



## BMR MANUAL RACK CONVERSION KIT

PART# RK002

*Before proceeding it should be noted that this kit is designed for use on the OE K-member or any K-member designed for use with the OE rack. If you have a BMR K-member with a -1 part number extension, it is designed for a manual rack and requires Part #RK001.*

### Installation Procedure:

**NOTE:** Center the steering before proceeding.

1. Lift vehicle and support with stands under the frame rails.
2. Remove both front wheels/tires. Open hood.
3. Locate the steering shaft on the drivers' side. Using an 11mm socket and long extension, remove the cross-bolt located on the upper portion of the steering shaft as shown in **Image 1**.

*Steps 4-10 involve power steering pump removal. If you have already removed your power steering pump, skip these steps and proceed to step 11.*

4. Using a 15mm wrench or socket, loosen the belt tensioner and remove the serpentine belt.
5. Using an 18mm line wrench, loosen and remove both power steering lines. Plug the lines to prevent fluid loss.
6. Drain the engine coolant and remove the upper radiator hose. **NOTE:** this step is necessary to gain access for removal of the power steering pump pulley.
7. Using a power steering pulley removal tool, remove the pulley from the front of the pump to gain access to the mounting bolts behind it.
8. Using a 13mm socket, remove the three bolts securing the pump. Remove pump.
9. Using a 15mm socket, remove the two bolts securing the power steering pump bracket and remove the bracket.
10. Without the power steering pump it is necessary to use a shorter drive belt. Using a 51.5-52.5" long belt, re-route the belt to match the image to the left.
11. Remove the cotter pins from both outer tie rod ends.
12. Using an 18mm wrench, loosen the castle nuts and remove. Strike the knuckle with a brass hammer where the tie rod end is inserted to free the tie rod end from the knuckle.
13. Using a 15mm wrench and an 18mm socket with a short extension, loosen the two rack mounting bolts. The passenger side bolt can be removed however the drivers' side bolts cannot be removed due to oil pan interference.





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**NOTE:** At this point there are two options for removing and re-installing the drivers' side bolt. The preferred method requires raising the motor to remove the bolt however this is a labor intensive process and can be skipped by using the second option. The second option involves cutting the bolt to remove it and installing a new one from the bottom. Both options are illustrated below.

### OPTION 1:

- 1) Remove negative battery cable.
- 2) Using a 13mm wrench, remove the power wire from the back of the alternator.
- 3) Remove the rear mounting bolt on the alternator using the same 13mm wrench.
- 4) Using a 15mm socket, remove the front two mounting bolts from the alternator.
- 5) Remove alternator.
- 6) Using two 18mm wrenches, loosen and remove the nuts from both motor mount bolts.
- 7) Place a block of wood and a hydraulic jack under the oil pan and lift the motor to Remove the load off the motor mount bolts. Remove both bolts.
- 8) Jack the motor up until it is high enough to remove the drivers' side rack bolt.

### OPTION 2:

- 1) Using a Sawzall, body saw or similar cutting tool, cut off the head of the drivers' side rack bolt. *NOTE: Depending on the saw, it may be necessary to remove the sway bar to gain access to the bolt.*
- 2) Remove the bolt from the bottom.

14. Remove the rack and pinion and steering shaft assembly. It may be necessary to use a pry-bar to slide it out of the mounts. It may also require a few taps on the upper steering joint to knock it loose from the steering column.

15. Verify that the new manual rack is centered by using the following procedure: turn the input shaft all the way in one direction then measure the distance from the end of the tie rod end to the rack mounting flange as shown in **IMAGE 3**. Now turn the shaft all the way in the opposite direction and record this measurement as well. Subtract the smaller number from the larger and this will be your centering measurement.



16. Thread the BMR outer tie rod ends onto the manual rack approximately half-way. Position the two racks next to each other and adjust the tie rods until the overall width is as close as possible.



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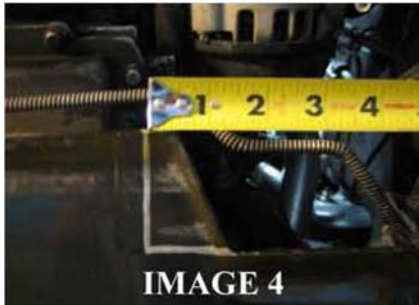
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**NOTE:** the following steps (steps 17-21 are only necessary if you are using a stock K-member. If you have a BMR K-member, proceed to step 22)

17. Locate the brake line that runs along the front of the K-member. Pry the brake line retainer out of the K-member and slightly bend the line up out of the way to prepare for clearancing the K-member.

18. Locate the drivers' side forward portion of the K-member. See **Images 4, 5, and 6** below. Measure approximately 1/2" from the front corner and mark the K-member. Mark a triangular section in the K-member in such a way that it "squares off" the area when cut.

19. Using a Sawzall or similar cutting tool, cut the section out.



20. Sand and paint the area.

21. Bend the brake line back and re-insert the retainer.

22. Using the provided new bolts, bolt the rack and pinion to the K-member. If you used **Option 1** to remove the drivers' side bolt, replace it from the top then lower the motor back down. Insert the motor mount cross-bolts and re-tighten both sides. Re-install the alternator. If you used **Option 2** to remove the drivers' side rack bolt, replace it from the bottom with the nut on top. Use red Loctite when installing the nut.

23. Tighten the rack bolts to 80 ft/lbs with a 19mm wrench and socket

24. It is now necessary to modify the vehicles spindles in preparation for installing the outer tie rods. Using a 1/2" drill bit, drill out the tie rod mounting holes on the spindles.

25. Assemble the tie rod bolts and spacers as illustrated in **Image 7** and bolt them to the spindles. Tighten the bolts to 55 ft/lbs.

26. Take the pre-assembled u-joint/shaft assembly that came with your RK002 and slide the end with the hole inside the steering column. Use the supplied 10mm nut along with the factory bolt and tighten them down.

27. Now take the other end of the shaft with the female splined u-joint and slide that over the male shaft on the rack.

28. Tighten the set screw and jam nut on the u-joint.

29. Double-check all bolts and jam-nuts from the installation to make sure everything is tight.

30. Re-install the wheels and tires and lower the vehicle.





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***NOTE:** In certain applications it may be necessary to clearance the plastic on the back of the alternator slightly to gain an adequate amount of clearance.*

At this point the vehicle should be taken to an alignment shop. Once the toe is properly set, an experienced alignment technician can fine tune the bump-steer by adding or removing spacers at the outer tie rod bolt. As a general rule of thumb to keep bump-steer minimized, the angle of the tie rod should parallel the lower A-arm as close as possible. ***NOTE:** Various length spacers are provided for varying ride heights. It is not necessary to use all of the spacers in every application.*

