

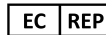
# ELEVATION

Owner's Operation and Maintenance Manual



Class 1 Medical Device  
PDG Elevation Ultralight Manual Wheelchair  
Basic UDI-DI: ++B829PDGWHEELCHAIRB7

Applies to the following model:  
UDI-DI: B829201 (Elevation)



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**DEALER** This manual must be given to the user of the wheelchair.

**USER** Before using this wheelchair, read this entire manual and save for future reference.

**ATTENDANT/ ASSISTANTS** Before assisting the user of this wheelchair, you must read this manual and save for future reference.

For more information regarding PDG products, parts & service, please visit [www.pdgmobility.com](http://www.pdgmobility.com)

## Serial Number

**WARNING** Do not operate this equipment without first reading and understanding this manual. If you are unable to understand the warnings and instructions, contact a health care professional such as a doctor or therapist who is familiar with this type of product before attempting to use this equipment. Otherwise, injury or damage may result.

Refer to this manual regularly for maximum safety and performance.

## DEVICE DESCRIPTION

The PDG Product Design Group, Inc. Elevation Manual Wheelchair is a manually operated, user propelled wheelchair. Its intended function and use is to provide mobility to persons limited to a seated position. It is an ultra-light, rigid (non-folding frame) type wheelchair.

The device consists primarily of a lower frame assembly, a seat sling, a back rest, and back upholstery, large rear wheels with hand rims for self-propelling the chair and front swivel type pivoting casters for turning.

Designed to enable greater function, independence, and comfort, the Elevation wheelchair promotes activities of daily living. Its seat height and backrest recline angle adjustment capabilities allow the seat position to be adjusted, enabling the user's sitting posture to best suit their current activity. Adding optional dynamic seat height and back angle adjustability, the Elevation is capable of up to 10 inches of real-time seat height/dump adjustment and 30° of back recline.

## 21 LIMITED WARRANTY

**PLEASE NOTE** THE WARRANTY BELOW HAS BEEN DRAFTED TO COMPLY WITH FEDERAL LAW APPLICABLE TO PRODUCTS MANUFACTURED AFTER JULY 4, 1975.

This warranty is extended only to the original purchaser/user of our products.

This warranty gives you specific legal rights and you may also have other legal rights, which vary from state to state.

PDG warrants its product, except for the seat cushion (which is not warranted), to be free from defects in materials and workmanship for a period of one (1) year from date of purchase. The side frames and cross-members are warranted for the lifetime of the original purchaser/user. If within such warranty period any such product shall be proven to be defective, such product shall be repaired or replaced, at PDG's option. This warranty does not include any labor or shipping charges incurred in replacement part installation or repair of any such product. PDG's sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement.

For warranty service, please contact the Dealer from whom you purchased your PDG product. In the event you do not receive satisfactory warranty service, please write directly to PDG at the address on the back cover page, provide Dealer's name, address, and date of purchase, indicate nature of the defect and, if the product is serialized, indicate the serial number. Do not return products to our factory without our prior consent.

Limitations and exclusions: the foregoing warranty shall not apply to serial numbered products if the serial number has been removed or defaced, products subjected to negligence, accident, improper operation, maintenance or storage, products modified without PDG's express written consent including, but not limited to, modification through the use of unauthorized parts or attachments; products damaged by reason of repairs made to any component without the specific consent of PDG, or to a product damaged by circumstances beyond PDG's control, and such evaluation will be solely determined by PDG. The warranty shall not apply to problems arising from normal wear or failure to adhere to these instructions. The foregoing express warranty is exclusive and in lieu of any other warranties whatsoever, whether express or implied, including the implied warranties of merchantability and fitness for a particular purpose, and the sole remedy for violations of any warranty whatsoever, shall be limited to repair or replacement of the defective product pursuant to the terms contained herein. The application of any implied warranty whatsoever shall not extend beyond the duration of the express warranty provided herein. The manufacturer shall not be liable for any consequential or incidental damages whatsoever.

This warranty shall be extended to comply with state/provincial laws and requirements.

## TABLE OF CONTENTS

<b>1</b>	<b>Special Notes</b> .....	<b>4</b>	<b>17</b>	<b>Set UP &amp; Adjustments</b> .....	<b>24</b>
<b>2</b>	<b>Safety summary</b> .....	<b>5</b>	17.1	Rear Wheel Removal and Installation	.24
<b>3</b>	<b>Tilting – Curbs</b> .....	<b>9</b>	17.2	Rear Wheel Axle Nut Adjustment	....24
<b>4</b>	<b>Stairways &amp; Escalators</b> .....	<b>10</b>	17.3	Rear Wheel Axle Receiver Adjustment	26
<b>5</b>	<b>Transferring to and From Other Seats</b> .	<b>11</b>	17.4	Center of Gravity/Wheel Position	....26
<b>6</b>	<b>Percentage of Weight Distribution</b> ....	<b>12</b>	17.5	Camber Angle	.....27
<b>7</b>	<b>Reaching, Leaning and Bending Forward</b> .....	<b>13</b>	17.6	Front Casters	.....28
7.1	Functional Reach from Wheelchair	....13	17.7	Seat Height Adjustment	.....29
7.2	Bending Forward	.....13	17.8	Seat Tilt and Wheel Position Set-Up Guides	.....32
7.3	Bending Backward	.....13	17.9	Backrest Recline Adjustment	.....36
7.4	Reaching Objects on Ground	.....13	17.10	Calf Strap	.....39
<b>8</b>	<b>Dressing or Changing Clothes</b> .....	<b>14</b>	17.11	Seat Sling	.....39
<b>9</b>	<b>Environmental Conditions</b> .....	<b>14</b>	17.12	Seat Cushion	.....40
9.1	Avoiding Contact with Water	.....14	17.13	Back Upholstery	.....40
9.2	Intended Terrain	.....14	17.14	Backrest Height	.....41
<b>10</b>	<b>Components &amp; Options Warnings</b> .....	<b>15</b>	17.15	Footrest Height	.....42
10.1	Postural Support Device or Lap Belts	..15	17.16	Anti-Tip Tubes (Optional)	.....43
10.2	Anti-Tip Tubes (Optional)	.....15	17.17	Wheel Locks (Optional)	.....43
10.3	Fasteners	.....16	17.18	Anti-Shear Side Guards (Optional)	....45
10.4	Footrests	.....16	17.19	Armrests	.....46
10.5	Pneumatic Tires	.....17	17.20	Gas Spring Assembly for Elevation with Real-Time Seat Height Adjustment	.....47
10.6	Quick-Release Axles	.....17	17.21	Cable Adjustment	.....48
10.7	Rear Wheels	.....18	17.22	Transport	.....48
10.8	Upholstery Fabric	.....18	<b>18</b>	<b>Contacting Your Supplier to Obtain Service</b> .....	<b>51</b>
<b>11</b>	<b>Standard Features</b> .....	<b>19</b>	<b>19</b>	<b>Damage Requiring Service by Qualified Service Agent</b> .....	<b>51</b>
<b>12</b>	<b>Unpacking</b> .....	<b>20</b>	<b>20</b>	<b>ISO Test Information Disclosure</b> .....	<b>52</b>
<b>13</b>	<b>Out Of The Box Instructions</b> .....	<b>20</b>			
13.1	Inspection	.....20			
13.2	Storage	.....20			
<b>14</b>	<b>Safety Inspection Checklist</b> .....	<b>20</b>			
<b>15</b>	<b>Troubleshooting</b> .....	<b>22</b>			
<b>16</b>	<b>Maintenance</b> .....	<b>22</b>			
16.1	Tools Required	.....22			
16.2	Cleaning	.....23			
16.3	Suggested Maintenance Procedures	..23			

## 1 SPECIAL NOTES

**WARNING/CAUTION** Notices as used in this manual apply to hazards or unsafe practices which could result in personal injury or property damage.

**NOTE** THE INFORMATION CONTAINED IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. An updated version of this owner's manual may be available at [www.PDGMobility.com](http://www.PDGMobility.com)

**INDICATIONS FOR USE** — To provide mobility to persons limited to a seated position.

**WHEELCHAIR USER** — As a manufacturer of wheelchairs, PDG endeavors to supply wheelchairs to meet many needs of the end user. However, final selection of the type of wheelchair to be used by an individual rests solely with the user and his/her health care professional capable of making such a selection.

**WHEELCHAIR TIE-DOWN RESTRAINTS AND SEAT RESTRAINTS** — Wheelchair users are NOT to be transported in vehicles of any kind while in wheelchairs. As of this date, Transport Canada, and the Department of Transportation has not approved any tie-down systems for transportation of a user in a moving vehicle of any type while in a wheelchair.

It is PDG's position that users of wheelchairs should be transferred into appropriate seating in vehicles for transportation and that use be made of the restraints made available by the auto industry. PDG can not and does not recommend any specific wheelchair transportation systems.

**POSTURAL SUPPORT DEVICE or LAP BELT** — IT IS THE OBLIGATION OF THE HME DEALER, THERAPISTS AND OTHER HEALTH CARE PROFESSIONALS TO DETERMINE IF A POSTURAL SUPPORT DEVICE IS REQUIRED TO ENSURE THE SAFE OPERATION OF THIS EQUIPMENT BY THE USER. SERIOUS INJURY CAN OCCUR IN THE EVENT OF A FALL FROM A WHEELCHAIR.

**SAVE THIS MANUAL FOR FUTURE REFERENCE**

Table 20.2 Dimensional and Performance Attributes

Feature	Minimum	Maximum
Overall length with legrest	815mm (32 in)	876mm (34.5 in)
Overall width	587mm (23.1 in)	688mm (27.1 in)
Total mass	12.0 kg (26.5 lbs)	12.0 kg (26.5 lbs)
Static stability downhill	>10°	>10°
Static stability uphill	5.4°	7.6°
Static stability sideways	>10°	>10°
Seat plane angle	12.0°	n/a
Effective seat depth	356mm (14 in)	457mm (18 in)
Effective seat width	356mm (14 in)	457mm (18 in)
Seat surface height at front edge	485mm (19.1 in)	515mm (20.3 in)
Backrest angle	-14.5°	+48.0°
Backrest height	240mm (9.4 in)	370mm (14.6 in)
Footrest to seat distance	385mm (15.2 in)	425mm (16.7 in)
Leg to seat angle	60°	100°
Hand-rim diameter	520mm (20.5 in)	572mm (22.5 in)
Minimum turning radius	515mm (20.3 in)	515mm (20.3 in)

The Elevation wheelchair conforms to the test methods for static, impact and fatigue strengths as required by ISO 7176-8.

## 20 ISO TEST INFORMATION DISCLOSURE

Table 20.1 Elevation Wheelchair Test Configuration

Seat Width	457mm (18 in)
Seat Depth	407mm (16 in)
Seat Back Height	240mm (9.45 in)
Wheelchair Weight	12 kg (26.5 lbs)
Seat sling	Standard Sling Seat w/tension straps
Back Upholstery	Standard back upholstery
Wheels	24" Wire Wheels
Casters	5" Aluminum Soft Roll
Footrest	Aluminum Footrest
Other Options	None
Mass of ATD	115 kg (250 lbs)
Max. User Weight	115 kg (250 lbs)

## 2 SAFETY SUMMARY

### Operating Information Warning

To determine and establish particular safety limits, practice bending, reaching and transferring activities in several combinations in the presence of a qualified health professional BEFORE attempting active use of the wheelchair.

- ✘ **DO NOT** attempt to reach objects if you have to move forward in the seat.
- ✘ **DO NOT** attempt to reach objects if you have to pick them up from the floor by reaching down between your knees.
- ✘ **DO NOT** lean over the top of the back upholstery to reach objects from behind as this may cause the wheel chair to tip over.
- ✘ **DO NOT** shift your weight or sitting position toward the direction you are reaching as the wheelchair may tip over.
- ✘ **DO NOT** use an escalator to move a wheelchair between floors. Serious bodily injury may occur.
- ✘ **DO NOT** attempt to stop a moving wheelchair with the wheel locks. WHEEL LOCKS ARE NOT BRAKES.
- ✓ Before attempting to transfer in or out of the wheelchair, every precaution should be taken to reduce the gap distance. Turn both casters toward the object you are transferring onto. When transferring to and from the wheelchair, ALWAYS ENGAGE BOTH WHEEL LOCKS.
- ✘ **DO NOT** operate on roads or highways.
- ✘ **DO NOT** climb, go up or down ramps or traverse slopes greater than 9°.
- ✘ **DO NOT** attempt to move up or down an incline that is wet, icy or covered with an oily film.
- ✘ **DO NOT** attempt to ride over curbs or obstacles greater than 2". Doing so decreases your wheelchair stability and may cause it to turn over and cause bodily harm or damage to the wheelchair.
- ✓ Consult your dealer prior to using parts, accessories, or adapters on your Elevation that are not provided by PDG. Failure to do so may void your warranty.
- ✘ **DO NOT** attempt to lift wheelchair by any removable (detachable) parts.
- ✘ **DO NOT** stand on the frame of the wheelchair.
- ✘ **DO NOT** use the footplate as a platform when getting in or out of the wheelchair.
- ✓ **ALWAYS** wear your postural support device (lap belt).
- ✘ The seat and backrest position of Elevation should only be adjusted with the lap belt securely fastened around the occupant.

- ✘ Extreme caution should be exercised when operating the backrest recline mechanism as excessive or sudden recline may promote the occupant to tip over backwards. The use of an anti-tip devices is recommended.
- ✘ Adjustment of Elevation to a higher seat position may result in changes to your body that you may be unaccustomed to and may find discomforting. Such changes may be dangerous and may lead to injury or death. Consult your doctor or physical therapist prior to using Elevation.
- ✘ The seat or backrest position of Elevation should only be elevated or reclined on firm, level ground to avoid the risk of falling or tipping over, possibly resulting in injury or death.
- ✘ Avoid reaching or leaning with the seat raised above the horizontal position to avoid the risk of falling or tipping over, possibly resulting in injury or death.
- ✘ Avoid sudden or extreme movements with the seat raised above the horizontal position or the backrest reclined to avoid the risk of tipping over and possible injury.
- ✘ Real-time seat height adjustment of the Elevation must only be used when the wheel locks are engaged to avoid any undesired movement and possible accident or injury.
- ✘ During an episode of spasms, cramps or any situation that distracts the user's attention, it is recommended that the user not raise the seat height until the episode subsides. If possible, it is recommended that the user immediately lowers the seat height, using the real-time seat height adjustment, below the horizontal until the episode subsides.
- ✘ Never operate Elevation without the complete confidence and ability to prevent tipping over backwards – inexperienced users are recommended to use anti-tip devices.
- ✘ Never operate the real-time seat raising mechanism while leaning forward or sideways.
- ✘ Never use Elevation without the seat sling affixed very firm and taut.
- ✘ It is recommended that a properly fitted seat cushion be used with your Elevation.
- ✘ Never use Elevation while inebriated or with some other altered state of mind.
- ✘ Never adjust the seat height of the Elevation using the real-time seat height adjustment while the wheelchair is unoccupied.
- ✘ Elevation must only be used by the original purchaser for whom it was ordered and fitted. Other individuals using Elevation may void the warranty and risk accident, injury or death.

## 18 CONTACTING YOUR SUPPLIER TO OBTAIN SERVICE

PDG has trained customer service representatives in many locations. To find your nearest Customer Service Center, visit our web site at [www.pdgmobility.com](http://www.pdgmobility.com) and click on CONTACTS. If you are uncertain about which CONTACT is most appropriate for your needs, contact PDG directly using telephone, fax, or e-mail contact information. Supply the serial number from the product you are attempting to service and we will be happy to inform you of the supplier who initially provided your product.

## 19 DAMAGE REQUIRING SERVICE BY QUALIFIED SERVICE AGENT

In some circumstances it may be required that your wheelchair be returned to a Qualified Service Agent for repairs. If any of the following conditions are observed, the wheelchair must be serviced by a Qualified Service Agent:

- ✘ Any part of the frame is cracked or broken
- ✘ Any weld is cracked or broken

Always contact your Service Agent prior to sending a wheelchair for repairs. For safe and secure shipping, the wheelchair must be boxed or fastened to a pallet to ensure it does not become damaged during shipping. Service agent will provide specific instructions for packaging and shipping your wheelchair. Alternatively, Qualified Service Agent may arrange for pick-up.

- 2 Not released sufficiently (excess play, evidenced by slow or no movement of strut when activated).
  - a If the strut body position has been checked (Lever Freeplay Section) proceed to B otherwise return to Lever Freeplay Section.
  - b Lengthen the cable turn buckle.
  - c Check the lever free play is ~ 0.5 to 1 mm. If correct proceed to D, if not go back to B.
  - d Tighten the turnbuckle jam nut back up against the turnbuckle end fitting.

## 17.22 Transport

The Elevation is not designed for transport in a vehicle while occupied. When transporting the chair ensure that the wheelchair is secured to prevent any movement which may result in injury. If you own an Elevation Full Feature, then to reduce the risk of accidental seat height movement during transport or storage, ensure that the seat is fully lowered and ensure that the release levers have their safety latches firmly placed in the "locked" position. (See Figure 17.39)

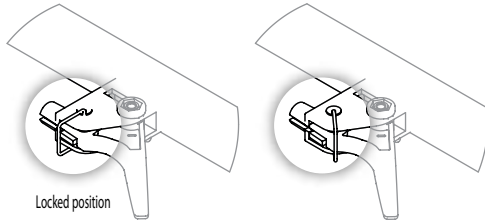


Figure 17.39  
Release lever safety latches.

## Tire Pressure

- ✘ If pneumatic tires are supplied, DO NOT use your wheelchair unless it has the proper tire pressure. DO NOT over inflate the tires. Failure to follow these suggestions may cause the tire to explode and cause bodily harm.
- ✓ Replacement of a pneumatic tire or tube MUST be performed by a PDG dealer.

## Weight Training

- ✘ PDG wheelchairs are **NOT** to be used as a weight training apparatus. PDG wheelchairs have NOT been designed or tested as a seat for any kind of weight training. If the occupant uses said wheelchair as a weight training apparatus, PDG shall **NOT** be liable for bodily injury and the warranty will be voided immediately.

## Weight and Age Limitations

The PDG Elevation wheelchair has a weight limitation of 250 pounds unless otherwise specified by PDG. Further, Elevation is not to be used by persons under the age of 12 years.

## Safety/Handling of Wheelchairs

"Safety and Handling" of the wheelchair requires close attention from the wheelchair user as well as the assistant. This manual points out the most common procedures and techniques involved in the safe operation and maintenance of the wheelchair. It is important to practice and master these safe techniques until you are comfortable maneuvering around frequently encountered architectural barriers.

Use this information only as a "basic" guide. The techniques that are discussed on the following pages have been used successfully by many.

Individual wheelchair users often develop skills to deal with daily living activities that may differ from those described in this manual. PDG recognizes and encourages each individual to try what works best in overcoming architectural obstacles that they may encounter. Techniques in this manual are a starting point for the new wheelchair user and assistant with "safety" as the most important consideration for all.

## Stability and Balance

To assure stability and proper operation of your wheelchair, you must at all times maintain proper balance. Your wheelchair has been designed to remain upright and stable during normal daily activities as long as you do not move beyond the center of gravity.

Virtually all activities which involve movement in the wheelchair have an effect on the center of gravity. PDG recommends using postural support devices (lap belts) for additional safety while involved in activities that shift your weight.

✘ **DO NOT** lean forward out of the wheelchair so that your shoulders are any further than the front of the rear wheels. Make sure the casters are pointing in the forward position whenever you lean forward. This can be achieved by advancing the wheelchair and then reversing it in a straight line.

### Coping with Everyday Obstacles

Coping with the irritation of everyday obstacles can be alleviated somewhat by learning how to manage your wheelchair. Keep in mind your center of gravity to maintain stability/balance.

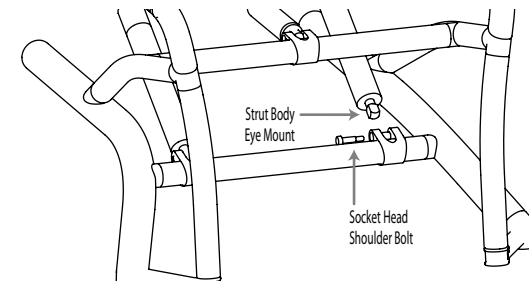
### A Note to Wheelchair Assistants

When assistance to the wheelchair user is required, remember to use good body mechanics. Keep your back straight and bend your knees whenever tilting the wheelchair or traversing curbs, or other impediments.

Be aware of any removable (detachable) parts. These must NEVER be used for hand-held or lifting supports, as they may be inadvertently released, resulting in possible injury to the user and/or assistant(s).

When learning a new assistance technique, have an experienced assistant help before attempting it alone.

- 2 Not released sufficiently (excess play, evidenced by slow or no movement of strut when activated)
  - a Shorten the cable turn buckle to ensure cable is not contributing.
  - b Loosen the jam nut.
  - c Loosen and remove the socket head shoulder bolt mounting the strut to the lower frame, removing the far end of the strut, as shown in Figure 17.38.
  - d Rotate the strut body and rod to turn the strut activator end fitting further off of the rod (turn clockwise with strut rod end pointing forwards you).
  - e Check the lever free-play. If correct proceed to F, if not go back to D.
  - f Tighten the jam nut back up against the strut activator end fitting.
  - g Rotate ONLY the strut body to align the strut body eye mount to the mounting hole on lower frame.
  - h Reinsert and retighten the socket head shoulder bolt.
  - i See Level Travel section for cable turn buckle adjustment instructions.



**Figure 17.38**  
Detaching the strut.

### Lever Travel

To test the travel of the lever, activate the trigger and watch the movement of the lever. If the cable is adjusted correctly, the lever should move until it is perpendicular to the strut rod. When not activated, the lever should wiggle 0.5 to 1mm along the length of the strut. This check ensures the strut is not:

- 1 Partially compressed all the time (no play, evidenced by the strut not locking).
  - a If the strut body position has been checked (Lever Freeplay Section) proceed to B otherwise return to Lever Freeplay Section.
  - b Loosen the turnbuckle jam nut, then shorten the cable turn buckle by rotating the center component of the turn buckle.
  - c Check the lever free play is ~ 0.5 to 1 mm, if correct proceed to D, if not go back to B.
  - d Tighten the turnbuckle jam nut back up against the turnbuckle end fitting.



### 17.21 Cable Adjustment

Cable adjustment becomes necessary in cases when the chair fails to lift or fails to tilt when the trigger is engaged. To adjust the cable, two lever behaviours must be investigated: Lever freeplay and lever travel.

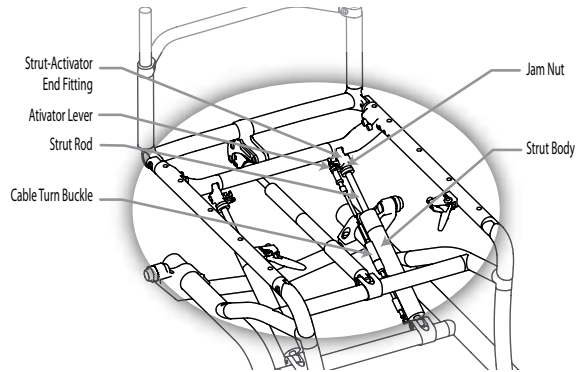


Figure 17.37  
Cable assembly.

#### Lever Freeplay

For this check, do not activate the trigger. Instead, simply wiggle the activation lever to see how much it moves. To ensure success, shorten the cable turn buckle until the cable is visibly loose in the lever pocket. The lever should wiggle 0.5 to 1mm along the length of the strut. This check ensures the strut is:

- 1 Not partially compressed all the time (no play, evidenced by the strut not locking).
  - a Shorten the cable turn buckle (lengthening the free cable length) to ensure cable is not contributing.
  - b Loosen the jam nut.
  - c Loosen and remove the socket head shoulder bolt mounting the strut to the lower frame, removing the far end of the strut, as shown in Figure N.
  - d Rotate the strut body and rod to turn the strut activator end fitting further onto the rod (turn counterclockwise with strut rod end pointing forwards you).
  - e Check the lever free-play. If correct proceed to F, if not go back to D.
  - f Tighten the jam nut back up against the strut activator end fitting.
  - g Rotate ONLY the strut body to align the strut body eye mount to the mounting hole on lower frame.
  - h Reinsert and retighten the socket head shoulder bolt.
  - i See Lever Travel section for instructions on how to adjust the cable turnbuckle.

### 3 TILTING – CURBS

It is recommended that two (2) assistants be used for this procedure. The first assistant should stand on the sidewalk and turn the wheelchair so that the rear wheels are against the curb. The second assistant should be positioned at the front of the wheelchair lifting upward on a non-removable (non-detachable) part of the wheelchair frame.

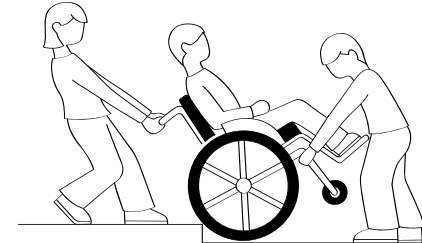


Figure 3.1 Assistant positioning for climbing curbs.

The wheelchair should be tilted back to the balance point and, in one continuous downward movement, the rear wheels should be pulled up and over the curb. DO NOT return the front casters to the ground until the wheelchair has been pulled backward far enough for the front casters to clear the edge of the curb. See Figure 3.1 for proper positioning.

## 4 STAIRWAYS & ESCALATORS

**WARNING** Do not attempt to lift a wheelchair by lifting on any removable (detachable) parts. Lifting by means of any removable(detachable) parts of a wheelchair may result in injury to the user or damage to the wheelchair.

**WARNING** **DO NOT** use an escalator to move a wheelchair between floors. Serious bodily injury may occur.

Extreme caution is advised when it is necessary to move an occupied wheelchair up or down the stairs. PDG recommends using two(2) assistants and making thorough preparations. Make sure to use **ONLY** secure, non-detachable parts for hand-held supports

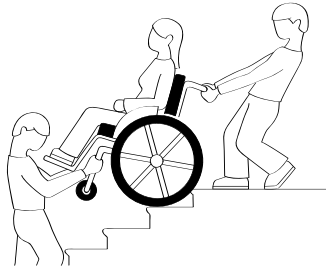


Figure 4.1 Assistant positioning for climbing stairs.

Follow this procedure for moving the wheelchair between floors when an elevator is NOT available. (See Figure 4.1)

- 1 After the wheelchair has been tilted back to the balance point, one assistant (in the rear) backs the wheelchair up against the first step, while securely grasping a non-removable (non-detachable) part of the wheelchair for leverage.
- 2 The second assistant, with a firm hold on a non-detachable part of the framework, lifts the wheelchair up and over the stair and steadies the wheelchair as the first assistant places one (1) foot on the next stair and repeats STEP 1.
- 3 The wheelchair should not be lowered until the last stair has been negotiated and the wheelchair has been rolled away from the stairway.

## 17.20 Gas Spring Assembly for Elevation with Real-Time Seat Height Adjustment

The gas springs on Elevation with Real-Time Seat Height Adjustment are selected and positioned at the factory for the weight of the user and allow for ease of seat height adjustment. By pushing lightly on the wheels and/or wheelchair frame, the occupant can sit higher, and by pulling lightly down one can sit lower with minimal effort. The gas spring release lever, actuators, and cables must be properly adjusted and maintained by the dealer for comfortable and safe usage. The sealed, gas strut component does not have any serviceable parts; do not attempt to service.

If you are experiencing problems with your chair's gas spring assemblies, take it to a dealer for maintenance. **DO NOT** attempt to service the gas spring assembly yourself. Gas springs must be replaced by a dealer.

Table 17.4 User mass & corresponding strut.

User Mass (Ages 12 and up)		Strut
65 – 89 lbs	29 – 40 kg	150 N
90 – 139 lbs	41 – 63 kg	200 N
140 – 199 lbs	64 – 90 kg	300 N
200 – 250 lbs	91 – 113 kg	400 N

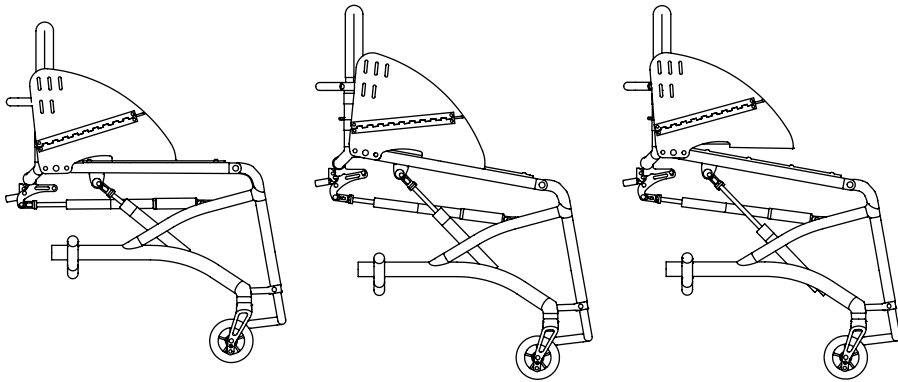


Figure 17.32

Figure 17.33

Figure 17.34

### 17.19 Armrests

The Elevation comes with rigid armrests. The armrest depth can be adjusted to five different depths to best suit the user.

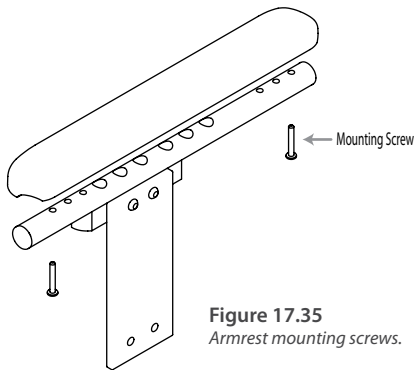


Figure 17.35  
Armrest mounting screws.

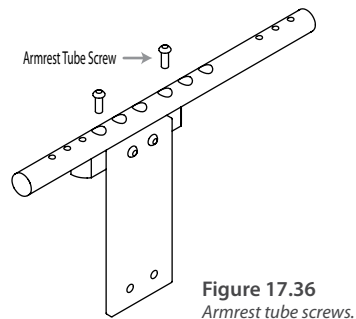


Figure 17.36  
Armrest tube screws.

### Arm Depth Adjustment

- 1 Remove the mounting screws from the armrest base (See Figure 17.35).
- 2 Remove the armrest pad.
- 3 Remove the arm rest tube screws (See Figure 17.36)
- 4 Adjust the arm to the desired arm pad depth.
- 5 Secure with existing hardware.

## 5 TRANSFERRING TO AND FROM OTHER SEATS

**WARNING** BEFORE attempting to transfer in or out of the wheelchair, every precaution should be taken to reduce gap distance. Turn both casters toward the object you are transferring onto. Also be certain the wheel locks are engaged to help prevent wheels from moving.

**CAUTION** When transferring, position yourself as far back as possible in the seat. This will prevent damaged upholstery and the possibility of the wheelchair tipping forward.

**NOTE** This activity may be performed independently provided you have adequate mobility and upper body strength.

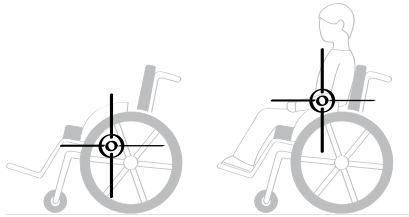


Figure 5.1  
Transferring to and from other seats.

- 1 Position the wheelchair as close as possible along side the seat to which you are transferring, with the front casters pointing toward it. (See Figure 5.1) Engage wheel locks. Shift body weight into seat with transfer.
- 2 During independent transfer, little or no seat platform will be beneath you. Use a transfer board if at all possible.

## 6 PERCENTAGE OF WEIGHT DISTRIBUTION

**WARNING** DO NOT attempt to reach objects if you have to move forward in the seat or pick them up from the floor by reaching down between your knees.



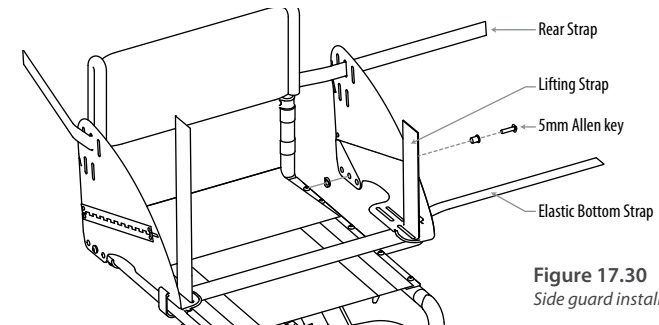
**Figure 6.1**  
Centre of gravity location.

Many activities require the user to reach, bend and transfer in and out of the wheelchair. These movements will cause a change to the normal balance, the center of gravity, and the weight distribution of the wheelchair. To determine and establish your particular safety limits, practice bending, reaching and transferring activities in several combinations in the presence of a qualified health professional BEFORE attempting active use of the wheelchair. (See Figure 6.1)

## 17.18 Anti-Shear Side Guards (Optional)

Your Elevation may be purchased with lifting Flexiguard™ side guards. These unique side guards flex inward, preventing shear and protecting the occupant's clothing from contact with the tires. They also allow easier access to the wheels for better performance and handling. When the seat height is raised, the anti-shear sideguards lift upward beneath the thighs and flex inward to reduce shear and improve user stability.

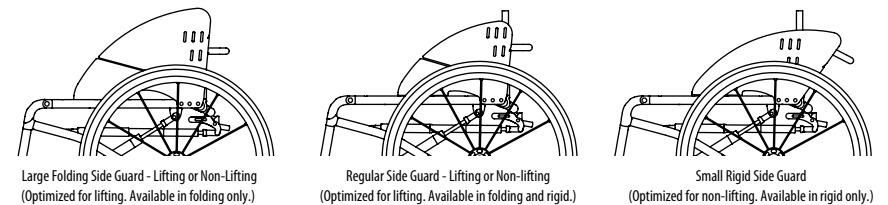
The side guards must be firmly affixed, as seen in Figure 17.30, to the backrest upholstery, backrest post, and seat upholstery using the hook and loop straps.



**Figure 17.30**  
Side guard installation.

## Rigid Anti-Shear Side Guards

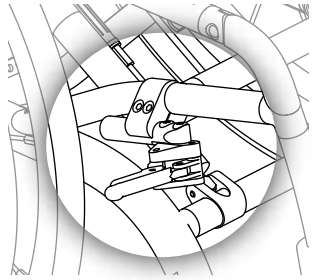
The optional rigid lifting side guards allow for superior uplift and stability when in elevated seat positions. These side guards can be placed in three seat depth locations depending on personal preference. The rigid-articulating side guards must be attached to the backrest pivot as shown in Figure 17.31. The rear and lifting straps must also be firmly attached before each use.



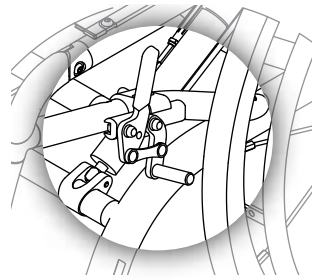
**Figure 17.31**  
Side guard options.

## Folding Anti-Shear Side Guards

The optional folding anti-shear side guards prevent shear while offering superior uplift and stability in elevated seat positions. Additionally, when folding the backrest down, the lifting side guards will also collapse allowing for a decreased chair size when available storage space is minimal.



**Figure 17.28**  
Scissor-style wheel locks.



**Figure 17.97**  
Push-to-lock-style wheel locks.

### To adjust wheel locks

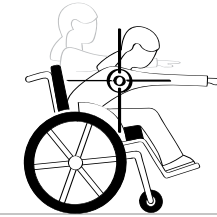
**WARNING** If adjustments to the position of the rear wheel axle have been performed, the wheel locks must also be adjusted. Never attempt to adjust the wheel locks with the wheelchair occupied.

- 1 Position the chair on a solid level surface and secure the chair so it will not move when the wheel locks are unlocked.
- 2 Release the wheel locks as far as they will go.
- 3 Loosen both screws on the cylindrical brake mounting bracket.
- 4 Adjust the position of the wheel locks and re-tighten the screws so that firm braking action prevents the wheels from rotating.

## 7 REACHING, LEANING AND BENDING FORWARD

### 7.1 Functional Reach from Wheelchair

Proper positioning is essential for your safety. When reaching, leaning, or bending forward, it is important to use the front casters as a tool to maintain stability and balance. (See Figure 7.1)



**Figure 7.1**  
Forward reach in wheelchair.

### 7.2 Bending Forward

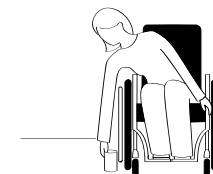
Position the front casters so that they are extended as far as possible and engage wheel locks. **DO NOT LEAN SO THAT YOUR SHOULDERS ARE FORWARD OF THE REAR WHEELS.**

### 7.3 Bending Backward

**WARNING** Reach back only as far as your arm will extend without changing your sitting position. Reaching back farther will change your center of gravity and may cause you to tip over.

### 7.4 Reaching Objects on Ground

Position wheelchair as close as possible to the desired object. Point front casters forward to create the longest possible wheelbase. (See Figure 7.2)



**Figure 7.2**  
Reaching objects on ground.

## 8 DRESSING OR CHANGING CLOTHES

**WARNING** Your weight may shift if you dress or change clothes while seated in this chair. To reduce the risk of a fall or tip-over:

- 1 Rotate the front casters until they are as far forward as possible. This makes the chair more stable.
- 2 Lock anti-tip tubes in place. (If your chair does not have anti-tip tubes, back it up against a wall and lock both rear wheels).

## 9 ENVIRONMENTAL CONDITIONS

**WARNING** Use extra care if you must ride your chair on a wet or slick surface. If you are in doubt, ask for help.

**WARNING** Contact with water or excess moisture may cause your chair to rust or corrode. This could cause your chair to fail.

### 9.1 Avoiding Contact with Water

- 1 Do not use your chair in a shower, pool or other body of water. The chair tubing and parts are NOT water-tight and may rust or corrode from the inside.
- 2 Avoid excess moisture (for example, do not leave your chair in a damp bathroom while taking a shower).
- 3 If your chair does get wet (from cleaning or otherwise), dry it as soon as possible.

### 9.2 Intended Terrain

**WARNING** Operating your wheelchair in sand, loose soil, or over rough terrain may damage wheels, the footrest, or other components of your wheelchair.

Your wheelchair is designed for use on firm, regular, even surfaces such as typical interior spaces, concrete, or asphalt.

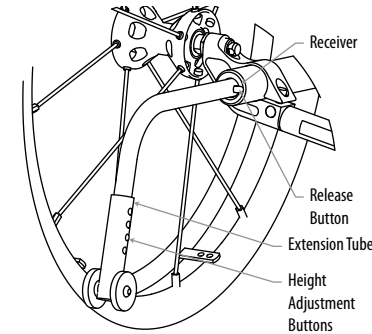
**NOTE** Failure to heed these warnings could result in severe injury to yourself or others as well as damage your chair.

## 17.16 Anti-Tip Tubes (Optional)

Your Elevation may be purchased with anti-tip tubes designed to prevent the chair from tipping over backward in most normal conditions.

To install the anti-tip tubes:

- 1 Press and hold the release button on the anti-tip tube. (See Figure 17.27)



**Figure 17.27**  
Height adjustable anti-tip tubes in the downward position.

- 2 Insert the anti-tip into the receiver.
- 3 Rotate the anti-tip until it locks into place in the downward position (the release button should remain outside the receiver).
- 4 Press the height adjust button and adjust the extension tube until the anti-tip wheels are between 1 ½" to 2" off the ground.

## 17.17 Wheel Locks (Optional)

**WARNING** Never attempt to engage wheel locks while the chair is in motion as it could cause you to lose control.

Wheel locks lock the rear wheels and prevent any undesirable movement of your wheelchair.

- 1 To engage the scissor-style wheel locks in Figure 17.28, pull the lever toward the wheel until it locks into place.
- 2 To engage the push to lock wheel locks in Figure 17.29, bring the lever forward until it locks into place.

Once the wheel locks are applied, the wheels should not be able to rotate. If they do, PDG recommends the chair be serviced by a dealer.

## 17.15 Footrest Height

**WARNING** Never attempt to adjust the footrest with the wheelchair occupied.

The height of the footrest is adjustable and should be adjusted to suit the occupant's needs. PDG recommends that the footrest be a minimum 2" off the ground (See Figure 17.25). Prior to adjusting the footrest, seat cushion selection and positioning, backrest selection and adjustments must be made.

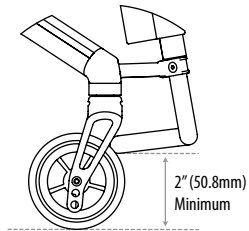


Figure 17.25  
Minimum footrest height.

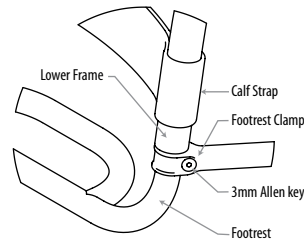


Figure 17.26  
Footrest height adjustment.

### To adjust footrest height

- 1 Using a 3mm Allen key loosen the socket head cap screws on the clamp. (See Figure 17.26)
- 2 Position the footrest to the desired height and ensure it is level to the ground.
- 3 Re-tighten the bolts.

## 10 COMPONENTS & OPTIONS WARNINGS

### 10.1 Postural Support Device or Lap Belts

**WARNING** The lap belt, which is required equipment, is intended for use **ONLY** as a positioning aid for simple positioning needs, such as posterior pelvic tilt.

This belt will not be sufficient for persons with more involved positioning needs. Only your health care advisor can determine the proper positioning products for your situation. If used improperly, lap belts can cause severe injury or even death. If your health care advisor has instructed you to use lap belts, make sure they instruct you on the proper usage of such belts, and such professional should supervise your use of such belts to ensure you can use them safely.

- 1 Belts must fit snugly in order to work properly. However, they must not be so snug they interfere with your breathing. Your health care advisor should be able to slide his or her open hand flat between the belt and your body.
- 2 Make sure you do not slide down in your chair while wearing a belt. If this should happen, you may suffer chest compression or be suffocated due to pressure from the belt.
- 3 Do not use a positioning or seat belt unless you are capable of removing the belts easily in an emergency. If you cannot do this, consult with your health care advisor for other options to help with your posture.
- 4 There are devices that help to keep you from sliding down in the seat of your wheelchair, such as a pelvic wedge. Consult with your health care advisor to find out if you need to use such a device in conjunction with lap belts to mitigate the risks described above.
- 5 **NEVER** use lap belts as a motor vehicle restraint. These types of belts are NOT intended to protect the wheelchair rider from the forces involved in a vehicle accident, and they may, in fact, cause you to be injured. PDG requires wheelchair users to ALWAYS transfer to appropriate motor vehicle seating when traveling in a motor vehicle.

**NOTE TO ATTENDANTS / ASSISTANTS** — NEVER use postural support (lap belt) as a patient restraint (a restraint requires a doctor's order) or on a wheelchair user who is comatose or agitated.

### 10.2 Anti-Tip Tubes (Optional)

Anti-tip tubes can help keep your chair from tipping over backward in most normal conditions. See Figure 17.25 for anti-tip tubes adjustability.

- 1 PDG recommends use of anti-tip tubes:

- a UNLESS you are a skilled rider of this chair and are sure you are not at risk to tip over.
  - b Each time you modify or adjust your chair. The change may make it easier to tip backward. Use anti-tip tubes until you adapt to the change, and are sure you are not at risk to tip over.
- 2 When locked in place (in the “down” position) anti-tip tubes should be BETWEEN 1 1/2 to 2 inches off the ground.
- a If set too HIGH, they may not prevent a tip-over.
  - b If set too LOW, they may “hang up” on obstacles you can expect in normal use. If this occurs, you may fall or your chair may tip over.
- 3 Keep Anti-Tip Tubes Locked In Place UNLESS:
- a You have an attendant; or
  - b You have to climb or descend a curb, or overcome an obstacle, and can safely do so without them. At these times, make sure anti-tip tubes are up, out of the way.

### 10.3 Fasteners

**WARNING** Many of the screws, bolts and nuts on this chair are special highstrength fasteners. Use of improper fasteners may cause your chair to fail.

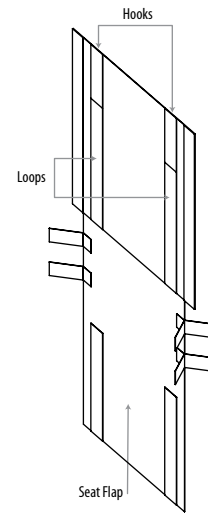
- 1 ONLY use fasteners provided by a dealer (or ones of the same type and strength, as indicated by the markings on the heads).
- 2 Over- or under-tightened fasteners may fail or cause damage to chair parts.
- 3 If bolts or screws become loose, tighten them as soon as you can. If you fail to heed these warnings damage to your chair, a fall, tip-over or loss of control may occur and cause severe injury to the occupant or others.
- 4 If you are unsure how to properly tighten components, contact a dealer.

### 10.4 Footrests

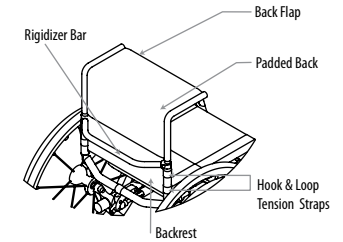
**WARNING** At the lowest point, footrests should be AT LEAST 1” off the ground. If set too LOW, they may “hang up” on obstacles you can expect to find in normal use. This may cause the chair to stop suddenly and tip forward.

To avoid a trip or fall when you transfer:

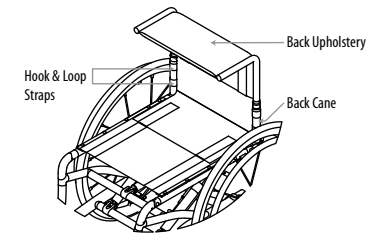
- a Make sure your feet do not “hang up” or get caught in the space between the footrests.
- b Avoid putting weight on the footrests, as the chair may tip forward.



**Figure 17.21**  
Back upholstery uninstalled.



**Figure 17.22**  
Back upholstery installed (front view).



**Figure 17.23**  
Back upholstery installed (back view).

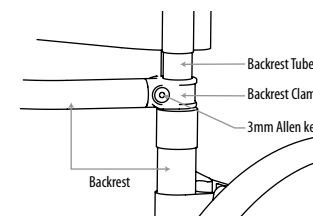
### 17.14 Backrest Height

**WARNING** Never attempt to adjust the backrest with the wheelchair occupied.

The backrest height is adjusted after removing the upholstery.

To adjust back height

- 1 Remove the back upholstery.
- 2 Using a 3mm Allen key, loosen the socket head cap screws on the clamp.
- 3 Position the backrest tubes to the desired height and ensure they are at equal distance on each side for maximum comfort and safety.
- 4 Re-tighten the screws.



**Figure 17.24**  
Backrest height adjustment.



## Replacing & Tensioning Seat Sling Upholstery

- 1 Remove the seat cushion.
- 2 Detach the seat flap of the back upholstery from the seat sling.
- 3 Remove the 10 button head screws that attached the seat sling to the seat rails using a 3mm Allen key. (See Figure 17.20.)
- 4 Flip the upholstery rail to loosen/tighten the upholstery. (See Figure 17.20.)
- 5 Reattach the upholstery to the seat rail. A second Allen key may be used to pry the upholstery taught during re-installation of the second side. Be sure not to damage the threads on the rivet nuts.
- 6 Reattach the seat flap of the back upholstery and replace the seat cushion.

## Replacing and Adjusting the Upholstery

- 1 Remove the seat cushion.
- 2 Detach the seat flap of the back upholstery from the seat sling.
- 3 Unscrew the button head fasteners attaching the upholstery along the top of the seat rail as shown in Figure 17.20.
- 4 Remove the tensioning rails from the seat upholstery by sliding them through the openings at either end.
- 5 Slide the tensioning rails into the new upholstery. Be sure to line the holes in the tensioning rails with the holes in the seat upholstery
- 6 Flip the tensioning rails to tighten or loosen the upholstery as shown in Figure 17.20.
- 7 Re-attach the upholstery to the seat rails one side at a time.

### 17.12 Seat Cushion

A seat cushion can be attached to the seat with hook-and-loop fasteners. If the seat cushion does not provide complete comfort and/or any skin or other physical condition develops with usage, see your Physician immediately.

**NOTE** It is recommended that a seat cushion be used with your Elevation.

### 17.13 Back Upholstery

The backrest upholstery is attached to the backrest with hook-and-loop straps. Minor adjustments are possible by loosening or tightening the hook-and-loop fasteners. If the backrest does not provide complete comfort and/or any skin or other physical condition develops, see your physician immediately. (See Figures 17.21 – 17.23 for set-up information.)

## 10.5 Pneumatic Tires

**WARNING** Proper inflation extends the life of your tires and makes your chair easier to use.

**WARNING** Replacement of a pneumatic tire or tube **MUST** be performed by a dealer.

- 1 Do not use this chair if any of the tires are under- or over-inflated. Check weekly for proper inflation level, as listed on the tire sidewall. Use a bicycle pump with a pressure gauge capable of measuring 120psi to safely maintain tire pressure.
- 2 Low pressure in a rear tire may cause the wheel lock on that side to slip and allow the wheel to turn, and the chair to move when you do not expect it.
- 3 Low pressure in any of the tires may cause the chair to veer to one side and result in a loss of control.
- 4 Over-inflated tires may burst.
- 5 Tire and tube size must correspond to wheel rims. Refer to Table 10.1 for size options of tires and tubes and their corresponding pressures.

Wheel Size Nominal	Tire Size	Tube Size	Pressure Maximum	
			PSI	KPa
24"	25-540	25-540	110	758
25"	20-559	20-559	110	758
26"	25-590	25-590	110	758

**Table 10.1** Standard tires and tubes and their corresponding pressures.

## 10.6 Quick-Release Axles

**WARNING** Do not use this chair **UNLESS** you are sure that both quick-release rear axles are locked. An unlocked axle may come off during use and cause a fall.

**WARNING** An axle is not locked until the quick-release button pops out fully. An unlocked axle may come off during use, resulting in a fall, tip-over or loss of control and cause severe injury to the rider or others.

See Section 17.3 for installation and adjustment information.

## 10.7 Rear Wheels

**WARNING** A change in set-up of the rear wheels will affect the center of balance of your chair.

- 1 The farther you move the rear axles **FORWARD**, the more likely it is that your chair will tip over backward.
  - 2 Consult your doctor, nurse or therapist to find the best rear axle set-up for your chair. Do not change the set-up **UNLESS** you are sure you are not at risk to tip over.
  - 3 Adjust the rear wheel locks after you make any change to the rear axles.
    - a If you fail to do so, the locks may not work.
    - b Make sure lock arms embed in tires at least 1/8 inch when locked.
- See Sections 17.1 – 17.5 for default installation and adjustment information.

## 10.8 Upholstery Fabric

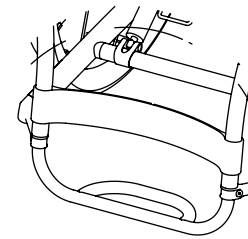
**WARNING** Worn or torn seat fabric and seat backs must be replaced as soon as possible. If you fail to do so, the seat may fail.

- 1 Sling fabric will weaken with age and use. Look for fraying or thin spots, or stretching of fabrics at rivet holes.
- 2 Dropping down into your chair will weaken fabric and result in the need to inspect and replace the seat more often.
- 3 Be aware that laundering or excess moisture will reduce flame retardation of the fabric.

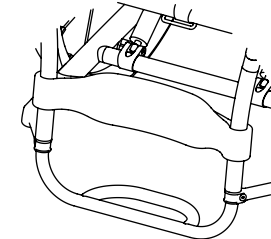
## 17.10 Calf Strap

**WARNING** Improper positioning of feet may result in accident or injury. Please consult your dealer for proper strap adjustment

The calf strap is positioned behind the occupant's lower calves to prevent the legs and/or feet slipping backwards. Adjust the hook-and-loop strap to obtain the desired length of strap to correctly position the feet on the footrest. (See Figures 17.17 and 17.18 for calf strap installation location.)



**Figure 17.17**  
Standard required  
hook and loop  
adjustable calf strap.

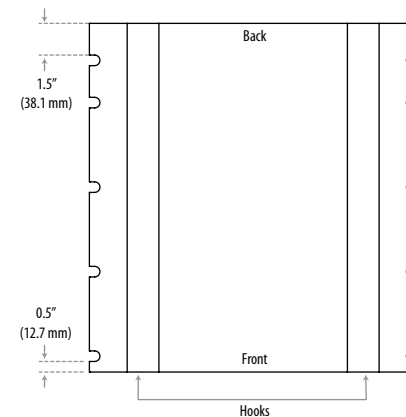


**Figure 17.18**  
Padded calf strap.

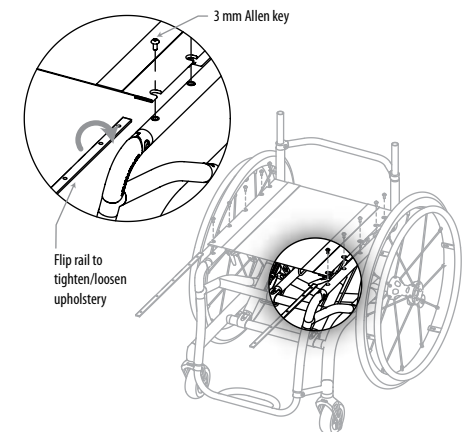
## 17.11 Seat Sling

**WARNING** Never attempt to adjust the seat tension with the wheelchair occupied. Never use your Elevation without the seat sling affixed very firm and taut.

Your Elevation comes standard with a nylon fabric seat sling that is adjusted taut by firmly tightening the hook-and-loop straps on the underside of the seat. (See Figures 17.19 and 17.20 for set-up information.)



**Figure 17.19**  
Adjusting/replacing tension adjustable seat sling.



**Figure 17.20**  
Adjusting/replacing tension adjustable seat sling.

## Real-Time Backrest Recline Operating Instructions

**WARNING** The backrest must be in its upright position prior to changing seat height.

**WARNING** Sudden or extreme reclining of the backrest will result in tipping backwards of the wheelchair. The use of anti-tip devices is strongly recommended to avoid accidents or injury.

**WARNING** Do not bend or stretch the cables that run from the release lever to the backrest adjustment mechanism, as this may release the mechanism and move the backrest resulting in accident or injury.

### To recline back

- 1 Be sure the chair is on a solid, level surface and secure it using the brakes.
- 2 Squeeze the lever on the LEFT side and lightly push back on the backrest.
- 3 Release the lever at the desired positions. See Figure 17.16 for location of the backrest recline adjustment lever.

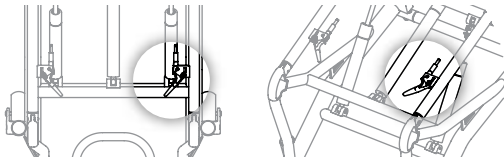


Figure 17.16  
Backrest recline adjustment lever.

### To return back

- 1 Squeeze the lever on the left side.
- 2 Lean forward slowly and the back will return.
- 3 Release the lever to lock the back at the desired position.
- 4 Test the wheelchair for maneuverability.

## 11 STANDARD FEATURES

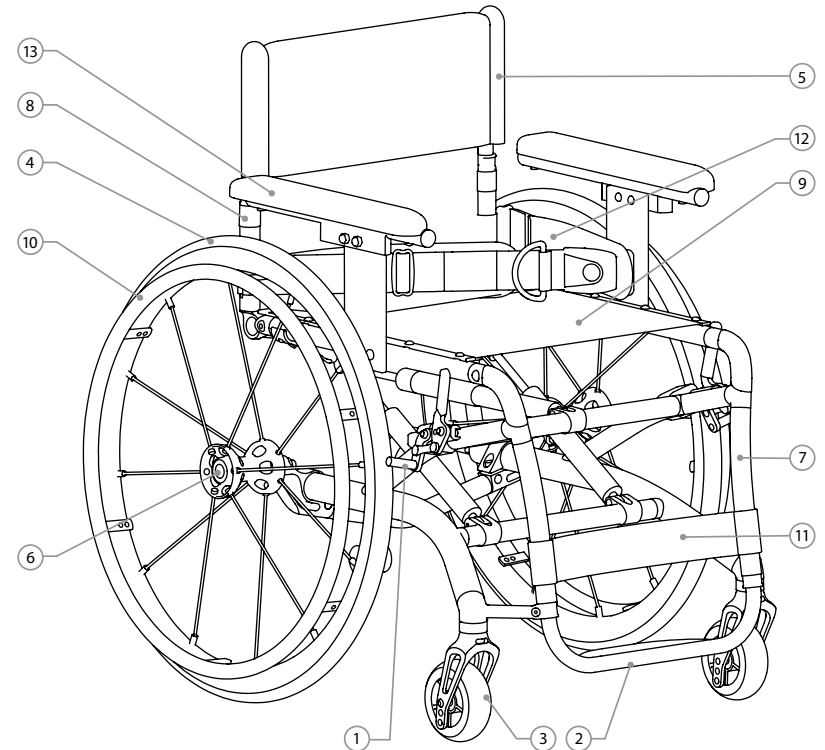


Figure 11.1  
Standard Elevation features.

- |                   |                      |               |
|-------------------|----------------------|---------------|
| 1 Wheel Lock      | 6 Quick-Release Axle | 11 Calf Strap |
| 2 Foot Rest       | 7 Lower Frame        | 12 Lap Belt   |
| 3 Front Caster    | 8 Back Rest          | 13 Armrest    |
| 4 Rear Wheel      | 9 Seat Sling         |               |
| 5 Back Upholstery | 10 Handrim           |               |

## 12 UNPACKING

**NOTE** Unless the PDG Elevation is to be used immediately, retain cartons and packing materials for storing the wheelchair until the device is put into use.

- 1 Check for any obvious damage to the carton or its contents. If damage is evident, notify your Dealer/Carrier immediately.
- 2 Remove all loose packing from the carton.
- 3 Carefully remove all components from the carton.

## 13 OUT OF THE BOX INSTRUCTIONS

### 13.1 Inspection

Examine exterior of the PDG Elevation for nicks, dents, scratches or other damages. Inspect all components. If damage is evident, notify your dealer immediately.

The Elevation wheelchair will arrive assembled unless otherwise noted or requested.

### 13.2 Storage

- 1 Store the repackaged PDG Elevation in a dry area.
- 2 DO NOT place other objects on top of the repackaged wheelchair.

## 14 SAFETY INSPECTION CHECKLIST

**NOTE** Twice a year take your wheelchair to a dealer for a thorough inspection and servicing. Regular cleaning will reveal loose or worn parts and enhance the smooth operation of your wheelchair. To operate properly and safely, your wheelchair must be cared for just like any other vehicle. Routine maintenance will extend the life and efficiency of your wheelchair.

Initial adjustments should be made by a dealer to suit your personal body structure and preference. Thereafter refer to Table 14.1 "Inspection Checklist" for inspection schedule.

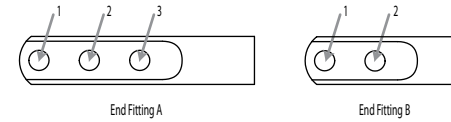


Figure 17.14 Strut end fittings.

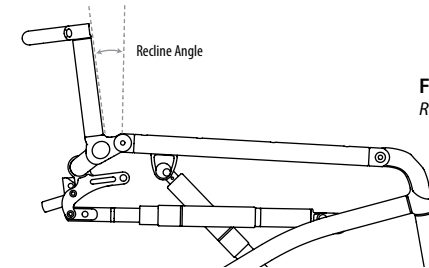


Figure 17.15 Recline Angle Definition

Seat Depth	Lower Range		Upper Range	
	Recline Strut End Fitting	Range of Recline Angle	Recline Strut End Fitting	Range of Recline Angle
14"	B1	0° to 7°	B2	12° to 19°
15"	B1	0° to 9°	B2	13° to 20°
16"	A3	1° to 7°	B2	13° to 19°
17"	B1	2° (anterior) to 8°	B2	11° to 19°
18"	B1	1° (anterior) to 8°	B2	12° to 19°
19"	B1	0° to 9°	B2	13° to 20°
20"	B1	1° to 10°	B2	13° to 21°

Table 17.3 Recline Range for Default Factory Set-Up Base Elevation

### Elevation with Real-Time Backrest Recline (Optional)

The Elevation with Real-Time Recline Adjustment has a unique backrest design that allows dynamic adjustment. The backrest can be adjusted to suit the occupant's position by simply activating the adjustment lever located at the front of the wheelchair, below the seat (see Figure 17.16). Activation of the adjustment lever will allow for movement of the backrest forward or back.

**E** Camber Bar Location

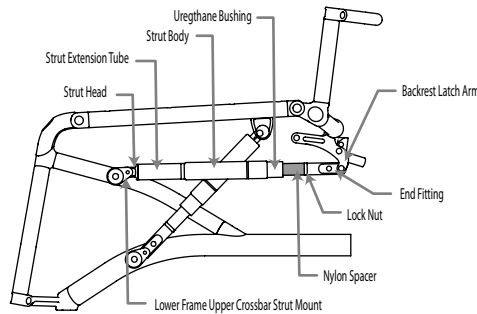
Seat Depth	Tall <sup>5</sup>	Medium	Short <sup>5</sup>
14" (35.6 cm)	3" (76 mm)	3" (76 mm)	3" (76 mm)
15" (38.1 cm)	2.5" (64 mm)	2.5" (64 mm)	2.5" (64 mm)
16" (40.6 cm)	2" (51 mm)	2" (51 mm)	2" (51 mm)
17" (43.2 cm)	1.5" (38 mm)	1.5" (38 mm)	1.5" (38 mm)
18" (45.7 cm)	2.5" (64 mm)	2.5" (64 mm)	2.5" (64 mm)
19" (48.3 cm)	2" (51 mm)	2" (51 mm)	2" (51 mm)
20" (50.8 cm)	1" (25 mm)	1" (25 mm)	1" (25 mm)

<sup>5</sup>Please note, Tall and Short frame sizes not available on base model.

**17.9 Backrest Recline Adjustment**

**Elevation Base Model**

The backrest will be set at the factory to correspond to a 90° relative to the seat. Additional strut end fittings will be provided to allow for up to 21° of recline.



**Figure 17.13**  
Recline strut assembly.

**WARNING** Never attempt to adjust the seat height mechanism with the wheelchair occupied.

**To adjust recline**

- 1 Using the 3mm Allen Key, remove the socket button head screw on the backrest latch arm. (See Figure 17.13)
- 2 Remove the strut end fitting by holding the strut stationary and twisting the end fitting counterclockwise until it detaches.
- 3 Attach desired strut end fitting by holding the strut stationary and twisting the end fitting clockwise until fully fastened. To determine which end piece is preferred, refer to Figure 17.14 and Table 17.3.
- 4 Refit and tighten the socket head shoulder bolt once set.

**Table 14.1** Inspection Checklist

ITEM	Initially	Inspect/ Adjust Weekly	Inspect/ Adjust Monthly	Inspect/ Adjust/ Every 6 Months
<b>GENERAL</b>				
Wheelchair rolls straight (no excessive drag or pull to one side).	✗			✗
Ensure all hardware is tight.	✗	✗		
<b>WHEEL LOCKS</b>				
Do not interfere with tires when rolling.	✗		✗	
Pivot points free of wear and looseness.	✗		✗	
Wheel locks easy to engage.	✗		✗	
<b>CLOTHING GUARDS</b>				
Inspect for bent or protruding metal.	✗			✗
Ensure all fasteners are secure.	✗			✗
<b>SEAT/BACK UPHOLSTERY</b>				
Inspect for rips or sagging.	✗			
Inspect fastening to ensure they are secure.	✗		✗	✗
<b>REAR WHEELS</b>				
No excessive side movement or binding when lifted and spun.	✗			✗
Quick-release axles lock properly.	✗	✗		✗
<b>FRONT CASTER</b>				
Inspect wheel/fork assembly for proper tension by spinning caster; caster should come to a gradual stop.	✗		✗	
Wheel bearings are clean and free of moisture.	✗	✗		
<b>CAUTION</b> Wheels and tires should be checked periodically for cracks and wear, and should be replaced when necessary.	✗		✗	
<b>TIRES</b>				
Inspect for flat spots and wear.	✗		✗	
If pneumatic tires, check for proper installation.	✗	✗		
Inspect rear tires for cracks and wear.	✗			✗
<b>CAUTION</b> Wheels and tires should be checked periodically for cracks and wear, and should be replaced when necessary.				
<b>CLEANING</b>				
Clean and wax all parts.				✗
Clean upholstery and armrests.				✗
Ensure axles are free of dirt, lint, etc.			✗	
Ensure tilt slides and roller bearings are free of dirt, lint, etc.			✗	

## 15 TROUBLESHOOTING

	Cause	Solution
<ul style="list-style-type: none"> <li>✘ Chair veers right</li> <li>✘ Chair veers left</li> <li>✘ Sluggish turn or performance</li> <li>✘ Casters flutter</li> <li>✘ Only 3 of 4 wheels contacting ground surface</li> </ul>	<p>If pneumatic tires, unequal tire pressure.</p> <p>Incorrect caster angle.</p> <p>Frame twisted, possibly during shipping.</p>	<p>Use a bicycle pump with a pressure gauge to determine the inflation level. Using the bicycle pump, match the inflation level to the correct inflation level listed on the tire sidewall.</p> <p>Check caster and rear wheel set-up validity according to Figure 17.6.</p> <p>Slightly release camber bar screw, and re-tighten while someone sits in the chair. If this does not resolve the problem, contact dealer.</p>
<ul style="list-style-type: none"> <li>✘ Squeaks and rattles</li> <li>✘ Looseness in chair</li> </ul>	Loose stem and bolts	Remove bolt, clean, apply Loctite, and torque to 120 ft-lb.
<ul style="list-style-type: none"> <li>✘ Chair not lifting</li> <li>✘ Chair not going into tilt</li> </ul>	<p>Insufficient trigger engagement.</p> <p>Trigger cable adjustment</p>	Refer to Section 17.20.

## 16 MAINTENANCE

The following instructions are intended to provide assistance in making wheelchair adjustments. It is important to note the initial wheelchair configuration prior to making changes. When making changes, dealers and users should do so under the guidance of a health care professional who is knowledgeable of the particular limitation of the wheelchair user. Be sure that when finished, all components are properly tightened and have been completed in accordance with these instructions. DO NOT over tighten hardware attaching to the frame. This could cause damage to the frame tubing.

### 16.1 Tools Required

Phillips Screw Driver

Allen Keys ..... 3mm    4mm    5mm    6mm

Adjustable or Open End Wrench ..... 7/16"    3/4"

Socket Head Driver with socket Heads ... 3/4"

### C

#### Maximum Seat Tilt Angle<sup>3</sup> of Elevation with Real-Time Seat Height Adjustability

Frame <sup>1</sup>		Seat Depth						
		14" (35.6 cm)	15" (38.1 cm)	16" (40.6 cm)	17" (43.2 cm)	18" (45.7 cm)	19" (48.3 cm)	20" (50.8 cm)
Tall	Tilt Angle	15°	19°	23°	20°	24°	23°	22°
	Equivalent Dump	3.6" (9.1 cm)	4.8" (12.2 cm)	6.2" (15.7 cm)	5.8" (14.7 cm)	7.3" (18.5 cm)	7.4" (18.8 cm)	7.5" (19.0 cm)
Medium	Tilt Angle	12°	16°	21°	19°	23°	22°	21°
	Equivalent Dump	2.8" (7.1 cm)	4.2" (10.7 cm)	5.8" (14.7 cm)	5.4" (13.7 cm)	7.1" (18.0 cm)	7.1" (18.0 cm)	7.1" (18.0 cm)
Short	Tilt Angle	9°	14°	20°	17°	23°	22°	20°
	Equivalent Dump	2.1" (5.3 cm)	3.7" (9.4 cm)	5.5" (14.0 cm)	5.0" (12.7 cm)	7.0" (17.8 cm)	7.0" (17.8 cm)	6.9" (17.5 cm)

<sup>3</sup> Maximum seat tilt is achieved when the crossbar is in position 1, the most rearward position.

### D

#### Maximum Seat Lift Angle<sup>4</sup> of Elevation with Real-Time Seat Height Adjustability

Frame <sup>1</sup>		Seat Depth						
		14" (35.6 cm)	15" (38.1 cm)	16" (40.6 cm)	17" (43.2 cm)	18" (45.7 cm)	19" (48.3 cm)	20" (50.8 cm)
Tall	Tilt Angle	30°	25°	19°	22°	18°	19°	20°
	Equivalent Seat Lift	7.1" (18.0 cm)	6.2" (15.7 cm)	5.2" (13.2 cm)	6.5" (16.5 cm)	5.5" (14.0 cm)	6.1" (15.5 cm)	6.8" (17.3 cm)
Medium	Tilt Angle	38°	31°	25°	28°	23°	24°	26°
	Equivalent Seat Lift	8.6" (21.8 cm)	7.7" (19.6 cm)	6.7" (17.0 cm)	8" (20.3 cm)	7.1" (18.0 cm)	7.8" (19.8 cm)	8.6" (21.8 cm)
Short	Tilt Angle	6°	38°	31°	35°	29°	30°	32°
	Equivalent Seat Lift	10.1" (25.7 cm)	9.3" (23.6 cm)	8.3" (21.1 cm)	9.7" (24.6 cm)	8.7" (22.1 cm)	9.6" (24.4 cm)	10.5" (26.7 cm)

<sup>4</sup> Maximum seat lift is achieved when the crossbar is in position 8, the most forward position.

A

### Default Upper Frame Crossbar Position

Frame <sup>1</sup>		Seat Depth						
		14" (35.6 cm)	15" (38.1 cm)	16" (40.6 cm)	17" (43.2 cm)	18" (45.7 cm)	19" (48.3 cm)	20" (50.8 cm)
Tall	Default Position	5	8	8	8	8	8	8
	Max lift angle at default	24.8°	24.5°	19.1°	22.3°	17.9°	18.8°	20.0°
	Max tilt angle at default	10°	10°	14°	11°	14°	14°	13°
Medium	Default Position	2	5	8	6	8	8	8
	Max lift angle at default	26°	25°	25°	24°	23°	24°	26°
	Max tilt angle at default	10°	11°	11°	11°	12°	11°	10°
Short	Default Position	1	2	6	4	6	6	6
	Max lift angle at default	30°	26°	27°	26°	25°	26°	28°
	Max tilt angle at default	9°	12°	11°	11°	13°	12°	11°

<sup>1</sup> Please note, Tall and Short frame sizes not available on base model.

B

### Seat Tilt Range for Base Model

Seat Depth	Lower Range (Factory Set-Up)		Upper Range <sup>2</sup>	
	End Fitting	Range of Seat Tilt	End Fitting	Range of Seat Tilt
14" (35.6 cm)	Y	1° to 10°	Z	6° to 15°
15" (38.1 cm)	X2	0° to 10°	Z	10° to 19°
16" (40.6 cm)	X1	0° to 10°	Y	9° to 19°
17" (43.2 cm)	W2	1° to 12°	W3	6° to 16°
18" (45.7 cm)	W1	0° to 11°	W2	5° to 16°
19" (48.3 cm)	W1	1° (anterior) to 10°	W2	4° to 15°
20" (50.8 cm)	W1	2° (anterior) to 9°	W2	3° to 14°

<sup>2</sup> For more information on adjusting your seat tilt range, please contact your dealer.

## 16.2 Cleaning

Periodic cleaning of all surfaces will help keep your wheelchair looking good and operating properly. All surfaces can be cleaned using warm water and a mild soap solution. Do not use abrasive cleaners on any surfaces.

## 16.3 Suggested Maintenance Procedures

- 1 Before using your PDG Elevation, make sure all nuts and bolts are tight. Check all parts for damage or wear and replace. Check all parts for proper adjustment.
- 2 Keep quick-release axles free of dirt and lint to ensure positive locking and proper operation. Refer to Section 17.3 in this manual.
- 3 If applicable, oil quick-release axles at least once (1) a month (3-in-1 oil or equivalent).

**WARNING** If pneumatic tires are used, do not use the wheelchair unless it has the proper tire pressure. DO NOT over inflate the tires. Failure to follow these suggestions may cause the tire to explode and cause bodily harm.

- 4 If tires are pneumatic, recommended tire pressure is listed on the side wall of the tire. Please refer to Table 10.1 for the size options of the tires and tubes and their corresponding pressures.
- 5 The wheels and tires should be checked periodically for cracks and wear, and should be replaced when necessary at your authorized dealer or by a qualified technician.
- 6 For wheelchairs with handrims, periodically check handrims to ensure they are secured to the rear wheels.



## 17 SET UP & ADJUSTMENTS

### 17.1 Rear Wheel Removal and Installation

**WARNING** Do not use this chair UNLESS you are sure both quick-release axles are locked. An unlocked axle may come off during use and cause a fall.

Quick-release axles come standard on the Elevation. They will allow the rear wheels to be easily removed and installed.

#### To install wheel

- 1 Depress quick-release button fully.
- 2 Insert axle through hub of rear wheel.
- 3 Keep the button depressed as the axle is slid through the axle receiver on the frame. (See Figure 17.1)
- 4 Release button to lock axle into the receiver. Adjust the nut on the axle if it does not lock or if there is play between the wheel and axle receiver. (See Section 17.2 Rear Wheel Axle Nut Adjustment.)

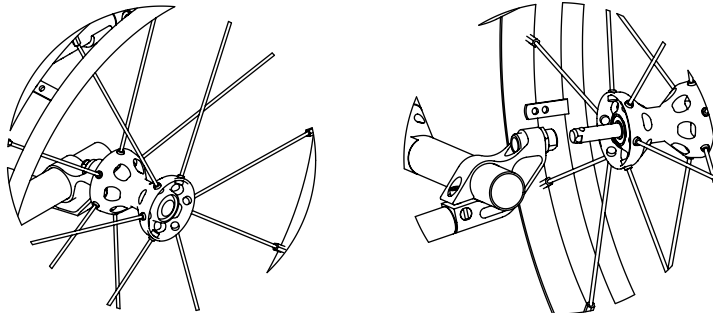


Figure 17.1 Quick release wheel attachment.

#### To remove wheel

- 1 Depress quick-release button fully.
- 2 With button depressed simultaneously pull back on the center of the wheel.

### 17.2 Rear Wheel Axle Nut Adjustment

The quick-release axle attaches the rear wheel to the axle receiver. When the axle is fully inserted into both the wheel and axle receiver the detent balls will lock the wheel assembly in place. By pushing the button on the quick-release axle the detent balls will be disengaged and wheel can be removed. If wheel and axle will not lock

Table 17.2 Determining Frame Size

Rear Wheel Diameter	Short Frame Seat-to-Floor Height	Medium Frame Seat-to-Floor Height	Tall Frame Seat-to-Floor Height
24" (61.0 cm)	18" (45.7 cm)	19" (48.3 cm)	20" (50.8 cm)
25" (63.5 cm)	18.5" (47.0 cm)	19.5" (49.5 cm)	20.5" (52.0 cm)
26" (66.0 cm)	19" (48.3 cm)	20" (50.8 cm)	21" (53.5 cm)

<sup>†</sup> Please note, Tall and Short frame sizes not available on base model.

There are eight possible upper frame crossbar positions, as shown in Figure 17.12.

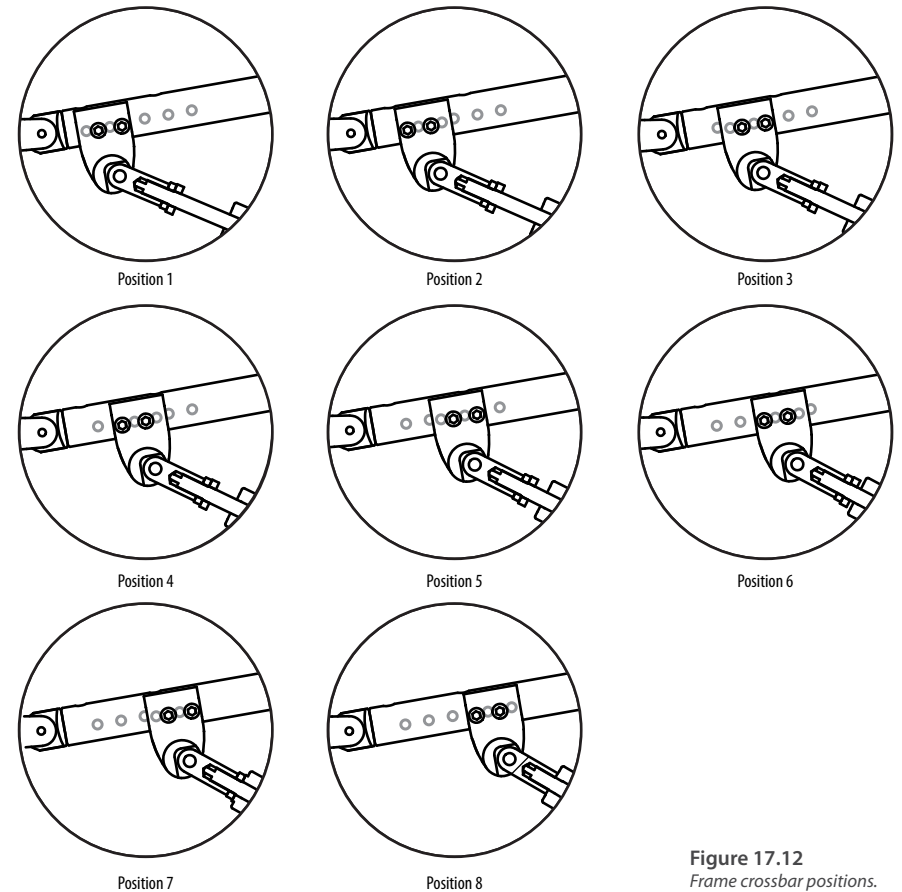
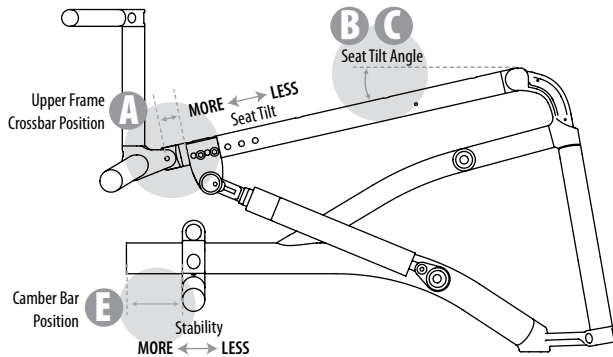


Figure 17.12  
Frame crossbar positions.

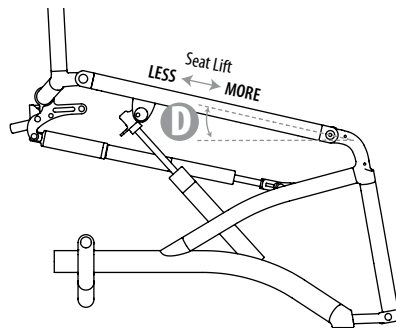


## 17.8 Seat Tilt and Wheel Position Set-Up Guides

The following figures and tables show the default set-up positions for the upper frame crossbar, the camber bar (rear wheel position) of each seat depth, and maximum seat tilt and lift angles.



**Figure 17.10** Seat Height and Wheel Position Set-Up Guides  
(Figure refers to Tables A - C, and E below.)

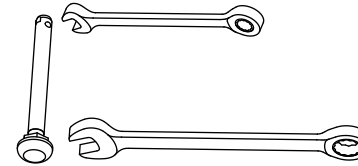


**Figure 17.11** Seat lift angle.  
(Figure refers to Table D below.)

For more information on adjusting your seat tilt range, please contact your dealer.

or alternatively if it is locking into place but there is excessive play when the wheel hub is pushing back and forth, the nut on the axle needs to be adjusted.

### If the axle does not lock



**Figure 17.2**  
Quick release axle adjustment.

- 1 Using a 7/16" open end wrench, securely hold the detent ball end of the axle. (See Figure 17.2)
- 2 Use the 3/4" open-end wrench to turn the axle nut counter-clockwise.
- 3 Turn the nut approximately in 1/2 turn increments
- 4 Try to lock the axle into the axle receiver.
- 5 If it doesn't lock, repeat steps 3 and 4 until it locks securely.

### If the axle locks, but there is excessive play

- 1 Using a 7/16" open end wrench, securely hold the detent ball end of the axle. (See Figure 17.2)
- 2 Use the 3/4" open-end wrench to turn the axle nut clockwise.
- 3 Turn the nut approximately in 1/2 turn increments.
- 4 Insert the axle and test for play.
- 5 Repeat steps 3 and 4 until the play has been eliminated and the detent balls are fully extended.

### 17.3 Rear Wheel Axle Receiver Adjustment

#### To adjust the position of the axle receiver

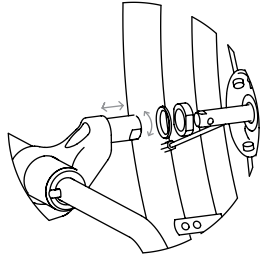


Figure 17.3 Axle receiver adjustment.

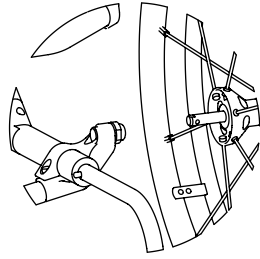


Figure 17.4 Quick release wheel attachment.

- 1 Remove the rear wheel and loosen the  $\frac{3}{4}$ -16 nut that locks it in place. The receiver's position can then be changed by moving it along the threads.
- 2 If a narrower chair width is desired, turn the axle receiver to the right. If wider chair or an increase in clearance between the side guards and rear wheels is desired, turn the axle receiver to the left.
- 3 Ensure that the spring lock washer is in place between the lock nut and the axle plate. Once the preferred location is selected, reapply Loctite to the  $\frac{3}{4}$ -16 nut and tighten it to set the location. (See Figure 17.3)

### 17.4 Center of Gravity/Wheel Position

**WARNING** The anti-tip tubes and wheel locks will also require adjusting if fitted.

The rear wheel axle location is preset at the factory. Adjustments are possible by moving the camber tube assembly forward or backwards.

**WARNING** Adjustment of Elevation to a higher seat position may result in changes in your body that you may not be unaccustomed to. Consult your doctor or physical therapist prior to using Elevation.

**WARNING** Use caution when adjusting the seat height; ensure that clothing and body parts are clear of any moving parts of the wheelchair to protect yourself and accompanying persons from possible injury.

**WARNING** Raise and lower seat slowly to avoid any potential risk of tipping and resultant injury. Please consult your Elevation Dealer or other authorized representative for detailed instructions on raising seat height.

#### To raise seat

- 1 Be sure the chair is on a solid level surface and secure it using the wheel locks.
- 2 Squeeze the lever on the right side and with your left hand push up on the main frame or rear wheel to raise the seat.
- 3 Release the lever at the desired height. See Figure 17.9 for location of seat height adjustment lever.

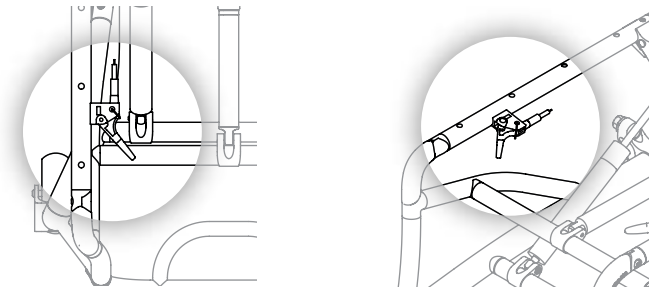
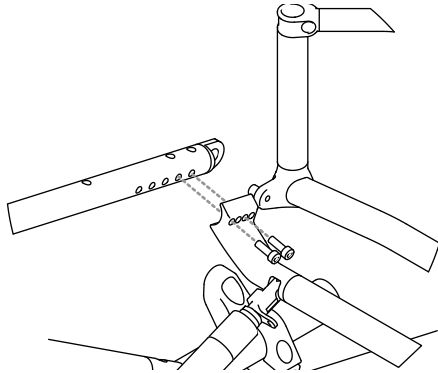


Figure 17.9 Seat height adjustment lever.

#### To lower seat

- 1 Squeeze the right lever and the seat will slowly lower.
- 2 Grab the rear wheel to assist bringing the seat down.
- 3 Release the lever to lock the seat at the desired height. 17.9



**Figure 17.8**  
Seat height bracket adjustment.

- 2 Slide the upper frame crossbar toward the front of the wheelchair to increase the minimum height.
- 3 Alternatively slide the upper frame crossbar rearward to decrease the minimum height.
- 4 Ensure the indexing features are equidistant from the backrest, on each side, to ensure proper functioning of the seat height mechanism.
- 5 Refit and tighten the cap screws once set.

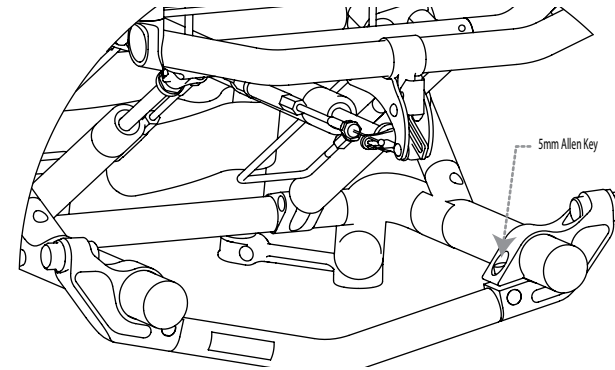
For default positioning of upper frame crossbar, refer to Figure 17.10 (“Seat Tilt and Wheel Position Set-Up Guides”).

### Real-Time Seat Height Adjustment Operating Instructions

The gas springs on your Elevation wheelchair with Dynamic Seat Height Adjustability have a real-time seat height adjustment that is unique in the wheelchair manufacturing industry. In addition to performing all the functions of a conventional wheelchair, the Elevation with Real-Time Seat Height Adjustability enables the user to make quick adjustments of the wheelchair seat height to suit the needs of his/her busy day.

During an episode of spasticity, cramps or any other situation that distracts the user’s attention or causes instability or discomfort, it is recommended that the user not raise seat height until the episode subsides. Consult your physician to make sure you do not suffer from any conditions (e.g. strong contractions, autonomic dysreflexia, osteoporosis, spasticity, or compromised hand function) which make operation of and/or sitting at higher seat elevations potentially harmful. The seat height should only be adjusted on a firm, level surface to avoid any potential risk of injury (tipping over).

### To adjust wheel position



**Figure 17.5**  
Wheel position adjustment.

**WARNING** Camber tube adjustment may increase the tendency of Elevation to tip over either forwards or backwards. The use of anti-tip devices are strongly recommended to avoid accident or injury.

**WARNING** Adjusting the camber bar position will impact anti-tip effectiveness. Anti-tip tubes **MUST** be re-adjusted following a camber bar adjustment.

- 1 Remove the rear wheels.
- 2 Using the 5mm Allen key, loosen the M6 socket head bolts on the top of the axle housing/camber tube until it is possible to slide the assembly forwards and back. (See Figure 17.5)
- 3 Place the camber tube at the desired position, ensure that the camber tube assembly is equally set on both sides by measuring from the camber tube to the rear of the wheelchair.
- 4 Re-tighten the socket head bolts.
- 5 Adjust anti-tip and wheel locks if fitted.
- 6 Fit rear wheels and check anti-tip performance.

For default wheel positions, refer to Figure 17.10.

### 17.5 Camber Angle

Your Elevation comes with a fixed camber angle. To change camber angle, please contact your dealer to obtain an alternative camber tube assembly with the desired camber angle.

### 17.6 Front Casters

The size of the front casters depends on the occupant's preference. Casters and forks are matched to the size of the rear wheels and should only be changed or adjusted by a dealer. Figure 17.6 and Table 17.1 provide reference information for dealer set-up of various caster, fork, and rear wheel combinations.

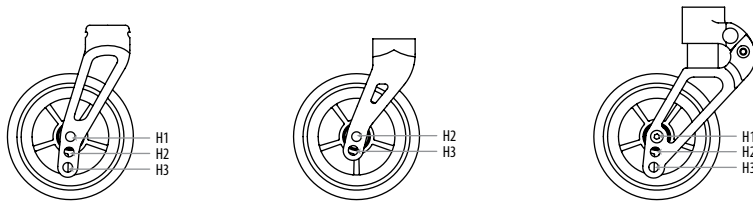


Figure 17.6 Caster set-up.

Table 17.1

PDG 5" Fork		Frog Leg Uni-tine		Frog Leg Suspension	
4" Caster Wheel		4" Caster Wheel		4" Caster Wheel	
24" Rear Wheel	H2	24" Rear Wheel	H3	24" Rear Wheel	H1
	—		spacer		—
25" Rear Wheel	H3	25" Rear Wheel	n/a	25" Rear Wheel	H2
	—		n/a		—
26" Rear Wheel	H3	26" Rear Wheel	n/a	26" Rear Wheel	H3
	spacer		n/a		—
5" Caster Wheel		5" Caster Wheel			
24" Rear Wheel	H1	24" Rear Wheel	H3		
	—		—		
25" Rear Wheel	H2	25" Rear Wheel	H3		
	—		spacer		
26" Rear Wheel	H3	26" Rear Wheel	n/a		
	—		n/a		

The short stem is used for all casters, unless a spacer is fitted. If a spacer is fitted then the long stem is required.

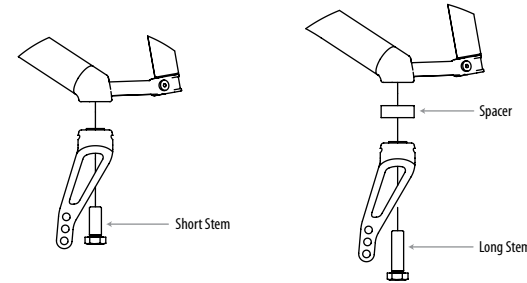


Figure 17.7 Caster assembly.

### 17.7 Seat Height Adjustment

#### Elevation Base Model

In the Elevation base model, the seat height will be set at the factory to correspond to a 0° angle relative to the ground. To adjust the seat height, use the onboard adjustment available on your factory set-up. If desired seat height cannot be achieved, additional strut end fittings are available, allowing for a maximum 6" range of seat tilt angles. Refer to Figure 17.10 and contact your dealer for more information.

#### Elevation Equipped with Real-Time Seat Height Adjustment (Optional)

If equipped with the Real-Time Seat Height Adjustment option, the Elevation's seat height can be changed dynamically, in order to increase reach, change body angle, or improve postural position.

The seat height adjustment range of the Elevation Equipped with Real-Time Seat Height Adjustment is preset at the factory for the user to achieve the most commonly used range of seat heights. However, minor adjustments may be required to optimize an occupant's unique requirements and comfort. To adjust the seat height range, use the onboard adjustment available on your factory set up.

#### Onboard Adjustment

**WARNING** Never attempt to adjust the seat height mechanism with the wheelchair occupied.

- 1 Using the 5mm Allen key, remove the socket head cap screws on the upper frame crossbar, as shown. (See Figure 17.8)