

BUILDING YOUR OWN AR15

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<http://www.colfaxtactical.com>



Can you do it? (the above pictured AR15 was my first build)

If you are a guy or gal that wants to build your own AR15-style rifle, then keep reading. You are in the right place! Please read the entire guide before you run out and spend money! Be sure to read the *Notes Pertaining to the Tutorial* on page 10.

In a nut shell, the AR15 is nearly identical to a military M16. The primary difference is that an M16 has full automatic firing capabilities and an AR 15 is a semi automatic rifle.

This CD/on-line guide is to help guide you through a maze of information available on the internet for those wanting to build your own legal AR15. Many firearm enthusiasts want to build their own AR15 style rifle but have been overwhelmed and even intimidated with the information out there. The goal here is to break it down to a manageable outline of internet links and first hand information so that you will not have to spend hours and hours trying to figure out where to start. This intro is not a tutorial on how to build but rather a summary of where you can go to start. There are however two tutorials included after this intro that describes methods of completing your lower.

Please understand that the information presented here is NOT to be construed as any type of legal advise. I am not an attorney and do not practice the law. For those of you wanting actual legal advice, go hire an attorney. ☺ On the other hand, if you are looking for legal advice with regards to firearms in your state, there will be some helpful links included. When on those web sites please keep in mind that there is a difference between legal advice and generalities with regards to the law. In other words we all know that it is illegal to run a stop sign without knowing the statutes that spell it out. By the same token, and for example only, when we read on reputable web sites (<http://www.calguns.net/calgunforum/index.php>) that a legal AR15 can be built in the state of California and it is backed up by law enforcement agencies (http://www.hoffmang.com/firearms/Sacramento-PD-OLL_Training_Bulletin-2008-11-18.pdf), then we can probably feel pretty safe in our undertaking.

DISCLAIMER: I am not compensated by anyone that I am endorsing here. I am recommending based on my experiences directly with them and by the opinions of others whose opinions I respect.

Building your own:

So why on earth would you want to construct your own AR15? There can be a lot of reasons. First, it's fun! Secondly, you can save a lot of money by constructing your own. Or there is also a bunch of you that love a challenge. Maybe you are into total customization. Perhaps you seek the sense of accomplishment in knowing that you are out there on the firing range using the actual beauty that you built in your garage. Your buddies probably will not believe it!

Even the BATF says that we can build our own for our personal use as long as it is not built for the purpose of selling or giving it to someone else. But... you have to be able to legally own a firearm. From everything else that we understand, the BATF does not require it to be registered either. Since we are not lawyers, you will need to do your own legal research to determine what the laws are in your local area. We can, however state, that if you live in California, your AR15 has to be California compliant in order to be legal.

Building what?.....

So what are we talking about here anyway? Making a barrel? Casting my own polymer stock? Milling a set of front and rear sites? **NO** to all of the above.



We are talking about making our own *MIL SPEC lower receiver. The lower receiver is what the BATF and therefore all gun shops consider the firearm. The lower receiver is the assembly that houses the hammer, trigger, and the magazine. As strange as this is, the barrel, stock, hammer and trigger parts, and the upper portion (upper receiver) can all be bought

through the mail without the customary firearms back ground checks.

* MIL SPEC (military specifications) lowers allow the user to interchange parts from many different manufactures. The lowers are made to a recognized set of dimensions.

Lower receivers (that are ready to use) can be legally purchased like any firearm. For example, in California, there is a 10 day wait (for the government to make sure that you are not a mass murderer) after purchasing a firearm but before taking possession of it. A stripped lower (a lower receiver is considered to be a “stripped” lower if it has no parts in it) falls into the same category as the aforementioned firearm. In California you will wait 10 days after buying a lower, and then it will end up being a registered firearm.

On the other hand, you can make your own lower. When I say make, I am actually referring to some actual machining. We are talking about home shop/ garage type of machining. Most of you with the skills enough to drill a hole can probably handle this. You will need a simple drill press.

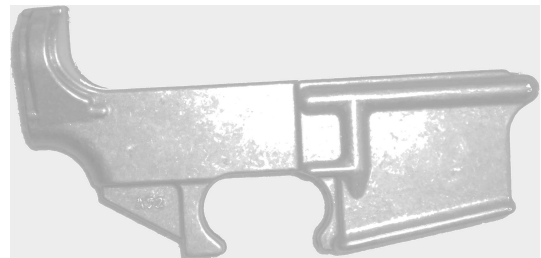
Lower receiver forgings (similar to a casting, only much, much better and stronger) can be had at very reasonable prices. They are often referred to as 80% lowers. The 80% means that they have roughly 80% of the necessary machining already completed. In other words, the really hard stuff has already been done for you and now you just need to complete it.

80% lowers are not classified as firearms. Since they can not be used in that *state of completion* in a firearm, they are nothing more than a fancy paperweight. The BATF does not recognize them as an 80% “anything”. They are not a firearm. But you will legally make them into one!

As a result, when you buy an 80% lower receiver (the paper weight) there is no BATF registration, background, or anything else associated with a conventional firearm purchase. And do not forget, after some work on it, you can buy everything else through the mail to complete that “just completed” 100% lower.

Suggested order of events:

- *Purchase a rifle kit (everything else to complete the AR15) Page 7 of this intro.
- *Get your shop/garage in order
- *Buy the lower- machine the lower
- *Surface finish the lower (anodize or paint)
- *Install the components into the lower
- *Assemble the remainder of the rifle-shoot the rifle!



Above is a 0% (raw forging)

So what do you need to build one?

At a minimum, a small garage type drill press will be necessary. Other than a drill press with a vise, you will need some common tools such as a set of drill bits and some simple calipers.

You will also probably want a machining/drilling jig. The CD will include plans to make your own or you can purchase them ready made. Although the price tag (around \$100-\$120) may sound like a lot, there is a silver lining. If you plan to only build only one AR, you can sell the jig on any one of the many AR15 web sites after completing your lower. They sell quick and often times you can recover 75-85% of what you paid for them. There are those of you that may want to go in with a couple of friend and split the cost of the jig. For the person that has more than a drill press (a small milling machine, for example) you can save even more money and buy a “0%” forging and do it all yourself at a substantial savings. For those of you with machining experience, check out Ray Brandes **Machining the AR15 Lower Receiver Forging**. Ray has been kind enough to allow

us to reprint his excellent manual here in this guide. You will find it here on this CD. If you are fortunate enough to own or have access to a CNC milling machine, you can complete one or many in even less time. But that is not the norm.

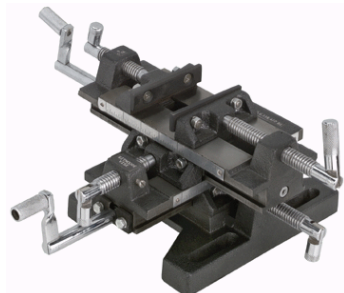
For those of you needing to equip your garage with a few tools, I recommend that you check out Harbor Freight Tools (<http://www.harborfreight.com/>) and MSC (<http://www1.mscdirect.com/cgi/nnsrhm>). I have dealt with MSC for over 20 years. They are a great company. For my own manufacturing company, we use MSC exclusively for all of our cutting tools (drill bits, carbide lathe inserts, end mills etc)

Harbor Freight is a tool /machine retailer that has great prices on a lot of import goods. If you need a drill press check out Harbor Freight drill presses at <http://www.harborfreight.com/cpi/ctaf/Category.taf?CategoryID=263> . Get the largest and heaviest duty machine that your budget allows.

Or better yet, check out their bench top mini mill at <http://www.harborfreight.com/cpi/ctaf/Category.taf?CategoryID=264> . The big difference between a drill press and a mini mill is that the drill press has a fixed table and a mini mill has a movable table in the X-Y axis. That feature alone can save you a lot of time.

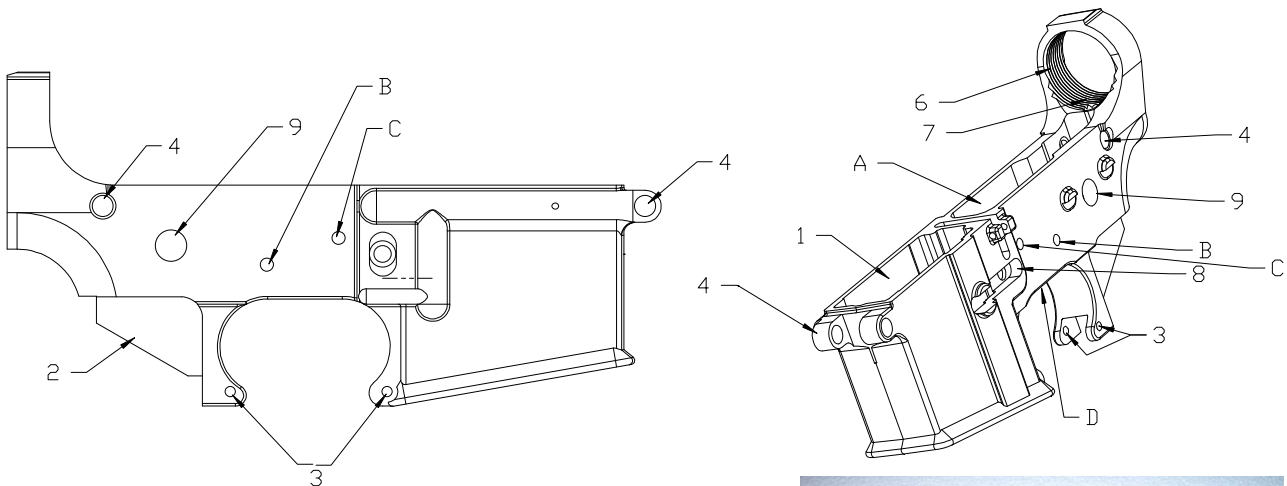
You can also buy a drill press X-Y table (<http://www.harborfreight.com/cpi/ctaf/displayitem.taf?Itemnumber=94276>) that attaches to your drill press. For under \$75, you will probably find it to be worth it. You can use it for a lot more than gun building!

If you have already purchased a 0% to 80% lower forging you are ready to rock and roll. If not, it's time to spend your hard earned pennies and get started! Below are pictured a drill press, an X-Y table (for a drill press), and a bench top mini mill.



First things first...

The 80% lower that you purchased from us is a top quality forging of 7075 aluminum. It was forged to military specifications. You are probably wondering what will be necessary to complete your lower. Here is what is already complete and what you will need to complete.



Already completed:

- 1) Magazine well completed
- 2) Pistol grip area completed
- 3) Trigger guard holes drilled
- 4) Front and rear pivot pin holes drilled and reamed
- 5) Selector retainer hole drilled
- 6) Main hole for buffer tube drilled and threaded
- 7) Buffer retainer hole drilled
- 8) Magazine release/catch slots finished (not able to see in diagram)



To be done by you:

- A) Fire control pocket
- B) Drill trigger pin hole
- C) Drill hammer pin hole
- D) Cut trigger slot
- 9) Selector hole drilled

Much more detail found in the tutorials on this CD.

Fixtures

A few words about fixtures are in order. A fixture is the same as a jig. It is a pair of aluminum parts (plates) that will allow you to safely clamp your lower into a vise without damaging it. Because of the irregular surface of the lower these special fixtures are necessary.

Colfax Tactical now offers fixtures.

The Colfax Tactical Standard Fixture (SF), often called a jig, was designed for completing our 80% lowers. We machine our fixtures in-house on a CNC vertical machining center insuring absolute accuracy. They will securely hold the lower in place while performing the finish machining. Included with the fixture are the necessary dowel pins and socket head cap screws to hold the fixture together.



The fixture's hardware is recessed flush with the fixture so that it can be secured in a vise. The fixture has drilled and reamed holes to complete the hammer, trigger, and selector holes.

There are also plans contained on this CD within the Ray Brandes (Ray-Vin) tutorial that talks about jigs, and has dimensions, for those of you with milling capabilities. You can also purchase a set of fixtures from Justin at (<http://www.cncguns.com/>) He offers a quality set of jigs that can help you complete less than an 80%'er and at a very reasonable price.

CNC Gunsmithing Web site- How to machine your lower-Highly recommended!

After this 10 page intro will be Justin Halford's tutorial . This is from Justin' web site called CNC Gunsmithing. (<http://www.cncguns.com/>) This is the actual tutorial "how to" machine the lower on a drill press that we use on this CD. It can also be found at: <http://www.cncguns.com/projects/ar15lower80tutorial-2.html> . This tutorial will most likely become your machining bible in terms of completing your lower.

In addition to his tutorials, he also has a forum that members can exchange ideas, offer advice, and of course, show off their accomplishments. This is not a giant forum like some of the others but it is my favorite. It has a down home feel to it and the members are pretty much good all around Americans who always seem ready to help.

Surface finishing your lower

There are a couple of ways to surface finish your lower: Anodizing, painting, or leaving it in the “white”.

Traditionally, they are anodized black. Anodizing can be thought of as a controlled rusting with color. It is similar to gun barrel bluing. There are a couple of ways that you can anodize your lower. You can send it out to an actual anodizer and have it done. Be warned that most anodizers will not accept your lower unless you stand there while they complete the process. The reason for that is that they need an FFL to work on a firearm. And in order to stay legal, you need to stand there and “not loose control of the firearm” while they anodize it. There are some anodizing FFL license holders that you can send your lower to for the process and a modest cost. Check with the members on the forums listed here.

Another way is to put together your own home anodizing set up. It's not as intimidating as you might think. It can really be worth the time if you and a few friends are getting together to make your own AR's. Plus, it's actually fun to do. The best recourse that I am aware of for home anodizing is Ron Newman's informative web site <http://www.focuser.com/atm/anodize/anodize.html> Ron has all of the supplies and instructions necessary for doing it at home. I personally bought his basic 2 gallon kit and it has really been worth it to me. (In my case, I get a lot of non firearm related parts anodized, so it was really worth it to me)

Some guys use a product called Duracoat and some use barbeque black paint. You can find lots of info on the AR15 sites listed within this guide. One of the plus sides to “painting” is that parts can be touched up if ever scratched.

In the “white” means that you leave it raw aluminum and maybe even do a polish or mat finish to it. Do what floats your boat and do not be concerned what anybody else thinks!

AR15 Kits

You will need to figure out what kind of kit that you want. The AR15 kits will include the barrel, upper receiver; stock, front sight, lower handle, and the entire trigger and hammer components (the lower receiver parts). In other words, the kits will give you every thing you need to complete your AR with the exception of the rear sight, the magazine, and if you live in California, the “bullet button”. As of this writing, you will want to place your order early in the whole process. A lot of kit dealers are back ordered. Since our last presidential election gun sales have gone through the roof. As such back orders are common. Straight forward advice: GET YOUR ORDER PLACED EARLY!

There are a couple of ways to go here. You can buy a kit or order all of the components separately. I suggest that you buy a kit and keep it simple. In most kits, you will receive everything necessary except the lower receiver. Remember, the lower receiver is the only part of this that is considered a firearm. Kits, more often than not, include all of the components that get installed in your lower receiver.

You will probably hear from the die-hards that kits are not the way to go. They will often advise that you buy top of the line, only the best, parts. If your budget and knowledge is ok with that, then by all means full steam ahead. But most likely, since you are reading this, your knowledge is somewhat limited. That's ok too (and real life). We all need to start somewhere! I purchased my kit and have shot hundreds of rounds through it without even a misfire. I am very pleased with it.

There are the M4 (also called an A4) style and the traditional A2 style. The M4 has a flattop rail assembly. It is much more universal in terms of what you can mount on it. The A2 has the integrated upper handle, which is much more military looking but less universal. My advice would be to get an M4 style. You can always add a removable upper handle if you really want to look the Rambo part.

There are quite a few companies out there that offer AR 15 kits. These are just a few that you can start with.

August 2010- Colfax Tactical now offers an excellent introductory kit. It comes with nearly everything needed to complete a stripped lower receiver. Includes fully assembled, headspaced and test fired upper receiver, lower parts kit and buttstock. Rifle kit does not include stripped lower receiver, magazines, or rear sight.

**Barrel:**

4140 Chrome Moly Steel
16" Length
1x9 Twist
A2 Flash Hider
Manganese Phosphated
Phosphated under Front Sight Base
Taper Pins in A2 Front Sight Base
Threaded Muzzle
M4 Profile Barrel

Bolt And Carrier:

Phosphated 8620 Steel Carrier Assembly
Carpenter 158 Bolt
Heat Treated and Plated
Mil-Spec
Chrome Lined Carrier Interior
Carrier Key - Chrome Lined, attached with
Grade 8 Screws
Properly Staked & Sealed Gas Key

Handguards:

Carbine Length
Aluminum Delta Ring
Single Heat Shield

Upper Receiver:

Forged 7075 T6 Aluminum
A4 Flat Top with T-Marks and feed ramps
Hard Coat Anodized
Mil-Spec
Ejection Port Cover and Round Forward
Assist
Right Hand Ejection
Bore's surface is coated with dry film lube,
over the anodized surface

Buttstock:

M4 6 Position
Reinforced Fiber
Commercial Sized Tube

Chamber:

5.56 X 45 mm

This is an excellent choice for a 16" M4 Rifle Kit. We believe that this kit is one of the very best buys for the money. It is the perfect kit for the individual building for the first time, or for the individual that is just getting back into AR15's.

Why no FFL? Because the (completed) lower receiver is considered to be the firearm by the BATF- The rest of the AR can be purchased through the mail with no paperwork.

Please call or email us for product availability.

Here are some other suppliers of kits

<http://www.del-ton.com/> Check out their 16" M4 kit

<http://www.ar15-kits.com/index1.html>- Check out their 16" CAR Rifle Kit

<http://www.yankeehillmachine.com/> Top quality!

<http://www.dpmsinc.com/store/> Big supplier!

http://www.rockriverarms.com/index.cfm?fuseaction=category.display&category_ID=199

Check out their CAR A4 kit. They are a bit pricier however the company is known for their quality.

After market parts and goodies:

There are literally dozens of companies that provide AR15 accessories. You can find everything from laser sites to \$1000 holographic scope systems. Night scopes to custom stocks. Railed forearms (which I have on mine) to powerful, blinding strobe lights. Warm up your check book and take out a second on your house. Time to spend some fun money!

Here are some of the many companies I have personally dealt with. All fine companies to deal with.

http://www.sacramentoblackrifle.com/category_s/27.htm

<http://www.metaldogtactical.com/index.html>

<http://www.outdoorbunker.com/SearchResults.asp>

<http://www.brownells.com/>

<http://www.midwayusa.com/>

Good places for AR Info:

There are available on the internet near countless web sites and forums regarding guns and AR's in particular. From what I have read, the AR is the most popular firearm in the US.

First, please check out **CNC Gunsmithing** (as mentioned earlier) forum section at <http://www.cncguns.com/forum/index.php>. It's a small, good group and packed with great information and dialog.

AR15.com is the Grand Phuba of AR web sites. You can find just about anything you could want or need in terms of AR information. It is quite impressive. I have learned a great deal from that web site. In particular, there is a great section on installing all of the lower parts into your stripped, lower receiver. Check it out at <http://www.ar15.com/forums/topic.html?b=3&f=4&t=226782>. ***Well worth the read!***

In terms of general AR15 guides , AR15.com is the place: <http://www.ar15.com/forums/topic.html?b=3&f=4&t=226782> When you get to that page, scroll down to the red links and click on the one that says guides.

Maintenance and cleaning: <http://www.ar15.com/forums/forum.html?b=3&f=7>

Numerous AR15 files (drawings, guides, etc) can be found at <http://www.firearmfiles.com/andromeda.php?q=f&f=%2Ffiles%2FAR15>

Laws and CALGUNS.net

Laws are different for every state and often times by city or county. It is your responsibility to understand what is legal and what is illegal in your specific location. Stay legal-stay out of jail!

California has tight restrictions in regards the AR15's. But even here, you can build a great AR. In a nut shell, Californians are restricted to a ten round magazine and need to use a bullet button in place of your magazine release button. If you are a resident in CALIFORNIA, then check out **Calguns.net**. Calguns.net is a sane haven for those who believe that the 2nd Amendment is alive and well. Calguns is simply amazing. It is like the California version of the NRA. If you join it, PLEASE support it! <http://www.calguns.net/calgunforum/index.php> You will find everything from classifieds to law interpretation to AR advise to retailers. Even if you do not live in California, Calguns.net is worth checking out.

There is a flowchart available that is in PDF format. It is worth reading for California residents wanting to own an AR. <http://www.calguns.net/caawid/flowchart.pdf>

For those of you living in California and want to dive further into the state laws, check out this on Calguns.net http://www.calguns.net/a_california_arak.htm

There is a pdf. file on this CD labeled Sacramento-PD-AR15. It basically covers what is legal and illegal in the state.

There is a good "law" section in AR15.Com. that is not California specific. Check it out at <http://www.ar15.com/forums/forum.html?b=1&f=6>

This is a very important link to the ATF stating that you can build your own:
<http://www.atf.gov/firearms/faq/firearms-technology.html#commercial-parts-assembly>

Here are the legal discussions that cover serial numbers:
<http://www.calguns.net/calgunforum/showthread.php?t=86627>

When you exit this guide you will also find on this CD the following:

Justin's Tutorial-How to complete the 80% lower

Drawings: There are mechanical drawings in PDF format and in DWG. Format

Ray Brandes: author of Machining the AR15 Lower Receiver Forging- How to complete a 0% lower

Manuals: US Army M16A2 (AR15) manual

Conclusion:

If you have visited the suggested web sites, you are probably aware by now that there is a whole world out there devoted to the AR. I recommend that you read as much as you can and really learn about this extraordinary piece of hardware. It's a great rifle and a lot of fun to shoot.

When you actually get to work on it, take your time. There is no reason to be in a hurry. You will be rewarded in the end by knowing what you are doing before you do it .

I wish you good building and good shooting!

Acknowledgements and THANKS go out to: **Please visit and support them!**

Justin Halford- <http://www.cncguns.com>

Ray Brandes <http://www.ray-vin.com>

AR15.com <http://www.ar15.com>

Calguns.net <http://www.calguns.net/>

end of intro

Notes pertaining to the following tutorial

There has been a BATF change over the last year or so with regards to what they allow as an 80% lower. In the past, the builder was supplied with a lower that already had the fire control pocket milled out. You were then required to basically drill all of the holes and thread the buffer tube hole. Many builders did not like having to drill out and thread the buffer hole. The drills and taps can really add up in terms of costs. There were also a number of smaller holes that often time presented problems for the home “do it your self-er”. It was easy to really mess up a lower when doing some of the smaller holes.

The lowers today are different. All of the difficult smaller holes and the buffer hole is completed for you. The fire control pocket is now solid. You will need to mill it out (by drilling it out) and then you need to make the slot for the trigger and drill the hole for the trigger pin and drill the hole for the hammer pin. Many builders find this even easier than in the past.

When reading the tutorial from Justin (on this CD-Justin’s Tutorial), you might want to read through his original tutorial as well. It can be found at <http://www.cncguns.com/projects/ar15lower80tutorial.html>. There is a lot of good information there.

Or “Machining the AR15 Lower” by Ray Brandes (on this CD), will walk you through the complete process on a 0% lower. It too is worth the read.

Wishing you success!

Colfax Tactical