

TEST REPORT

APV Engineering & Testing Services
1521 Hume Highway
Campbellfield, Victoria, 3061
A.B.N. 26 148 189 468

Telephone: 613 9355 5533
Facsimile: 613 9357 4362

DoTRS TFI#: 2741

Test Facility: Component Laboratory

Test Title / Description: Evaluation of the performance of aftermarket seat covers in conjunction with side airbag systems.

Test Report: 0064

Test Date: 8/12/2011 - 9/12/2011

Customer: Sperling Enterprises
16 Helles Avenue,
Moorebank, NSW.
2170.

Submitted by:


Mano Lygnos
Test Engineer
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25/01/2012.

Authorised by:


William Chu
Senior Test Engineer
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25/01/2012



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| | | |
|---|----------------------|------------------------|
| Test Centre Work Order No: 00137 | Report/Test No: 0064 | Issue No: 2 |
| Sample Part No: MHCBNSLV60 & MHCBNA30ASLV | Number of Samples: 7 | Issue Date: 25/01/2012 |
| Type of Test: Side Air Bag deployments in seats to validate Car Seat Covers | | |

1.0 Aim:

The scope of this test is to conduct static deployments of Side Air Bags in customer supplied seats with and without Car Seat Covers with Air Bag feature, to evaluate the effect of the Car Seat Cover on the performance of the Air Bag.

2.0 Samples:

7 customer supplied seat backs and 4 aftermarket Car Seat Covers. The four Car Seat Covers have coloured indicating labels. The sample with the White label is part number MHCBNSLV60, the samples with the Yellow, Green and Orange labels are part number MHCBNA30ASLV.

3.0 Test Method:

Test Matrix

| TEST NAME & P/N | DESCRIPTION | TEMPERATURE | COMMENT |
|--|-------------------|-------------|--|
| WHITE S60 W/ABF AMB P/N - MHCBNSLV60 | WHITE WITH COVER | AMBIENT | Stored and tested in an ambient environment. |
| YELLOW BASELINE AMB P/N - MHCBNA30ASLV | YELLOW BASELINE | HOT @ *85 | Conditioned for a minimum of 4 hours and tested 3 mins after removal from chamber. |
| YELLOW S30 W/ABF AMB P/N - MHCBNA30ASLV | YELLOW WITH COVER | HOT @ *85 | Conditioned for a minimum of 4 hours and tested 3 mins after removal from chamber. |
| GREEN BASELINE AMB P/N - MHCBNA30ASLV | GREEN BASELINE | COLD @ -*35 | Conditioned for a minimum of 4 hours and tested 3 mins after removal from chamber. |
| GREEN S30 W/ABF AMB P/N - MHCBNA30ASLV | GREEN WITH COVER | COLD @ -*35 | Conditioned for a minimum of 4 hours and tested 3 mins after removal from chamber. |
| ORANGE BASELINE AMB P/N - MHCBNA30ASLV | ORANGE BASELINE | AMBIENT | Stored and tested in an ambient environment. |
| ORANGE S30 W/ABF AMB P/N - MHCBNA30ASLV | ORANGE WITH COVER | AMBIENT | Stored and tested in an ambient environment. |



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4.0 Test Equipment:

Deployment Room:
High Speed Camera:
Thermometer:
Fixture:
Environmental chamber:

OOP Deployment Room
Phantom Miro (S/N: 8201 & 8202)
Room Thermometer RS 212-124, S/N: TE2
Standard Seat Mounting Table and Screen.
Votsch VC7150-5 S/N 59566063550010 & VC7150 S/N
59566063560010

5.0 Test Results:

Result Table

| | | BASELINE | | WITH SEAT COVER | |
|--------|-------------|--------------|---------------------|-----------------|---------------------|
| | TEMP | OPENING TIME | FULL INFLATION TIME | OPENING TIME | FULL INFLATION TIME |
| YELLOW | HOT @ °85 | 4 ms | 12 ms | 4 ms | 12 ms |
| GREEN | COLD @ °-35 | 3 ms | 16 ms | 4 ms | 16 ms |
| ORANGE | AMB | 4 ms | 16 ms | 4 ms | 16 ms |
| WHITE | AMB | N/A | N/A | 4 ms | 16 ms |

The test results detailed in this test report apply to the test samples identified. The performance of similar products is not implied.

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Conclusion

Yellow:-

The **Yellow baseline** test opened (meaning the time the Air Bag Cushion fabric was first visible) at 4 ms and showed full inflation at 12 ms.

The **Yellow Size 30 Carbon Mesh s/crv with air bag feature** test opened at 4 ms and showed full inflation at 12 ms.

Green :-

The **Green baseline** test opened at 3 ms and showed full inflation at 16 ms.

The **Green Size 30 Carbon Mesh s/crv with air bag feature** test opened at 4 ms and showed full inflation at 16 ms.

Orange:-

The **Orange baseline** test opened at 4 ms and showed full inflation at 16 ms.

The **Orange Size 30 Carbon Mesh s/crv with air bag feature** test opened at 4 ms and showed full inflation at 16 ms.

White :-

The **White Size 60 Carbon Mesh s/crv with air bag feature** test opened at 4 ms and showed full inflation at 16 ms.

All deployment samples exhibited the following:

- The bag fully inflated & positioned during deployment.
- The un-covered seat backs and Side Air Bags deployed in a satisfactory manner, the seat backs with the covers did not hinder the full inflation time however it slightly delayed the opening time in the case of the Green seat.
- The module stayed attached during deployment.
- No fragmentation or separation of pieces from the covers.
- No damage on the airbag observed which would adversely affect the module to fully inflate & position during deployment.
- Seat structure & components did not show any detachment or damage.

N/B As you can see in the Cine Files provided the White seat has a different type of air bag to the other pairs of seats. The Green, Yellow and Orange seat pairs had Thorax only type air bags whereas the White is a Head/Thorax type air bag. The Head/Thorax type air bag is a larger bag and different shape. This may need to be taken into consideration during comparison of results.



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6.0 Sample Disposal:

Samples kept for 6 months after which they will be destroyed.

7.0 Data Supplied To The Customer:

Hard Copy of Test Report and Disc containing Cine Files

Tested By:

Mano Lygnos
Taha Shaikh

Title:

Test Engineer
Test Engineer

Date Tested:

8/12/2011
9/12/2011

Reported By

Mano Lygnos

Title:

Test Engineer

Report Date:

25/01/2012

Signatory:

A handwritten signature in blue ink, appearing to read 'Mano Lygnos', is written over a horizontal line.

Title:

Senior Test Engineer

Date:

25/01/2012