8D-Report

Vorgang / Concern title	Reklamationsnummer / Complaint no.	Reklamationsdatum / Complaint opening date	
Example: Axial run-out of precision ring n.o.k.	Schaeffler 214999999 Lieferant / Supplier 12345	2011-08-01	
Name Lieferant / Supplier Sample supplier	**Produktionsstandort / Production site** Sample city	**Revision 8D-Report** 04	**Revision Datum / Date** 2011-08-17
Zeichnungsnummer / Drawing no. F-123456789	**Zeichnungsstand / Drawing revision** AC	**Teilebezeichnung / Part name** Precision ring Ø20	
Schaeffler Werk(e) / Plant(s) Herzogenaurach, Hirschaid	**Liefermenge / Quantity delivered** 100	**Beanstandete Menge / Quantity claimed** 12	

1 Team

Name	Abt./ Dept.	Kontakt/ Contact (Email, Phone)
Meyer F.	Quality	meyer@sample.com
Mueller S.	Production	mueller@sample.com
Huber A.	R&D	huber@sample.com
Teamleiter/ Champion		
Boss G.	Q-Mgr.	boss@sample.com

2 Problembeschreibung / Problem description

Axial run-out from face to inner boreØ n.o.k.
Nominal: 0,05
Ist: bis zu 0,1

3 Sofortmaßnahme(n) / Corrective action(s)

	Einführungsdatum / Implementation date
1. Check of stock: No parts on stock at present	2011-08-01
2. Check customer stock: In the Herzogenaurach plant another lot with the same defect was found. In the Hirschaid plant no parts were on stock.	2011-08-02
3. Check of stock in transit to customer: At present there are no parts on the way to the customer	2011-08-01
4. The stock parts of similar type 18, 19, 21 were checked also for the claimed defect. No defects were found on these.	2011-08-01
Amendment: After return shipment the complained delivery was sorted 100%. During the sorting another 5 defective parts were found. We kindly ask you to adjust the ppm-relevant quantity in your ERP-system (actual defective quantity = 17).	

4 Fehlerursache(n) / Root cause(s)

☒ Fehler tritt erstmalig auf / First occurrence defect ☐ Wiederholfehler/ Repetitive defect

Root cause analysis for creation of the defect (3x5 Why method applied):
The root cause was detected as "wear of the ballscrew spindle" in the face-grinding machine. The wear at the spindle head caused a play in the spindle guidance. When wearing the grinding wheel the grinding pressure will rise and - in combination with the increasing play in the spindle guidance- lead to deviations in the axial run-out. A planned maintenance and check of this play was not part of the maintenance plan.

Root cause analysis for non-detection of the defect (3x5 Why method applied):
The defect was not detected during quality inspection (operator self inspection) because the control plan defined the measurement of the axial run-out in the machine chuck directly (simulation of end customer application). During analysis we found out that the parts measured directly in the chuck (thus an elastic deformation of the part) reach the required value for the run-out. When measuring the same parts out of the machine some do not reach the required value.
Also the point of time for the inspection was not defined and so not all produced parts showed the deviations. The root cause for this is the lower grinding pressure after dressing of the grinding wheel (after dressing the deviation of the run-out is at the lowest).

5 Geplante Abstellmaßnahme(n) / Chosen corrective action(s)	5a Wirksamkeitsprüfung mit Methode/ Verification check by method of
Corrective actions regarding creation of the defect::	
1.Add check of spindle play in the maintenance plan	Check of maintenance plan at machine
2. Check if regular moving of the spindle is leading to lower/ no wear of the spindle	Tech. discussion machine manufacturer
3. Conduct clamping tests to identify the effect of the clamping force, if necessary adjustment	Empirical with different clamp. forces
Corrective actions regarding detection of the defect:	
4. Update control plan: Point of time for check changed to "before dressing" (biggest influence of the clamping pressure)	Check of revision in ERP-system
5. Purchase tapered gauges for measurement of axial run-out outside the machine	Empirical check, series of measurement
6. Update of control plan: Add additional check of axial run-out with tapered gauges	Check of revision in ERP-system

6 Eingeführte Abstellmaßnahme(n) / Implemented corrective action(s)

	Einführungsdatum / Implementation date
Corrective actions regarding creation of the defect::	
1. Check of spindle play added to the maintenance plan	2011-08-10
2. Movement of the spindle head added to the maintenance plan	2011-08-10
3. Process-FMEA no. M20-12345 updated, new revision = 03; clamping force added	2011-08-17
Corrective actions regarding detection of the defect:	
4. Control plan updated: Point of time for check changed to "before dressing" (biggest influence of the clamping pressure)	2011-08-12
5. Tapered gauges purchased	2011-08-17
6. Control plan updated: Additional check of axial run-out with new tapered gauges outside the machine chuck.	2011-08-17

7 Maßnahme(n) gegen Wiederholfehler / Action(s) to prevent recurrence Für jede Maßnahme ist ein Nachweis beizulegen/ For each action below a documented evidence must be attached	**Einführungsdatum / Implementation date**
☐ Update of Design FMEA no.	
☒ Update of Process FMEA no. M20-12345-V08	2011-08-17
☒ Update of Control plan no. PP001-M20, Revision 03	2011-08-17
☒ Update von Arbeitsanweisung(en) / of work instruction(s) no. Maintenance plan machine no. 0815	2011-08-10

8 Teamerfolg / Congratulations	**Name Ersteller / Author 8D-Report**	**Abschlussdatum Lieferant / Closing date supplier**
G. Boss Unterschrift / Signature Teamleiter/ Champion	Meyer Fritz	2011-08-17

Entscheid / Decision Schaeffler	**8D-Report akzeptiert/ accepted**	**Abschluss / Closure Schaeffler**
	☒ Ja / Yes ☐ Nein/ No: Update erforderlich bis/ required until	2011-08-18 Schwendtner Ralf Datum / Date Name / Unterschrift/ Signature

Anlagen, Fotos, Nachweise / Attachments, photos, evidences:

1. Process-FMEA: Extract of the modified chapter

Failure Mode and Effects Analysis

Design-FMEA ☐ Process-FMEA ☒

Bestätigung durch betroffene Abteilungen und/oder Lieferant	Name/Dept./Supplier	Name/Dept./Supplier
	---	Meyer/ Quality Management

Systems/ criteria	Potential defect	Potential effect	D	Potential root cause	Current state: Planned actions	Occurrence	Severity	Detection	RPZ
Face grinding	Surface not machined completely	Function not given		Stock too low	Income inspection: Measurement of stock distribution	5	5	2	50
	Axial run-out (face - inner Ø) n.o.k.	Function not given		Kraft im Spannfutter zu groß	Spannkraft typweise festlegen	2	4	6	48

2. Control plan no. M20-12345-V03: Extract from the modified control plan, tapered gauges added

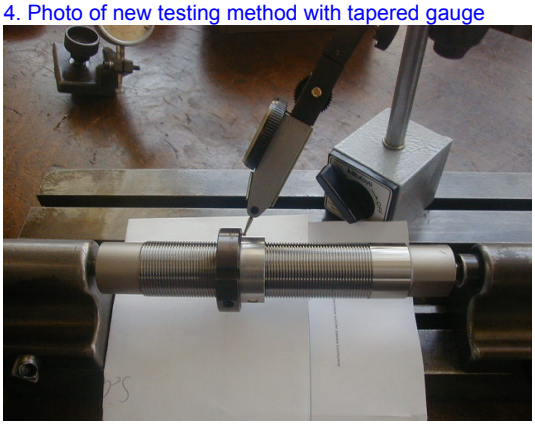
Control plan M20-12345 V03

Precision ring 20				FS	
Pos.:	**Nominal**	**Equipment**	**When**		Ac
10	ID 16,5±0,1	Internal m. gauge	First part Last part		
11	OD 20±0,1	Caliper	1 of 100 pcs		
12	Axial run-out max. 0,05	Dial gauge (measurement in chuck)	100%		
13	Axial run-out max. 0,05	Indicating caliper+ tapered gauge	before every dressing cycle		

3. Extract of the modified maintenance plan machine no.0815

No.	ToDo	When	a
11	Check of play ballscrew spindle	every 8 weeks	
12	Regular movement of the spindle head	if deviating in no.11	

4. Photo of new testing method with tapered gauge



5. Extract from the 3x5 Why analysis

Concern:
Defect description: Axial run-out

Why wasn't the defect predicted during the planning process? (RMEA, Inspection plan...)

5 Whys

Why wasn't the defect prevented by the production process? (Why did the problem occur?)

P1

5 Whys

Why didn't the quality inspection protect the customer from the defect?

(Why weren't defects found during the inspections? Inspections carried out properly? Was the method,inspection equipment frequency and number of parts to be inspected appropriate?...)

P2 F1

5 Whys

F2

Q1 Why did the quality inspection not detect the deviations in the axial run-out?
Because the control plan defined a check directly in the machine chuck?

Q2 Why did the control plan define a check directly in the machine chuck?
Because the purpose was to simulate the end-customer application.