



MPRTECH Presents:

UMP 11/9

**With assistance from:
DB Firearms**

OFFICIAL BUILD GUIDE





INTRODUCTION:

This design utilizes the complete bolt, barrel, and trunnion from a Mac 11/9.

Common vendors for these parts will be listed in the Materials Required.

Additionally, it uses an AR-15 Fire Control Group. It can use DIY 3D-printed sten-style magazines or surplus sten Magazines.

If you have printed a DB Alloy, this model shares magazines with it for the sten version of the Alloy.

VARIANTS:

Standard Build:

Full size UMP style PCC for printers larger than an Ender 3

Micro Build:

A more compact design for smaller printers. The main upper receiver and lower receiver are shorter and cuter.

FCG Reinforced Lower:

This lower uses FCG Reinforcement plates to protect the lower from trigger issues.

More info can be found here: [LINK](#) and here: [LINK](#)

Brace Versions:

The brace can either fold to the left or right of the gun depending on user preference. STL files are clearly labeled for which one it is. Not mix and match between versions.

HARDWARE:

SUGGESTION: Order a parts kit from dbdesignworks.com

Full Hardware List:

Front Sight:

1x M4x20mm Dowel Pin (mcmaster 91595a167)

Rear Sight:

1x M4x35mm Button Head Bolt (mcmaster 91239A158)

1x M3x16mm Socket Head Bolt (mcmaster 91290A120)

1x .375" OD Compression Spring (mcmaster 9657K622)

1x M3 Heat Set Insert (mcmaster 94459A130)

1x M3x10mm Button Head Bolt (mcmaster 91239A115)

Takedown Pins:

1x M5x40mm Dowel Pin (mcmaster 91595A384)

1x M5x45mm Dowel Pin (mcmaster 91595A388)

1x M4x45mm Dowel Pin (mcmaster 91585A537)

Trunnion/Handguard Hardware:

6x M5 Heat Set Inserts (mcmaster 94459A180)

6x M5x14mm Flat Head Bolts (mcmaster 91294A211)

4x M5x90mm Socket Head Bolts (mcmaster 91290A278)

4x M5 Square Nuts (mcmaster 96887A331)

Charging Assembly:

1x 1/4-20x7/8" Low Profile Socket Head Screw (mcmaster 90665A159)

1x 1/4-20 Square Nut (mcmaster 94855a247)

G36 Safety Selector(optional, you can print the standard AR Safety lower as well):

1x M3x10mm Socket Head Bolt (mcmaster 91290a115)

Magazine Release:

1x M4x22mm Dowel Pin (mcmaster 91595A170)

1x .375" Compression Spring (mcmaster 9657K623)

Lower Receiver:

1x M5 Square Nut (mcmaster 96887A331)

1x M5x25mm Socket Head Bolt (mcmaster 90128A249)

BRACE:

1x M5x60mm Socket Head Bolt (mcmaster 91290A268)

1x .375" Compression Spring (mcmaster 9657K623)

ADDITIONAL COMPONENTS:

1. Laser Cut Steel Trunnion Plate (in hardware kit at dbdesignworks.com) or sent out to a laser cutter. DXF files included in the STL folder

Laser Cut Specification:

Material: .125" Steel (stainless preferred)

Units: mm

2. AR Fire Control Group: Consists of Hammer, Disconnecter, Trigger, and accompanying springs, along with pins.

3. AR Safety (or printable G36 style safety)

4. AR Safety Detent and Spring

5. Glock 33 round Magazine Spring (If you are making your own mag) or Surplus Sten Magazine

6. Bolt: Mac 11/9 style bolt. Popular vendors include the following

-Aves: [LINK](#)

-JC Arms: [LINK](#)

-KAK: [LINK](#)

-Velocity Firearms: [LINK](#)

7. Barrel + Trunnion: Mac 11/9 Trunnion and Barrel, usually 5.4" in length. Longer is also okay to use.

PLEASE NOTE: even with 5.4" of length, you will need an additional 1" of barrel length to clear the handguard. Make sure and select a muzzle device that properly extends your barrel beyond your handguard. The diameter should not exceed 1"

-Aves: [LINK](#)

-JC Arms: [LINK](#)

-KAK: Barrel ONLY, other lengths available: [LINK](#)

-Velocity: Barrel, other lengths available: [LINK](#)

Trunnion: [LINK](#)

NOTE ON SELF-ASSEMBLY OF BARREL AND TRUNNION:

In order to install your barrel into the trunnion, you will need to drill and pin the barrel. It is not difficult. Aves and JC Arms will do this for you.

Drill bit: 1/8"

Pin: 1/8 x 1" roll pin (mcmaster 97855a180)

Instructions:

From the factory, these barrels are screwed into the trunnion (from either side) and then torqued down using jam nuts and wrenches.

It is not entirely necessary to aggressively torque them down in the application we are using them, but get it as tight as you can. Blue Loc-tite can be helpful as well.

After torquing, drill your barrel pin hole with your 1/8" bit. It should go through easily and barely notch your barrel threads. Install your pin and you are done.

PRINTING INSTRUCTIONS:

SELECT YOUR VARIANT BEFORE CONTINUING. SEE TOP OF README FOR DESCRIPTION OF TWO VERSIONS

1. Materials: This design was tested in PLA+, ABS, and CF Nylon. It contains a whole lot of plastic so it's pretty strong. Use a quality filament to ensure that you have a long lasting gun.

There are two components in the files that should be printed in TPU to prevent premature wear to the receiver and improve recoil management. Can they be printed in PLA? Well, yes technically. However, you may have slightly stiffer recoil overall and may have to ream holes in the rear takedown.

- 1. TPU Bolt Buffer, goes inside rear end cap and softens recoil/prevents receiver damage**
- 2. TPU Short Stroke Buffer, clips on the guide rod for your bolt and limits bolt travel (use this if you experience damage to the feed lips of magazines)**

2. Infill And Walls: Most of the beta testing involved 100% Infill. It is recommended for every part except for the TPU Parts. Print those at 6 walls, 6 top and bottom layers, and 20-50% infill depending on stiffness of TPU

If your TPU is more squishy, go with 50% infill. For harder TPU, go with 20% Infill.

3. Print Orientations: All STL's have been pre-oriented for slicing. If you are an advanced printer and want to try something different, you are welcome to. However, the orientations the files are saved in currently were thoroughly tested.

4. Supports: It is suggested that you use supports on all models, but please use organic/tree supports and ensure your settings are dialed in so they're simple to remove.

5. Temperature Settings: Print as hot as your filament will allow you to go, to ensure good layer adhesion.

6. SPECIAL INSTRUCTIONS FOR THE PIECE LABELED TRUNNION CARRIER: This piece is designed to be scaled correctly in your slicer before printing to ensure a perfect fit with your trunnion.

Each manufacturer has slightly different tolerances on the thickness of the trunnion. Measure the overall thickness of your trunnion and scale the part in your slicer to be oversized by .1mm compared to your trunnion. This will ensure a perfect fit. Check the addendum called TRUNNION_CARRIER_PRINTING.JPEG

ASSEMBLY:

[REFER HERE FOR THE GUTTERCHEESE ASSEMBLY VIDEO](#)

1. Upper Receiver:

After removal of all supports, it's time to install the trunnion/barrel. This design will require you to install the trunnion upside-down compared to a normal MAC. Add the 4 M5 square nuts to the upper receiver in their corresponding pockets (watch for hidden support material). Ensure you have your muzzle device installed on your barrel.

Then, install the trunnion/barrel assembly upside down in the 'Trunnion Carrier' with the slot for the charging handle facing up. Upside Down would mean with the large thru-hole in the side of the trunnion at the top of the gun, closest to the charging handle slot.

Add the steel trunnion plate, then the handguard to the barrel end. Add the 4 long M5 bolts into the front of your handguard through your assembly. This may require reaming to get your holes to the proper size. Take your time to ensure everything is going together smoothly and nothing is being forced.

*****IMPORTANT: At this stage, add your charging handle. it's non-removeable after this step*****

Push the whole assembly onto the front of the upper receiver. Now, tighten down the 4 M5 bolts in the front of your handguard to compress the trunnion between all pieces. When tightening, do it in a criss-cross pattern a little at a time to ensure even tightness between all bolts.

ASSEMBLY CONTINUED:

2. Handguard Cover/Rails

Now, install the 6 M5 heat set inserts into the handguard in their corresponding holes using a soldering iron. [Like this](#)

You can now add either the rails or the handguard cover with the corresponding M5 flat head bolts. Your upper receiver is now nearing completion.

3. Bolt/Charging Mechanism

You should now assemble your charging insert. Add your 1/4" square nut into the side of the insert, then install your 1/4" bolt through the top. Tighten until snug. Add the charging insert to the top of your bolt, with the insert nub being placed into the top of the bolt where the top-cocking handle usually goes.

If you printed a TPU short stroke buffer, install it on the back of your bolt between the bolt and the factory buffer pad, with the short stroke buffer against the rear buffer pad. Now, slide the bolt assembly/charging insert into the upper receiver all the way forward into battery.

4. Backplate Installation

You should now install the 'TPU Bolt Buffer' into your backplate of choice. it should slot in. Now, install your backplate assembly onto the back of your upper receiver.

This is under some spring pressure from the Bolt Recoil Assembly. You can now install the 2 corresponding M5 Dowel Pins to secure the backplate. These are a tight fit, but if it's too tight you may want to ream your holes. The shorter M5 pin goes in the top hole. Tap them in with a soft faced hammer.

ASSEMBLY CONTINUED:

5. Lower Assembly

Start by installing your magazine release. Dab a little grease on the end of your spring to keep it in place and install it in the lower in its corresponding divot. Next, install the magazine release and pin it in place.

Install your AR FCG and pins as described in [this video](#).

Next, we will install the safety by sliding it in from the left side of the receiver. If you printed the G36 safety, it can be installed from the right side. Add your screw to secure the left side of the G36 safety.

Add the M5 square nut to the corresponding pocket for the grip screw. Then, carefully add the grip with the detent and spring to make your lower assembly complete. Install the grip screw last and tighten securely.

---Over tightening the grip screw can damage your lower. Don't over tighten it!---

6. Lower/Upper Mating Time

Slot the lower into the upper with the front first into the locking tabs, then push the back of the lower up into the receiver. If you experience resistance, you can gently tap the lower into place.

Secure the lower with the M4 pin.

7. Sights

The upper receiver has integrated 'iron sights'. To install the front sight, simply place it in the corresponding hole and use the dowel pin to pin it in place.

To install the rear sight, first melt in your M3 heat set insert into the hole at the back/top of the upper receiver. Next, grab the M3 screw for the sight and screw it through the top of the rear sight. Add the spring to the screw, underneath the sight, and then install the screw into the heat set insert. Then, install the M3 cross bolt into the receiver to retain the hinging section of the rear sight.

You can now install the retainer screw in the side of the sight to finish the sight installation.

ASSEMBLY CONTINUED:

8. Magazine Assembly

Install the follower into the magazine and then the 33rd glock magazine spring. Install the locking plate and then the floor plate. Lube your magazine with PTFE dry lube.

Check that it successfully locks into the lower. If you are using metal sten magazines, you will need to print the sten magazine adapter (1 per mag) to allow it to lock in.

For additional instructions, refer to the Magazine Readme located in the Magazine subfolder.

9. Brace Installation

If you printed the brace, you'll want to install the remaining hardware now. The long M5 bolt acts as the hinge, install it and do not over-tighten it. Next, get your button and install the spring behind it. Place the button in the hinge and install the retainer in the side of the button. A little super glue can help keep this piece in place. Glue on the reinforcement plate and allow it to fully dry to ensure your latch is strong.

10. Function Testing

*****ALWAYS CHECK FUNCTION WITH SNAP CAPS*****

Charge the bolt and make sure it resets the trigger. Check feeding. Go shooting!

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