Appendix 4 of the Regulation Problem Solving

Explanation for the checklist

Goal:
To evaluate quality of 8D steps completion, to identify strengths and weaknesses so as to enable 8D teams to improve furthermore their problem solving skills and its documentation. Multiple evaluations by different organizational structures (self assessment by 8D teams, process owners, fresh eye evaluators and corporate quality management) should enable a companywide leveling.

Scope:
External and internal complaints, leading to internal or supplier 8D Reports.

Requirements:
Confirmed professional experience in Problem-Solving.

D2 – Problem description

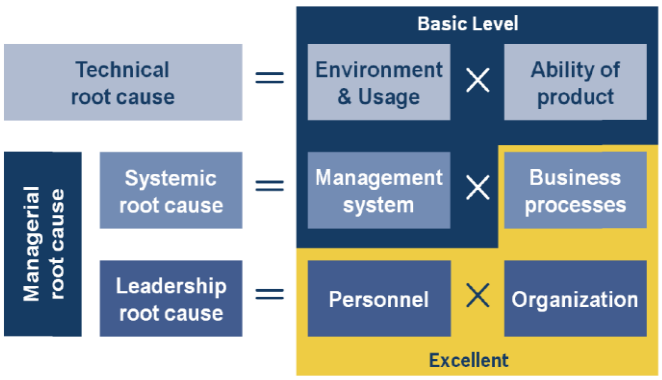
Key question: Has the **fundamental (real) problem** been identified and understood?	
Requirement for „basic level“	**Examples**
The fundamental problem has been quantitatively and clearly identified. It includes facts, figures and dates, usually listed under: what, where, when, how much, who. The whole environment should be taken into account as far as possible, evidence is provided for description and simplification of the problem analysis. The Problem description is the input for efficient Problem Solving.	Number of rejected parts corresponding to production period, flow charts, trend charts, sketches, photos, drawings. Specific events that occurred (shift change or maintenance/setting in manufacturing), changes in the environment (seasonal climate variations, change in project teams…). Pareto analysis concerning all customers built up over time.
Requirements for „Excellent“	**Examples**
Additional information regarding interfaces and impact on customer is provided. All parameters which allow the reproduction of the failure and evidence are provided. Preliminary Risk assessment is provided.	Situation/ problem analysis according to Kepner-Tregoe, basic conditions, history chart, accumulation of facts, effect on end customer (loss of some functions, complete product break down…).

D3 – Containment actions

Key question: Are the interests of BSH (see basic level), especially **in regard to satisfied customers,** sufficiently protected?	
Requirement for „basic level“	**Examples**
Interests of BSH are understood as: Prevention of product liability cases, compliance with legal requirements (country-specific requirements if applicable), loss of image for own brands, respectively BSH, costs because of warranty or accommodation. All necessary costumer information (internal/ external) and compulsory registration to authorities are carried out. Measures are effectively implemented and evidence is given. Effectiveness of containment actions must be documented. If no containment action can be implemented, then the decision making process must be transparently described.	Potential customers to be informed are for example: - Production (follow-up shifts, other production lines/plants) and purchasing organization, - Warehouses (BSH, Logistic Service Provider, Transit), - BSH service organization - Installer and dealer - end customer Containment actions are for example: - sorting actions or warehouse blocking, - build up for firewalls, - fast design review by development, - action guidelines to service organization Evidence of the implementation and detection of the effectiveness must be documented. - agreement of prescribed terminology towards customer (internal and external) if required.
Requirements for „Excellent“	**Examples**
Others e.g. statistical analysis for risk assessment.	

D4 – Establish and review causes

Root cause definition
(Quality Management in the Bosch Group. Appendix 1 to Booklet 16)



Environment and usage:
That means the functionality of the delivered products in the intended use and foreseeable misuse. Is the product specified correctly?

Ability of product:
That means the accordance of the product with the defined specification.
Management system:
That means the use of the documents and compliance with regulations, for example definition of manufacturing processes, development guidelines, FMEA, drawings.

Business process:
That means the process definitions in the management system, for example process descriptions like purchasing processes, logistics processes.

Personnel:
That means: Causes in lack of competence of all levels involved or in qualification / choice of the participants. Sequence of decision making processes.

Organization:
That means: Causes in the definition and handling of interfaces between the involved functions and responsibilities.

D4 – Establish and review causes

Key question: - Has the **Root Cause** for occurrence of the failure been established? - Why did our processes not identify the faulty part / process?	
Requirement for „basic level“	**Examples**
The Technical Root Cause (TRC) and the Managerial Root Cause (MRC) in the Management-System (see definitions), in reference to all facts compiled in D2, is fully established, validated and reproducible. The root cause was efficiently worked out thanks to the use of methodical quality tools. The non-detection was clearly addressed and understood.	Reproduction of the incident can be validated, for example through simulation or testing (errors can be switched on and off). Non-detection can be validated with, for example, a test setup. The MRC is logical derived in regard to the management system (Quality of FMEA, Control Plans, use of design rules and norms, product and process release…). In all cases in which the incident cannot be 100% eradicated (e.g. sinkhole in cast parts), a monitoring must be established.
Risk assessment is provided.	The risk assessment includes at least the severity of the fault, the probability of its occurring or being discovered and an estimation of its potential extent.
Requirements for „Excellent“	**Examples**

All of the four elements of the MRC (including Business processes and Leadership) are identified. The causal relationships between fault (D2) and MRC are transparently depicted. The evidence of the use of methodical tools is also proven for this MRC by submitting the analysis process as well as the results.	Focus is set on the business processes (How is the use of a preventive quality tool or design rules defined and regulated?), as well as on the leadership (how was the organization set up, how were tasks and responsibilities defined and competences and capacities managed, how were decisions taken?). Using for example a cause-effect diagram (Ishikawa), 3x5xWhy-question technique, Fault Tree Analysis (FTA), Shainin, Six Sigma, process analysis, etc... The focus is not only set on how deep and precise the tools were used, but also how understandably it was explained. This explanation shall give the evidence that the root cause was found.

D5/6 – Corrective Action

Key question: - Is the failure eradicated? - Could the **failure** be blocked with certainty? - Are the **basics for process improvement** defined sufficiently?	
Requirement for „basic level“	**Examples**
The corrective actions defined, fully cover the causes listed in D4 and are documented. Evidence of effectiveness of corrective actions taken is provided before immediate measures are withdrawn. Persons responsible are designated and dates set. Reason for withdraw of containment actions is documented.	Photos, sketches, Tests, simulations… The effectiveness of the corrective actions of the TRC is proven, for example through simulation, calculation or testing. All actions for maintenance of the proven effectiveness are defined, for example preventive tool service, regular calibration of measuring tool… In all cases in which the incident cannot be 100% eradicated (e.g. sinkhole in cast parts), a PDCA must be made on the basis of the monitoring.
Requirements for „Excellent“	**Examples**
Effectiveness is assessed and evaluated with regard to risks on other products /	A theoretical representation of the changed process sequence is possible using a flow chart.

processes. A protection for example via Poka Yoke could be introduced. The MRC in the business processes and/or Leadership are found and corrective actions are effectively introduced.	Procedure or design rule were revised (for example how to define, release and control the use of a product or process design rule, how to define a maintenance interval, how to define validation test). Or the organization was changed (new responsibility split, clarified interfaces…), or competences/ capacity was adapted. The decision making process can also be changed (rules for strategic override, management release…). While protecting the manufacturing flow via Poka Yoke, it must be assessed whether test or controls have become redundant (for example visual check by operator, sensor control…), and could be suspended.

D7 – Introduce preventive actions

Key question: Are TRC and MRC eradicated (even somewhere else)?	
Requirement for „basic level“	**Examples**
Findings are worked out in a way that affected areas at BSH can use this information for the prevention of faults. If the same processes or components are used at several locations the prevention of faults must be implemented at all affected locations. The changes in FMEA are to be exemplified via keywords.	“Failure Mode and Effect Analysis” (FMEA)
Requirements for „Excellent“	**Examples**
The corrective actions in D5/D6 are already effective beyond the site.	Changes / adjustments of a guideline or business unit description; development guidelines, manufacturing guidelines, logistics guidelines.

D8 – Final meeting

Requirement for „basic level“	Examples
Signatures from team leader, sponsor (department manager level) and the other functions are provided.	“Failure Mode and Effect Analysis” (FMEA)
Requirements for „Excellent“	**Examples**
A final meeting and self assessment of the 8D results by the 8D team together with the sponsor has been carried out.	

Add-on

Witness on the spot
As far as possible the 8D evaluation should be done on the spot (directly where corrective actions were implemented) to clarify ambiguous statements. The common evaluation with the team is to be promoted, a short loop feed-back works as an on the job training.