

# Addendum 1

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- 5) Describe the defect or noncompliance. The description should address the nature and physical location of the defect or noncompliance. Illustrations should be provided as appropriate. The fault may consist in cracks on the rear wheel spokes of the Monster 1100 evo model (this wheel is fitted only on this specific model). The attached picture (A) shows the two areas featuring the cracks (spokes 1 and 7) as well as the result of the analysis performed with P.T. (Penetrant Testing). The wheel has not been removed from a vehicle sold to an end Customer but from a DMH test motorcycle from the Ducati R&D department that was undergoing a long distance test. The wheel was disassembled at 26.688 Miles. At the time of writing we have no experience of bikes of the same type with failure of the rear wheel with fully broken spokes.

Picture A



Describe the cause(s) of the defect

The concerned wheel has been dimensioned by the supplier in compliance with the JASO T203-85 Standard starting from the load on the axis defined according to JASO standard. In July 2010 the wheel has passed the tests provided by the JASO standard, as specified in annex (B). Notwithstanding the above, this was not sufficient to ensure endless life of the wheel.

Describe the consequence(s) of the defect or noncompliance condition.

One or more spokes may feature cracks after an intense use or long travelled distances, equal to more than 6 years of average use by a Customer (Note: the Monster 1100 EVO was introduced on the market in April 2011).

Identify any warning which can (a) precede or (b) occur.

None

If the defect or noncompliance is in a component or assembly purchased from a supplier, identify the supplier by corporate name and address.

Enkei Thai Co.,Ltd.

444 Moo 17 Bangplee Industrial Estate Soi 6, Tayparak Road Bangsaothong, Samutprakarn Thailan 10540

Identify the name and title of the chief executive officer or knowledgeable representative of the supplier:  
Somsak Bhunsang  
General Manager Enkel Thai Co.,Ltd

- 6) With respect to a defect, furnish a chronological summary (including dates) of all the principle events that were the basis for the determination of the defect. The summary should include, but not be limited to, the number of reports, accidents, injuries, fatalities, and warranty claims.

In November 2011, during the development of another motorbike we found a problem similar to the one described here. For this reason we have decided to check again the projects developed with similar design criteria. During this controls we have found out what stated in point 5. No report and/or warranty claim, or accident communications have been received from the field.

Based on the above finding , in November 2011, we decided to re-design the concerned wheel spokes to increase the safety factor.

The wheel was re-designed in order to accomplish TUV standard and that involved a reduction by 40% of the maximum tension calculated by simulating the tests provided by the JASO T203-85 Standard.

With respect to a noncompliance, identify and provide the test results or other data (in chronological order and including dates) on which the noncompliance was determined.

It is not a noncompliance.

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# Addendum 2

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# Durability Test Report

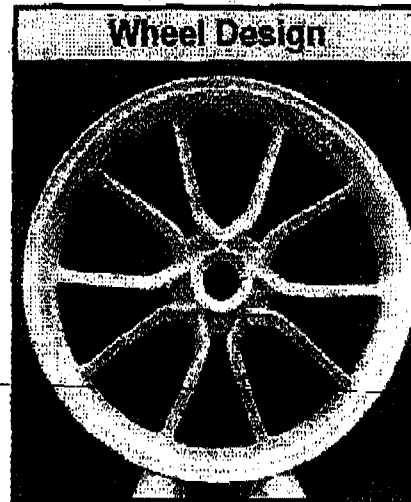
Testing Purpose  Development  Sampling  Other

Development Phase IPP 1

Submit to Customer DUCATI MOTOR HOLDING SPA

EKT Wheel Name	DUG - RR	Report No.	10-06-096
Customer Part Number	502.1.145.1A	Mold Number	T1
Customer Part Name	WHEEL REAR	Size, Offset, P.C.D.	17 x 5.5
Specification	JWL	Customer Model	SF848
		Process	MINI MAP

Summary of Test		
No.	Test Item	Result
1	Weight	N/A
2	Rotary Bending Fatigue Test	OK
3	Radial Dynamic Fatigue Test	OK
4	90° Impact Test	OK
5	Torsion Test	OK



## ENKEI THAI CO.,LTD.

R&D	Quality Engineering ( LAB Test )			
Approved	Approved	Approved	Checked	Issued
26/Sep/10	27/Sep/10		29/Sep/10	29/Sep/10

## DUCATI MOTOR HOLDING SPA

Approved	Approved	Checked

Please Fill Signature and Send These Cover Sheets

To : Enkei Thai Co.,Ltd. ( QE Section )

444 Moo 17 Bangplae Industrial Estate Soi 8, Tayparak Road Bangsaothong  
Samutprakarn THAILAND 10540



# Durability Test Report

Testing Purpose

Development

Sampling

Other

Development Phase

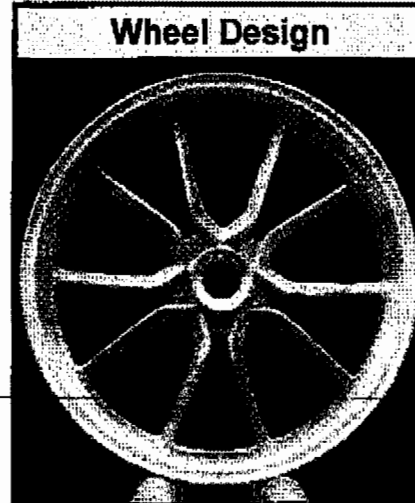
*IPP 1*

Submit to Customer

*DUCATI MOTOR HOLDING SPA*

		Report No.	10-06-096
EKT. Wheel Name	DU6 - RR	Mold Number	T1
Customer Part Number	502.1.145.1A	Size, Offset, P.C.D.	17 x 5.5
Customer Part Name	WHEEL REAR	Customer Model	SF848
Specification	JWL	Process	MINI MAP

Summary of Test		
No.	Test Item	Result
1	Weight	N/A
2	Rotary Bending Fatigue Test	OK
3	Radial Dynamic Fatigue Test	OK
4	90° Impact Test	OK
5	Torsion Test	OK



## ENKEI THAI CO.,LTD.

R&D	Quality Engineering ( LAB Test )			
Approved	Approved	Approved	Checked	Issued

## DUCATI MOTOR HOLDING SPA

Approved	Approved	Checked

Please Fill Signature and Send These Cover Sheets

To : Enkei Thai Co.,Ltd. ( QE Section )

444 Moo 17 Bangplee Industrial Estate Sol 6, Tayparak Road Bangsaothong  
Samutprakarn THAILAND 10540





# Durability Test Report

## (Item No.2) Rotary Bending Fatigue Test

### Wheel Information

<b>Wheel Information</b>		Report No.	10-06-096
EKT Wheel Name	DU8 - RR	Mold Number	T1
Customer Part Number	502.1.145.1A	Size, Offset, P.C.D.	17 x 5.5
Customer Part Name	WHEEL REAR	Customer Model	SF848
Specification	JWL	Process	MINI MAP

### Acceptability Criteria

AFTER BEING SUBJECTED TO AT LEAST  $10^5$  CYCLE OF TEST  
 SHALL BE NO EVIDENCE OF HARMFUL CRACK, SIGNIFICANT DEFORMATION OR ANY  
 ABNORMAL LOOSENESS AT JOINTS

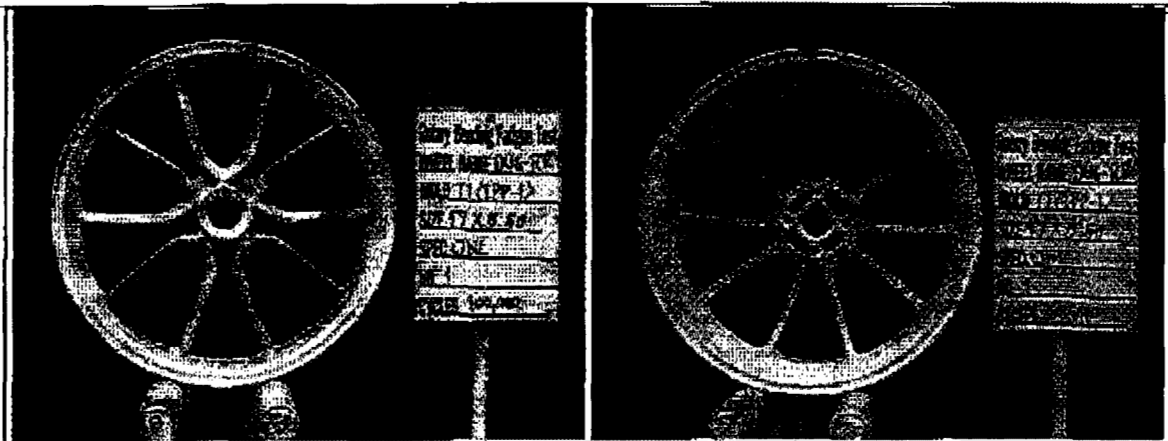
### Testing Condition

Item	Test load	Test Speed	Test Cycles	Fasten Torque	Quantity
Standard	0.346	300	100,000	-	2
Unit	kN.m	rpm	Cycles	N.m	pcs.

### Testing Result

Wheel No.	Test Cycles	Test Speed	Test load	Result Test	Judge.
		rpm	kN.m		
1	100,000	300	0.346	No Crack	OK

### Wheel Testing Photo



### Remark

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Issued	Mr.Sumrit F.
Checked	Mr.Mungkorn C.
Approved	Mr.Thanit S.

Test Start	25-Jul-10
Test Finish	26-Jul-10

Test & Laboratory

Quality Engineering Section



# Durability Test Report

## ( Item No.2 ) Rotary Bending Fatigue Test

Wheel Information		Report No.	10-06-096
EKT Wheel Name	DU6 - RR	Mold Number	T1
Customer Part Number	502.1.145.1A	Size,Offset,P.C.D.	17 x 5.5
Customer Part Name	WHEEL REAR	Customer Model	SF848
Specification	JWL	Process	MINI MAP

### Acceptability Criteria

AFTER BEING SUBJECTED TO AT LEAST  $10^5$  CYCLE OF TEST  
 SHALL BE NO EVIDENCE OF HARMFUL CRACK, SIGNIFICANT DEFORMATION OR ANY  
 ABNORMAL LOOSENESS AT JOINTS

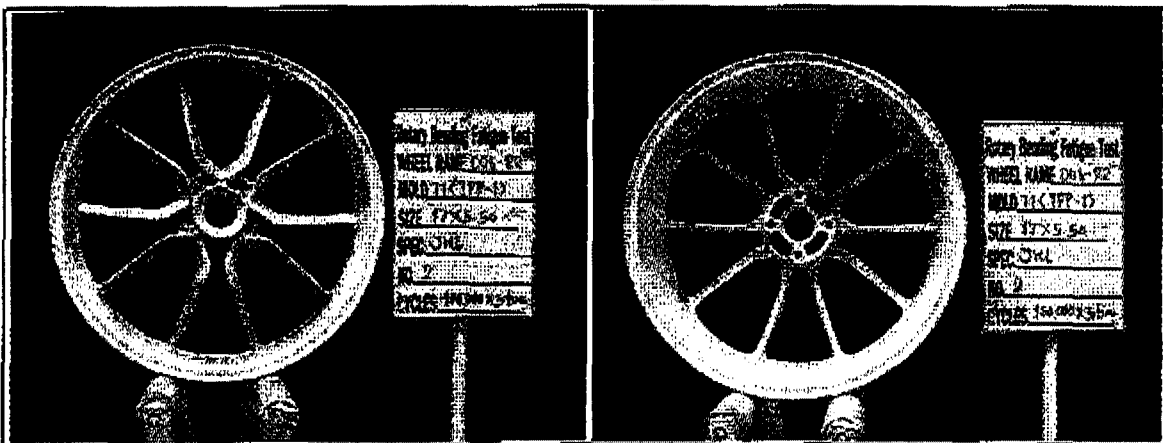
### Testing Condition

Item	Test load	Test Speed	Test Cycles	Fasten Torque	Quantity
Standard	0.346	300	100,000	-	2
Unit	kN.m	rpm	Cycles	N.m	pcs.

### Testing Result

Wheel No.	Test Cycles	Test Speed	Test load	Result Test	Judge.
		rpm	kN.m.		
2	100,000	300	0.346	No Crack	OK
	+100,000	300	0.346	No Crack	OK
	+100,000	300	0.346	No Crack	OK

### Wheel Testing Photo



### Remark

Issued	Mr.Sumrit F.
Checked	Mr.Mungkorn C.
Approved	Mr.Thanit S.

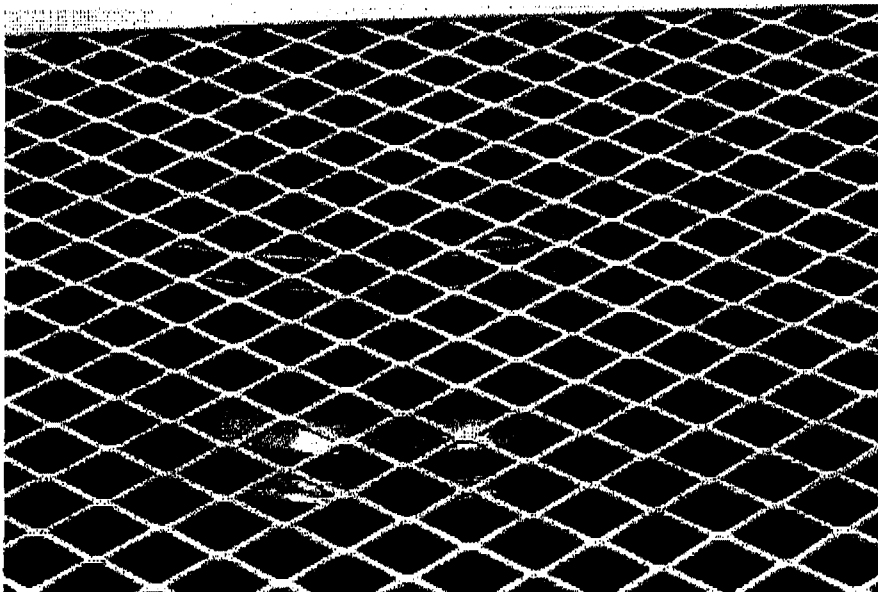
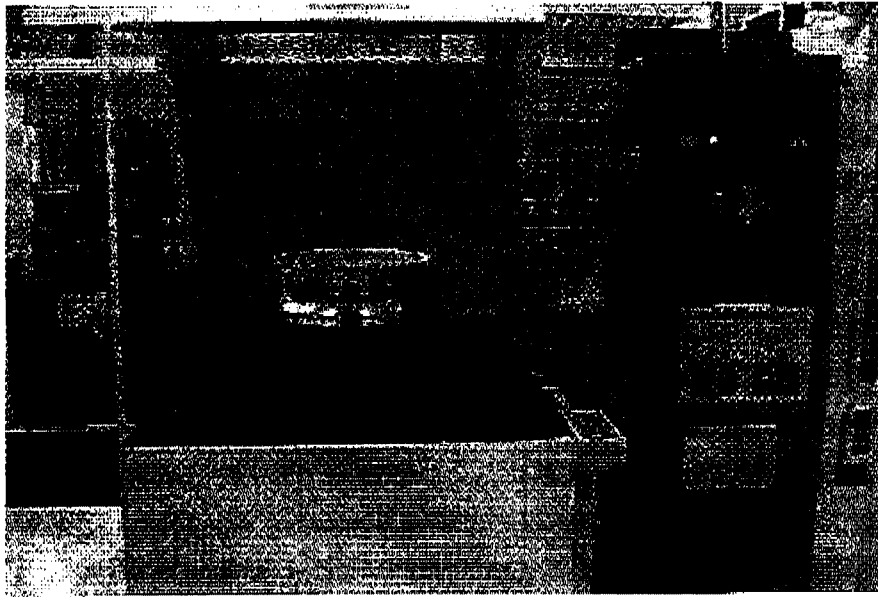
Test Start	26-Jul-10
Test Finish	29-Jul-10

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Quality Engineering Section

# Wheel Testing Photo

Wheel Name : DU6-RR # T1 IPP1  
Rotary Bending Fatigue Test Machine





# Durability Test Report

## ( Item No.3 ) Dynamic Radial Fatigue Test

### Wheel Information

Report No.		10-06-096	
EKT Wheel Name	DU6 - RR	Mold Number	T1
Customer Part Number	502.1.145.1A	Size,Offset,P.C.D.	17 x 5.5
Customer Part Name	WHEEL REAR	Customer Model	SF848
Specification	JWL	Process	MINI MAP

### Acceptability Criteria

AFTER BEING SUBJECTED TO AT LEAST  $5 \times 10^5$  CYCLE OF THE TEST SPECIFIED SHALL BE NO EVIDENCE OF HARMFUL CRACK , SIGNIFICANT DEFORMATION OR ANY ABNORMAL LOOSENESS AT JOINT OF THE LIGHT ALLOY WHEEL

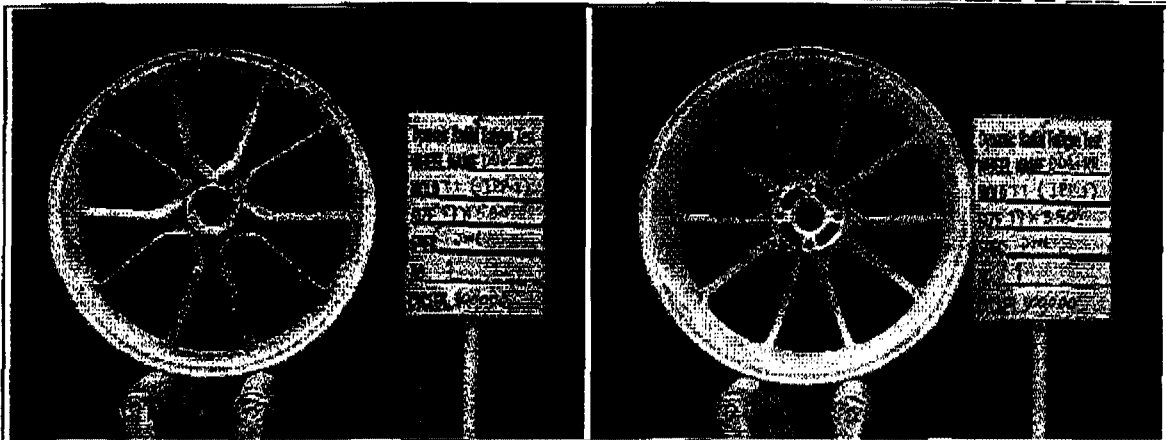
### Testing Condition

Tire Size				180/55-R17 M/C		
Item	Test load	Test Speed	Test Cycles	Fasten Torque	Air Pressure	Quantity
Standard	5.297	300	500,000	-	290	2
Unit	kN.m	rpm	Cycles	N.m	kPa	pcs.

### Testing Result

Wheel No.	Test Cycles	Test Speed	Test load	Result Test	Judge.
		rpm	kN.m		
1	500,000	300	5.297	No Crack , No Leak	OK

### Wheel Testing Photo



### Remark

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Issued	Mr.Sumrit F.
Checked	Mr.Mungkorn C.
Approved	Mr.Thanit S.

Test Start	22-Jul-10
Test Finish	23-Jul-10

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Quality Engineering Section



# Durability Test Report

## ( Item No.3 ) Dynamic Radial Fatigue Test

Wheel Information		Report No.	10-08-096
EKT Wheel Name	DU6 - RR	Mold Number	T1
Customer Part Number	502.1.145.1A	Size,Offset,P.C.D.	17 x 5.5
Customer Part Name	WHEEL REAR	Customer Model	SF848
Specification	JWL	Process	MINI MAP

### Acceptability Criteria

AFTER BEING SUBJECTED TO AT LEAST  $5 \times 10^5$  CYCLE OF THE TEST SPECIFIED SHALL BE NO EVIDENCE OF HARMFUL CRACK, SIGNIFICANT DEFORMATION OR ANY ABNORMAL LOOSENESS AT JOINT OF THE LIGHT ALLOY WHEEL

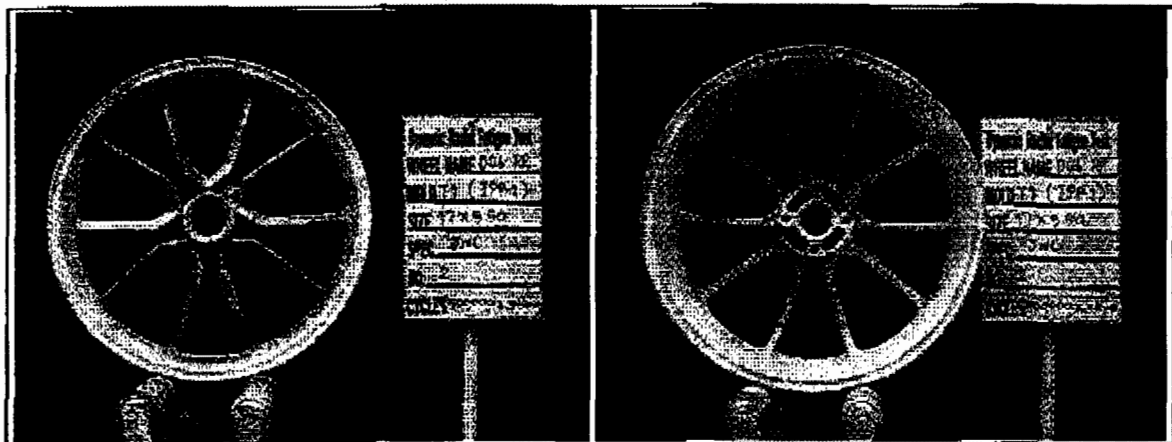
### Testing Condition

Testing Condition				Tire Size	180/55-R17 M/C	
Item	Test load	Test Speed	Test Cycles	Fasten Torque	Air Pressure	Quantity
Standard	5.297	300	500,000	-	290	2
Unit	kN.m	rpm	Cycles	N.m	kPa	pcs.

### Testing Result

Wheel No.	Test Cycles	Test Speed	Test load	Result Test	Judge.
		rpm	kN.m		
2	500,000	300	5.297	No Crack , No Leak	OK
	+500,000	300	5.297	No Crack , No Leak	OK
	+500,000	300	5.297	No Crack , No Leak	OK

### Wheel Testing Photo



### Remark

Issued	Mr.Sumrit F.	Test Start	23-Jul-10		
Checked	Mr.Mungkorn C.	Test Finish	26-Jul-10		
Approved	Mr.Thanit S.				

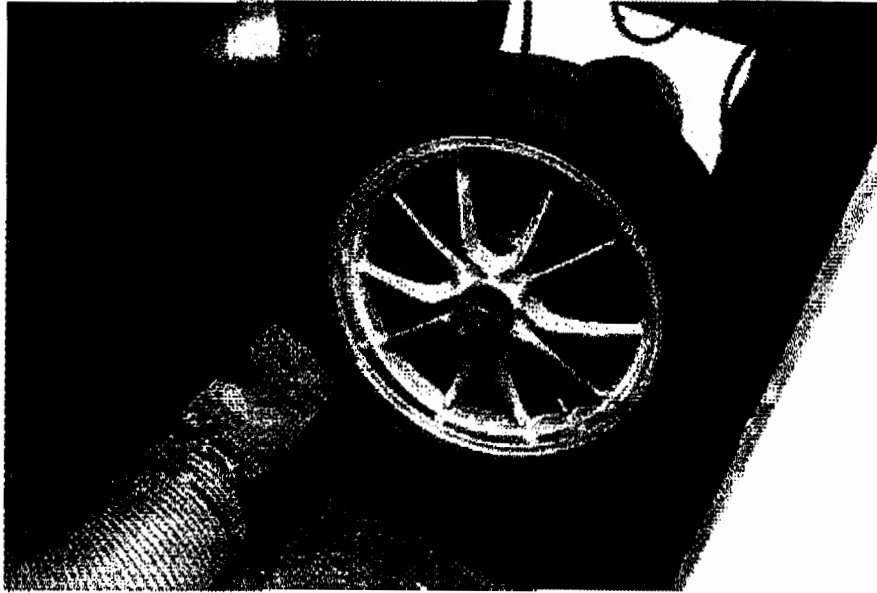
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Quality Engineering Section

# Wheel Testing Photo

Wheel Name : DU6-RR # T1 IPP1

Dynamic Radial Fatigue Test Machine





## Durability Test Report

### ( Item No.4 ) 90° Impact Test

#### Wheel Information

<b>Report No.</b>		10-06-096	
<b>EKT Wheel Name</b>	DU6 - RR	<b>Mold Number</b>	T1
<b>Customer Part Number</b>	502.1.145.1A	<b>Size, Offset, P.C.D.</b>	17 x 5.5
<b>Customer Part Name</b>	WHEEL REAR	<b>Customer Model</b>	SF848
<b>Specification</b>	JWL	<b>Process</b>	MINI MAP

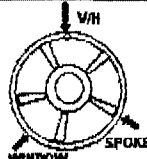
#### Acceptability Criteria

AFTER BEING SUBJECTED TO THE IMPACT TEST SHALL BE NO EVIDENCE OF HARMFUL CRACK, SIGNIFICANT DEFORMATION, ANY ABNORMAL LOOSENESS AT JOINTS, OR ANY SUDDEN AIR LEAKAGE SUDDEN AIR LEAK SHALL MEAN THE TIRE PRESSURE DROP BY MORE THAN 50% IN LESS THAN 30 SEC

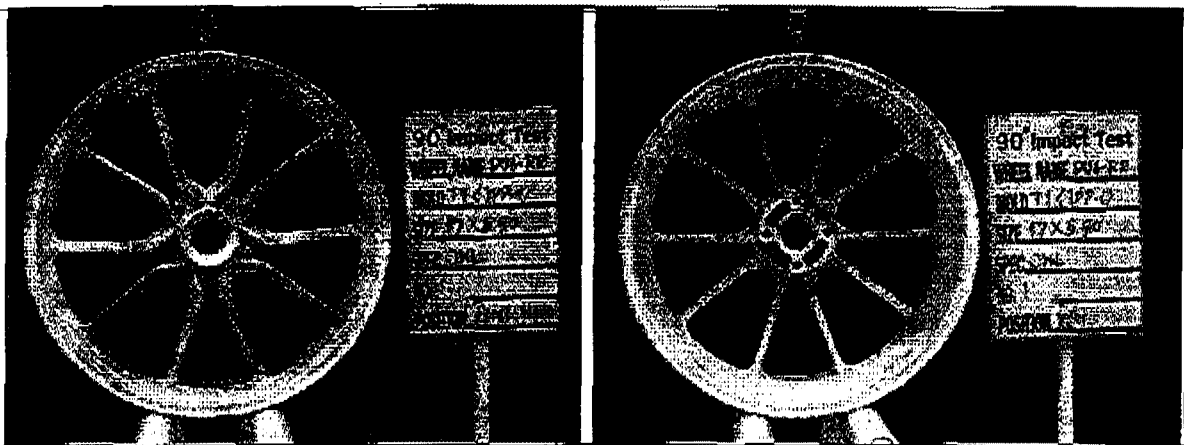
#### Testing Condition

Item	Impact Weight	Tire Size	Air Pressure	Height	Quantity
Standard	360	180/55-R17 M/C	290	150	3
Unit	kg	-	kPa	mm	pcs.

#### Testing Result

Wheel No.		Test Position ( Angle from V/H )	Standard	Rim Width Deformation	Result Test	Judge.
1		V/H	Tire pressure drop by more than 50% in less than 30 sec.	0.28	No Crack , No Leak	OK

#### Wheel Testing Photo



#### Remark

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<b>Issued</b>	Mr.Sumrit F.	<b>Test Start</b>	20-Jul-10
<b>Checked</b>	Mr.Mungkorn C.	<b>Test Finish</b>	20-Jul-10
<b>Approved</b>	Mr.Thanit S.		

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Quality Engineering Section



# Durability Test Report

## ( Item No.4 ) 90° Impact Test

### Wheel Information

<b>Wheel Information</b>		Report No.	10-06-096
EKT Wheel Name	DU6 - RR	Mold Number	T1
Customer Part Number	502.1.145.1A	Size, Offset, P.C.D.	17 x 5.5
Customer Part Name	WHEEL REAR	Customer Model	SF848
Specification	JWL	Process	MINI MAP

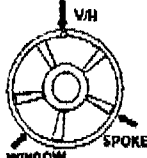
### Acceptability Criteria

AFTER BEING SUBJECTED TO THE IMPACT TEST SHALL BE NO EVIDENCE OF HARMFUL CRACK, SIGNIFICANT DEFORMATION, ANY ABNORMAL LOOSENESS AT JOINTS, OR ANY SUDDEN AIR LEAKAGE SUDDEN AIR LEAK SHALL MEAN THE TIRE PRESSURE DROP BY MORE THAN 50% IN LESS THAN 30 SEC

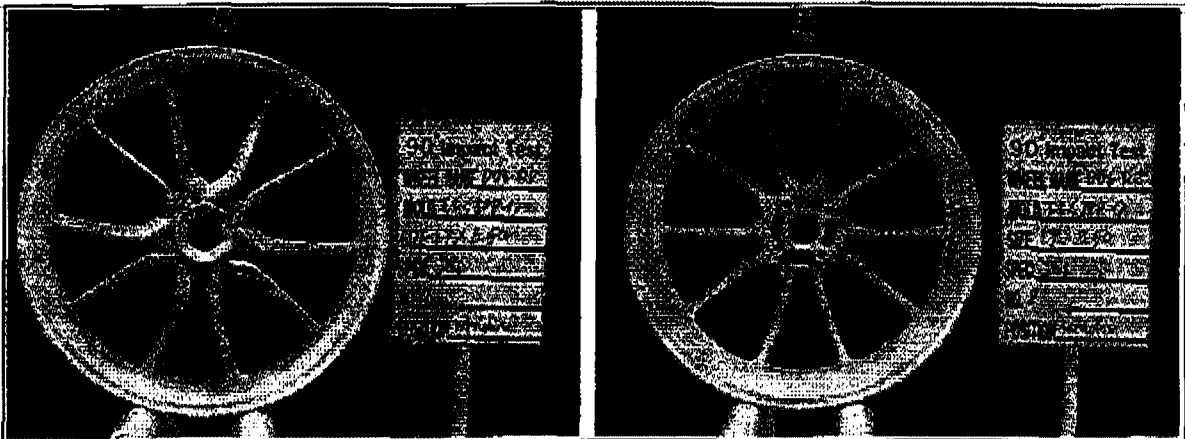
### Testing Condition

Item	Impact Weight	Tire Size	Air Pressure	Height	Quantity
Standard	360	180/55-R17 M/C	290	150	3
Unit	kg	-	kPa	mm	pcs.

### Testing Result

Wheel No.		Test Position (Angle from V/H)	Standard	Rim Width Deformation	Result Test	Judge.
2		Window	Tire pressure drop by more than 30% in less than 30 sec.	0.74	No Crack , No Leak	OK

### Wheel Testing Photo



### Remark

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Issued	Mr.Sumrit F.	Test Start	20-Jul-10
Checked	Mr.Mungkorn C.	Test Finish	20-Jul-10
Approved	Mr.Thanit S.		

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Quality Engineering Section



# Durability Test Report

## (Item No.4) 90° Impact Test

### Wheel Information

<b>Wheel Information</b>		<b>Report No.</b>	10-06-098
<b>EKT Wheel Name</b>	DU6 - RR	<b>Mold Number</b>	T1
<b>Customer Part Number</b>	502.1.145.1A	<b>Size, Offset, P.C.D.</b>	17 x 5.5
<b>Customer Part Name</b>	WHEEL REAR	<b>Customer Model</b>	SF848
<b>Specification</b>	JWL	<b>Process</b>	MINI MAP

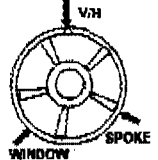
### Acceptability Criteria

AFTER BEING SUBJECTED TO THE IMPACT TEST SHALL BE NO EVIDENCE OF HARMFUL CRACK, SIGNIFICANT DEFORMATION, ANY ABNORMAL LOOSENESS AT JOINTS, OR ANY SUDDEN AIR LEAKAGE SUDDEN AIR LEAK SHALL MEAN THE TIRE PRESSURE DROP BY MORE THAN 50% IN LESS THAN 30 SEC

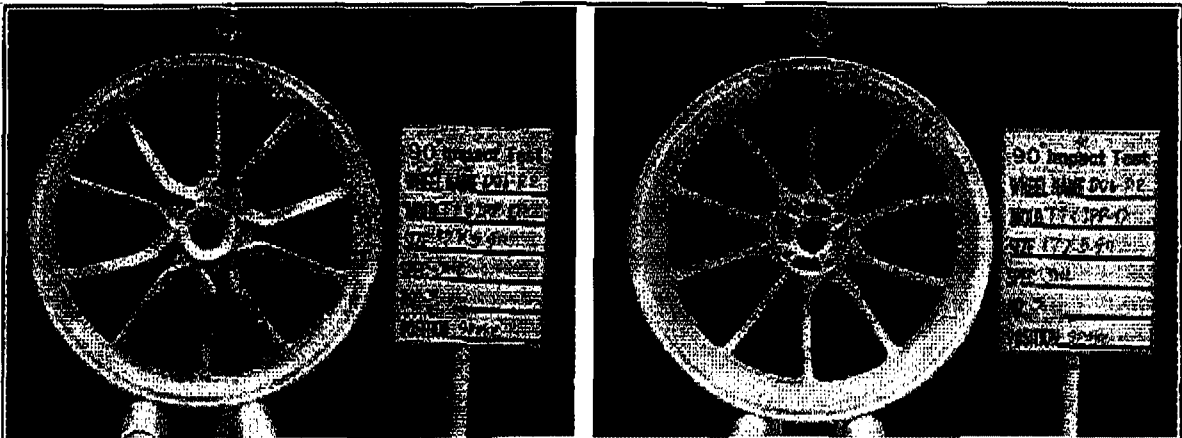
### Testing Condition

Item	Impact Weight	Tire Size	Air Pressure	Height	Quantity
Standard	360	180/55-R17 M/C	290	150	3
Unit	kg	-	kPa	mm	pcs.

### Testing Result

Wheel No.		Test Position (Angle from V/H)	Standard	Rim Width Deformation	Result Test	Judge.
3		Spoke	Tire pressure drop by more than 50% in less than 30 sec.	0.31	No Crack, No Leak	OK

### Wheel Testing Photo



### Remark

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<b>Issued</b>	Mr.Sumrit F.
<b>Checked</b>	Mr.Mungkorn C.
<b>Approved</b>	Mr.Thanit S.

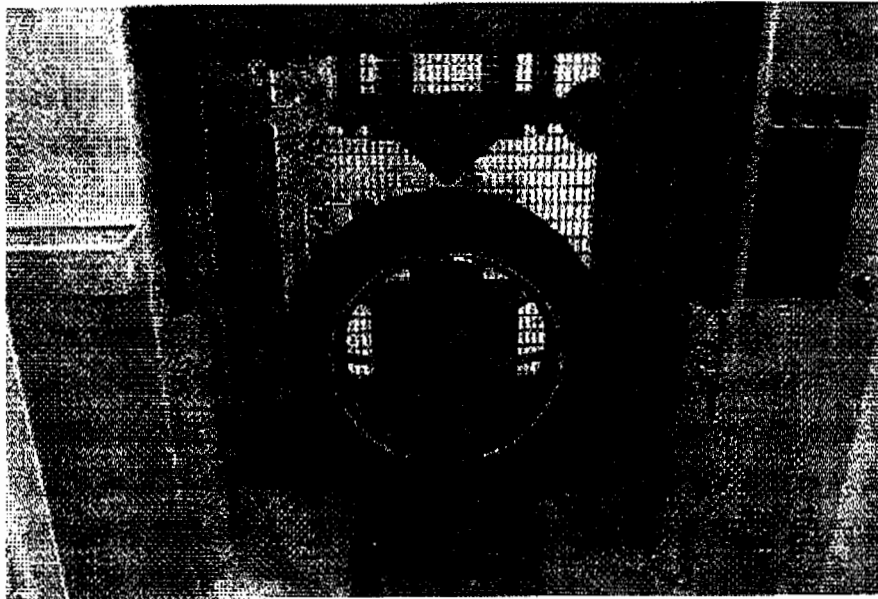
<b>Test Start</b>	20-Jul-10
<b>Test Finish</b>	20-Jul-10

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Quality Engineering Section

# Wheel Testing Photo

Wheel Name : DU6-RR # T1 IPP1  
90° Impact Test Machine





## Durability Test Report ( Item No.5 ) Torsion Test

### Wheel Information

<b>Wheel Information</b>		Report No.	10-06-096
EKT Wheel Name	DU6 - RR	Mold Number	T1
Customer Part Number	502.1.145.1A	Size,Offset,P.C.D.	17 x 5.5
Customer Part Name	WHEEL REAR	Customer Model	SF848
Specification	JWL	Process	MINI MAP

### Acceptability Criteria

AFTER BEING SUBJECTED TO AT LEAST 10<sup>5</sup> CYCLE OF THE TEST  
SHALL BE NO EVIDENCE OF HARMFUL CRACK , SIGNIFICANT DEFORMATION OR ANY  
ABNORMAL LOOSENESS AT JOINTS

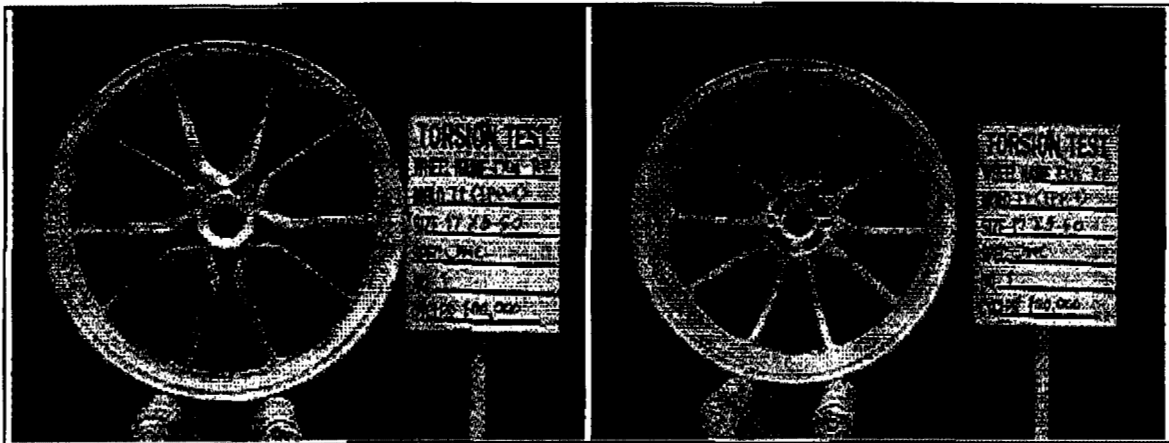
### Testing Condition

Item	Test load	Load On Time	Test Cycles	Fasten Torque	Quantity
Standard	0.706	0.30	100,000	-	2
Unit	kN.m	Sec.	Cycles	N.m	pcs.

### Testing Result

Wheel No.	Test Cycles	Load On Time	Test load	Result Test	Judge.
		Sec.	kN.m		
1	100,000	0.30	0.706	No Crack	OK

### Wheel Testing Photo



### Remark

Issued	Mr.Sumrit F.	Test Start	21-Jul-10
Checked	Mr.Mungkorn C.	Test Finish	23-Jul-10
Approved	Mr.Thanit S.		

Test & Laboratory Quality Engineering Section



# Durability Test Report

## ( Item No.5 ) Torsion Test

### Wheel Information

<b>Wheel Information</b>		<b>Report No.</b>	10-06-096
EKT Wheel Name	DU8 - RR	Mold Number	T1
Customer Part Number	502.1.145.1A	Size, Offset, P.C.D.	17 x 5.5
Customer Part Name	WHEEL REAR	Customer Model	SF848
Specification	JWL	Process	MINI MAP

### Acceptability Criteria

AFTER BEING SUBJECTED TO AT LEAST  $10^5$  CYCLE OF THE TEST  
 SHALL BE NO EVIDENCE OF HARMFUL CRACK, SIGNIFICANT DEFORMATION OR ANY  
 ABNORMAL LOOSENESS AT JOINTS

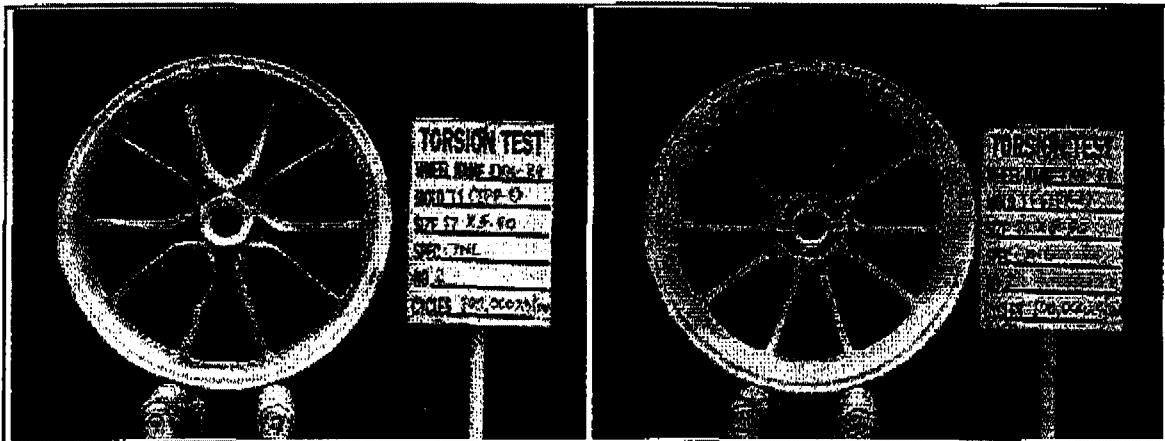
### Testing Condition

Item	Test load	Load On Time	Test Cycles	Fasten Torque	Quantity
Standard	0.706	0.30	100,000	-	2
Unit	kN.m	Sec.	Cycles	N.m	pcs.

### Testing Result

Wheel No.	Test Cycles	Load On Time	Test load	Result Test	Judge.
		Sec.	kN.m		
2	100,000	0.30	0.706	No Crack	OK
	+100,000	0.30	0.706	No Crack	OK
	+100,000	0.30	0.706	No Crack	OK

### Wheel Testing Photo



### Remark

Issued	Mr. Sumrit F.	Test Start	23-Jul-10
Checked	Mr. Mungkorn C.	Test Finish	26-Jul-10
Approved	Mr. Thanit S.		

# Wheel Testing Photo

Wheel Name : DU6-RR # T1 IPP1

Torsion Test Machine

