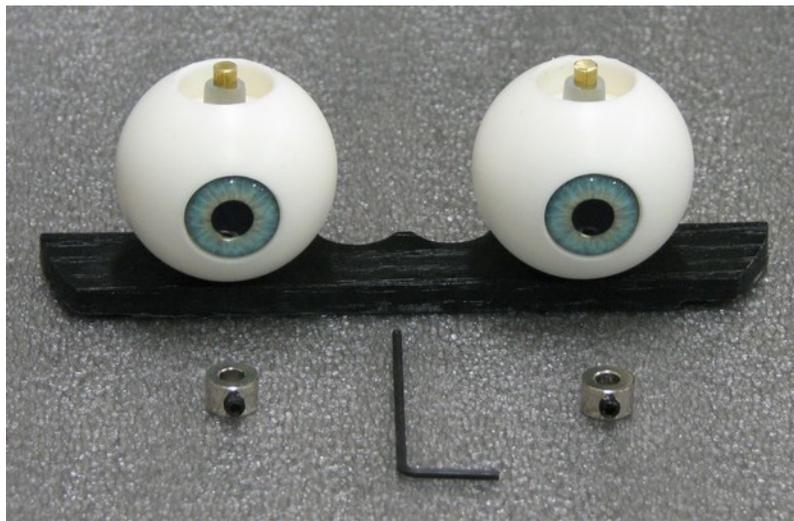


Ultimate Eye Kit Instructions

Puppets and Props - Michael Brose

Although the cast eyeballs are strong and durable they should still be handled with some care. Just the same as with wooden eyes, acrylic eyes or other resin eyes, they can be scratched if you are not careful with them. It is best if eyes are not left to sit in direct sunlight as they can yellow over time. Store eyes and eye tray in a safe place until you are ready to install them.

When you receive the eyes and eye tray, the eyes will be set on the tray with the first form of attachment, a short length of silicone tubing for each eyeball. May not look like much, but these surprisingly hold the eyes in place quite well on the eye tray, even if a finished figure gets a lot of use and/or bumped around a bit in travel. We've tested these in the shop quite a bit here. The eye and tube can be removed by carefully pulling on the eyeball, straight up off of the eye tray. This can come in handy when installing winkers, as you often will need to temporarily remove the eyes from the eye tray while working on the winkers mechanism.



You can reinstall the eye onto the eye tray by simply placing the eye on the eyeball pivot rod, and carefully pushing the silicone tube back over the top of the brass pivot rod. Push the silicone tube down all the way. At first it will be tight against the top of the eyeball recess, and the eyeball will not move freely just yet.

To adjust the silicone tube properly, you can gently pull up on the eyeball to move the tube slightly upward, or it is also permissible to pry gently between the underneath side of the eyeball and the eye tray with a flat screwdriver, which is an easier way to move things a small amount. The idea is have the smallest amount of space between the bottom of the silicone tube and the top of the eye recess. When adjusted correctly, the eyeball should slide up and down on the brass pivot rod about 1/32", or in other words, the smallest amount of clearance, just enough to have the eyeball rotate freely.

Both eyes should be adjusted this way and should move as freely as if the silicone tube was not even there (another indication that the adjustment is correct). The nice thing with this arrangement, is that you can initially have the silicone tube pressed tightly against the eyeball so that the eyes do not rotate while you are fiddling with winkers or installing the eye tray into the head.

After the eye tray is securely installed in the head, you can very easily take a flat blade screwdriver and pry gently between the underneath side of the eyeball and the eye tray and adjust the position of the silicone tube precisely. If you accidentally go too far and the silicone tube ends up too high on the pivot rod, you can push gently on the tube and push it back down some. Sometimes a little adjusting back and forth is necessary to get it just right.

You can also attach the eyes to the eye tray by using the metal collars provided if you prefer. To use these however, you will need to make a little slot or groove on the top of each eyeball to allow access to the little black allen screw inside each collar with the allen wrench that's included.

You can use a small drum sander bit or small barrel shaped grinding bit to grind a small groove into that area. It just needs to be enough to get the allen wrench in place to tighten the set screw. When tightening the collar in place, again you want about 1/32" clearance so there is some play and the eyeballs rotate very freely.

Hole in rear of eye is for a 1/4" diameter eye post. You can use wood, metal (aluminum is easiest to work with) or plastic. A larger hole can be done, but much care must be taken not to damage the eyeballs while enlarging this eye post hole on the back of the eyeballs. See last page for some ideas on synchronizing the eye movements.

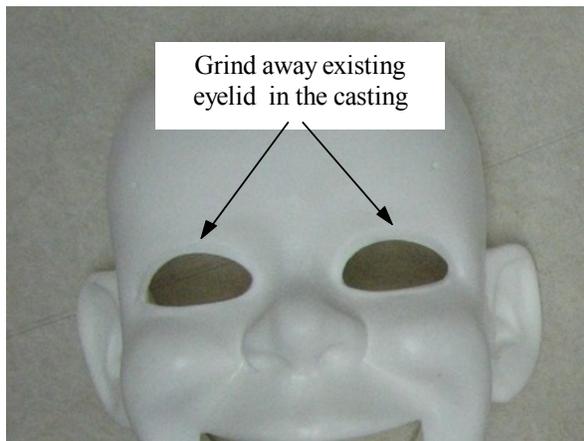
The winker shells provided in this kit have a 3/32" recess or gluing area on the back/top of the winker shell. This formed recess area is just right for 3/32" brass rod. This brass rod can be purchased at your local hobby shop or online.

The first step in working with the winker shells is to make a small cut out in the shells on the sides of the shell. This is done to make clearance around the winker pivots (see photo below). This needs to be cut on each side of the winker shell. This can be done with a small pair of cuticle scissors.



Prior to painting the winker shells, they must be sanded first with medium or 100 grit sandpaper. Sand the entire front of the winker shells including the top flange area. Mike likes to use a shellac based primer such as BIN primer (available at hardware stores, Home Depot, etc.). Just one coat is fine of the primer. Acrylic paints or acrylic latex mixed to a flesh tone is then applied 2-3 coats.

Test fit the winker shells and make sure they do not interfere with the winker frames as they move. Mike likes to use a little 'Fun Tac' (a blue putty that temporarily holds things in place) to hold the winker shells in place to test the movement inside the head. In the Fred or Little 'E' heads,



you need to carve away the eyelid area that is part of the cast head prior to installing the eye tray and winker assembly. You can use a Dremel with a small drum sander bit from the inside of the head, and/or coarse sandpaper. Work slowly and keep testing the fit of the eye tray with winkers. See photos above. You can see that the eye area looks quite a bit wider open after the eyelid is carved away. Still, take care and only remove as much as is necessary. If you accidentally remove too much material in the eye openings, you can fill some back in with epoxy putty.

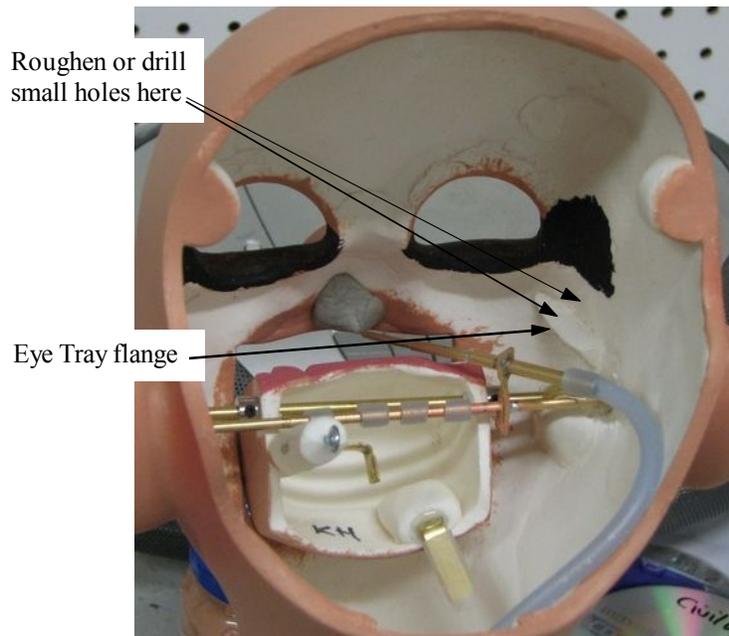
Then, with the winker shells in place on the eye tray and winker assembly, you should look to see that the winker shells are level in relation the the eye openings. Then mark with a fine tip marker near where you did the cut outs on the winker shells, so it will be easy to see proper placement when gluing the winker shells in place.

Mike likes to get the winker shells glued up prior to gluing the eye tray in place. That way you can see exactly how well the winker shells are clearing the eye sockets and fitting the area that you carved away. You do not want the winker shells scraping or rubbing inside the eye sockets when moving through their full travel. Take your time to make sure all looks good before gluing the eye tray into place!

To glue the styrene winker shells to brass looped pivot rods, use one of the gel super glues. Mike likes using Loctite Super Glue with Gel Control. The gel versions of super glue do not run, but stay where you put them. Put small little dots of super glue inside the winker shell flange 1/8" to 3/16" apart along the inside of the whole flange. Do this quickly and press into place immediately and hold it in place for 30-45 seconds or as recommended by the super glue instructions. It is best to wear some disposable rubber gloves when doing this so you do not glue your fingers to the winker shells!

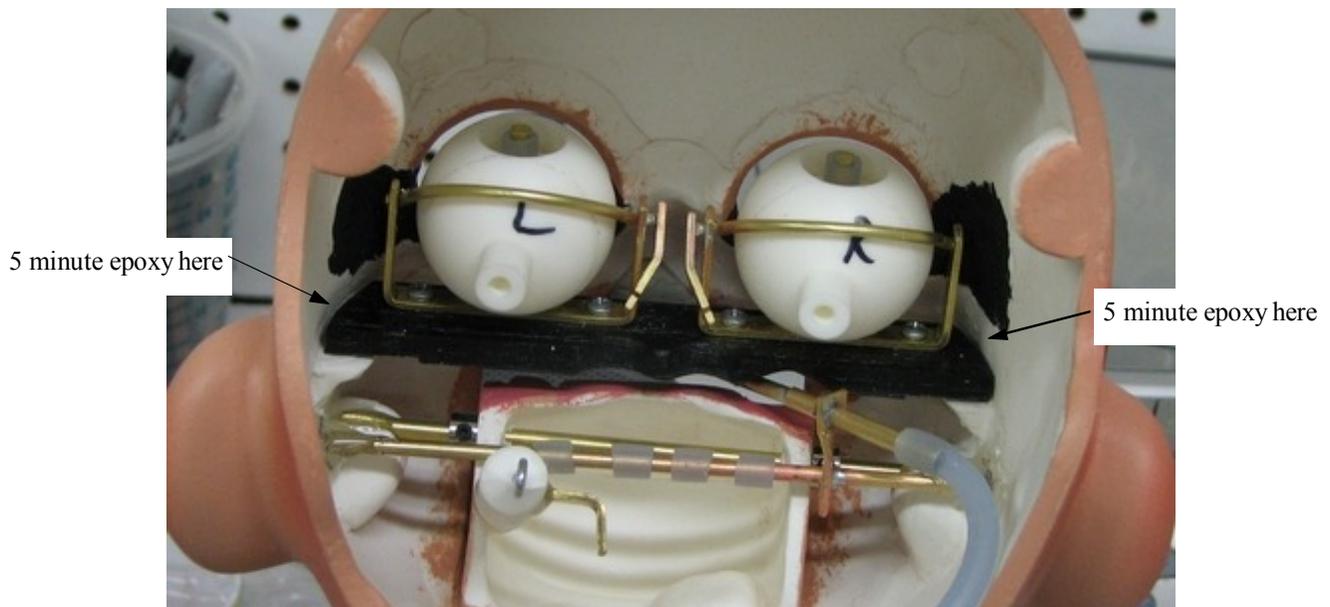
Prior to gluing the eye tray into place inside the head (read about winker shells installation first), you should roughen the area near the eye tray flanges. You can use coarse sandpaper to do this. Mike Brose likes to drill small 1/16" holes into the flange surface and above the flange on the inside sides of the head. Drill just into the surface, being careful not to drill all the way through the casting! Use a small hand drill on slow speed to do the drilling (a flex shaft on a Dremel works ideal). See photo on next page that shows where to do this. Roughen or drill on both sides of the inside of the head.

When installing the eye tray inside the head, you can put some epoxy putty (Apoxie Sculpt or Magic Sculpt works well) on top of the eye tray flanges inside the cast head. Using this putty, you can get the Eye Tray leveled inside the head properly. You may have to let the epoxy putty firm up some before doing this, as when it is first mixed, it is often times too soft.



Look at the front of the head and look at the bottom of the irises in the eyeballs. The bottom of the iris should be level with the top of the bottom eyelids. Also, make sure the eyes have 1/32" to 1/16" clearance away from the eye sockets, as you do not want the eyeballs rubbing on anything inside the head. You will also need to place the winker shells in place (see instructions below), to make sure you have clearance there as well.

It is also possible to use a small amount of ordinary modeling clay, on top of the eye tray flanges. Mike uses just a small bead of clay near the outer lip of the eye tray flange. Then, whether you have used epoxy putty or have used clay to do the leveling, follow up by applying some 5 minute epoxy on the top edge and sides of eye tray, even letting it travel down underneath the eye tray edge some. See photo below.

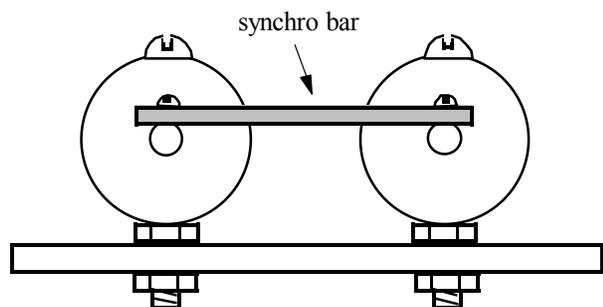


Apply the 5 minute epoxy carefully with a flat toothpick. Apply enough, but take care not to having it drip all over inside the head, in places you do not want the glue. Winker frames and winker pivot loops are not included with the eye tray kit.

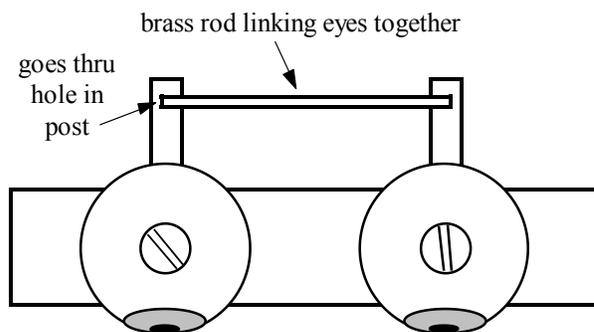
See our web site pages on figure making for more free info and Mike's books for more info.....

- <http://www.puppetsandprops.com/FigMakInfo.html>
- <http://www.puppetsandprops.com/DummyBooks.html>
- http://www.puppetsandprops.com/winker_book.html

Some synchro linkage ideas

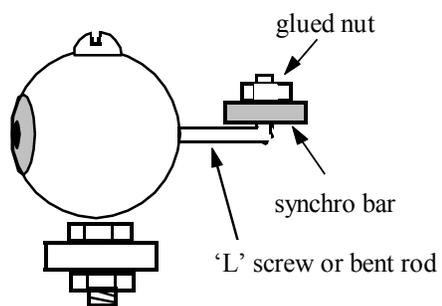


Synchro bar attached to eye posts - Rear View



top view

Synchro rod attached to eye posts



Synchro bar with 'L' style post on back of eye