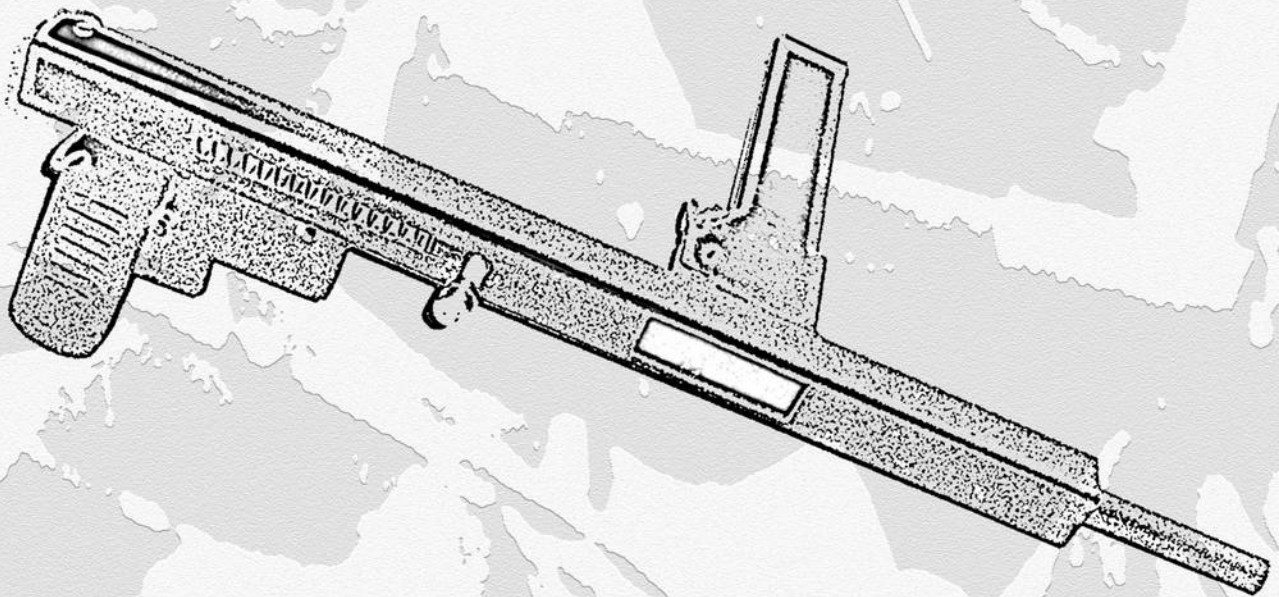
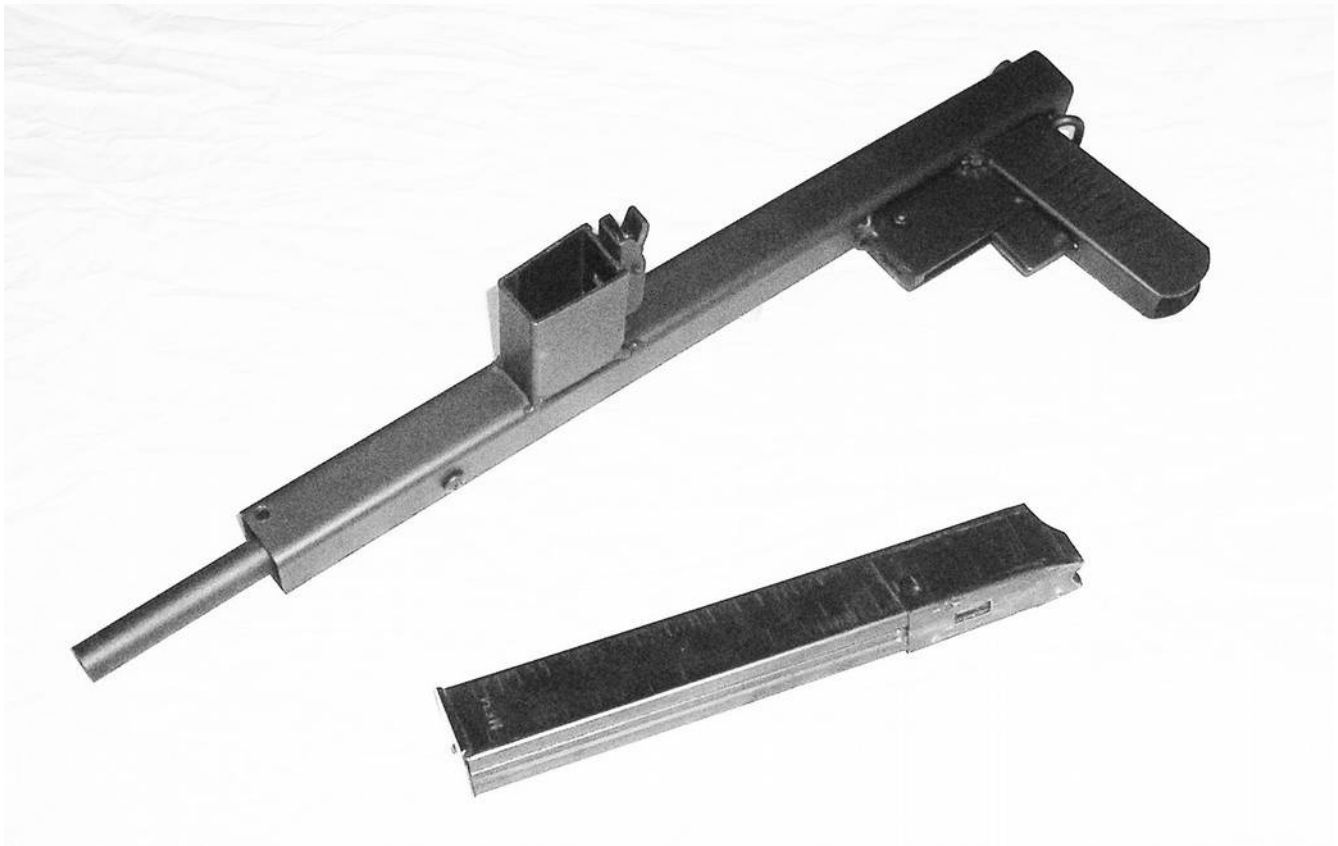


THE TABLE LEG TYPEWRITER

DIY SUBMACHINE GUN CONSTRUCTION GUIDE



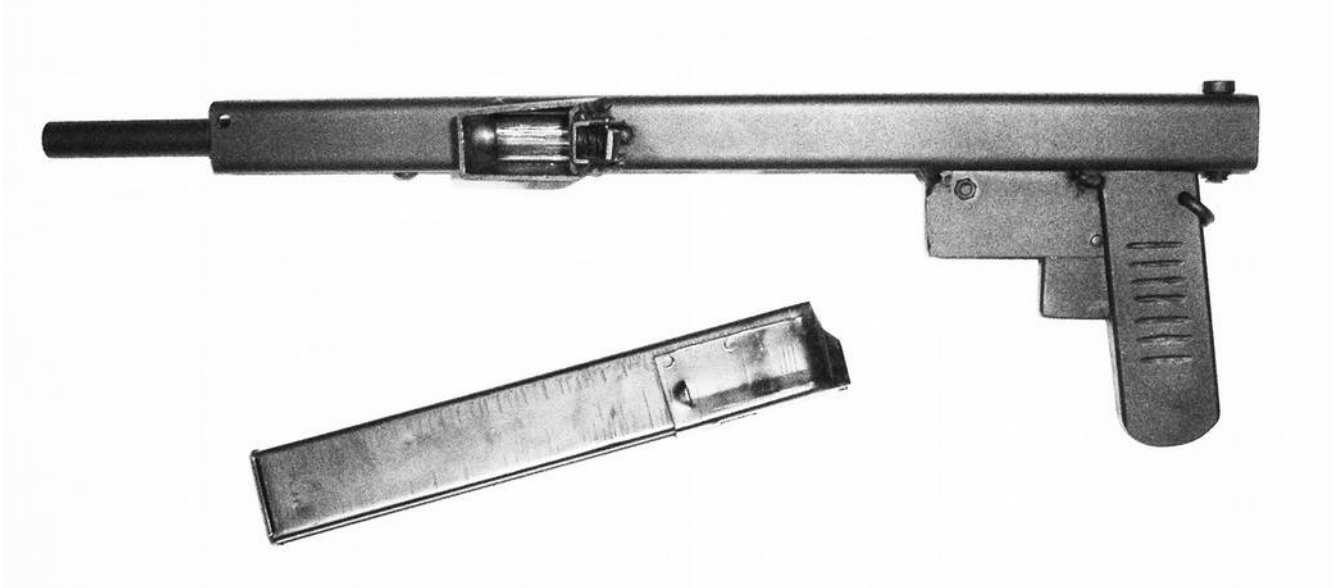


Practical Scrap Metal Small Arms Vol.10
By Professor Parabellum

Introduction

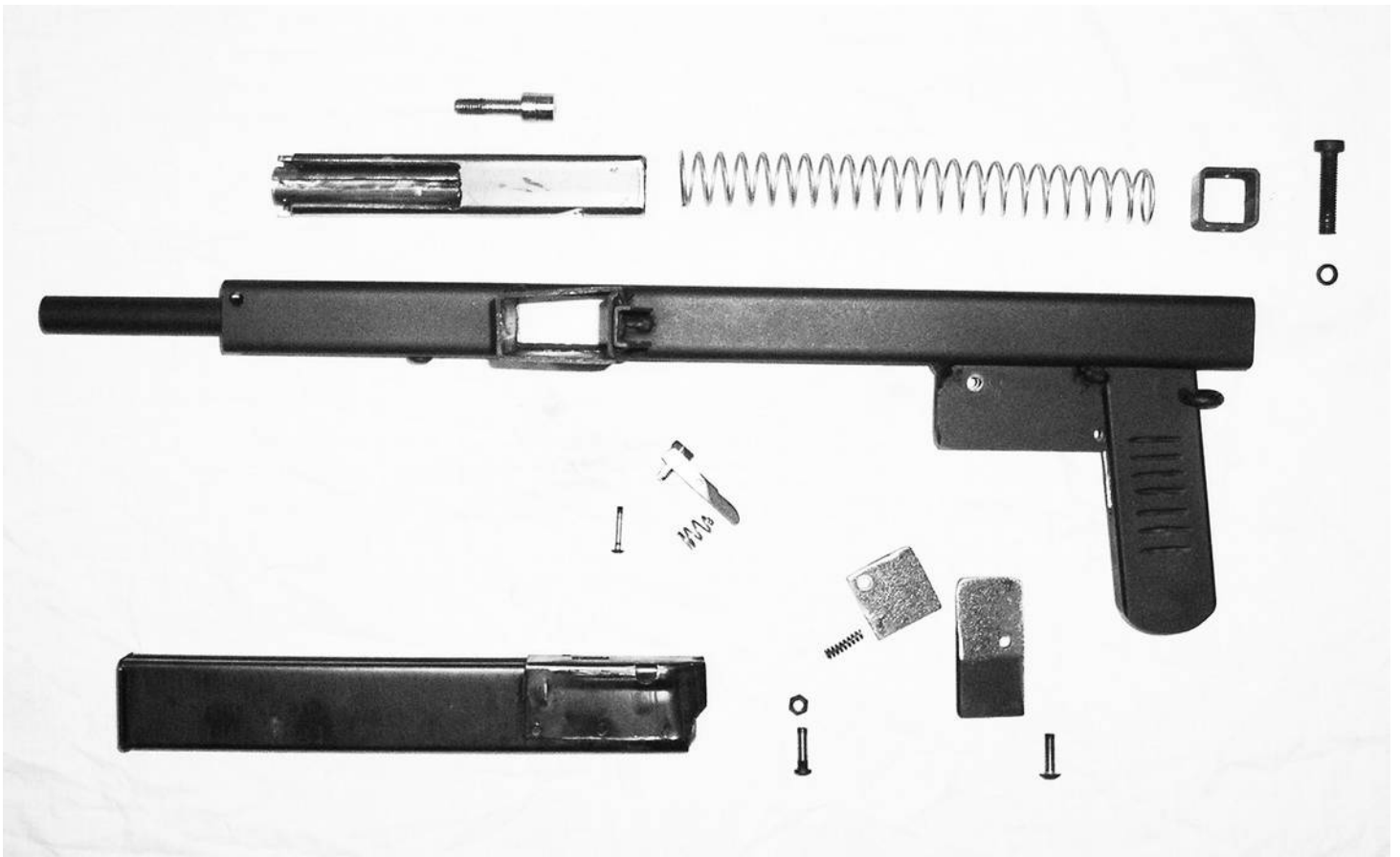
The 9mm submachine gun design described here is extremely basic and can be put together using very limited tools and materials. The design was intended not only to be easily constructed, but also easily remembered in terms of measurements and relationship between the (very few) components. The trigger mechanism for example is simply a steel rectangle and a square! The design makes use of standard sizes of square steel box section, which is sleeved together to form most internal components. No milling machine or lathe is required.

In all its a basic 'entry' DIY design yet entirely field-able. Its compact trigger housing makes it lightweight and with the magazine-well naturally resting against the users left wrist it's particularly wieldable. This makes it perfectly suited if you ever find yourself in a trench or decide on a spot of emu hunting from inside a truck cab. The demonstration model accepts standard 9mm STEN magazines, though plans for a homemade magazine are also provided.



For legal reasons the demonstration model shown was built as a non-firing dummy display replica. Its dummy barrel is permanently destroyed & blocked with its bolt containing no provisions for a firing pin. ***The information presented here is strictly intended for academic study purposes only!***





Disassembled view

Materials

- 30mm x 30mm x 2mm mild steel square box section**
- 25mm x 25mm x 2mm mild steel box section**
- 20mm x 20mm x 2mm mild steel box section**
- 2mm or 3mm thick mild steel plate**
- 6mm (5/8") thick mild steel plate**
- 16mm (5/8") bright mild steel round bar**
- 3/4" (19mm) wide compression spring**

Tools

Cheap power tools are widely available on the Internet or can be found almost given away at any swap meet. The tools below are highly useful and will cut down construction time considerably. With these plus a good set of hand files one can mimic many machining operations without needing access to a lathe or milling machine.



Force PT110921 4-1/2-Inch Angle

\$19.99 from 3 stores

7.5 Amp, 11,000 rpm motor designed for fast material removal



Central Machinery 8" Bench Mount Drill Press, 5 Speed

\$54.98 from 5+ stores

#1 in Central Machinery Drill Presses

Central Machinery · Bench-top · 8 inch · 5 speed · With Depth Stop

Professional accessories include a built-in worklight and tilt table.



Force 1.1 Amp Rotary Tool Kit

\$13.98

★★★★★

The Force 1.1 Amp Rotary Tool Kit is an essential tool for homeowners and c



Speedway 230-Volt Arc Welder Kit

\$64.99 from 10+ stores

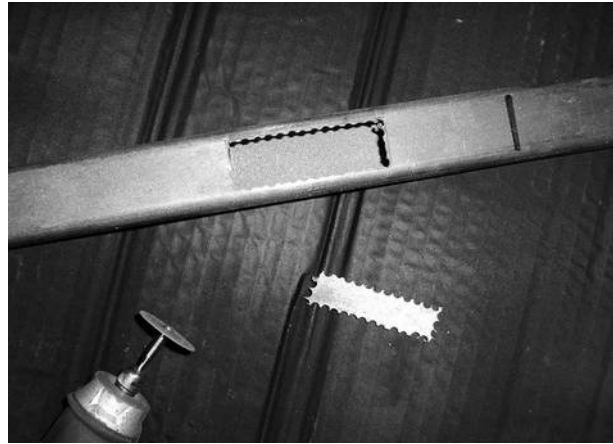
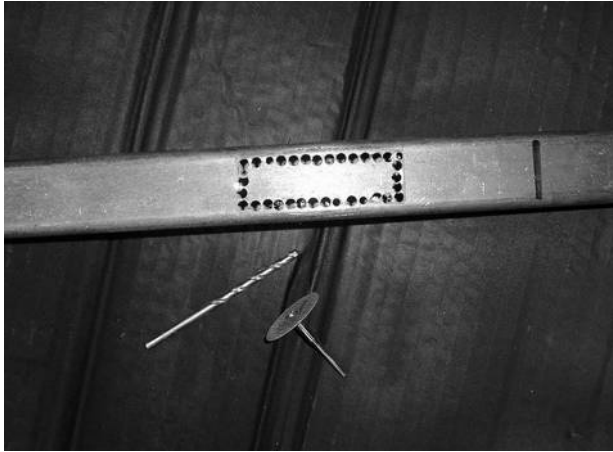
★★★★☆ 4 product reviews

Speedway 7644 230V Single Phase Arc Welder

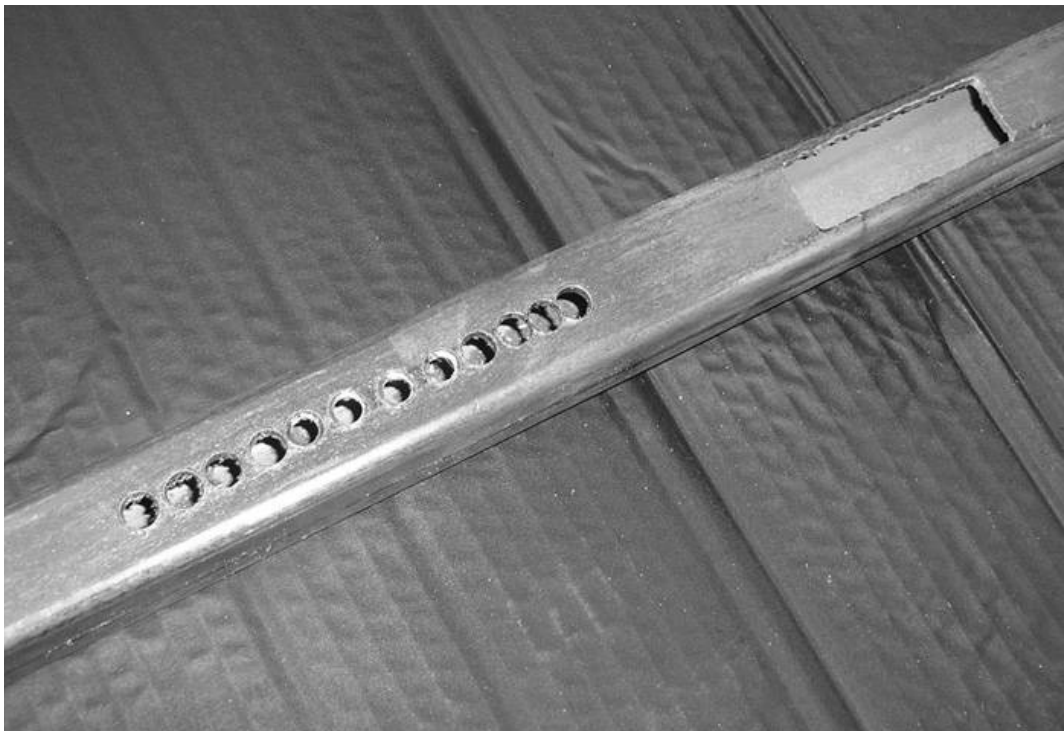
Construction

Receiver

We first start by cutting holes in the receiver. This piece starts out as a 420mm length of 30mm square mild steel box tubing, commonly used for the fabrication of large tables and stages. The wall size of the tube should be 2mm thick. Onto this the openings forming the ejection port, magazine hole, cocking handle slot and sear hole are marked and cut out. This can be achieved using a combination of 'chain drilling' and cutting along the lines using a dremel type rotary tool fitted with a 'reinforced cutting disc'. Alternatively a hammer and screw driver can be used to chisel the pieces out after which a hand-file may be used to the same effect.



To form the cocking handle slot, a row of holes are drilled using an 8mm drill bit. If available, an angle grinder fitted with a 1mm slitting disc may be used to cut along the top and bottom, as close to the lines as possible.



Behind the magazine opening a 1/2" long slit is made into which the ejector blade will slot into. This can be cut out by drilling a line of holes using a 2mm drill bit then cutting straight through using a dremel or junior hacksaw.

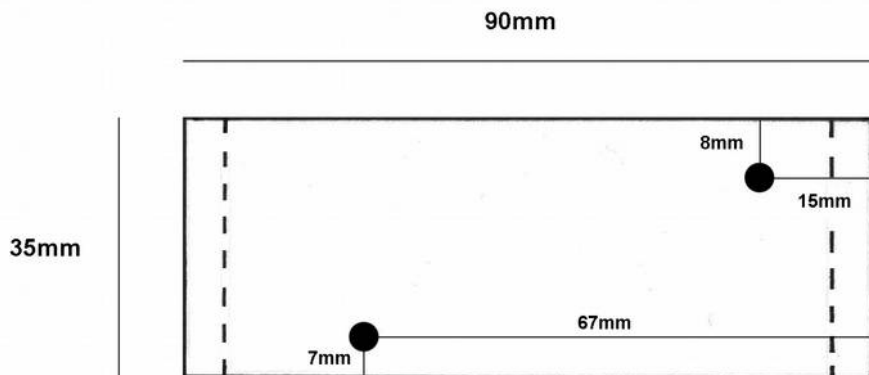
The ejector is a small blade shape which is cut from 2mm thick steel sheet. In submachine guns this part simply 'kicks' a cartridge out of the receiver through the ejection port when it is fired. This will be aligned with the ejector channel in the bolt and welded in place at a later stage.



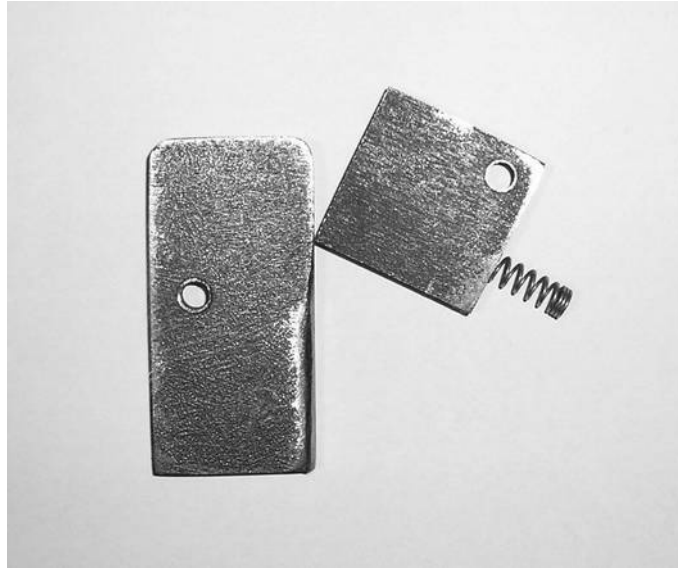
Trigger housing

With the receiver complete construction of the trigger housing may proceed. Two 35mm x 90mm rectangles are cut out from 2mm or 3mm mild steel plate. Between either side of these a 35mm length of 6mm thick mild steel plate is cut out and welded in place to complete the enclosure. Two holes are drilled in the positions marked which will hold the bolts for the trigger and sear.

Alternatively It can simply be bent from a single 190mm long strip of 35mm wide steel sheet to form a 'U' shape.

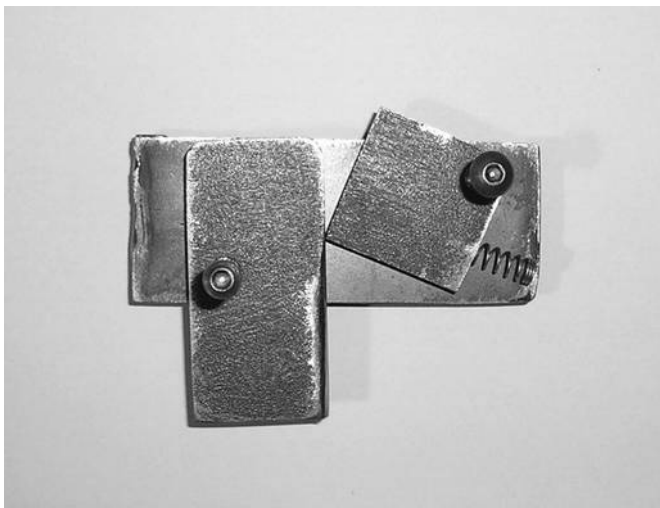


Trigger and sear



The trigger grouping used on this design is probably the simplest ever devised. It consists merely of a square and a rectangle plate which 'rock' together with the aid of a small spring to allow the bolt to move forward when pulled or stay cocked back when released. The assembly is among the most durable and reliable.

Both the trigger and sear are cut from 6mm thick steel plate and drilled in the positions marked to accept an M5 bolt each. A 5mm hole is drilled in the sear to accept a short compression spring, a suitable one of which may be found by dismantling a hand sanitizer bottle.

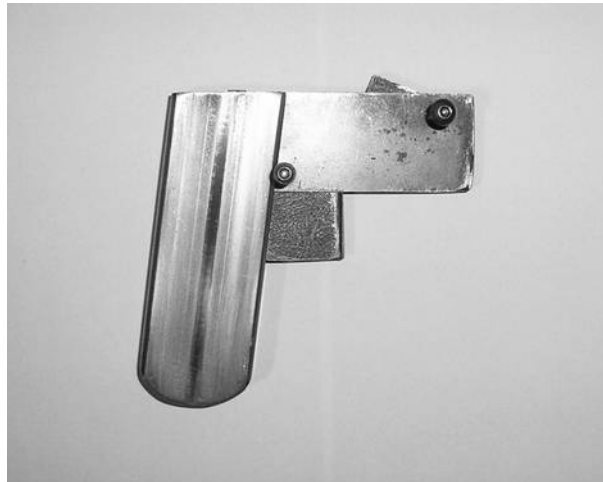


Cocked position



Trigger pulled

Grip



The grip is cut from a length of 40mm x 20mm (2mm wall) mild steel rectangular tube. A slot is cut on one side to accommodate insertion of the trigger housing and trigger. The bottom can be rounded off or left flat according to preference. A dremel can be used to cut a shallow grill pattern each side or alternatively wooden grip panels can be fitted to improve ergonomics. At the top a hole is drilled to accommodate a sling swivel made from a single link cut from a steel chain which is heated and bent into place.

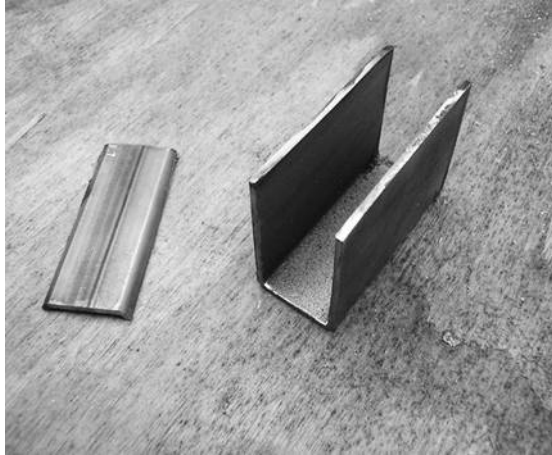


Finally the grip piece may be welded to the trigger housing from above where it passes through. The grip should butt up tightly against the trigger pin, being sure to shroud the trigger. Make sure the top of the completed assembly is completely level.

Once complete the grip & trigger housing may be welded to the receiver at the position marked on the plans. Make sure the tip of the sear can enter the sear hole without any resistance. Use a 'C' clamp to hold both the receiver and trigger housing assembly firmly together and weld a spot at each corner.

Magazine-well

If 9mm STEN magazines are to be used, the magazine-well may be made by cutting off a single 1" side of a 57mm length of 1" x 2" (25mm x 50mm) mild steel box tube and flaring out slightly so that a STEN magazine may pass through with ease. This is best achieved by hammering a length of 1" steel bar into the opened end and use two pairs of pliers to best match the general profile of the magazine.



Once a magazine is inserted in place, press the removed 1" side down into the now opened up space and carefully weld in spots along the edges being sure not to overheat. If excess tightness is encountered after welding, the inside may be smoothed using a hand file and sand paper. Grind or file off excess material once complete.

Magazine latch



The magazine latch is a simple hook which works against a spring, either allowing the magazine to pass or be held firmly in place. The latch itself starts out as a 45mm x 10mm strip of 6mm steel or aluminum plate which is drilled with a 5mm bit and threaded with a 6mm hand-tap to accept an M6 bolt at one end. Once screwed tightly in place, the bolt is cut and filed to the profile shown in the plans. A 3mm hole for its pivot pin as well as a shallow hole to seat a small spring are also drilled in the positions marked.

After the latch is complete, its housing may be cut from a 50mm long length of 15mm box tube or bent from steel sheet. A 3mm hole is drilled in the position marked which will accept the latch pivot pin made from an M3 bolt. Once done it may be welded to the back of the magazine well at the position marked after which an 8mm hole is drilled straight through both pieces to allow the latch to enter and contact the back of the magazine.

Bolt

With the basic body of the weapon beginning to take shape, work on the bolt may proceed. The bolt in a submachine gun pushes a round out of the magazine and into the chamber of the barrel, the fixed firing pin setting it off when fully chambered. A slot in the bolt allows the ejector to make contact with the back of the expelled cartridge, flicking it out of the ejection port before stripping the next round. An extractor is usually a small 'hook' attached to the bolt which assists the direction of cartridge ejection, also being able to extract dud rounds manually. As such the inclusion of one is useful but not necessarily essential – one has however has been included in the plans for reference. At it's most basic a bolt need not have any moving parts at all.

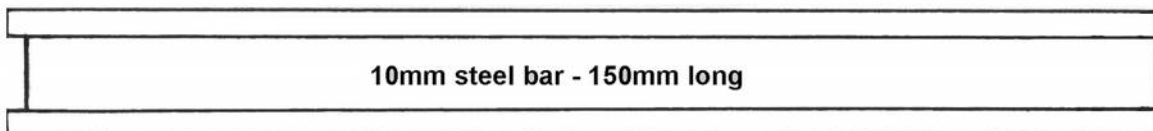
The bolt on this design consists of three pieces which are bolted together, rather than machined from a single piece. A length of 16mm steel bar stock provides the face of the bolt while two lengths of steel square tubing form the main body. Its weight when assembled is 570g.



To form the bolt face, the center of the bar is drilled using a 10mm drill bit until a depth of 3mm is achieved. If using a drill press or hand-drill this is best performed by using a series of drill bits starting at 5mm. If drilling wanders the bar can be tilted at an angle until the bit wanders back to the center. With care and attention a reasonable degree of accuracy can be achieved without needing to use a lathe. The second step is to level the hole flat using a 10mm drill bit which has been modified by removing its cutting tip. The rim should be beveled inwards slightly using a 16mm+ drill bit and sanded smooth.

Alternatively a 150mm length of 10mm diameter round bar can be sleeved with a 6" length of 16mm steel tubing with a 3mm thick wall to produce a breech face without needing to drill one from a single piece. Retain both together with four M5 steel bolts and grind off the heads.

16mm x 3mm steel tube - 153mm long



3mm

Next the slot for the ejector can be cut. Use a dremel fitted with a cutting disc to score a line down one side. Next a series of holes are drilled along the line using a 3mm drill bit. An angle grinder fitted with a 1mm slitting disc is used to cut a 4mm deep slot as even as possible along the 3" long line marked.



Once complete, the body of the bolt is assembled from a length of 20mm x 2mm steel square tube sleeved with a length of 25mm x 2mm square tube. To ensure snugness of the two pieces, epoxy may be applied to the surface of the 20mm tube or weld 'spattered' on each side and sanded down before being inserted into the 25mm tube. Once tightly sleeved together both pieces are modified by removing a section of one side where the magazine will pass. The 16mm diameter breech section may now be inserted into the tubular body, the ejector slot directly facing the open side. It may be welded in place at the rear to ensure no movement occurs while further modifications to it take place.



Insert the assembled bolt into the receiver and mark 15mm from the back on the portion viewable through the cocking handle slot. Remove the bolt and drill 10mm deep on the point marked using a 6.8mm drill bit. The hole is then threaded using an 8mm hand tap to accept an M8 bolt used as a cocking handle. This piece may have an M8 nut tightened on to it and 'turned' smooth if desired using a drill press and hand file.

Finally the sear catch point is added to the bolt by marking the bottom side 25mm from the rear using a hacksaw and grinding a 'dip' in front for the sear to spring up into and hold the bolt back. The bolt is reinforced further with three 25mm long steel bars or bolts passed through the body section.



Completed bolt, left side

Once complete the bolt may be inserted into the receiver and aligned with the ejector which is inserted through its slot and welded in place. A hand file may need to be passed over the tip if any excess friction is encountered.



Barrel

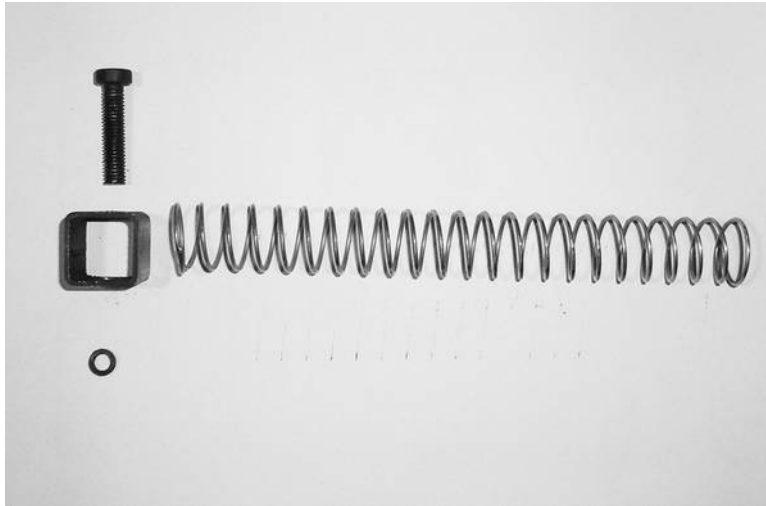


For legal reasons the demonstration model pictured was built with a non-functioning dummy barrel which is permanently blocked and destroyed by a combination of drilling, cutting and welding. The diameter of the barrel is 16mm (15.88). Alternatively the inner collar tube can also be obtained with a 2.5mm thick wall which will accept a 15mm diameter barrel.



As with the bolt, the barrel and collar are assembled in an identical manor using two lengths of square tube. The barrel collar sleeves down to 16mm which will allow a 16mm (15.88mm) tube to slide perfectly in place. The square shape of the collars will allow steel plate to be shimmed inside to fit any desired barrel size. A feed ramp is formed as part of the collar which is ground to shape using a dremel fitted with a grinding wheel. The barrel is inserted flush with the opening and welded in place at the front making sure not to overheat. The collar itself is positioned directly in front of the magazine-well opening and retained with either four M5 x 5mm bolts or plug welded in place on either side.

Recoil spring and plug



The recoil spring is a purchased compression spring around 3/4" (19mm) diameter and around 8" (200mm) long with a wire thickness of 1.6mm. Look for long compression springs in the 17mm to 21mm diameter range from spring suppliers online. As long as the spring firmly holds the bolt closed and can be pulled back with consistent ease it should be suitable.

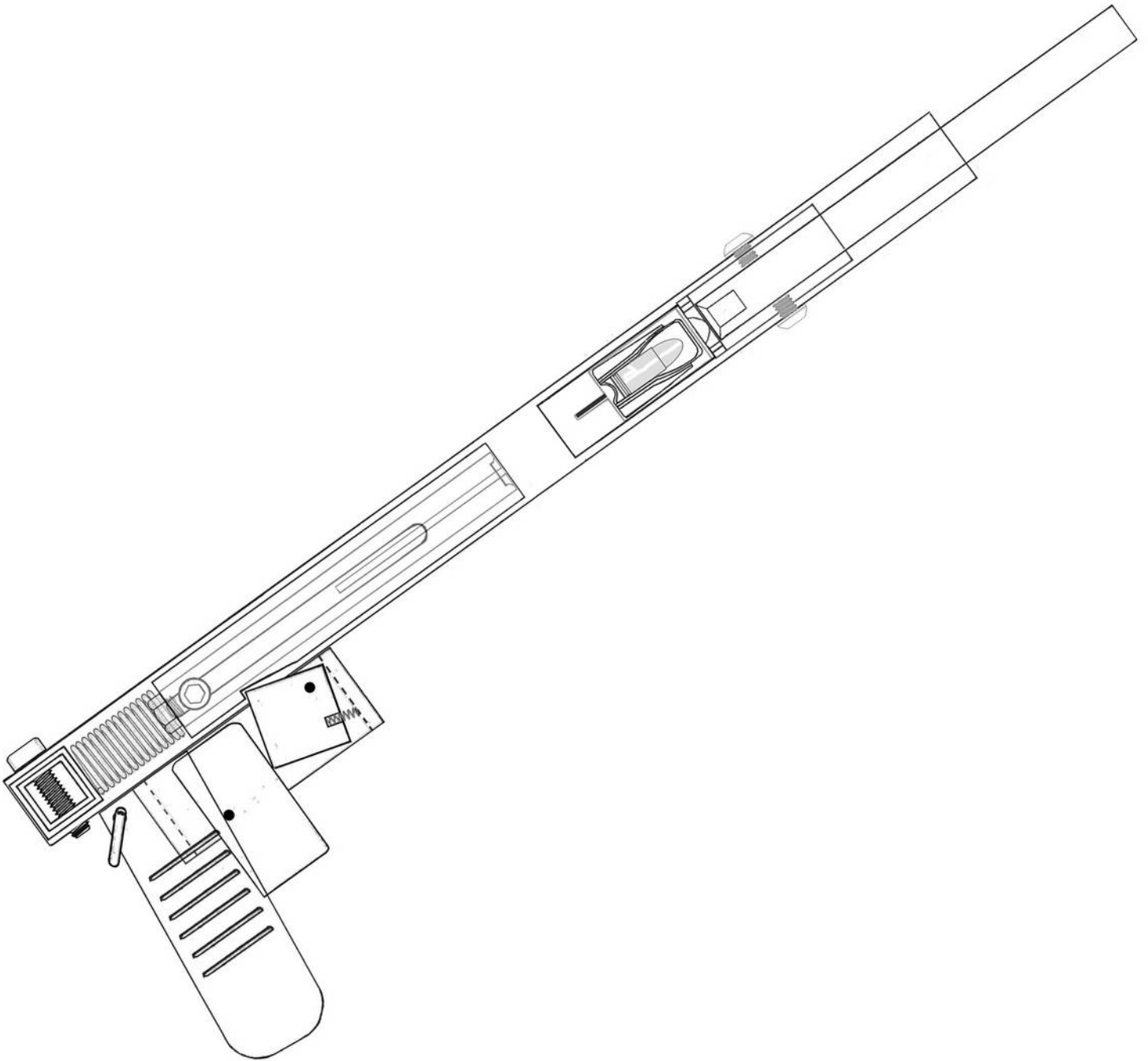
The receiver plug is made from 25mm square tube and is held in place by an M8 bolt secured with a rubber washer. The assembly can be quickly stripped without tools by slipping off the washer, pressing the plug against the recoil spring and removing the bolt from above.

Finishing

Once all components are complete and smooth functioning is established, everything with exception of the bolt and recoil spring are finished using a matt black or gray 'High Temperature Engine Enamel' spray. This type of finish is extremely durable and should require no priming or preparation beyond making sure the surface of the gun is free of oil and dirt. After allowing to cure for 24 hours, apply regular engine oil to any moving components if excess friction is encountered.

Construction plans

All pages included should be printed out on 8.5 x 11 US letter paper. Each component template is drawn to scale and can be cut out and glued to their respective thickness of material or used as a reference for measurements. Make sure the ruler at the bottom left of each sheet is 2 inches in length. Alternatively, take a screen-shot and enlarge the plans using a computer program until the ruler is the correct length, then trace the parts needed onto a sheet of paper taped over your computer's screen.



FOR ACADEMIC STUDY PURPOSES ONLY

Receiver

(Right side)

30mm x 30mm (2mm wall)
mild steel square box tube

420mm long

2.5"

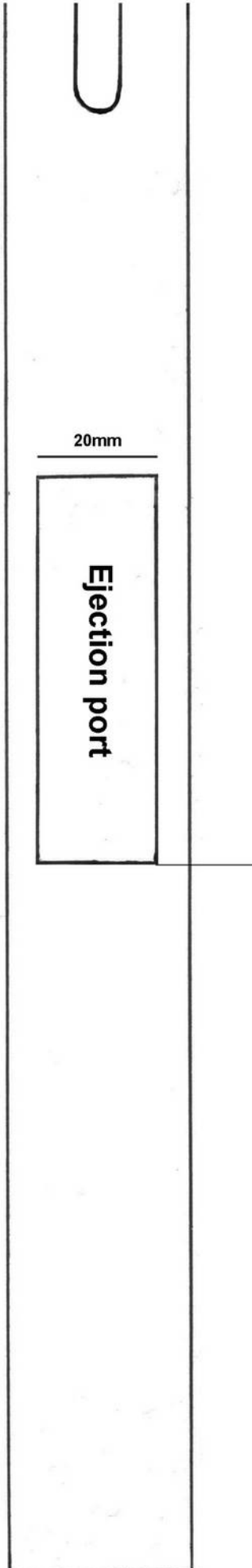
20mm

Ejection port

119mm

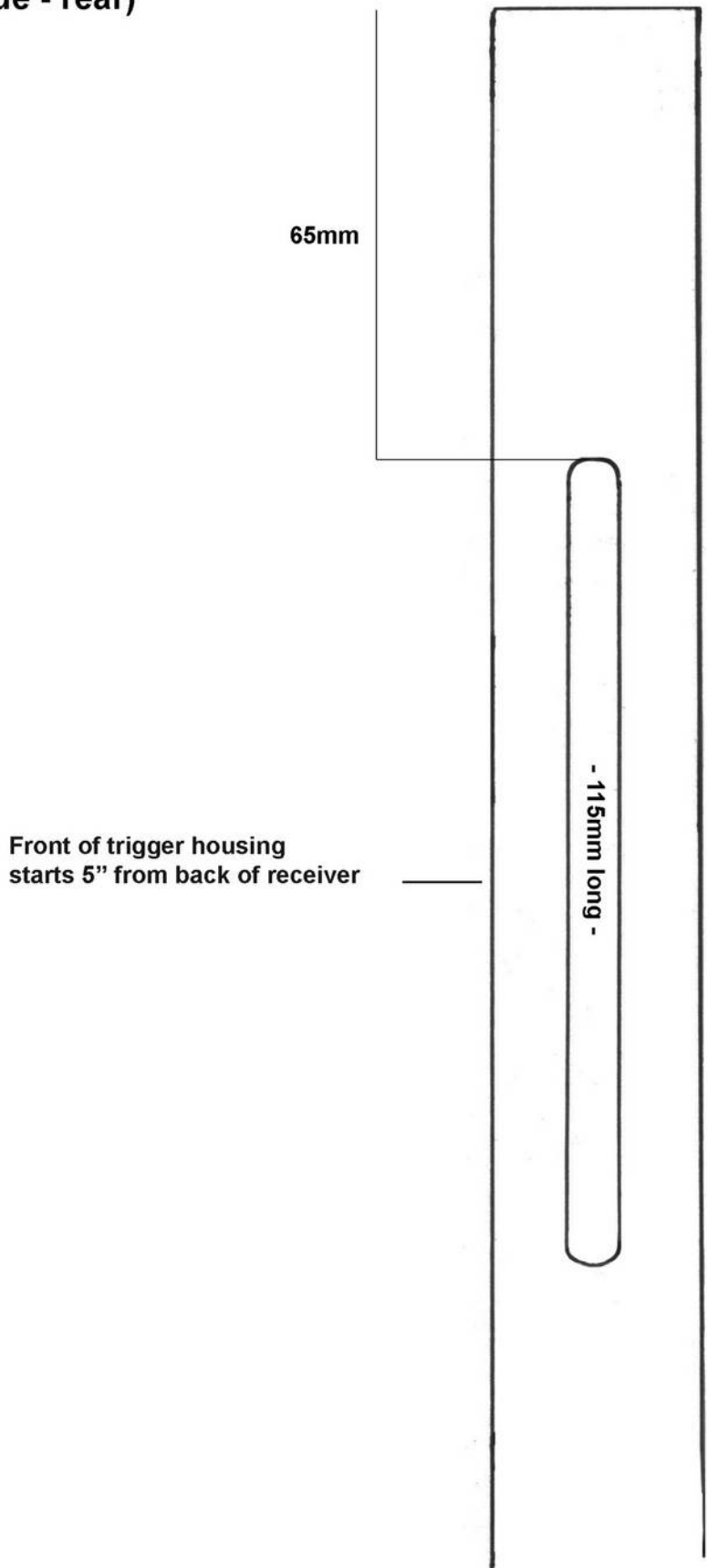
2 inches

Print on 8.5x11 US letter paper



Receiver

(Right side - rear)



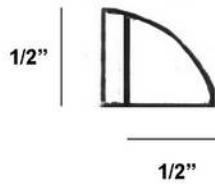
2 inches

Receiver

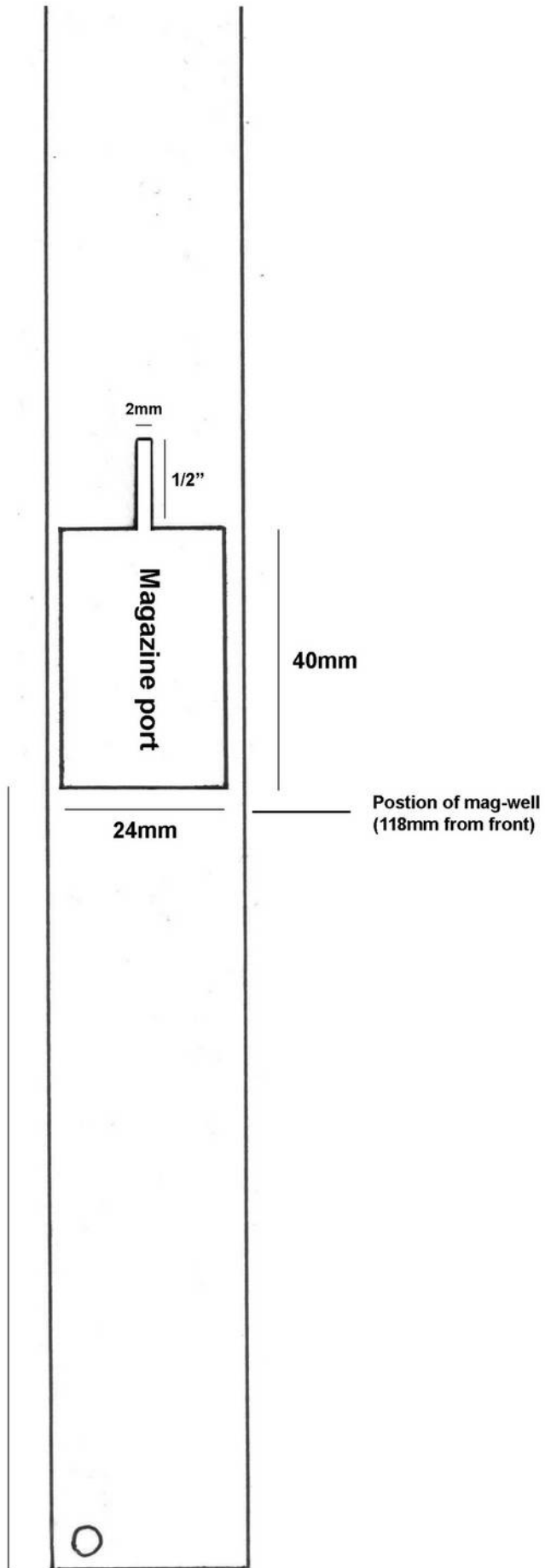
(Left side)

Ejector template:

(2mm mild steel sheet)



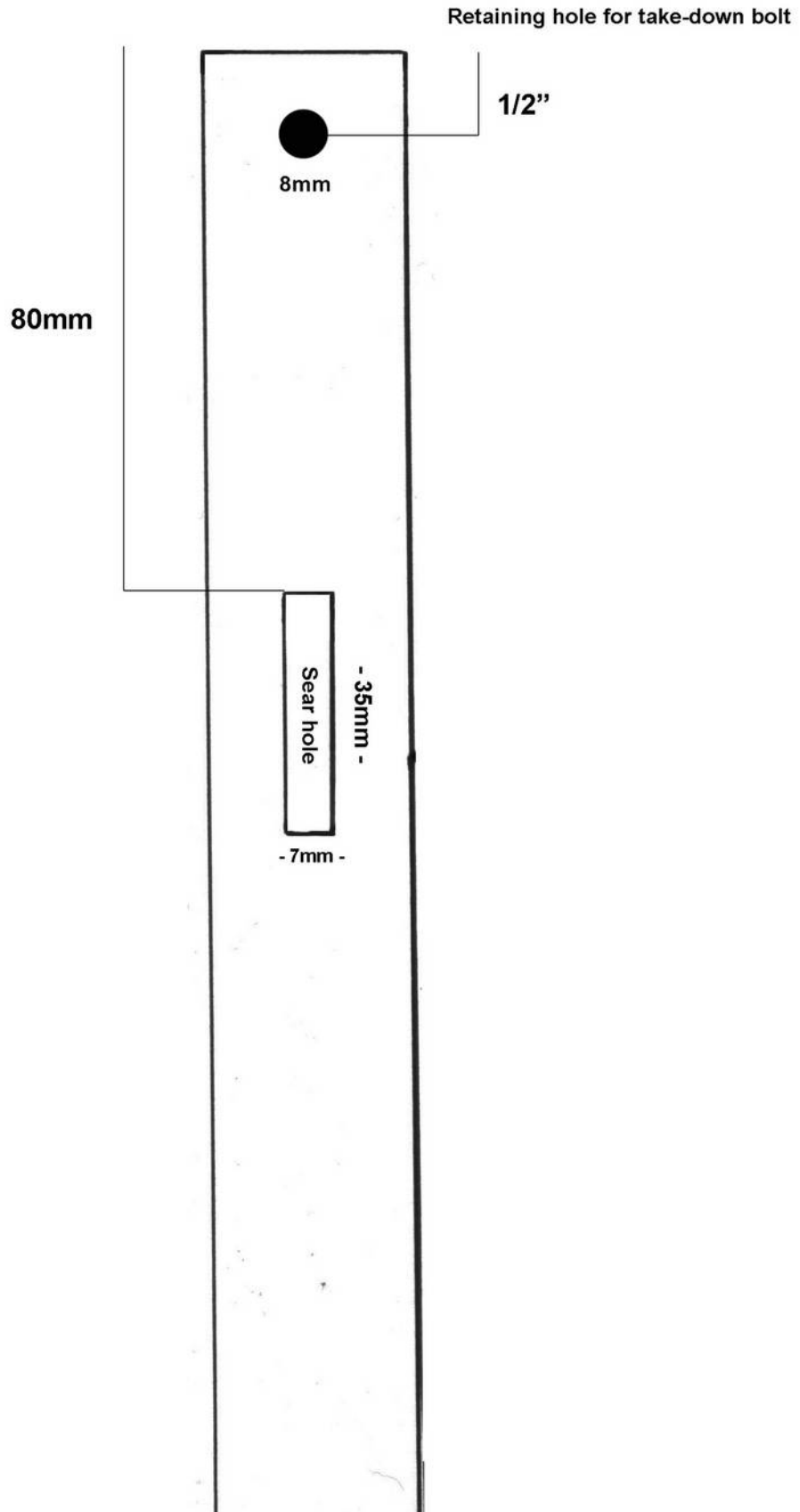
Should be inserted 1/2" deep into receiver



2 inches

Receiver

(Bottom - rear)



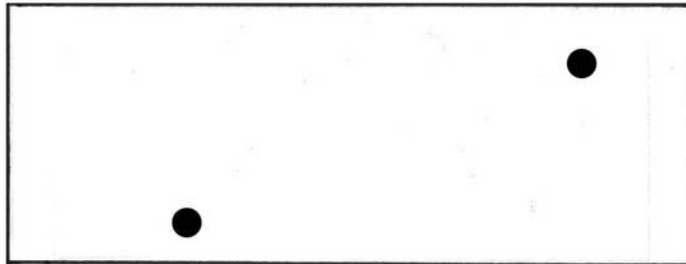
2 inches

Trigger housing

Side plate x2

Template:

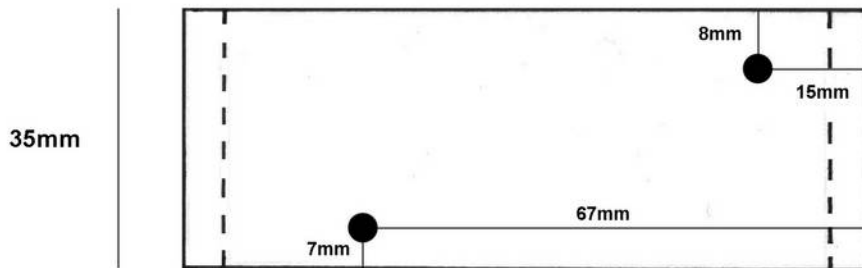
Cut out and stick on 2mm thick mild steel plate



Holes are 5mm (Drill through both pieces after welding housing together)

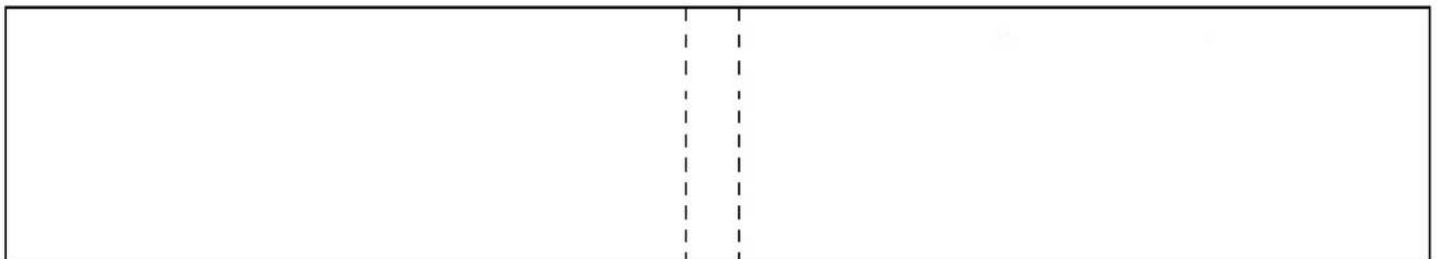
Measurements:

90mm



Weld or bolt two strips of 6mm thick plate inbetween both ends

Alternatively bend housing from a single 190mm long strip of 35mm wide steel plate



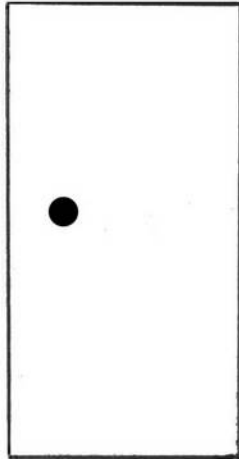
Bend around a section of 6mm plate to ensure correct inner dimension

2 inches

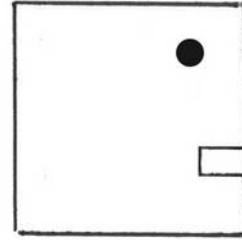
Trigger group

Cut from 1/4" (6mm) thick mild steel plate

Trigger template:



Sear template:

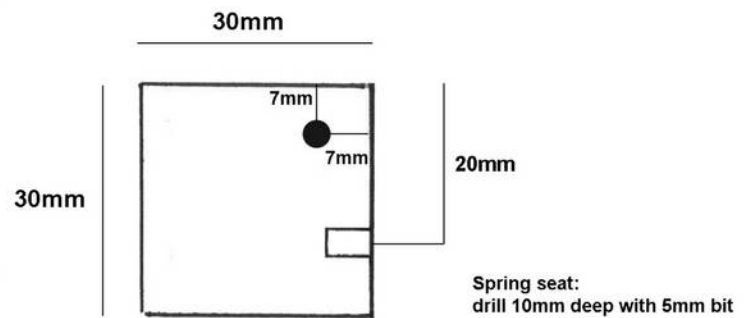
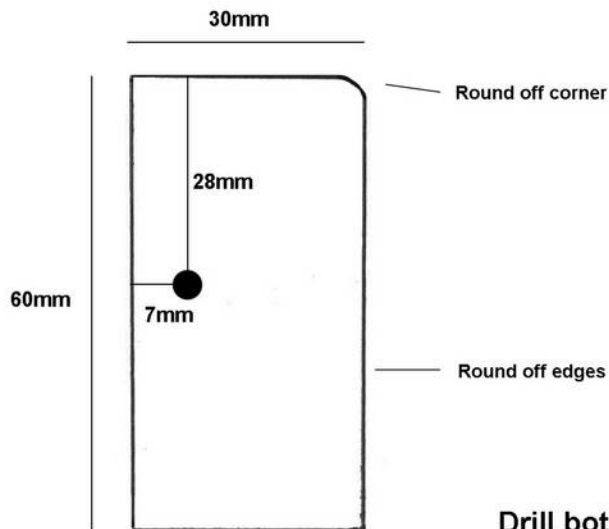


Hand sanitizer bottle compression spring



5mm dia, 20mm long
- Needs to be strong

Measurements:



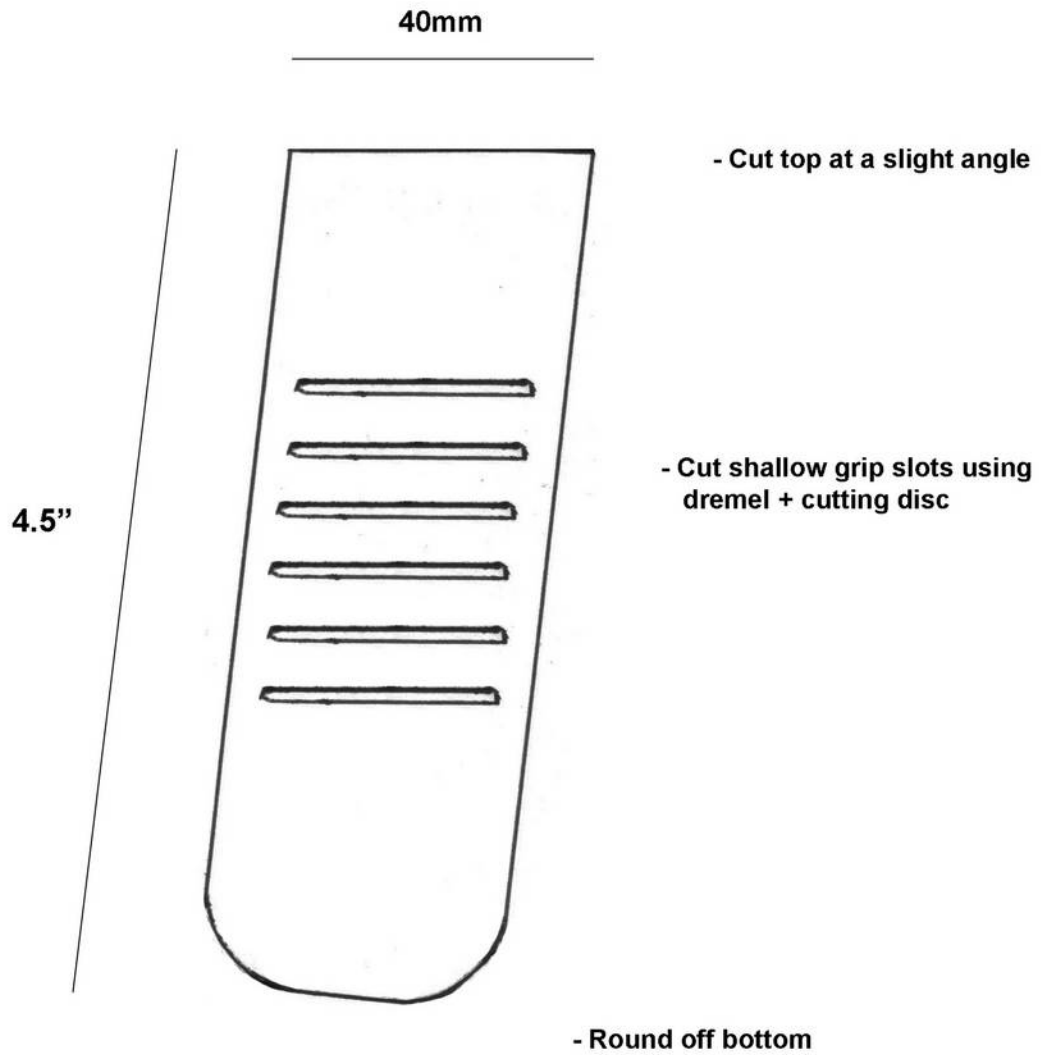
Drill both holes with a 5mm bit

Sear can be optionally hardened by heating until cherry red and quenched using Kasenit

2 inches

Grip

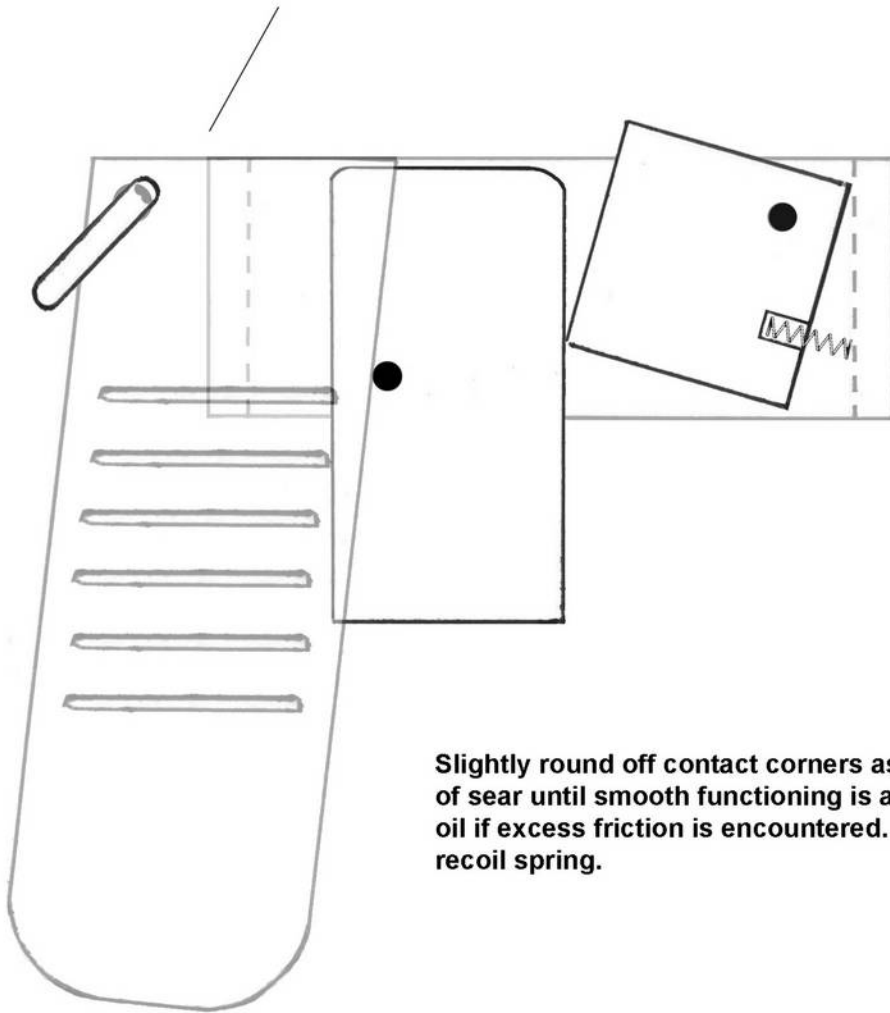
Grip is made from a 4.5" long section of 40mm x 20mm rectangular steel box tube



2 inches

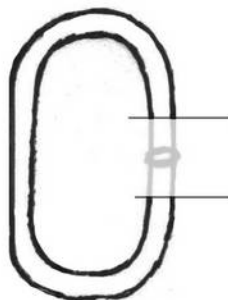
Trigger housing assembled

Substantially weld two spots inside where back of housing meets grip



Slightly round off contact corners as well as bolt contact edge of sear until smooth functioning is achieved. Apply engine oil if excess friction is encountered. Sear should not interfere with recoil spring.

Sling swivel:

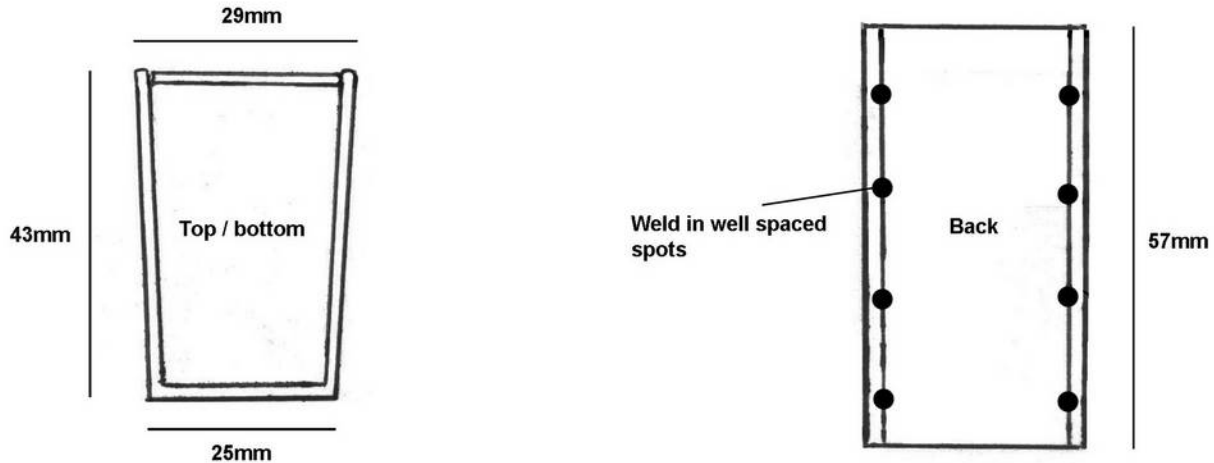


Cut a single link from a chain and bend until able to be crimped into swivel hole on grip. May need to be heated before hand.

2 inches

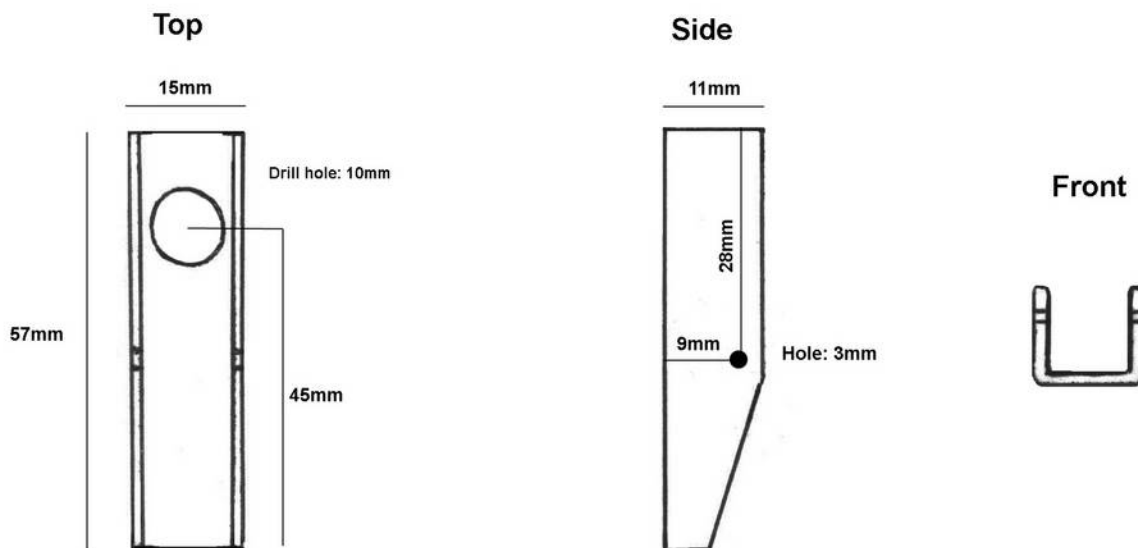
Magazine-well (for 9mm STEN magazines)

A 57mm length of 1" x 2" (25mm x 50mm x 2mm wall) steel rectangular tube is modified by removing a single 1" side to enable both 2" sides to be flared out slightly in order to accept a STEN magazine. A section of 1" steel bar can be hammered down through the opened side to acheive this. The removed side is then welded back into place forming the correct inner dimensions. Use a STEN magazine for reference throughout.



Magazine catch housing

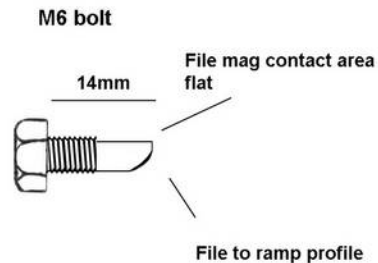
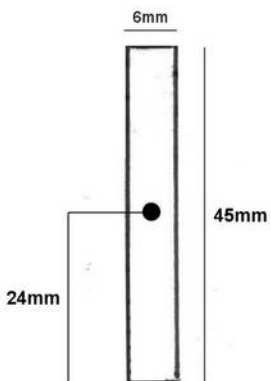
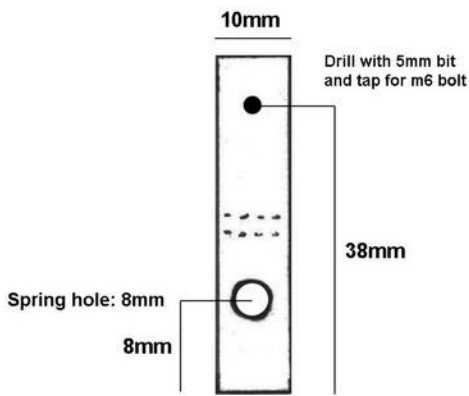
Make using a length of 15mm steel square box section or bend from sheet.



2 inches

Magazine latch

Assemble from a strip of 6mm (1/4") thick aluminum or plastic plate + M6 bolt

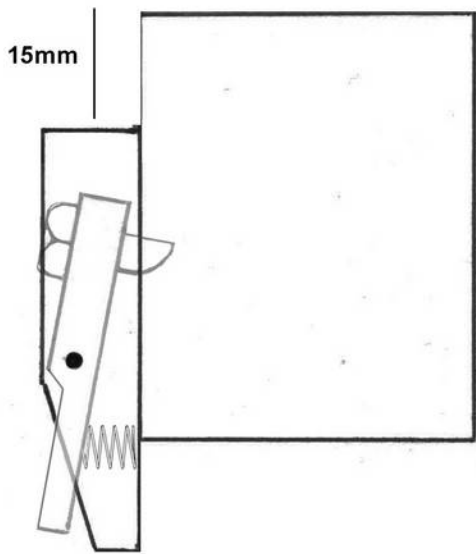
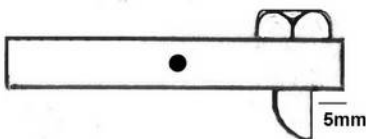


Tightly screw into plate and modify as above while in place.

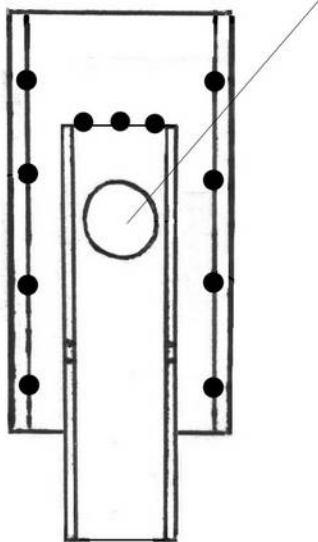
8mm x 15mm compression spring



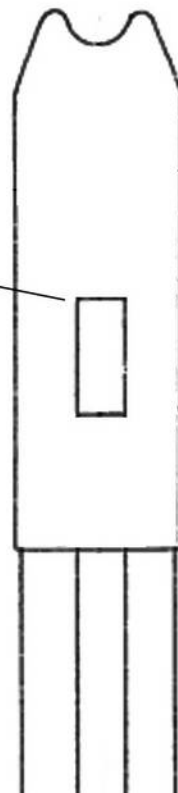
Finished:



Drill through both pieces with 10mm bit



Latch should contact this point on a 9mm STEN magazine

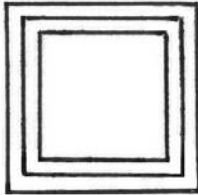


- Weld latch housing to mag-well
- Secure latch with M3 bolt + nut

2 inches

Bolt body

The bolt starts out as two 6" lengths of steel square box tube sleeved together. The inner tube may have weld 'spattered' over each side then grinded down to create a tighter fit.

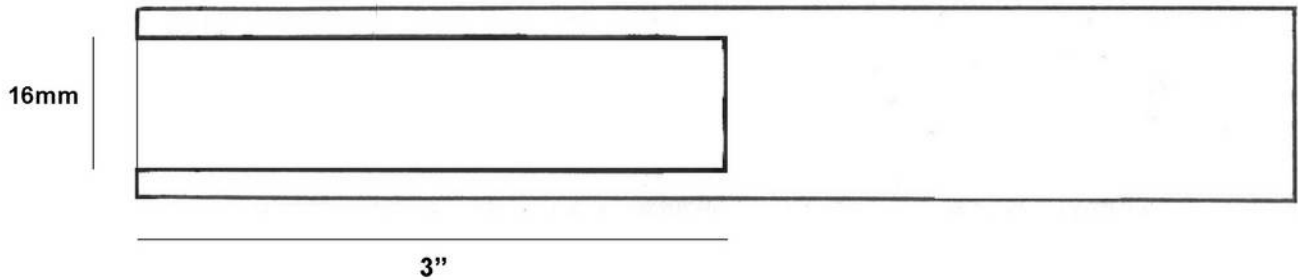


Inner tube : 20mm x 20mm x 2mm

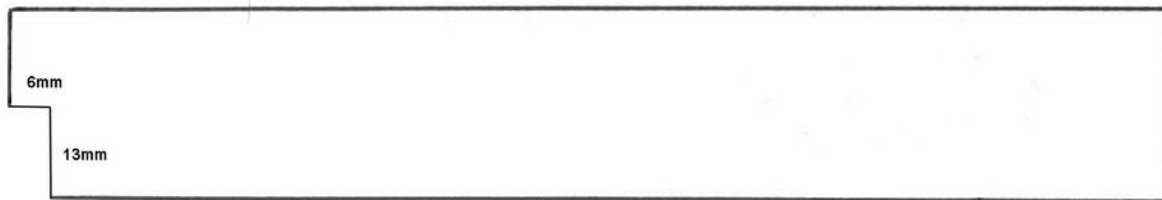
Outer tube: 25mm x 25mm x 2mm (or 2.5mm wall if available)

Once tightly sleeved together, a 3" long portion of one side is removed to allow the magazine lips to pass through.

Left side



Top



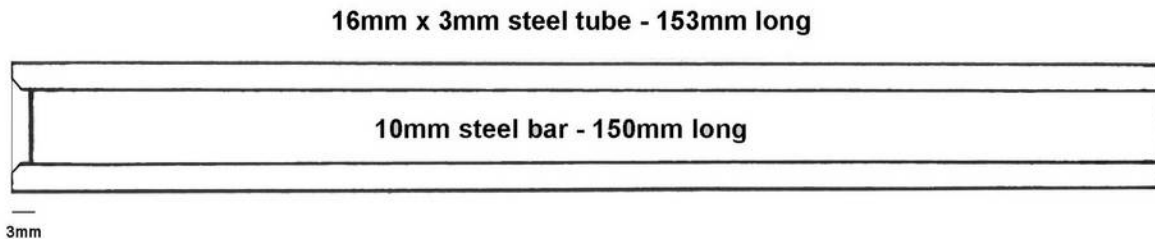
Cut a section out of the front of the left side to accomodate for the feed ramp

2 inches

Inner bolt face

Two-part tube and bar assembly method:

Insert a 150mm length of 10mm mild steel round bar into a 6" length of 16mm x 3mm steel tube. 3mm of space should remain at the front. Use a counter-sink or 16mm + drill bit to slightly bevel the front of the 16mm tube inwards before hand.

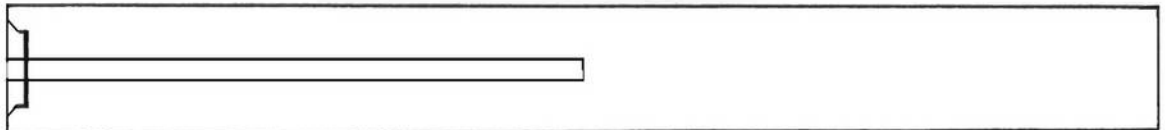


Making a bolt face from a solid 16mm dia steel bar (Alternative method):



- Drill the center with a 10mm drill bit until 3mm deep. Level the hole flat using a 10mm drill bit having had it's tip removed using an angle grinder.
- Bevel the rim inwards slightly using a 16mm+ drill bit and sand smooth.
- Drill center with a 2.5mm bit, 10mm deep

Cutting the ejector slot:



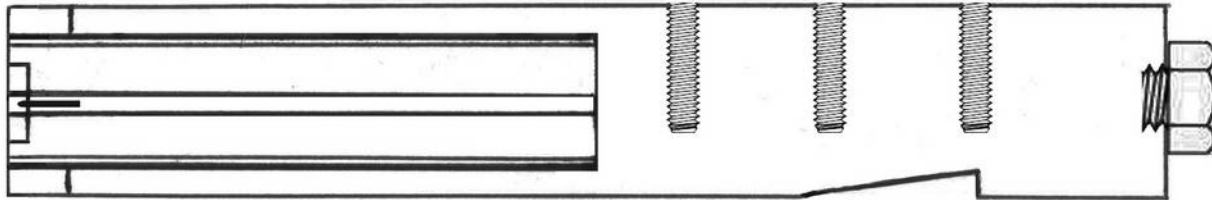
Cut a 5mm deep slot, 3" long along one side. Use a combination of a drilling with a 3mm bit and cutting using an angle grinder fitted with a 1mm slitting disc. The ejector should be a able to enter freely without any friction.

2 inches

Bolt (assembled)

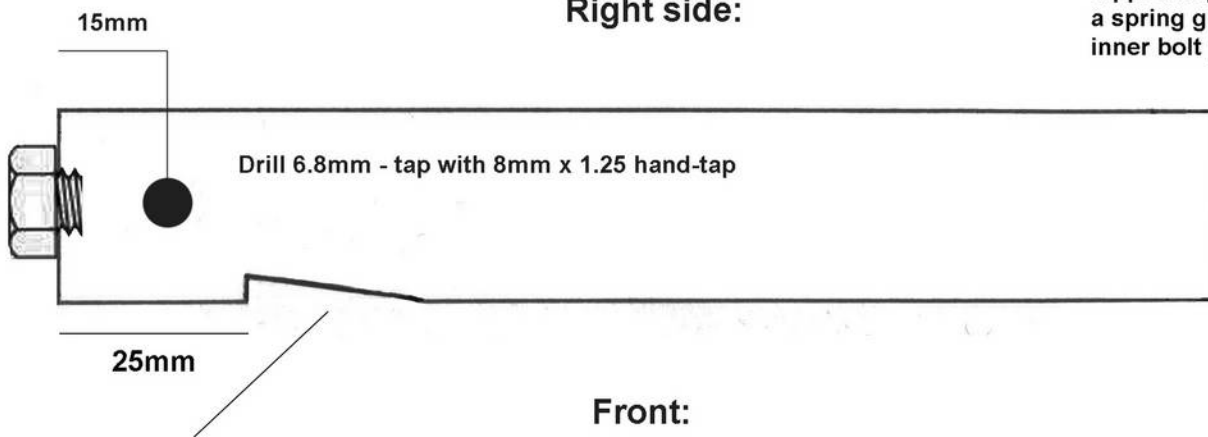
Left side:

Weld at rear and tap 3 M6 bolts (coated with loctite) through assembled bolt - remove heads



Right side:

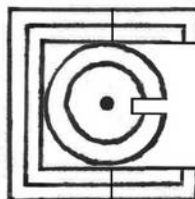
A 10mm long M8 bolt can be tapped in place and serve as a spring guide (or use longer inner bolt piece)



Make 90 degree cut at 25mm with hacksaw & file to create sear catch point.

Grind shallow dip in front using angle grinder.

Front:



Fixed extractor (optional)

A simple 'claw' shape can be fabricated from 2mm thick steel sheet and bolted to the right side of the inner bolt piece. Part of the tube walls and chamber entrance will need to be cut to facilitate it. Make the contact point fairly undersized so a cartridge may slip under it with ease.



Round off contact edge

Bolt handle:

M8 Hex bolt, 50mm (2") long + M8 nut



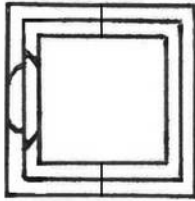
2 inches

Barrel

Barrel collar / feed ramp combination

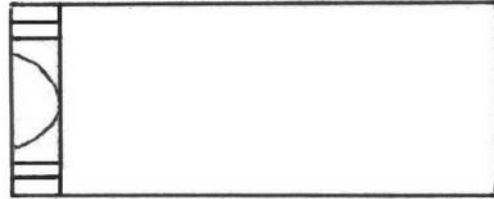
25mm x 25mm (2mm wall) sleeved with a length of 20mm x 20mm (2mm wall)

Front

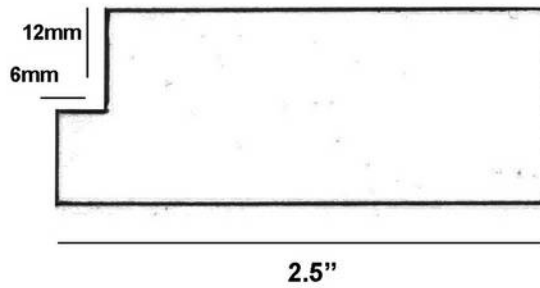


Use a dremel + grinding wheel to form a bevel in lip of feed ramp

Right side

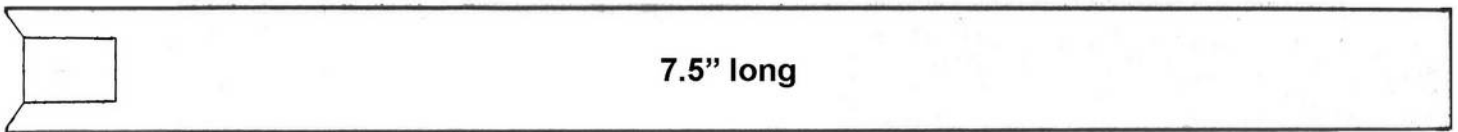


Cut away walls from right side to accomodate front of bolt



Barrel

5/8" blank / 15.88mm (16mm) wide



Slightly bevel entrance inwards using 16mm+ drill bit or counter-sink cutter

For legal purposes permanently destroy dummy barrel

2 inches

Receiver plug and recoil spring

Recoil spring

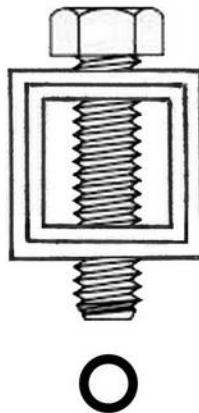
Shop purchased compression spring - 8" long, 3/4" (19mm) diameter, 1.6mm wire



Recoil shield / receiver plug

As with the bolt body and barrel collar, the plug consists of a section of 25mm square tube sleeved and welded with a section of 20mm square tube, both 25mm long. The walls of the plug should face front and rear. An 8mm hole is drilled through both the receiver and collar to accept an M8 bolt. Rather than securing with a nut, a small rubber washer can be slide over the end of the bolt to facilitate ease of disassembly.

- 25mm x 25mm (2mm wall)
- 20mm x 20mm (2mm wall)
- M8 bolt, 35mm long
- small rubber washer / ring



For aesthetic purposes, the bolt can be spun in a drill press while using a hand file to round off the hex head.

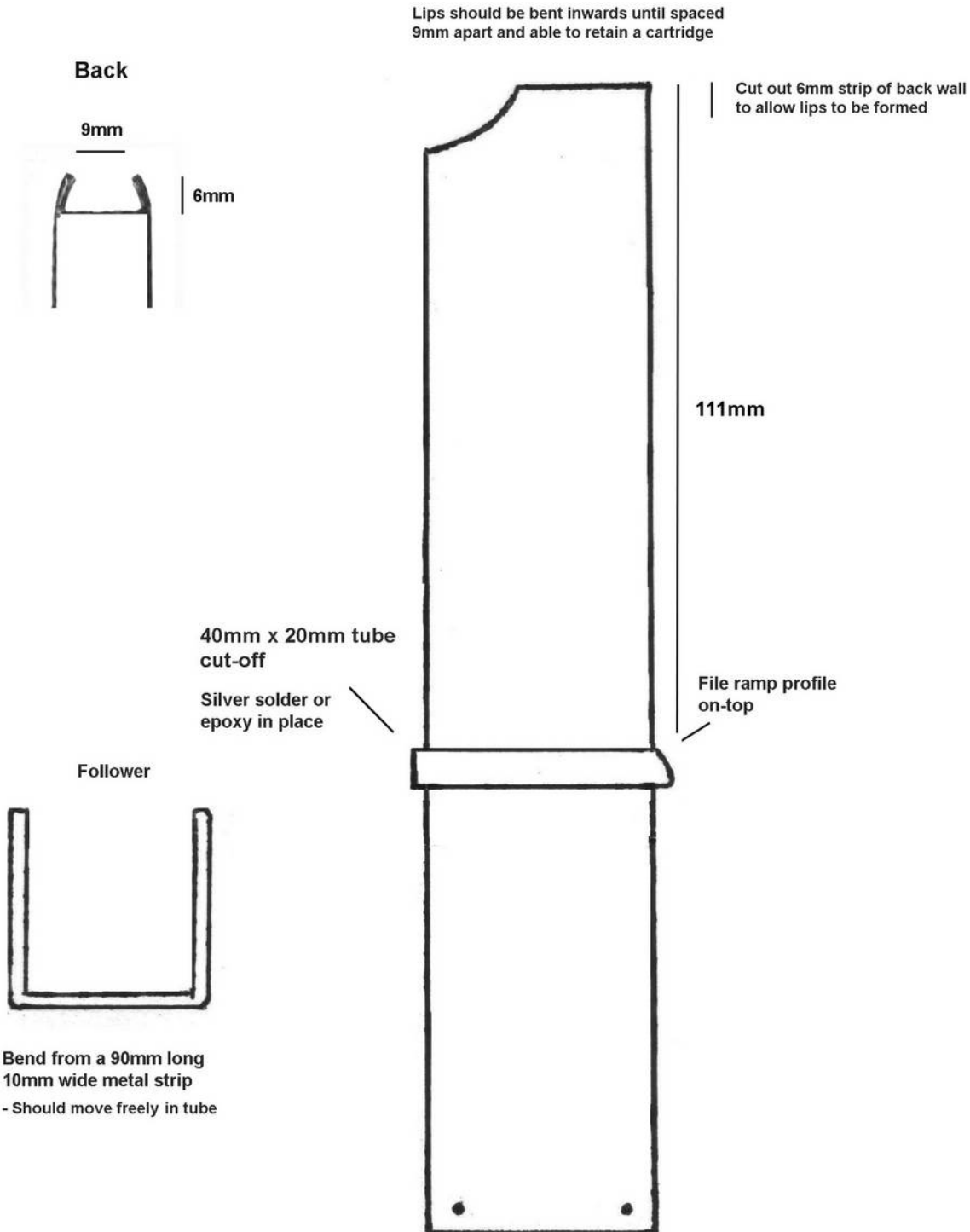
To field strip the gun, remove rubber washer and push plug forward against the spring while pushing up on the bottom of the bolt.

2 inches

Homemade 9mm magazine

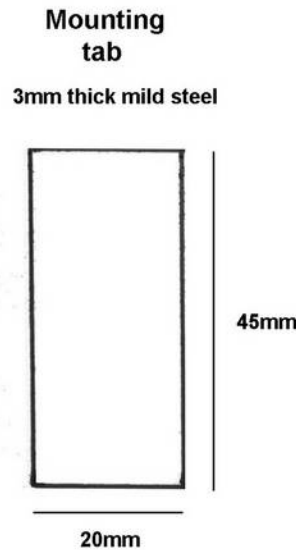
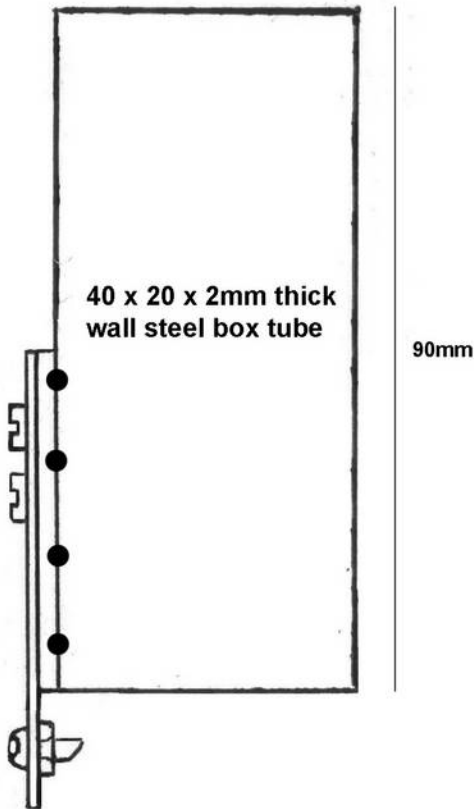
To form the magazine spring, tightly wind a length of 20 gauge spring steel wire around a 15" long 24mm x 8mm bar leaving a 15mm gap between coils - once complete cut spring to 12" long

Body is constructed from 35mm x 15mm (1.5mm wall) mild steel box tube - 7" in length

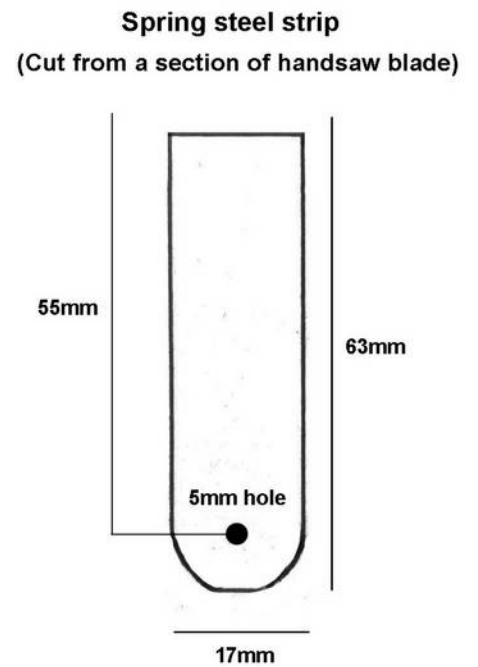


Mag-well for homemade magazines

A length of 20mm x 40mm steel rectangular box tube with a wall thickness of 2mm will facilitate a magazine made from 15mm x 30 / 35mm tube.



- File magazine contact edge flat
- Form ramp profile on underside
- Retain with an m5 nut + loctite

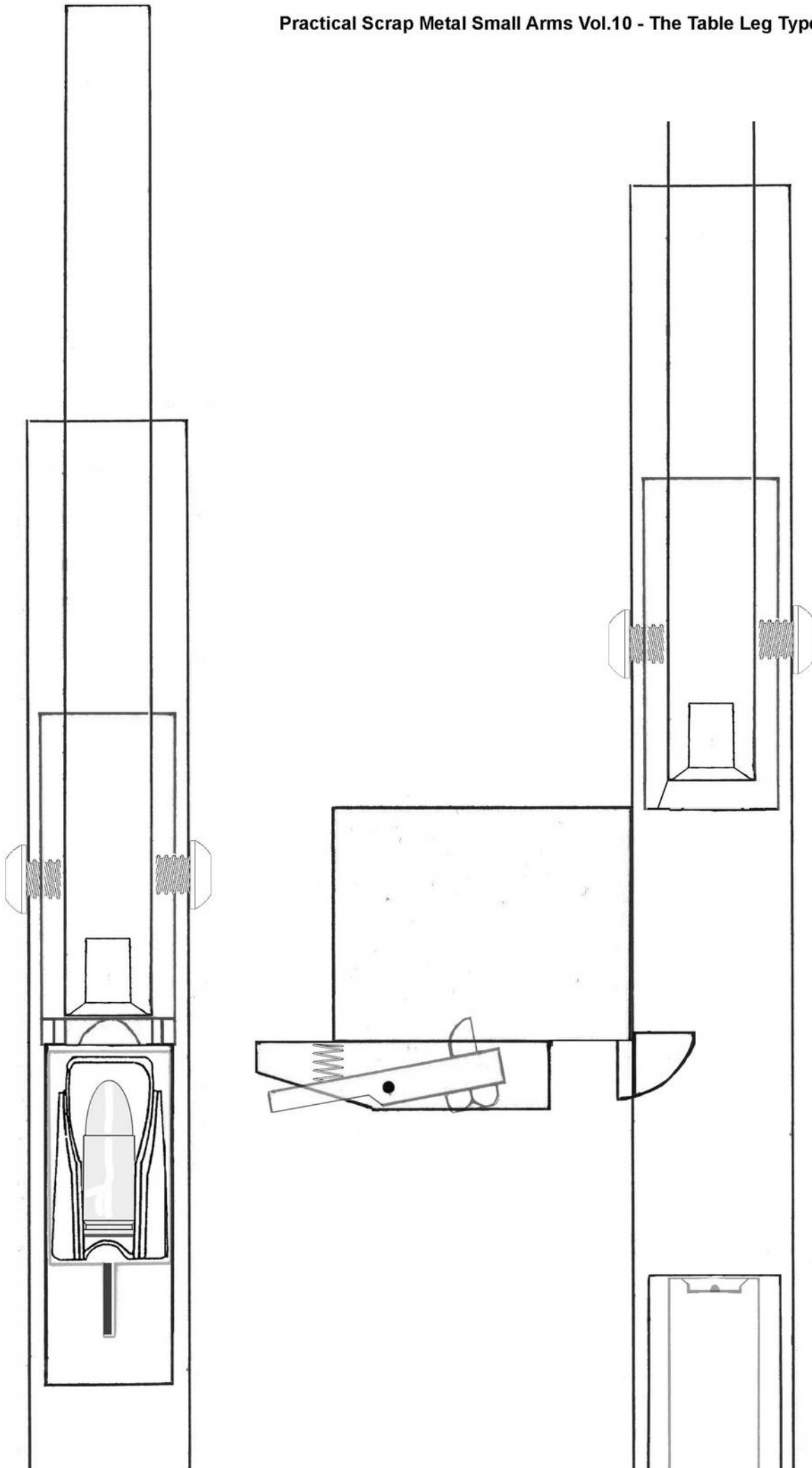


Bolt latch strip to mounting tab and weld assembly to back of magazine well.

2 inches

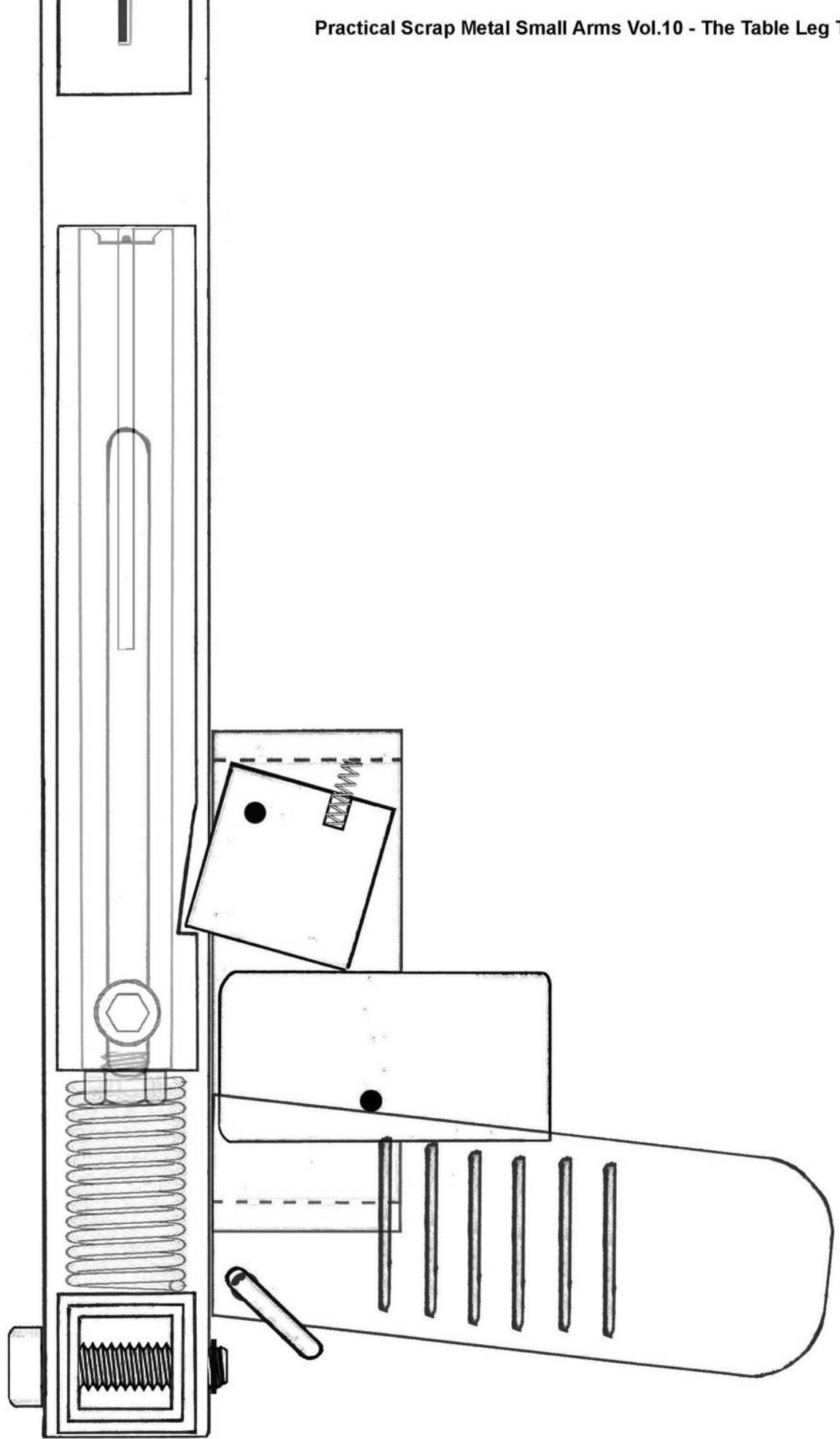
2 inches

Print on 8.5x11 US letter paper



2 inches

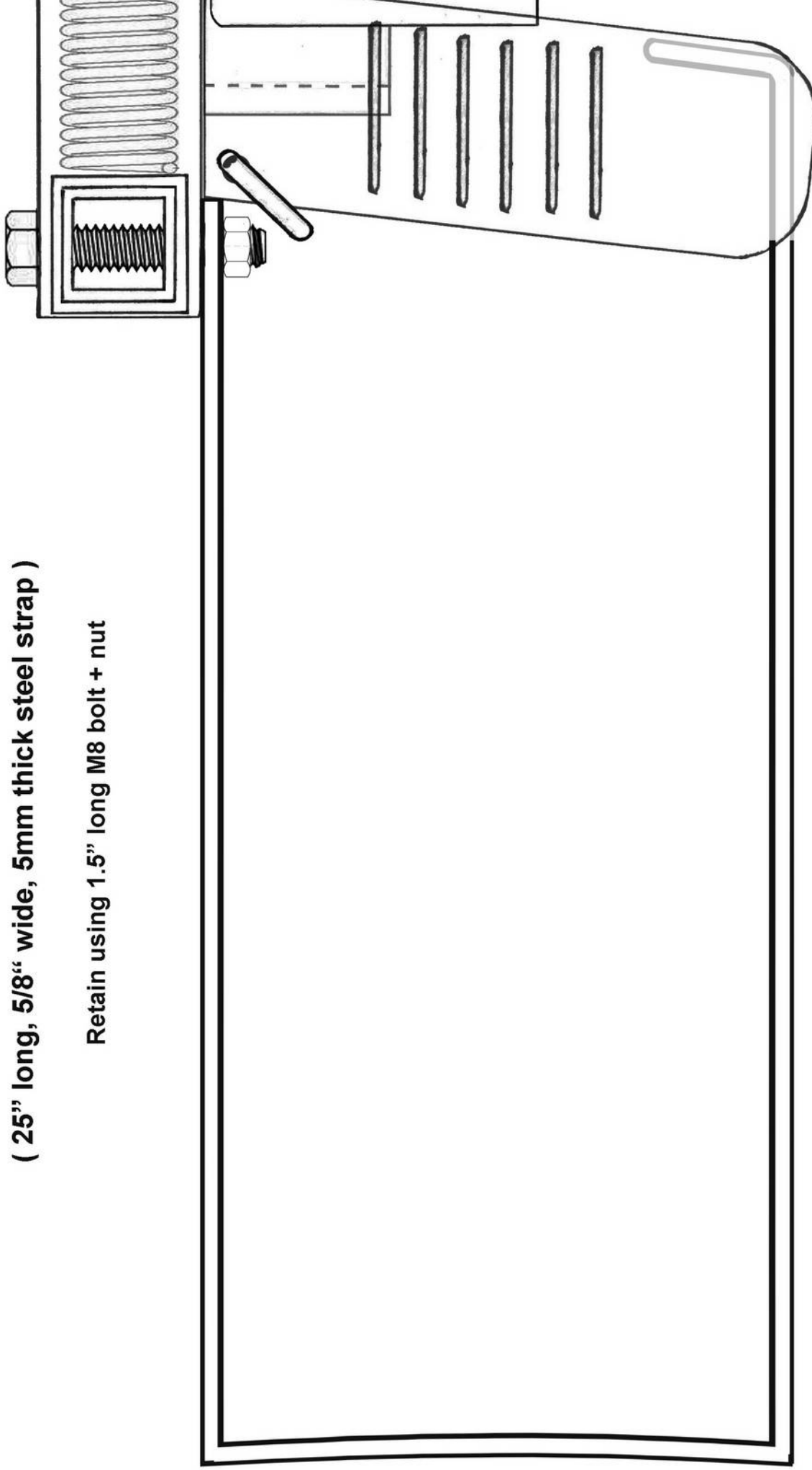
Print on 8.5x11 US letter paper



Simple removable skeleton stock

(25" long, 5/8" wide, 5mm thick steel strap)

Retain using 1.5" long M8 bolt + nut



2 inches

Print on 8.5x11 US letter paper

Stock slots into open bottom of grip

