

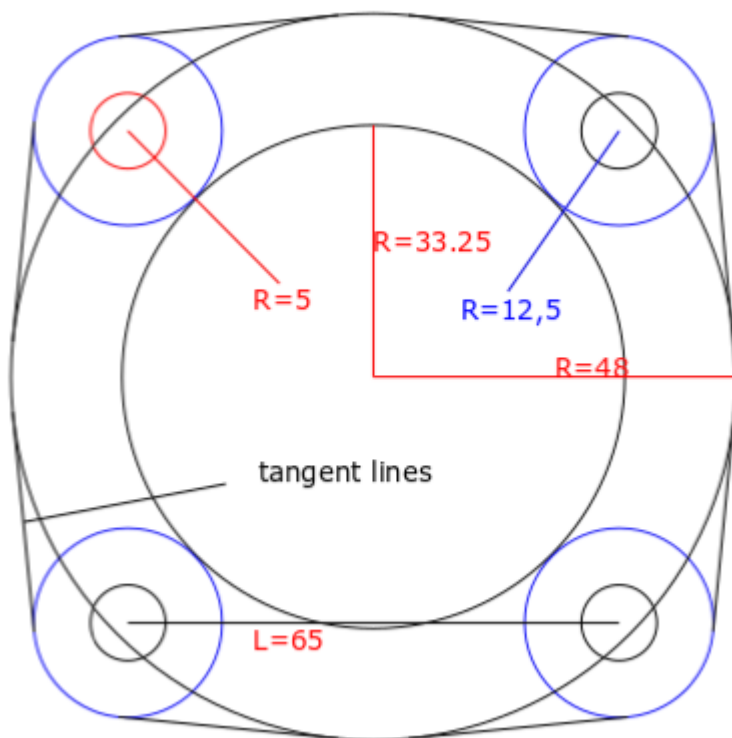
# Zundapp – Gaskets

## Making your own gaskets

As we all know, finding parts for our Bellas is getting harder each year. Getting consumables ranging from tires, to spark plugs is getting harder too as one manufacturer after the other stops making what we use as technology moves on. Luckily, we have a few dedicated suppliers catering to our scene and there is also some aftermarket manufacturing going on. The gear linkage from Broadhurst scooters is an excellent example.

But personal manufacturing is now also at our fingertips. You may recall some of the 3D printed rubber samples brought in two AGMs ago of Bella rubbers. Now I'd like to introduce you to laser cutting. Laser cutting is mostly a two-dimensional process at this time, so it is perfect for flat objects. Materials you can cut range from wood to metal. Anything really except materials that a laser is not suitable for like glass or rubber. Non-standard washers for example can be easily cut.

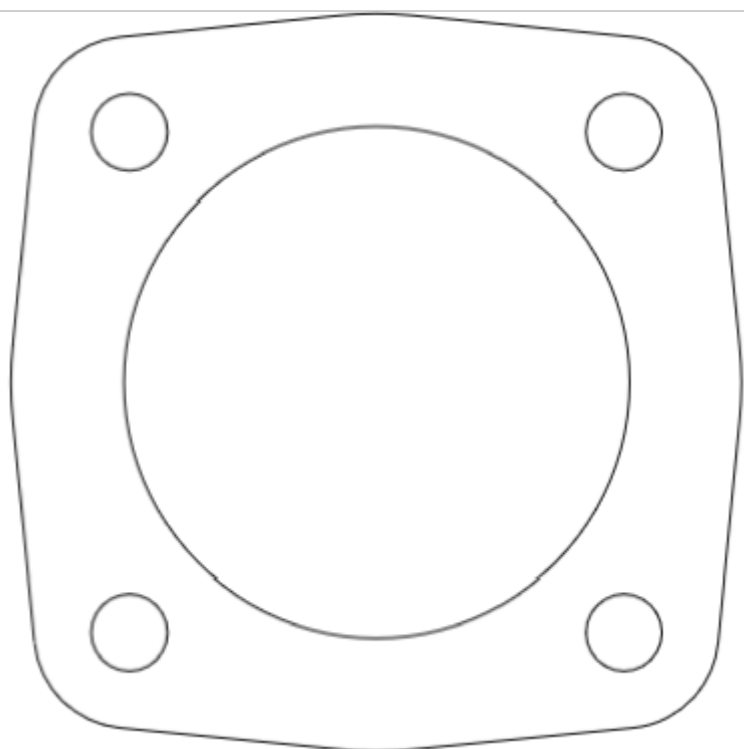
I was in need of new gaskets for my Bella R204 after an engine seize and immediately thought of laser cutting them as they take an age to arrive from Germany or are simply quite expensive or can only be had in a set.



All you need really is gasket material, a drawing in the format the cutter will accept and off you go. That's what I thought anyway. Turns out that not all lasers can deal with reinforced gasket material (metal core) for the head, so I had to find someone with access to a proper laser. A very helpful connection with access to one helped out with that. The other gaskets can be cut by any cutting and engraving machine that handles paper and wood.

That only left the design files. That's the tricky bit. You can of course simply scan an old gasket onto your computer, do a 'trace perimeter' on the scan and convert that to a file the cutter accepts. That takes a little know how, but is doable. The dimensions however tend not to be too accurate and plus or minus a millimeter makes a difference. It's much better to express the gasket geometrically, for example, a head gasket is a central circle surrounded by four equidistant smaller ones for the Bella. That's much more precise. The challenge comes in at the ports of the cylinder gasket as it's very hard to reverse engineer that shape. Those you can scan however, clean up and size them to fit your geometric drawing. An example of the head gasket for the R204 can be seen above.

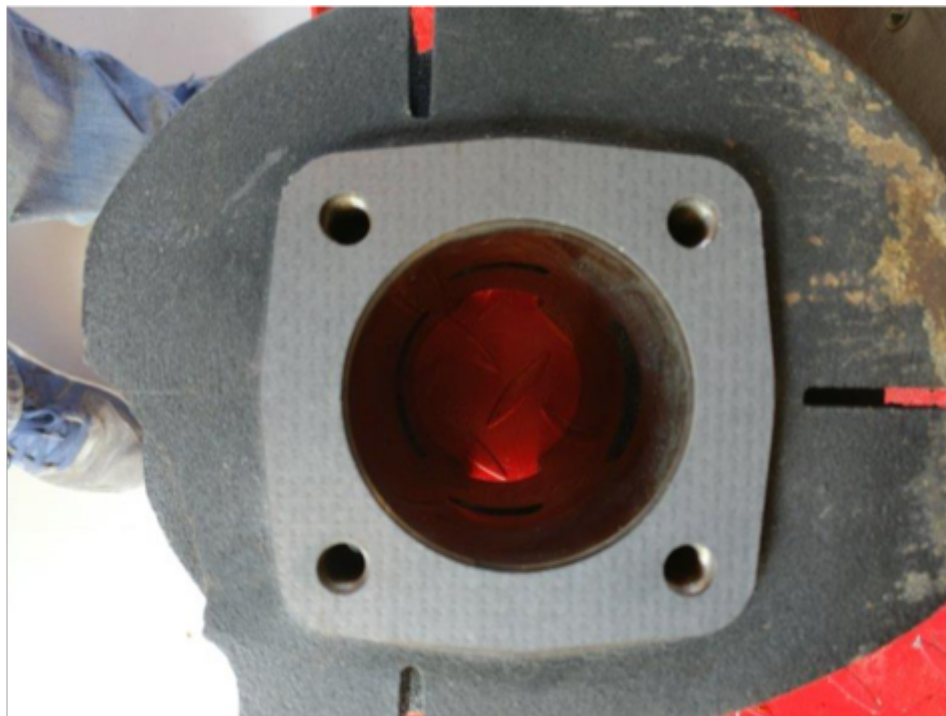
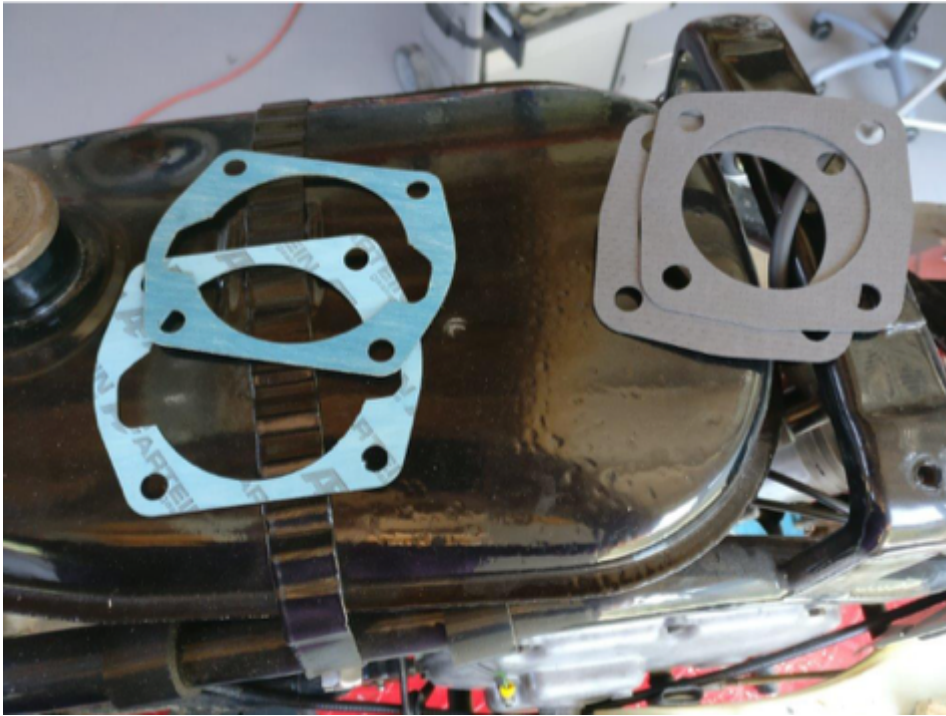
When you draw that in a program like Inkscape (free software) you get the implemented version to the right. This is a so-called vector graphic and can be converted easily into a DXF file that the cutter needs.



I ordered some gasket paper; 0.5 mm for the cylinder and 1.2mm steel reinforced for the head gasket, but different thicknesses are available; I just went with the same size as a gasket set I had for another Bella. This material comes in sheets of different sizes so make sure you can make an efficient cut. In my case I purchased material suitable for exactly two gaskets. Don't forget to put all copies in the design file, otherwise you'll only get one out of each sheet.

So, are we quids in? Four sheets of 0.5mm paper cost 9.5 GBP; reinforced 1.2mm paper 21 GBP. Your local maker community would probably charge you around 15 quid for use of a laser. An online service would probably be more expensive. We're looking roughly at 2.12 GBP per cylinder gasket and 3.56 per head gasket. From memory the cylinder gaskets are around 6 GBP and head gaskets 11.50 GBP when ordered as single items, so that's 1/3 of the price.

A half sheet of gasket material died on trial, but the rest came out very nicely indeed:





As you can see in the parts table, the cylinder gasket would fit any 200CC Bella (and 200S / 201S motorcycles). The head gasket is only suitable for slanted cylinder models looking at part number, but you can compare yours to the drawing on the previous page and adjust accordingly.

Should you want to cut your own, all you need are the SVG files. Should you want to have a go; here are the files:  
[http://noxxou.synology.me/bella/?page\\_id=2457&lang=en](http://noxxou.synology.me/bella/?page_id=2457&lang=en)

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