tick only one box) ☒ Live (unfired)  or ☐ Spent (fired) 



2. Calibre (leave blank unless you are absolutely sure) X mm
or inches or Bullet Diameter Guide hole number: # 2

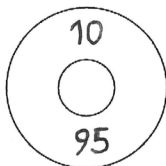
3. Tally (||||) the # of cartridges recorded of this type 11

4. Photographs of this type of ammunition (write down the number (#) you have written on the back of each printed photograph or the file # of each digital photograph of this type of ammunition. If the photograph contains more than one type of ammunition, write down the position in the photograph of the type of ammunition that you are recording on this copy of the ARF(L) form)

A. Photograph # / digital file # 0095 Position in photograph 1+3 FROM LEFT
 B. Photograph # / digital file # Position in photograph
 C. Photograph # / digital file # Position in photograph
 D. Photograph # / digital file # Position in photograph

AMMUNITION TYPE 2

1. Live or spent? (tick only one box) ☒ Live (unfired)  or ☐ Spent (fired) 



2. Calibre (leave blank unless you are absolutely sure) X mm
 or inches or Bullet Diameter Guide hole number: # 2

3. Tally (||||) the # of cartridges recorded of this type 1

4. Photographs of this type of ammunition (write down the number (#) you have written on the back of each printed photograph or the file # of each digital photograph of this type of ammunition. If the photograph contains more than one type of ammunition, write down the position in the photograph of the type of ammunition that you are recording on this copy of the ARF(L) form)

A. Photograph # / digital file # 0095 Position in photograph CENTRE
 B. Photograph # / digital file # Position in photograph
 C. Photograph # / digital file # Position in photograph
 D. Photograph # / digital file # Position in photograph