THE DOMINION OF CANADA RIFLE ASSOCIATION

Code of Practice for Handloading Firearms Ammunition

PREFACE

Many shooting disciplines rely on handloaded ammunition for accuracy beyond 500 yards which is the benchmark of factory loaded ammunition. F Class is a long-range rifle discipline with two categories. F Open which consists of any scoped rifle to a maximum caliber of 8mm and FTR which is a.223 or.308 caliber scoped rifle. Target rifle is a non-scoped .223 or .308 calibers. Precision rifle is a discipline which allows any centre rifle caliber allowable at the range used. In certain competitions targets can reach 1500 yards. All four disciplines have weight restrictions. All competitions are shot at ranges from 300 yards to 1500 yards.

Black Powder is the oldest of all of the DCRA disciplines and is shot at distances up to 1000 yards. One of the disciplines with the greatest number of DCRA member participants is Service Rifle shooting which follows a service conditions format and is generally shot with a .223/5.56 calibre.

For the purpose of this article long range will be 700 to 1000 yards. Factory ammunition, although much more accurate today is not designed for long range. Most manufacturers use 500 yards as their benchmark for long distance. After 500 yards, their ammunition group size tends to open up and cannot maintain the accuracy required for competition shooting. In order to be competitive, long-range shooters must reload to guarantee accuracy and competitiveness at long ranges.

This Code of Practice applies to all DCRA shooting disciplines.

DEFINITIONS

DCRA means the Dominion of Canada Rifle Association (DCRA)

SOP means Standard operating procedure

COP means Code of Practice

GENERAL RULES

Only reload ammunition when you can give your full and undivided attention. Allow plenty of time so you do not rush. Avoid distractions such as television, visitors, or any other factor that negatively affects your concentration. NEVER attempt to reload while under the influence of alcohol or medications that affect concentration or judgment.

Thoroughly read and understand all reloading equipment instructions before using that equipment. All manufacturers offer technical support. If you do not understand the written instructions, contact the manufacture for clarification before proceeding.

Wear approved safety glasses during all reloading operations, and while shooting. Make safety glasses available to

any approved visitors to your loading area.

Make certain that all equipment is firmly anchored to the work surface during use. A heavy loading press falling on your foot can cause serious injury. Avoid using clamps to attach heavy tools to the bench. Follow the tool's manufacturer's instructions for safely mounting the tool.

Observe "good housekeeping" in the reloading area. See that all components and equipment has a designated place. Clean up spills promptly. Limit components on the bench to only those required for the immediate project.

Keep accurate and legible records. Label everything so there is no confusion regarding the ammo or components. A logbook is a great way to ensure that you always know the load information for each cartridge.

Store and keep powder and primers away from sources of heat, open flame, and electricity, and out of the reach of children. This also means NO SMOKING in the loading area.

Keep powder and primers in their original, factory-marked containers. Scrap any components that lose their identification information. If you must remove any components from their factory containers during loading, return them to their proper containers as soon as the loading sessions ends. Place a "sticky-note" on the powder measure that identifies the propellant being used. Remove the note promptly when the propellant is returned to its original factory container.

Keep no more than one container of propellant on the bench at one time. Store powder away from the bench to avoid mistakes or mixing.

Carefully read and follow published reloading data. Verify that your loading manual is open to the proper page for the cartridge you are loading. Don't play "inventor."

Never attempt to reload without immediate access to a reliable reloading scale. Scales built for other purposes, such as cooking or postage, are unacceptable. Check the "zero" of the scale before each powder weighing session. Once a month, remove dust from the scale and calibrate. Calibration weight sets are available from RCBS and other manufacturers. Check both zero and calibration if the scale is jarred or moved from its normal location. Avoid locating mechanical scale within three (3) feet (one meter) of fluorescent lights. The electromagnetic fields generated by such lights can cause weighing errors.

Use extra care with primer tubes. Handle loaded tubes with care; a dropped tube can explode. Do not store primers in primer tubes between sessions. Check monthly for build-up of residue inside the tubes and, if detected, clean the tube under water with a narrow bottle brush if needed. Dry washed tubes thoroughly before returning them to service. Never apply oil to any primer tube; this will accelerate build-up of residue.

Never attempt to use a damaged primer tube, or one that is not intended for your make and model of reloading press/ priming apparatus. Tube fit in the tool is important to safe loading; make certain you have the right tube matched with the right tool. When filling tubes, never use excessive pressure. If unusual force is detected, cease loading immediately and correct the problem before proceeding.

LOAD DATA

IMPORTANT NOTE: Reloading data published by bullet manufacturers is for their bullets, so only use the load data from the manufacturers of the bullet you intend to use. Many of our bullets are of unique construction; there is no such thing as "generic loading data" anymore. Other bullet makes may produce significantly different pressures and velocities. Bullet manufacturers make no warranty that their published loads are safe with another make of bullet. You, the reloader, bear the ultimate responsibility for knowing your firearm, loading equipment, and techniques. All loads must be to SAMMI specifications.

Always use loading data published by a reputable component manufacturer.

Never start with a maximum load. Always begin with the starting load and work toward the maximum in increments, testing at each step. This provides you with a safety margin in case of some undiscovered change in the components. Component manufacturers strive to maintain lot-to-lot uniformity, but some variance will occur over time

and especially between batch numbers.

Always use the latest data for your cartridge. Over long periods of time. components may change. Using the latest recommendation ensures that your loads reflect current technology and standards.

If new to the art and practice of reloading, use only moderate loads until you gain experience with the cartridge, your firearm, and your loading equipment.

Leave experimentation to the professionals. Published data is FACT. It is not a "jumping-off point" for wild experimentation.

Never mix different propellants. Blending propellants is extremely dangerous and should never be done. Also do not mix different batch numbers of the same propellant.

Always reduce loads when changing components. Sometimes, you cannot match the exact combination of components that the component company used when developing the load. Drop back to the starting load to build a safe margin for any changes.

LEAD EXPOSURE

The metallic element lead can, at high exposure levels, result in birth defects, reproductive harm, or other serious medical problems. Lead is present in primers and most bullets, and the reloader may be exposed to lead when handling reloading components (including fired cases), shooting, or cleaning firearms or reloading equipment. Simple guidelines will limit your exposure and result in your hobby remaining a safe one.

Observe good personal hygiene. Wash hands thoroughly with soap as soon as you finish handling ammunition, shooting, or cleaning firearms. Simple hand washing is the best step to minimize lead exposure.

Never eat or drink while reloading. Failing to follow this simple rule means that lead residue on your hands goes directly into your body. Keep your hands away from your nose and mouth while loading. If you smoke, wash up thoroughly before taking a smoke break, and take that break well away from powders and primers.

Avoid breathing dust in the loading area. Have your loading room properly ventilated. If you use dry case-cleaning media, wear a dust mask when charging and emptying your case cleaner. The media can become charged with lead from fired cases.

Clean the reloading area regularly. This prevents the buildup of dust that may contain lead. Wipe horizontal surfaces with a damp cloth. Damp mop hard-surface floors often. Avoid using carpeting in areas identified as loading areas. In addition to holding residue, carpet can induce static electricity problems that constitute a hazard when handling primers.

DCRA Code of Practice for Handloading Firearms Ammunition

Any person wanting to use handloaded/reloaded ammunition on any Military range or range covered by insurance provided through the DCRA must first read and agree to abide by this Code of Practice (COP).

Failure to comply with the following recommendations may invalidate insurance, leaving clubs and individuals directly responsible for meeting any financial claim, and may result in damage to firearms, injury and even death.

Scope

This COP provides guidance for the safe preparation and use of firearms ammunition. It is not intended to provide comprehensive instruction on handloading techniques, nor is it intended to replace or be a substitute for handloading manuals.

Terms & definitions

For the purposes of this COP, the following terms and definitions apply.

Handloading

The processes of manually preparing and assembling components to produce firearms cartridge ammunition for personal use, not for resale.

Reloading

Handloading cases that have been previously fired.

Factory ammunition

Commercially produced ammunition, which is subject to C.I.P. (Permanent International Commission for the proof of small arms) Approval and Rules of Proof if of European Manufacture or SAAMI (Sporting Arms and Ammunition Manufacturers Institute) if from the USA.

Full-bore firearm

A rifle or pistol designed to shoot centrefire cartridges

Small-bore firearm

A rifle or pistol designed to shoot rimfire cartridges of .22 calibre or less.

NOTE: Small-bore only ranges are typically certified for .22 LR. Some types of cartridges, e.g. .22 WMR, .17 HMR, etc., may exceed the ballistic limits specified on small-bore range safety certificates and are, therefore, not permitted on such ranges.

If you don't know what you are doing ... DON'T DO IT!

Handloading requires a technical knowledge of firearms and ballistics sufficient to be able to select appropriate components (case, primer, powder, bullet) and assemble them in a reproducible manner to make cartridges that are both safe to fire in a designated firearm and fall within the particular safety requirements for the ranges on which the cartridges will be fired. Before attempting to handload any ammunition, it is essential that expert advice is sought either from your club or the DCRA, or by attending a recognised handloading course.

Never handload ammunition if you are not prepared to make the commitment you owe to yourself and others to clearly understand the scope of responsibility that accompanies handling things that can kill people.

Do not experiment. Target shooting ranges are not laboratories and there is no place in target shooting for a "suck it and see" attitude. Only shoot ammunition that you know is safe and for which you know and understand the ballistic performance.

Obtain one or more up to date handloading manuals, study their guidance on handling, storing and working with primers, powders, and other ammunition components, and learn how to handload safely. You must understand what you are doing and why it must be done in a specific way.
If you cannot find the exact load data in the manual for the combination of components you intend to use, obtain a manual that does have the data, or change components to those for which you do have data. Alternatively, contact powder manufacturers to obtain the specific data you require in written form (e-mail, fax or letter). Never shoot handloaded ammunition unless

you have reliable data confirming your load is safe. NEVER shoot anyone else's handloads in your firearms.

NOTE: it may be beneficial for future reference to batch test handloaded ammunition over a chronograph on a suitable range (i.e. one with higher muzzle velocity/muzzle energy limits) to ensure the ammunition is safe for use on the range(s) on which it is normally intended to be used.

Handloaded ammunition of initially unknown ballistic performance should be batch tested by an officially recognised proof house to ensure that the associated breech pressures and velocities are within acceptable standards.

Read and understand all manufacturers' instructions for the handloading equipment you will be using. If you do not have instructions, contact the manufacturers to obtain copies.

Ask the advice of experienced handloaders, and if possible, ask an experienced handloader to show you each step of the handloading process.

Consider attending a handloading course if available.

If you have any doubt about your ability to handload safely, do not do it – use factory ammunition that is within the ballistic performance of range safety templates.

Pay attention to what you are doing.

Only handload ammunition when you can give your full and undivided attention to it. Set up your handloading equipment in a quiet area where you will not be constantly interrupted. Do not handload whilst watching television or listening to music or being distracted by anything else.

Do not handload when you are tired or ill.

Do not handload under the influence of alcohol, drugs, or medication.

Allow plenty of time and handload at a leisurely pace without being rushed. Establish your own handloading routine and stick to it so that you avoid mistakes.

Keep all your handloading equipment and components out of reach of small children and anyone else who does not require access to it.

Never smoke during a handloading session. Keep matches, flames, and other possible ignition sources away from your handloading area.

Keep your handloading area neat and tidy.

Have only one set of components (cases, powder, primers, and bullets) on your handloading bench at any one time. Do not attempt to handload more than one type of ammunition at the same time.

Do not have food or drink on your handloading bench.

Sweep up any spilled powder immediately. Do not use a vacuum cleaner because internal electrical sparks may ignite the powder causing a fire or explosion.

Label components and keep them in a convenient place on your handloading bench. Do not use components that you cannot positively identify.

Wear approved eye protection during all stages of handloading.

Do not use smokeless powders in cartridges for firearms proofed for black powder only.

Smokeless powders for rifle and pistol cartridges are made using nitrocellulose and are much more powerful than black powder. Fast burning smokeless powders for pistol cartridges are

often double base with nitro-glycerine added to the nitrocellulose, making them even more powerful. NOTE: Smokeless powders are also known as propellants and nitro powders. Black powder is also known as gun powder. Most modern cartridge firearms are proofed for nitro powders. Check for nitro proof marks:

Note the “N” for Nitro on these two British Proof Marks.

Vintage firearms, original or replica, are often only proofed for black powder. Black powder proof marks are different like these two British ones:

There are seven countries that proof mark firearms which may be seen on firearms, these are: - Britain, Italy, Spain, Germany, France, Belgium and Austria. Each has its own different designs of proof marks. See: - https://www.nramuseum.org/media/940944/proofmarks.pdf

In addition to proof marks, modern black powder firearms, including replicas of vintage firearms, are often engraved with warnings such as BLACK POWDER ONLY or NOT NITRO.

If you cannot identify the proof marks on your firearm, or if you are not sure what they mean, have your firearm inspected by a competent gunsmith.

Special black powder substitutes such as Hodgdon Pyrodex® and Triple Seven can be used in firearms proofed for black powder only. Read and understand manufacturers’ instructions for Pyrodex or Triple Seven before using these powders in cartridges for black powder firearms. Do not substitute smokeless powders for black powder, Pyrodex or Triple Seven.

Handle powder carefully, and as recommended by manufacturers.

Store powder in a cool, dry place away from direct sunlight and sources of heat and other possible ignition sources.

Where possible and practical, store powders only in original factory containers with original labels.
If powder needs to be repackaged, for example when splitting down bulk quantities, the containers should be constructed in such a way that, in the event of a fire they do not provide additional containment that will either increase the explosive force of any deflagration or cause smokeless powder to detonate. Normally plastic/polythene or paper/cloth containers should be used. Metal containers with a screw cap or a push-in lid must not be used. NOTE: Long term exposure to moisture or air or sunlight will degrade powders, thereby changing burning

characteristics and creating a potential hazard when ammunition is fired. Return unused powder to its container and keep tightly closed.

If containers for another type of powder are re-used, make sure all traces of the old powder are removed, remove old labels, and clearly label the containers to reflect the new contents.

Keep powder containers tightly closed when not in use.

Do not mix powders of different types. NOTE: Similar, or sometimes even the same designation can be used for different powders from different manufacturers. For example, Hodgdon and Vihtavuori both have “110” powders, but they are very different from one another and should never be mixed, or their handloading data inter-changed.

Only have one type of powder on your handloading bench at any one time.

Pour out only enough powder for immediate use.

Return any unused powder immediately to its correct container.

NEVER, ever add fast burning pistol powder to rifle ammunition to make it go faster, it will almost certainly end in disaster and potential injury to bystanders.

Handle primers very carefully, and as recommended by manufacturers.

Store primers in a cool, dry place away from direct sunlight and sources of heat and other possible ignition sources.

Do not store primers in bulk – doing so will create a bomb! For example, do not empty primers from their original factory packing so that they are loose in a large container. Bulk primers will mass detonate if one is ignited.

Store primers only in original factory packaging with original labels.

Do not handle primers with greasy or dirty hands. Grease and dirt can affect the igniting characteristics of primers.

Do not mix primers from different manufacturers or different types from the same manufacturer.

Do not mix regular primers with magnum primers or benchrest primers.

Do not mix Berdan primers with Boxer primers.

Do not force primers; if resistance is felt when trying to seat a primer, STOP and investigate. Return any unused primers immediately to their factory packaging.

Never exceed maximum loads given in handloading data tables.

Do not begin handloading with the maximum powder charge shown in handloading data tables. Always begin with the starting load indicated in the data tables. If a starting load is not given, reduce the listed maximum load by 10% and use that as a starting load.

Always work up from a starting load towards the maximum load in small steps, watching for signs of excessive pressure at every step. If you see signs of excessive pressure, stop shooting that load immediately. Reduce subsequent loads back to where you no longer see signs of excessive pressure and use that as your maximum load.

Do not exceed the maximum load given in handloading data tables or the maximum load that you have discovered for yourself. Stick to CIP/SAAMI limits!

Cases made to military specifications often have thicker case walls, which reduces the internal volume of the case. Maximum loads quoted in data tables should be reduced, typically by 5%,

when handloading military cases. An example is substituted load data from 308 Winchester for 7.62x51 NATO.

Never assume your firearm can handle listed load data, older firearms were manufactured with lower pressure limits. An example of this would be the old Mauser M96 rifle in 6.5x55 Swedish that cannot tolerate modern pressures as prescribed by various load data publishers. Many of these manufacturers have instead listed safe data specifically for these older rifles. Another example is the Enfield No4 if converted from .303 British Calibre to .308Win. Some of these actions, which were made by many different companies and designed only for the .303 British cartridge, are weaker and will not safely regularly fire .308Win cartridges, especially if the chamber or cartridge is wet or oily. Bolt failure can occur.

Never substitute load data from similar calibres with differing max pressure.

Never reduce the minimum starting load given in handloading data tables.

Using too little powder to load cartridges can cause dangerous over-pressure. A phenomenon known as detonation. Always perform visual check of each case to ensure that powder level is appropriate.

Do not attempt to handload without a reliable powder scale. If using a volumetric measure, the weight of a given volume should be checked using a reliable powder scale both before and regularly (e.g. every 10 rounds) throughout the handloading session.

A reliable powder scale is one that has been calibrated or checked using a check weight before each handloading session commences.

Keep powder scales clean and properly maintained in accordance with manufacturers' instructions.

Select the correct type and weight of bullet for the range on which ammunition will be used.

Do not use tracer, tungsten/steel cored, or other specialist bullets on target ranges unless the local range regulations specifically allow for it.

Do not use full or partial metal jacketed bullets on indoor ranges unless the local range regulations specifically allow for it.

NOTE 1: some bullets, typically referred to as copper washed, have a very thin copper coating to reduce lead fouling in barrels. Such bullets are not classed as metal jacketed and can usually be used safely on ranges where jacketed bullets are not allowed.

NOTE 2: the base of cast lead bullets are sometimes fitted with copper cups known as gas checks to help seal gases and prevent deformation of the base of the bullet. Gas checked bullets are not classed as metal jacketed and can usually be used safely on ranges where jacketed bullets are not allowed.

Make sure ammunition is within the cartridge overall length (COL) limits specified in handloading

Firing cartridges that are only a few thousandths of an inch longer or shorter than the specified COL can create excessive pressure.

Always measure cartridges with an accurate set of digital or dial callipers (or Vernier callipers only if you are confident in reading Vernier scales) to ensure they are within safe specification.

COL specified in most handloading manuals is based on industry standard chamber and cartridge dimensions. COL is specified with tolerances such that any cartridge will be safe in firearms with chambers within the size tolerance specified for the particular cartridge. In other

words, any standard cartridge can be fired safely in any standard firearm chambered for that cartridge. Some firearms may have non-standard chambers that require non-standard COL, or it may be desirable when making high accuracy ammunition to fine tune COL to suit a specific chamber. Assembling such ammunition should not be attempted without specialist measuring and handloading equipment and the necessary skill to use it. Bullets should not, in any circumstances, be in contact with the rifling in a barrel when a cartridge is loaded in the chamber. Bullet jump, i.e. the free space between the barrel lead and the bullet ogive, or wadcutter face, should still be within established safe limits. Specialist handloading manuals dealing specifically with loading for accuracy should be consulted.

Be aware that different types of firearms have different handloading data.

Rifles with bolt actions are generally stronger than lever-action carbines and revolvers when chambered for the same cartridge, and so are more likely to withstand accidental high pressures without failing, although signs of excessive pressure may be visible.

Do not use handloading data for rifles with strong actions to make ammunition for firearms with weaker actions, e.g. lever-action carbines or revolvers.

Record and label each batch of ammunition you make.

Record details of all components used for each batch of ammunition:

i. brand of case, how many times it has been reloaded, full-length or neck sized, etc.

ii. brand and type of primer.

iii. brand, type and weight of powder.

iv. brand, type and weight of bullet.

v. cartridge overall length (COL).

vi. date the ammunition is loaded.

Label the container in which the ammunition is stored and include either the full loading record or a reference code that will allow you to positively identify the ammunition.

Always check for signs of excessive pressure.

When shooting handloaded ammunition check for signs of excessive pressure with every shot. If you see signs of excessive pressure, stop shooting immediately.

- Signs of excessive pressure are:
- Harder recoil than usual
- Louder report than usual
- Difficulty when extracting fired case bulging and/or split fired cases cratered primers flattened primers
  pierced primers
- Blown primers, i.e. primer blown out of primer pocket case head imprinted with bolt face/ ejector marks.

Short head spaced cartridges.

If a cartridge has a short headspace (sloppy on length when in the chamber) this can produce very flat primers but not due to high pressures. This is due to the primer, when struck, pushing back out of its pocket followed by the case slamming back upon firing and squashing the primer very flat. Cartridges used in this condition will quickly exhibit a split low down on the side wall

which will develop into a separation of the base of the cartridge from the wall. These cartridges should immediately be discarded for reasons of safety.

Always ensure that the ballistic performance of handloaded ammunition is within the range safety.

Local range regulations do vary from range to range. Always check local range regulations and any other relevant rules or restrictions.

Do not use ammunition that exceeds the calibre, muzzle velocity or muzzle energy limits for the range on which you intend to shoot.

Only shoot ammunition that is with the confines of the range template.

The DCRA reserves the right to request at any time any number of reloaded rounds of ammunition as may be necessary to test for safety assurance purposes.

References

Berger Bullets; https://bergerbullets.com/

CCI Ammunition; https://www.cci-ammunition.com/home

Federal Ammunition; https://www.federalpremium.com/home

Hodgdon Powder Company; Resources; https://hodgdonpowderco.com/hodgdon/#

Lapua Bullets; https://www.lapua.com/

National Rifle Association of the UK, NRA Code of Practice for Hand Loading; https://nra.org.uk/nra-training-publications/

Sierra Bullets; Safety Resources; https://www.sierrabullets.com/resources/safety/

Sporting Arms & Ammunition Manufacturers Institute (SAAMI); https://saami.org/

Vihtavuori Smokeless Powders; Resources; https://www.vihtavuori.com/resources/material-bank/

Winchester Ammunition; Resources; https://winchester.com/

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Declaration

The following declaration must be signed by DCRA members prior to using handloaded, reloaded ammunition on any military or private range that requires it.

A copy of this declaration is to be retained by the range operator and made available for inspection in the event of any insurance claim. Another copy must be submitted to the DCRA for retention and record keeping purposes. This can be printed or electronic.

The owner of the ammunition

I hereby confirm that I have read and understood the DCRA Code of Practice for Handloading Firearms Ammunition, and that I will abide by this Code of Practice and certify that my ammunition is safe and within the range template for the caliber I shoot.

Indemnification

The shooter/handloader indemnifies the Crown and private range owners against claims or damages in the unlikely event of hand loaded ammunition failure or corruption.

Signature		**Date:**	
Print Name		**DCRA Membership Number**	