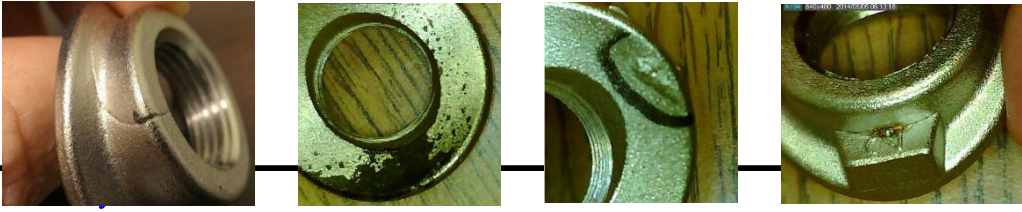


## Corrective Action Report

Corrective Action Report			
This report apply for: <input type="checkbox"/> System <input checked="" type="checkbox"/> Product <input type="checkbox"/> Process			Order Number: 122482
Inspector: Di Nan		Confirmed By: Liang Zhang	Issue Date: 2014.6.16
<b>General Information:</b>			
P.N. :	Description: BOSS, SENSOR OXYGE	Company: Nanjing Best International Co., Ltd..	Reject Rate: 9.63%
The reason for this report: <input type="checkbox"/> internal QA FAIL <input checked="" type="checkbox"/> Customer Inspection FAIL <input type="checkbox"/> Customer Complaint <input type="checkbox"/> others:			
Defect Problem Description: 1、Product surface crack 2、black spot on surface 3、surface embossing 4、rust (gate location)			
			
<b>1) Problem Definition and</b>			
<b>What</b> (what the problem is about, how describes it, what it is, etc)	1. there are cracks on surface and thread 2. Black spots exist on the product surface after nickel plating 3. surface has residual embossing 4. rust marks exist on the root of the gate location		
<b>How</b> (how it was presented, how it happens, how is explained, etc)	Customers found as above problem in the inspection, feedback to us in the form of mail and photos. At the same time, some of the substandard products were given back for analyzing.		
<b>When</b> (When it was seen first time, how long it has been identified, etc)	On June 16, 2014, customer feedback by email (customer feedback this on May 23, due to the small rate and human factors, only trained the employees and did not cause enough attention)		
<b>Where</b> (In which machine, which areas, physical place, location, etc)	The customer found the problem at their side.		
<b>How Much</b> (magnitude, quantities, amounts, dollars, metrics affected, etc)	578pcs		
<b>2) Teamwork Building.</b>			
Total documentation of the resources involved in problem solving methodology.			
<b>Name *</b>	<b>Position</b> (Employee position)	<b>Role</b> (in the team)	
Liang Zhang	technical engineer	Responsible for product development related technology	

Qin Ma	director the of production department	Responsible for product production schedule
Di Nan	inspection engineer	Responsible for product inspection
Yun Chen	purchasing engineer	Responsible for purchasing and outsourcing related work

### 3) Containment Actions.

Summary of provisional actions and/or remedies that suspend immediate and absolutely the effects of the problem avoiding consecutive claims

Containment Action *	Date	Resp.
Strengthen the sampling inspection of the products in the process of working procedure	2014-6-17	Di Nan
Quarantine all made products and extend the time for placement after plating. Full inspect products after surface treatment	2014-6-17	Di Nan
Communication with outsourcing factories about reason of black spots on the plated surface and improvement plan	2014-6-18	Yun Chen

### 4) Root Cause Analysis.

Identification of original cause and capable to eliminate the problem and all secondary effects, also removes immediate containment actions mentioned below

<b>Problem Analysis</b> (Logic to conclude the root cause)	<ol style="list-style-type: none"> <li>1. Cooling speed of castings is uneven/too fast, causing shrinkage cracks</li> <li>2. Shell mould cracks</li> <li>3. Mold damage, the surface has a pit</li> <li>4. Wax models convex or shell mould concave</li> <li>5. Plated surface drying is inadequate</li> <li>6. Cracks/porosity/sand holes at gate location</li> </ol>
<b>Root Cause</b>	<ol style="list-style-type: none"> <li>1. Cooling speed of castings is uneven/too fast, causing shrinkage cracks</li> <li>2. Wax models convex or shell mould concave</li> <li>3. Cracks/porosity/sand holes at gate location</li> <li>4. Plated surface drying is inadequate</li> </ol>
<b>Root Cause Verification</b> (Verify through Experimentation that the root cause detected could provoke that the problem shows up or not)	<ol style="list-style-type: none"> <li>1. Cooling speed of castings is uneven/too fast, causing shrinkage cracks</li> <li>2. When wax making, wax hanging and casting slag splashing</li> <li>3. Cracks/porosity/sand holes at gate location</li> <li>4. Plated surface drying is inadequate</li> </ol>

**5) Permanent Corrective Actions.**

1. Optimization of casting mould, increase the gate connection area
2. Increase the sprinkle sand layer
3. Control the cooling speed of castings, and make it completely natural cooling
4. Technology training on new casting workers
5. To strengthen quality management of outsourcing factory
6. To strengthen the inspection of product surface/full inspection

Action *	Date	Resp.
<b>Defect Occurrence Corrective Action</b> 1. Optimization of casting mould, increase the gate connection area 2. Training on new employees, to ensure operating per operation instruction strictly 3. To strengthen quality management of outsourcing factory	2014-7-4	Liang Zhang Yun Chen
<b>Defect Detection Corrective Action</b> Quarantine/rework those with surface issue, scrap those with cracks, porosity and sand holes	Long-term effective	Di Nan Liang Zhang

**6) Corrective Actions Verification.**

Describe the way in which you verify that all actions have been implemented.

Verification *	Date	Resp.
According to the D5 measure, do trial production internally, did not find the surface corrosion and cracking phenomena.	2014-7-15	Di Nan Liang Zhang

**7) Recurrence Prevention.**

Describes which is the way in which you will be preventing that root causes like this could be originated again.

Action *	Document	Date	Resp.
1. Optimization of casting mould, increase the gate connection area 2. Increase the sprinkle sand layer 3. Control the cooling speed of castings, and make it completely natural cooling 4. Technology training on new casting workers 5. To strengthen quality management of outsourcing factory 6. To strengthen the inspection of product surface/full inspection	Notice of change employee training records Email and phone records Inspection instruction	2014-7-18	Liang Zhang Qin Ma Yun Chen Di Nan

**8) Effectiveness Tracing**

Did not find rust, cracks and other surface defects on trial produced parts after technology change

<b>Confirm:</b>	Trial produced quantity is 500pcs, the surface had no change after 16days placements with plating
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<b>Date:</b>	31 <sup>st</sup> , July, 2014
<b>Engineer:</b>	Liang Zhang, Di Nan, Yun Chen