SADfab Bronze Bearing Retrofit kit for polyurethane bushings Install Instructions

For 90-05 Mazda Miata with Energy suspension or Prothane bushing kits only

Kit Contents:

Steel Crush Sleeves:

			L x OD x ID
□	X4	FUCA	2.250”x0.748”x0.600”
□	X6	FLCA-F / RLCA-I	2.485”x0.748”x0.485”
□	X2	FLCA-R	2.090”x0.748”x0.485”
□	X4	RUCA-I	2.204”x0.748”x0.406”
□	X4	RLCA-O	2.270”x0.748”x0.562”
☐	X2	RUCA-O	2.250”x0.623”x0.406”

Bearings:

□	X32	All locations except FUCA and RLCA-O	1”x0.875”x0.751”
□	X8	FUCA	0.750”x0.875” 0.751”
□	X4	RUCA-O	1”x0.750”x0.626”

Other:

□	X16	LCA load spreading washers 0.875”x0.135”x0.485”
□	X12	Long grease fittings ¼-28x1”
□	X10	Short grease fittings ¼-28x0.540”
☐		Misc swag

Tools and supplies needed:

- Press or a decent (large) vice. You may substitute a ball joint press, C-Clamp, or even a threaded rod with an assortment of nuts, washers and a piece of pipe. Flame is not necessary to remove OEM rubber bushings and just makes a mess!
- Piece of 1-1/2” schedule 40 pipe at least 3” long. Sched 10 or 40 weld tee will work too. Or any cylindrical thing with a hole in it at least 1.580” ID and no larger than about ~1.630”. You can typically get schedule 40 black iron pipe pieces from home depot racing or the plumbing outlet

of your choice. PVC or ABS may work as well. If you have a press with proper press plates, then you will not need a piece of pipe although it may make things easier.

- Wire brushes,maybe some 200-400 grit sandpaper.
- Hand drill and a #3 or 7/32” drill bit. If you are drilling the FUCA bushings out yourself you will also need a ⅞” drill bit.
- 90* ¼ - ⅜ ” counter sink cutting bit (nice to have but not necessary, 82* or 100* will work too)
- Grease, any type as long as it isn’t silicone based. Marine type, water proof, lithium complex grease, is recommended.
- Grease gun
- Various hand tools, sockets, wrenches etc. to remove the control arms from the car.
- Hammer
- Punch
- ¼-28 tap and tap handle (starter or plug tap, do not use a bottom tap) for grease fittings.
- RTV for grease fittings and bushing grooves. **For NB arms only**, epoxy or sealant of choice to plug excess holes in bushing bores.

Installation:

1. Mark LCA-i eccentric (camber/cam) bolts locations. Remove control arms from the vehicle.
2. **If you already have poly bushings installed skip to step #4a.** Remove old bushings from control arms. Make sure you support the control arms properly (Fig. 1), so that you don’t bend them. For example: do not press the RLCA-I bushings out by resting one end of the arm on the press and pressing out the other side, squeezing the 2 legs of the arm together (Fig. 2). Use the pipe or press plates to “receive” the old bushing.

Fig. 1
Support the bore you are pressing the bushing out of, on press plates or a piece of pipe. FUCA pictured.

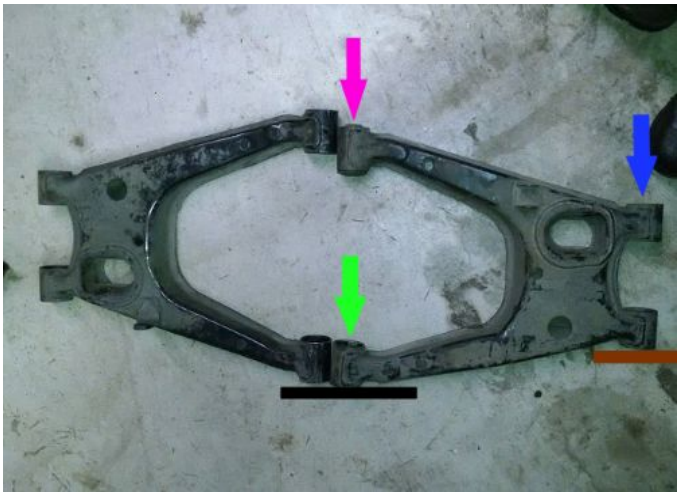


Fig. 2
Damaged bent arm from incorrectly pressing inner bushings out.

In Fig. 2 the arm was bent when an attempt was made to press the top bushing (pink arrow) out while the lower bushing bore rested on the press plate (black rectangle). The lower

bushing (green arrow) should have been the one to be pressed out when the lower bushing bore is resting on the press plate.
Exceptions to this are the FLCA, RUCA-I and RLCA-O bushing locations. You can set one end of the arm on the press, while pressing the adjacent bushing out, flip and repeat. See Fig. 2, you can press the top bushing (blue arrow) out while the bottom bushing bore rests on the press plate (brown rectangle). Care should still be taken with this method. Watch to make sure the arm isn't flexing too much with a stubborn bushing, use the other method when in doubt.

It may be necessary or make it easier on some bushings to remove the rubber flange on one side. These are easily cut with a razor or tore off with a pair of pliers.

Fig. 3
Flange to be cut/torn off. (FUCA pictured)

Fig. 4
Flange removed. (FUCA pictured)

3. Clean the control arms, wire brush the bores clean, remove any burrs or rust from the bushing bores, use sandpaper for stubborn deposits. Now would be the time to paint or coat the arms if you planned on doing that.
4. Install the bronze bearings, bushings and grease fittings:
   A. If you have an existing poly kit installed:
   Start by removing all of the original poly kit steel crush sleeves. Then drill out your 4 FUCA bushings to ⅞" as described in 4B-I. Drill and tap for the grease fitting in the locations described in step 4C & G and install the fittings. Install 2 bearings in each bushing location as described in step 4D and E.
   B. If you are installing a new poly kit:
      I. If you are drilling your own FUCA bushings, start by installing the 4 FUCA bushings into their control arms. Holding the arms in a vise, enlarge the 4 FUCA bushing bores to ⅞". A sharp bit and lots of lube make this much easier, dipping the entire bit in motor oil works well. Go ahead and install the RLCA-O bushings into their location.
      II. If you've sent your FUCA bushings to SADfab to be pre drilled, install the FUCA and RLCA-O bushings into the arms.

C. Drill and tap FUCA and RLCA-O locations for grease fittings:
Center punch the location to drill as shown in Fig. 5 so the drill bit doesn't

Walk. Do your best to center the hole so that it ends up between the 2 bearings once they are installed. Grease fitting locations for all bushing locations are shown below. Using the #3 or 7/32" bit, drill through the arm and all the way through the bushing into the bushing bore for the FUCA and RLCA-O locations only. Remove burrs with the 90* countersink bit, being careful not to enlarge the hole. Tap the holes to ¼-28 and install grease fittings

D. Install the bearings into the bushings:
Install 2 bearings into each FUCA and RLCA-O bushing, 1 from each end, push in until flush. Install bearings into the remaining bushings that are not yet installed in the control arms, 1 bearing into each bushing from the flange side, until flush. If your bushings are already installed, you can press them in with a vise or press with LIGHT FORCE, as they can be stubborn. Use soft jaws on vises! These bearings are relatively soft and it's not like pressing a hardened steel ball bearing. If your bushings are grooved as shown in Fig 6 and 7 it is recommended that you seal the grooves with RTV when installing the bearings into the bushings.

E. Take all the **LCA Inner** bushing locations and countersink the bearing into the bushing with the load spreading washers, until the washer is flush as shown in Figs 6 and 7. Set the washers aside for now.

F. Install all the bushings into the control arms, a press or vise may be necessary, lube the bushings and control arm bores with grease.

G. Drill and tap the remaining grease fittings aiming for the gap between the 2 bushing halves. Only drill about half way into the poly bushings being careful not to go all the way through and damaging the bearings. In the event you do, just dress the bearing with a file or something so there are no raised edges or burrs. Clean any chips or filling out, install the remaining grease fittings, and grease the bearings, filling the gap between the bushing halves and bearings with grease.

*****Most NB control arms have a hole in the bore that needs to be sealed up for grease fittings to work!!!***** Epoxy, RTV or weld hole so grease doesn't escape. RLCA-O and FUCA do not need to be sealed due to 1 piece bushing design.

Fig. 5 Always center punch before drilling

Fig. 6

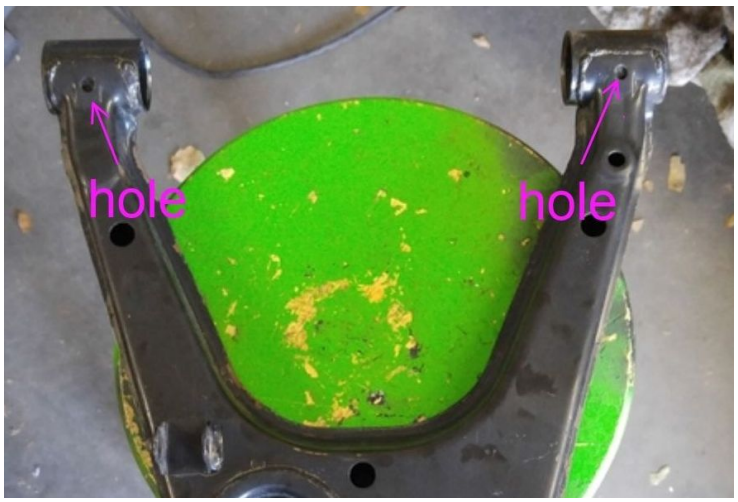
Fig. 6

Fig. 7

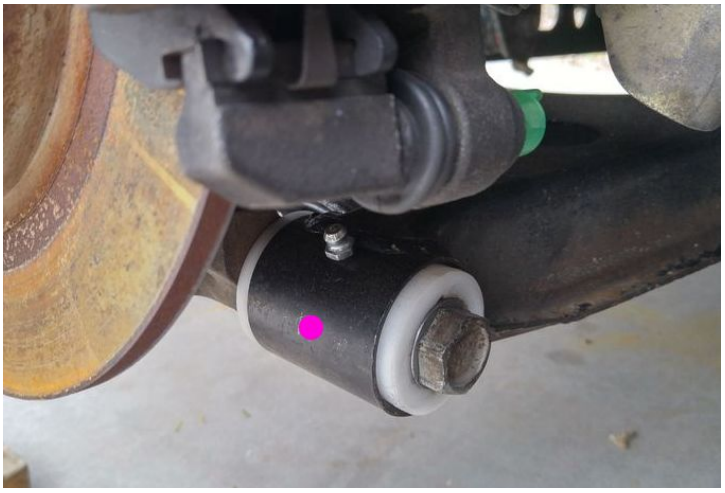
Grease fitting install locations:

FUCA: short fittings, points at ground when installed

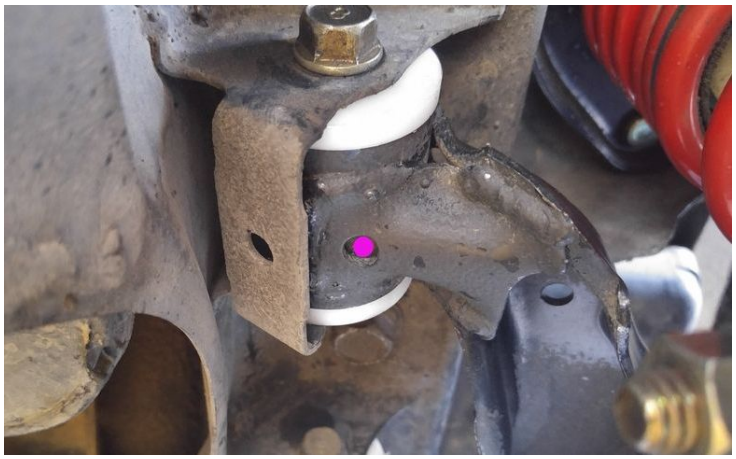
FLCA: long fittings, go in the hole in the bore gusset on the top side of the arm



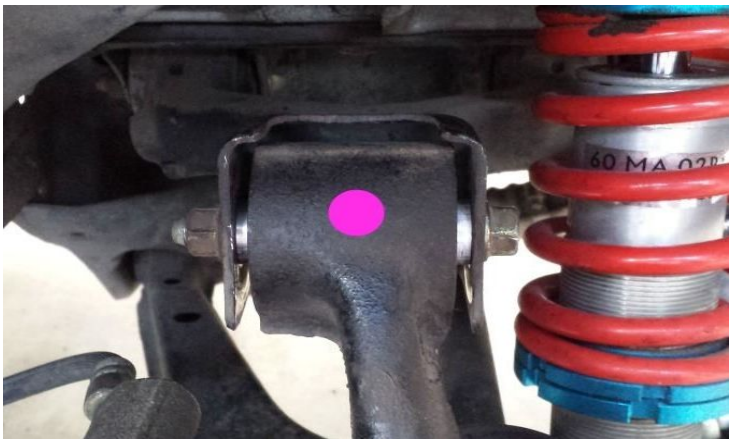
RLCA-I: long fittings, go in the hole in the bore gusset On the top side of the arm.



RLCA-O: short fittings. Just about anywhere around the OD of the bushing bore will work, the pink dot is best for access, or pointing straight down at the ground.



RUCA-I: long fittings. The location depends upon what coilovers and top hats you have and how much droop travel they offer. You can install the fitting in the bottom, in the hole marked by the pink dot, if your suspension doesn't droop enough to have the fitting sheared off by the subframe strap pictured. Alternatively they can be mounted in the top through the hole of the bushing bore gussets, just like the LCA inner locations.



RUCA-O: short fittings.
Just about anywhere on the casting is fine pointing outwards away from the control arm, or on the pink dot.

5. Slide all of the new SADfab steel sleeves into the bearing/bushing assembly in their proper locations. On the LCA inner locations only: install the 16 load spreading washers, 2 in each of the 8 locations, one washer at each end of the steel sleeve, just like in step 4E.

6. Reinstall all of the arms onto the car, make sure washers don't fall out of the LCA inner locations. Feel free to give each grease fittings a few pumps of grease. Set the camber bolts to where they were marked and go get an alignment!

Notes

The FUCA sleeves will stick out of the bushings about ¼" on each side where they clamp against the subframe sleeve. This is completely normal.

It's recommended that you grease the bushings every oil change.The purpose of the grease is less about lubrication and more about pushing dirt out and keeping moisture out.

Because of the reduction in friction and spring rate offered by this kit, you may need to reset ride height, re-corner weight the car, and may even need to increase your spring rate.

Use the factory washers and included washer in the poly kits just as you would with a normal poly bushing install.