



UNITED STATES  
CONSUMER PRODUCT SAFETY COMMISSION  
BETHESDA, MD 20814

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## Memorandum

Date: August 16, 2017

TO : The Commission  
Todd A. Stevenson, Secretary

THROUGH: Mary T. Boyle, General Counsel  
Patricia H. Adkins, Executive Director  
DeWane Ray, Deputy Executive Director for Safety Operations

FROM : George A. Borlase, Ph.D., P.E., Assistant Executive Director  
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SUBJECT : 2016 Tipover Briefing Package Test Results Update

This memorandum updates the datasheet in Appendix A of the *Staff Briefing Package on Furniture Tipover – September 30, 2016*. The memorandum highlights several issues discovered by CPSC staff through continued product testing and will be brought to the attention of ASTM.

### Repeating of Testing

Staff's 2016 Tipover Briefing Package<sup>1</sup> evaluated 61 dressers for compliance with the current ASTM F2057-14 *Standard Safety Specification for Clothing Storage Units*. Based on subsequent discussion with firms regarding the failing test results, staff realized that all loaded drawer testing conducted for the September 2016 Briefing Package was performed with the 50-lb fixture, but with a strap with a shorter distance (3.15 inches) between the test weights than is specified in F2057-14 (which specifies a 6 inch strap). Therefore, staff retested all of the available dressers that were the subject of the September 30, 2016 briefing package using test weights with the strap lengths specified in the F2057-14 standard, and the results of the tests are attached in Appendix A.

Of the 61 dressers originally tested, staff was able to retest 26 existing dresser samples and 1 new dresser sample that was the same as a previously tested sample. There were 22 dresser samples that could not be retested because these samples with prior passing test results were destroyed when testing had been previously completed, and 13 dresser samples could not be retested because they were damaged from the previous testing. Additionally, staff tested the dressers

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<sup>1</sup> <https://www.cpsc.gov/es/content/staff-briefing-package-on-furniture-tipover>

with two slightly different test weights, 48.54 pounds and 49.66 pounds with 6 inch spacing between the test weights. Both weights still met the tolerances listed in F2057-14, but two rounds of testing were performed with slightly different weights to better understand the sensitivity of the furniture to test weight variances.

In the original briefing package, 27 dresser samples failed Section 7.2 of the standard. These were retested separately using the 48.54 pound test weight and the 49.66 pound test weight. Of these 27, 25 dresser samples again failed to meet Section 7.2 of the standard when retested with either test weight. As shown in Appendix A, dresser sample 43, when retested, met Section 7.2 of the standard at either test weight, although in those passing results both rear feet came off the ground. Due to the borderline performance of this sample, staff obtained a second identical Clothing Storage Unit (CSU) for sample 43 from the manufacturer (43NEW). Dresser sample 49 also met Section 7.2 of the standard when retested, but only at the 48.54 pound test weight. Similar to dresser sample 43, both rear feet of sample 49 came off the ground.

The results of the retested furniture are very consistent with the original test results, and therefore staff's conclusions and recommendations regarding furniture stability remain the same as set forth in the September 2016 briefing package. Staff believes that more work needs to be done to effectively address the risk of tipover incidents, and staff will continue to actively engage with the ASTM subcommittee to develop an effective standard.

### **Repeatability and Reproducibility of Test Method**

Since October 2016, EXHR staff has continued to test and retest CSUs and encountered products that are designed with little to no margin of safety regarding stability testing. Testing of these CSUs identified several issues regarding repeatability and reproducibility with the test method of F2057-14, including insufficiently specified test parameters, opportunities to circumvent testing by use of an apparently functionless design change, and procedures that have been interpreted differently. As part of staff's effort to improve furniture safety, staff intends to address the following issues with ASTM.

### **Test Weight Considerations**

One of the most significant issues staff identified was that the test weight for the fixture specified in F2057-14 permits a tolerance of  $\pm 1$  lb. for each of the two test weight blocks and indicates a separation distance between test blocks of 6 inches. Regarding the test fixture, the total weight can range from 48 to 52 lbs. plus the weight of the fastening hardware and strap. Thus, the test fixture can weigh from slightly above 48 lbs. to slightly above 52lbs. To show the impact of this permitted tolerance, LSM staff retested the available CSUs from the September 2016 briefing package with two additional test fixtures weighing 48.54 and 49.66 lbs. made in CPSC's machine shop. These two fixtures are within the allowed specifications for the test weight. Therefore, the test fixtures used in retesting varied from 48.54 to 50.00 lbs. All testing conducted for the September 2016 Briefing Package was performed with the 50.00 lb. test weight because this fixture is exactly in the middle of the test fixture weight range.

As summarized above, only two changes in stability performance were observed during retesting for samples 43 and 49, as shown in Appendix A:

- Sample 43 was retested with the two fixtures (weighing 48.54 and 49.56 lb.) on the lower end of the tolerance. Although it did not tip over, the rear feet lifted off the ground and the unit balanced on its front feet. Due to the borderline performance of this sample, staff obtained a second identical CSU for sample 43 from the manufacturer (43NEW).
- Sample 43NEW was tested to confirm these results. The new sample failed to meet the stability requirements of section 7.2 with each of the three test fixtures, as shown in Appendix A.
- Sample 49 also showed a change in stability performance within the tolerance range of the test fixture. Sample 49 consists of three drawers across the top row of drawers, but only the middle drawer was big enough to support the test fixture. When sample 49 was tested with the 50.00 lb. and 49.66 lb. test fixtures, it tipped over. When sample 49 was tested with the 48.54 lb. test fixture, it did not tip over. However, the rear feet lifted off the ground.

The retest results do not change any of staff's findings, conclusions, or recommendations from the *Staff Briefing Package on Furniture Tipover – September 30, 2016*. However, these results highlight staff's concerns related to repeatability and reproducibility due to the allowable test weight range of 48 lbs. to 52 lbs. (8% variability) and when a CSU leans forward and the rear legs come off the ground. Although the CSU did not tip and fall over, CPSC staff believes that when the rear feet lift off the ground, this presents an unstable situation with little to no safety margin, and should be addressed in the standard.

## **Outstop Considerations**

During subsequent testing following publication of the September 2016 briefing package, staff encountered designs with drawer outstops significantly less than 66 percent of the operational sliding length (OSL). CPSC staff tested a CSU with an outstop that was less than 20 percent of the OSL, which limits users' access to contents of the CSU drawer. In addition, during testing, the location of the outstop at 20 percent of the OSL prevents proper placement of the test weight on the CSU drawer. Because of this emerging design feature, CPSC staff believes that the definition of the term outstop needs to be updated to reflect manufacturers' recent use of multiple outstops. The definition should include a clear description of their purpose with specification added to the minimum OSL that a drawer must be extended to for stability testing, particularly if an outstop is less than 66 percent of the OSL.

## **Testability Considerations**

As noted in Appendix A, staff could not complete testing of two units due to CSU hardware being damaged beyond repair by application of the test weight. In addition, during subsequent testing, staff tested several CSUs where drawer glides and drawers were not able to support the test weight, or the drawer glides bent significantly creating a negative angle to the horizontal

such that these units also tipped over. Additionally, test labs have contacted CPSC for clarification of how to repair a failed component to original specification without affecting test results. CPSC staff notes the ASTM standard should address how to handle a failed component that cannot be repaired or how to secure a failed component without affecting test results. In other ASTM standards a component failure during testing typically means a failure to comply (e.g. ASTM F2012, F2120, and F2167). CPSC staff also believes the ASTM standard should consider alternatives such as a design to fail feature preventing the CSU from tipping over.

### **Test Surface Considerations**

During subsequent testing, staff has observed variability of stability performance of a CSU at different floor flatness tolerances. CPSC staff notes that the ASTM F2057-14 standard should provide a detailed definition of *hard, level, flat surface* (7.1.1 of the standard) and to consider adding a surface flatness tolerance (i.e.  $\pm 0.1^\circ$ ) over a certain area. The standard should also specify the type of flooring surface material for testing. For example, the standard could reference a vinyl tile that meets certain specifications such as the Type IV vinyl-composition tile called out in CPSC's standard 16 C.F.R. part 1500.

### **Test Method Considerations**

During subsequent testing, CPSC staff identified several issues related to specificity and clarity of the test procedures in ASTM F2057-14. CPSC staff has identified the following specific issues in the standard:

- a. The standard should provide more clarity on applying the test weight fixture to drawers with center dividers, and/or center knobs/handles. The application of the test weight should include greater detail similar to other standards such as ASTM F2236-16a *Standard Safety Specification for Soft Infant and Toddler Carriers*, which uses a static weight application. CPSC staff has observed changes in product stability performance with varying orientation and application of the test fixture to accommodate handles, knobs and other drawer features that can offset the test weight and shift the center of gravity of the test fixture causing the CSU to tip over. As an example, for dressers with a center knob/handle, the test fixture can rest on the handle (rather than above or below), increasing the distance from the front of the dresser, and thus, the moment arm and tipping moment. This effect on testing is further compounded by the other end of the fixture contacting the drawer bottom.
- b. The test procedure should also address this contact of the test weight with the drawer bottom and placement of the test weight when CSU drawers are not deep enough to test with the current fixture. This issue with the test procedure is based on variable results observed in test weight applications on CSUs with shallow drawers.
- c. The test procedure should have a time requirement to apply test weight and a duration for which the CSU must support the weight without tipping over. CPSC staff notes language

in other ASTM standards (F963<sup>2</sup>, F2236, and F2194<sup>3</sup>) that refers to application of weight or force over a specific period of time, so not to impart an impulse force on the product.

- d. Also consideration should be given to including pictures of test fixture application to address several of the issues noted above where appropriate.

## **Conclusion**

Staff retested 27 dressers from the *Staff Briefing Package on Furniture Tipover – September 30, 2016* to correct the failure in the initial testing to test with the 6 inch strap specified in the standard. The retest results do not change any of staff's findings, conclusions or recommendations from the *Staff Briefing Package on Furniture Tipover – September 30, 2016*. During retesting, 25 of 27 CSUs that failed the first set of tests also failed in the range of tests in this re-evaluation. The two CSUs that performed differently were marginal in performance as their rear feet lifted off the ground. Staff believes that providing detailed clarification of test method issues in *Standard Safety Specification for Clothing Storage Units* will increase repeatability and reproducibility of testing CSUs, and plans to send a letter to ASTM with the above recommended improvements to the test method to be considered for ASTM 2057 *Standard Safety Specification for Clothing Storage Units*.

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<sup>2</sup> Standard Consumer Safety Specification for Toy Safety.

<sup>3</sup> Standard Consumer Safety Specification for Bassinets and Cradles.

Appendix A

| Sample | Destroyed       |        |       |       |        | Retested            |                     |                               |                               | Damaged   |  |   | 7.2 Configuraiton - value is force (lbs) to cause tipover | 7.2 configuration - least distance the drawer open which fails 7.2 | 7.2 Configuraiton - value is force (lbs) to cause tipover | Contain Tip restraint | Actual Height | Actual Width | Actual Depth | Actual Weight |
|--------|-----------------|--------|-------|-------|--------|---------------------|---------------------|-------------------------------|-------------------------------|---|--|---|---|--|---|-----------------------|---------------|--------------|--------------|---------------|
|        | Rows of drawers | Height | Width | Depth | Weight | 7.1 All drawers out | 7.2 One drawer 50lb | Retest 7.2 One drawer 48.54lb | Retest 7.2 One drawer 49.66lb | 7.1 configuration - value is force (lbs) to cause tipover | 7.2 configuration - least distance the drawer open which fails 7.2 | 7.2 Configuraiton - value is force (lbs) to cause tipover |   |  |   |                       |               |              |              |               |
| 1      | 1               | 30.1   | 18.1  | 15    | 20     | P                   | F                   | F                             | F                             | 3   | 2  | 5   | N   | 30.125   | 18  | 14.75                 | 20            |              |              |               |
| 2      | 0               | 38.5   | 20    | 40    | 42     | P                   | F                   | F                             | F                             | 41  | N/A  | 41  | P   | 38.125   | 40.75   | 20.625                | 51            |              |              |               |
| 3      | 2               | 31.75  | 35.75 | 19    | 112    | P                   | F                   | F                             | F                             | 30  | 7.25   | 46  | P   | 34   | 46  | 18                    | 93            |              |              |               |
| 4      | 2               | 30     | 36    | 17    | 102    | P                   | P                   |                               |                               | 41  | N/A  | 60.5  | P   | 30   | 35.5  | 17.125                | 91            |              |              |               |
| 5      | 3               | 31     | 27    | 14    | 50     | P                   | F                   | F                             | F                             | 45  | 6.625  | 45  | N   | 29.375   | 24  | 14.938                | 64            |              |              |               |
| 6      | 3               | 26.75  | 28.5  | 11.75 | 41.2   | P                   | F                   | F                             | F                             | 0.5   | 0.875  | 11  | F   | 27   | 28.5  | 11.875                | 39            |              |              |               |
| 7      | 3               | 31.19  | 28.5  | 15.69 | 65     | P                   | F                   | F                             | F                             | 10  | 6.5  | 31  | P   | 31.5   | 28.5  | 15.75                 | 51            |              |              |               |
| 8      | 3               | 28.13  | 27.5  | 15.75 | 47.813 | P                   | F                   | F                             | F                             | 11  | 4.25   | 23  | P   | 28.125   | 27.63   | 15.625                | 45            |              |              |               |
| 9      | 3               | 40     | 30.5  | 15.38 | 75     | P                   | F                   | F                             | F                             | 47  | 7.75   | 47.5  | P   | 40.375   | 30.5  | 15.375                | 74            |              |              |               |
| 10     | 3               | 40     | 19.5  | 50    | 99     | P                   | P                   |                               |                               | 40+   | N/A  | ***   | P   | 39.5   | 49.75   | 19.5                  | 95            |              |              |               |
| 11     | 3               | 35     | 33.5  | 19.13 | 90     | P                   | P**                 |                               |                               | 17  | N/A  | 57  | P   | 38   | 33.5  | 19.25                 | 90            |              |              |               |
| 12     | 5               | 31     | 54    | 18    | 85     | P                   | F                   | F                             | F                             | 9.5   | 4.875  | 90.36   | P   | 49   | 33  | 17.875                | 68            |              |              |               |
| 13     | 3*              | 33.03  | 41.3  | 20.08 | 94.8   | P                   | P                   |                               |                               | 74  | N/A  | 82  | P   | 33.5   | 41.38   | 20.25                 | 94            |              |              |               |
| 14     | 3*              | 33.5   | 45    | 19    | 105    | P                   | P                   |                               |                               | 56  | N/A  | 73  | F   | 33.5   | 45  | 19                    | 100           |              |              |               |
| 15     | 3               | 32     | 57    | 18    | 101    | P                   | P***                |                               |                               | ***   | ***  | 66  | F   | 32   | 57.13   | 17.75                 | 100           |              |              |               |
| 16     | 3               | 47.01  | 30.08 | 16.69 | 119    | P                   | P                   |                               |                               | 73  | N/A  | 32.67***  | P   | 47.25  | 30  | 19.375                | 99            |              |              |               |
| 17     | 3               | 33.5   | 42    | 19    | 113    | P                   | P                   |                               |                               | 37  | 16   | 65  | F   | 33   | 42  | 19                    | 108           |              |              |               |
| 18     | 3               | 33.5   | 42.5  | 19    | 114    | P                   | P                   |                               |                               | 49  | N/A  | 50***   | F   | 33.625   | 42.75   | 19.125                | 113           |              |              |               |
| 19     | 3               | 32.5   | 53.5  | 16.5  | 118    | P                   | P**                 |                               |                               | 30***   | ***  | 63  | N   | 32   | 53.25   | 16.5                  | 117           |              |              |               |
| 20     | 4               | 33.75  | 38    | 18.75 | 70     | P                   | P                   |                               |                               | 48  | N/A  | 23  | P   | 44.875   | 36  | 18                    | 96            |              |              |               |
| 21     | 4               | 46.25  | 29.5  | 58    | 61.6   | P                   | F                   | F                             | F                             | 3.5   | 4.75   | 70***   | N   | 32.25  | 27.5  | 15.875                | 59            |              |              |               |
| 22     | 4               | 44     | 36    | 18    | 48     | P                   | P                   |                               |                               | 70  | N/A  | 61  | P   | 44   | 35.5  | 17.75                 | 99            |              |              |               |
| 23     | 4               | 41.57  | 31.57 | 15.71 | 74.74  | P                   | P**                 | P                             | P                             | 34  | N/A  | 40+   | P   | 43.125   | 32  | 18.5                  | 75            |              |              |               |
| 24     | 4               | 39     | 27.5  | 15.5  | 75     | P                   | F                   | F                             | F                             | 32  | N/A  | 23  | P   | 39   | 27.5  | 15.5                  | 71            |              |              |               |
| 25     | 4               | 38     | 33.5  | 20    | 90     | P                   | F                   | F                             | F                             | 4   | 5.875  | 54.9  | N   | 36.25  | 36.13   | 16                    | 68            |              |              |               |
| 26     | 4               | 41.5   | 36    | 21.5  | 109    | P                   | F                   | F                             | F                             | 12.5  | 14.625   | 55  | P   | 41   | 35.5  | 21.125                | 122           |              |              |               |
| 27     | 4               | 35.5   | 41    | 18    | 95     | P                   | P**                 | P**                           | P**                           | 43  | N/A  | 53.9  | P   | 40.875   | 35.5  | 18.875                | 69            |              |              |               |
| 28     | 4               | 36     | 36.25 | 16.75 | 94     | P                   | F                   |                               |                               | 46.5  | 7.75   | 63  | N   | 35.75  | 36.13   | 16.75                 | 88            |              |              |               |
| 29     | 4               | 42.68  | 34.72 | 18.58 | 114    | P                   | P                   |                               |                               | 35  | N/A  | 45  | P   |  | 34.75   | 18.5                  | 106           |              |              |               |
| 30     | 4               | 34     | 41    | 19    | 118    | P                   | F                   | F                             | F                             | 13  | 11.5   | 28  | N   | 34.125   | 41  | 19.375                | 93            |              |              |               |
| 31     | 4               | 36.75  | 36    | 16.5  | 110    | P                   | F                   | F                             | F                             | 11  | 5.125  | 35  | P   | 36.5   | 36  | 16.5                  | 57            |              |              |               |
| 32     | 5               | 51.63  | 18    | 24.19 | 45     | P                   | F                   | F                             | F                             | 7   | 10   | 39  | N   | 51.75  | 24.25   | 18                    | 88            |              |              |               |
| 33     | 5               | 40.25  | 17    | 13.5  | 55     | P                   | F                   | F                             | F                             | 27  | 4.75   | 43.54   | P   | 40.25  | 17.13   | 13.4                  | 53            |              |              |               |
| 34     | 5               | 42.75  | 28.5  | 11.75 | 62     | P                   | F                   |                               |                               | 0.8   | 3.875  | 25  | P   | 42.625   | 28.5  | 11.875                | 60            |              |              |               |
| 35     | 5               | 45     | 31    | 16    | 76     | P                   | F                   |                               |                               | 5   | 8  | 42  | P   | 44.5   | 30.75   | 15.75                 | 88            |              |              |               |
| 36     | 5               | 44.13  | 32    | 17    | 83     | P                   | F                   | F                             | F                             | 6.5   | 8.375  | 47***   | N   | 43.875   | 31.88   | 16.75                 | 89            |              |              |               |
| 37     | 5               | 42.25  | 31.5  | 16    | 87     | P                   | ***                 |                               |                               | 15  | ***  | 9***  | N   | 45.25  | 31.5  | 15.75                 | 74            |              |              |               |
| 38     | 5               | 45     | 31    | 16    | 90     | P                   | F                   |                               |                               | 2   | 9  | 43  | P   | 44.375   | 31  | 16                    | 88            |              |              |               |
| 39     | 5               | 46.65  | 37    | 17.5  | 94.6   | P                   | P                   |                               |                               | 26  | N/A  | 59  | P   | 46.5   | 37.25   | 17.5                  | 93            |              |              |               |
| 40     | 5               | 42.25  | 31.5  | 16    | 92     | P                   | F                   |                               |                               | 26  | ***  | 13***   | P   | 45   | 37.5  | 16                    | 71            |              |              |               |
| 41     | 5               | 61     | 22    | 42    | 130    | P                   | P                   |                               |                               | 90  | N/A  | 90+   | N   | 60.75  | 20.38   | 42                    | 116           |              |              |               |
| 42     | 5               | 48     | 43    | 18.5  | 143    | P                   | P                   |                               |                               | 47  | N/A  | 72.8  | P   | 48.25  | 40  | 18.5                  | 111           |              |              |               |
| 43     | 5               | 48     | 32    | 16    | 108    | P                   | F                   | P**                           | P**                           | 39  | 7.125  | 45  | P   | 48.5   | 31.63   | 15.875                | 100           |              |              |               |
| 43NEW  | 5               |        |       |       |        |                     | F                   | F                             | F                             |   |  |   |   |  |   |                       |               |              |              |               |
| 44     | 6               | 57     | 25    | 17    | 45     | P                   | P                   |                               |                               | 52  | N/A  | ***   | P   | 57.5   | 24.5  | 16.875                | 94            |              |              |               |
| 45     | 6               | 48.5   | 37    | 19    | 52     | P                   | P                   |                               |                               | 18  | N/A  | 62.22   | F   | 48.5   | 37.38   | 19.125                | 108           |              |              |               |
| 46     | 3*              | 31.75  | 18    | 48    | 85     | P                   | P                   |                               |                               | 55  | N/A  | ***   | P   | 32   | 48  | 18                    | 86            |              |              |               |
| 47     | 3*              | 32     | 52    | 18.75 | 92.4   | P                   | ***                 |                               |                               | 17  | ***  | 76.14   | N   | 32   | 51.63   | 18.625                | 97            |              |              |               |
| 48     | 6               | 44.5   | 28.5  | 15    | 74     | P                   | F                   | F                             | F                             | 29  | 7.25   | 85  | N   | 44.625   | 28.5  | 15.875                | 77            |              |              |               |
| 49     | 6               | 36     | 36    | 16.5  | 77     | P                   | F                   | P**                           | F                             | 24  | 9  | 17.54   | P   | 36   | 36  | 16.5                  | 79            |              |              |               |
| 50     | 3*              | 29.5   | 47.5  | 17    | 93     | P                   | F                   |                               |                               | 18  | ***  | 54.3  | N   | 29.5   | 47.5  | 17                    | 100           |              |              |               |
| 51     | 3*              | 28.25  | 47.62 | 15.62 | 91.9   | P                   | P***                |                               |                               | 14  | ***  | 49  | P   | 29.75  | 47.5  | 15.75                 | 91            |              |              |               |
| 52     | 6               | 53     | 28.38 | 18.75 | 95     | P                   | F                   | F                             | F                             | 30  | 12.5   | 55***   | P   | 53   | 28.25   | 18.625                | 90            |              |              |               |
| 53     | 3*              | 31     | 59.25 | 17    | 111    | P                   | P                   |                               |                               | 35  | N/A  | 58***   | N   | 31.25  | 59.13   | 16.875                | 125           |              |              |               |
| 54     | 3*              | 28     | 58    | 16    | 109    | P                   | P                   |                               |                               | 18  | N/A  | 44.52***  | F   | 28   | 58.38   | 15.75                 | 94            |              |              |               |
| 55     | 3*              | 33     | 54    | 18    | 125    | P                   | F                   | F                             | F                             | 12  | 7.75   | 43.69   | N   | 29   | 54  | 18                    | 97            |              |              |               |
| 56     | 8               | 40.5   | 59    | 19    | 78     | P                   | P                   |                               |                               | 23  | N/A  | 65  | P   | 40.375   | 59  | 18.875                | 116           |              |              |               |
| 57     | 7               | 59.75  | 23.13 | 17.88 | 101.41 | P                   | P                   |                               |                               | 45  | 26   | 76***   | N   | 30   | 66.13   | 17.375                | 160           |              |              |               |
| 58     | 8               | 31     | 52.5  | 16    | 100    | P**                 | F                   | F                             | F                             | 9   | 8.625  | 50  | N   | 31.25  | 52.25   | 16                    | 98            |              |              |               |
| 59     | 7               | 33.5   | 47.5  | 18.75 | 120    | P                   | P                   |                               |                               | 25.5  | N/A  | 53  | P   | 33.5   | 47.63   | 18.75                 | 113           |              |              |               |
| 60     | 3*              | 31     | 54    | 18    | 85     | P                   | F                   | F                             | F                             | 8.5   | 6.125  | 24  | P   | 31   | 54  | 18                    | 71            |              |              |               |
| 61     | 6               | 66.5   | 46    | 20    | 290    | P                   | P                   |                               |                               | 50  | N/A  | 100+  | F   | 67   | 44.5  | 20.5                  | 267           |              |              |               |

\* Double wide (6 drawers total)

\*\* Both Rear feet came off the ground  
 \*\*\* Drawer broke, test could not be completed  
 P\*\*\* Drawer broke but unit did not tip over  
 F\*\*\* Drawer broke and unit tipped over

N No Tip Restraint  
 F Failed F3096  
 P Passed F3096