|  |
| --- |
| **PDAC Test Report—for Performance Testing** |

# Test wheelchair

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer |  |  | Max User Weight Specified (lb) |  |
| Address |  | | Test Dummy Weight (lb) |  |
|  | | Weight of Base Product (lb) |  |
|  | | Weight of Accessories Tested (lb) |  |
|  | | Weight of Product with Accessories as Tested (lb) |  |
|  |  | |
| Make |  | | Seat Width Tested (in) |  |
| Model |  |  | PMD Type:  PWC or  POV | |
| Manufacture Date |  |  | NOTE: PDAC requires images of all test set-ups as noted. **Each image must be labeled with a date/time stamp, the test section, and the clause number to which it applies.** | |
| Serial/Batch # |  |  |

# testing Results

## Verification that PMD does not meet the requirements of the next higher performance Group

**The PMD must fail one test in Section 2, 4, 6 or 10 in the next higher performance group to be classified in the group that is being applied for.**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Group | Passes | | | | |  | Fails | | | | |
| 1 | 2 | 3 | 4 | 5 |  | 1 | 2 | 3 | 4 | 5 |
| Section 1: Static Stability |  |  |  |  |  |  |  |  |  |  |  |
| Section 2: Dynamic Stability |  |  |  |  |  |  |  |  |  |  |  |
| Section 3: Effectiveness of Brakes |  |  |  |  |  |  |  |  |  |  |  |
| Section 4:Theoretical Range |  |  |  |  |  |  |  |  |  |  |  |
| Section 5: Dimensions |  |  |  |  |  |  |  |  |  |  |  |
| Section 6:Maximum Speed |  |  |  |  |  |  |  |  |  |  |  |
| Section 7: Seating Dimensions |  |  |  |  |  |  |  |  |  |  |  |
| Section 10: Obstacle-Climbing |  |  |  |  |  |  |  |  |  |  |  |
| Section 14: Power and Control Systems |  |  |  |  |  |  |  |  |  |  |  |

# Test Institution

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test Lab Name |  |  | Address |  |
| Phone No. |  |  |  |  |
| Report Prepared By |  | | Report Date |  |
| Signature of Person Responsible |  | | Date Range of Testing\* |  |
| \*The specific date or date range for each section of testing should be indicated on the specific test page.  Note: All testing included in these data forms must be completed by an independent test lab that is capable of conducting the latest RESNA testing procedures. Manufacturers may perform RESNA WC-1, Section 8 strength testing in house, if desired. | | | | |

# Referenced Standards

Dimensional and performance tests were conducted according to: RESNA WC‑1:2009 and RESNA WC-2:2009. PDAC requirements are as noted for Sections 1, 2, 3, 4, 5, 6, 10 and 14.

# HCPCS Code

**Mark the Healthcare Common Procedure Coding System (HCPCS) code that is being applied for:**

**NOTE: Only one box may be checked**

|  |
| --- |
| **Performance Group 1 POV**  K0800,  K0801,  K0802 |
| **Performance Group 2 POV**  K0806,  K0807,  K0808 |
| **Performance Group 1 PWC**  K0813,  K0814,  K0815,  K0816 |
| **Performance Group 2 PWC**  K0820,  K0821,  K0822,  K0823,  K0824,  K0825,  K0826,  K0827,  K0828,  K0829,  K0830,  K0831,  K0835,  K0836,  K0837,  K0838,  K0839,  K0840,  K0841,  K0842,  K0843 |
| **Performance Group 3 PWC**  K0848,  K0849,  K0850,  K0851,  K0852,  K0853,  K0854,  K0855,  K0856,  K0857,  K0858,  K0859,  K0860,  K0861,  K0862,  K0863,  K0864 |
| **Performance Group 4 PWC**  K0868,  K0869,  K0870,  K0871,  K0877,  K0878,  K0879,   K0880,  K0884,  K0885,  K0886 |
| **Performance Group 5 PWC**  K0890,  K0891 |

# PDAC Checkoff List

|  |  |
| --- | --- |
| **Patient Weight Capacity (choose one category)**  Pediatric up to and including 125 lbs.  Standard Duty 300 lbs. or less  Heavy Duty 301–450 lbs.  Very Heavy Duty 451–600 lbs. | |
| **Portability**  Portable—Components do not exceed 55 lbs.—Weight of heaviest component:\_\_\_\_\_\_\_\_lbs. | |
| **Suspension**  Drive wheel suspension | |
| **Batteries and Motors** The batteries in the wheelchair shall be sealed, non-spillable and meet DOT CFR 173.159 (d), IATA Packing Instructions 806, and IATA Provision A67 | Battery group size:\_\_\_\_\_\_\_\_\_ Indicate the type of motors:  2-pole motor(s)  4-pole motor(s)  Other motor(s)—type\_\_\_\_\_\_\_\_\_\_\_ |
| **Basic Equipment Package (check all that apply)**  Lap belt – Required for PMD and POV  Battery type—group size:\_\_\_\_\_\_\_\_\_\_\_\_  Battery charger type: \_\_\_\_\_\_\_\_\_\_\_\_  Leg support type: \_\_\_\_\_\_\_\_\_\_\_\_  Foot support type: \_\_\_\_\_\_\_\_\_\_\_\_  Arm supports type: \_\_\_\_\_\_\_\_\_\_\_\_  Upholstery for seat and back  Weight specific components  Non-expandable controller w/ input device  Tiller steering  Tires/casters—complete set  All accessories needed for safe operation | |
| **Seat Style (choose one)**  Sling seat/back—flexible material  Solid seat/back—rigid material  Captain’s chair | |
| **Options**  Accommodates seating and positioning items  Accommodates powered elevating seat option | |
| **Power Options (choose one)**  No power options  Seat elevator only  Single power option  Multi power option | |
| **Controller Options (choose one)**  Standard integrated control input device  Remote proportional control input device | |
| **Controller Power Options (choose one)**  Accommodates non-powered options  Accommodates more than one powered option  Accommodates only one powered option | |
| **Expandable Controller (choose one)** Non-expandable controller  Expandable controller | |
| **Controller Upgradable to Expandable Controller? (choose one)**  No upgrade to expandable controller  Upgradable to expandable controller | |
| **Upgradable to Alternate Control Device? (choose one)**  Not able to upgrade to alternate control device  Upgradable to alternate control device | |
| **Ventilator**   Accommodates ventilators | |
| **Pediatric Specific (Check all that apply)**  Adjustability for growth  Special developmental capability  Seat width: min. of 5 one-inch options  Seat depth: min. of 3 one-inch options  Seat height: adjustment ≥ 3 inches  Back height: adjustment—min. of 3 options  Seat to back angle: range—min of 12 degrees | |

## Section 11: RESNA Test Dummy Center of Mass Verification

**Date of Test: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Test Dummy Mass: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Provide images of the test dummy mounted on the whole dummy center of mass test fixture in the forward- and rearward-tipped positions see RESNA WC-1, Section 11, Figure 1:  
 PDAC-required image of the side view of the test dummy in the COM test fixture tipped forward  
 PDAC-required image of the side view of the test dummy in the COM test fixture tipped rearward

Units in: Inches Millimeters  
Calculated x,y center of mass: x:\_\_\_\_\_, y:\_\_\_\_\_ See RESNA WC-1, Annex A of Sec 11

Measured x,y center of mass: x:\_\_\_\_\_, y:\_\_\_\_\_ See RESNA WC-1, Annex A of Sec 11

The difference between calculated and measured center of mass must be no greater than   
± 25 mm (1 inch).

## Section 1: Determination of Static Stability

### Pass/Fail Criteria:

**Check the performance group for the HCPCS code that you are applying for:**

**Performance Group 1 POV** must pass at 6.0 degrees

**Performance Group 2 POV** must pass at 7.5 degrees

**Performance Group 1 PWC** must pass at 6.0 degrees

**Performance Group 2 PWC** must pass at 6.0 degrees

**Performance Group 3 PWC** must pass at 7.5 degrees

**Performance Group 4 PWC** must pass at 9.0 degrees

**Performance Group 5 PWC** must pass at 7.5 degrees

For PDAC review, all PMDs must pass static stability testing in the forward, rearward and lateral directions with anti-tip devices in the least effective configuration.

**Testing Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Calibrated Test Dummy Calibrated Driver**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| For the PMD being tested, mark the performance  group associated with the HCPCS code: | **Testing must pass at the  marked ramp angle** | | | |
| **6.0 Degrees** | **7.5 Degrees** | **9.0 Degrees** | Indicate:  Fail if specified angle is not achieved  Pass if specified angle is achieved or exceeded  NA If test does not apply |
| ☐Group 1 PWC  ☐Group 1 POV  ☐Group 2 PWC | ☐Group 2 POV  ☐Group 3 PWC  ☐Group 5 PWC | ☐Group 4 PWC |

**Tests for Static Stability in the Forward Direction**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | All user-adjustable and dealer-adjustable manual and power adjustments are set to the least stable forward configuration.   **PDAC-required image of test set-up attached** | | | | |
|  | **Clause** | **Description of Test** | **Test result** | **Indicate Pass/Fail/NA** | |
| **Measurements in Degrees** |
| Description of Test  One of these tests must pass. | 9.2 | Wheels unlocked and the wheelchair in the least stable configuration |  |  | |
| **Image of max tip angle attached** | | | | |
| 9.3 | Wheels locked and the wheelchair in the least stable configuration |  |  | |
| **Image of max tip angle attached** | | | | |
| 11.2 | Forward stability with anti-tip devices in the least stable configuration – if required |  |  | |
| **Image of max tip angle attached** | | | | |
|  | Indicate the fore/aft seating position as measured from the rear most position with the rear most position being 0.0 mm | | | |  |
|  | Indicate the back support recline angle relative to vertical in degrees | | | |  |
|  | Indicate the seat tilt angle relative to horizontal in degrees | | | |  |
|  | Indicate the seat height relative to the lowest position with the lowest position being 0.0 mm | | | |  |
|  | Other component(s):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Measurement is relative to:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Measured in:  degrees  millimeters other\_\_\_\_\_\_\_\_\_\_\_ | | | |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tests for Static Stability in the Rearward Direction** | | | | |
|  | All user-adjustable and dealer-adjustable manual and power adjustments are set to the least stable rearward configuration.   **PDAC-required image of test set-up attached** | | | |
| **Clause** | **Description of Test** | **Test result** | **Indicate Pass/Fail/NA** | |
| **Measurements in Degrees** |
| 10.2 | Wheels unlocked and the wheelchair in the least stable configuration |  |  | |
| **Image of max tip angle attached** | | | |
| 10.3 | Wheels locked and the wheelchair in the least stable configuration |  |  | |
| **Image of max tip angle attached** | | | |
| 11.2 | Rearward stability with anti-tip devices in the least stable configuration – if required |  |  | |
| **Image of max tip angle attached** | | | |
|  | Indicate the fore/aft seating position as measured from the rear most position with the rear most position being 0.0 mm | | |  |
|  | Indicate the back support recline angle relative to vertical in degrees | | |  |
|  | Indicate the seat tilt angle relative to horizontal in degrees | | |  |
|  | Indicate the seat height relative to the lowest position with the lowest position being 0.0 mm | | |  |
|  | Other component(s):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Measurement is relative to:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Measured in:  degrees  millimeters other\_\_\_\_\_\_\_\_\_\_\_ | | |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tests for Static Stability in the Lateral Direction** | | | | |
|  | All user-adjustable and dealer-adjustable manual and power adjustments are set to the least stable lateral configuration   **PDAC-required image of test set-up attached** | | | |
| **Clause** | **Description of Test** | **Test result** | **Indicate Pass/Fail/NA** | |
| **Measurements in Degrees** |
| 12.1 | Wheelchair in in the least stable configuration |  |  | |
| **Image of max tip angle attached** | | | |
| 11.2 | Lateral stability with anti-tip devices in the least stable configuration – if required |  |  | |
| **Image of max tip angle attached** | | | |
|  | Indicate the fore/aft seating position as measured from the rear most position with the rear most position being 0.0 mm | | |  |
|  | Indicate the back support recline angle relative to vertical in degrees | | |  |
|  | Indicate the seat tilt angle relative to horizontal in degrees | | |  |
|  | Indicate the seat height relative to the lowest position with the lowest position being 0.0 mm | | |  |
|  | Other component(s):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Measurement is relative to:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Measured in:  degrees  millimeters other\_\_\_\_\_\_\_\_\_\_\_ | | |  |

## Section 2: Determination of Dynamic Stability of Electric Wheelchairs

### Dynamic Stability Driving Tests

**Testing Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Calibrated Test Dummy or  Calibrated Driver**

### Pass/Fail Criteria: For PDAC review, all PMDs must pass every test with a score of 2 or 3 in each category at the ramp angle specified for the particular wheelchair HCPCS code.

### The PMD must fail one test in Section 2, 4, 6 or 10 in the next higher performance group to be classified in the group that is being applied for.

**Check the performance group for the HCPCS code that you are applying for:**

**Performance Group 1 POV** must pass at 6.0 degrees—**only test 10.4 performed at 50% speed**

**Performance Group 2 POV** must pass at 7.5 degrees

**Performance Group 1 PWC** must pass at 6.0 degrees

**Performance Group 2 PWC** must pass at 6.0 degrees

**Performance Group 3 PWC** must pass at 7.5 degrees

**Performance Group 4 PWC** must pass at 9.0 degrees

**Performance Group 5 PWC** must pass at 7.5 degrees

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Observed Dynamic Response** | |  |  | **Score** | |
| No Tip | At least three wheels remain on the test plane at all times | | | 3 | PASS |
| Transient Tip | Less than three wheels remain on the test plane at some point during the test and then drop back onto the test plane, whether or not any anti-tip devices contact the test plane. | | | 2 | PASS |
| Stuck on Anti-Tip Device (a) | The wheelchair anti-tip device(s) contacts the test plane, and the wheelchair remains stuck on the anti-tip device(s). | | | 1 | FAIL |
| Full Tip | The wheelchair tips completely over - 90 degrees or more from its original orientation, unless caught by a restraining device or testing personnel for test purposes. | | | 0 | FAIL |
| (a) When determining whether the wheelchair is "stuck" on the anti-tip device(s), this implies that the wheelchair occupant could not easily restore the wheelchair to the upright position without assistance while remaining seated in the wheelchair. If the wheelchair is not equipped with an anti-tip device, a score of 1 cannot be awarded. | | | | | |

**Testing Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Calibrated Test Dummy or  Calibrated Driver**

**The PMD must pass all tests in this section.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Dynamic Stability Driving Tests—Full Speed. These tests are completed on a ramp. | | | | **Testing must pass at the  marked ramp angle** | | | |
| For the PMD being tested, mark the performance group associated with the HCPCS code:  Conduct the testing at the ramp slope angle corresponding to the performance code: | | | | **6.0 Degrees** | **7.5 Degrees** | **9.0 Degrees** | Indicate: Fail if  0–1 score Pass if 2–3 score |
| ☐Group 1 PWC  ☐Group 1 POV  ☐Group 2 PWC | ☐Group 2 POV  ☐Group 3 PWC  ☐Group 5 PWC | ☐Group 4 PWC |
| **PDAC-required image of test set-up attached** | | | | **6.0 Degrees** | **7.5 Degrees** | **9.0 Degrees** | **Indicate Pass/Fail** |
| Rearward Stability | 8.2 | Stability when starting forward on uphill slope | |  |  |  |  |
| 8.3 | Stability when stopping after traveling forward on uphill slope | Power off |  |  |  |  |
| Release |  |  |  |  |
| Opposite command |  |  |  |  |
| 8.4 | Braking stability when traveling backward down slope | Power off |  |  |  |  |
| Release |  |  |  |  |
| Opposite command |  |  |  |  |
|  | All user-adjustable and dealer-adjustable manual and power adjustments are set to the least stable configuration for forward stability in which the PMD drives in full speed mode. Indicate the position of all adjustable seating components for this least stable configuration in this report. | | | | | | |
|  | Indicate the fore/aft seating position as measured from the rear most position with the rear most position being 0.0 mm | | | | | |  |
|  | Indicate the back support recline angle relative to vertical in degrees | | | | | |  |
|  | Indicate the seat tilt angle relative to horizontal in degrees | | | | | |  |
|  | Indicate the seat height relative to the lowest position with the lowest position being 0.0 mm | | | | | |  |
|  | Other component(s):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Measurement is relative to:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Measured in:  degrees  millimeters other\_\_\_\_\_\_\_\_\_\_\_ | | | | | |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **PDAC-required image of test set-up attached** | | | | **6.0 Degrees** | **7.5 Degrees** | **9.0 Degrees** | **Indicate Pass/Fail** |
| Forward Stability | 9.2 | Braking stability when traveling forward down slope | Power Off |  |  |  |  |
| Release |  |  |  |  |
| Opposite Command |  |  |  |  |
| 9.3 | Stability when traveling from a sloped surface to a level surface | |  |  |  |  |
|  | All user-adjustable and dealer-adjustable manual and power adjustments are set to the least stable configuration for lateral stability in which the PMD drives in full speed mode. Indicate the position of all adjustable seating components for this least stable configuration in this report. | | | | | | |
|  | Indicate the fore/aft seating position as measured from the rear most position with the rear most position being 0.0 mm | | | | | |  |
|  | Indicate the back support recline angle relative to vertical in degrees | | | | | |  |
|  | Indicate the seat tilt angle relative to horizontal in degrees | | | | | |  |
|  | Indicate the seat height relative to the lowest position with the lowest position being 0.0 mm | | | | | |  |
|  | Other component(s):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Measurement is relative to:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Measured in:  degrees  millimeters other\_\_\_\_\_\_\_\_\_\_\_ | | | | | |  |
|  | | | | | | | |
| **PDAC-required image of test set-up attached** | | | | **6.0 Degrees** | **7.5 Degrees** | **9.0 Degrees** | **Indicate Pass/Fail** |
| Lateral Stability | 10.2 | Turning on a slope | |  |  |  |  |
|  | Indicate the fore/aft seating position as measured from the rear most position with the rear most position being 0.0 mm | | | | | |  |
|  | Indicate the back support recline angle relative to vertical in degrees | | | | | |  |
|  | Indicate the seat tilt angle relative to horizontal in degrees | | | | | |  |
|  | Indicate the seat height relative to the lowest position with the lowest position being 0.0 mm | | | | | |  |
|  | Other component(s):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Measurement is relative to:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Measured in:  degrees  millimeters other\_\_\_\_\_\_\_\_\_\_\_ | | | | | |  |

If the PMD goes into a speed reduction or creep mode after manual or power seating components are adjusted, it must pass these tests. If the PMD does not have creep mode, do not complete this page. If the PMD has more than one creep mode, the chair should be tested in both creep modes.

**Testing Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Calibrated Test Dummy or  Calibrated Driver**

PMD does not have a creep mode  PMD has a creep mode, the following test results apply:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Dynamic Stability Driving Tests—Reduced Speed - Creep These tests are completed on a ramp. | | | | **Testing must pass at the  marked ramp angle** | | | |
| For the PMD being tested, mark the performance group associated with the HCPCS code:  Conduct the testing at the ramp slope angle corresponding to the performance code: | | | | **6.0 Degrees** | **7.5 Degrees** | **9.0 Degrees** | Indicate:  Fail if  0–1 score  Pass if  2–3 score |
| ☐Group 1 PWC  ☐Group 1 POV  ☐Group 2 PWC | ☐Group 2 POV  ☐Group 3 PWC  ☐Group 5 PWC | ☐Group 4 PWC |
|  | All user-adjustable and dealer-adjustable manual and power adjustments are set to the least stable configuration for rearward stability in which the PMD drives in creep mode. Indicate the position of all adjustable seating components for this least stable configuration in this report. | | | | | | |
| **PDAC-required image of test set-up attached** | | | | **6.0 Degrees** | **7.5 Degrees** | **9.0 Degrees** | **Indicate Pass/Fail** |
| Rearward Stability | 8.2 | Stability when starting forward on uphill slope | |  |  |  |  |
| 8.3 | Stability when stopping after traveling forward on uphill slope | Power off |  |  |  |  |
| Release |  |  |  |  |
| Opposite command |  |  |  |  |
| 8.4 | Braking stability when traveling backward down slope | Power Off |  |  |  |  |
| Release |  |  |  |  |
| Opposite Command |  |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | All user-adjustable and dealer-adjustable manual and power adjustments are set to the least stable configuration for forward stability in which the PMD drives in creep mode. Indicate the position of all adjustable seating components for this least stable configuration in this report. | | | | | | |
| **PDAC-required image of test set-up attached** | | | | **6.0 Degrees** | **7.5 Degrees** | **9.0 Degrees** | **Indicate Pass/Fail** |
| Forward Stability | 9.2 | Braking stability when traveling forward down slope | Power Off |  |  |  |  |
| Release |  |  |  |  |
| Opposite Command |  |  |  |  |
| 9.3 | Stability when traveling from a sloped surface to a level surface | |  |  |  |  |
|  | All user-adjustable and dealer-adjustable manual and power adjustments are set to the least stable configuration for lateral stability in which the PMD drives in creep mode. | | | | | | |
| **PDAC-required image of test set-up attached** | | | | **6.0 Degrees** | **7.5 Degrees** | **9.0 Degrees** | **Indicate Pass/Fail** |
| Lateral Stability | 10.2 | Turning on a slope | |  |  |  |  |

### Dynamic Stability Transition Height Driving Tests

**Testing Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Calibrated Test Dummy or  Calibrated Driver**

### Pass/Fail Criteria: For PDAC review the PMD must pass every test with a score of 2 or 3 in each category at the transition height specified for the particular wheelchair HCPCS code.

**Check the performance group for the HCPCS code that you are applying for:**  
All transition height requirements are ± 2 mm required to accommodate US dimensional materials

Transition Heights:  
 **Performance Group 1 POV** testing must pass at 20 mm (0.75 inches)

**Performance Group 2 POV** testing must pass at 50 mm (2.00 inches)

**Performance Group 1 PWC** testing must pass at 20 mm (0.75 inches)

**Performance Group 2 PWC** testing must pass at 40 mm (1.50 inches)

**Performance Group 3 PWC** testing must pass at 60 mm (2.375 inches)

**Performance Group 4 PWC** testing must pass at 75 mm (3.00 inches)

**Performance Group 5 PWC** testing must pass at 60 mm (2.375 inches)

**The PMD must pass all tests on this page.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Dynamic Stability Transition Height Driving Tests—Full Speed These tests are completed on a level surface. | | | | **Testing must pass at the marked transition height** | | | | | | | | | | | | | | | | | |
| **20 mm** | **40 mm** | **50 mm** | | | **60 mm** | | | **75 mm** | | | **Other** | | Indicate: Fail if  0–1 score Pass if 2–3 score | | | |
| For the PMD being tested, mark the performance group associated with the HCPCS code:  Conduct the testing at the transition height corresponding to the performance code: | | | | ☐Group 1 POV  ☐Group 1 PWC | ☐Group 2 PWC | | ☐Group 2 POV | | | | ☐Group 3 PWC  ☐Group 5 PWC | | | ☐Group 4 PWC | | | |  | |  | |
|  | All user-adjustable and dealer-adjustable manual and power adjustments are set to the least stable configuration for rearward stability in which the PMD drives in full speed mode | | | | | | | | | | | | | | | | | | | | |
| **PDAC-required image of test set-up attached** | | | | **20 mm** | **40 mm** | | **50 mm** | | | | **60 mm** | | | **75 mm** | | | | **Other** | | **Indicate Pass/Fail** | |
| Rearward Stability | 8.5 | Traveling forward up a step transition from a standing start | |  |  | |  | | | |  | | |  | | | |  | |  | |
| 8.6 | Traveling backward down a step transition from a standing start | |  |  | |  | | | |  | | |  | | | |  | |  | |
|  | All user-adjustable and dealer-adjustable manual and power adjustments are set to the least stable configuration for forward stability in which the PMD drives in full speed mode | | | | | | | | | | | | | | | | | | | | |
| **PDAC-required image of test set-up attached** | | | | **20 mm** | **40 mm** | | **50 mm** | | | | **60 mm** | | | **75 mm** | | | | **Other** | | **Indicate Pass/Fail** | |
| Forward Stability | 9.4 | Traveling forward up a step transition at maximum speed | |  |  | |  | | | |  | | |  | | | |  | |  | |
| 9.5 | Traveling forward down a step transition from a standing start | |  |  | |  | | | |  | | |  | | | |  | |  | |
|  | All user-adjustable and dealer-adjustable manual and power adjustments are set to the least stable configuration for lateral stability in which the PMD drives in full speed mode | | | | | | | | | | | | | | | | | | | | |
| **PDAC-required image of test set-up attached** | | | **20 mm** | | **40 mm** | | | **50 mm** | | **60 mm** | | | **75 mm** | | | **Other** | | | **Indicate Pass/Fail** | | |
| Lateral Stability | 10.5 | Stability when one side of the wheelchair travels down a step transition |  | |  | | |  | |  | | |  | | |  | | |  | | |

**PDAC-required image of test set-up attached**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lateral Stability | 10.4 | Turning suddenly at maximum speed  **For Group 1 POVs the test is conducted at 50% of the maximum speed on a level surface of the POV as measured in Section 6 testing.** | **Test must pass on a level surface** | |
| Score 0–3 | Indicate:  Fail if 0–1 score  Pass if 2–3 score |
|  |  |

If the PMD goes into a speed reduction or creep mode after manual or power seating components are adjusted, it must pass these tests. If the PMD does not have creep mode, do not complete this page. If the PMD has more than one creep mode, the chair should be tested in both creep modes.

**Testing Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Calibrated Test Dummy or  Calibrated Driver**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PMD does not have a creep mode   PMD has a creep mode; the PMD must pass all tests on this page.   PMD has more than one creep mode; the PMD must pass all tests on this page in all creep modes.  Dynamic Stability Transition Height Driving Tests—Reduced Speed (Creep) These tests are completed on a level surface. | | | | | | | | | |
|  | | | | **Testing must pass at the marked transition height** | | | | | |
| For the PMD being tested, mark the performance group associated with the HCPCS code:  Conduct the testing at the transition height corresponding to the performance code: | | | | **20 mm**  ☐Group 1 POV  ☐Group 1 PWC | **40 mm**  ☐Group 2 PWC | **50 mm**  ☐Group 2 POV | **60 mm**  ☐Group 3 PWC  ☐Group 5 PWC | **75 mm**  ☐Group 4 PWC | Indicate:  Fail if  0–1 score Pass if 2–3 score |
|  | All user-adjustable and dealer-adjustable manual and power adjustments are set to the least stable configuration for rearward stability in which the PMD drives in creep mode. | | | | | | | | |
| **PDAC-required image of test set-up attached** | | | | **20 mm** | **40 mm** | **50 mm** | **60 mm** | **75 mm** | **Pass/Fail** |
| Rearward Stability | | 8.5 | Traveling forward up a step transition from a standing start |  |  |  |  |  |  |
| 8.6 | Traveling backward down a step transition from a standing start |  |  |  |  |  |  |
|  | | All user-adjustable and dealer-adjustable manual and power adjustments are set to the least stable configuration for forward stability in which the PMD drives in creep mode. | | | | | | | |
| **PDAC-required image of test set-up attached** | | | | **20 mm** | **40 mm** | **50 mm** | **65 mm** | **75 mm** | **Pass/Fail** |
| Forward Stability | | 9.4 | Traveling forward up a step transition at maximum speed |  |  |  |  |  |  |
| 9.5 | Traveling forward down a step transition from a standing start |  |  |  |  |  |  |
|  | | All user-adjustable and dealer-adjustable manual and power adjustments are set to the least stable configuration for lateral stability in which the PMD drives in creep mode. | | | | | | | |
| **PDAC-required image of test set-up attached** | | | | **20 mm** | **40 mm** | **50 mm** | **60 mm** | **75 mm** | **Pass/Fail** |
| Lateral Stability | | 10.5 | Stability when one side of the wheelchair travels down a step transition |  |  |  |  |  |  |

**PDAC-required image of test set-up attached**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lateral Stability | 10.4 | Turning suddenly at maximum speed For Group 1 POVs the test is conducted at 50% of the maximum speed on a level surface of the POV as measured in Section 6 testing. | **Test must pass on a level surface.** | |
| Indicate: Fail if 0–1 score Pass if 2–3 score | |
| **Score 0–3** | **Pass / Fail** |
|  |  |

## Section 3: determination of the Effectiveness of Brakes

**Testing Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Calibrated Test Dummy or  Calibrated Driver**

**7.2 Parking brakes**

**Check the performance group for the HCPCS code that you are applying for:**

**Performance Group 1 POV** must pass at 6.0 degrees

**Performance Group 2 POV** must pass at 7.5 degrees

**Performance Group 1 PWC** must pass at 6.0 degrees

**Performance Group 2 PWC** must pass at 6.0 degrees

**Performance Group 3 PWC** must pass at 7.5 degrees

**Performance Group 4 PWC** must pass at 9.0 degrees

**Performance Group 5 PWC** must pass at 7.5 degrees

**The following PDAC requirements must be met:**

### Include an automatic parking brake, which operates independently of tire wear and inflation pressure and is operated by releasing the input control device to achieve a zero speed command e.g. spring-loaded disc brake

Be operable when there is no power from the battery supplying the drive system

NOTE Braking functions may be combined in one device e.g. the spring-loaded disc brake could combine automatic brake and parking brake.

Not allow the loaded wheelchair to slide nor rotate its wheels when tested as specified in RESNA Section 3 Clause 7.2 on the specified slope both facing up the slope and facing down the slope.

Determine if the parking brakes hold the loaded wheelchair stationary on the slope.

**Testing Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Calibrated Test Dummy or  Calibrated Driver**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | All user-adjustable and dealer-adjustable manual and power adjustments are set to the least stable configuration for rearward stability in which the PMD drives in full speed mode | | | | |
|  | | **Testing must pass at the  marked ramp angle** | | | |
| For the PMD being tested, mark the performance  group associated with the HCPCS code: | | **6.0 Degrees** | **7.5 Degrees** | **9.0 Degrees** | Indicate:  Fail if specified angle is not achieved  Pass if specified angle is achieved or exceeded  NA if the test does not apply |
| ☐Group 1 PWC  ☐Group 1 POV  ☐Group 2 PWC | ☐Group 2 POV  ☐Group 3 PWC  ☐Group 5 PWC | ☐Group 4 PWC |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | All user-adjustable and dealer-adjustable manual and power adjustments are set to the least stable configuration for rearward stability. | | | | |
| **Parking brake effectiveness test on slope** | **PDAC-required image of test set-up attached** | | **Test Results in Degrees** | **Indicate if unit Slips or Tips** | **Indicate:**  **Pass/Fail** | |
| 7.2 | Brake effectiveness facing uphill |  |  |  | |
| 7.2 | Brake effectiveness facing downhill |  |  |  | |

**7.3 Running brakes, normal operation (release control input device)**

**7.4 Running brakes, operation by reverse command of control input device**

**7.5 Running brakes, emergency operation (power off)**

Perform 7.3, 7.4 and 7.5 on a level surface only.

### Pass/Fail Criteria: When running the PMD at its maximum speed on the level, the stopping distance shall not exceed the distance specified in the table below or by using the formula: Stopping Distance = [(2.0424 x (Vmax2) – (2.092 x Vmax) + 17.4] for level surfaces. The Vmax used in the formula shall be the maximum speed measured in Section 6 Clause 6.1, measured in mph on a horizontal surface.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **MPH** | | **2.0** | **2.5** | **3.0** | **3.5** | **4.0** | **4.5** | **5.0** | **5.5** | **6.0** | **6.5** | **7.0** | | **7.5** | | **8.0** | |  | |
| **Forward on Horizontal (inch)** | | **21.4** | **24.9** | **29.5** | **35.1** | **41.7** | **49.3** | **58.0** | **67.7** | **78.4** | **90.1** | **102.8** | | | **116.6** | | **131.4** | |  |
|  | All user-adjustable and dealer-adjustable manual and power adjustments are set to the least stable configuration for rearward stability.   **PDAC-required image of test set-up attached** | | | | | | | | | | | | | | | | | | | |
| Brake effectiveness on the level at maximum speed | | | | Test result must be less than the calculated number to the right. | | | | This test must pass at the stopping distance calculated based on the maximum speed. | | | | | | Indicate: Fail if PMD does not stop within required distance. Otherwise a Pass. | | | | | | | |
| 7.3 Running brakes, normal operation | | | | \_\_\_\_\_\_ inches | | | | \_\_\_\_\_\_inches  from table or formulae above | | | | | |  | | | | | | | |
| 7.4 Running brakes, operation by reverse command | | | | \_\_\_\_\_\_ inches | | | |  | | | | | | | |
| 7.5 Running brakes, emergency operation | | | | \_\_\_\_\_\_ inches | | | |  | | | | | | | |

**NOTE: Testing done on level surface only**

## Section 4: Energy Consumption of Electric Wheelchairs and Scooters for Determination of Theoretical Distance Range

**Testing Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Test Dummy or  Driver**

**Pass/Fail Criteria:**

**For PDAC review, the PMD must fail one test in Section 2, 4, 6 or 10 in the next higher performance group to be classified in the group that is being applied for.**

**Check the performance group for the HCPCS code that you are applying for:**

**Performance Group 1 POV** must drive a minimum of 5.0 miles

**Performance Group 2 POV** must drive a minimum of 10.0 miles

**Performance Group 1 PWC** must drive a minimum of 5.0 miles

**Performance Group 2 PWC** must drive a minimum of 7.0 miles

**Performance Group 3 PWC** must drive a minimum of 12.0 miles

**Performance Group 4 PWC** must drive a minimum of 16.0 miles

**Performance Group 5 PWC** must drive a minimum of 12.0 miles

**PDAC-required image of test set-up attached**

|  |  |  |  |
| --- | --- | --- | --- |
| **The PMD must drive the minimum distance specified for the Performance Group** | | | |
| **Clause** | **Description of Test** | **Results** | **Indicate Pass/Fail** |
| 7.1 | Continuous Driving Test | miles |  |
| 7.2 | Maneuvering Test | miles |  |

## Section 5: Determination of Dimensions, Mass and Maneuvering Space

**Testing Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Test Dummy or  Driver**

**Pass/Fail Criteria:**

**Check the performance group for the HCPCS code that you are applying for:**

**Performance Group 1 POV** Length of the PMD must be less than 48.0 inches  
Width of the PMD must be less than 28.0 inches  
Turning Diameter must be less than 108.0 inches

**Performance Group 2 POV** Length of the PMD must be less than 48.0 inches   
Width of the PMD must be less than 28.0 inches  
Turning Diameter must be less than 108.0 inches

**Performance Group 1 PWC** Length of the PMD must be less than 40.0 inches  
Width of the PMD must be less than 24.0 inches

**Performance Group 2 PWC** Length of the PMD must be less than 48.0 inches  
Width of the PMD must be less than 34.0 inches

**Performance Group 3 PWC** Length of the PMD must be less than 48.0 inches  
Width of the PMD must be less than 34.0 inches

**Performance Group 4 PWC** Length of the PMD must be less than 48.0 inches  
Width of the PMD must be less than 34.0 inches

**Performance Group 5 PWC** Length of the PMD must be less than 48.0 inches  
Width of the PMD must be less than 28.0 inches

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PDAC-required image of test set-up attached** | | | | | |
| **The length and width of the PMD must be less than the measurement specified for the PDAC performance group. All measurements are in inches.  For tests 8.2 to 8.10, do not load the wheelchair with the test dummy.  For tests in 8.11 to 8.15, load the wheelchair with the appropriate test dummy including foot space gauges.** | | | | | **Indicate Pass or Fail** |
| **Clause** | **Application** | **Description of Test**  **Dimensions in Inches, Mass in Pounds** | **Results** | |
| **POV** | **PWC** |
| 8.2 | All units | Full overall length |  |  |  |
| 8.3 | All units | Overall width |  |  |  |
| 8.9 | All units | Unloaded wheelchair mass with front riggings and batteries (lbs.) |  |  |  |
| 8.10 | All portable units | Mass of heaviest part (lbs.) Must not be over 55 lbs. for the following codes:  K0813  K0814  K0820  K0821 |  |  |  |
| 8.11 | PWC only | Pivot width  Diameter or  Radius |  |  | N/A |
| 8.12 | POV only | Reversing Width |  |  | N/A |
| 8.13 | POV only | Turning diameter less than 108 in. |  |  |  |
| 8.15 | All units | Required width of angled corridor |  |  | N/A |

## Section 6: Determination of Maximum Speed, Acceleration and Deceleration of Electric Wheelchairs

**Testing Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Test Dummy or  Driver**

**PDAC Pass/Fail Criteria: The PMD must fail one test in Section 2, 4, 6 or 10 in the next higher performance group to be classified in the group that is being applied for.**

**Check the performance group for the HCPCS code that you are applying for:**

**Performance Group 1 POV** must drive no less than 3.0 miles/hour

**Performance Group 2 POV** must drive no less than 4.0 miles/hour

**Performance Group 1 PWC** must drive no less than 3.0 miles/hour

**Performance Group 2 PWC** must drive no less than 3.0 miles/hour

**Performance Group 3 PWC** must drive no less than 4.5 miles/hour

**Performance Group 4 PWC** must drive no less than 6.0 miles/hour

**Performance Group 5 PWC** must drive no less than 4.5 miles/hour

**PDAC-required image of test set-up attached**

|  |  |  |  |
| --- | --- | --- | --- |
| **The maximum speed of the PMD must be no less than the value specified for the performance group** | | | **Indicate Pass or Fail** |
| **Clause** | **Description of Test** | **Results** |
| 6.1 | Maximum speed on a horizontal surface | mph |  |
| 6.4 | Maximum speed on a plane inclined to the maximum safe slope (as determined in Section 2 testing) | mph |  |

## Section 7: Method of Measurement of Seating and Wheel Dimensions

**Testing Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Reference Loader Gauge or 50 kg Dummy**

**Pass/Fail Criteria:** None  **PDAC-required image of test set-up attached**

Fill in the values for each measurement in inches or degrees

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Clause** | **Description of Test** | **Fixed or Minimum Value** | **Maximum Value** | **Number of Positions or Continuous** |
| 7.3.2 | Seat Plane Angle | degrees | degrees |  |
| 7.3.3 | Effective Seat Depth | inches | inches |  |
| 7.3.4 | Seat Width | inches | inches |  |
| 7.3.6 | Seat Surface Height at Front Edge  (to floor) | inches | inches |  |
| Seat Surface Height at Front Edge  (to deck) POV only | inches | inches |  |
| 7.3.7 | Back Support Angle | degrees | degrees |  |
| 7.3.8 | Back Support Height | inches | inches |  |

## Section 10: Determination of Obstacle-Climbing Ability of Electrically Powered Wheelchairs

**Testing Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Calibrated Test Dummy or  Calibrated Driver**

**Pass/Fail Criteria: For PDAC review, the PMD must fail one test in Section 2, 4, 6 or 10 in the next higher performance group to be classified in the group that is being applied for.**  Must pass the minimum listed value in one of the following clauses: 7.1, 7.2, 7.3 or 7.4.

**Check the performance group for the HCPCS code that you are applying for:**  
All transition height requirements are ± 2 mm required to accommodate US dimensional materials

**Performance Group 1 POV** The PMD must climb a minimum of 20 mm (0.75 inches).

**Performance Group 2 POV** The PMD must climb a minimum of 50 mm (2.00 inches).

**Performance Group 1 PWC** The PMD must climb a minimum of 20 mm (0.75 inches).

**Performance Group 2 PWC** The PMD must climb a minimum of 40 mm (1.50 inches).

**Performance Group 3 PWC** The PMD must climb a minimum of 60 mm (2.365 inches).

**Performance Group 4 PWC** The PMD must climb a minimum of 75 mm (3.00 inches).

**Performance Group 5 PWC** The PMD must climb a minimum of 60 mm (2.365 inches).

|  |  |  |  |
| --- | --- | --- | --- |
| **Obstacle Climbing  PDAC-required image of test set-up attached**  The PMD must climb the minimum obstacle height for the performance group in at least one of the tests.  Indicate Pass if the PMD climbs the required obstacle height in at least one of the tests specified in Clause 7.1–7.4 or 7.7.  Indicate Fail if the PMD will not climb the required obstacle height in at least one of the tests specified in Clause 7.1–7.4 or 7.7. | | | |
| **Clause** | **Description of Test** | **Results** | **Pass/Fail** |
| 7.1 | Forward with no run-up |  |  |
| 7.2 | Forward with 0.5 m run-up |  |
| 7.3 | Backward with no run-up |  |
| 7.4 | Backward with 0.5 m run-up |  |
| 7.7 | Other techniques |  |
| Description of other technique: | | | |
| **Obstacle Descending  PDAC-required image of test set-up attached**  The PMD must descend the minimum obstacle height for the performance group in both tests 7.5 and 7.6. | | | |
| **Clause** | **Description of Test** | **Results** | **Pass/Fail** |
| 7.5 | Forward full speed |  |  |
| 7.6 | Rearward slow speed |  |  |

## Section 14: Power and Control Systems for Electric Wheelchairs—Requirements and Test Methods

**Testing Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Test Dummy  Driver**

**Pass/Fail Test**

**Clause 6.14—Stalled Condition Protection—PDAC requires the PMD to meet the RESNA pass/fail criteria specified in Clause 6.14 of RESNA WC-2:2009.**

After fully charging the PMD, conduct the testing and note the reason for stopping the test:

**Any of the following criteria are acceptable reasons for stopping the test:**

The controller does not “fold-back” in less than 15 seconds and a fuse or circuit breaker that requires a manual reset does not blow and immobilize the PMD—**Pass**

Automatic circuit protection devices reset on their own or reset by turning the PMD off and   
on again—**Pass**

The PMD that has an automatic resetting circuit protection device that trips during testing and resets a minimum of five times consecutively without damage—**Pass**

The PMD has a manually resetting circuit protection device that trips during testing and is readily accessible to be reset by the operator—**Pass**

**All of the following PDAC requirements must be met:**

After returning to room temperature and fully charging the PMD, the PMD operates normally after the test procedure and meets specific PDAC performance requirements specified here and there is no physical damage to the PMD. The functional check shall include the PDAC speed and obstacle climbing performance requirements and the functional check specified in RESNA Vol. 2 Section 9 Clause 8—Functional Check—**Required for Pass**

There is no physical damage to the PMD—**Required for Pass**

**Note if the testing was stopped for any of the following reasons which are not acceptable and result in a failure:**

The controller of the PMD “folds-back” in less than 15 seconds—**Failure**

A circuit protection device trips that is not accessible to the operator that requires a manual reset that immobilizes the PMD—**Failure**

A PMD that has an automatic resetting circuit protection device that trips five times or less and fails during testing—**Failure**

After the motor(s) returns to room temperature and fully charging the PMD, the PMD does not operate normally and does not meet specific PDAC performance requirement after the test procedure. The functional check shall include verification that the PMD still meets the minimum PDAC speed and obstacle climbing performance requirements and the functional check specified in RESNA Vol. 2 Section 9 Clause 8—Functional Check—**Failure**

**PDAC-required image of test set-up attached**

|  |  |  |  |
| --- | --- | --- | --- |
| **Clause** | **Description of Test** | **Results** | **Pass/Fail** |
| 6.14 | Stalled condition protection |  |  |

**Clause 6.15—Ability to Stop When Power Is Switched Off or Lost**

**Testing Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Test Dummy  Driver**

After fully charging the PMD, conduct the test in Section 14, Clause 6.15

L1max is the stopping distance down a 6 degree slope at maximum speed with release of joystick.

1.3 x L1max is the maximum stopping distance allowed when the power is switched off or lost.

Conduct RESNA 6.15 for lost power only to determine if the PMD stops in the required distance.

The average braking distance of the wheelchair when power is lost shall not exceed 1.3 x L1max

The steering response throughout the test shall be in accordance with the manufacturer’s specification

**If any one item is marked as a failure, the overall test is a fail**

**PDAC-required image of test set-up attached**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Clause** | **Description of Test** | **L1max Stop Distance** | **1.3 x L1max Stop Distance** | **Results—Stop Distance When Power Is Lost** | **Pass/Fail—Resulting Stop Distance Must Be Less than 1.3xL1 Max** |
| 6.15 | Ability to stop when power is switched off or lost | inches | inches | inches |  |

**Clause 6.18—Maximum Thermal Drive Test**

**Testing Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Test Dummy  Driver**

After fully charging the PMD, conduct the testing and note the reason for stopping the test and the time and distance that the PMD drove during the test:

**Any of the following criteria are acceptable reasons for stopping the test:**

The wheelchair drives for 60 minutes and the test is stopped—**Pass**

The wheelchair battery set becomes depleted—**Pass**

The wheelchair stops when the controller “folds back” after a minimum of 6 minutes—**Pass**

The wheelchair slows down to an average speed below 25 ft/min. after a minimum of 6 minutes—**Pass**

The wheelchair slows down when the controller “folds back” after a minimum of 6 minutes—**Pass**

The PMD has an automatic resetting circuit protection device that trips during testing after a minimum of 6 minutes and resets by turning the power off and then back on again or an automatic circuit protection device resets on its own—**Pass**

The PMD has a manually resetting circuit protection device that trips during testing after a minimum of 6 minutes and is readily accessible to be reset by the operator—**Pass**

**All of the following PDAC requirements must be met:**

After the motors return to room temperature and after fully charging the PMD, the PMD operates normally after the test procedure and meets specific PDAC performance requirements specified here. The functional check shall include verification that the PMD still meets the minimum PDAC speed and obstacle-climbing performance requirements and the functional check specified in RESNA Vol. 2 Section 9 Clause 8—Functional Check—**Required for Pass**

**Note if the testing was stopped for any of the following reasons which are not acceptable and result in a failure:**

The PMD turning in a non-commanded manner—**Failure**

The PMD wiring insulation melts, causing the failure of insulation around the wiring—**Failure**

The wheelchair stops after less than 6 minutes when the controller “folds back”—**Failure**

The wheelchair slows down to an average speed below 25 ft/min. after less than a minimum of 6 minutes—**Failure**

The wheelchair folds back in less than 6 minutes—**Failure**

A circuit protection device trips that is not accessible to the operator and requires a manual reset and immobilizes the PMD—**Failure**

**PDAC-required image of test set-up attached**

|  |  |  |  |
| --- | --- | --- | --- |
| **Clause** | **Description of Test** | **Results Distance/Time prior to stopping or slowing down below 25 ft./min.** | **Pass/Fail** |
| 6.18 | Maximum Thermal Drive Test | feet |  |
| minutes |

Section 22: Set-up procedures

### Serial/Batch #:\_\_\_\_\_\_\_\_\_\_\_ Manufacture Date:\_\_\_\_\_\_\_\_

### 5 Selection, equipping and adjusting the wheelchair (All fields must be completed. Enter N/A for fields that don’t apply)

NOTE: All dimensions in inches

### 5.2 Tires

### Drive wheels

|  |  |
| --- | --- |
| Tire type:  non-pneumatic  pneumatic | Tire size - smallest recommended\_\_\_\_\_\_\_\_\_\_\_\_ |
| Tire pressure - max recommended \_\_\_\_\_\_\_\_\_ | Caster wheel track width mid-position \_\_\_\_\_\_\_\_\_ |

### Caster wheels – Front Not Applicable

|  |  |
| --- | --- |
| Tire type:  non-pneumatic  pneumatic | Tire size - smallest recommended\_\_\_\_\_\_\_\_\_\_\_\_ |
| Tire pressure - max recommended \_\_\_\_\_\_\_\_\_ | Caster wheel track width mid-position \_\_\_\_\_\_\_\_\_ |

### Caster wheels – Rear Not Applicable

|  |  |
| --- | --- |
| Tire type:  non-pneumatic  pneumatic | Tire size - smallest recommended\_\_\_\_\_\_\_\_\_\_\_\_ |
| Tire pressure - max recommended \_\_\_\_\_\_\_\_\_ | Caster wheel track width mid-position \_\_\_\_\_\_\_\_\_ |

### 5.5 Motor 1

|  |  |
| --- | --- |
| Motor manufacturer\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Motor part #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Motor model\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Motor serial #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

### Motor 2

|  |  |
| --- | --- |
| Motor manufacturer\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Motor part #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Motor model\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Motor serial #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

### Motor 3

|  |  |
| --- | --- |
| Motor manufacturer\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Motor part #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Motor model\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Motor serial #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Motor 4**

|  |  |
| --- | --- |
| Motor manufacturer\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Motor part #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Motor model\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Motor serial #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

### 5.6 Controller

|  |  |
| --- | --- |
| Controller manufacturer\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Controller part #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Controller model\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Printout of All Internal Controller Settings Attached | Controller serial #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

### 5.7 Batteries

|  |  |
| --- | --- |
| Battery manufacturer\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Battery part #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Battery model\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Battery serial #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Discharged/recharged twice | Battery capacity - amp hr\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Recharged 75% of rated nominal capacity | Maintain battery and WC temp at 18 °C and 25 °C |

### Adjusting the wheelchair to the reference configuration Not Applicable

|  |  |
| --- | --- |
| Position adjustable parts per manufacture\_\_\_\_ | Seat position  Forward  Middle  Rearward  Non/Adj  Adj # of positions:\_\_ Adj. Increment:\_\_ |
| Seat depth  N/Adj  Man\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Back support angle +10º (+3/-0) \_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Seat height highest position\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Seat plane angle nearest + 4º or greater (+3/-0) \_\_ |
| Back support height   N/Adj  Man\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Leg-to-seat-surface angle ≥ 90º \_\_\_\_\_\_\_\_\_\_\_\_\_  Foot support angle ≥ 90º\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Foot support clearance ≥ 2.0 in (+0.12/-0) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | All other mechanical components mid-position |

### Adjusting the wheelchair – control device Not Applicable

|  |  |
| --- | --- |
| Control device mid-position or greater\_\_\_\_\_\_\_ | Other programmable control device settings manufacturer recommended or mid-position |
| User adjustable speed and sensitivity maximum |  |

### 7 Final adjustments

|  |  |
| --- | --- |
| Back support angle close to +10º\_\_\_\_\_\_\_\_\_\_\_ | Seat support angle close to +4º\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

### 8 Final check

|  |
| --- |
| Tighten all fasteners in accordance with manufactures specifications |

### 9 Set-up procedures for test dummies

RESNA Dummy (use 50kg)

Test Load Mass \_\_\_\_\_\_\_\_kg \_\_\_\_\_\_\_\_lb Record Max User Mass\_\_\_\_\_\_\_\_kg \_\_\_\_\_\_\_\_lb

|  |  |
| --- | --- |
| Seat to back support angle\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Test dummy fore-aft position to seat-back  angle ± 3º |
| Test dummy equal to max user mass | Secure test dummy |
| Position dummy symmetrically ± 0.4 in | Wheelchair not deformed in any way |
| Test dummy body to seat hinge free |  |

Reference Configuration images:  
front side quarter

|  |
| --- |
| **PDAC Test Report—for Strength Testing** |

# Test Institution

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test Lab Name |  |  | Address |  |
| Phone No. |  |  |  |  |
| Report Prepared By |  | | Report Date |  |
| Signature of Person Responsible |  | | Date of Tests |  |
| Note: Strength testing may be performed by the manufacturer. | | | | |

# Test wheelchair

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Manufacturer |  |  | Max User Weight Specified |  |
| Address |  |  | Test Dummy Weight |  |
|  | Max Weight of Accessories Tested |  |
|  |
|  |  |  | Max Payload Tested |  |
| Make |  | Seat Width Tested |  |
| Model |  |  | PMD Type:  PWC or  POV | |
| Manufacture Date |  |  | NOTE: PDAC requires images of all test set-ups as noted. **Each image must be labeled with the test section and clause number to which it applies.** | |
| Serial/Batch # |  |

# Referenced Standards

Static, impact and fatigue tests were conducted according to: RESNA WC-1:2009, Section 8.

# Test Results

## Section 8: Requirements and Test Methods for Static, Impact and Fatigue Strengths

**Testing Date(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Test Dummy or  Driver**

**RESNA Pass/Fail Criteria:  
No component shall be fractured or become detached**

**Exceptions:**

**1** Readjustment of postural components

**2**  Readjustment, re-tightening or refitting of operator-adjustable components at 25% intervals

**3** Replacement of wear items once per item for fatigue tests

**4** Cracks in surface finishes

Retightening, readjusting, or refitting of any component not identified as an exemption in 1, 2, or 3, above, is not allowed.

**Clause 8.0—Static Strength**  **PDAC-required image of each test set-up attached**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Clause** | **Description of Test** | **Test Load Required** | **Results** | **Pass/Fail** | **PDAC Image** |
| 8.4 | Arm supports Resistance to downward forces |  |  |  |  |
| 8.5 | Foot supports Resistance to downward forces |  |  |  |  |
| 8.6 | Tipping levers Resistance to downward forces |  |  |  |  |
| 8.7 | Handgrips Resistance to pull off forces |  |  |  |  |
| 8.8 | Arm supports Resistance to upward forces |  |  |  |  |
| 8.9 | Foot supports Resistance to upward forces |  |  |  |  |
| 8.10 | Push handles Resistance to upward load |  |  |  |  |

**Clause 9.0—Impact Strength**  **PDAC-required image of each test set-up attached**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Clause** | **Description of Test** | **Impact or Drop Angle Required** | **Results** | **Pass/Fail** | **PDAC Image** |
| 9.3 | Back support Resistance to impact |  |  |  |  |
| 9.4 | Handrim Resistance to impact |  |  |  |  |
| 9.5 | Casters Resistance to impact |  |  |  |  |
| 9.6 | Foot support Resistance to Lateral Impact |  |  |  |  |
| Foot support Resistance to Longitudinal Impact |  |  |  |  |

**Clause 10.0—Fatigue Strength**  **PDAC-required image of each test set-up attached**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Clause** | **Description of Test** | **Results** | **Pass/Fail** | **PDAC Image** |
| 10.3 | Multi-Drum Test—200,000 cycles |  |  |  |
| 10.4 | Drop Test—6666 cycles |  |  |  |

PDAC Required Image Captions

### Section 11 page 4 of PDAC Test Report

❑ Side view of the test dummy in the CoM test fixture tipped forward

❑ Side view of the test dummy in the CoM test fixture tipped rearward

## Section 1

### All Section 1 images are to be side views showing the maximum tip angle achieved

❑ Static Stability set-up for testing in the least stable Forward Direction

❑ 9.2 Wheels unlocked and the wheelchair in the least stable configuration

❑ 9.3 Wheels locked and the wheelchair in the least stable configuration

❑ Static Stability set-up for testing in the least stable Rearward Direction

❑ 10.2 Wheels unlocked and the wheelchair in the least stable configuration

❑ 10.3 Wheels locked and the wheelchair in the least stable configuration

❑ Static Stability set-up for testing in the least stable position on Anti-tips - if required

❑ 11.2 Forward stability with anti-tip devices in the least stable configuration - if required

❑ 11.2 Rearward stability with anti-tip devices in the least stable configuration - if required

❑ 11.2 Lateral stability with anti-tip devices in the least stable configuration - if required

❑ Static Stability set-up for testing in the least stable Lateral Direction

❑ 12.1 Wheelchair in in the least stable configuration

## Section 2

### Dynamic Stability Driving Tests—Full Speed. All images are to be side views on the test ramp

❑ Dynamic Stability in the Rearward Direction in the least stable configuration —   
Full Speed

❑ Dynamic Stability in the Forward Direction in the least stable configuration —   
Full Speed

❑ Dynamic Stability in the Lateral Direction in the least stable configuration —   
Full Speed

### Dynamic Stability Driving Tests— Reduced Speed – Creep All images are to be side views on the test ramp

❑ Dynamic Stability in the Rearward Stability in the least stable configuration —   
Reduced Speed - Creep

❑ Dynamic Stability in the Forward Direction in the least stable configuration —   
Reduced Speed - Creep

❑ Dynamic Stability in the Lateral Direction in the least stable configuration —   
Reduced Speed - Creep

### Dynamic Stability Transition Height Driving Tests—Full Speed. All images are to be side views showing the wheelchair and the transition

❑ Dynamic Stability in the Rearward Direction in the least stable configuration —   
Full Speed

❑ Dynamic Stability in the Forward Direction in the least stable configuration —   
Full Speed

❑ Dynamic Stability in the Lateral Direction in the least stable configuration one side —  
Full Speed

❑ Dynamic Stability in the Lateral Direction in the least stable configuration turning —  
Full Speed

### Dynamic Stability Transition Height Driving Tests— Reduced Speed - Creep. All images are to be side views showing the wheelchair and the transition

❑ Dynamic Stability in the Rearward Direction in the least stable configuration —   
Reduced Speed - Creep

❑ Dynamic Stability in the Forward Direction in the least stable configuration —   
Reduced Speed - Creep

❑ Dynamic Stability in the Lateral Direction in the least stable configuration one side —   
Reduced Speed - Creep

❑ Dynamic Stability in the Lateral Direction in the least stable configuration (turning) —   
Reduced Speed - Creep

## Section 3

Images are to be side views showing the maximum slope achieved

❑ 7.2 Parking brake effectiveness Uphill

❑ 7.2 Parking brake effectiveness Downhill

Images are to be quarter views showing the wheelchair and test area

❑ 7.3 Brake effectiveness on the level at maximum speed

## Section 4

Images are to be quarter views showing the wheelchair and test area with the measurement instrumentation in place on the wheelchair

❑ 7.1, 7.2 Determination of Theoretical Distance Range

## Section 5

### Dimensions, Mass and Maneuvering Space An image shall be provided of each dimension as it is being measured.

❑ 8.2 Full overall length

❑ 8.3 Overall width

❑ 8.9 Unloaded wheelchair mass with front riggings and batteries

❑ 8.10 Mass of heaviest part – if required

❑ 8.11 Pivot width: N/A\_\_\_ **OR**  ❑ 8.12 Reversing width: N/A\_\_\_

❑ 8.13 Turning diameter

❑ 8.15 Required width of angled corridor

## Section 6

Images are to be quarter views showing the wheelchair and test area

❑ 6.1 Maximum speed

## Section 7

A quarter view image should be taken of the loaded wheelchair. Images of individual measurements can be made.

❑ Measurement of Seating and Wheel Dimensions

## Section 10

All images are to be side views showing the wheelchair and the maximum obstacle

❑ 7.1, 7.2, 7.3, 7.4Obstacle Climbing

❑ 7.5, 7.6Obstacle Descending

## Section 14

All Section 14 images are to be quarter views showing the wheelchair and test area

❑ 6.14 Stalled condition protection

❑ 6.15 Ability to stop when power is switched off or lost

❑ 6.18 Maximum Thermal Drive Test

## Section 22

Reference Configuration images

❑ Front

❑ Side

❑ Quarter

## Section 8

### Static Strength Images are to be side views showing the wheelchair under test

❑ 8.4 Arm supports—Resistance to downward forces

❑ 8.5 Foot supports—Resistance to downward forces

❑ 8.6 Tipping levers—Resistance to downward forces

❑ 8.7 Handgrips—Resistance to pull off forces

❑ 8.8 Arm supports—Resistance to upward forces

❑ 8.9 Foot supports—Resistance to upward forces

❑ 8.10 Push handles—Resistance to upward load

### Impact Strength Images are to be side views showing the wheelchair with the impact device prior to release

❑ 9.3 Back support—Resistance to impact

❑ 9.4 Handrim—Resistance to impact

❑ 9.5 Casters—Resistance to impact

❑ Foot support—Resistance to lateral and longitudinal impact

### Fatigue Strength Images are to be front, side and quarter view with the test dummy in place while on the test device

❑ 10.3 Multi-Drum Test—200,000 cycles

❑ 10.4 Drop Test—6666 cycles