	<b>SECTION 7: PART INSPECTION STANDARD</b>	Ref: TM-QA-DO-06-329-R2-E
		Revision Level: 3
		Date: 06/07/05
		Page: 1

**PURPOSE:** To explain key points and submission / review / revision procedure for part inspection standards

**SCOPE:** Applies to all purchased parts as supplied to TMI at all phases as explained in TMI SQAM Section 3.

**EXPLANATION:** The inspection standard defines the critical and / or special characteristics and acceptance criteria for each part and the method and frequency by which the part should be monitored and controlled by the supplier. The inspection standard is a binding document between the supplier and TMI and details the important dimensional, appearance, functional, safety, performance, and packaging items which will be inspected by the supplier before parts are shipped to TMI.

**NOTE:** All characteristics designated as special and/or critical per the Inspection Standard must be identified in a Critical Characteristics Matrix (TMI SQAM Section 22) and shown in the PFMEA and Control Plan.

There are two different types of production level Part Inspection Standards, and the type to be applied will be determined by TMI plant QC.


- **APPROVAL INSPECTION STANDARD** - This standard is automatically written by the supplier for each new part or at the start of each new program regardless of part carryover status and is submitted to TMI QC (Development at Phase 1 / Plant at Phases 2 & 3) for approval.
- **TMI ISSUED INSPECTION STANDARD** - This standard is written by TMI and issued to the supplier for comments, approval, and use.

**RELATED DOCUMENT(S):**

- QUALITY ASSURANCE PROJECT PLAN (QAPP) (TMI SQAM Section 25)
- PFMEA (TMI SQAM Section 9)
- CRITICAL CHARACTERISTIC MATRIX (TMI SQAM Section 22)
- MQC / CONTROL PLAN (TMI SQAM Section 10)
- RAW MATERIAL CERTIFICATION (TMI SQAM Section 24)
- PACKAGING APPROVAL FORM (TMI SQAM Section 23)

**REQUIRED DOCUMENT(S):**

- PART INSPECTION STANDARD - TMI APPENDIX 7A
- INSPECTION STANDARD REQUEST COVER SHEET - TMI APPENDIX 7B
- INSPECTION STANDARD CHANGE REQUEST - TMI APPENDIX 7C
- SAMPLE DATA SHEET - TMI APPENDIX 12A

	<b>SECTION 7: PART INSPECTION STANDARD</b>	Ref: TM-QA-DO-06-329-R2-E
		Revision Level: 3
		Date: <b>06/07/05</b>
		Page: 2

**RESPONSIBILITIES:**

**A) APPROVAL INSPECTION STANDARD -**

- 1) The supplier must submit a newly developed and unique inspection standard for each part number (or family of part numbers) per drawing **for each new program regardless of carryover part status.**
- 2) Revision (addition of new program number) to the existing program standard for a carryover part will not be accepted. Inspection standards that are revised over multiple programs tend to become too busy and incoherent to be effectively used.
- 3) The supplier must submit an initial draft level inspection standard with required internal management level approvals and signatures at phase 1 and revise at each subsequent phase or as instructed by TMI Plant QC for each part number and submit to TMI Plant QC within two weeks of award of business but no later than the timing indicated on the TMI QUALITY ASSURANCE PROJECT PLAN. In some cases, TMI plant QC may meet with the supplier to determine requirements in advance of actual submission.
- 4) The supplier must develop the inspection standard using the TMI PART INSPECTION STANDARD format (TMI appendix 7A - Revision 1 - 3/17/03) per the following guidelines:
  - a) If the standard is manually designed, no characters may be written in changeable or erasable means. If the standard is computer generated, clear revisions and cross referencing must be identified.
  - b) Cut and paste documents are not allowed.
  - c) All signatures must be in ink. No photocopied signatures are allowed.
  - d) The inspection standard has two sections that must be completed by the supplier. They are as follows:
    - aa) INSPECTION STANDARD COVER PAGE (TMI Appendix 7A) is completed as follows:
      - Mark the correct box indicating the standard as “Approval Issued” or “TMI Issued”.
      - Enter the production model number code applicable for the part
      - Enter the date of the original draft of the inspection standard
      - Enter the part number(s) specific to the inspection standard
      - Enter the material specification for the part as shown in the title block of the part drawing
      - Enter the general drawing tolerance instruction number found in the title block of the part drawing
      - Enter the part weight and tolerance - Weight is found on the drawing / Tolerance is found in the appropriate design standard.
      - Add a neatly, cleanly drawn sketch of the part. (Digital or photocopied pictures may be used but cannot be cut and pasted onto the original standard.)
      - Enter the supplier name on each page
      - Obtain approval signatures on all pages (minimum of three signatures from the supplier’s QC department)
      - Enter the initial submission date in the revision record section and list as “Initial Issuance”



# SECTION 7: PART INSPECTION STANDARD

Ref: TM-QA-DO-06-329-R2-E

Revision Level: 3

Date: 06/07/05

Page: 3

bb) INSPECTION STANDARD BODY PAGE(s) (TMI Appendix 7A) are completed as follows:

the

- Enter model number, date, part number, and part name.
- Indicate which items have special regulation requirements by using the symbols found on drawing. (Please refer to Attachment 7-1 for examples of symbols and their meaning.) The symbol itself should be shown in the first column (REG. ITEM).
- Indicate the General Tolerance specified on the part drawing. If the drawing does not identify the General Tolerance, it is the supplier's responsibility to notify TMI Purchasing and request the information and / or document needed.
- Indicate which items have special inspection requirements (process capability, special testing, part certification, etc. as specified by TMI QC) by entering the [Pc] symbol in the first column (REG. ITEM).
- Enter the sequential number for the inspection item as shown in your sketch. These items should be categorized and grouped in the following sections where applicable:

➤ DATUMS - A minimum of three datum points shall be clearly defined per directions controlled. Directions are identified as below:

“L” direction - The front to back direction of the part in relationship to TMI's assembly.

“W” direction - The right to left direction of the part in relationship to TMI's assembly.

“H” direction - The up and down (vertical) direction of the part in relationship to TMI's assembly.

Datums are to be established in the following scheme:

- #1 = Datum established to control all three directions
- #2 = Datum established to control two directions
- #3 = Datum established to control one direction

➤ DIMENSIONAL -


- ✓ This section of the inspection standard defines the critical dimensions that must be controlled on the part to assure the complete fit, function, and appearance quality of the part.
- ✓ The author of the inspection standard will determine which part dimensions are critical by reviewing the part drawing and tolerances and then comparing these to the design intent for installing and locating the part to the assembly. This activity is to be conducted with TMI plant QC. The general drawing tolerance may be changed by the part inspection standard author and TMI QC as necessary to control the part dimension and completed fit.
- ✓ The number for each inspection item should clearly correspond to a sketch showing the detailed measurement location for the dimension specified.

➤ APPEARANCE -

- ✓ Appearance requirements and acceptance criteria are specified in the inspection standard.
  - ✓ Aesthetic characteristics, color, and other visual control items such as missing or wrong parts are specified in this section.
  - ✓ The inspection item should briefly describe the appearance characteristic to be controlled.
  - ✓ The inspection criterion should define judgment for the acceptable limit of the inspection item.
  - ✓ Boundary samples may be used to better define these requirements; and, if used, their use should be noted in this section. Color can be controlled using numerical or visual limits depending on the inspection method with visual color matching being the controlling method.
- **FUNCTIONAL** - Functional requirements are related to moving parts such as hinges and lock mechanisms. Frequencies for test during all phases are normally defined in the inspection standard.
- **PERFORMANCE** - Performance requirements and testing methods are stated on the drawing. Frequencies for testing during all phases are defined in the inspection standard.
- **MATERIAL** - Material specifications are located on the part drawing. Frequencies for testing during all phases are defined in the inspection standard.

NOTE: Proof of material compliance to drawing, inspection standard, and technical standards will be required for shipments at all phases. This proof must be in the form of material certifications. Further certifications may be required for routine mass production parts as specified by TMI Plant QC.

- **WEIGHT** – Part weight is located on the drawing. Frequencies for evaluation are defined in the inspection standard.
- Enter the type of inspection equipment to be used to check the inspection item (caliper, checking fixture, gage, visual, sensory, etc.)
  - Enter the inspection criterion used to judge the conformance of the part to the quality standard:  
EXAMPLE - Dimension @ 7.0mm with a tolerance of +/- 0.5mm = 7.0 +/- 0.5mm criterion
  - Enter the frequency that the inspection item should be monitored by the supplier. Sampling frequencies should be specific to the inspection item being defined. As all stages of production level processes may differ, it may be necessary to list separate frequencies for all stages of production per inspection item.
  - Enter any general remarks, comments, or sketches as needed.
- 5) After completing the initial draft of the inspection standard, the supplier must submit the inspection standard with a **INSPECTION STANDARD REQUEST COVER SHEET - REQUEST FOR REVIEW** (TMI Appendix 7B) to TMI Plant QC. The **SAMPLE DATA SHEET** initial format must also be attached. TMI Plant QC will be responsible for approval of all Inspection Standards at all phases.
- 6) TMI Plant QC will review all received Inspection Standards internally with TMI Development QC before any Inspection Standard approval is given. TMI Development and Plant QC will then either

	<b>SECTION 7: PART INSPECTION STANDARD</b>	Ref: TM-QA-DO-06-329-R2-E
		Revision Level: 3
		Date: 06/07/05
		Page: 5

approve the draft or request modification by the supplier. Once approved, the original will be returned to the supplier and a copy retained by TMI QC along with the original REQUEST TO REVIEW form.

- 7) TMI Development and / or Plant QC will indicate the need for Checking Fixtures on the INSPECTION STANDARD REQUEST COVER SHEET (TMI Appendix 7B) when returning the Inspection Standard Request to the supplier.
  
- 8) TMI Plant QC must issue a copy of the approved Inspection Standard to TMI Development QC. TMI Plant and Development QC will use this approved Inspection Standard to judge part quality at incoming inspection with TMI's expectation being that the part meet the approved Inspection Standard. Any part not meeting standard will be rejected.

### C) REVISIONS TO THE APPROVED INSPECTION STANDARD –

- 1) Revisions to the inspection standard are the responsibility of the supplier.
- 2) Revisions may be initiated by either the supplier or by TMI QC.
  - a) If the change is initiated by the supplier, the supplier must pre-negotiate the revision with TMI QC. Once negotiated, the supplier should submit the revised inspection standard with an INSPECTION STANDARD CHANGE REQUEST (TMI Appendix 7B) to TMI QC. After review and approval, TMI QC will sign both the change request form and the original inspection standard, keep a copy, and return the originals to the supplier.
  - b) If the change is initiated by TMI QC, TMI QC will issue an INSPECTION STANDARD CHANGE REQUEST to the supplier detailing the revision needed. The supplier must then review the request, revise the standard as needed, and submit the original standard with the signed request form to TMI QC. TMI QC will then sign the original, make copies, and return the originals to the supplier.
  - c) Revisions are required due to ECI implementation, corrections to existing standards, or additions to standards based on mass production concerns.
  - d) Revisions to inspection standards must be made per the following criteria:
    - aa) The original information should never be erased. The original information must remain clearly recognizable but also be identified as obsolete. This is accomplished by marking through original information with an X or a double line on manually generated standards. Computerized standard must have clearly identified revisions and cross referencing identified.
    - bb) The change should be placed near the original information and marked with an appropriate revision mark. Revisions should be noted by an alphanumeric character surrounded by a triangle and are referred to as 'delta' marks. Any and all revisions of individual content made as a part of a larger, overall revision should be labelled with the same revision mark.
    - cc) Revisions must be recorded in the revision record using the above noted delta mark. The revision mark is placed in the "Issue" column. A revision date and a brief explanation of the revision content including applicable ECI numbers should be noted in the revision record.



# SECTION 7: PART INSPECTION STANDARD

Ref: TM-QA-DO-06-329-R2-E
Revision Level: 3
Date: <b>06/07/05</b>
Page: 6

Only those revisions that have been approved by both TMI and the supplier are to be noted in the revision block. When the revision block is completely filled, it is acceptable to add another page.

## D) TMI ISSUED INSPECTION STANDARD -

- 1) TMI will draft the inspection standard and send the original to the supplier with an Inspection Standard Request Cover Sheet (TMI Appendix 7B).
- 2) The supplier should review the draft and either approve or request modification prior to the due date indicated by on the cover sheet by TMI.
- 3) If approved, the supplier should sign each page and the cover sheet of the standard, make copies, and return the original to TMI plant QC.
- 4) If the supplier requests revisions or modifications to the standard, they should specify these on a separate sheet and attach this to the original. (If revisions are needed, the supplier should never modify or sign the original document.) The supplier should then submit both the modification sheet and the original standard to TMI plant QC. If TMI agrees to the requested modifications, a revised standard will be issued repeating the above steps.
- 5) If revisions are required after start of production:
  - a) The supplier is to negotiate these with TMI plant QC.
  - b) After negotiation, the supplier should submit an Inspection Standard Change Request to TMI plant QC.
  - c) TMI QC will reject or approve the request and return the original request form to the supplier.
  - d) If approved, TMI QC will change the standard and send the revised original, attached to a new request cover sheet, to the supplier.

TMI

REVISION	REVISION DATE	SECTION	CHANGE DESCRIPTION
0	07/09/03	ALL	Initial release
1	05/20/03	ALL	Added revision record
2	08/09/04	Scope & Responsibility	Added Phase 1 requirements / Modified rules for datums / Revised routing for forms
3	3/01/05	RESP – A – 1	Revised required timing for submission of Inspection Standard
4	<b>6/07/05</b>	<b>RESP – A - 1, 2, &amp;</b>	<b>Addition of requirement for</b>



# SECTION 7: PART INSPECTION STANDARD

Ref: TM-QA-DO-06-329-R2-E

Revision Level: 3

Date: 06/07/05

Page: 7

		3.	unique I/S for carryover part at new program launch