





# MTS-Test Workmanship Standards

Workmanship Standards Number: 02-03

Rev: A

- 1.1 Name: Machining - Mill Steps, Tool Marks, Chatter Marks
- 1.2 Workmanship Standards Category: Metal Fabricated Materials
- 1.3 Purpose/Description (why/when/how): The existence of unacceptable Mill Steps, Tool Marks, and Chatter Marks creates risks to meeting function and quality requirements of assembled components and subsequent operations.
- 1.4 Illustration:

The following illustrations depict “Acceptable” and “Unacceptable” workmanship results.

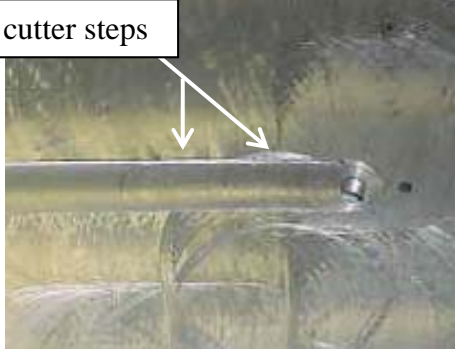
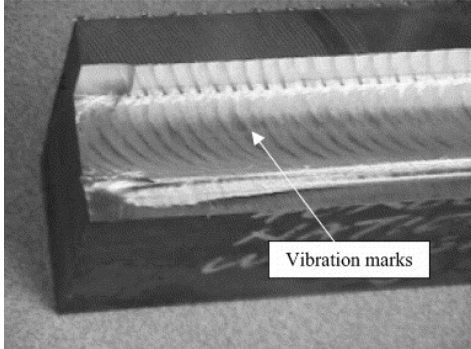

Acceptable Workmanship	Acceptable Notes
	<p>Surfaces show evidence of cutter marks which are burr free and are within the dimensional and surface roughness requirements.</p>
	<p>Port spot face is clean and free of steps and marks across entire face and edges.</p>



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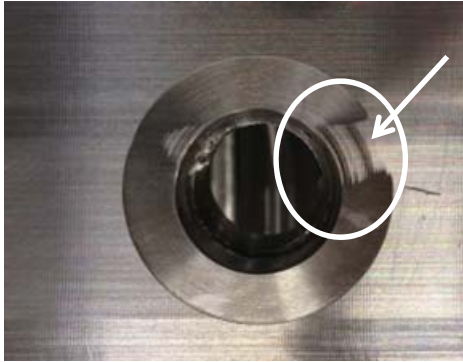
Unacceptable Workmanship	Unacceptable Notes
<p data-bbox="138 436 430 493">Milling cutter steps</p> 	<p data-bbox="885 520 1518 693">Cutter has left a burr, in the bottom of the part, between cutter passes that exceed the surface finish tolerance on the print. This can lead to marking or incorrect fitment of mating components.</p>
 <p data-bbox="511 1039 673 1075">Vibration marks</p>	<p data-bbox="868 955 1550 1029">Cutter vibration has created chatter marks with the surface finish not meeting print specification.</p>
	<p data-bbox="868 1281 1550 1459">Cutter marks that create surface finish out of print specification. This can cause failures or re-work in subsequent operations. Examples such as nylon adherence failures and assembly fitment issues.</p>



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Port spotface did not cleanup the manifold surface completely. This can cause the assembled component to not seat flat and has unacceptable quality appearance.

## 2 REVISION HISTORY & APPROVAL

REVISION HISTORY			
Rev	Description of Change	Author	Effective Date
A	Initiated	Jim Fischer	

APPROVAL OF CURRENT REVISION		
Name / Function	Signature	Date
Stephen Jordheim / Workmanship Standards Process Owner		
Alan Rivers / Workmanship Standards Co-Pilot		