

Attachment to GD-038

Special Characteristics (Guideline for suppliers)

General

- All dimensions, specifications, and tolerances displayed on drawings are important and functional related.
- All part dimensions and specifications must meet requirements and be produced within tolerances.

Special Characteristics are characteristics that require special care and attention.

Special Characteristics may be influenced by the manufacturing process and require appropriate controls to maintain the required process capability and achievement of requirements.

Definitions and Explanations

Critical Characteristics (CC) are characteristics that may affect the:

- Safe vehicle and/or product function
- Compliance with legal and regulatory requirements
- Environmental requirements

Significant Characteristics (SC) are characteristics that may affect:

- Fit, form or function of the product
- Reliability (performance) of the product
- Production process

Standard Characteristics

All Characteristics except CC and SC

Process Capabilities (Cm (Pm), Cmk (Pmk); Pp, Ppk; Cp, Cpk) See ISO 22514-1ff.

Cm*, Cmk*		machine capability indices	
Pp, Ppk,		process performance indices	
Cp, Cpk,		process capability indices	
* according ISO 22514-1	Pm, Pmk	machine performance indices	

"Pass Through" Characteristics

"Pass Through" Characteristics are those Characteristics (Special or Standard) that are produced or manufactured by a Tier 2, which are not controlled, or functionally tested between Tier 2 and OEM and supplied direct to the OEM's or End user (path through).

Huf identifies the pass through characteristics and approve the controls (Control Plan supplier) for those characteristics.

Marking of Special Characteristics

Special Product Characteristics must be assigned in the drawings, FMEAs, Control Plan, Inspection Plan and Work Instruction.



Example marked drawing with e. g. SCs (CCs accordingly):



Define stable, capable processes and controls for Special Characteristics

- Identify Process Parameters related to Special Characteristics arising specifically from process operations on the Process FMEA.
 - Identify any process parameters in each operation that impact each SC/CC.
 - Determine the causal relationship to the SC/CC.
 - Process parameter with the strongest causal relationship become control characteristics.

• Define Controls for Special Characteristics and incorporate in the Control Plan

Control of the process parameter around some target value will ensure that variation of the Special Product Characteristic is maintained or minimized around its nominal target value. Control of a process parameter is generally the most cost effective method of controlling a (Special) Characteristic. When a process parameter cannot be identified for the Special Characteristic select appropriate controls.

Controls can include Poka Yoke, SPC, sampling with a containment plan (first part approval; first /last part) or 100% inspection (A 100% inspection should always be an exception, as they usually produce additional process time and costs. It should be used as a control for not stable/capable processes).

Process Capabilities

Target values for Performance/ Capability indices for CC, SC and Standard Characteristics:

	Machine Capability (Machine Performance)		Process Performance		Process Capability	
	Cm (Pm)	Cmk (Pmk)	Рр	Ppk	Ср	Cpk
СС	≥ 2,00	≥ 1,67	≥ 2,00	≥ 1,67	≥ 1,33	≥ 1,33
SC	≥ 2,00	≥ 1,67	≥ 2,00	≥ 1,67	≥ 1,33	≥ 1,33
Standard	≥ 1,67	≥ 1,67	≥ 1,67	≥ 1,67	≥ 1,33	≥ 1,33

To prove compliance with the specifications for the Special Characteristics, all CC and SC must be listed in the PPAP Report within the scope of the PPAP sampling, together with the respective results of the capability tests, as well as the derivation that these characteristics were taken into account in the P-FMEA and in the Control Plan.

For verification and evidence purposes, the excerpts from the P-FMEA, the Control Plan and the complete capability-check results must also be attached to the PPAP report.



Documentation

Documents and recordings with CC and SC have to be archived. The minimum period of archiving amounts 30 years after creation.