





<b>TEST REPORT – Static Load Test</b> <b>Internal Test Report attachment to STR085</b>	
Report Reference Number.....:	TR694
Date of Report.....:	06/03/2024
Tested By.....:	Callum Azzouz
Tested At.....:	Prism Medical UK
Testing Address.....:	Research & Development Testing Bay, Prism Medical UK, Unit 1, Tir Llwyd Industrial Estate, St Asaph Avenue, Kinnel Bay, Conwy, LL18 5JZ
Testing Date.....:	19/07/2023-06/03/2024
Average Room Temperature.....:	21°C
Average Humidity Temperature.....:	45%
Product Model.....:	Smirthwaite Asiento
Product Type.....:	Postural seating
Part Number.....:	025562
Serial Number(s).....:	SN – TA – P1
Manufacturing Address.....:	16 Wentworth Road, Heathfield, Newton Abbot, Devon, TQ12 6TL
Test.....:	Static Load Test
Standard.....:	BS EN 21856:2022
Clause.....:	17.2
Copyright Blank Test Report.....:	This test report is based on the Content of BS EN 21856:2022. This test report was prepared by Prism Medical UK.  Prism Medical UK takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.
Number of Pages.....:	23
Compliant / Non-Compliant.....:	PASS
Complied By.....:	Callum Azzouz
Signature.....:	
Approved By.....:	Stuart Phelan
Signature.....:	

<b>Test Specifics</b>	
Specific Test Specimens.....:	Smirthwaite Asiento Size 3 - 025562
Models Covered by this Test Report.....:	Smirthwaite Asiento Size 3 - 025562
Test Item Particulars.....:	<p>All tests were completed on a Smirthwaite Asiento Size 3, but the test report covers all models stated in the section above. This is due to the differences having no effect on this specific test conducted.</p> <p>Products using the same design frame but with a lower Safe Working Load have been deemed to comply with this Test Report.</p>

<b>Test Requirements</b>		
The product is required to comply with all of the requirements from the clauses below.		
Clause.....:	17.2	<p><b>Static Forces</b></p> <p>Position the support or suspend system in the least favourable position of intended use.</p> <p>Apply a test load to the support surface in the worst-case position and in a manner that ensures that there is negligible dynamic loading. The test load is equal to the maximum rated load, including any accessories, specified by the manufacturer, with a tolerance of (+ 5 %/- 0 %), multiplied by a safety factor. The safety factor is equal to 1,5 for a supported system. For a suspended system, the safety factor is as specified in Table 4.</p> <p>Maintain the test load for between 60 s and 70 s.</p> <p>Remove the test load and inspect the assistive product for damage. The product shall still function normally.</p>
<p>A suitable static force test was created to fully test the strength of the product. With this clause 17.2.1 being met by applying 1.5x the SWL on the seat of the product. Further testing was undergone using test sequences from BS EN 12520-2015 and EN 1728:2012 as a good reference, from here a more intense testing procedure has been created.</p> <p>This includes:</p> <p>Seat (Front Edge) Static Test – SWL 1.5x – 20mins (180kg)            Back Rest Static Test – 75% SWL 1.5x – 20mins (126kg)            Arm Rests (Single) Static Test – 52% SWL 1.5x – 20mins (94kg)            Leg Rest (Single) Static Test – SWL – 20mins (120kg)</p>		
Clauses not included in this test report.....:	N/A	N/A

<b>Test Equipment</b>	
Pressure Pad Tester	
Stop Watch	
Tape Measure	
Marker Pen	

### Test Details

Clause 16.2

- 1) The chair is placed in the testing bay underneath the pressure pad tester. The castors are applied to avoid unwanted lateral movement.



2) Measurements were taken for the following before completion of the static load tests.

- Height of the seat (left and right side of the split)
- Armrests
- Backrest
- Footrest (+ split seat design)

Seat Static Load Pre Test measurements



Backrest static load pre test measurements





Armrest static load pre test static load measurements



Leg rest (+ split leg design) static load pre-test measurements



3) The Load is applied to each chair component to the load rating stated below. The correct load is calculated in terms of pressure to allow the pressure pad to apply the correct load. The following equation is used.

$$1 \text{ bar} \sim 500\text{N} \sim 50\text{kg}$$

These loads are either larger or matching the load requirements stated earlier.

- 180kg on the seat.
- 120kg on the Footrest
- 94kg on the armrest
- 126kg on the backrest

Images show each component during the static load test.

Seat Static load test images



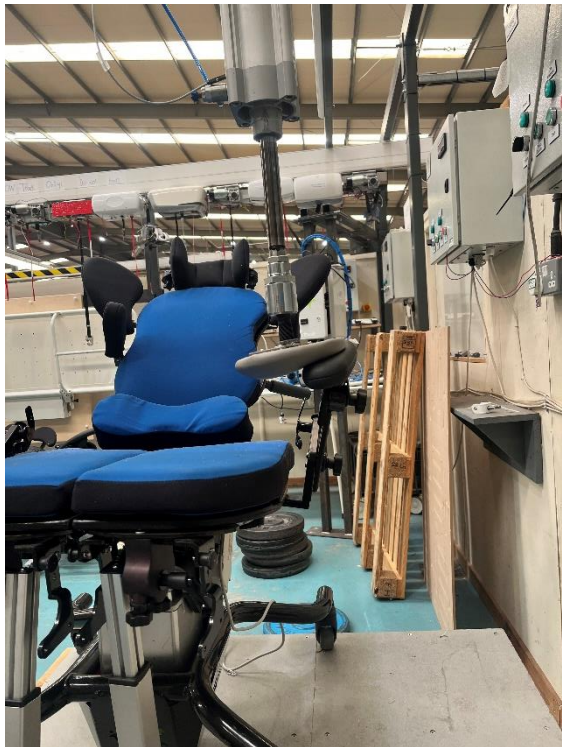


Backrest static load test images



Armrest static load test images









Leg rest (+ split seat design) static load test images











4) Measurements were taken for the following during the static load test.

- Height of the seat (left and right side)
- Armrests (left side)
- Backrest
- Footrest (left side)

Seat static load under load measurements



Back rest static load under load measurements





Arm rest static load under load measurements





Leg rest (+ split seat design) static load under load  
measurements



	
<p>5) The stopwatch was used to count 70 seconds. The load time was then increased to 20 minutes for more severe testing.</p>	
<p>6) Measurements were taken for the following after completion of the static load test.</p> <ul style="list-style-type: none"><li>• Height of the seat (left and right side)</li><li>• Armrests (left side)</li><li>• Backrest</li><li>• Footrest (left side)</li></ul>	<p>Backrest static load post test measurements</p>  <p>Arm rest static load post test measurements</p>







Leg rest (+ split seat design) static load post test  
measurements







Table 1 – Static Load Test Measurements				
Measured Part	Before-Loading (mm)	During Loading (mm)	After-Loading (mm)	Permanent Deformation (mm)
Seat	700	619	700	0
Armrest	720	637	687	33
Footrest	1147	823	1050	97
Split seat design footrest test	720	687	717	3
Backrest	1120	906	1085	35
Extended seat base	575	530	573	2

### Test Comments

#### **non-split seat base**

The footrest static load test has previously passed with the split seat design. The seat has since been updated to a thicker non-split seat design as this is much stronger. This does not affect the safety or function of the smirthwaite asiento size 3.

#### **Extended Seat Base**

The seat base has previously been tested in a smaller size, however now the seat base has been extended by 100mm due to this change the seat base was re-tested, the new seat base has passed the static load test, with no damage or deformation that affects the safety and function of the chair.

This was retest on 03/03/2024.

## Test Results

### **Seat Static Load:**

The Asiento showed slight sign of compression during the load test, remaining very sturdy under load. There was no sign of any cracking, breaking, or creaking under load which could lead to a critical failure in the chairs frame. Once the load was removed of the seat, post-test measurements showed a maximum of no deformation.

### **Back Rest Static Load:**

During the back load test, the chair showed clear flex, with the backrest height flexing by 214mm, this flex is acceptable within the design of the chair, there was no sign of any cracking or creaking which could lead to a critical failure within the frame and backrest. Once the load was removed the backrest showed deformation of 35mm. The deformation found shows no damage that affects the function and safety of the product during intended use. The backrest has been testes with the shock mount ON and OFF. The backrest remained functional following both tests. The deformation on the backrest is due to a drop in pressure on the shock mount. Repressurising the back rest will result in 2mm deformation which is the deformation found on the backrest frame. This is an acceptable amount of deformation when this loading would be a misuse scenario.

### **Arm Rest Static Load:**

The arm rest is not designed to be load bearing, but to ensure the arm rests are of suitable strength, and to counter misuse of the product, the arm rest was tested to  $52\%$  of the SWL  $\times 1.5 = 94\text{kg}$ , which between the two arm rests will represent a person lifting their body weight through the arm rests. The arm rest showed large flex from its mounting point in an outward direction, under the intense load it did not crack or break and did return to position once the load was removed. The armrest should not be loaded to this extent and was not to for away from deforming. The arm rest mould deformed inward following the load test, this did not snap or cause any sudden danger, the mould remained deformed and would need replacing.

The armrest has been tested to the extreme and for a missuse scenario, where the user will apply their full load between the two armrests. With a SWL of 120kg, the armrests where tested to 94kg ( $52\% \times 1.5$ ).

During the intended use of the armrest, no more than  $5\text{kg} \times 1.5$ , (7.5kg) should be applied. The armrest has been tested on the size 1+2 Asiento which shares the same armrest design. This armrest passed the load test at 63kg. This result covers a pass for the armrest on the size 3 chair.

The results from this test shows that on the size 3 chair, a misuse of the armrest by applying the full load will cause permanent deformation.

### **Leg Rest Static Load:**

The leg rest is not designed to be load bearing, but to ensure the leg rests are of suitable strength, and to counter misuse of the product, the leg rest was tested to the SWL, which will represent a person putting their full load through the leg rest. The leg rest showed extreme flex, also causing the split seat to flex during loading, the leg rest held the load once it had fully flexed and did not result in a critical failure. Once the load had been removed the leg rest showed a large



amount of deformation, 97mm. The deformation found shows no damage that affects the function and safety of the product during intended use. As the leg rest remains safe following the misuse load test, the strength of the leg rest has been deemed acceptable.

The leg rest has been tested to the extreme and for a misuse scenario, where the user will apply their full load onto the leg rests. With a SWL of 120kg, the leg rests were tested to 120kg to simulate this scenario.

During the intended use of the leg rest, no more than 8.4kg x 1.5, (12.6kg) should be applied. The leg rest has been tested on the size 1+2 Asiento which shares the same leg rest design. This leg rest passed the load test at 80kg. This result covers a pass for the leg rest on the size 3 chair.

The results from this test shows that on the size 3 chair, a misuse of the leg rest by applying the full load will cause large flex and permanent deformation but won't snap.

<b>Test Conclusion</b>	
Clause:	Pass/Fail
16.2	PASS
All clauses have been adhered to and are compliant to the requirements of the Standard. Therefore, the Static Load Requirements for the Smirthwaite Asiento size 3 – (025562) are compliant.	

**END OF REPORT**