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Engineering Specification TES-004

Engineering Specification Name: **Inspection Requirements**		Issued By: **Engineering**
Rev.: R001	Eff. Date: **12/29/11**	**Page 1 of 3**

1.0 Purpose: The purpose of this engineering standard is to define inspection requirements for hardware manufactured to TDI drawings. This specification should be considered by vendors during the quotation process.

Note: Any request for inspection requirement waivers must be requested from TDI's quality or engineering departments.

2.0 Scope: This engineering standard outlines the dimensional inspection requirements which are to be used when inspecting hardware.

3.0 Definitions:

3.1 100% Inspection: Inspection, and recording of findings, for all requirements per the drawing, for each completed part. Pre-machining dimensions on parts such as castings or weldments are not required to be inspected. All dimensions on completed parts must be inspected.

Note: Any exceptions are outlined within this document.

3.2 Inspection Record: All finish dimensions on part drawing must be recorded on the inspection report with actual measured dimensions. Recording "accept", "Ok", "within tolerance", and checkmarks are not acceptable.

3.3 M&TE: Measurement & test equipment

3.4 COC: Certificate of Conformance

4.0 Responsibility: It is the responsibility of Test Devices' engineering manager to ensure this standard is maintained and updated continuously.

5.0 Inspection Requirements:

5.1 Measurement Accuracy: Suppliers shall select M&TE with an accuracy ratio of 4 to 1 (product tolerance to M&TE tolerance).

5.2 Calibration: All inspection equipment used to inspect hardware must be calibrated.

APPROVALS			
Engineering	Hiro Endo, Engineering Manager	HE 12/29/2011	Date
Quality	David Woodford, VP, Quality & Business Operations	DJW 12-29-11	Date

Revision Log			
Revision	Summary of Changes	Approved By	Rev. Date
Initial Issue	Initial Issue	HES	10/18/11
R001	Added section 6.0 Sampling Plans		12/29/11

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5.3 Raw Material, Hardware & Processes: Provide packing list & COCs for all purchased material & hardware

5.4 Threaded Holes: Each hole must be checked for the following:

5.4.1 Threads quality using a thread gage appropriate for the class of thread specified.

5.4.2 Depth of threads in hole

5.4.3 If No-Go gage is not used, the thread minor diameter must be checked and recorded.

5.5 External Threads: The preferred way of inspecting external threads is with a thread ring, but inspection with a thread micrometer or thread wires is acceptable.

5.6 NPT Threads: Each NPT thread up to 1 inch must be checked with a gage. Threads larger than 1 inch may be checked with a mating part. Quantity of turns required is 3 +/- ½.

5.7 Modified Purchased Parts: All modified dimensions for any purchased part must be inspected and recorded after the modification is complete.

5.8 Geometric Tolerances: All geometric tolerances, such as flatness, parallelism, perpendicularity, runout, concentricity, etc., must be inspected and recorded.

5.9 True Position: Must be inspected and recorded. Location only has to be recorded if found out of tolerance.

5.10 Reference Dimensions: Dimensions shown in parenthesis do not have to be inspected.

5.11 Hole Patterns:

5.11.1 Location of holes in pattern must be checked and recorded.

5.11.2 Only min and max diameters found in a hole pattern must be recorded.

5.12 Counter-bores: Record size and depth. Acceptable to record min and max if more than one.

5.13 Chamfers: All chamfers leading into holes must be verified. Break edges do not.

5.14 Welds: Inspect & record that welds were inspected and approved. Welder certificates must be supplied if required on the drawing.

5.15 Surface Finish: Inspect and record findings for all finishes of 32 or under. For those greater than 32, visually verify and measure if questionable.

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6.0 Sampling Plans:

Test Devices will accept sample inspection on orders of 4 or more parts. 100% inspection needs to be completed, and documented, on the sample amount. Please see sample table 6.1 below for the required quantity per lot size.

Note: Test Devices' acceptable reject rate is 0, so if one part is found to have a non-conforming dimension, the entire lot needs to be inspect 100% to ensure the quality of parts being shipped to Test Devices are acceptable**.**

Table-6.1: Sample Table (MIL-STD 105E).

Lot Size	Sample Size
1-3 pcs	All pcs
4-8 pcs	3 pcs
9-15 pcs	5 pcs
16-25 pcs	8 pcs
26-50 pcs	13 pcs
51-90 pcs	20 pcs
91-150 pcs	32 pcs

Note: For lot sizes larger than 150 pcs, please contact Test Devices for an acceptable sample size

7.0 Referenced Documents:

7.1 MIL-STD 105E

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