

HOMEMADE

CONSTRUCTING THE

GRENADE

ULTIMATE

LAUNCHERS

HOBBY WEAPON



RAGNAR BENSON

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Homemade Grenade Launchers:

Constructing the Ultimate Hobby Weapon
by Ragnar Benson

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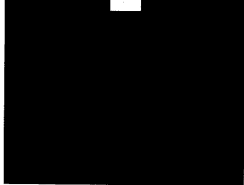
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WARNING



The procedures in this manual and the resulting end product are *extremely dangerous*. Whenever dealing with high explosives and improvised weaponry, special precautions should be followed in accordance with industry standards for experimentation and production. Failure to strictly follow such industry standards may result in harm to life or limb.

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PREFACE



Once upon a time in this land of the free and home of the brave, it was perfectly acceptable to own and operate large-bore firearms of a military nature. So long as no one was damaged in the process, the good citizens of the land allowed us the right to our chosen hobby. We fired our military weapons right out in the open, where anyone could watch.

As time went by, we obviously were having so much fun at our weekly blasts that other similarly inclined gun nuts aspired to join in the festivities. Impartial, unbiased observers—perhaps from another planet—might have concluded that our passion for throwing an explosive charge out a fifth of a mile onto a dirt field, where it roared off with a throaty thump, was absolutely ridiculous. These same observers would, if they were consistent in their logic, have made similar conclusions regarding the game of golf.

As time went by, many more like-minded enthusiasts attached themselves to our group. We found that we were not alone in our appreciation of the operation of large-bore military weapons. Each newcomer brought along his version of fantasy, thus enriching us all with the smell of the smoke and shock of the blast.

Robin Miller owned a fine 81mm Finnish mortar. It was new in the box when he bought it. Mr. Miller discharged it using custom-loaded 12-gauge blanks as a propellant. A few loaded with

35 grains of Herco virtually blew the projectiles off the playing field.

Finnish armorers apparently had us gun nuts in mind when they designed this particular mortar. It could be drop fired or discharged with a lanyard.

Miller used old 16-ounce vegetable cans half filled with concrete as projectiles. Later on he got a bit more rowdy and started making projectiles with a stick of dynamite and 10-second delay fuze. Fast 60-percent dynamite vaporized the can and concrete, nicely marking the location of the projectile. We never did attempt point-detonating rounds. Our fuzed rounds were much safer and, even if it had been in a military context, no one was going to throw them back.

Dennis Stover purchased a brand-new Lahti 20mm antitank rifle along with two 125-round cases of ammo. He kept four or five extra magazines loaded up and, whenever the occasion demanded, could really lay down the firepower. In fact, muzzle blast from this outrageous, monstrous rifle killed all the mosquitoes in the region and damaged low-flying ducks and geese. But glory had its price. Dennis spent almost \$100 for the entire outfit—a sum we judged to be most princely at the time.

Ted Terrel, a poor struggling college student, could afford nothing more than a case of rifle grenades. He bought the grenades from Val Foget at

Navy Arms and fired them from a borrowed AR-15 rifle. At the time, a case of forty-eight grenades was a mere \$17, proving that the old adage, "It isn't what you spend but how you spend it," is what counts. Terrel demonstrated that under many circumstances he could shoot his big-bore weapons with as much accuracy as the rest of us. We fired our ordnance out across a gently sloping 40-acre cornfield. About 300 yards out we circled a white clothesline on the ground as an aiming point. Using nothing more than Kentucky windage, he put his rifle grenades in the 10-yard circle with as much frequency as anyone.

Of course the 20mm Lahti delivered with pinpoint accuracy, but the rounds were not HE (high explosives). When they got to the target, the effect was not as inspiring as the others.

Larry (Ted's younger, more affluent brother) started bringing his .55-caliber BOYES antitank rifle. He did well with it, but ammo always was a problem. He later rebarrelled it for more commonly available .50-caliber machine gun ammo, allowing him to shoot until his shoulder melted.

Ron Brooke had an operational World War II 3.2-inch bazooka but was constrained by a severe lack of ammo. Over the years we managed to scrounge a few original HE rounds, but bazooka rounds were always scarce, even back in the Good Old Days. And contrary to what one may see in the Rambo movies, they are extremely difficult to manufacture at home.

There were others . . . but lest I fail to preserve a few trees for use by the gun-hating liberal press, I must press on to the main point.

Other than a few chickens living a couple of miles away that we literally scared the shit out of, we did nothing except entertain ourselves and the growing collection of rubberneckerers who drove out to watch the fireworks. Some even recall a round of applause following an especially skillful discharge.

Eventually I went to Interarmco in Alexandria, Virginia, and purchased an 800-pound French Peteaux 25mm cannon. It was almost brand-new, complete with half-inch Class A armor plate and rubber tires. Cost was \$45 for the cannon and \$45 to truck it home. My friends vir-

tually died of apoplexy upon hearing that factory ammo was \$1 per round!

From the instant it was delivered, the cannon was a roaring success. A truck driver who claimed to be too bored and too busy to deliver it to our farm and an indifferent neighbor with a high-reach hydraulic unloader spent the first afternoon of my ownership playing with the thing. Four hours later, after an emergency meeting that took me to town, I found them still happily spreading out the trails, lowering the spades, releasing the breechblock, and turning the traverse mechanism. The pair had come over at my request, duty bound not to be fascinated, but here they were, still playing with it like nothing else in the world mattered.

After I steam-cleaned away the fossilized Cosmoline and my wife painted it up smartly, this problem grew more intense. So many people drove out from town to see the cannon that we were forced to chain it to a tree for fear someone might try to tow it away.

Our entire collection of ordnance, we discovered, held great fascination for the average man in the street. It was like owning a snowmobile: if tinkering with the machine isn't fascinating, then ownership is not much fun.

We tinkered in two realms. For the most part, the large-bore ordnance we owned was either new or in very good condition. We seldom were forced to tinker to "get the machine to run." Instead our tinkering was directed toward finding out how, sans training or field manuals, to best use the ordnance. The second component of our play involved manufacturing the ammo necessary to enjoy our hobby.

As a result, we became something of experts at hand loading rounds for the Peteaux and other large bores. I even had a bullet mold and neck-size die made, allowing me to produce complete ammo. Our mortar crew eventually perfected HE rounds, and our rifle grenade shooter even conjured up some of his own grenades. The only failure occurred with the bazooka, due perhaps to our lack of persistence.

Today there is a remnant of interest throughout the land in shooting big-bore weapons. The

ground rules have been changed slightly, precluding one from doing so openly, and requiring that both ammo and firearm be manufactured at

home. Nevertheless, despite suppressive federal and state legislation, the interest and enthusiasm are still there.



INTRODUCTION



Federally licensed dealers in destructive devices report that there is a tremendous resurgence of interest in large-bore mortar and grenade-launcher-type weapons throughout the United States. Interest in these firearms peaked once before, just prior to the 1968 gun act that made it tough to own and operate military weapons.

Even at steep \$1,000-per-year license fees, the number of legal dealers has increased dramatically as well. As recently as two years ago, there were only a couple throughout this country. Now there are scores and scores of dealers willing and able to legally sell mortars, cannons, and grenade launchers.

Things are also changing out on the shooting range. Owners who once unlimbered their .50-caliber machine guns expecting large, appreciative audiences are coming up short. Interest at military shoots now centers around M79s, M203s, and the likes of the occasional 37mm Bofors cannon. There is almost universal agreement that the cutting edge of firearms one-upmanship has shifted to the spectacular big bores. Owners and spectators alike are fascinated with arms that deliver a round on target in a colorful manner, and eight ounces of high explosive resolutely thumping is colorful.

During the 1970s and 1980s, military weapons designers did all of us a favor when they

came up with the 40mm system. Instead of dealing with 40,000 psi (pounds per square inch) chamber pressures, as is true with most rifles, or even 10,000 psi that most shotguns produce, we apply a relatively benign 2,600 psi when discharging

an M79 or M203 round. At these chamber pressures, modest and easily available common steel parts work perfectly for constructing homemade firing devices.

By nature, the devices are relatively easy to make in one's home workshop. If this were not enough, the military has gone and redesigned the cartridges so that they are extremely easy to reload. Whereas 40mm rounds were originally designed using difficult-to-prime high- and low-pressure chambers, they are now set up so that all that is required to recharge the case is a .38 blank. It is best if these are reloaded at home, but even this requirement is not written in stone.

Reloadable 40mm plastic cases come as close to being universally available as any exotic large-bore in existence. It would be almost impossible, for instance, to find empty 25mm Peteaux brass, or 37mm, or virtually any of the other fun stuff, but empty 40mm cases are easily found for \$.50 to \$1 each. Numerous commercial manufacturers have even come on the scene, turning out new supplies for us to purchase.


Sport shooting 40mm weapons is a happy



Two models of home-built 40mm weapons: M79 (left) and M203 (right) ready to be attached to a rifle.

combination of mortar, cannon, and high explosives. It takes a bit of skill to get on to them, but with practice, 40mm rounds are as accurate as light mortars within their firing distance. Grunts who practiced daily in Vietnam learned that they

could put nine out of ten HE rounds through a hooch door. A large number of loadings are available for the M79. One can use smoke, tear gas, shotgun, white phosphorus, and, of course, the intensely desirable HE rounds. Commercial manufacturers are even stepping up to the plate, offering new shot, smoke, and even white phosphorus rounds. All of this adds up to interesting times for military big-bore enthusiasts. Although it is not the early 1960s again, makers are faced with the relatively easy task of constructing a firing device out of common materials, and ammo is common and relatively easy to reload. The information that follows provides in-depth analysis and guidelines for the home builder of the most entertaining and interesting big-bore military systems of all: the 40mm M79 and M203.



CHAPTER ONE

TECHNICAL DATA



When exploring the frontiers of new technology, one can never be too careful.

Methodically and carefully I wrapped the package of new nylon line around my home-built M79, binding it securely to the 12 x 12-inch support on my deck. The job

would have proceeded a bit faster had I not been so cheap and unwilling to cut the new package of line.

After fastening the weapon to the support, I placed a piece of newly washed white cotton sheet over the breech. If something were to cut loose, I could—in theory—determine where and with what determination. Always with safety in mind, I donned a heavy horsehide jacket, heavy welding gloves, and a surplus German police riot helmet.

I crammed a factory-new military round into the breech of my home-built M79, then backed the barrel into the breechblock with a resounding thud. Even through my earmuffs, the detonating round sounded tublike and metallic, much like an 80mm mortar fired with full increments.

Observing the projectile was impossible till it got out about a hundred yards. Then it slowed and became very visible, arcing through the clear blue sky. But—horror of horrors—not everything was proceeding as planned: the projectile was traveling farther than I had supposed it might! My first inclination was to call NASA and ask them what to do, but before I could the projectile bounced to a landing and started spitting out

hideous clouds of blue-gray smoke. The smoke wasn't a problem, but the resting place left something to be desired. We have but one neighbor within half a mile, and this round had selected his barn lot in which to return to earth.

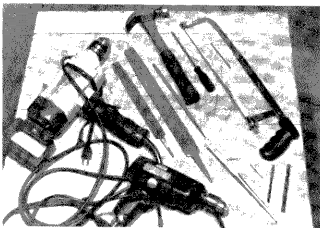
In spite of the fact that it took him less than thirty seconds to determine who was at fault and call me on the phone, I was hooked on 40mm weapons. It appeared that even wimpy smoke rounds were enough fun to get the neighborhood worked up. My neighbor's only request was that next time I fired off a round, I call him first so that he could come over to make sure I was careful.

Forty-millimeter grenade launchers, either of the M79 single-shot type or the M203 rifle-attached models, were, as I found out, not very difficult to build. My metalworking/welding skills are farm-boy class and nothing more. Grinding down some of the parts on a simple bench grinder and marking pins on a 1/2-inch drill was as close as I came to actually doing anything resembling machine work.

Building 40mm ammunition is a bit more complex, but to produce either or both of the weapons, the list of required tools is remarkably ordinary. Should the maker not have one or more of the major tools, they can either be purchased, rented, or substituted for relatively modest sums of money. Forty-millimeter home builders will find

that the job goes easier with small power tools, but they are not essential. A 1/2-inch electric drill, for instance, is convenient, but the job can still be done with a hand drill. True also with a saber saw vis-à-vis a common file.

The following is a list of tools that will be required along with brief descriptions as to their place in the process.



Most of the tools required to construct 40mm devices are extremely common and can be found in the average household.

an M79 and M203 from a professional, but the downside to this approach is that everyone will know what is coming together.

The acetylene welder is used to construct the breechblocks and the M203 firing mechanism. An electric welder works best to fashion the breechblock to the M203 and M79 if it is permanently attached. An electric welder is virtually mandatory to fasten the pull arm on the M79 barrel.

1. A 1/4-inch electric drill with 13/64-inch drill bit used to bore out the set screw holes for the breechblock pieces.
2. A 5/16-inch drill bit used to construct the firing pin mechanism.
3. A 1/16-inch drill bit to bore out stop pin holes on the M203 firing pin mechanism.
4. A fine 4-inch flat file used to lathe down firing pins from common bolts for both models of grenade launcher.
5. A medium-grade 12-inch, 5/32-inch round file used to dress up notches on the M203 breech tube and clean out firing pin holes in the M203's firing mechanism.
6. A large production model 1/2-inch drill; chuck up bolts in this device and lathe them down with a file to make firing pins.
7. A 1/4 x 28 tap and turning wrench to cut threads for Allen screws used to secure the breech mechanism of both models. (Most builders will already own or wish to purchase an entire tap and die set, yet rather than spending \$35 to \$50, one could purchase the lone tap for less than \$5.)
8. An electric welder and acetylene gas outfit. Although it might be possible to use only an acetylene welder, the builder thus equipped will probably want to have the arm of the M79 attached by a skilled technician in a shop with an electric welder. Two \$20 bills would certainly buy all the welding on both
9. A small electric saber saw with fine metal-cutting blade to cut the locking notches out of the breech piece on the M203. This job can be done with a file and hacksaw, but progress is, of course, much, much slower, requiring large helpings of elbow grease.
10. Even given a saber saw, 40mm builders will require a common hacksaw with high-quality 24-tooth blades to make notches in the M203 breech piece, cut bolts, and trim washers.
11. A common household hammer used to flatten steel and drive a punch to make drill holes.
12. A small metal punch used as drill hole marker.
13. A common 8-inch slot-blade screwdriver used to attach hose clamps and adjust the firing pin mechanism.
14. A bench grinder with medium to medium-fine stone used to surface the breechblock parts, dress up the barrels, and cut away welding slag from the various parts. (A file can be used but, again, will require additional patience and perseverance.)
15. A small Allen wrench of the correct size to operate a 1/4 x 28 Allen screw that holds the breechblock in place.
16. A powder scale used to load ammunition.
17. A .38 Special decapping and sizing die used to recap the many trial rounds needed to test the newly assembled grenade launcher.

Even an absolute tool klutz will agree that this is not an exotic or even difficult list with which to contend. Most of these items can be found lying around the average American home or are substitutable using a bit of money and/or energy.

Before starting on the actual construction of a 40mm grenade launcher and ammo, it is critical that the builder understand the theory behind the beast they are trying to create. Not all of the information con-

tained in the government manual reprint on 40mms (page 7) is current. The data on high-pressure/low-pressure function, however, is still accurate, providing a solid launching point from which to construct one of these little marvels.

About the only portion of this manual that has become truly obsolete relates to the ammo, which is now often loaded using nylon cases. The extruded nylon "brass" uses short .38 blanks and is ridiculously easy to reload. With either aluminum- or nylon-cased ammo, the projectile leaves the barrel at about 250 feet per second, becoming plainly visible after about 100 yards.

Unless the home builder chooses to adapt a commonly available M79 barrel to his creation, the fired round will not spin activate. Military rounds of the high-explosive type require a rifled barrel to spin them, thus activating the explosive charge. They will not function properly in a home-built 40mm device. M79 barrels are expensive, but they're available from numerous surplus dealers. No special rules or requirements are currently attached to their purchase or ownership.

Home-built 40mm devices are usually constructed using smooth-bore steel tubing. This common steel tubing shows no sign of abuse or stretching, even after repeated firings.

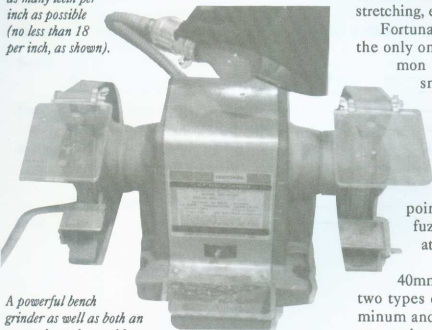
Fortunately, various types of HE rounds are the only ones that are spin armed. Other common military 40mm rounds—including smoke, buckshot, practice, parachute flare, CN gas, and others—are fuze activated. Thus they can be fired as issued from our homemade 40mm smooth bores.

All homemade ammo described in this book will either be point detonating (very dangerous) or fuze HE rounds. Fuzed rounds are relatively safe but can be erratic at times.

While not specified in the manual, 40mm reloaders will commonly encounter two types of cases previously mentioned: aluminum and plastic. Plastic hulls are extremely easy to handle. Aluminum hulls are reloadable, but under much more adverse circumstances.



A small saber saw speeds work on the M203's breech locking slots. Purchase a steel-cutting blade with as many teeth per inch as possible (no less than 18 per inch, as shown).



A powerful bench grinder as well as both an arc and acetylene welder are required to complete this project.

Information on reloading aluminum cases is included in Chapter 5, but one would hope that it is never necessary. As far as can be determined, the simpler nylon plastic cases can be used in virtually any circumstance with any load.

Some builders may be interested in the section in the manual that pertains to sights. My experience indicates that one will always use eyeball

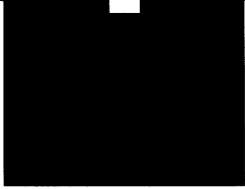
Kentucky windage with any home-built 40mm. Others may want to add sights, either from surplus parts or as part of the home building process.

I suggest a careful—30 minutes at most—reading of this field manual, paying especially close attention to the theory behind the function of 40mm weapons. This manual is out of print, so the information is not otherwise available.

FIELD MANUAL }
No. 23-31 }HEADQUARTERS
DEPARTMENT OF THE ARMY

40-MM GRENADE LAUNCHERS M203 and M79

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CHAPTER TWO

LEGAL CONSIDERATIONS



A bowling ball for a farm boy has about as much practical value as roller skates do for tree squirrels. When my brother unexpectedly brought one of the damn things home, we thought he might have lost his marbles. Everyone alive remembers where they were

when Kennedy was shot. Momentous events are like that. I was putting my boots on in the wash kitchen when my brother walked in with the thing.

It was a used bowling ball, but in relatively nice condition as bowling balls go. Subsequent events indicate that we should perhaps have rated it as at least NRA "Very Good" condition.

The ball kicked (or rolled) around the farm while we tried to discover some productive purpose to put it to. During this time our Sunday afternoon large-bore recreational shoots reached virtually a fever pitch, yet my poor brother had neither mortar nor cannon with which to join in the festivities.

Whether it was brooding jealousy or just good native intellect, Brother finally hit on a plan by which he could also fire off some large-bore ordnance. One afternoon, he dragged his bowling ball, a post-hole digger, and a case of 40-pound dynamite down to the 40-acre playing field. Resolutely, Brother began digging a circular hole into the mucky, black Iowa soil. As I remember, it was coming on autumn and the first 2 or 3 inches of wet earth was fairly solid

with frost. He finally managed to get a hole down 3 feet, into which he plunked a half-pound stick of dynamite. After lighting the fuze, he dropped the surplus bowling ball down the hole.

Dynamite at 2 1/2 feet in the ground makes only a

slightly muffled thump upon detonation, but bowling ball and four wheelbarrows of dirt spit out down the range. Although he was aiming for our rope circle on the ground, the ball fell far short, propelling out a scant 60 or so yards in the general direction of the bull's-eye.

"Better angle the hole a bit more," Brother figured, "and not dig it so deep." He also reloaded with three sticks of dynamite in an attempt at better range.

This next shot was a trifle more effective, as the bowling ball had a better lateral component to it. Brother thought we would be jealous of his reusable projectile, but we controlled that emotion. By nightfall he had our cornfield pocked up like a Panamanian dictator's face. He used about half a case of dynamite and had halfway perfected the art of pitching the old bowling ball out across the countryside. We were happy that he had discovered some productive use for the thing, as well as keeping himself out of mischief. Unlike our cornfield, the ball seemed to be holding up well.

Even these many years later, questions still

run through my mind regarding this activity. Under the current law, should he have registered the bowling ball, the hole in the ground, the post-hole digger, or the dynamite? Obviously, devising laws covering DDs (destructive devices) is not easy.

In the event that you, the home builder of a 40mm weapon, wish to legally authenticate your little monster, be prepared for a long, difficult, convoluted, and often arduous journey. Theoretically, one can legally build and register an M79 or M203 in most states, but like many things in today's society, "the game may not be worth the candle."

In preparation for this chapter, I talked with several officers of the Bureau of Alcohol, Tobacco and Firearms (BATF), all of whom gave me slightly different answers to my many questions regarding licensing. It quickly became obvious that these people wanted, with all their bureaucratic hearts and souls, to tell me what could not be done as opposed to what could be undertaken while complying with existing laws. In many cases they genuinely did not know how to interpret my questions.

I was told by one agent that I could legally build and license a drop-fired 80mm mortar as long as it used black powder. Another agent explained that HE warheads were okay but could contain no more than a quarter-pound of explosives. A third told me categorically that I could own no weapon larger than half inch, and that was that.

When I asked about 12-gauge shotguns, which are about .78 inch, the agent talked about other issues until finally suggesting that I had best talk to the head office in Washington, D.C. I asked for written permission to proceed on drop-fired mortars and HE warheads as outlined by the first two agents but failed as of this writing to receive a reply.

Not only do various regional BATF agents hold their cards close to the vest and tend to pass out information out of step with national headquarters, they seem also to operate somewhat in the blind as a result of a lack of a fully formulated policy. Many people in the DD business feel the

BATF is proceeding on a case-by-case basis, proceeding for some serious ambiguity.

Unlike ownership of full-automatic weapons, the demand for DD licensing apparently has not yet reached a sufficient level to push the BATF into a uniform posture pertaining to their regulations. Like the previous conclusion, this one is based only on supposition, but really seems to be in accord with what is happening out in the field.

Perhaps driven by the recent resurgence of interest in destructive devices, the situation may change. Necessary rules and regulations will probably be promulgated and will likely be more stringent than those currently in use. As a result, what you learn here may be obsolete by the time you are ready to make your petition to the BATF. My advice is to take the applicable bits and pieces I have garnered from the DD industry and government sources and weave them into a plausible, reasonable plan of action that's workable in your region. As in all matters of this sort, I recommend extreme caution.

The first and most important bit of research involves determining how the authorities in your state view destructive devices. In many cases, state laws are so convoluted and contradictory that they are virtually hopeless. Because these statutes often contain numerous loopholes, one could validly assume that some way to own DDs could be found by every determined builder in virtually any state. Yet most gun nuts do not have the money and patience to duke it out with the state attorney general's office over DD permits.

An in-depth analysis of the firearms and explosives laws of all fifty states indicates that many states have not even considered the legal problems related to the private ownership of DDs. Others completely and specifically outlaw them, while most are somewhere in between.

California is an example of a state that specifically prohibits destructive devices in its statutes. Montana, New Jersey, and Ohio are others among this special class of specific prohibitors. Ohio refers to these weapons as "dangerous ordnance."

Rhode Island and Washington state appear to flatly prohibit machine guns but not DDs! That would, if it is a correct reading on my part, be an

interesting switch for gun owners who could not legally possess an MG34 but could own an M79 or M203. This, however, may prove to be an oversight that the governor would quickly call the legislature into special session to correct, should you make serious inquiry regarding legality.

North Carolina's statutes refer to "weapons of mass destruction," pointing out that private ownership within the state is absolutely verboten. Massachusetts refers to DDs as "infernal machines" and, of course, punitively prohibits them all.

In both Oregon and Pennsylvania, a few cities specifically prohibit DDs. In this case, one would have to inquire locally. A few states specifically mention federal licensing, permitting ownership under circumstances where federal permits are held.

In spite of these seemingly specific prohibitions and, in a few cases, permission, statutes on the state level are never as clearly defined as one would wish them to be. Almost every state, for instance, prohibits the private ownership of bombs and exploding devices. Without making specific inquiry, it is impossible to determine if these prohibitions extend to 40mm rounds, even if one used only non-explosive ammo with one's weapons.

Another problem is that most states specifically prohibit weapons with barrels shorter than 16 inches, which presents a whole new set of conflicts that the builder of a 40mm weapon must contend with. Home-built 40mm devices can be banged out with virtually any barrel length the maker desires, but generally he will probably want to produce models having something approximating the original specs, which are 12 to 14 inches.

Barrel length and explosive rounds alone produce a suspect situation in virtually every state in the Union. Calling the state attorney general's office in one's state capitol is perhaps the only way to determine the legal status of DDs. Even then, the advice given by the attorney general or his deputy will be subject to his knowledge of and prejudices for or against DDs.

The serious inquirer will almost certainly be required to submit his questions in writing.

Being on the careful side would suggest that this be undertaken by one's attorney—another expense to add to the mounting collection gathered in pursuit of one's hobby. It may even be necessary to ask a local prosecuting attorney, sheriff, or police chief to send a letter of inquiry over his signature. This will not guard your anonymity but will produce a swifter response. In most larger states, the attorney general will not respond to questions from mere citizens.

As previously mentioned, the situation is only slightly better at the national level. The suggestions that follow are generally accepted practice in places where DDs are becoming popular, but may—depending on one's local situation—end up only being a starting point.

When I was given the contradictory advice from the BATF, which I knew was not the custom of the trade, I quizzed the agents further about their interpretation of the law.

"What specific definitions are you using?" I asked. "A 12-gauge shotgun projectile could conceivably be a destructive device under your definition."

"We really don't know," one agent finally admitted. "If you want exact information, you will have to call or write our main office in Atlanta, Georgia."

The address they suggested contacting is the Bureau of Alcohol, Tobacco and Firearms, Firearms Licensing Center, Box 2994, Atlanta, GA 30301. As of this writing, their phone number is (404) 986-6040. Another agent suggested Washington, D.C., but couldn't find the phone number or address while I was on the phone with him. According to my BATF manual, it is the Bureau of Alcohol, Tobacco and Firearms, Firearms and Explosives Operations Branch, Box 189, Washington, D.C. 20044. These people have phones, but getting through the switchboard to the appropriate person is virtually impossible. Their number is (202) 566-7777, for the brave. Their street address is 1200 Pennsylvania Avenue, Washington, D.C., for the terminally brave.

The general consensus out in the hustings is that the BATF is giving the public a pretty fair shake regarding DDs. Private ownership of these

weapons has not become widespread and therefore is not a major consideration for the average BATF agent. In other words, BATF is not used to dealing with DDs and is not yet afraid of them.

Also, builders/owners of DDs should be aware that they are not the same type of legal animal as full-auto weapons. Newcomers tend to lump the two together which, when done, presents a distorted legal situation. It is not, for instance, illegal to own just a DD receiver so long as the barrel is not attached. If the owner can otherwise own the receiver within his state of residence, Uncle Sam will not be a problem. Should the same owner be found in possession of both an unregistered barrel and receiver, this would be construed as illegal ownership of a DD—quite different from a full-auto weapon, where ownership of that weapon's receiver is an absolute no-no.

Oddly enough, the receiver of an M203 or M79 alone is subject to BATF Form 4473 used for transfer of over-the-counter weapons. This is the one we fill out at our local gunshop when purchasing a rifle or shotgun. Unlike a machine gun, an intact receiver from a DD is not the weapon itself. Perhaps this policy has more wisdom than rancor. How, for instance, would one define a receiver for an 80mm mortar or World War II bazooka?

Regular-operating licensed DD dealers are also manufacturers. A dealer is construed to be a person who both puts the devices together for resale and buys from other dealers and manufacturers for resale to the general public. A federal DD dealer's license costs \$1,000 per year on a three-year basis. Dealers must shell out \$3,000 every three years or lose their ability to buy, sell, and assemble DDs.

Dealers in DDs apparently cannot import these weapons from other countries for sale to the general public. This is unfortunate, since some very nice, inexpensive 40mm weapons are currently made in Turkey and Thailand as well as other places.

Interstate sales are preferably handled by transfer from one DD dealer to another in the buyer's resident state. Many, if not most, states

do not currently have a resident DD dealer. As a result, a selling dealer in Florida or Texas may ask for a significant down payment. On receiving this, he will ship the barrel of the 40mm device to the buyer along with BATF Form 1.

BATF Form 1 is similar in design and content to the federal form used to transfer Class II full-auto weapons. Purchasers must have their fingerprints taken by the local gendarmes as well as being signed off on their character. On completion, the document is sent off to BATF headquarters for approval. A \$200 transfer tax fee must also be included with the permit application. Normally, approval or disapproval takes three to four months. If the permit is approved, it comes back signed by a BATF director and has an accompanying tax stamp. A new owner validates the permit by attaching the stamp and signing across its face.

Before completing either the barrel or receiver portion of a 40mm DD, the legally circumpect home builder will want to complete a copy of BATF Form 1 and send it in with the \$200 for approval. When the form returns, the builder can complete his weapon or, in the case of a straight purchase, send a certified copy to the selling dealer, who will then ship the missing half (barrel or receiver). It is my understanding that a builder can legally assemble a DD by simply registering it and paying the \$200 tax—something that is no longer possible with full-auto weapons.

Questions arise over such weapons as 37mm barricade guns, 25mm flare pistols, and even 8-, 10-, and 12-gauge shotguns. All of these have larger bores than the magical half-inch limit. Eight-gauge shotguns have bores measuring .93 inches. Even much smaller 20-gauge guns have bores measuring .615, or .115 inches over the legal limit.

Although the code specifies that a destructive device is a weapon having a bore of half an inch or more, the folks at BATF have taken a rather intelligent and charitable approach to their enforcement activities. Apparently BATF does not want to break its pick by fighting with members of the scattergun fraternity. In this case, it appears to genuinely want to control

weapons that really are destructive devices. For starters, BATF has not concerned itself with fuze-detonated black-powder weapons of any type. Unlicensed private individuals can legally own and operate black-powder cannons and mortars so long as these weapons are not drop fired and have nonstandard bores vis-à-vis military weapons.

Owners are not harassed by BATF over barricade guns and flare pistols because no commercial high-explosive rounds have ever been manufactured for these weapons. This enforcement practice may soon grow a bit thin with the increasing popularity of explosive 12-gauge rounds. Given the universality of 12-gauge guns, any enforcement will no doubt be directed toward the ammunition rather than the weapons. This will probably occur just as soon as some nut tries to blow up a McDonald's in California with 12-gauge explosive rounds.

Sincere BATF sanctions fall on high-explosive rounds. At least one DD dealer claims he can and will supply factory-made HE 40mm rounds. The purchaser must pay a \$200-per-round transfer tax plus the appropriate Department of Transportation freight rates, and provide for appropriate explosives storage on delivery. Obviously this is far too expensive for all but the super rich, even discounting problems dealing with the local authorities.

No one in the active DD community can think of an individual who has tested this system and legally taken delivery of live HE rounds. It is rumored that HE rounds sometimes surface near military bases and are subsequently tested

by owners of 40mms (though as mentioned earlier, these rounds will not function properly in a home-built smooth-bore weapon as described in the following chapters).

Inserts designed to convert one's M79 or M203 to a single-shot 12-gauge device are turning up on the private market with increasing frequency. According to federal authorities, if the device is permanently affixed to the 40mm weapon, the owner has a shotgun, not a destructive device. The owner does, however, have a short-barreled shotgun, which is, of course, subject to other federal restrictions.

Other nonexplosive 40mm rounds, such as shot, flare, smoke, practice, parachute, gas, and even white phosphorus, are not subject to BATF restrictions. This, again, assumes that one's regional office and state officials comply with generally accepted practice.

Obviously the best course of action for the potential DD builder/owner is to first contact his state authorities and then the feds. You may get a slightly different story than outlined here, but use this information to try to get your set of officials to adhere to the regular party line.

BATF officials are going to be extremely reluctant to put anything in writing for you, the potential new owner of a destructive device. It may even be necessary to set out with nothing more than telephone approval, which is really not a very smart way to go. To their credit, BATF seems to be trying ever so cautiously to use common sense.

As always, let the builder beware. Common sense is the most uncommon of senses . . .

CHAPTER THREE

HOME CONSTRUCTION OF AN M79

Construction of a good, effective, reliable M79 in one's basement workshop is so simple that most people will require only this chapter's photographs to complete the job. Gun nuts no longer need furtively fantasize about fun-filled afternoons pooping out heavy grenades. My estimate is that hundreds if not thousands of fun-loving readers will construct their own M79, and not a single person will spend more than \$50 for parts, nor invest more than a week's work (forty hours) assembling them.

There are three major components for which the builder must scrounge a bit. For some of these acquisitions, circumstances and luck play a minor role. All can be purchased if need be. The first, falling squarely in the category of "it's nice if you can scrounge this piece from your old parts bin," is a surplus rifle stock. The stock can be military, commercial, or even surplus in origin.

PARTS LIST FOR M79

- 16-inch length of 1 1/2-inch (inside diameter) standard-weight steel pipe
- 9-inch length of 2-inch (inside diameter) heavy-walled steel pipe
- 1 1/2-inch length of 1 1/2-inch steel pipe
- 2-inch long 3/4-inch bolt
- Three heavy duty hose clamps (approximately 4-inch)
- Twelve 1/4 x 28 Allen screws 3/4-inch long
- One 3/4-inch heavy flat washer having approximately 2-inch diameter
- Three 5/16-inch machine-thread nuts
- One 5/16-inch machine-thread bolt 3 inches long
- One surplus rifle stock

Almost any precut rifle stock will work. Buy one if you must, but it is always nice to use that old stock you have had lying around for years. Forty millimeters are hard on stocks, so choose a stout military variety if possible.

After this the assembler will require a breech sleeve and barrel. The breechblock is made from some of the same material used in the barrel. Construction of the breechblock and firing pin, comprising the third component group, definitely constitutes the only part of this project requiring mechanical ability past the level of the average cocker spaniel.

Starting from the top, go to the nearest full-service steel warehouse, welding shop, machine shop, or well driller's supply house. You will need to purchase two pieces of steel pipe. The best, strongest pipe commonly available is DOM, which roughly translates into "drawn over mandrel" pipe. DOM pipe has no seam and

is generally considered to be tougher material than standard pipe, better able to withstand higher internal pressures. In some places in the United States, DOM pipe is not available; if that's the case in your area, use the best high-grade steel pipe available. In my area DOM pipe is not carried by machine shops. The steel pipe they do carry will reportedly withstand 10,000-psi pressures which, even without the heavy breech piece, is absolutely adequate for the intended purpose. Steel pipe required for this project is not of the type one is likely to find in plumbing shops.

For the breech, purchase one 9-inch-long piece of 2-inch diameter heavy-walled steel pipe. Standard-walled 2-inch will not, in this case, work. Be sure to specify heavy-walled 2-inch pipe. Have the shop cut the pipe stock and then clean the newly cut ends with their reamer. By so doing they will smooth off the sharp edge and burrs in a much neater fashion than one can ever hope to accomplish at home. The extra dollar or so spent on this operation is money extremely well spent.

M79 barrels can be any length the builder desires. Accuracy and range are not sacrificed by short barrels. Issue M79s have 14-inch barrels. Many gun nuts feel that length is a bit

Use any sturdy surplus stock you have on hand or can reasonably purchase (left). Polish out one end of the 1 1/2" pipe with fine emery cloth until the 40mm cases slip in and out easily (middle). Thin-walled 1 1/2" steel pipe should slip inside heavy-walled 2" steel pipe breech (right).

short for the style of weapon they are building, opting instead for a barrel about 16 inches long.

Select a piece of standard-weight steel pipe with a 1 1/2-inch inside diameter. Check to see that it is the correct diameter by pushing an empty 40mm case into the pipe. The empty should fit sufficiently snug so that one must push fairly resolutely to get the case inserted all the way. Later you will polish out the bore of the weapon with fine emery cloth so that the rounds easily drop in. At this time all that is needed is an indication that the correct pipe is indeed in hand. By decapping the nylon case first, the machine shop attendant will almost certainly be unaware of the origin of your gauge, as 40mm cartridges do not really look like cartridges.

Test the two pipes by ensuring that the barrel piece (16 inches long, 1 1/2 inches in diameter) will closely slide inside the breech piece (9 inches long, 2-inch inside diameter). First-time M79 builders can be certain they are on the correct track for size and wall thickness by purchasing both the barrel and breech pipe at the same time. The only disadvantage to purchasing both items at the same shop is the fact that the clerk may ask questions you may not wish to answer.

While at the machine shop, have a piece of 1 1/2-inch stock cut 1 1/2 inches long. This piece will become part of the breech

