

VDA AK 8D – definition of failure cause categories for 8D reporting

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Level 1	Level 2	Level 3	Examples	QDX ID
Development	Specification	Specification missing		010010001
		Requirements changed		010010002
		Specification unclear	Requirements insufficient	010010003
		Miscellaneous		010019999
	Concept	Compatibility	Fixing points do not match, incorrect bus protocol	010020004
		Industrial feasibility	Screw not reachable, inadequate test possibilities	010020005
		Architecture	Increased bus load for data flow, insufficient electromagnetic compatibility in the system, runtime problems	010020006
		Cable routing or cable harness routing	Fixation inadequate	010020007
		Usability	Menu navigation (multimedia), haptic feedback for switch	010020008
		Internal interface	Incorrect connection technology, software driver for hardware components	010020009
		External interface	Plug design incorrect, syntax protocol for communication, inadequate sealing concept	010020010
		Change to the application profile	Deviating product lifecycle, modified installation space	010020011
		Software update process		010020019
		Diagnostic capability	Clear correlation between failure memory entry and failure location, basic diagnostic capability	010020013
		Test planning concept	Definition of test parameters, limit values for stress test in production, identifying test criteria	010020014
		Miscellaneous		010029999
		Product development	No alignment with requirements	Unsuitable temperature range for component
	Material selection		Contact corrosion, expansion coefficients, material pairing unsuitable, insufficient insulation for cable harness	010030016
	Circuit board design		Placement on the circuit board, design rules not adhered to	010030017
	Construction		Tolerances incorrectly determined	010030018
	Circuit diagram		Pull-up resistor missing, ESD protective circuit missing	010030012
	Product drawing		Incorrect or no dimensions	010030020
	Development environment and IT tools		Incorrect data formats, incorrect versioning, faulty tool chain	010030021
	Basic software and functional software		Matlab model incorrect, faulty AUTOSAR module, faulty hardware drivers, parameterization incorrect, firmware error	010030022
	Data management		Incorrect or old coding data/software version	010030023
	Change management		After correcting the active component, the external circuitry interim solution was not removed	010030024
	Miscellaneous		010039999	

Process development	No alignment with requirements		010040015	
	Development environment selection	Low process optimization due to selected development environment	010040025	
	Production process selection	Unfavorable material selection in relation to the production process (e.g. silver migration when soldering)	010040026	
	Production control system selection		010040027	
	Production planning system selection	Inadequate plant utilization	010040028	
	Manufacturing sequence		010040029	
	Transport system automation planning	PLC programming, material flow simulation	010040030	
	Plant control automation planning	Soldering profile programming for wave soldering	010040031	
	Production line layout	Spatially separated production lines, limited spatial options (doors too narrow), building planning	010040032	
	Plant planning	Selection of the appropriate production machines	010040033	
	Logistics planning		010040034	
	Packaging planning	Not ESD-compliant	010040035	
	Personnel planning		010040036	
	Maintenance planning	Maintenance cycles, maintenance concept	010040037	
	Quality planning and test planning	No visual inspection	010040038	
	Energy planning	Emergency power supply	010040039	
	Rework planning		010040040	
	Production resource preparation	Tool manufacturing	010040041	
	Start-up planning	Construction, conversion, commissioning, start-up protection	010040042	
	Programming process planning	Selection of programming location and programming procedure, switching from programmable memory to hardware programming (ROM mask)	010040043	
	Data management		010040023	
	Change management	Missing or insufficient change management	010040024	
	Miscellaneous		010049999	
	Verifying and validating	Protection missing		010050044
		Test coverage insufficient	Testing from the customer's point of view	010050045
		Methodological error	Durability test (e.g. battery missing)	010050046
		Miscellaneous		010059999
Storage	Storage period	Storage period exceeded, storage concept (e.g. FIFO) not adhered to	020060047	
	Storage conditions	Humidity, temperature	020060048	
	Miscellaneous		020069999	
	Semi-finished product	Processing period	Processing period exceeded	020070049
		Miscellaneous		020079999
	Order picking	Type error	An incorrect item is available as a replacement or in addition to the correct item.	020080050
		Quantity error	The quantity of the correct item is too high or too low.	020080051
		Completeness error	An item is missing	020080052
		Miscellaneous		020089999
	Handling	Manual handling	Electrostatic discharge (ESD) specifications inadequate	020090053
		Machine handling	Driverless transport unit, contact points unsuitable, electrostatic discharge (ESD) specifications inadequate	020090054

	Contamination	Contamination that is external to the process	020090055	
	Miscellaneous		020099999	
Joining	Gluing process	Gluing with physically binding adhesives, wet gluing process, contact gluing process, activated gluing process, adhesive process	020100056	
	Dispensing process	Applying heat-conducting paste or liquid seal	020100057	
	Welding process	Contact welding process, laser welding process, friction welding process, ultrasonic welding process, resistance welding process, manual welding process, crack formation in weld, cavities in the weld, raised weld seam	020100058	
	Soldering process	Dip soldering process, wave soldering process and flow soldering process, selective soldering process, reflow soldering process, light soldering process, inductive soldering process, resistance soldering process, cold soldering process, vacuum soldering process, hot air soldering process, laser soldering process, soldering with an open gas flame, diffusion soldering process, amorphous brazing foil, vapor phase soldering process, ultrasonic soldering process, manual soldering process	020100059	
	Riveting process	Solid rivet process, piercing rivet process, blind rivet process	020100060	
	Wire bonding process	Inadequate definition of the process window, monitoring of process parameters on production equipment not activated	020100061	
	Fastening process	Clicking	020100062	
	Clamping process		020100063	
	Clipping process	Securing housing cover with clip	020100064	
	Latching process		020100065	
	Plugging process	Bent pin in electrical plug connection, pushing through of plug pin (incorrect connection)	020100066	
	Screwing process	Screw sequence not adhered to	020100067	
	Sealing process		020100068	
	Clinching process	Clinching, toxing, pressure joining, forming joining	020100069	
	Shrinking process		020100070	
	Lamination process		020100071	
	Press-fit process	Press-fit (plug in circuit board), force fitting (e.g. pressing in ball or bolts), pressing on	020100072	
	Sewing process	Seats, steering wheel	020100073	
	Weaving process	Carbon fibers	020100074	
	Crimping process	Crimped insulation; missing crimp-force monitoring	020100075	
	Woven fabric production process	Carbon mat production	020100076	
	Embroidery process	Carbon mat production	020100077	
	Miscellaneous		020109999	
		Casting process	Tempering, hardening, casting (e.g. also ECU or sensor housing)	020110078
		Injection molding process	Too much raw material, air pockets, clogged nozzle, injection position incorrect, melting temperature too low	020110079
		Metal vapor process		020110080
	Vulcanization process	Tires	020110081	
	Spray compacting process		020110082	

Shaping	Sintering process		020110083	
	Foaming process		020110084	
	Thixoforming process		020110085	
	Calendering process	Film production	020110086	
	Extrusion process	Forming with a mold	020110087	
	Blow mold process		020110088	
	Glass production process		020110089	
	Permanent mold casting process		020110090	
	Overmolding process	Glass pane overmolding process	020110091	
	Miscellaneous		020119999	
	Forming	Bending process		020120092
		Pressing process	Cold pressing, hot pressing	020120093
Folding process			020120094	
Rolling process		Rolling, cold rolling, hot rolling	020120095	
Forging process		Caulking	020120096	
Deep drawing process			020120097	
Pull-through process		Wire drawing	020120098	
Flanging process			020120099	
Rolling process			020120100	
Resin injection process		Carbon fiber reinforced plastics, resin transfer molding	020120101	
Wet pressing process		Carbon fiber reinforced plastics	020120102	
Draping process		Carbon fiber reinforced plastics	020120103	
Twisting process		Tooth setting process, twisting of rods or molded parts (e.g. crankshaft)	020120104	
Miscellaneous			020129999	
Chipping cutting	Cutting process	Thread-cutting, deburring and cleaning processes	020130105	
	Drilling process	Technical cleanliness for blind holes	020130106	
	Milling process	Depanelization	020130107	
	Turning process		020130108	
	Honing process		020130109	
	Grinding process		020130110	
	Sawing process		020130111	
	Deburring process		020130112	
	Rotational turning process		020130113	
	Miscellaneous		020139999	
Chipless cutting	Stamping process	Tool wear influence	020140114	
	Crushing process	Depanelization	020140115	
	Laser cutting process		020140116	
	Electron beam cutting process		020140117	
	Water jet cutting process		020140118	
	Knife cutting process		020140119	
	Miscellaneous		020149999	
Production	Painting process	Color and gloss level	020150120	
	Heat treatment process	Tempering, annealing, burning, baking	020150121	
	Diffusion process	Galvanizing	020150122	

Surface treatment	Hardening process	Irradiation, or hardening or irradiating (e.g. paint with UV)	020150123
	Flame treatment process	Plastic production (e.g. preconditioning of surface)	020150124
	Coating process	Powder-coating process	020150125
	Etching process		020150126
	Galvanization process	Chroming, galvanizing	020150127
	Polishing process		020150128
	Flocking process		020150129
	Anodizing process		020150130
	Embossing process	Leather embossing	020150131
	Preservation process	Brake disc preservation, corrosion protection	020150132
	Shot peening process		020150133
	Miscellaneous		020159999
	Lubricating	Missing	
Insufficient			020160135
Methodological error			020160046
Miscellaneous			020169999
Cleaning	Air cleaning process		020170136
	Laser cleaning process		020170137
	Plasma cleaning process	Unclean bond pad surface	020170138
	Ultrasonic cleaning process		020170139
	Sandblasting process		020170140
	Water jet cleaning process		020170141
	Washing process	Labels not removed	020170142
Miscellaneous		020179999	
Assembling	Assembly process	Assembling of electronic component	020180143
	Depositing process or placement process		020180144
	Telescoping process		020180145
	Application process		020180146
	Mounting process		020180147
	Spring-assisted forming joining process		020180148
	Setting process		020180149
	Process sequence		020180150
	Positioning process of the component	Orienting process of the component or position incorrect, imprecise, variation	020180151
Miscellaneous		020189999	
Set-up	Balancing process		020190152
	Adjustment process	Adjusting headlights or sensor	020190153
	Teaching-in process	Brake, clutch	020190154
	Miscellaneous		020199999
Programming the control unit	Software version	Incorrect version	020200155
	Coding process	Incorrect parameterization	020200156
	Programming process	Flash error, abort	020200157
	Miscellaneous		020209999
	Network		020210158
	Server		020210159

Infrastructure	Production software		020210160
	Production control system		020210161
	Power failure		020210162
	Conveyor technology		020210163
	Miscellaneous		020219999
Testing	Incoming goods inspection	Checking completeness, properties	020220164
	Alignment process and adjustment process		020220165
	Leakage test	Inadequate method or process, test coverage insufficient	020220166
	Torque test	Test equipment error	020220167
	Electrical test	Test process, in-circuit test, electrical characterization of the lithium-ion cell, open circuit voltage test after storage period and formation, and metallic particles as impurities	020220168
	Electric component test	Water test, slippage, insufficient test coverage, insufficient test depth, incorrect bin limits or bin classes	020220169
	Electric component final test	Final test, slippage, insufficient test coverage, insufficient test depth, incorrect bin limits or bin classes	020220170
	Final test and function test		020220171
	High temperature test		020220172
	Hydraulic test		020220173
	Dimension check		020220174
	Position check		020220175
	Automatic visual check	Laser scanning	020220176
	Manual visual check	Reference sample faulty	020220177
	Pneumatic test		020220178
	Pre-measurement process		020220179
	Concentricity test	Two-dimensional force measurement	020220180
	X-ray test	Computer tomography	020220181
	Unbalance test	Tire unbalance	020220182
	Thermal imaging test		020220183
	Hardness test		020220184
	Eddy current test		020220185
	Ultrasonic test		020220186
	Test marking	Type plate	020220187
	Rheology test	Test of the viscosity and dispersion of the substance applied as part of cell coating	020220188
	Humidity test		020220189
	Temperature test		020220190
Miscellaneous		020229999	
Packaging	Packaging missing		020230191
	Packaging incorrect	Unsuitable packaging, e.g. does not comply with technical cleanliness	020230192
	Packaging faulty		020230193
	Marking and labeling	Labeling	020230194
	Miscellaneous		020239999
Reworking	Reworking not permitted		020240195
	Reworking insufficient		020240196

	Reworking	Reworking missing		020240197	
		Miscellaneous		020249999	
	Maintenance	Maintenance cycle	Maintenance intervals too long	020250198	
		Maintenance	Maintenance incorrect, insufficient or not carried out	020250199	
		Miscellaneous		020259999	
	Component production process	Single error chip production	Defect density problems, single error, statistical error	020260200	
		Systematic chip production error	Process problem, batch problem, contamination	020260201	
		Single error chip housing	Contamination, damage during manual visual inspection, statistical error	020260202	
		Systematic chip housing error	Process problem, batch problem, contamination, equipment fault	020260203	
		Passive components production process		020260204	
		Miscellaneous		020269999	
Logistics	Transport	Loading process	Mechanical damage because box falls down	030270205	
		Transportation process	Mechanical damage due to shifting in the truck	030270206	
		Storage	Environmental influences, e.g. rain, sun	030270207	
		Delivery documents	Missing, incorrect or incomplete delivery documents	030270208	
		Miscellaneous		030279999	
	Packaging	Packaging size		030230209	
		Packaging goods	Porous film	030230210	
		Packaging cleanliness	Contaminated	030230211	
		Packaging material	Incorrect packaging material used for sea freight/air freight	030230212	
		Packaging concept	No ESD-safe packaging	030230213	
		Specification not adhered to		030230214	
		Miscellaneous		030239999	
	Marking and labeling	Marking or label missing		030280215	
		Marking or label cannot be read		030280216	
		Marking or label incorrect	Multiple markings	030280217	
		Marking or label mixed up	Right or left	030280218	
		Marking or label pasted over	Marking no longer clear (e.g. dangerous goods), marking covered	030280219	
		Accompanying documents missing	Variant mix-up, semi-finished products	030280220	
		Scanning process		030280221	
		Positioning incorrect		030280222	
		Information carrier	Radio frequency identification, data matrix code, bar code	030280223	
		Miscellaneous		030289999	
	Data exchange	Data	Incorrect or no data	030290224	
		Transfer	Interrupted data transmission, delayed, too early, incomplete	030290225	
		Miscellaneous		030299999	
		OK according to analysis	According to standard test	According to "VDA volume Field Failure Analysis"	040300226
	According to load test		According to "VDA volume Field Failure Analysis"	040300227	
	OK according to No Trouble Found process	Data collection and data analysis	According to "VDA volume Field Failure Analysis"	040310228	
		System test	According to "VDA volume Field Failure Analysis"	040310229	
		Process evaluation	According to "VDA volume Field Failure Analysis"	040310230	
		Contamination	Particles, fluids	040320055	

Failure cause unfamiliar or unknown	Caused by customer	Damage or destruction	Mechanical, thermal damage; assembly, disassembly, improper external intervention	040320231
		Logistics	Marking, packaging, storage, transportation	040320232
		Handling	Electrical application error, programming process, diagnosis	040320233
		Incorrect diagnosis and disassembly	Diagnostics, guided troubleshooting, exchange of non-causative component	040320234
		Out of warranty	Mileage exceeded	040320235
		Not in accordance with the contract	Manipulation, chip tuning	040320236
		Electrical overstress EOS	Electrical overstress EOS	040320237
		Electrostatic discharge ESD	Electrostatic discharge ESD	040320238
		Miscellaneous		040329999
		Failure cause cannot be determined	Part lost during analysis	
	Part destroyed during analysis			040330240
	Failure cannot be reproduced		Failure could be proven once, failure disappeared, e.g. pressure-sensitive mat for seat occupancy detection shifted slightly and moved into the correct position itself after loosening the screws	040330241
	Miscellaneous			040339999