



Brake Dynamometer Test Report

Link Test Report #: 150537-04
Test Description: US Traffic Noise and Wear test

Customer Reference: D465
Program #: LC0002A0.SPT
Platform: D465
Lining Material: 025561/ TA , 025562/ TA
Test Date: 21/10/2015

Requested By:

Jane Peng and P.A.Castro Labandeira

Tested By:

Testing Coordination and Facility
Link Transportation Testing Technology (Shanghai) Co., Ltd
Building No.5, 778 Zhao Xian Road, Jiading District, Shanghai
Shanghai, 201821
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US Traffic Noise and Wear test

Test Information

Customer Name	
Requestor	Jane Peng and P.A. Castro Labandeira
Test Procedure	5 Shifts using NVH dyno
Program Number	LC0002A0.SPT
Test Coordinator	Nicky Mao
Technician	Jerry he
Dynamometer	3460
Parts received, start and end dates	2015-09-24, 10/04/2015 - 10/06/2015
Datalog, Template version	3.24, 1.2

Setup Details

Fixture Identification	N/A
Fixture Design	Knuckle
Drive adapter method	N/A

Dynamometer Information

Rolling Radius	307.9 mm
Gross Axle Weight	N/A kg
Required Wheel Load	667.6 kg
Actual Wheel Load	667.9 kg
Required Inertia	63.3 kg·m ²
Actual Inertia	63.8 kg·m ²

Brake Information

Brake Platform	D465
Brake Type	Disc
Brake Size	23*260
Brake ID Number	025249
Drum/Rotor Type	Standard
Drum/Rotor Finish	New
Pri/Lead/Inner Lining	025561/ TA
Sec/Trail/Outer Lining	025562/ TA
Orientation	Left
Effective Radius	107.5 mm
Number of Pistons/Cyls	1
Coefficient Multiplier	0.0182
Piston Diameter	57.0 mm

Comments:

USCT test on pads TA.

Processed by: Nicky Mao

Signature:

Nicky Mao

2015.10.08

11:39:10

+08'00'

Date

21/10/2015

Approved by: Kevin Jiang

Signature:

Date

21/10/2015

US City Traffic Noise and Wear Simulation Summary

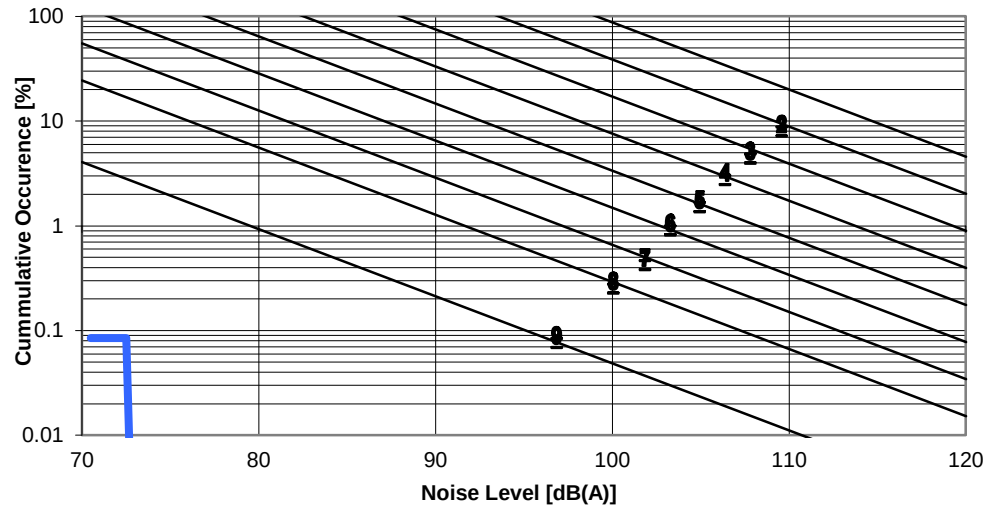
Noise Index

9.6

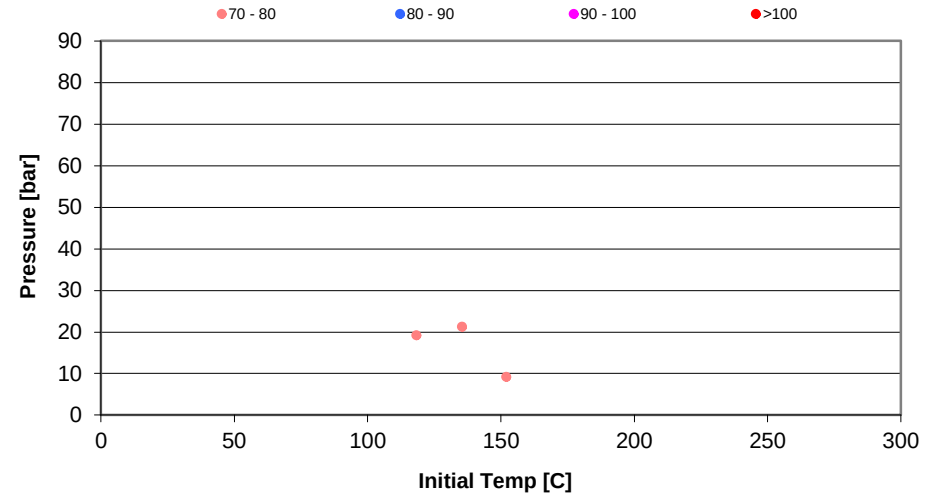
Calculated Lining Life

22,000 km

Cummulative Percentage of Noisy Stops



Spl & Pressure vs. Temperature



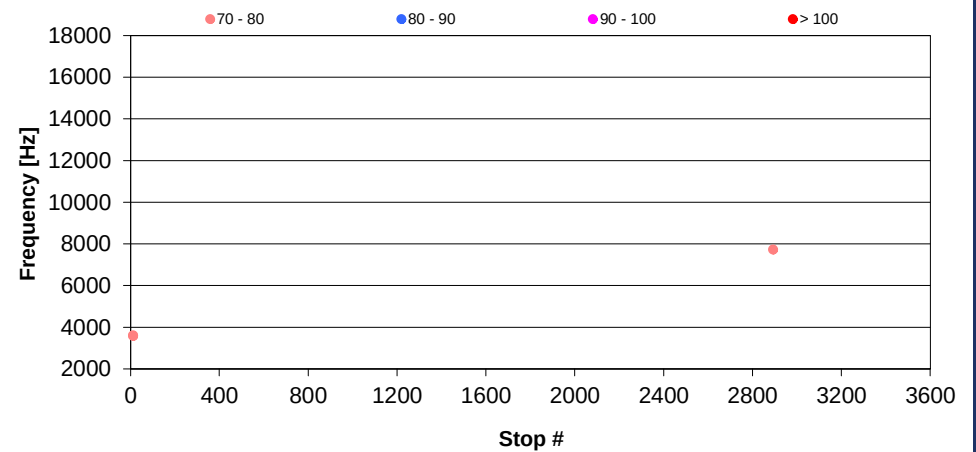
Wear Summary Table

	Inner Pad	Outer Pad	Rotor	Units
Average Wear	0.73	0.63	0.789	mm
Specific Wear	0.05	0.05	0.03	g/MJ
Weight Loss	7.70	7.30	5.400	g
Calculated Life	22,000	26,000	5,000	km

Life calculated using the following Thicknesses (mm)

Backing Plate	6.21
Minimum Rotor	21.46
Minimum Lining	2

Stop # vs. Frequency [Hz]



Test Description:

D465 5 Shifts using NVH dyno

Rotor

Primary Lining:

Secondary Lining:

025249

025561/ TA

025562/ TA

Effective Radius

Piston Diameter

Actual Inertia

Actual Wheel Load

Rolling Radius

107.5 mm

1x57.0 mm

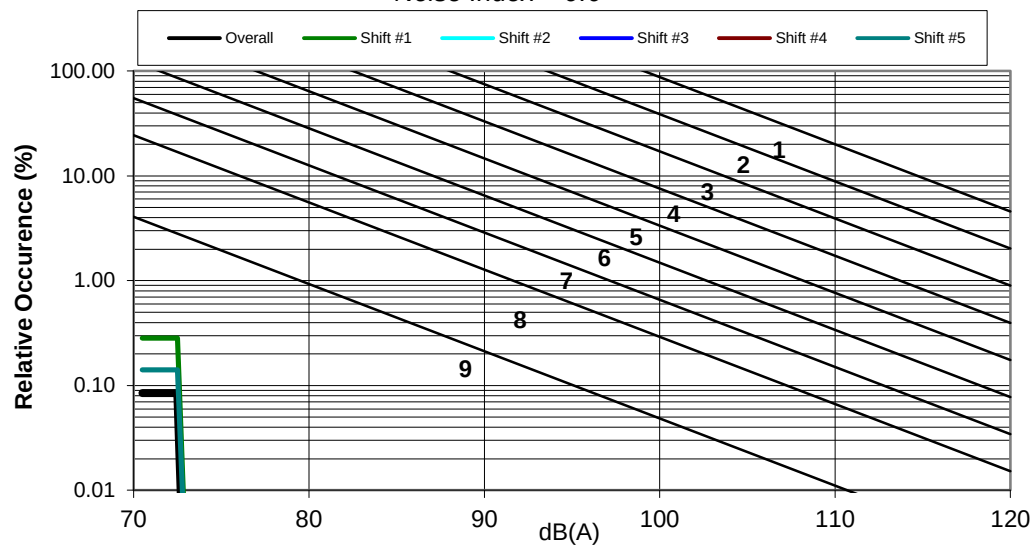
63.8 kg·m²

667.9 kg

307.9 mm

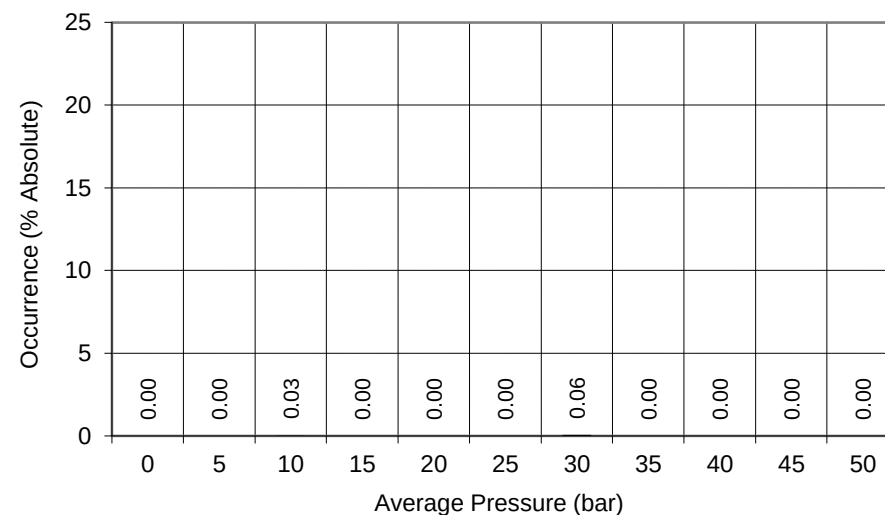
Cummulative Percentage of Noisy Stops

Noise Index = 9.6

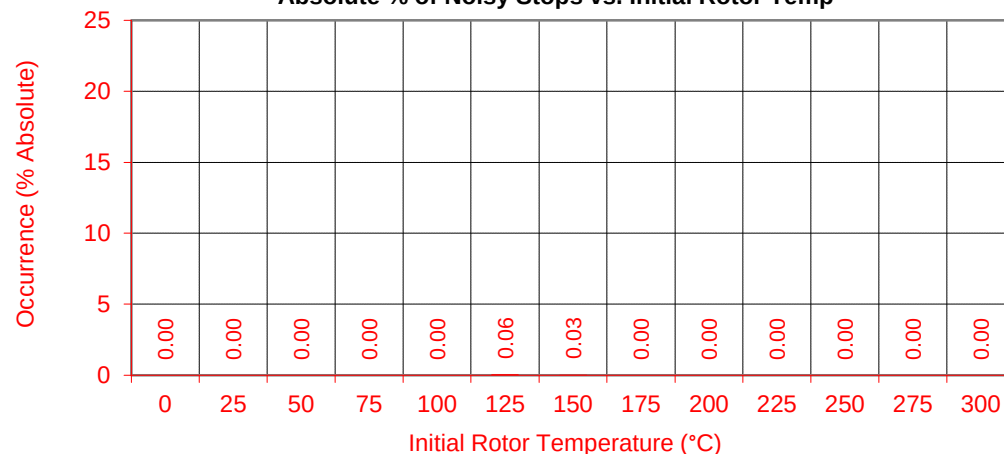


*Noisy Stops defined as those with Max SPL>70dB(A)

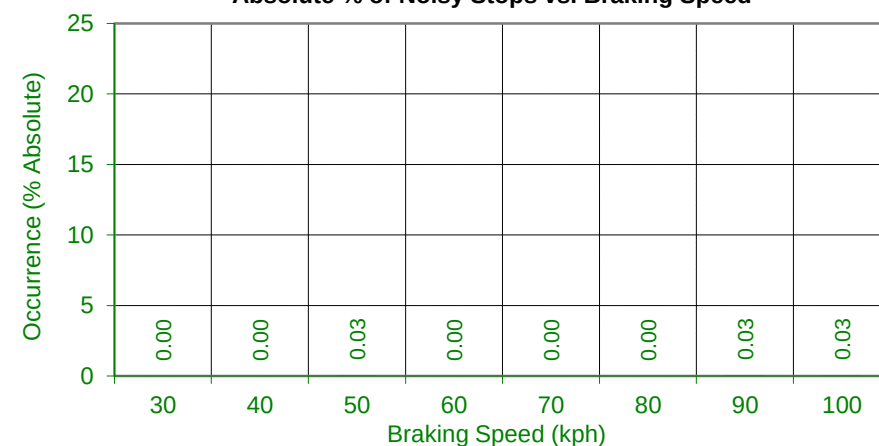
Absolute % of Noisy Stops vs. Average Pressure



Absolute % of Noisy Stops vs. Initial Rotor Temp



Absolute % of Noisy Stops vs. Braking Speed



Test Description:

D465 5 Shifts using NVH dyno

Rotor
Primary Lining
Secondary Lining

025249
025561/ TA
025562/ TA

Effective Radius	107.5 mm
Piston Diameter	1x57.0 mm
Actual Inertia	63.8 kg·m²
Actual Wheel Load	667.9 kg
Rolling Radius	307.9 mm

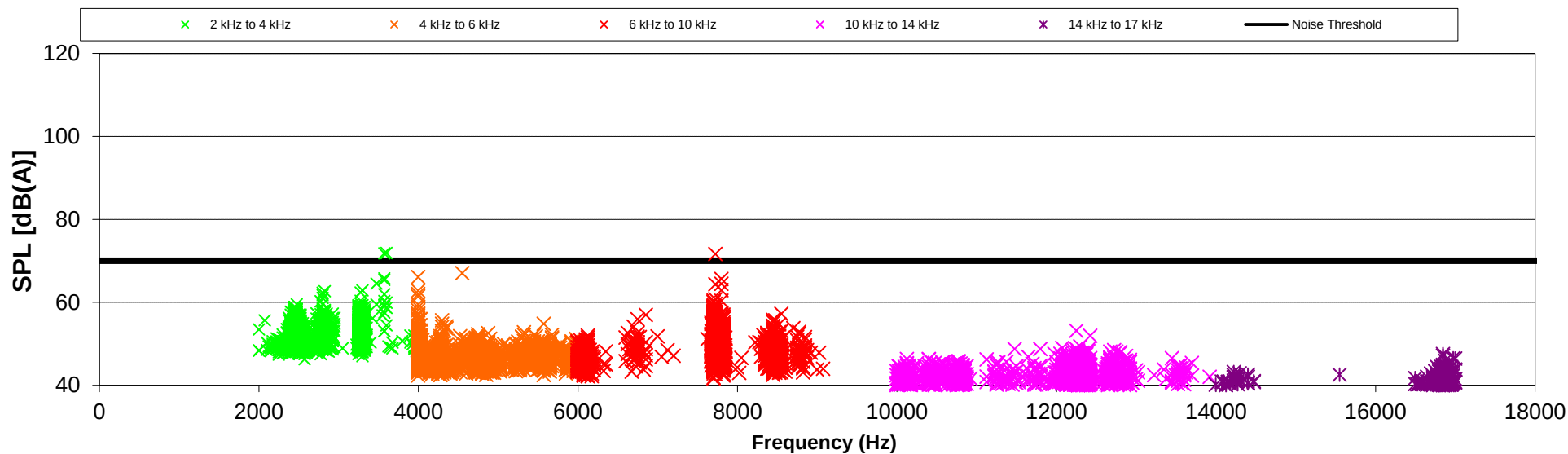
Test Request #:
150537-04

Customer Ref.:
D465

Frequency Range	Threshold	Number of Noisy Stops (per frequency range / shift)						Percentage (%) Noisy Stops (per frequency range)	
		Overall	Shift #1	Shift #2	Shift #3	Shift #4	Shift #5	Overall	
2 kHz to 17 kHz	>70 dB(A)	3	2	0	0	0	1	0.1%	
	>80 dB(A)	0	0	0	0	0	0	0.0%	
2 kHz to 4 kHz	>70 dB(A)	2	2	0	0	0	0	0.1%	
	>80 dB(A)	0	0	0	0	0	0	0.0%	
4 kHz to 6 kHz	>70 dB(A)	0	0	0	0	0	0	0.0%	
	>80 dB(A)	0	0	0	0	0	0	0.0%	
6 kHz to 10 kHz	>70 dB(A)	1	0	0	0	0	1	0.0%	
	>80 dB(A)	0	0	0	0	0	0	0.0%	
10 kHz to 14 kHz	>70 dB(A)	0	0	0	0	0	0	0.0%	
	>80 dB(A)	0	0	0	0	0	0	0.0%	
14 kHz to 17 kHz	>70 dB(A)	0	0	0	0	0	0	0.0%	
	>80 dB(A)	0	0	0	0	0	0	0.0%	

Total # of Stops 3545

Max SPL per Frequency Range (All stops)



Test Description:

D465 5 Shifts using NVH dyno

Rotor
Primary Lining
Secondary Lining

025249
025561/ TA
025562/ TA
Effective Radius
Piston Diameter
Actual Inertia
Actual Wheel Load
Rolling Radius

107.5 mm
1x57.0 mm
63.8 kg·m²
667.9 kg
307.9 mm

Test Request #:
150537-04

Customer Ref.:
D465

Inboard Pad Thickness (mm)								Average	Mass (gram)
1	2	3	4	5	6	7	8		
18.52	18.47	18.47	18.43	18.24	18.34	18.35	18.32	18.39	388.6
17.57	17.55	17.62	17.80	17.82	17.72	17.65	17.56	17.66	380.9
0.95	0.92	0.85	0.63	0.42	0.62	0.70	0.76	0.73	7.70

Tangential Wear 38.6% Radial Wear 25.4% Cup Wear -10.7%

Outboard Pad Thickness (mm)								Average	Mass (gram)
1	2	3	4	5	6	7	8		
18.49	18.33	18.33	18.35	18.14	18.28	18.34	18.32	18.32	391.3
17.60	17.59	17.63	17.65	17.73	17.80	17.79	17.76	17.69	384.0
0.89	0.74	0.70	0.70	0.41	0.48	0.55	0.56	0.63	7.30

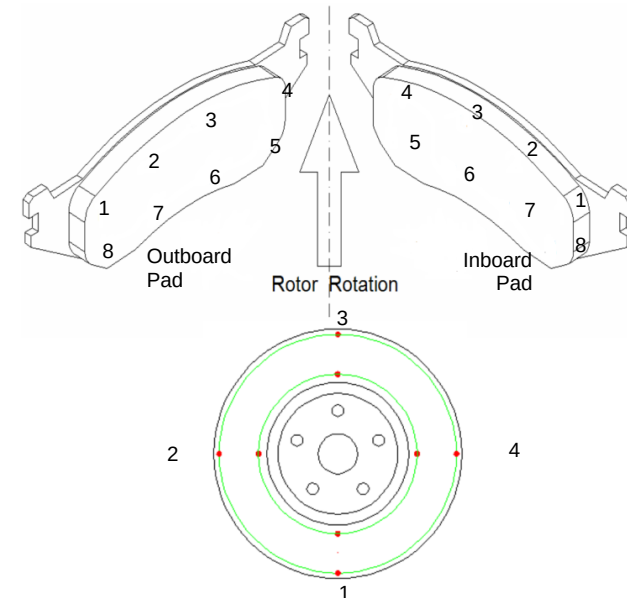
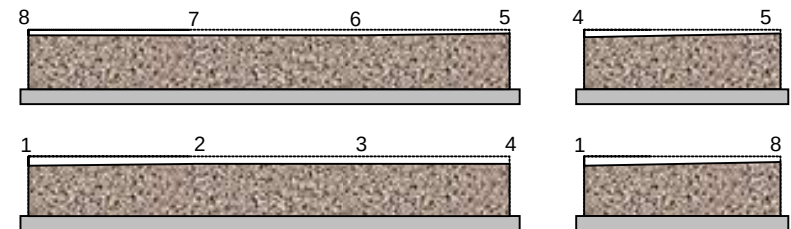
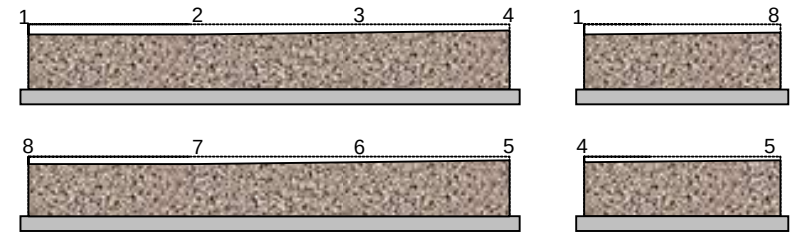
Tangential Wear 23.4% Radial Wear 34.0% Cup Wear 3.5%

Rotor Thickness (mm)								Average	Mass (gram)
Inner				Outer					
1	2	3	4	1	2	3	4		
23.08	29.14	23.07	23.08	23.09	23.09	23.09	23.10	23.843	4,825.2
23.05	23.05	23.05	23.05	23.06	23.06	23.06	23.05	23.054	4,819.8
0.030	6.090	0.020	0.030	0.030	0.030	0.030	0.050	0.789	5.400

*Tangential wear =Avg(1,8) - Avg(4,5)

*Radial wear =Avg(1,2,3,4) - Avg(5,6,7,8) * reported as percentage of max

*Cup wear =Avg(1,8,4,5) - Avg(2,3,7,6) ** scale factor of 2 used for pad wear diagrams



Test Description

US Traffic Noise and Wear test

Rotor
Primary Lining
Secondary Lining

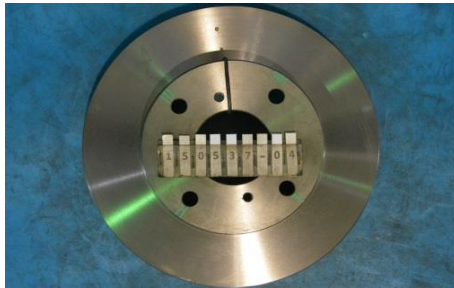
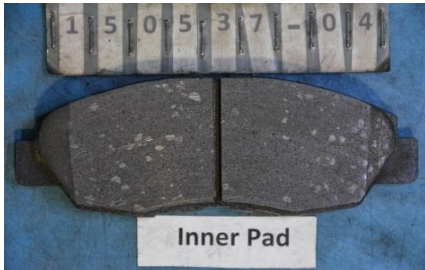
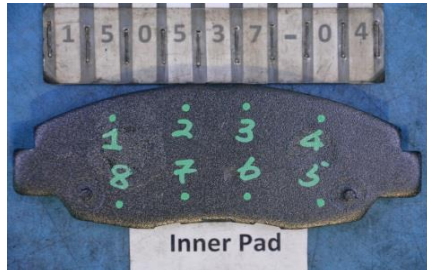
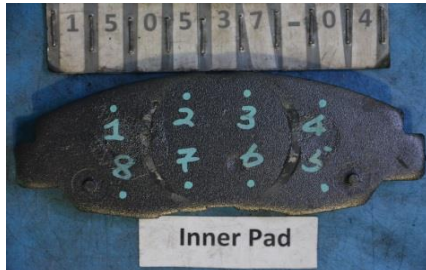
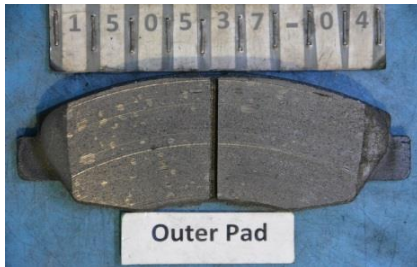
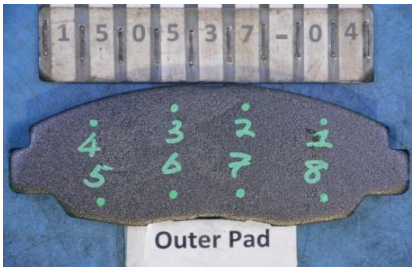
025249
025561/ TA
025562/ TA

Effective Radius
Piston Diameter
Actual Inertia
Actual Wheel Load
Rolling Radius

107.5 mm
1 x 57.0 mm
63.8 kg·m²
667.9 kg
307.9 mm

Test Request #:
150537-04

Customer Ref.:
D465

Initial		Final		Initial		Final	
Rotor				Rotor			
Inboard		Outboard		Inboard		Outboard	
							
Inner Pad							
Friction		Backing Plate		Friction		Backing Plate	
							
Outer Pad							
Friction		Backing Plate		Friction		Backing Plate	
							
Test Description:		Rotor		Effective Radius		107.5 mm	
D465 5 Shifts using NVH dyno		Primary Lining:		025249 Piston Diameter		1 x 57.0 mm	
		Secondary Lining:		025561/ TA Actual Inertia		63.8 kg·m²	
				025562/ TA Actual Wheel Load		667.9 kg	
				Rolling Radius		307.9 mm	

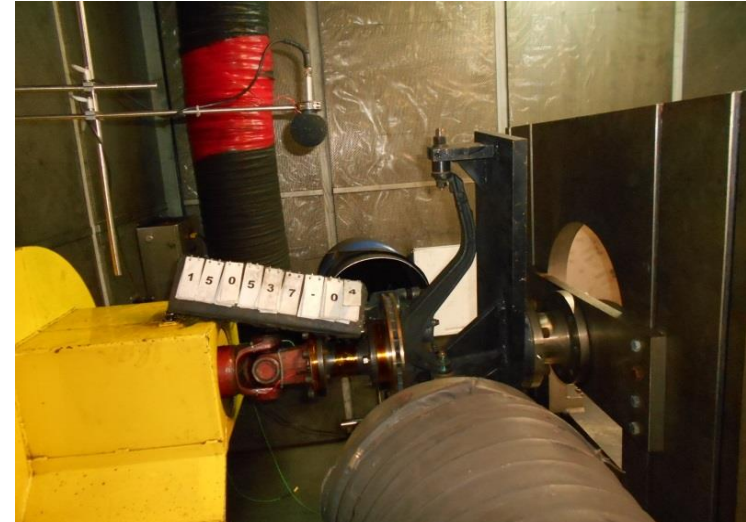
Test Request #:
150537-04

Customer Ref.:
D465

Initial

Setup

Final



Test Description:

D465 5 Shifts using NVH dyno

Rotor
Primary Lining:
Secondary Lining:

025249	Effective Radius	107.5 mm
025561/ TA	Piston Diameter	1 x 57.0 mm
025562/ TA	Actual Inertia	63.8 kg·m²
	Actual Wheel Load	667.9 kg
	Rolling Radius	307.9 mm



Test Request Document 测试需求文档

ID of File 文件编号: LC-L-5.4-L4-008-04

Revised Version 修订日期: 2015-01-19

Project Information 项目信息

Customer Company Name 客户公司名称	Danaher Auto Spare Parts Co.,Ltd.
Customer Contact Name 客户联系人	Jane Peng
Customer Contact Phone 客户联系号码	N/A
Customer Reference 客户参考号	D465
Rqtd Test Procedure No. & Ver. No. 测试要求标准号及版本号	US City Traffic
Requested Test Project Description 测试要求标准描述	5 Shifts using NVH dyno
Ready Date of All Test Parts 所有测试部件就绪日期	2015-09-24
Script Name 程序名	LC0002A0.SPT
Link Test Engineer 林科测试工程师	Nicky Mao
Initial Technician 主要技师	He Yanbin

Test Conditions 测试条件

Gross Vehicle Weight GVW (kg) 车辆满载重量	1831.00
Required Wheel Load (kg) 轮毂承载	0.00
Rolling Radius (mm) *** 转动半径	307.86
Required Inertia (kgm2) *** 转动惯量	63.30
Vmax *** 最大速度[kph]	200.00
Brake Type 制动类型	Disk
Axle Position 轴位置	Front
Brake Orientation *** 位置	Left
Brake Method 制动方法	Hydraulic
Brake Hose ID 制动软管编号	N/A
Brake Hose Condition 制动软管状态	Used

Highlighted field should be filled out by customer as far as possible, don't change format. 标注颜色字段请客户尽可能填写, 请不要修改本格式。

Setup Information 安装信息

Dyno 测试台架	N-2 (3900SR)
Fixture ID 夹具号	LC-F-159
Fixture Type 夹具类型	Knuckle
Drive Connected Method 驱动连接方式	Spool Driver
Brake Car Model and Platform 制动车型与平台	D465

Caliper/Brake Information 制动钳信息

Caliper ID 制动钳编号	006564	
Caliper Type 制动钳类型	N/A	
Caliper Condition 制动钳状态	Used	
Caliper Mounting Angle Position 制动钳安装角度位置	N/A	
No. of Pistons / Diameter *** 活塞数量 / 活塞直径[mm]	1	57
Effective Radius (mm) *** 有效半径	107.5	

Rotor/Drum Information 制动盘/鼓信息

Rotor/Drum ID 制动盘/鼓编号	025249	
Rotor/Drum size&Condition 制动尺寸和状态	23*260	New
Drum/Rotor Type 制动盘类型	Standard	
LRO Req Before/After 侧向跳动 [micron]	40 micron	50 micron
Eff Pressure Offset 活塞移动起始压力[Bar]	0.50	***
Rotor/Drum Manufacturer 碟/鼓制造商	N/A	
Rotor/Drum Nature Frequencies 碟/鼓固有频率	No	

TC Install Instruction 热电偶安装说明

	TC#	Control 主控温度通道	Depth 深度(mm)	Inner 内表面	Outer 外表面	Type 类型	Actual Measurement Depth 实际深度
Rotor/Drum 制动盘/鼓	TC1	Yes	0.5		Yes	Embed 埋入	0.51
Pri/Lead/Inner Lining ☒ 动/ ☐ 蹄/ ☐ 摩擦片							
Sec/Trail/Outer Lining ☒ 动/ ☐ 蹄/ ☐ 摩擦片							
出风管内			200				
Project Additional Comments 项目的额外的批注	US City test on pad TA.						

LINK Project No & Line No 林科项目号&序号	150537	04
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Pads/Linings 摩擦片

Lining Orientation 摩擦材料方位	Pri/Lead/Inner 第一/领蹄/内	Sec/Trail/Outer 第二/从蹄/外
Lining ID 摩擦片号	025561/ TA	025562/ TA
Lining Formulation No. 摩擦材料配方号	TA	TA
Batch # (Lot) 批次号	N/A	N/A
With/Without Slot 是否有开槽	Yes	Yes
Compressibility 可压缩性	N/A	N/A
Insulator Type 消音片类型	No Insulator	No Insulator
Insulator Name 消音片名称	N/A	N/A
Chamfer Type 倒角类型	Parallel	Parallel
Lining Condition 摩擦片状态	New	New
Lining Add. Comments 摩擦片额外信息注释	N/A	N/A
Lining Nature Frequencies 摩擦片固有频率	No	No

Miscellaneous 杂项

Picture Need or Not? *** 是否需要图片	Yes	
Wear Data Need or Not? *** 是否需要磨损数据	Yes	
Measure with Insulator? *** 是否带消音片测量	No	
How to Measure Lining *** 测量摩擦片/蹄厚度方式	Paint Points 油漆点	
DTV meaurement scale if need DTV? 量程? 要求 (micron)?	N/A	
Offline Rotor Mapping? 额外的离线DTV	No	
Offline Compressibility? 额外的离线压缩性试验	No	
ECU Control Mode ECU控制模式	Full Auto全自动	

Emails of Report Distribution (Separated by ;) 接收测试报告人员email清单 (用; 分隔)	
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