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1965-1989 911/912/930

Front Monoball Installation Instructions

1965-1989 911/912/930



Front Monoball Assembly (Qty 2)



Installation Tools and Hardware

Check to make sure you that have all parts listed prior to installation. If anything is missing contact us immediately.

Parts List

- (2) monobal cartridge assemblies
- (2) keyed lock washers
- (2) 6mm X10mm s/s button head screws
- (1) 3/8 drive torque tool
- (1) 1/4-20 cartridge retaining tool
- (1) 1/4x1" flat washer
- (1) 1/4-20 wing nut



Figure 1



Figure 2



Figure 3

1. Install one monoball at a time. With your car sitting on the ground, use an impact wrench to remove the shock absorber retainer nut atop the strut perch. If you don't have access to an impact wrench, use a regular socket wrench to turn the nut and a pipe wrench on the large cupped washer underneath it to prevent the shock from rotating.

2. Remove the two washers (one thin, one larger and cupped) underneath the nut.

3. Lift the car about a foot off the ground.

4. Reach underneath the fender, grab a hold of the shock at the top, and compress it downward a few inches in order to remove the strut from the strut perch. Allow the strut to re-extend, and lean it against the inside of the fender (or the inside of the bottom of the strut perch), being careful not to allow moving the strut to twist or kink the brake line. It may take some experimentation in the amount your car is lifted off the ground to find a height where the wheel is resting on the ground in such a manner that it supports the strut leaning against the inside of the fender or the strut perch.

5. Turning your attention back to the top of the strut perch, use a razor blade to cut away some of the circular rubber bushing (figure 1). It is only necessary to cut away enough of the perimeter of the bushing to allow it to be pushed down and dropped out of the strut perch housing (figure 2).

6. Unscrew the monoball so that you have two halves. Attach the cartridge retaining tool to the bottom monoball half (figure 3).

7. Apply a small amount of grease on threads.

8. Reaching underneath the fender, place the bottom half of one monoball in position on the underside of the strut perch. With your other arm, place the top half of the monoball in position on the top of the strut perch and screw the two together, being careful not to cross-thread the two monoball halves.

9. When finger-tight, attach the torque tool to the top monoball. Using a 3/8" torque wrench, tighten the monoball to 40 ft-lbs (figure 4). Remove install tools.

10. Apply a light coat of grease to the part of the strut that sits inside the bore of the monoball, compress the shock, and re-fit inside the monoball.

11. Slide the supplied stainless steel toothed washer over the threaded, grooved portion of the top of the strut (figure 5), and then screw on the nut that you removed in step one. Use an impact wrench to gently torque down the nut (figure 6).



Figure 4



Figure 5



Figure 6

Rear Monoball Installation Instructions

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Parts List:

- 2 cartridges
- 4 bushings
- 2 FK Com10t Bearings
- 2 External C-Clips MC98410A250
- 2 Internal C-Clips MC98409A221
- 2 Small Rubber Seals
- 2 Large Rubber Seals
- 2 Spacer Rings ** 65-89 911/912/930 only



Rear Monoball Cartridge (Qty 2)

**For 1965-1989 911/912/930 spacer ring goes between control arm and the outer snap ring.

1. Remove rear wheels and lift car off the ground.
2. Remove one rear trailing arm. This can be done either completely, so that the arm is totally free of the car, or partially, leaving the emergency brake cable and axle attached. The latter method requires a hydraulic stand to place the trailing arm on while each monoball is replaced, and is easiest when the engine and transmission are out of the car, but is quicker because the rear brakes and axles do not need to be disassembled. This method also will require a second person to hold the monoball while the stock bushings are removed (figure 5). Also, when removing the large bolt that holds the trailing arm in its bracket on the unibody, make a note of from which direction the bolt is removed.
3. With the trailing arm detached from the car, remove the factory bushing assembly, which is composed of three parts. The first two -- a metal bushing and a rubber insert -- should be easy to pry out with a large flathead screwdriver. If not, use a heat gun or torch to heat the end of the trailing arm. Heat will expand the aluminum, making removal easier. Be careful not to gouge the trailing arm's soft aluminum.
4. Removing the third part of the bushing assembly is the hardest part of the monoball installation. Inside the bore of the end of the trailing arm that the rear monoballs are installed into is a thin, two-piece pressed metal bushing that must be pounded out (figure 3 shows this bushing partially removed). In the center of the bore there is a narrow circular area between the two halves of the bushing that provides an edge from which to pound out each bushing half. The easiest way to drive out the bushing is to heat the trailing arm and then use a narrow chisel or punch to pound out one of the bushing halves. Work around the edge of the bushing, being careful not to gouge the aluminum. It may take some substantial force to get the bushing started. Once you have one of the bushing halves removed, you can use a socket of the proper size to drive out the other half - this is much quicker and gentler on the trailing arm bore than using a chisel and hammer.
5. Once the two halves of the metal bushing are pounded out, use some fine sandpaper or a round file to smooth out the bore of the trailing arm and the external surfaces the monoball rests against. Be sure to thoroughly remove any dirt or areas of raised or gouged metal - the monoball tolerances are extremely tight, and even small imperfections in the trailing arm mating surfaces could cause a difficult installation.
6. Find a socket that, when placed against the flat side of the monoball opposite the circlip (figures 1 and 2), sits solidly along its outer edge. You will use this socket to pound or press the monoball cartridge into the trailing arm.
7. Remove the circlip from the monoball, and heat the end of the trailing arm the monoball will be installed into.
8. Install the monoball into the trailing arm with the side the circlip fits onto pointing toward the outside of the car. The direction the monoball faces is very important, so make sure you have this step right.
9. Using the aforementioned socket, pound or press the monoball into the trailing arm.
10. **For 1965-1989 911/912/930 slide spacer ring onto monoball.
Attach the circlip to the monoball. You may find it necessary to tap around the outside of the circlip with a small punch to get it to seat properly in its groove on the monoball. Make sure to carefully verify that the circlip has seated properly in the monoball - it can look like it has, but in fact be still riding on top of the groove, or just next to it (figure 4).
11. Re-install the trailing arm into the car, starting with the end the monoball is on. Use a rubber mallet to tap the trailing arm into its bracket and an alignment tool to line up the monoball bore with the holes in the bracket. You may need to install the bolt from the wrong side first, in order to properly line everything up, and then remove and reinstall it from the proper side, after coating the bolt with some grease.
12. Reassemble the trailing arm and be sure to have your rear suspension aligned.



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5