

## What you need to make your own weightlifting equipment.

- Graph paper etc to make your design on.
- Chop (circular cut off) saw that cuts steel. These will cut from square to up to a 45 degree angle.
- Hand grinder – usually 4 ½” + extra grinding wheels. The lapped sand paper ones are best to finish with.
- Squares – small, medium, and large.
- Center punch
- Drill press or electric hand drill + bits or access to one.
- Clamps of various sizes and shapes – magnetic corner clamps are very handy but not necessary.
- Assortment of files – flat, round, etc.
- Tape measures.
- Hammer.
- Scratch awl and/or markers – pen and pencils.
- Protractor, straight edge – ruler.
- Access to a machine shop – depending on what you build, you may need one. Take your checkbook. Drilling the holes for a power rack is beyond what most people can do at home. One thing to remember is that a “loose” fit to a machinist may be just a couple thousands of an inch. Be sure to tell them exactly what you want. That’s pretty tight for the pins in your power rack.
- A place to buy steel. Also a place to buy bolts, nuts, washers, bushings, bearings, etc.
- Welder – helmet – gloves etc plus the ability to weld. You do NOT want bad welds on this stuff – you could get hurt badly if it breaks.
- Or better yet, a friend who’s a good welder who will weld for free in exchange for working out with you. Even if you have to pay a professional welder, the fact that you’ve done all the cutting, fitting, grinding etc; and will be doing the grinding, painting will save you a bunch of money over retail. If everything is ready to go, you can weld up a power rack in 2 ½ hours including pins etc, and a simple design grip machine in an hour. I’ve found that the paint job gets beat up so easily that I just use spray cans of Rustoleum instead of fancy finishes. They still look nice and are easier to touch up than a professional paint job you may not be able to match easily. Obviously black is the best wearing but the choice is yours. Personally I like white frames with black pad covers, etc but I like to paint anything that sticks out bright red so I don’t run into it so often.
- Most commercial equipment is made from 11 ga. steel in standard sizes that are readily available. If you want it heavier, then you can do that at a reasonable additional cost. Some of the commercial stuff is either made overseas or made from steel made there as it is metric, not inch measurements. Not an issue usually.
- Steel gets thicker towards the inside as the gauge changes – the outside stays the same. Steel measurements are pretty accurate. Pipe varies more. Tubing is more accurate than pipe and comes in more sizes. Tubing is better if you want to bend

- it. Steel is available in 1/8" and 1/4" increments for the most part – some other stuff can be ordered; at least where I have bought my stuff.
- The trick to making an adjustable slide is the use of 14 ga. steel. An example is 1 3/4" square steel will fit inside 2" 14 ga. and slide in and out. If you drill center line holes in each and use a spring loaded plunger (or pin or bolt) – you have your adjustable slide like on a glute ham machine, or whatever. There are some other sizes that will fit also but they are not used as often as this. See the chart for things that fit together as slides.
  - McMasters Carr catalog has all kinds of stuff in it but it's so big it can be hard to find what you want if you don't know the correct name.
  - Grade 8 nuts and bolts hold up much better than grade 2 if you use them a lot like on homemade collars or weld them on as part of something.
  - Hot rolled steel has a rougher finish compared to cold rolled so cold rolled works better as axles or pins. Cold rolled does cost more and is usually somewhat stronger but not always.
  - Steel prices have gone up in some cases 100% over the last year so expect to pay more to build or buy now.
  - Scrap steel can save you a lot of money – especially for grip tools that don't need a lot of length usually. A lot of cities have steel or metal scrap yards that will let you go around and pick up what you want and then sell it to you by the pound for much less than the price of regular new steel. Sometimes they have lengths long enough for about any project. The rust will clean right off with a hand grinder and very little effort.
  - Most equipment for home use is made from 11 gauge steel but heavy duty items can be made from thicker stock easily. If you squat a ton of weight, build your racks from 3/16" steel for example.
  - You'll need some basic knowledge about steel and what fits together to make a "slide" that allows adjustment options on something like a squat rack, glute/ham, etc.
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## **Commonly Used Steel that fits together that makes a slide**

1 1/2" pipe fits into 2" pipe  
1" pipe fits into 1 1/4" pipe  
2" pipe will fit into 2 1/2" pipe

1" HRS fits into 1 1/2" square steel  
3/4" Pipe fits into 1 1/2" square steel

1 1/2" flat fits into 2" channel

1 3/4" Square steel fits into 2" 14 ga square steel  
Most steel will fit into the next bigger size 14 ga steel  
This is what is used most commonly is lifting equipment.

Other larger sizes go together but are not often used for our purposes.

## **Plans for what you want to build?**

Most things are very simple and almost nothing is patented or protected in the lifting world that is simple enough that you'd want to build one at home. Those few items that are patented, just don't build those. Most designs have been around for ages with only a tweak here and there. A power rack is pretty much a power rack, etc. I had a grip machine that looked like a Go Really from IronMind that I bought in the early 1960's. Just go measure the one at a commercial gym and duplicate it then add any size changes or features you might want like band hooks, extra pins and J-hooks, chin up and dip racks, height changes, etc. I've just used a power rack as an example. I usually get ideas about features from looking at equipment on the internet and incorporating them into my designs. You can of course build about anything but at some point, you'd better be a decent engineer if you want things to work right. No doubt you could build a Nautilus pullover machine but that's not what I'm talking about.

Now, maybe you think I was a welder, engineer, etc but I was just a mailman who did some light construction like remodeling my house. This stuff is so simple that anyone can make it with just a little knowledge and the willingness to try. Now if you think you'll only make a couple pinch blocks; you'll be better off just buying them. But if you want to put together a really nice garage gym, you can pay for the equipment you'll need and still save a bunch of money.

Steel prices have more than doubled since I started building my equipment. This is and will continue to show up in the retail market place and of course in the cost of your homemade equipment. Steel prices obviously affect large items more than small ones but there is more labor in some small items than in big ones. The more labor intensive an item is, the more you will save by building it yourself. One last piece of advice, when in doubt, over build for strength.