8D Problem Solving Report

IATF 16949

Report ID:	8D-2024-031
Customer:	Volkswagen AG
Supplier:	Metatech GmbH
Product:	Brake Caliper Bracket
Part Number:	BC-4471-02
Customer Complaint Number:	VW-REC-2026-10492
Customer Part Number:	7L0-615-424-B
Supplier Part Number:	STC-BC4471-REV3
Report Date:	2026-04-14

D1 – Team

Team Leader	Jonas Hartmann
Quality Rep.	Laura Steinberg
Production Rep.	Tobias Kerner
Engineering Rep.	Stefan Wollner
Additional Members	Claudia Renner (Logistics), Felix Gruber (Purchasing), Sara Lindemann (Customer Service)

D2 – Problem Description

What	Brake caliper bracket bore diameter exceeds specification tolerance. Measured diameter: 12.3 mm. Specification: 12.0 mm ±0.1 mm. Deviation: +0.2 mm above upper tolerance limit. Parts fail assembly requirements.
Where	Detected at customer incoming inspection, VW Györ Plant, Assembly Line 4
When	First detected on 13.04.2026 during incoming goods inspection of delivery note 2024-DE-4471
How Many	3 non-conforming parts confirmed out of 150 inspected. Full lot size: 480 units (Lot LOT-2026-0312). Remaining 330 units quarantined pending sorting.
Detection Method	Calliper measurement during incoming inspection, cross-checked with CMM (Coordinate Measuring Machine)
Customer Complaint	During incoming inspection at our Györ facility, 3 parts from delivery note 2026AI -DE-4471 were found non-conforming. Bore diameter measured at 12.3 mm, exceeding the specified tolerance of 12.0 mm ±0.1 mm. Affected parts were quarantined immediately. Supplier is requested to provide full 8D report within 10 business days.
Additional Notes	Customer has requested 100% inspection certificate for all future deliveries of Part No. BC-4471-02 until root cause is confirmed and corrective actions verified effective.

D3 – Containment Actions

Action	Responsible	Due Date
block shipment of all brake caliper bracket inventory	Production Representative	2026-04-29
quarantine work in progress brake caliper brackets	Production Representative	2026-04-29
perform 100% sorting of finished goods inventory	Quality Representative	2026-04-30
contact customer to verify in-transit shipment status	Team Leader	2026-04-29
implement enhanced inspection for bore diameter on production line	Production Representative	2026-05-01

Cleanpoint Delivery On	2026-04-13
Delivery Note Number	DN-2026-4471
Delivered On	2026-04-06
Quantity Correct	477
Quantity Incorrect	3

D4 – Root Cause Analysis (5-Why)

TUA — Technical Cause (Occurrence)

Why 1: Machining tool produced oversized bore diameter

Why 2: Cutting tool experienced excessive wear during machining operation

Why 3: Tool wear monitoring system failed to detect worn cutting tool condition

Why 4: Tool wear inspection checklist does not include bore diameter cutting tool verification

Why 5: Tool condition assessment procedure lacks specific criteria for bore machining tools

Root Cause: Tool condition assessment procedure lacks specific criteria for bore machining tools

TUN — Technical Cause (Non-Detection)

Why 1: Bore diameter measurement not performed during final inspection

Why 2: Bore diameter characteristic missing from final inspection checklist

Why 3: Control plan does not specify bore diameter as critical characteristic for final inspection

Why 4: Risk assessment did not identify bore diameter as customer critical dimension

Why 5: Customer specification review process did not capture bore diameter inspection requirement

Root Cause: Customer specification review process did not capture bore diameter inspection requirement

SUA — Systemic Cause (Occurrence)

Systemic Cause: Tool management system lacks comprehensive tool condition criteria definition and implementation process

Derived From: Tool condition assessment procedure lacks specific criteria for bore machining tools

SUN — Systemic Cause (Non-Detection)

Systemic Cause: Quality planning system lacks systematic customer specification analysis and control plan development process

Derived From: Customer specification review process did not capture bore diameter inspection requirement

D5 – Corrective Actions

Action	Related Cause	Responsible	Target Date	Verification
define specific wear criteria for bore machining tools — Establish measurable criteria including tool wear limits, surface finish parameters, and dimensional accuracy thresholds specifically for bore machining operations. Include visual inspection standards and measurement protocols for tool condition assessment.	Tool condition assessment procedure lacks specific criteria for bore machining tools	Manufacturing Engineering	2026-05-15	process audit of tool condition assessment procedure
implement bore diameter inspection step in control plan — Add mandatory bore diameter measurement at specified frequency in the control plan. Define sampling plan, measurement method, and reaction plan for out-of-specification results. Update inspection instructions and operator work instructions.	Customer specification review process did not capture bore diameter inspection requirement	Quality Engineering	2026-05-12	measurement system analysis and capability study
establish comprehensive tool condition criteria definition process — Create systematic process for defining tool condition criteria across all machining operations. Include tool life prediction models, wear pattern analysis, and preventive replacement schedules. Integrate criteria into tool management system database.	Tool management system lacks comprehensive tool condition criteria definition and implementation process	Process Engineering Manager	2026-06-30	system audit of tool management process
implement systematic customer specification analysis process — Develop structured process for analyzing customer specifications	Quality planning system lacks systematic customer specification	Quality Systems Manager	2026-06-15	process audit of quality planning system

and translating requirements into control plan elements. Include specification review checklist, cross-functional review requirements, and control plan update procedures. Define roles and responsibilities for specification analysis.				analysis and control plan development process
update PFMEA with bore diameter failure mode — Revise Process FMEA to include bore diameter deviation as potential failure mode. Define occurrence, detection, and severity ratings. Establish prevention and detection controls specific to bore machining process variations.	Tool condition assessment procedure lacks specific criteria for bore machining tools	Quality Engineering	2026-05-20	PFMEA review and approval
implement tool condition monitoring system — Install automated tool condition monitoring for bore machining operations. Include vibration analysis, cutting force monitoring, and dimensional trend analysis. Set alarm thresholds based on established tool condition criteria.	Tool management system lacks comprehensive tool condition criteria definition and implementation process	Maintenance Engineering	2026-07-15	capability study of monitoring system

D6 – Implementation & Verification

Implementation Status	Completed
Implementation Date	2026-04-20
Responsible	Jonas Hartmann
Verification Results	define specific wear criteria for bore machining tools: Audit tool wear criteria document completeness and measure operator adherence rate e95% to defined inspection protocols within 30 days of implementation implement bore diameter inspection step in control plan: Verify 100% bore diameter measurements recorded in control plan database and confirm zero customer complaints related to bore diameter deviations within 60 days establish comprehensive tool condition criteria definition process: Confirm tool condition criteria defined for 100% of active machining tools and measure tool-related quality incidents reduction e50% within 90 days implement systematic customer specification analysis process: Audit customer specification analysis completion rate e100% for new projects and measure control plan accuracy rate e98% within 45 days of implementation update PFMEA with bore diameter failure mode: Confirm PFMEA revision approval and validate RPN reduction from 96 to 48 through implemented prevention and detection controls within 30 days implement tool condition monitoring system: Measure tool condition monitoring system uptime e95% and confirm predictive tool replacement rate e90% based on monitoring system alerts within 60 days

D7 – Prevention

Preventive Measures	standardize PFMEA methodology for machining process failure modes across all product families
Process Doc. Updates	FMEA: standardize PFMEA methodology for machining process failure modes across all product families Control Plan: establish control plan template with mandatory customer specification verification checkpoints Work Instructions: create standardized work instruction format for tool condition assessment across machining centers Test/Inspection Plan: develop inspection plan template incorporating customer critical characteristics identification process Other: implement cross-functional specification review training program for quality planning teams
Training Required	FMEA Resp: Jonas Hartmann (2026-04-27) Control Plan Resp: Jonas Hartmann (2026-04-28) Work Instructions Resp: Jonas Hartmann () Test Plan Resp: Jonas Hartmann () Other Resp: Jonas Hartmann ()

D8 – Closure

Customer Approval	Approved | Sign-off: Approved
Closure Date	2026-04-27 | Sign-off Date: 2026-04-29
Responsible	Jonas Hartmann, Quality Manager
Lessons Learned	1. CNC machine tool wear must be monitored via automated SPC with mandatory alert threshold at 80% of tolerance band — not only at the point of non-conformance. 2. Incoming inspection frequency for safety-critical dimensions must be increased after any tooling change at supplier. 3. The 8D process was initiated within 24 hours of complaint receipt — this response time should be established as the standard for all customer complaints

classified as Priority High or above. 4. The IS/IS NOT analysis effectively narrowed the root cause investigation to a single machine and shift, reducing investigation time significantly.

This methodology should be applied consistently across all future D4 analyses.

Team Recognition	The cross-functional team — Jonas Hartmann, Laura Steinberg, Tobias Kerner, Stefan Wollner, Claudia Renner, Felix Gruber and Sara Lindemann — demonstrated outstanding commitment throughout this investigation. The root cause was identified within 4 days and effective containment was delivered to the customer within 5 days of complaint receipt. Management thanks the team for their professional and solution-oriented approach. This case will serve as a reference example for future 8D investigations at Metatech GmbH