



**JIM VISH & ASSOCIATES**  
**SHEAR STRENGTH COMPARISON**  
**of the Table Restraint Systems**  
**Report No. 220-13-2728A**  
**Proposal No. 32338, Rev. A**

**Customer Information**

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**Jim Vish & Associates**  
**Sandy Vish**

**Laboratory Information**

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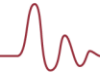
Test engineer: Jeffrey Reid; *Westpak*<sup>™</sup>  
Test date: 12/06/2013  
Westpak<sup>™</sup> laboratory: San Diego, California

WESTPAK, Inc. is accredited to ISO 17025 *General Competence for Testing and Calibration Laboratories* (#2870.01 and 2870.02). WESTPAK, Inc. is also registered to ISO 9001 *Quality Management* and ISO 14001 *Environmental Management Systems* (#10001175 and #10004260). This test method is not yet accredited, for accredited test methodologies, please visit [ww.A2LA.org](http://ww.A2LA.org) for the Scope of Accreditation of Westpak, Inc.



**WESTPAK, INC.**  
ISO 9001:2008  
ISO 14001:2004  
10001175 & 10004260





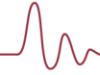
## **Purpose of Testing**

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Twenty (20) Generic Material samples and twenty (20) JV Material samples were subjected to the following test input:

<b>Test Input</b>	<b>Purpose of Testing</b>	<b>Standard Referenced</b>	<b>Inspections</b>
Shear Strength	To determine the shear strength of the hook and loop material (Velcro) of the table restraint belt systems.	ASTM D5169-98	During Test

Acceptance criteria are determined by **Jim Vish & Associates**.



## Product Information

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Product: Table Restraint Systems  
Dimensions (in): 1.00 x 4.00  
(2.54 cm x 10.2 cm)  
Quantity: 40 sets (20 Generic Material  
and 20 JV Material)



Generic Samples



JV Samples

## Test Equipment and Instrumentation

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All testing was conducted in the package laboratory at ambient conditions.

Please refer to Appendix I for equipment and instrumentation information and calibration dates.



## Test Description

### Shear Strength

Quantity tested: 40 samples (5 samples of each batch with all four hook and loop directions)

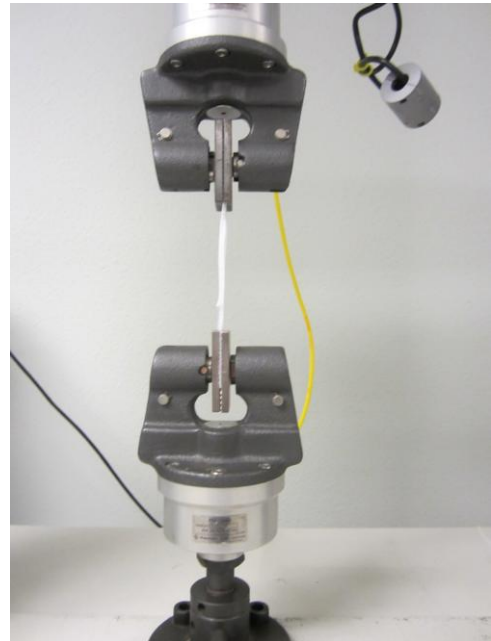
Jaw separation rate: 12 in/min (305 mm/min)

Initial Gauge Length: 3 in

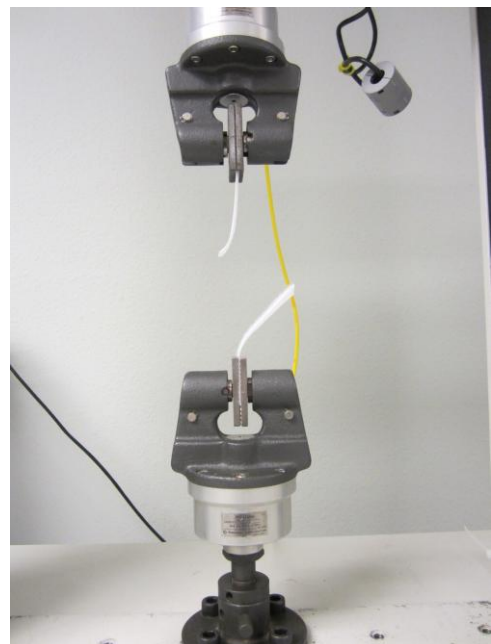
Sample Width: 1.0 in

Sample Length: 4.0 in

Note: Samples were prepared with roller in accordance with paragraph 8 of ASTM D5169



Test In Progress



Post test

**Results and Observations**

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<b>Test Input</b>	<b>Observations</b>	<b>Appendix</b>
Shear Strength	<p>The total average force of the Generic samples was 44 lbf, with a standard deviation of 3. The total maximum was 49 lbf and the total minimum was 37 lbf.</p> <p>The total average force of the JV samples was 37 lbf, with a standard deviation of 5. The total maximum was 49 lbf and the total minimum was 27 lbf.</p>	II



## Conclusions

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Twenty (20) Generic Material samples and twenty (20) JV Material samples were subjected to shear strength testing as specified by **Jim Vish & Associates**.

The total average force of the Generic samples was 44 lbf, with a standard deviation of 3. The total maximum was 49 lbf and the total minimum was 37 lbf.

The total average force of the JV samples was 37 lbf, with a standard deviation of 5. The total maximum was 49 lbf and the total minimum was 27 lbf.

**Jim Vish & Associates** will make any final conclusions about the integrity of the Table Restraint Systems samples based on the results of this testing.

There were no anomalies throughout the conduct of this test that would detract from the ability of **Jim Vish & Associates** from making reasonable judgments regarding the testing conducted herein.

**WESTPAK™** is pleased to present this report to **Jim Vish & Associates** covering the shear strength comparison of the Table Restraint Systems. The equipment used to conduct this testing has been recently calibrated and is known to be in good operating condition. In addition, the test operator uses good laboratory practice at all times. Therefore, the data is considered accurate and reliable. However, there is no warranty expressed or implied with the submission of this report, and **Jim Vish & Associates** assumes all liability for use of the data contained herein.

Respectfully submitted,  
**WESTPAK, INCORPORATED**

**Reviewed By**



Jeffrey Reid  
Associate Engineer  
December 13th, 2013



Ryan Craft  
Site Manager  
December 13, 2013

# APPENDIX I

## EQUIPMENT AND INSTRUMENTATION

Instrumentation & Equipment	Westpak™ No.	Model No.	Last Calibration Date
Mitutoyo 4" Digital Caliper	1799	CD-4"CSX	1/30/2013
Shimadzu 50kgf Load Cell	273	346-51294-21	7/12/2013
Shimadzu Universal Test Machine 50 kg	272	AGS-H	7/11/2013
Notes: All calibration conducted annually on instrumentation only.			

**APPENDIX II**

**SHEAR STRENGTH  
TEST DATA**

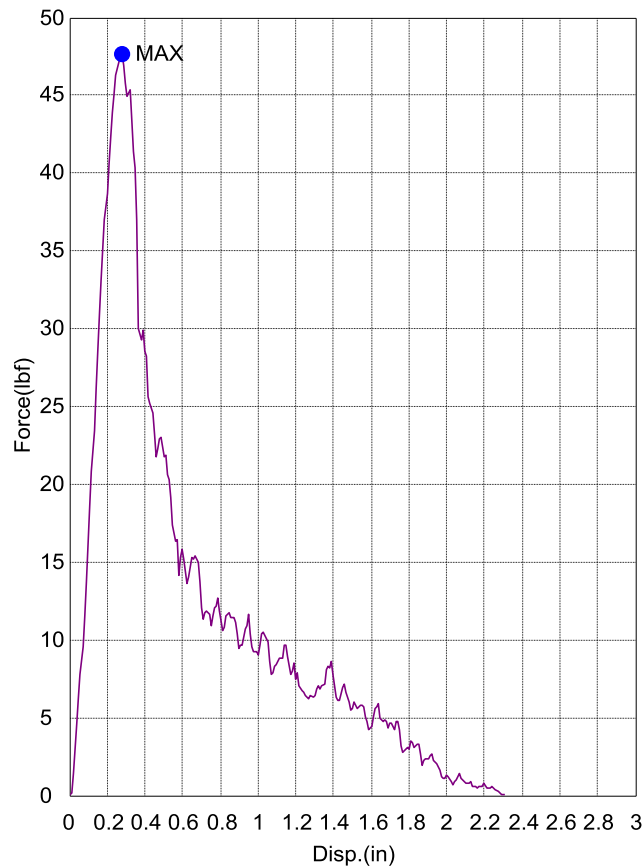


**Table 1**  
**Shear Strength Test**  
**Generic Samples**

Sample	Maximum Force (lbf)
Generic 1_1	40
Generic 1_2	46
Generic 1_3	48
Generic 1_4	46
Average	45
Standard Deviation	3
Maximum	48
Minimum	40
Generic 2_1	41
Generic 2_1	43
Generic 2_2	43
Generic 2_4	46
Average	43
Standard Deviation	2
Maximum	46
Minimum	41
Generic 3_1	42
Generic 3_2	46
Generic 3_3	47
Generic 3_4	40
Average	44
Standard Deviation	3
Maximum	47
Minimum	40
Generic 4_1	44
Generic 4_2	43
Generic 4_3	41
Generic 4_4	46
Average	44
Standard Deviation	2
Maximum	46
Minimum	41

**Table 1 (continued)  
Shear Strength Test  
Generic Samples**

Sample	Maximum Force (lbf)
Generic 5_1	40
Generic 5_2	42
Generic 5_3	49
Generic 5_4	37
Average	42
Standard Deviation	5
Maximum	49
Minimum	37
Total Average	44
Total Standard Deviation	3
Total Maximum	49
Total Minimum	37



Note: Graph from one sample presented above, additional graphs available upon request.

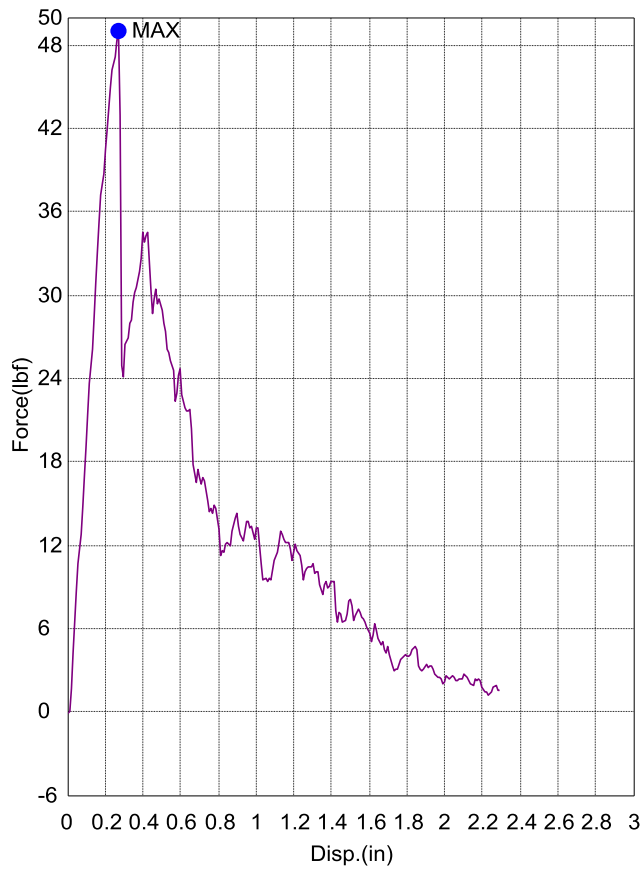
**Table 2 (continued)**  
**Shear Strength Test**  
**JV Samples**

<b>Sample</b>	<b>Maximum Force (lbf)</b>
JV 1 _ 1	38
JV 1 _ 2	32
JV 1 _ 3	49
JV 1 _ 4	42
Average	40
Standard Deviation	7
Maximum	49
Minimum	32
JV 2 _ 1	32
JV 2 _ 2	41
JV 2 _ 3	33
JV 2 _ 4	37
Average	36
Standard Deviation	4
Maximum	41
Minimum	32
JV 3 _ 1	31
JV 3 _ 2	37
JV 3 _ 3	41
JV 3 _ 4	30
Average	35
Standard Deviation	5
Maximum	41
Minimum	30
JV 4 _ 1	37
JV 4 _ 2	34
JV 4 _ 3	43
JV 4 _ 4	39
Average	38
Standard Deviation	4
Maximum	43
Minimum	34

**Table 2 (continued)  
Shear Strength Test  
JV Samples**

Sample	Maximum Force (lbf)
JV 5 _ 1	38
JV 5 _ 2	40
JV 5 _ 3	41
JV 5 _ 4	27
Average	37
Standard Deviation	6
Maximum	41
Minimum	27

Total Average	37
Total Standard Deviation	5
Total Maximum	49
Total Minimum	27



Note: Graph from one sample presented above, additional graphs available upon request.