

How Two - Mirror polish aluminium

Posted by dan - 2011/06/26 03:42

Right I was perusing the various MR2 boards and came across this great how-to over on IMOC for mirror polishing parts on the MR2.

How To Mirror Polish Aluminium

I'm going to give this a whirl when I get the engine out or maybe try a few bits that I have lying around. Free bling! B)

The link above takes you to the following walkthrough.

We start with the standard piece, in this case it's the coolant neck of a Gen3 3S-GTE engine.

http://www.carpron.com/multisite/d/127616-2/IMG_2464.JPG

The first step is the most time consuming and important phase. The amount of work and detail you're prepared to bring into this phase determines how well it'll look in the end.

To get the part to a smooth, mirror-shine finish we need to smoothen the surface of the part. Since this aluminum part is cast, the cast structure needs to be leveled. Aluminum is very soft and this can be achieved by hand-sanding the structure down with grit 80 sanding paper:

http://www.carpron.com/multisite/d/127621-2/IMG_2465.JPG

I'm using a cork sanding block, which isn't too large and gives in a little. A hard, plastic sanding block wouldn't work as well because it's not flexible, making it much harder to sand curved surfaces.

After the first stroke, this problem area becomes visible:

http://www.carpron.com/multisite/d/127624-2/IMG_2471.JPG

The top is not completely round but has a weird shape. You could leave it like this, but as I said, this stage determines how well the finished piece will look. So I want this removed to create a nice round shape instead of what it is now. I use a big metal file to level the high areas. This is the result:

http://www.carpron.com/multisite/d/127627-2/IMG_2475.JPG

I also filed down the casting seams at the top:

http://www.carpron.com/multisite/d/127630-2/IMG_2476.JPG

The rest of the shapes were okay, these just required sanding. Do as much as you can with the sanding block, because you can easily apply pressure on it, making the work much easier. Also, when not using a tool like a block, you're bound to create waves in the soft material, which will show once it's completed. Compare it to body filler: you need the sanding block to create a tight, planar surface. If you'd sand the filler by hand, you'd create a warped surface.

After sanding more:

http://www.carpron.com/multisite/d/127636-2/IMG_2480.JPG

Here I filed away the ongoing casting seam with the same file:

http://www.carpron.com/multisite/d/127642-2/IMG_2485.JPG

The file leaves pretty heavy scratches. 80 Grit sandpaper deals with it though:

http://www.carpron.com/multisite/d/127645-2/IMG_2487.JPG

A bit further down, there's a small '2' cast into the piece.

http://www.carpron.com/multisite/d/127654-2/IMG_2502.JPG

I used a miniature file to get rid of it:

http://www.carpron.com/multisite/d/127657-2/IMG_2508.JPG

I used the large metal file again to level this:

http://www.carpron.com/multisite/d/127660-2/IMG_2510.JPG

You can see how much material was removed by looking at the blank material. After more sanding, sanding and sanding, stage1 was completed.

http://www.carpron.com/multisite/d/127669-2/IMG_2515.JPG

TIME NEEDED TO COMPLETE 80GRIT SANDING: 6-7 HOURS

The next stages are considerably shorter, and easier. 120 Grit sandpaper is up!

http://www.carpron.com/multisite/d/128663-1/IMG_2543.JPG

In this picture, the top part has been sanded down with 120 grit, the rest is still 80. The idea is, that every scratch you made with the 80 grit sanding paper must be removed by the 120 grit. If you don't, you'll see it throughout the remaining stages!

http://www.carpron.com/multisite/d/128667-1/IMG_2552.JPG

Here, the piece is complete done.

http://www.carpron.com/multisite/d/128670-1/IMG_2553.JPG

TIME NEEDED TO COMPLETE 120GRIT SANDING: 1.5 HOURS.

The next stage is 220 grit sanding. Again, you should sand away all the sanding marks left by the 120 grit stage. All done:

http://www.carpron.com/multisite/d/128676-1/IMG_2560.JPG

TIME NEEDED TO COMPLETE 220GRIT SANDING: 1 HOUR.

The next phase is 400. This is where it gets tricky, because this is one of the highest grits you can still dry-sand. Wipe off the paper often, because it tends to fill up with aluminum dust very quickly.

http://www.carpron.com/multisite/d/128680-1/IMG_2562.JPG

As you can see, the piece gets shinier by the hour!

TIME NEEDED TO COMPLETE 400GRIT SANDING: 1 HOUR.

Now we move to wet sanding. Get a bucket of warm water and throw in some pieces of 1200 grit sanding paper. You might also get an old towel, fold it four times, and lay it on your lap. I found this greatly helps in not getting my lap soaking wet.

http://www.carpron.com/multisite/d/128684-1/IMG_2569.JPG

Also, note that at this point, sanding can be done by hand for most parts. You're not altering the shape of the piece any more, you're just refining the texture of the aluminum. Some parts may still be easier to do with a block or rubber, but hand-sanding will get you into all the tight areas.

TIME NEEDED TO COMPLETE 1200GRIT WET-SANDING: 45 MINUTES.

The last sanding step is 2500 grit. Again, this can be done by hand to save time. Finished piece:

http://www.carpron.com/multisite/d/128688-1/IMG_2581.JPG

TIME NEEDED TO COMPLETE 2500GRIT WET-SANDING: 45 MINUTES.

Now it's time for the topping on the ice! Get yourself a hard cotton/cloth polishing disc with polishing paste (usually a hard bar), and mount it on a drill.

http://www.carpron.com/multisite/d/128692-1/IMG_2585.JPG

Use this to polish the piece to the mirror-shine you always dreamed of!

http://www.carpron.com/multisite/d/128696-1/IMG_2590.JPG

http://www.carpron.com/multisite/d/128699-1/IMG_2593.JPG

http://www.carpron.com/multisite/d/128702-1/IMG_2598.JPG

TIME NEEDED TO COMPLETE MACHINE POLISHING: 15 MINUTES.

Now get polishing people!!

Credit to Edwin over on IMOC for the write up!

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Re: How To - Mirror polish aluminium

Posted by Harper - 2011/06/26 13:06

Nice. How long does it last?

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Re: How Two - Mirror polish aluminium

Posted by dan - 2011/06/26 19:40

The guy who did it said he polished it up a bit every winter but we would probably need to do it more with our crap weather. It's also no good to spray laquer on it as it's too smooth to stick properly.

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Re: How Two - Mirror polish aluminium

Posted by Harper - 2011/06/26 23:20

I might give this ago saying I'm stuck in the house. What would be a good part to start on?

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Re: How Two - Mirror polish aluminium

Posted by Marty J - 2011/06/26 23:26

I did the same part a few months ago to the level of the part on the 220 grit and got fed up with it. You really do need a lot of patience if you are thinking about doing this.

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Re: How Two - Mirror polish aluminium

Posted by dan - 2011/06/26 23:50

I have a lot of patience for things like this. Camp in front of the telly for the evening and do it over a few nights. Sorted!

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Re: How Two - Mirror polish aluminium

Posted by Quandry - 2011/07/01 11:33

wow to see it before and after you would think it wasn't the same piece.

what parts are you planning on doing this with dan?

Re: How Two - Mirror polish aluminium

Posted by dan - 2011/07/01 16:43

Not sure yet, definitely trying the water elbow above and any other bits I can get my hands on! Going to get a small buffer pad for the dremmel and see if it's any good. If not then I'll get a bigger one for the drill.

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Re: How Two - Mirror polish aluminium

Posted by SWAGGER - 2011/07/01 18:58

Id use a full size power drill Dan, the motors in Dremel type hobby drills are small and running fort excessive periods of time can burn them out. They are only meant for light work. I burned out one doing a small job before and I know two others that it happened to also. They are dead handy but not particularly tough.

Seriously nice result, fair play for going to the effort of putting that up.

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Re: How Two - Mirror polish aluminium

Posted by ceramicpower - 2011/07/05 11:04

cool, i might do my block

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