

# BRODA<sup>®</sup>

## REPAIR AND MAINTENANCE MANUAL



## Index

Section I	Suggested Tool Kit	Page 2
Section II	List of Commonly Replaced Parts	Page 3
Section III	Cables	Page 4 - 7
Section IV	Cable Handles	Page 8 – 10
Section V	Casters and Wheels	Page 11 - 12
Section VI	5” TotalLock Caster	Page 13 – 16
Section VII	5” Non-Locking Caster	Page 17 – 20
Section VIII	5” Directional-Lock Caster	Page 21 – 24
Section IX	5” Fixed Caster	Page 25 – 28
Section X	4” TotalLock Solus Caster	Page 29 – 33
Section XI	6” Single Directional Locking Caster	Page 34 – 37
Section XII	6” and 8” Multi Directional Lock Caster	Page 38 – 41
Section XIII	Re-synchronizing	Page 42 – 44
Section XIV	Gas Cylinders	Page 45 – 48
Section XV	Seat Depth Extensions	Page 49
Section XVI	Vinyl Straps	Page 50 – 51
Section XVII	Oxygen Tank	Page 52

## Suggested Tool Kit

A variety of fasteners are used in the assembly of Broda's products. The majority of these are 1/4" or 5/16" diameter bolts and nuts. However some of the fasteners used are supplied with the components which are purchased offshore hence some of these are metric.

Listed below are the most common tools used in the assembly of our chairs, from time to time you may be required to do repairs or modifications in the field. Therefore we suggest the following items to make your job easier.

<b>Qty.</b>	<b>Item</b>	<b>Where Used</b>
2	7/16" combination wrenches	Nuts & bolts used to secure seat to base frame, adjusting seat height on the Pedal Chair.
2	1/2" combination wrenches	Nuts & bolts used to secure gas cylinders, adjusting arm heights (all models).
1	3/4" combination wrench	Nut used to Secure 5" casters on the front of Pedal and Basic chairs.
1	13mm combination wrench	Bolts used to secure rear casters in the Elite Chair line.
1	17mm combination wrench	Adjustments to lock nut on the stem of the gas cylinders.
1	5/8" combination wrench	Axle bolt & lock nut on wheelchair models.
1	10mm combination wrench	Nuts used to secure wheel locks on wheelchair models.
1	#2 Robertson screwdriver (red)	Screws which fasten cable handles, screw in the footrest rod.
1	#3 Robertson screwdriver (black)	Screws which secure the armrests to chair.
1	3mm Allen wrench	Set screw used to secure pedals on the Elite Chair line and on the housing bolts of the 4" Solus caster.
1	5/32" Allen wrench	Set screw used in conjunction with arm heights.
1	Heat gun	Use for heating vinyl straps during strap replacement or reversal.
1	Hand Rivet Gun	Used for installation of vinyl straps.

## List of Commonly Replaced Parts

Part No.	Description
ACS A-3	black urethane plastic arm rests
PRT-CABLE	control cable for gas cylinder release mechanism.
PRT-CABLEACT	actuator for gas cylinder release mechanism.
PRT-CABLEHANDLE	control handle for gas cylinder release mechanism.
PRT-CABLERELEAS	complete release mechanism for gas cylinders consisting of the prt-cable, prt-cableact, and prt-cablereleas.
PRT-CASTER4"	four inch white solus caster.
PRT-CASTER5"	five inch grey total lock caster.
PRT-CASTER5" NL	five inch grey non-locking caster.
PRT-CASTERFIX5"	five inch grey fixed caster with brake.
PRT-CASTER5" DL	five inch grey directional locking caster.
PRT-CASTER6" SL	six inch white single-directional locking caster.
PRT-TIRE 5"	five inch grey tire for five inch casters.
PRT-MDLC BOLTS	MDLC mounting bolts 8mm x 10mm metric.
PRT-MDLC6"	six inch grey multi-directional locking caster.
PRT-MDLC8"	eight inch grey multi-directional locking caster.
PRT-PAB4	300N locking gas cylinder with a nine inch long body
PRT-PAB5	300N locking gas cylinder with an eleven inch long body
PRT-PAB5 NL	300N non-locking gas cylinder with an eleven inch long body
PRT-STRAP	vinyl straps used on chairs. you must specify the color, seat width of the chair, and location of the strap on the chair when ordering.

**Note:** Please include the model number and serial number of the chair whenever you are ordering parts. These can be found on a sticker that is attached to the cross member on the back of the seat back.

## Cables

### Maintenance

The cables do not require any maintenance.

### Removal and Installation

The cable is used in conjunction with a cable handle and an actuator to control the function of the gas cylinder. The cable is held in place on the handle end by either a cable housing retaining clip or a retaining bolt or screw on earlier models. On the actuator end the cable hooks into the lever that depress the control pin on the cylinder and the cable housing either clips into the actuator housing or is held in place by a cable tie.

### Steps:



1. Unclip the cable from the actuator.



2. Cut the cable ties that secure the cable to the frame of the chair (carefully note the location of the cable ties and how the cable is threaded around the frame of the chair.)



3. Remove the mounting screw from the cable handle



4. With a flat blade screwdriver gently pry the cable housing retaining clip from the cable end of the handle.



5. Remove the small screw and nut from the lever part of the handle using a #2 Robertson (red) or a flat blade screwdriver and a 3/8" wrench.



6. Remove the old cable by spreading the plastic finger locks with a flat blade screwdriver and sliding the cable housing down and then pulling it out. (Side and Top view)



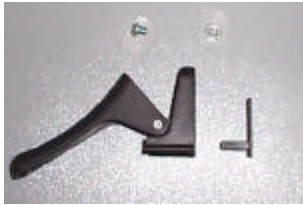
7. Insert the end of the cable housing into the tear drop shaped slot located in the fixed part of the handle and push it up into the small hole past the plastic finger locks.



8. Reinstall the cable housing retaining clip (left) that was removed in step 4 (this will hold the cable housing in the fixed part of the handle).



9. Feed the cable into the narrow slot located in the lever part of the handle.



10. Reinstall the small screw and nut removed in step 5 into the small hole located the lever (this will stop the cable from slipping out of the lever).



11. Remount the handle assembly to the frame of the chair using the screw removed in step 3.



12. Thread the new cable around the frame of the chair the same as the old one and install new cable ties where necessary.



13. Hook the end of the cable into the lever in the actuator and clip the cable housing into the actuator housing.



14. Install a new cable tie around the end of the cable housing and the actuator, if the chair was originally equipped with one.

Note: This procedure may vary on earlier models.

## Cable Handles

### Maintenance:

The Cable handles do not require any maintenance.

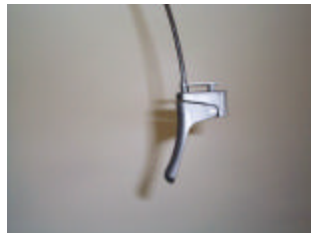
### Removal and Installation

The cable handle is used in conjunction with a cable and actuator to control the function of the gas cylinder. The handle is held in place by a #8 x 1 1/2" mounting screw through the frame of the chair. The cable housing is held in place by a retaining clip, which is held in place by the mounting screw. The cable itself is held in place by a small screw with a nut on the end.

### Steps:



1. Remove the mounting screw.



2. With a flat blade screwdriver gently pry the cable housing retaining clip from the cable end of the handle.



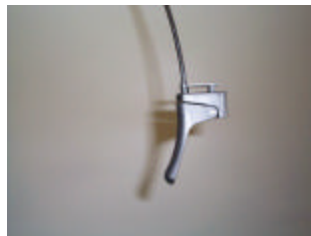
3. Remove the small screw and nut from the lever using a #2 Robertson (red) or a flat blade screwdriver and a 3/8" wrench.



4. Remove the old cable by spreading the plastic finger locks with a flat blade screwdriver and sliding the cable housing down and then pulling it out. (Side and top view.)



5. Insert the end of the cable housing into the tear drop shaped slot located in the fixed part of the handle and push it up into the small hole past the plastic finger locks.



6. Install the cable housing retaining clip that was removed in step 2 (this will hold the conduit into the fixed part of the handle.)



7. Feed the cable into the narrow slot located in the lever part of the handle.



8. Reinstall the small screw and nut removed in step 3 into the small hole located in the lever (this will stop the cable from slipping out of the lever.)



9. Mount the handle assembly to the frame of the chair using the screw removed in step 1.

## Casters and Wheels

There are eight current and four non-current types of wheels used on Broda chairs.  
The twelve different types are:

### Current Wheels

Caster Type	Description Function	Where Used
5" TotalLock Caster <b>Part No. PRT-CASTER5"</b>	5" Grey wheel, zinc plated housing, black brake pedal  Rolls and swivels when unlocked. Swivel and rolling lock when pedal is depressed.	Standard on front and left rear of basic chairs. Model No's 30V, 30VT, and 80V and on the front of all elite chair prior to May 28, 1997 Available on other models by request except gliders.
5" Non-Lock Caster <b>Part No. PRT-CASTER5" NL</b>	5" Grey wheel, zinc plated housing, no brake pedal  Rolls and swivels. It has no lock or brake of any type	Standard on front of pedal chairs. Model No's 48, and 48-500. Available on other models by request.
5" Directional-Lock Caster <b>Part No. PRT-CASTER5" DL</b>	5" Grey wheel, zinc plated housing, blue pedal  Rolls and swivels. It has a directional (swivel) lock when the pedal is depressed.	Standard on the right rear of basic chairs. Model No's 30V, 30VT, and 80V.
5" Fixed Caster <b>Part No. PRT-CASTERFIX5"</b>	5" Grey wheel, zinc plated housing, black brake pedal  Rolls and doesn't swivel. The wheel locks when the pedal is depressed	Standard on the rear of pedal chairs. Model No. 48
5" TotalLock Solus Caster <b>Part No. PRT-CASTER5" SL</b>	5" Grey wheel, White painted housing, grey brake pedal  Rolls and swivels when unlocked. Swivel and rolling lock when pedal is depressed.	Standard on the front of all elite chairs model no's 85V, 85V-550, 35V, 35V-550, 75V, 75V-550, 785, and 785-550 since May 15, 2000
6" Single Directional Locking Caster <b>Part No. PRT-CASTER6" SL</b>	6" Grey wheel, White painted housing, Chrome brake pedal  this caster has a three position pedal with a totallock position (doesn't roll or swivel), a directional lock position (rolls but stays in the trailing position) and a swivel mode where the caster is free to swivel and roll)	Standard on the rear of all elite chairs model no's 85V, 85V-550, 35V, 35V-550, 75V, 75V-550, 785, and 785-550 since May 28, 1998
20" Mag Style wheels <b>Part No. PRT-WHEEL20"</b>	20" Mag Style wheel with handrim and patient operated wheel locks	Standard on all 500 or 550 model chairs. (XX-500, XX-550)
24" Mag Style wheels <b>Part No. PRT-WHEEL24"</b>	24" Mag Style wheel with handrim and patient operated wheel locks	Available by request on all 500 or 550 Model chairs. (XX-500, or XX-550)

### Non-Current Wheels

<p>4" TotalLock Solus Caster</p> <p><b>Part No.</b> PRT-CASTER4" SL</p>	<p>4" Grey wheel, White painted housing, grey brake pedal</p> <p>Rolls and swivels when unlocked. Swivel and rolling lock when pedal is depressed.</p>	<p>Standard on the front of all elite chairs model no's 85V, 85V-550, 35V, 35V-550, 75V, 75V-550, 785, and 785-550 between May 28, 1998 and May 15, 2000</p>
<p>8" Fixed Wheel</p> <p><b>Part No.</b> PRT-WHEEL8"</p>	<p>8" Grey wheel with 5 piece step on brake</p> <p>This wheel doesn't swivel and has a separate step on brake</p>	<p>Standard on Basic chair models 30V, 30VT, and 80V prior to February 14, 1997</p>
<p>6" Multi-Directional Caster</p> <p><b>Part No.</b> PRT-MDLCASTER6"</p>	<p>6" Grey wheel, chrome plate housing, chrome plate brake pedal mounted to the side of the caster.</p> <p>this caster has a three position pedal with a totallock position (doesn't roll or swivel), a directional lock position that locks in the trailing or leading position but allows the caster to roll and a swivel mode where the caster is free to swivel and roll)</p>	<p>Used on elite chairs models 35V, 75V, 85V, and 785 between December 22, 1997 and May 28, 1998.</p>
<p>8" Multi-Directional Caster</p> <p><b>Part No.</b> PRT-MDLCASTER8"</p>	<p>6" Grey wheel, chrome plate housing, chrome plate brake pedal mounted to the side of the caster.</p> <p>this caster has a three position pedal with a totallock position (doesn't roll or swivel), a directional lock position that locks in the trailing or leading position but allows the caster to roll and a swivel mode where the caster is free to swivel and roll)</p>	<p>Used on elite chair models 35V, 75V, and 85V prior to December 22, 1997.</p>

## 5" TotalLock Caster

### Maintenance and Repair:

These casters are designed to be maintenance free. The bearings in these casters are permanently lubricated and should not require further lubrication. The brake and directional lock on these casters are not adjustable or repairable if they fail the caster must be replaced. The only repair that can be done to these casters is to change the wheel itself.

### Caster Removal and Installation Instructions:

This Caster is mounted on to a stud along with a dust cap and is held in place by a 12 mm retaining nut (19 mm or 3/4" wrench). The stud is inserted into the front leg of the chair and held in place by a 1/4" X 1 1/2" bolt through the front leg of the chair.

#### Steps:



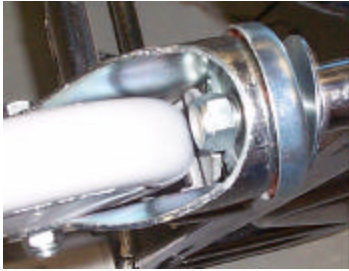
1. Tip the chair forward so that the chair is lying on its front with the back wheels up in the air.



2. Remove the retaining nut that is located inside the caster housing above the tire.



3. Slide the old caster off of the mounting stud leaving the dust cap in place.



4. Make sure the dust cap is still in place and slide the new caster onto the mounting stud.



5. Reinstall and tighten the retaining nut.

## Wheel Removal and Installation Instructions

### Steps:



1. Tip the chair forward so that the chair is lying on its front with the back wheels up in the air.



2. Remove the nut from the axle bolt (2 x 14mm or 9/16" wrenches.)



3. Slide the axle bolt out of the caster housing.



4. Remove the old wheel from the caster housing.



5. Remove the thread guards from the old wheel.
6. Place the thread guards on the new wheel.



7. Insert the new wheel with the thread guards into the housing.



8. Insert the axle bolt into the caster housing.



9. Reinstall and tighten the axle bolt.

## 5" Non-Locking Caster

### Maintenance and Repair:

These casters are designed to be maintenance free. The bearings in these casters are permanently lubricated and should not require further lubrication.

### Caster Removal and Installation Instructions:

This Caster is mounted on to a stud along with a dust cap and two spacers this held in place by a 12 mm retaining nut (19 mm or ¾" wrench). The spacers are located between the dust cap and the caster and the caster and the retaining nut. The stud is inserted into the front leg of the chair and held in place by a ¼" X 1 ½" bolt through the front leg of the chair.

#### Steps:



1. Tip the chair forward so that the chair is lying on its front with the back wheels up in the air.



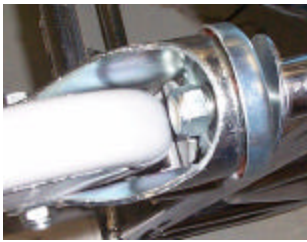
2. Remove the retaining nut that is located inside the caster housing above the tire.



3. Remove the lower spacer that is located between the retaining nut and the caster.



4. Slide the old caster off of the mounting stud leaving the dust cap and upper spacer in place.



5. Make sure the dust cap and upper spacer is still in place and slide the new caster onto the mounting stud.



6. Reinstall the lower spacer.



7. Reinstall and tighten the retaining nut.

## Wheel Removal and Installation Instructions

### Steps:



1. Tip the chair forward so that the chair is lying on its front with the back wheels up in the air



2. Remove the nut from the axle bolt (2 x 14mm or 9/16" wrenches).



3. Slide the axle bolt out of the caster housing.



4. Remove the old wheel from the caster housing.



5. Remove the thread guards from the old wheel.

6. Place the thread guards on the new wheel.



7. Insert the new wheel with the thread guards into the housing.



8. Insert the axle bolt into the caster housing.



9. Reinstall and tighten the axle bolt.

## 5" Directional-Lock Caster

### Maintenance and Repair:

These casters are designed to be maintenance free. The bearings in these casters are permanently lubricated and should not require further lubrication. The Directional-locks on these casters are not adjustable or repairable if they fail the caster must be replaced. The only repair that can be done to these casters is to change the wheel itself.

### Caster Removal and Installation Instructions:

This Caster has an integral mounting stud that is inserted into the right rear leg as viewed from the back of the chair and held in place by a 1/4" X 1 1/2" bolt through the right rear leg of the chair.

#### Steps:



1. Tip the chair forward so that the chair is lying on its front with the back wheels up in the air



2. Remove the nut from the 1/4" bolt located on the right rear leg of the chair (as viewed from the back) just above the caster.



3. Remove the bolt from the right rear leg by sliding it out of the hole.



4. Pull the old caster out of the right rear leg of the chair.



5. Insert the new caster into the right rear leg of the chair being careful to make sure the bolt hole in the stud of the caster lines up with the bolt hole in the right rear leg of the chair.



6. Reinsert the bolt into the hole on the right rear leg of the caster.



7. Reinstall the nut onto the above bolt and tighten.

## Wheel Removal and Installation Instructions

### Steps:



1. Tip the chair forward so that the chair is lying on its front with the back wheels up in the air.



2. Remove the nut from the axle bolt (2 x 14mm or 9/16" wrenches).



3. Slide the axle bolt out of the caster housing.



4. Remove the old wheel from the caster housing.



- 5. Remove the thread guards from the old wheel.
- 6. Place the thread guards on the new wheel.



7. Insert the new wheel with the thread guards into the housing.



8. Insert the axle bolt into the caster housing.



9. Reinstall and tighten the axle bolt.

## 5" Fixed Caster

### Maintenance and Repair:

These casters are designed to be maintenance free. The bearings in these casters are permanently lubricated and should not require further lubrication. The Brakes on these casters are not adjustable or repairable if they fail the caster must be replaced. The only repair that can be done to these casters is to change the wheel itself.

### Caster Removal and Installation Instructions:

This Caster has an integral mounting stud that is inserted into the rear leg of the chair and held in place by a 1/4" X 1 1/2" bolt through the rear leg of the chair.

#### Steps:



1. Tip the chair forward so that the chair is lying on its front and the rear wheels are up in the air.



2. Remove the nut from the 1/4" bolt located on the rear leg of the chair just above the caster.



3. Remove the bolt from the rear leg by sliding it out of the hole.



4. Pull the old caster out of the rear leg of the chair.



5. Insert the new caster into the rear leg of the chair being careful to make sure the bolt hole in the stud of the caster lines up with the bolt hole in the rear leg of the chair.



6. Reinsert the bolt into the hole on the rear leg of the caster.



7. Reinstall the nut onto the above bolt and tighten.

## Wheel Removal and Installation Instructions

### Steps:



1. Tip the chair forward so that the chair is lying on its front with the rear wheels up in the air.



2. Remove the nut from the axle bolt (2 x 14mm or 9/16" wrenches).



3. Slide the axle bolt out of the caster housing.



4. Remove the old wheel from the caster housing.



5. Remove the thread guards from the old wheel.

6. Place the thread guards on the new wheel.



7. Insert the new wheel with the thread guards into the housing.



8. Insert the axle bolt into the caster housing.



9. Reinstall and tighten the axle bolt.

## 4" TotalLock Solus Caster

### Maintenance and Repair:

These casters are designed to be maintenance free. The bearings in these casters are permanently lubricated and should not require further lubrication. There are no adjustments on this caster and the only repair that can be done to them is to replace the brake pedal if it brakes.

### Caster Removal and Installation Instructions:

This Caster has an integral mounting stud that is inserted into the front leg of the chair and held in place by a 1/4" X 1 1/2" bolt through the front leg of the chair.

#### Steps:



1. Tip the chair forward so that the chair is lying on its front with the back wheels up in the air.



2. Remove the nut from the 1/4" bolt located on the front leg of the chair just above the caster.



3. Remove the bolt from the front leg by sliding it out of the hole.



4. Pull the old caster out of the front leg of the chair.



5. Insert the new caster into the front leg of the chair being careful to make sure the bolt hole in the stud of the caster lines up with the bolt hole in the front leg of the chair.



6. Reinsert the bolt into the hole on the front leg of the caster.



7. Reinstall the nut onto the above bolt and tighten.

## Brake Pedal Removal and Installation Instructions

### Steps:



1. Remove the caster from the chair as per above Removal and Installation instructions.



2. Remove the grey rubber dust boot from the top of the caster by prying up on the bottom edge of the dust boot between the dust boot and the white housing, this may take bit of effort, as they are quiet tight sometimes.



3. Remove the Allen screws that hold the two halves of the caster together. These Allen screws are located one side of the caster at the top.



4. Pry the two halves of the caster apart. Be careful to observe where all the various parts are install and try not to knock any of them out of place.



5. Lift the old brake pedal out of the housing.



6. Place the new brake pedal into the rear of the housing above the silver colored brake shoe. Make sure that the round tab on the brake pedal is inserted into the round hole at the rear of the caster housing and the wide end of the pedal is sticking out the back of the caster. The same as the old brake pedal.



7. Reinstall the other half of the housing. Be careful to make sure that the pins on the brake shoe and the brake pedal are lined up with the appropriate hole.



8. Reinstall and tight the Allen screws.



9. Reinstall the rubber dust boot. Make sure the flats on the inside of the dust boot are lined up with the flats on the side of the caster housing.



10. Reinstall the caster onto the chair as per above Installation instructions.

## 6" Single Directional Locking Caster

### Maintenance and Repair:

These casters are designed to be maintenance free. The bearings in these casters are permanently lubricated and should not require further lubrication. There are no adjustments or repair for this caster should the caster become defective it must be replaced.

### Replacement Instructions:

This caster has a stem that is inserted into the rear leg of the chair and is held in place by two mounting bolts located above the caster on the front and rear of the rear leg of the chair. The caster functions are controlled by pedals mounted on each side of the chair at the rear. These pedals control the function of casters at the same time and are mounted on a hexagonal shaft that run through the frame of the chair from one side to the other and are held in place by set screw located on the underside of the pedal. These casters must be synchronized with each other during installation as per the following instructions.

### Steps:



1. Identify the caster that is not functioning properly.



2. Adjust the pedal so that the caster, which is still fully functional, is locked in the directional lock mode (the caster is locked from rotating and is trailing behind the chair and the wheel still spins).



3. Use a 3mm Allen-wrench to loosen the setscrew in the pedal beside the caster you are replacing. Remove the pedal from the hexagonal shaft. Check to make sure there are no burrs on the shaft where the pedal was secured. If there are burrs present use a file to remove them before proceeding to the next step.



4. Use a 13mm wrench to remove the mounting bolts that secure the faulty caster.



5. Slide the hexagonal shaft out of the frame of the chair approximately 6", on the side with the pedal still attached (next to the good caster).



6. Remove the faulty caster from the chair.



7. Holding the stem of the replacement caster in one hand determine if it is set in the directional lock mode (the caster housing should not rotate around the stem but the wheel still spins). If so skip to step 10.
8. Set the caster in the directional lock mode. By inserting a large flat blade screwdriver into the hexagonal hole located in the caster stem and rotating counter clockwise, when viewing the caster with the blue side of the stem facing towards you, until it clicks. The head of a ¼” bolt will fit in the hexagonal hole and it can be held and rotated with a pair of locking pliers.



9. Hold the stem of the caster and swivel the caster housing until the directional lock engages. The caster won't swivel but the wheel still rotates in the fork.



10. Install the caster in the chair frame with the wheel trailing **behind** the chair the same as the other caster. The blue side of the stem goes to the right.



11. Reinsert the hexagonal rod through the new caster (a gentle tap may be required here).



12. Reinstall and tighten the mounting bolts (the use of Lock-Tite is recommended).



13. Reinstall the pedal removed in step 3 and tighten the setscrew.

## 6" and 8" Multi Directional Lock Caster

### Maintenance and Repair:

These casters are designed to be maintenance free. The bearings in these casters are permanently lubricated and should not require further lubrication. There are some adjustments that can be done on this caster. The brakes can be adjusted to compensate for wear and the casters can and be resynchronized if they become unsynchronized.

### Removal and Installation

This caster has a stem that is inserted into the rear leg of the chair and is held in place by two mounting bolts located above the caster on the front and rear of the rear leg of the chair. The caster functions are controlled by pedals mounted on each side of the chair at the rear. These pedals control the function of casters at the same time. They are mounted on a hexagonal shaft that run through the frame of the chair from one side to the other and are held in place by set screw located on the underside of the pedal and a chrome end-cap. These casters must be synchronized with each other during installation as per the following instructions.

### Steps:



1. Identify the caster that needs to be replaced.



2. Adjust the pedal so that the caster, which is not being replaced, is locked in the directional-lock mode (the caster is locked from rotating and is trailing behind the chair and the wheel still spins).



3. Remove the end-cap from the hex shaft by placing a flat blade screwdriver between the pedal and the end-cap and prying.



4. Use a 3mm Allen-wrench to loosen the setscrew in the pedal beside the caster you are replacing. Remove the pedal from the hexagonal shaft. Check to make sure there are no burrs on the shaft where the pedal was secured. If there are burrs present use a file to remove them before proceeding to the next step.



5. Use a 13mm wrench to remove the mounting bolts that secure the faulty caster.



6. Slide the hexagonal shaft out of the frame of the chair approximately 6", on the side with the pedal still attached (next to the good caster).



7. Remove the faulty caster from the chair.



8. Holding the stem of the replacement caster in one hand determine if it is set in the directional lock mode (the caster housing should not rotate around the stem but the wheel still spins). If so skip to step 10.
9. Set the caster in the directional lock mode. By inserting a large flat blade screwdriver into the hexagonal hole located in the castor stem and rotate it until you hear a click (the head of a ¼" bolt will fit in the hexagonal hole and it can be held and rotated with a pair of locking pliers).



10. Hold the stem of the caster and swivel the caster housing until the directional lock engages. The caster won't swivel but the wheel still rotates in the fork.



11. Install the caster in the chair frame with the wheel trailing **behind** the chair the same as the other caster.



12. Reinsert the hexagonal rod through the new caster (a gentle tap may be required here).



13. Reinstall and tighten the mounting bolts (the use of Lock-Tite is recommended).



14. Reinstall the pedal removed in step 3 and tighten the setscrew.



15. Install new end-cap.

16. Check for proper function. If the casters are not synchronized refer to the following instructions on re-synchronizing the casters.

## Re-synchronizing

### Steps:



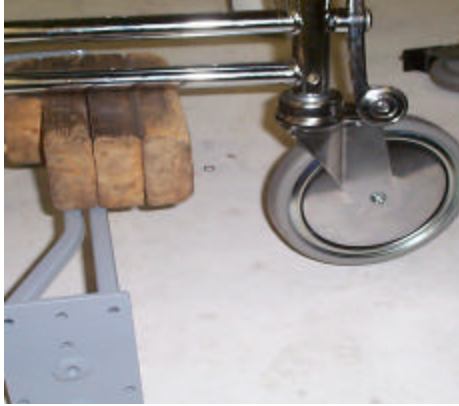
1. Identify the caster that is not functioning properly (the mounting bolts are probably missing from the problem caster). If both casters are malfunctioning skip to step 3 do one caster and then repeat for second caster.



2. Adjust the pedal (the rear part of the pedal is in the down position) so that the caster that is still functioning is in the directional lock mode (the caster won't swivel but the wheel still spins) with the wheel in the trailing position.



3. Use a prop to elevate the rear of the chair so that the wheels are off the floor.



4. Rotate the problem castor counter clockwise until it will no longer rotate (do not force once resistance is felt).
5. Rotate the castor clockwise six full turns.



6. Install the two mounting bolts (finger tight only at this time). If doing both castors return to step 1 and proceed with the second castor now.
7. Remove the prop elevating the chair off the floor.
8. Check the function of the castors. If the castors are synchronized tighten the bolts with a 13mm wrench. Check the bolts in the other castor to make sure the bolts are tight.
9. If one of the castors is still not functioning properly remove the two mounting bolts and rotate the castor counterclockwise one more full turn.
10. Reinstall and tighten the mounting bolts.

## Brake Adjustment

### Steps:



1. Tip chair forward so that the rear casters are elevated. Inside the housing above the wheel you will see a hexagonal plastic brake shoe with slots in it.



2. Insert a flat blade screwdriver into the slot.
3. Turn the brake shoe counter clockwise one half turn.
4. Test the brake. Repeat step 3 until desired brake pressure is achieved (caution over adjustment could result in tire or brake damage).

## Gas Cylinders

The use of gas charged springs on Broda products allow the caregiver to easily make adjustments to the tilt, recline, and leg rest with a minimum amount of effort. The gas cylinders contain Nitrogen gas, it is not flammable nor is it toxic. The cylinders provide a lifting force of 300 Newtons (approx. 68Lbs). In other words the cylinders reduce the amount of weight the care giver has to lift by 68Lbs.

Part No.	Description	Where Used
<b>Part No.</b> PRT-PAB4	300N locking gas cylinder with a nine inch long body	Used for the seat tilt on pedal chairs (48's) and full recliners (75V).
<b>Part No.</b> PRT-PAB5	300N locking gas cylinder with a eleven inch long body	Used for the leg rest and back recline on all models and for the tilt on the 785's, 35V's, 85V's, and 885's.
<b>Part No.</b> PRT-PAB5 NL	300N non-locking gas cylinder with an eleven inch long body	Used on the 785's and 885's as the right hand tilt cylinder. This cylinder is also used in conjunction with the regular PAB5 when more lift is required.

### How do they work?

On the end of the stem of the cylinder is a small pin. When the operator depresses the Handle this pulls on the cable which in turn pulls on a small lever inside the actuator mechanism into which the stem of the cylinder is mounted. This depresses the pin and this in turn opens a valve located inside the barrel of the cylinder. This allows for changes in position. When the operator releases the handle the valve closes and locks the cylinder in the desired position.

Over the years Broda has used many different types of actuators to operate the gas cylinders used on our products. Although they may look different their function is one and the same (to push against the pin and open the valve that controls the cylinder). If the cylinder is not properly adjusted when mounted in the actuator problems are sure to arise.

### Maintenance

The gas cylinders do not require any maintenance. Although they may need to be adjusted do to wide temperature variations or cable stretch.

**When adjusting the cylinder it is important that you do not damage the stem on the cylinder. Small scratches left by applying the jaws of pliers or Vice Grips directly to the shaft while making adjustments will destroy the seal and allow the gas inside the cylinder to escape. Use a piece of vinyl strapping or rubber to protect the cylinder shaft from the jaws of the tool you are using to make the adjustments!**

## Trouble shooting for cylinders

Often we experiencing problems with cylinders on Broda chairs the cylinder is not bad it just needs adjustment. There are two common adjustments.

1. The pin that the cable handle pulls on at the end of the cylinder is not connected correctly.
2. Or the handle or cable assembly have become broken or disconnected.

*The cable mechanism works exactly like a bicycle brake and is easy to check when experiencing problems.*

Other solutions to common problems are listed below.

- 1. Chair is not reclining or tilting when cylinder handle is pulled.**
  - a. The pin in the end of the cylinder is not being depressed when the handle is pulled.  
*Action to take:* See adjustment steps on page 46.
- 2. The chair seems to slowly slide out of position**
  - a. The pin in the end of the cylinder may be still partially depressed.  
*Action to take:* See adjustment steps on page 46.

### Adjustment Steps



**Note: Cylinder does not need to be removed from the chair to make this adjustment.**

1. Loosen the lock nut located on the stem of the gas cylinder next to the actuator (17mm or 11/16" wrench).
2. From the above instruction determine whether you want to wind the stem further into the actuator or further out of the actuator.



**Note:** When adjusting cylinders with tools that come in contact with the cylinder rods. A cloth, piece of vinyl strap, or some other protective material must be used to protect the sliding surface of the rod. If the rod becomes scratched or scarred it will puncture the seal on the cylinder and the cylinder will fail.

**Damaging a cylinder in this fashion voids the manufacturers warranty.**

3. Wind the stem in the correct direction one half turn. When viewing the cylinder with stem pointing towards you turn the stem clockwise to wind the stem out of the actuator and counter-clockwise to wind the stem into the actuator.
4. Check the function of the cylinder and repeat steps 3 & 4 until the cylinder functions properly.
5. Tighten the lock nut loosened in step 1.

## Removal and Installation Steps



Old (left) and new (right) actuators respectively



1. Remove the 5/16" mounting bolt from the end of the cylinder (requires 2 x 1/2" wrenches).



2. Loosen the lock nut located on the stem of the cylinder by the actuator.



3. Wind the stem of the cylinder out of the actuator.
4. Wind the stem of the new cylinder into the actuator.



5. Reinstall the 5/16" mounting bolt.
6. Adjust the cylinder as per the above adjustment instructions.

## Seat Depth Extension Models 35V, 75V, 85V, 80V, and 30VT

**Note: Please call factory at 1-800-327-1692. When attempting a Seat Depth Extension. Please have serial number of chair you are working on.**

### Steps:

- 1) Remove the front strap from the seat by cutting the strap and drilling out the rivets that hold it in place with a 3/16" drill.
- 2) Detach the gas cylinder from the leg rest by removing the bolt that fastens the front of the cylinder to the leg rest. Requires two half inch wrenches. The cylinder is located on the left-hand side of the chair as seated in the chair.
- 3) Detach the leg rest from the front of the seat by removing the pivot bolts that fasten the leg rest to the seat. Requires two half inch wrenches.
- 4) Remove the two chrome seat plugs from the front of the seat frame (one on each side of the seat).
- 5) Install the two new seat extension plugs and secure them to the seat frame with the 1/4" x 1 1/4" fasteners supplied. **Make sure the rivet holes on the seat extension plug are on the outside when the plugs are installed.**
- 6) Reinstall the leg rest using the fasteners that were removed in step 3.
- 7) Install the cylinder extension bar (fcp-pabbar) onto the cylinder by sliding it on over the cylinder with the forked end towards the front of the chair and bolting in the appropriate hole. Use the fourth hole from the end of the fork for a three inch seat extension and the third hole from the end for a 1 1/2" seat extension. **The holes in the fork are offset to one side. The extension bar should mounted with this side upwards.** Use a 5/16" x 2 1/4" Long bolt to attach extension bar to cylinder.
- 8) Attach the front end of the extension bar to the leg rest with a 5/16" x 2 1/4" long bolt and appropriate spacers to keep the cylinder running straight.
- 9) Install new straps on seat extension plugs. Refer to strap installation instructions.

## Vinyl Straps

### Maintenance

The only maintenance required for the vinyl straps is general cleaning with an ammonia or chlorine based cleaners (Do Not use petroleum based cleaners).

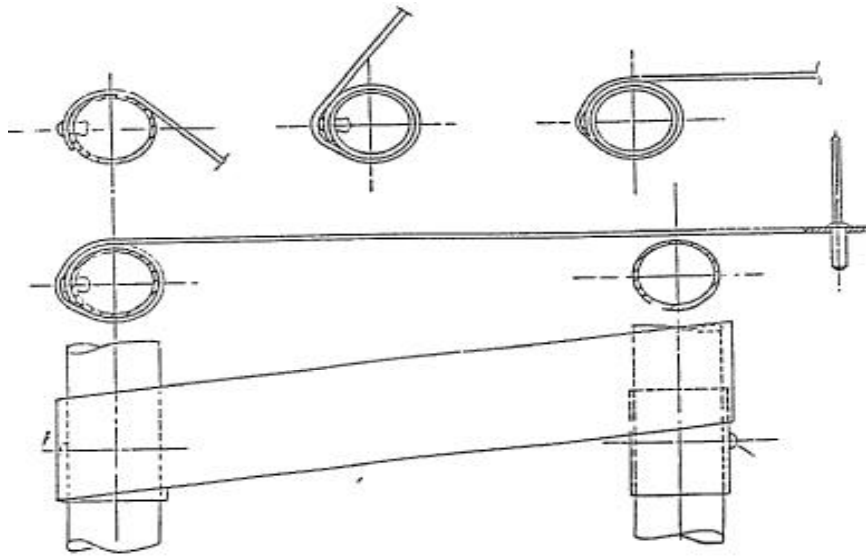
### Installation/Replacement Instructions

The vinyl strapping has both elasticity and memory retention this allows each strap to conform to the resident as an independent unit. Occasionally a strap may lose memory or be cut. This makes it necessary to replace them. These straps are installed under tension this is done by heating the straps so that they are soft and pliable and this enables them to be easily stretched during installation. They are held in place by riveting them to the steel frame of the chair and then wrapping them around the frame over the top of the rivet. This is done the same for both ends of the strap.

#### Steps:

- 1) Remove the old strap by cutting it in two and drilling out the rivets with a 3/16" drill bit.
- 2) Heat the strap either by placing it in a pot of boiling water for a couple of minutes or by laying it out and heating it with a heat gun.
- 3) Rivet one end of the strap with a 3/16" diameter 3/8" long rivet, through the precut hole in the end of the strap to the frame with the crowned side of the strap up (shiny side).
- 4) Wrap the strap around the frame, over the top of the rivet.
- 5) Stretch the strap and wrap it around the other side of the frame next the rivet hole (do not cover the rivet hole with the strap).
- 6) Rivet the other end of the strap, through the precut hole in the end of the strap to the frame.
- 7) Stretch the strap and move the offset strap over to cover the rivet.

Note: If the strap cools off during the installation you can reheat it with a heat gun.



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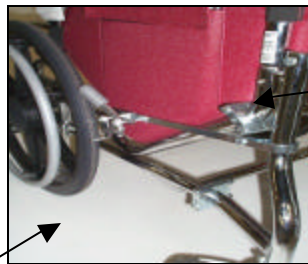
## Oxygen Tank Holder

### Installation instructions



<b>Installation time:</b>	<b>10 minutes</b>
Tools required:	<b>1 – 1/2" wrench</b> <b>2 – 7/16" wrenches</b>

1. Choose desired location on chair frame for mounting clamps. (**Please note: certain locations may hinder the functions of the chair i.e. elevating leg rest, swing away arm rests, back recline, seat tilt.**)
2. Remove center bolts that secure clamps to the tank cage. (Note placement of washers and spacers before disassembling)
3. Remove bolts that secure clamp pieces together.
4. Position clamps around tubular frame of chair at desired location.



5. Using the two 7/16" wrenches, tighten the bolts that will secure the clamps around the chair frame with threaded hole facing outward.
6. Install the 5/16" bolts removed in Step 2 through the slots in tank cage and using 1/2" wrench secure cage to clamp block installed in Step 4.
7. Insert oxygen tank and use hand wheel to secure.



**BRODA does not recommend the use of this accessory with other manufacturer's products**