

AIAG & VDA FMEA Handbook – 1st Edition – English Translation Errata Sheet

<u>Page</u>	<u>Section</u>	<u>Original Language (see highlight)</u>	<u>Corrected Version Language or explanation</u>
21	1.4.1	The Design FMEA analyzes the functions of a system, subsystem, or component of interest as defined by the boundary shown on the Block/Boundary Diagram, the relationship between its underlying elements, and to external elements outside the system boundary. This enables the identification of possible design weaknesses to minimize potential risks of failure.	The Design FMEA analyzes the functions of a system, subsystem, or component of interest as defined by the boundary shown on the Block/Boundary Diagram or Structure Tree , the relationship between its underlying elements, and to external elements outside the system boundary. This enables the identification of possible design weaknesses to minimize potential risks of failure.
40	2.3.1	Visualization of product or process functions	Visualization of product functions
40	2.3.1	• Function tree/net or function analysis form sheet and parameter diagram (P-diagram)	• Function tree/net or function analysis form sheet and/or parameter diagram (P-diagram), as applicable
41	2.3.2	The recommended phrase format is to use an "action verb" followed by a "noun" to describe a measurable function.	The recommended phrase format is to use an action verb followed by a noun to describe a measurable function.
56	2.4.8 Figure 2.4-7	Figure 2.4-7 View of Product End Item-Function-Failure Form Sheet	Figure 2.4-7 View of Next Higher Level Item-Function-Failure Form Sheet
58	2.5.3	EMC Directive adhered to, Directive 89/336/EEC	European EMC Directives
65	2.5.8 Table D2	Note: O = 10, 9, 8, 7 can drop based on product validation activities.	Note: Occurrence can drop based on product validation activities
67	2.5.9 Table D3	Detection Maturity Method for D=7: Proven test method for verification of functionality or validation of performance, quality, reliability and durability; planned timing is later in the product development cycle such that test failures may result in production delays for re-design and/or re-tooling.	Detection Maturity Method for D=7: New test method; not proven; planned timing is sufficient to modify production tools before release for production.
75	2.6.3	If "No Action Taken", then Action Priority is not reduced, and the risk of failure is carried forward into the product design.	If "No Action Taken", then risk of failure is not changed, and the Action Priority is not reduced.

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80	3.1.2	Answers to these questions and others defined by the company help create the list of DFMEA projects needed. The PFMEA project list assures consistent direction, commitment and focus.	Answers to these questions and others defined by the company help create the list of PFMEA projects needed. The PFMEA project list assures consistent direction, commitment and focus.
81	3.1.2 Figure 3.1-1	Planning and Preparation: All Processes Level Maintenance OP 40 Work Instruction (Part Replacement)	Planning and Preparation: All Processes Level Maintenance OP 40 Work Instruction (Machine Part Replacement)
81	3.1.2 Figure 3.1-1	Planning and Preparation: Department Levels Maintenance OP 40 Work Instruction (Part Replacement)	Planning and Preparation: Department Levels Maintenance OP 40 Work Instruction (Machine Part Replacement)
81	3.1.2 Figure 3.1-1	Structure Analysis: Process Structure 4M Elements Operator Greasing Device Grease EnvironMent(...) Operator Press Machine Sintered Bearing ...	Structure Analysis: Process Structure 4M Elements Man (Operator) Machine (Greasing Device) Material (Grease) EnvironMent (Cleanliness) Operator Press Machine Sintered Bearing Cleanliness
82	3.1.3	A plan for the execution of the PFMEA should be developed once the DFMEA project is known.....The DFMEA activities (7-Step process) should be incorporated into the overall project plan.	A plan for the execution of the PFMEA should be developed once the PFMEA project is known.....The PFMEA activities (7-Step process) should be incorporated into the overall project plan.
82	3.1.4	This includes use of a foundation PFMEA (described in Section 1.3), similar product PFMEA, or product foundation PFMEA.	This includes use of a foundation PFMEA (described in Section 1.3), a product family PFMEA, or similar product PFMEA.

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83	3.1.5	Cross-Functional Team: Team: Team Roster needed	Cross-Functional Team: Team Roster needed
85	3.2.2 Figure 3.2-2	4M Elements Operator Greasing Device Grease EnvironMent(...) Operator Press Machine Sintered Bearing ...	4M Elements Man (Operator) Machine (Greasing Device) Material (Grease) EnvironMent (Cleanliness) Operator Press Machine Sintered Bearing Cleanliness
86	3.2.3	Refer to Section 3.4-7 Failure Cause for more information about how the 4M approach is used to identify Failure Causes.	Refer to Section 3.4.6 Failure Cause for more information about how the 4M approach is used to identify Failure Causes.
88	3.3.1	Visualization of product or process function	Visualization of process function
88	3.3.2	The recommended phrase format is to use an <i>action verb</i> followed by a I to describe the measurable process function (“DO THIS” “TO THIS”).	The recommended phrase format is to use an <i>action verb</i> followed by a noun to describe the measurable process function (“DO THIS” “TO THIS”).

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89	3.3.2	For the logical linking of a function and structure, questions are asked as: “What does it do?” How to achieve the product / process requirements – from right to left (Process Item => Process Step => Process Work Element) “How?” Why implement the product / process requirements – from left to right (Process Work Element => Process Step => Process Item)	For the logical linking of a function and structure, questions are asked as: “What does it do?” How to achieve the product / process requirements – from right to left (Process Work Element => Process Step => Process Item) “How?” Why implement the product / process requirements – from left to right (Process Item => Process Step => Process Work Element)
94	3.4.4	• Internal customer (next operation/subsequent operation/operation tar-gets)	• Internal customer (next operation/subsequent operation/operation targets)
94	3.4.4	Product or Product end user/ operator	Product end user/ vehicle operator
104	3.5.2.1	Test runs according to start-up regulation AV 17/3b	Test runs according to start-up regulation
108	3.5.6 Table P1	S = 10: Failure may result in an acute health and/or safety risk for the manufacturing or assembly worker	S = 10: Failure may result in a health and/or safety risk for the manufacturing or assembly worker
108	3.5.6 Table P1	S = 10: Failure may result in an acute health and/or safety risk for the manufacturing or assembly worker	S = 10: Failure may result in a health and/or safety risk for the manufacturing or assembly worker
108	3.5.6 Table P1	S = 8: 100% of production run affected may have to be scrapped. Failure may result in in-plant regulatory noncompliance or may have a chronic health and/or safety risk for the manufacturing or assembly worker.	S = 8: 100% of production run affected may have to be scrapped.

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108	3.5.6 Table P1	S = 8: Line shutdown greater than full production shift; stop shipment possible; field repair or replacement required (Assembly to End User) other than for regulatory noncompliance. Failure may result in in-plant regulatory noncompliance or may have a chronic health and/or safety risk for the manufacturing or assembly worker.	S = 8: Line shutdown greater than full production shift; stop shipment possible; field repair or replacement required (Assembly to End User) other than for regulatory noncompliance.
111	3.5.7 Table P2		Note: Occurrence can drop based on process validation activities
118	Fig 3.5-3	MRKJ5038	MRKJ5039
121	3.6.3	If “No Action Taken,” then Action Priority is not reduced, and the risk of failure is carried forward into the product.	If “No Action Taken,” then the risk of failure is not changed and the Action Priority is not reduced.
122	Fig 3.6-1	MRKJ5038	MRKJ5039
131	4.3.1	Missing header: 4.3.2 Function	Inserted header: 4.3.2 Function (inserted after final bullet “Basis for the Failure Analysis step”)
134	4.4.2	As an aspect of the Failure Scenario, it is necessary to estimate the magnitude of the Fault Handling Time Interval (time between the occurrence of the fault, and the occurrence of the hazard/noncompliant Failure Effect). The Fault Handling Time Interval is the maximum time span of malfunctioning behavior before a hazardous event occurs, if the safety mechanisms are not activated.	As an aspect of the Failure Scenario, it is necessary to estimate the magnitude of the Fault Tolerant Time Interval (time between the occurrence of the fault, and the occurrence of the hazard/noncompliant Failure Effect). The Fault Tolerant Time Interval is the minimum time-span of malfunctioning behavior before a hazardous event occurs, if the safety mechanisms are not activated.

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141	4.5.7	The effectiveness of diagnostic monitoring and response, the fault monitoring response time , and the Fault Tolerant Time Interval need to be determined prior to rating. Determination of the effectiveness of diagnostic monitoring is addressed in detail in ISO 26262-5:2018 Annex D.	The effectiveness of diagnostic monitoring and response, the Fault Handling Time Interval , and the Fault Tolerant Time Interval need to be determined prior to rating. Determination of the effectiveness of diagnostic monitoring is addressed in detail in ISO 26262-5:2018 Annex D.
142	4.5.7	If there is no monitoring control, or if monitoring and response do not occur within the Fault Handling Time Interval , then Monitoring should be rated as Not Effective (M=10).	If there is no monitoring control, or if monitoring and response do not occur within the Fault Tolerant Time Interval , then Monitoring should be rated as Not Effective (M=10).
144 / 145	Table MSR3	Fault Handling Time Interval	Fault Tolerant Time Interval
147	4.5.8 Table AP	Product Effect High = 9 -> Extremely low - Very low = 2-3 -> Reliable – High = 1 -> L	Product Effect High = 9 -> Extremely low - Very low = 2-3 -> Reliable = 1 -> L
151	4.6.3	If "No Action Taken", then Action Priority is not reduced and the risk of failure is carried forward into the product design.	If "No Action Taken", then risk of failure is not changed, and the Action Priority is not reduced.
159 - 161	A1 All Forms	Model Year / Platform	Model Year / Program
159	Form A		Remove "Filter Code (Optional)" column from Step 6 – Optimization on DFMEA Form A
160	Form B		Remove "Filter Code (Optional)" column from Step 6 – Optimization on DFMEA Form B
163 - 168	A2 All Forms	Model Year / Platform	Model Year / Program

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167	A2 Form G	<p>Error in Header alignment:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4" style="text-align: center; font-size: small;">STRUCTURE ANALYSIS (STEP 2)</th> </tr> </thead> <tbody> <tr> <td style="width: 25%; text-align: center; vertical-align: top;">2. Process Step <small>Station No. and Name of Focus Element</small></td> <td style="width: 25%; text-align: center; vertical-align: top;"><small>Process Description (Verb / Noun) (Function or Outcome of the Process Step)</small></td> <td style="width: 25%; text-align: center; vertical-align: top;">2. Function of the Process Step and Product Characteristic <small>(Quantitative value is optional)</small></td> <td style="width: 25%; text-align: center; vertical-align: top;">3. Process Work Element <small>4M Type</small></td> </tr> </tbody> </table>	STRUCTURE ANALYSIS (STEP 2)				2. Process Step <small>Station No. and Name of Focus Element</small>	<small>Process Description (Verb / Noun) (Function or Outcome of the Process Step)</small>	2. Function of the Process Step and Product Characteristic <small>(Quantitative value is optional)</small>	3. Process Work Element <small>4M Type</small>	<p>Fixed Header alignment:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center; font-size: small;">STRUCTURE ANALYSIS (STEP 2)</th> </tr> </thead> <tbody> <tr> <td style="width: 33%; text-align: center; vertical-align: top;">2. Process Step <small>Station No. and Name of Focus Element</small></td> <td style="width: 33%; text-align: center; vertical-align: top;"><small>Process Description (Verb / Noun) (Function or Outcome of the Process Step)</small></td> <td style="width: 33%; text-align: center; vertical-align: top;">2. Function of the Process Step and Product Characteristic <small>(Quantitative value is optional)</small></td> </tr> </tbody> </table>	STRUCTURE ANALYSIS (STEP 2)			2. Process Step <small>Station No. and Name of Focus Element</small>	<small>Process Description (Verb / Noun) (Function or Outcome of the Process Step)</small>	2. Function of the Process Step and Product Characteristic <small>(Quantitative value is optional)</small>
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167	A2 Form G	<p>Error in Header alignment:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4" style="text-align: center; font-size: small;">FAILURE ANALYSIS (STEP 4)</th> </tr> </thead> <tbody> <tr> <td style="width: 25%; text-align: center; vertical-align: top;"><small>2. Failure Mode (FM) of the Process Step</small></td> <td style="width: 25%; text-align: center; vertical-align: top;"><small>1. Failure Effects (FE)</small></td> <td style="width: 25%; text-align: center; vertical-align: top;"><small>Severity (S) of FE</small></td> <td style="width: 25%; text-align: center; vertical-align: top;"><small>3. Failure Cause (FC) of the Work Element</small></td> </tr> </tbody> </table>	FAILURE ANALYSIS (STEP 4)				<small>2. Failure Mode (FM) of the Process Step</small>	<small>1. Failure Effects (FE)</small>	<small>Severity (S) of FE</small>	<small>3. Failure Cause (FC) of the Work Element</small>	<p>Fixed Header alignment:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center; font-size: small;">FAILURE ANALYSIS (STEP 4)</th> </tr> </thead> <tbody> <tr> <td style="width: 33%; text-align: center; vertical-align: top;"><small>1. Failure Effects (FE)</small></td> <td style="width: 33%; text-align: center; vertical-align: top;"><small>Severity (S) of FE</small></td> <td style="width: 33%; text-align: center; vertical-align: top;"><small>3. Failure Cause (FC) of the Work Element</small></td> </tr> </tbody> </table>	FAILURE ANALYSIS (STEP 4)			<small>1. Failure Effects (FE)</small>	<small>Severity (S) of FE</small>	<small>3. Failure Cause (FC) of the Work Element</small>
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168	View B	Function Analysis (Step 3) Item 2: Process Step Station No. And Name of Focus Element	Function Analysis (Step 3) Item 2: Function of the Process Step and Product Characteristic (Quantitative value is optional)														
168	View B	Function Analysis (Step 3) Item 3: Process Element 4M Type	Function Analysis (Step 3) Item 3: Function of the Process Work Element and Process Characteristic														
169 - 170	A3 All Forms	Model Year / Platform	Model Year / Program														
173	B1.5 Figure B1.5-1	DFMEA AP: H, M, L, N/A	DFMEA AP: H, M, L														

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173	B1.6 Figure B1.6-1	DFMEA AP: H, M, L, N/A	DFMEA AP: H, M, L
173	B1.6 Figure B1.6-1	Status: Open, Decision pending (optional), Implementation pending (optional), Completed, Discarded	Status: Open, Decision pending (optional), Implementation pending (optional), Completed, Not Implemented
173	B1.6 Figure B1.6-1		Remove “Filter Code (Optional)” column from Step 6 – Optimization on DFMEA Form A
177	B2.4 Figure B2.4-1	It is recommended to list the Severity Rating next to each of the 3 areas (Your Plant, Ship to plant, Process Item, End User) being considered and use the highest Rating for the Severity. Rank. One area, such as End User, may not always have the highest Severity Rating.	It is recommended to list the Severity Rating next to each of the 3 areas (Your Plant, Ship to Plant, End User) being considered and use the highest Rating for the Severity. One area, such as End User, may not always have the highest Severity Rating.
178	B2.5 Figure B2.5-1	PFMEA AP: H, M, L, N/A	PFMEA AP: H, M, L
178	B2.6 Figure B2.6-1	PFMEA AP: H, M, L, N/A	PFMEA AP: H, M, L
178	B2.6 Figure B2.6-1	Status: Open, Decision pending (optional), Implementation pending (optional), Completed, Discarded	Status: Open, Decision pending (optional), Implementation pending (optional), Completed, Not Implemented
182	B3.5 Figure B3.5-1	FMEA-MSR AP: H, M, L, N/A	FMEA-MSR AP: H, M, L
183	B3.6 Figure B3.6-1	FMEA-MSR AP: H, M, L, N/A	FMEA-MSR AP: H, M, L

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183	B3.6 Figure 3.6-1	Status: Open, Decision pending (optional), Implementation pending (optional), Completed, Discarded	Status: Open, Decision pending (optional), Implementation pending (optional), Completed, Not Implemented
187	C1.2 Table C1.2	Note: O = 10, 9, 8, 7 can drop based on product validation activities.	Note: Occurrence can drop based on product validation activities
189	C1.3.1 Table C1.3.1	Note: O = 10, 9, 8, 7 can drop based on product validation activities.	Note: Occurrence can drop based on product validation activities
190 - 191	C1.3.2 Table C1.3.2	Includes Table C1.3.2 – Alternative DFMEA Occurrence (O) for Time Based Failure Prediction Values	Table is removed from the Handbook
192	C1.4 Table D3	Detection Maturity Method for D=7: Proven test method for verification of functionality or validation of performance, quality, reliability and durability; planned timing is later in the product development cycle such that test failures may result in production delays for re-design and/or re-tooling.	Detection Maturity Method for D=7: New test method; not proven; planned timing is sufficient to modify production tools before release for production.
197	C2.2 Table C2.2		Note: Occurrence can drop based on process validation activities
208	C3.4	Product Effect High = 9 -> Extremely low - Very low = 2-3 -> Reliable - High = 1 -> L	Product Effect High = 9 -> Extremely low - Very low = 2-3 -> Reliable = 1 -> L
218	F1.1 6th Step	Open, completed, discarded	Open, decision pending, implementation pending, completed, not implemented

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223	F1.2	Step 7 summarizes the scope and results of the DFMEA in a report for review by internal management and/or the customer. The AIAG 4th Edition FMEA manual indicates that management owns the FMEA process and has the ultimate responsibility of selecting and applying resources and ensuring an effective risk management process including timing. These statements are found in Chapter 2, Strategy, Planning, Implementation. However, the 4th Edition does not provide additional guidance on how to engage management in the DFMEA team. Step 7 provides recommendations for what to include in results documentation. This report should indicate the technical risk of failure as a component of the development plan and project milestones.	Step 7 summarizes the scope and results of the PFMEA in a report for review by internal management and/or the customer. The AIAG 4th Edition FMEA manual indicates that management owns the FMEA process and has the ultimate responsibility of selecting and applying resources and ensuring an effective risk management process including timing. These statements are found in Chapter 2, Strategy, Planning, Implementation. However, the 4th Edition does not provide additional guidance on how to engage management in the PFMEA team. Step 7 provides recommendations for what to include in results documentation. This report should indicate the technical risk of failure as a component of the development plan and project milestones.
223	F2	VDA Volume 4, Chapter Product and Process FMEA to AIAG & VDA FMEA Handbook	VDA Volume 4, Product and Process FMEA to AIAG & VDA FMEA Handbook
223	F2.1	VDA Volume 4, Chapter Product DFMEA to AIAG & VDA FMEA Handbook	VDA Volume 4, Section Product DFMEA to AIAG & VDA FMEA Handbook
223	F2.1	Preparation and Project Planning	Planning and Preparation
223	F2.1	result documentation	Result Documentation
228	F2.2	VDA Volume 4, Chapter Product PFMEA to AIAG & VDA FMEA Handbook	VDA Volume 4, Section Process PFMEA to AIAG & VDA FMEA Handbook
228	F2.2	Preparation and Project Planning	Planning and Preparation
228	F2.2	result documentation	Result Documentation
232	F2.3	VDA Volume 4, Chapter FMEA for Mechatronical Systems to AIAG & VDA FMEA Handbook	VDA Volume 4, Section FMEA for Mechatronical Systems to AIAG & VDA FMEA Handbook
235	G	AIAG APQP Advanced Production and Quality Planning	AIAG Advanced Product Quality Planning and Control Plan