Universal AR-15 80% Lower Receiver Jig Instructions
Modulus Arms Jig Contents

The Modulus Arms Universal AR-15 80% Lower Receiver Jig contains the following parts:

1. 1x Template
2. 2x Side Plate
3. 1x Drill Guide
4. 1x Front Support
5. 1x Rear Support
6. 1x Buffer Support
7. 1x Depth Gauge
8. 14x Screws [8-32 x ½”]
9. 2x Side Plate Screw [8-32 x 1.5”]
10. 1x Rear Take Down Bolt [1/4-20 x 2.25”]
11. 1x Flat Washer [1/4”]
12. 1x Rear Take Down Nut [1/4”]

Figure 1: Jig Contents
Required Tools

The following items are required to finish the 80% AR-15 Lower Receiver:
(Available for sale on Modulus Arms Website)

1. ½” Dia, ⅜” Shank, 4” Long, 1” Cut, Square End Mill
2. 3/8” Drill Bit
3. 19/64” Drill Bit
4. 5/32” Drill Bit
5. 3/8” Drill Stop

Figure 2: Jig Fabrication Kit

The additional tools needed to finish the 80% AR-15 Lower Receiver:

1. Router (Laminate/Trim Recommended)
2. Front Takedown kit or ¼” bolt
3. Drill (Hand or Drill Press)
4. 1/8” Allen Wrench
5. Vise or device to hold Jig
6. 9/64” Allen Wrench
7. Phillips Screwdriver
8. 3/16” Allen Wrench

Figure 3: Example Tools

Routers that we recommend to finish the 80% AR-15 Lower Receiver:

1. Ridgid R24012
2. Dewalt D26670
3. Makita RT0701C
4. Porter-Cable PCE6430
5. Porter-Cable 7310
**Modulus Arms Jig Assembly**

**Front Support:** The front takedown pin secures the front support as shown in Figure 4 (Left). For best results, the spring and detent from the Modulus Arms AR Lower Parts Kit may be used. Optionally, Modulus Arms offers an AR-15 Front Takedown Kit for sale on the website. To install the Front Support you must first install the front takedown pin. Next, you place the front support in the proper location and secure it with the front takedown pin as shown in Figure 4 (Right). If a front takedown pin is not available, you may use a ¼” diameter bolt (not supplied).

![Figure 4: Front Takedown Pin (Left), Front Support (Right)](image)

**Buffer Support and Rear Support:** Thread in the buffer support (clockwise) until the buffer support is below the rear surface of the lower, then further turn clockwise until the three screw holes are aligned vertically shown in Figure 5 (Left). On some lower receivers, especially polymer, the buffer support can go in very snug. Threading in two of the screws to use as a handle can help to install the buffer support. If it is too tight, do not thread it in as it can get stuck. Using two of the ½” long screws, attach the rear support. Do no tighten, yet. Make sure the rear support is in contact with the lower receiver rear surface. If it is not in contact, you must thread the buffer support in further.

![Figure 5: Buffer Support (Left), Rear Support (Right)](image)
Drill Guide: Align the drill guide under the rear pocket and trigger slot cutouts in the template. Use four ½” screws to attach the drill guide to the template as shown in Figure 6. Tighten the screws to 1 ft-lb.

Template: Align the template over the rear and front support as shown in Figure 7. Use four ½” screws to attach the template. Tighten all four screws to 1 ft-lb. Tighten rear support screws to 1 ft-lb.
**Side Plates:** Place the side plate into position and thread two ½” screws into the top through the template as shown in Figure 8. Leave loose. Repeat the same steps on the other side plate. Each side plate is identical and can be placed on either side. When both side plates are attached loosely, squeeze the side plates together against the sides of the lower receiver. When they are tight to the lower receiver, tighten the four ½” screws to 1 ft-lb as shown in Figure 9. Screw the two 1-1/2” screws through the side plates to connect them together as shown in Figure 10. Tighten these two screws to 1 ft-lb. Do not install the 1/4-20 bolt.

- **Note:** Many questions have been asked about these two 1-1/2” screws. They are used to prevent the side plates from flexing in when clamped in a vise. That is why both sides are threaded.
- **Note:** The side plates are identical and can be used on either side. If you wear out any hole, you have three more sets of holes to use.
- **Note:** It is recommended to put masking tape or some other protection over the sides of the lower before installing the side plates. Doing so will help prevent scratches or wear.

![Figure 8: Side Plate Alignment](image1)

![Figure 9: Side Plate Tightening](image2)
Drilling the Trigger and Rear Shelf Holes

Trigger Slot Drilling: With the two exposed holes in the trigger slot, use the 19/64” drill bit to drill all the way through the lower. View Figure 11 for locations.

- **Note**: If a hand drill is being used be sure to hold the drill upright. If the drill is not held upright blemishes will be visible in the trigger slot after assembly. This is true for all drilling of the lower.
- **Note**: Use a vise, C-clamp or other mechanism to hold the Jig.
- **Note**: Be sure not to start spinning the drill until after the drill bit is placed into the drill guide or premature wear will occur. This is true for all drilling of the lower.
- **Note**: Use plenty of WD-40 or cutting fluid and remove the chips regularly. This is true for all drilling of the lower.
Rear Shelf Drilling: Slide the 3/8” drill stop onto the drill bit. Insert the drill bit into the depth gauge in slot labeled “B” as shown in Figure 12. Make sure the drill bit is inserted all the way into the slot and tighten the drill stop onto the drill bit. Next, drill the three holes visible in the rear shelf template opening as shown in Figure 13. Be sure to drill to the depth specified with the drill stop and do not go any further.

- **Note**: Modulus Arms forged lower receivers have some of the rear pocket already machined. You must only drill the hole closest to the trigger slot template.
- **Note**: Be sure the drill stop is tight. Check the placement of the drill stop with the depth gauge after each hole.

![Figure 12: Slot B](image1.png)

![Figure 13: Rear Shelf Drill Location](image2.png)
**Milling the Trigger Slot**

**Configure Jig for Milling Trigger Slot:** Remove the four screws holding the template to the front and rear Support. Remove the four Screws holding the template to the side plates. Remove the template from the Jig. Remove the drill guide from the template. Reinstall the template by inserting and tightening the eight screws to the side plates, front and rear supports. The Jig should be configured like Figure 14.

![Figure 14: Configuration for Trigger Milling](image)

**Trigger Slot Milling:** Loosen the router base so that it is as far down as it can go. Insert the end mill into the router. Adjust the end mill in the router until it hits the bottom of the depth gauge slot “A”. When the end mill is at the correct height, tighten the collet of the router locking the end mill in place. Move the base of the router until the tip of the end mill is at the first line in slot “A”, shown in Figure 15. Place the router into the trigger template and into one of the holes previously drilled as shown in Figure 16. Be sure not to be touching the sides of the holes when you start the router. Start the router and allow it to come completely up to speed. Start to move the router removing material. Start by moving in semi-circular motion in small clockwise steps. Press down firmly to prevent the router from lifting. Do not try to move the router in one straight direction but rather in smooth half circles removing small amounts of material as you proceed. Join the two drill holes together and then start to widen the opening until you reach the template. When you reach the template, trace the inside diameter of the template in a clockwise motion. Be sure to remove as much material as possible before touching the template or tracing the template. Reducing the amount of time in contact with the template will increase its longevity. Do not push hard against the template. A gentle touch is enough. Mill the rounded corners in the template last, as they are most likely to chatter. When the opening is the same size as the template turn off the router, wait for it to completely stop and remove it. Adjust the router base so the end mill is at the next mark on the depth gauge as shown in Figure 17. Continue in this pattern until you reach the bottom of the depth gauge. At this point, you should be out of the bottom of the lower receiver.

- **Note:** DO NOT INSERT OR REMOVE THE END MILL FROM THE TEMPLATE WHILE THE END MILL IS SPINNING. THIS IS DANGEROUS AND THE MOST COMMON CAUSE OF BROKEN END MILLS OR DAMAGED JIGS/LOWERS.
- **Note:** Be sure the end mill is very tight in the router. Tighten it as much as possible.
• **Note:** If the router begins to whine or vibrate during milling, turn the router off and remove it from the template. Inspect the end mill and be sure there are no chips jammed into the teeth of the end mill. If there is, use a tool to remove the stuck chips. A small screwdriver or pencil works well. Be sure not to damage the teeth.

• **Note:** The top 90% of the milling is removed in future steps so this is your practice session. Use it to adjust the router speed settings for optimal results. We recommend a mid-speed setting on most routers. Adjust as necessary for your exact router.

• **Note:** If you have a shop vacuum, use it. We recommend sticking it between the lower and the template over the magazine opening. It typically fits and stays. Run the vacuum whenever you are milling. If you do not have a shop vacuum, stop regularly and remove the chips. If they build up, they can become stuck between the end mill and the template and melt. This build up can be removed from the end mill with sand paper. Use of a cutting fluid or WD-40 is recommended.

![Figure 15: Trigger Slot Depth Setting](image)
Figure 16: Trigger Slot Router Placement

Figure 17: Second Depth Mark
Drilling the Fire Control Holes

Configure Jig for Drilling Fire Control Holes: Remove the screws connecting the template from the front and rear supports. Remove the screws connecting the template to the side plates. Remove the template. Place the drill guide under the template as shown in Figure 18. Insert the four screws attaching the drill guide to the template. Tighten to 1 ft-lb. Install the eight screws into the supports and side plates to 1 ft-lb as shown in Figure 19.

Figure 18: Fire Control Drill Guide Setup

Figure 19: Fire Control Drilling Configuration

Rear-Shelf Pocket Drilling: Insert the 3/8” drill bit into the drill. Place the 3/8” drill stop on the drill bit. Insert the drill bit into slot “C” of the depth gauge. Make sure the drill bit is touching the bottom of the drill guide and tighten the drill stop onto the drill bit as shown in Figure 20. Drill the three 3/8” holes open in the template. The holes open to the trigger slot do not need drilling. The partial covered hole does not need drilling.

- Note: Be sure the drill stop is tight. Check the placement of the drill stop with the depth gauge after each hole.
Milling the Fire Control Pocket

Configure Jig for Milling Fire Control Pocket: Remove the screws attaching the front and rear support to the template. Remove the screws attaching the template to the side plates. Remove the template. Remove the four screws attaching the drill guide to the template. Install the eight screws attaching the supports and side plates to 1 ft-lb as shown in Figure 21.

Milling Fire Control Pocket: The end mill should already be installed in the router. Move the base of the router until the tip of the end mill is at the first line in slot “C”, shown in Figure 22Figure 15. Place the router into the fire control template and into the trigger slot opening you previously milled. You will always use this as a starting location for this step. Be sure not to be touching the sides of the opening when you start the router. Start the router and allow it to come completely up to speed. Start to move the router removing material. Start by moving in semi-circular motion in small clockwise steps. Press
down firmly to prevent the router from lifting. Do not try to move the router in one straight direction but rather in smooth half circles removing small amounts of material as you proceed. Join the trigger slot opening with the drill holes and then start to widen the opening until you reach the template. When you reach the template, trace the inside diameter of the template in a clockwise motion. Be sure to remove as much material as possible before touching the template or tracing the template. Reducing the amount of time in contact with the template will increase its longevity. Do not push hard against the template. A gentle touch is enough. Mill the rounded corners in the template last, as they are most likely to chatter. When the opening is the same size as the template turn off the router, wait for it to completely stop and remove it. Adjust the router base so the end mill is at the next mark on the depth gauge. Continue in this pattern until you reach the bottom of the depth gauge.

- **Note:** DO NOT INSERT OR REMOVE THE END MILL FROM THE TEMPLATE WHILE THE END MILL IS SPINNING. THIS IS DANGEROUS AND THE MOST COMMON CAUSE OF BROKEN END MILLS OR DAMAGED JIGS/LOWERS.
- **Note:** Be sure the end mill is very tight in the router. Tighten it as much as possible.
- **Note:** If the router begins to whine or vibrate during milling, turn the router off and remove it from the template. Inspect the end mill and be sure there are no chips jammed into the teeth of the end mill. If there is, use a tool to remove the stuck chips. A small screwdriver or pencil works well. Be sure not to damage the teeth.
- **Note:** If you have a shop vacuum, use it. We recommend sticking it between the lower and the template over the magazine opening. It typically fits and stays. Run the vacuum whenever you are milling. If you do not have a shop vacuum, stop regularly are remove the chips. If they build up, they can become stuck between the end mill and the template and melt. This build up can be removed from the end mill with sand paper. Use of a cutting fluid or WD-40 is recommended.

![Figure 22: End Mill Depth for Fire Control Pocket](image-url)
**Milling the Rear Shelf Pocket**

**Note:** If you bought a forged lower from Modulus Arms, you can skip to Drilling the Hammer, Trigger and Safety Pin Holes. If you have a lower receiver that does not have a pre-machined rear pocket, you must continue with this section.

**Configure Jig for Milling Rear Shelf Pocket:** Remove the screws attaching the front and rear support to the template. Remove the screws attaching the template to the side plates. Remove the template. Install the eight screws attaching the supports and side plates to 1 ft-lb as shown in Figure 23.

![Figure 23: Configuration for Rear Shelf Milling](image)

**Milling Fire Control Pocket:** The end mill should already be installed in the router. Move the base of the router until the tip of the end mill is at the first line in slot “B”, shown in Figure 24. Place the router into the rear shelf template and into the opening from the previous milled fire control pocket. You will always use this as a starting location for this step. Be sure not to be touching the sides of the opening when you start the router. Start the router and allow it to come completely up to speed. Start to move the router removing material. Start by moving in semi-circular motion in small clockwise steps. Press down firmly to prevent the router from lifting. Do not try to move the router in one straight direction but rather in smooth half circles removing small amounts of material as you proceed. Join the opening with the two holes you drilled previously. When you reach the template, trace the inside diameter of the template in a clockwise motion. Be sure to remove as much material as possible before touching the template or tracing the template. Reducing the amount of time in contact with the template will increase its longevity. Do not push hard against the template. A gentle touch is enough. Mill the rounded corners in the template last, as they are most likely to chatter. When the opening is the same size as the template turn off the router, wait for it to completely stop and remove it. Adjust the router base so the end mill is at the next mark on the depth gauge. Continue in this pattern until you reach the bottom of the depth gauge.

- **Note:** DO NOT INSERT OR REMOVE THE END MILL FROM THE TEMPLATE WHILE THE END MILL IS SPINNING. THIS IS DANGEROUS AND THE MOST COMMON CAUSE OF BROKEN END MILLS OR DAMAGED JIGS/LOWERS.
- **Note:** Be sure the end mill is very tight in the router. Tighten it as much as possible.
- **Note:** If the router begins to whine or vibrate during milling, turn the router off and remove it from the template. Inspect the end mill and be sure there are no chips jammed into the teeth of the end mill. If there is, use a tool to remove the stuck chips. A small screwdriver or pencil works well. Be sure not to damage the teeth.
Note: If you have a shop vacuum, use it. We recommend sticking it between the lower and the template over the magazine opening. It typically fits and stays. Run the vacuum whenever you are milling. If you do not have a shop vacuum, stop regularly and remove the chips. If they build up, they can become stuck between the end mill and the template and melt. This build up can be removed from the end mill with sand paper. Use of a cutting fluid or WD-40 is recommended.

Figure 24: Depth Gauge for Rear Shelf
Drilling the Hammer, Trigger and Safety Pin Holes

**Insert the Rear Takedown Bolt:** Insert the rear takedown bolt through the rear takedown hole in the side plate, put on the flat washer and tighten rear takedown nut as shown in Figure 25.

![Figure 25: Rear Takedown Bolt](image_url)

**Drilling the Safety Hole:** Clamp the jig in the vise as shown in Figure 26. Insert the 3/8” drill bit into the drill. Drill the hole shown in Figure 27 through one side of the lower receiver. Do not drill all the way through. Flip the jig over and repeat in the opposing hole. Be sure to always use the hole locations closest to the top Template.

- **Note:** Be sure to be in the correct hole location. If you are not in the correct location you can damage your lower receiver.
- **Note:** If a hand drill is being used be sure to hold the drill upright.
- **Note:** Use a vise, C-clamp or other mechanism to hold the Jig.
- **Note:** Be sure not to start spinning the drill until after the drill bit is placed into the drill guide or premature wear will occur.
- **Note:** Use plenty of WD-40 or cutting fluid and remove the chips regularly.
- **Note:** The extra holes below are there because the side plates are universal. They give you two times the amount of holes for drilling so you do not need to replace your side plates from premature wear.
Drilling the Trigger and Hammer Pin Holes: Insert the 5/32” drill bit into the drill. Drill the hole shown in Figure 28 through one side of the lower receiver. Do not drill all the way through. Drill the hole shown in Figure 29 through one side of the lower receiver. Do not drill all the way through. Flip the jig over and repeat in the opposing holes. Be sure to always use the hole locations closest to the Template.

- **Note:** Be sure to be in the correct hole location. If you are not in the correct location you can damage your lower receiver.
- **Note:** If a hand drill is being used be sure to hold the drill upright.
- **Note:** Use a vise, C-clamp or other mechanism to hold the Jig.
- **Note:** Be sure not to start spinning the drill until after the drill bit is placed into the drill guide or premature wear will occur.
- **Note:** Use plenty of WD-40 or cutting fluid and remove the chips regularly.
- **Note**: The extra holes below are there because the side plates and universal. They give you two times the amount of holes for drilling so you do not need to replace your side plates from premature wear.

![Figure 28: Trigger Pin Hole](image)

![Figure 29: Hammer Pin Hole](image)

*Done! Go Shooting!*