Locating Multiple Bore Diameters Via Hobbing

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QUESTION

Attached photos (Figs. 1–2) show a bushing to locate one single bore. This will be used to locate one single bore diameter of a gear wheel. What is (the latest) technology for common clamping a bushing to locate multiple bore diameters in hobbing?

Figure 1

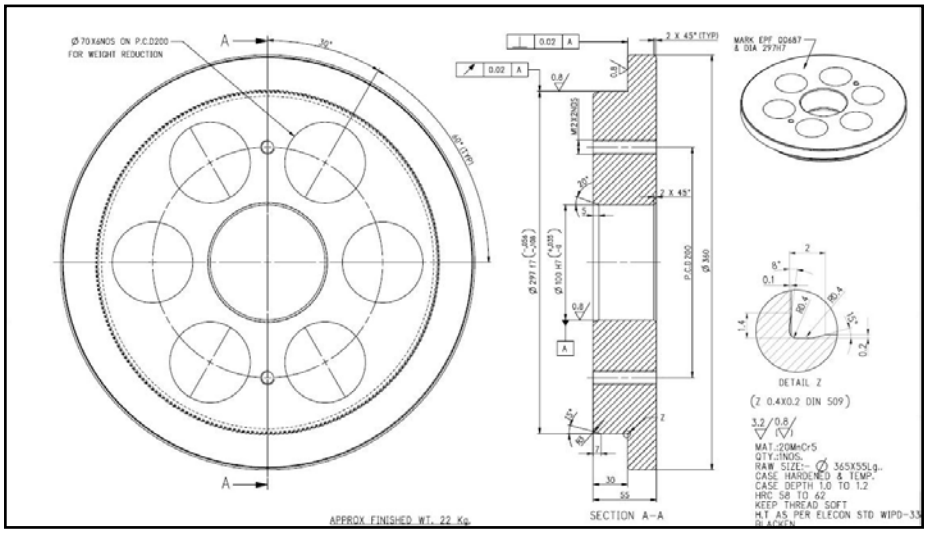

Figure 2

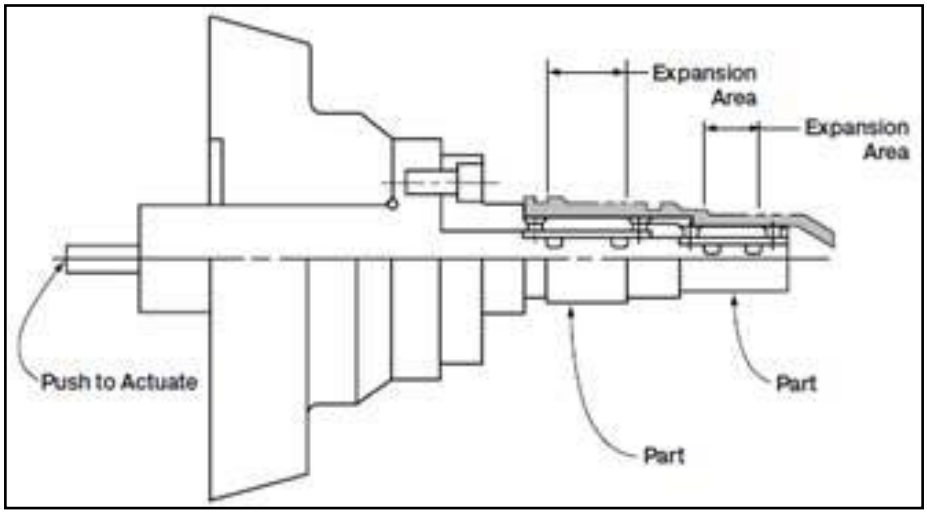

Figure 3

Expert response provided by Tim Zenoski, Gleason Corp. Director, Global Product Management/Workholding: Utilizing a bushing for an application like this is typically something that Gleason wouldn't do. The bore of the gear has a .0014" tolerance. This means that the bushing would have a certain level of clearance in the bore. We refer to this as solid centering. It's done, but usually for low-quality hobbing applications. I would recommend using a mechanical collet or spring (as shown in Figure 3) to center and clamp the gear. You would then utilize the downward pressure of the tailstock to face clamp the gear blank.

Another possible low-cost option would be to center the gear blank with a ball sleeve (cage). A ball sleeve would be designed with an interference fit to the gear bore. This would center the gear — even with the .0014" tolerance. Tailstock clamping would be needed to drive the blank.

Regarding your question about clamping or centering in multiple bores; we normally wouldn't do this, (but) if we were to, I would most likely recommend a hydraulic expansion arbor.

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