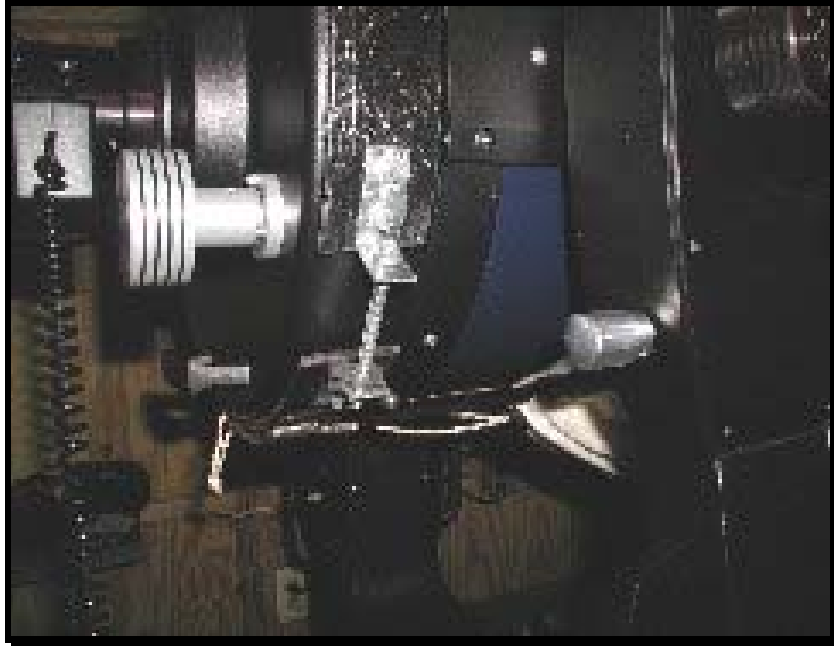


## OTA Rear Cell Counterweight for the Meade Dew Shield

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*This process really needs to be done outside or at least some where that has PLENTY of ventilation! I wouldn't want to be responsible for someone getting injured because of something I had told someone to do was safe, this is not!*

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### MOLD

I used a 2x6 for this purpose. I measured the rear of the OTA (black part where the finder bracket is attached, it's a little more than 2" wide, that set the width. I also measured the circumference (I don't recall the total length) and that set the length. I laid out the length and width on the 2x6 and set up my router with a square-nosed straight bit and set the depth for 1/4" and routed out the 2x6, that formed the mold. Once the mold was cut out and I knew I'd be ready to pour lead the next day I wet down the 2x6 so it would soak in, and that part is key! If the 2x6 is too wet the hot lead will splatter as its poured, too dry and the wood will scorch a little of which will occur anyway. I almost forgot, when you get the total length that needs to go around the OTA subtract an inch or two so you will be able to clamp the weight around the OTA.

### LEAD & POT

I went to my local gun shop and bought a 25 lb. bag of #6 lead shot (about \$12.00), but any *small* sized shot will do. The smaller the less heat is required to smelt it down. A 1 lb. coffee can is about right to handle with that much lead in it, but you can use any size that you like. Take one wire coat hanger and cut the hook off as close to the twist as possible. Put two small holes in the can near the top on opposite sides and attach the coat hanger making sure to twist the wire well and secure to the can. You really need the length for the sake of safety! You will need a pair of channel lock pliers or something similar to grab the bottom of the can lip so you can pour without getting burned, and needless to say a pair of gloves and safety glasses would be wise choices too.

### HEAT SOURCE & SMELTING

I have a one burner Coleman white gas camping stove I used but you could also use an electric hot plate or anything that will get hot. How I figured the amount of was less than scientific and it turned out a bit messy. I had a bright idea that if I poured the shot into the mold I would know how much to smelt down and it would have worked fairly well except those little BB's want to go everywhere! What I ended up doing was to get a piece of plastic wrap from the kitchen and laid it over the mold and then poured the shot into the mold, much neater, but be careful as it does get heavy and might tear the plastic. When you think you have enough 'measured' out add about 1/3 more as this will need to be poured all at once. Put the lead into the can and crank up the heat. Another piece of coat hanger here would also be a good idea, I used a piece of 5/16" steel rod about 18" long I had to make sure all of the lead gets melted. As soon as all of the lead is melted it is ready to pour.

## **POURING & CASTING**

I had my mold sitting on the driveway and leveled. Leveling is key to getting a uniform thickness in the casting, level in both directions. RECHECK the mold for dampness, it should not show signs of standing water but you should be able to tell that it is holding moisture. Be prepared for steam when you start pouring. When you start pouring do so slowly and starting from one end and travel toward the other. Fill the mold completely so that the lead fills the mold cavity, a little over filling won't hurt. If the mold starts scorching badly, take a wet rag and pat the part that is scorching keeping the rag off of the fresh casting. Any discoloring due to this can be cleaned up later. Things should settle down quite quickly so once it looks like the worst is over you can take a break and let things cool down for a couple of hours. The hot lead will have burned most of the little fuzzy stuff out of the mold so getting it out won't be too difficult just use care. I was able to turn my mold over and rap on it with a hammer and the cast fell right out.



*Note: Just below the OTA handle you will see one of the small extra weights I also made for different set-ups. These can be added to either the top or bottom as needed with Velcro.*

## **CLEAN UP, SHAPING & FINAL ASSEMBLY**

Once the casting is removed from the mold there will be, no doubt, some areas that will need a little cleaning up with a file. What works best to start with is a coarse bastard file, it has a crosshatch pattern to the teeth or the teeth look like little pyramids. When the rough edges are fairly clean switch to a mill file,

the teeth are one continuous edge running diagonally across the file surface. For the final cleaning I used 320 grit sandpaper.

Shaping is perhaps the hardest part of this project so work slowly and carefully. There are a couple of ways this can be accomplished and they all will work but I used my scope to shape the weight around. You can also make a template of the OTA diameter by cutting out a circular piece of plywood. Either way you will need another source of heat so you can get the lead more pliable. Be careful when re-heating the lead it won't take much to get it too soft! Form the lead weight to fit the OTA, and it should come up that inch or two short.

Once formed you will need two 'L' brackets (3/4" wide and about 1 1/4" long on mine), four screws (I used 10/32 hardware), eight flat washers, four lock or star washers and four nuts from your local hardware store. If you don't already have the securing bolt and nut you will also need a 1/4"/20 long enough to span the gap in the weight plus a little extra. I also said in my post that I used a wing nut, I had thought of that, but I only used a hex nut. Locate the 'L' brackets on the outer ends of the weight and attach them by drilling holes and screwing them on the weight. The eight flat washers I got were over-sized to help distribute the compression of the screws and nuts (mine are about the size of a dime). Install the screws with the heads towards the OTA. Once the brackets are tightened to the weight I cut off the excess threads and peened them over so they would never come loose. I also filed the heads of the bolts to reduce their profile against the OTA, in retrospect I would have used pop rivets if I had thought of it sooner.

You should now have a weight ready for painting. I masked the inside of my weight where I was going to install the Velcro so I wouldn't have to worry about it peeling the paint off later. Paint the weight a gloss black to match the OTA and let dry. Add the Velcro all the way to the ends of the weight (I got 2" peel and stick from Home Depot), loosely install the 1/4"x20 bolt and nut and slide it onto the OTA.

\*Note\*

***I found that the 'L' brackets would be in the way for some things if installed either straight up or straight down. Looking from the rear of the scope, I rotated them towards the Dec lock fork arm (about the 4 o'clock position) since the other fork arm is a tad on the light side.***

For extra add-on weights for various balance needs you can pour another bar and cut it into short, 6" or so, lengths and attach them to the outside of your OTA weight using the Velcro, hook side on the large weight and loop side on the small weights.

Clear, Dark Skies!

Dave

Birmingham Astronomical Observatory  
12" f/10 LX200GPS s/n 05008  
ASO SuperCharge # 243-2012  
N 42° 59' 23.1" / W 083° 46' 29.7"  
David Birmingham, Director  
Email: [d.birmingham@worldnet.att.net](mailto:d.birmingham@worldnet.att.net)