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Felten- Guilleame- Rod Finishing Grooves

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On March 15th and 16 Herr Viebahn and Mallach visited Worcester. During a discussion of the rod finishing mill grooves Herr Viebahn said they were thinking seriously of grinding grooves using the Naxos Union grinding equipment. We were shown the finishing grooves as they might be if ground. These grooves have a 60° entry slope becoming tangent to the radius of the groove. This is due to a feature inherent in the design of the Naxos Union machine.

In our contract with F. & G. page 2, is a paragraph stating that they may expect a 5 m/m gage bar whose out of round tolerance is plus or minus 0.15 m/m or .0059 thousandths. In order to help achieve this tolerance we have reduced the plug diameter on 5, 5.3 & 5.5 m/m rod from our 10.4 to 105% of finished size to 103%. This allows a smaller margin of wear in the groove in order to hold to .006" tolerance on worn grooves.

With the pass obtained using Naxos Union grinding equipment, the guide way tolerance can be from .197" to .228" (.031"), depending on the fill, with no wear in the groove. If a radius equal to 101.6% of 5 m/m is used for the bottom of the groove the width on the face is increased still further.

When we discussed this with Herr Viebahn and Mallach, Herr Viebahn said that he didn't think they were required to roll the rod with this close tolerance. However, I believe he understood the uncertainty of the tolerance he could expect with this groove as it wore.

This memorandum does not imply that the .005" tolerance cannot be obtained using this type of groove, but rather is a red flag as to what may be encountered for gage as the pass wears.

Since Templeboro are grinding rod grooves and, assuming their grooves similar to those described using the Naxon Union machine, it would be helpful to know what tolerance they obtain from a clean groove to a discard groove.
Bethlehem-Johnstown rod mill uses a plug of 104% of .222" dia. rod. Their tolerance was .005" - .009" on clean grooves to .010" to .014" on worn grooves. These grooves were turned in the conventional manner, not ground. They now use ground grooves and run two turns per groove. With the ground groove Bethlehem rod tolerance is just about the same as non ground grooves with the added benefit of not having to stone out grooves during rolling.