Prüfbericht - Nr.: *Test Report No.:*	**28500175 001**		**Seite 1 von 4** *Page 1 of 4*
Auftraggeber: *Client:*	Goodridge (UK) Ltd. Exeter Airport Business Park, Exeter EX5 2UP, United Kingdom		
Gegenstand der Prüfung: *Test item:*	3.5mm ID flexible automotive brake hose.		
Bezeichnung: *Identification:*	Goodridge Logo	**Serien-Nr.:** *Serial No.:*	Not specified
Wareneingangs-Nr.: *Receipt No.:*	7901739	**Eingangsdatum:** *Date of receipt:*	04 August 2009
Prüfort: *Testing location:*	Goodridge (UK) Ltd.		
Prüfgrundlage: *Test specification:*	§571.106 Standard No. 106; Brake hoses		
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The test item passed the test specification(s).*		
Prüflaboratorium: *Testing Laboratory:*	Goodridge (UK) Ltd. Exeter Airport Business Park, Exeter EX5 2UP, United Kingdom		

geprüft/ *tested by:* G Babre

21 August 2009

Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

kontrolliert/ *reviewed by:* G W Beardow

21 August 2009

Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges/ *Other Aspects:*

The brake hoses were tested to ascertain conformity to FMVSS 106 due to a design change in the nylon collar

VCA Test report FMVSS 106-01 was referred for tests unaffected by the change.

Abkürzungen:				*Abbreviations:*			
	P(ass)	=	*entspricht Prüfgrundlage*		*P(ass)*	=	*passed*
	F(ail)	=	*entspricht nicht Prüfgrundlage*		*F(ail)*	=	*failed*
	N/A	=	*nicht anwendbar*		*N/A*	=	*not applicable*
	N/T	=	*nicht getestet*		*N/T*	=	*not tested*

TEST SAMPLE SPECIFICATION

PART / MODEL	:	**600-03**
BORE SIZE, mm	:	**3.5 ± 0.2**
PTFE WALL THICKNESS, mm	:	**1.0 ± 0.04**
BRAID O/D, mm	:	**6.45 ± 0.2**
WEIGHT, lb/ft	:	**0.04**
MIN. BEND RADIUS, mm	:	**38**

Clause	Requirement	Remarks - Results	Verdict
S5.2	**Labelling**	The hose is supplied to a vehicle manufacturer and hence no additional marking required as per clause 5.2.4. End fittings carry Goodridge "G" symbol already filed with NHTSA	**P**
S5.3	**Test Requirements**		
S5.3.1	**Constriction:** Every inside diameter of any section of a hydraulic brake hose assembly shall not be less than 64% of the nominal inside diameter of the brake hose	Verified as per VCA Test Report[1]	**P**
S5.3.2	**Expansion and Burst Strength:** The maximum expansion of a hydraulic brake hose assembly at 1000 psi and 1500 psi shall not exceed the values as per Table I	Verified as per VCA Test Report[1]	**P**
S5.3.3	**Whip Resistance** A hydraulic brake hose assembly shall not rupture when run continuously on a flexing machine for 35 hrs	Two hoses of length 600 mm length were tested on a rig confirming to S6.3.1. There was no pressure drop from the assemblies observed after 35hrs running at 800 rpm (Refer Annex I)	**P**
S5.3.4	**Tensile Strength** A hydraulic brake hose assembly shall withstand a pull of 325 pounds without separation of the hose from its end fittings	Verified as per VCA Test Report[1]	**P**
S5.3.5	**Water Absorption and Burst Strength** A hydraulic brake hose assembly, after immersion in water for 70 hours, shall withstand water pressure of 4,000 psi for 2 minutes, and then shall not rupture at less than 5,000 psi	Verified as per VCA Test Report[1]	**P**
S5.3.6	**Water Absorption and Tensile Strength** A hydraulic brake hose assembly, after immersion in water for 70 hours (S6.5), shall withstand a pull of 325 pounds without separation of the hose from its end fittings	Verified as per VCA Test Report[1]	**P**

1- VCA Test Report No. FMVSS: 106-01

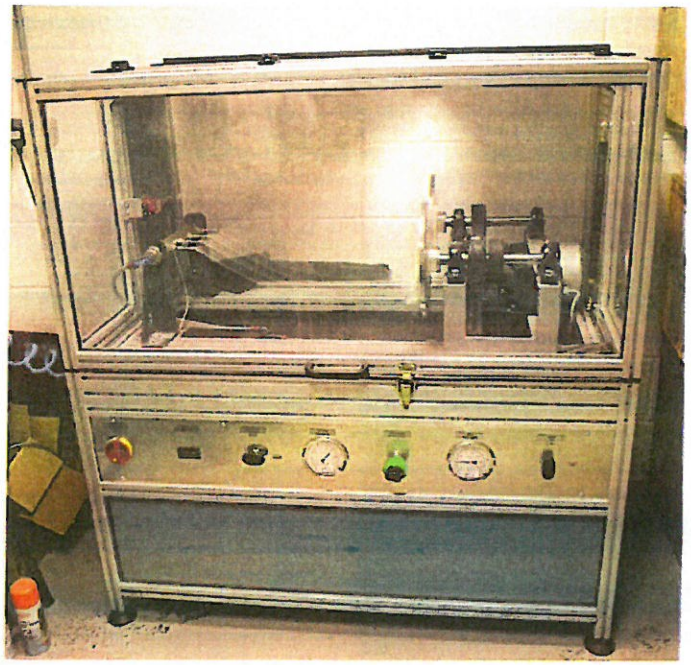
Clause	Requirement	Remarks - Results	Verdict
S5.3.7	**Water Absorption and Whip Resistance** A hydraulic brake hose assembly, after immersion in water for 70 hours, shall not rupture when run continuously on a flexing machine for 35 hours	Two hoses of 600 mm length were immersed in distilled water for 70 hrs and were tested on a rig confirming to S6.3.1. There was no pressure drop from the assemblies observed after 35hrs running at 800 rpm (Refer Annex I)	P
S5.3.8	**Low Temperature Resistance** A hydraulic brake hose conditioned at - 40 °F. for 70 hours shall not show cracks visible without magnification when bent around a cylinder as specified in S6.6	Verified as per VCA Test Report[1]	P
S5.3.9	**Brake Fluid Compatibility, Constriction & Burst Strength** A hydraulic brake hose assembly shall meet the constriction requirement of S5.3.1 after having been subjected to a temperature of 200 °F for 70 hours while filled with SAE RM–66–04 Compatibility Fluid, as described in appendix B of SAE Standard J1703 JAN 1995, "Motor Vehicle Brake Fluid." It shall then withstand water pressure of 4,000 psi for 2 minutes and thereafter shall not rupture at less than 5,000 psi	Verified as per VCA Test Report[1]	P
S5.3.10	**Ozone Resistance** A hydraulic brake hose shall not show cracks visible under 7-power magnification after exposure to ozone for 70 hours at 104 °F	Verified as per VCA Test Report[1]	P
S5.3.11	**End Fitting Corrosion Resistance** After 24 hours of exposure to salt spray, a hydraulic brake hose end fitting shall show no base metal corrosion on the end fitting surface except where crimping or the application of labeling information has caused displacement of the protective coating.	Verified as per VCA Test Report[1]	P

1- VCA Test Report No. FMVSS: 106-01

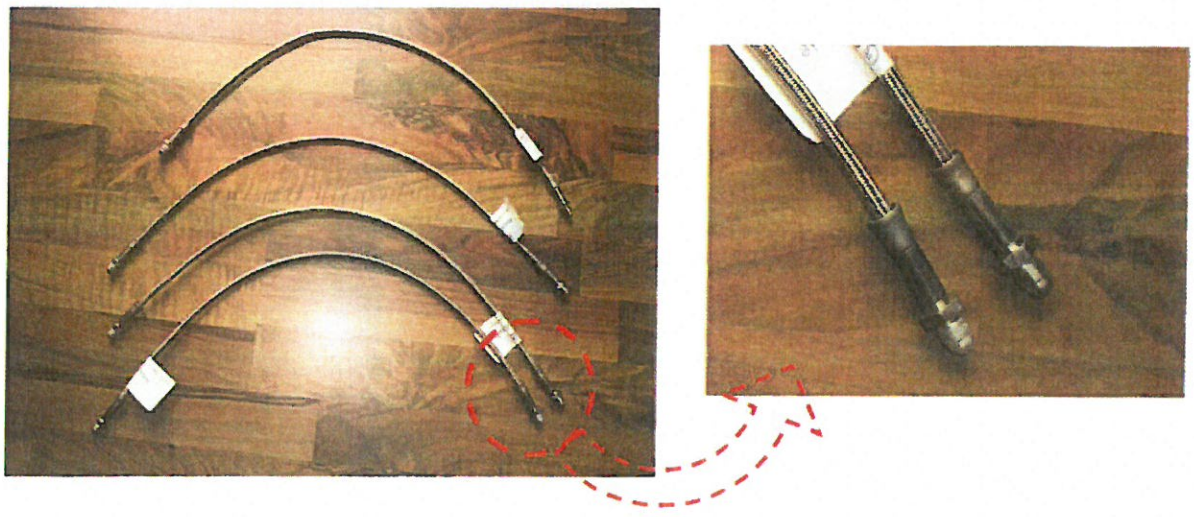
FMVSS 106

ANNEX I
PHOTO DOCUMENTATION

1) Lab Test Apparatus



2) Tested Specimens



VEHICLE CERTIFICATION AGENCY

Vehicle Certification Agency, 1 The Eastgate Office Centre
Eastgate Road, Bristol, BS5 6XX, United Kingdom
☎Switchboard: 0117 951 5151
System and Component Section Fax: 0117 952 4163

TEST REPORT: FMVSS REGULATION 106 BRAKE HOSES

Report/Job Number: FMVSS : 106 ESG079157

TEST DETAILS	
Subject	§ 571.106
Location of Test	Goodridge Exeter, JCS Weston-S-Mare, SW metal finishers
Date of Test	5 December 2006
VCA Representative	John Danter
Manufacturer's Representative	Steve Fluhrer

MANUFACTURER DETAILS	
Manufacturer's Name	**GOODRIDGE (UK) Ltd.**
Manufacturer's Address	Exeter Airport, Exeter, EX5 2UP, United Kingdom
Model Type & description	**Flexible brake hose.**
Reason for test	Extension to cover amendments to the regulation

CONCLUSION	The above mentioned hose was tested in accordance with FMVSS regulation 106, and was found to comply in all respects. Signature: Name: J Danter Position: Engineer components. Date: 11 December 2006

LIST OF ANNEXES

ANNEX	No of PAGES	SUBJECT
1	1	Goodridge quality report
2	13	Exeter Advanced Technologies
3	5	PARC Test report
4	2	SATRA Test report

TEST REPORT: FMVSS Regulation 106 BRAKE HOSES

Clause	Detail	Test house	Date for completion	Report Reference
S5.3.2	Expansion and burst strength – Addition of 2,900 psi expansion test, rupture pressure remains at 5,000 + psi, for hose dia of 3mm +	In house (Goodridge) + Hose supplier	18/9/06 and 5/12/06	600-03 EX-BU
S5.3.4	Tensile test – addition of fast pull to 370lbs +	Exeter University (Exeter Advanced Technologies)	3/2/2006	3075/A
S5.3.6	Water absorption + tensile as above	Exeter University (Exeter Advanced Technologies	3/2/2006	3075/B
S5.3.8	Low temperature now - 45 degC to -54degC for 70 hrs bent over a cylinder 3.5" dia	PARC	COMPLETE	1283
S5.3.9	Brake fluid constriction test now at 120 deg C for 70 hrs	PARC	COMPLETE	1283 + FMVSS DEC06
S5.3.11	NEW - Dynamic Ozone test	SATRA	COMPLETE	82526/0636/A
S5.3.12	NEW – High temp impulse test, Pressure cycling + Burst strength 0-1600 – 1600 –0 psi / 2 sec at a temp of 146 deg C	SATRA	COMPLETE	82526/0636/A.