

TOP END[®]

Excelerator[™]

Li'l Excelerator[™]

Excelerator XLT[™]

Excelerator XLT 2000[™]

DEALER: THIS MANUAL MUST BE GIVEN TO THE USER OF THE WHEELCHAIR.

USER: BEFORE USING THIS WHEELCHAIR, READ THIS MANUAL AND SAVE FOR FUTURE REFERENCE.



Yes, you can.®

SPECIAL NOTES

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WARNING

DO NOT OPERATE THIS EQUIPMENT WITHOUT FIRST READING AND UNDERSTANDING THIS MANUAL. IF YOU ARE UNABLE TO UNDERSTAND THE WARNINGS, CAUTIONS AND INSTRUCTIONS, CONTACT YOUR INVACARE DEALER OR INVACARE CUSTOMER SUPPORT AT (800) 532-8677 BEFORE ATTEMPTING TO USE THIS EQUIPMENT - OTHERWISE INJURY AND/OR EQUIPMENT DAMAGE MAY RESULT.

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

NOTICE

THE INFORMATION CONTAINED IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE.

WARNING

EXCELERATOR USER

As a manufacturer of the Excelerator, Invacare endeavors to supply an Excelerator to meet many needs of the end user. However, final selection of an Excelerator to be used by an individual rests solely with the user and his/her health care professional capable of making such a selection.

EXCELERATOR TIE-DOWN RESTRAINTS AND SEAT POSITIONING STRAPS

Invacare recommends that the Excelerator users NOT be transported in vehicles of any kind while in an Excelerator. As of this date, the Department of Transportation has not approved any tie-down systems for transportation of a user while in an Excelerator, in a moving vehicle of any type.

AS REGARDS RESTRAINTS - SEAT POSITIONING STRAPS - IT IS THE OBLIGATION OF THE DME DEALER, THERAPISTS AND OTHER HEALTH CARE PROFESSIONALS TO DETERMINE IF A SEATING POSITIONING STRAP IS REQUIRED TO ENSURE THE SAFE OPERATION OF THIS EQUIPMENT BY THE USER. SERIOUS INJURY CAN OCCUR IN THE EVENT OF A FALL FROM AN EXCELERATOR.

SAVE THESE INSTRUCTIONS

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SPECIFICATIONS

SPECIFICATIONS

	EXCELERATOR	L/I'L EXCELERATOR	EXCELERATOR XLT	EXCELERATOR XLT 2000
Seat Width:	14 to 20-inches	12 or 14-inches	14 to 20-inches	14 to 20-inches
Seat Depth:	15	12 or 14-inches	15-inches	15-inches
Seat-to-Floor (approx.):	Fixed 20/18-inches	Fixed 17.5/15.5 inches	Fixed 12.5-inches	Fixed 12.5-inches
Back Style:	Rigid	Rigid	Adjustable Back Angle 90° - 110°	Adjustable Back Angle 90° - 110°
Back Height (Fixed or Adjustable):	12-16 or 14-18-inches	12 to 16-inches	13-inches (Fixed) 20-inches (Narrow, Tall)	13-inches (Wide) 20-inches (Narrow, Tall)
Footrest:	Adjustable Height/Angle	Adjustable Height/Angle	Adjustable Fore and Aft	Adjustable Fore and Aft
Side - Wheel Clearance:	2-inches - * 2.5-inches	2-inches - * 2.5-inches	2-inches - * 2.5-inches	2-inches - * 2.5-inches
Rear Axle:	Quick-Release	Quick-Release	Quick-Release	Quick-Release or Threaded
Rear Wheel Camber:	9° - Standard	9° - Standard	15° - Standard	15° - Standard
Wheels:	24-inch Spoke (Cruiser Tires)	Front - 20-inch Spoke Rear - Mag (Knobby Tires)	24-inch Spoke (High Performance, Cruiser or *Knobby)	24-inch Spoke (High Performance, Cruiser or *Knobby)
Brakes:	Hand Crank (Internal) Parking Brake	Hand Crank (Internal) Parking Brake	Hand Crank - (Internal) Parking Brake	Dual Hand Caliper Brakes
Handles:	Ergonomic, Vertical	Ergonomic, Vertical	Ergonomic, Vertical	Ergonomic, Vertical
Hub:	FRONT - Shimano® Nexus® 7 Speed Hub REAR - Precision Black Anodized w/1/2-inch Quick Release Stainless Axles	FRONT - Shimano 3 Speed Hub REAR - Precision Black Anodized w/1/2-inch Quick Release Stainless Axles	FRONT - Shimano Nexus 7 Speed Hub REAR - Precision Black Anodized w/1/2-inch Quick Release Stainless Axles	FRONT - Shimano 27 Speed External Cassette XT/Ultegra® REAR - Precision Black Anodized w/1/2-inch Quick Release Stainless or Threaded Axles
Spokes:	14 Gauge Stainless	14 Gauge Stainless	14 Gauge Stainless	14 Gauge Stainless
Shift Levers:	Shimano	Shimano	Shimano	Shimano - STI indexed/brake levers
Gears:	7 Speed	3 Speed	7 Speed	27 Speed
Seat Cushion:	Foam Insert	Foam Insert	Foam Insert - Optional	Foam Insert - Optional
Back Upholstery:	Nylon-Adjustable Tension	Nylon-Adjustable Tension	Nylon-Adjustable Tension	Nylon
Weight:	50 lbs.	40 lbs.	35 lbs.	30 lbs.
Shipping Weight:	80 lbs.	70 lbs.	80 lbs.	80 lbs.
Options:	Computer, Tow Bar, Horizontal Handles, Safety Light, Helmet and Flag, Custom Color, Seat Positioning Strap, Quad Cuffs & Gloves, 24-inch Knobby Tires, Mountain Drive, Bike Rack, Water Bottle and Cage, Tripin Quad Handles.	7 Speed Hub, Helmet, Horizontal Handles, Quad Cuffs & Gloves, Computer, Custom Color, Seat positioning Strap, Safety Flag and Light, Water Bottle and Cage.	NOTE: Same options as Exceleator including the following: 24 Speed External Gearing, Threaded Axles, Leg Guard Attachments, Lateral Supports.	NOTE: Same options as Exceleator including the following: Composite Wheels, Leg Guard Attachments, Lateral Supports, Welded Seat Supports.

* Knobby Tires will reduce side wheel clearance to approximately 1-inch.

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This Procedure Includes the Following:

Operating Information

Safety/Handling of Excelerator

OPERATING INFORMATION

WARNING

Wear your helmet at ALL times when riding the Excelerator.

The bicycle must be adjusted to fit the rider. Check the seat position, back height, quick release threaded axles, footrest height, hand crank adjustment for smooth operation of your Excelerator.

Before riding your Excelerator, check your brakes. Be sure that the brakes and all other features of your Excelerator are operating properly.

The user is responsible for normal upkeep and maintaining the Excelerator in proper operating condition.

The manufacturer is not responsible for failure, damage or injury caused by improper operation or maintenance by the end-user.

To determine and establish your particular safety limits, practice transferring activities in the presence of a qualified health care professional BEFORE attempting active use of the Excelerator.

Before attempting to transfer IN or OUT of the Excelerator, every precaution should be taken to reduce the gap distance. Position the Excelerator on level ground and as close as possible to the object you are transferring INTO or OUT of. The parking brake of the Excelerator MUST be engaged and the object you are transferring INTO or OUT of MUST also be secured before attempting any transfers.

Care MUST BE taken when operating on roads, streets or highways.

Operation of the Excelerator is subject to all traffic rules and regulations. (This may include the use of a safety light and reflectors for dusk/night riding.)

Give pedestrians the right of way.

Slow down at all street interprocedures and observe to the left, to the right and back to left again before proceeding.

Use proper hand signals when turning.

DO NOT attempt to move up or down an incline with an ice or oil film.

DO NOT attempt to ride over curbs or obstacles. Doing so may cause your Excelerator to turn over and cause bodily harm or damage to the Excelerator.

DO NOT use parts, accessories, or adapters other than those authorized by Invacare.

DO NOT attempt to lift the Excelerator by any removable (detachable) parts. Lifting by means of any removable (detachable) parts of an Excelerator may result in injury to the user or damage to the Excelerator.

DO NOT stand on the seat or frame of the Excelerator.

If a seat positioning strap is deemed necessary by your health care professional (doctor - therapist), ALWAYS wear a seat positioning strap.

Avoid all surface hazards.

DO NOT carry any riders.

DO NOT carry any items that may obstruct your view or prohibit you from operating the Excelerator properly.

DO NOT clean gear hubs with pressure water (e.g. strong water jet, high-pressure cleaner etc.). Water that penetrates into the hub could lead to function problems. The hub has been adequately lubricated. However, if the response of the hand crank brake should become too sharp, the brake cylinder MUST be greased by a brake professional, using special SACHS grease Type A (F & S Part No. 0369135100).

WARNING

TIRE PRESSURE

DO NOT use your Excelerator unless it has the proper tire pressure (p.s.i.). DO NOT overinflate the tires. Failure to follow these suggestions may cause the tire to explode and cause bodily harm.

DO NOT ride on a flat or underinflated tires. Riding on flat or underinflated tires can cause injury, as well as, damage to the tire, tube and bicycle.

WEIGHT LIMITATION

The Invacare Excelerator and Excelerator XLT/XLT 2000 have a maximum weight limitation of 250 lbs. The Invacare Li'l Excelerator has a maximum weight limitation of 150 lbs.

SAFETY/HANDLING OF EXCELERATOR

“Safety and Handling” of the Excelerator requires the close attention of the 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 Excelerator. It is important to practice and master these safe techniques until you are comfortable in maneuvering the Excelerator.

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

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

Stability and Balance

For stability and proper operation of your Excelerator, you must at all times maintain proper balance. Your Excelerator should remain upright and stable during normal daily activities when operated correctly.

Invacare recommends using seat positioning straps for additional safety.

A Note to Excelerator Assistants

When learning assistance techniques for the Excelerator, have an experienced assistant help you before attempting it alone.

When you are assisting with a transfer to / from the Excelerator, remember to use good body mechanics. Keep your back straight and bend your knees whenever lifting or positioning the Excelerator for the end-user.

Also, be aware of detachable parts. These must NEVER be used for lifting supports, as they may be inadvertently released, resulting in possible injury to the user and/or assistant.

Percentage of Weight Distribution

Transferring in and out of the Excelerator will cause a change to the normal balance, the center of gravity, and the weight distribution of the Excelerator. To determine and establish your particular safety limits, practice transferring activities in several combinations in the presence of a qualified health care professional BEFORE attempting a transfer alone.

Proper positioning is essential for your safety.

Transferring into/out of the Excelerator (FIGURE 1)

WARNING

Before attempting to transfer IN or OUT of the Excelerator, every precaution should be taken to reduce the gap distance. Position the Excelerator on level ground and as close as possible to the object you are transferring INTO or OUT of. The parking brake of the Excelerator MUST be engaged and the object you are transferring INTO or OUT of MUST also be secured before attempting any transfer.

CAUTION

When transferring, position yourself as far back as possible in the seat. This will prevent damage to the upholstery.

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

Position the Excelerator on level ground and as close as possible along side the object to which you are transferring. Apply parking brake on Excelerator and secure object that you are transferring into or out of. Shift body weight onto object with transfer.

During independent transfer, little or no seat platform will be beneath you. Use a transfer board if at all possible.

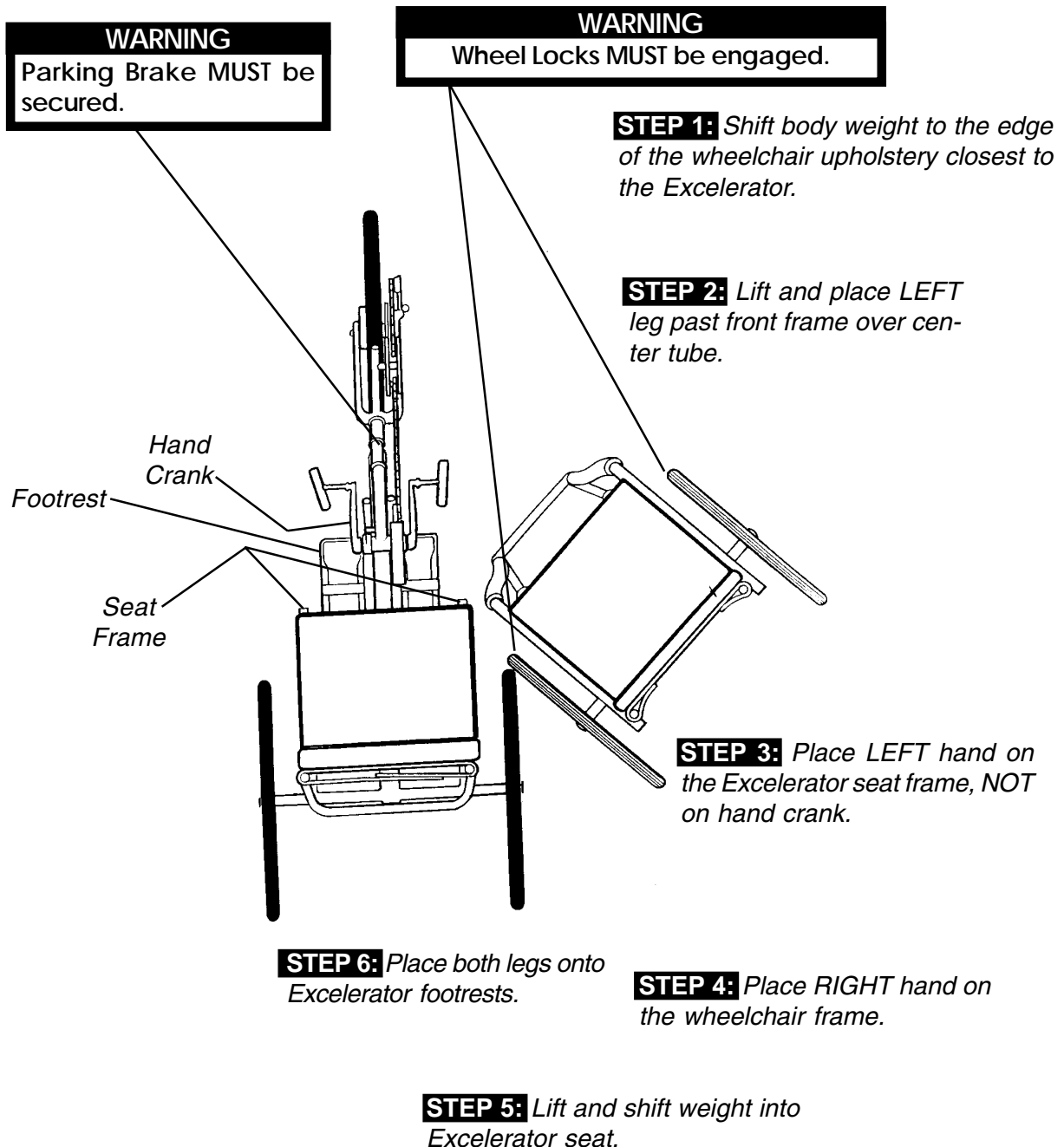


FIGURE 1 - TRANSFERRING INTO AND OUT OF THE EXCELERATOR

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This Procedure Includes the Following:

Safety Inspection Checklist	Troubleshooting	Maintenance
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SAFETY INSPECTION CHECKLIST

NOTE: Every six (6) months, take your Excelerator to a qualified technician for a thorough inspection and servicing. Regular cleaning will reveal loose or worn parts and enhance the smooth operation of your Excelerator. For safe and proper operation, your Excelerator must be cared for just like any other vehicle. Routine maintenance will extend the life and efficiency of your Excelerator.

NOTE: Invacare recommends that the following adjustments be performed by a qualified technician. Initial adjustments should be made to suit your personal body structure and preference. Thereafter follow these maintenance procedures.

ITEM	INITIALLY	INSPECT/ ADJUST WEEKLY	INSPECT/ ADJUST MONTHLY	INSPECT/ ADJUST PERIODICALLY
FRAME Check for bent or broken frame. Frame damage can cause other parts to fail.	X		X	X
BRAKES (PROCEDURE 8) Parking Brake - Adjust brake shoes to front rim. Check for worn or missing shoes. Check for wax or oil on rim. Cable anchor attached securely to brake arm. Internal Stopping Brakes - engages easily.	X X X	X X X		X X X
SEAT AND BACK UPHOLSTERY (PROCEDURE 10) Inspect for rips or sagging.	X			X
REAR WHEELS (PROCEDURE 4) Axle nut and wheel mounting nuts are secure. No excessive side movement or binding when lifted and spun. CAUTION: As with any vehicle, the wheels and tires should be checked periodically for cracks and wear, and should be replaced.	X X	X X	X	X X
SPOKES (PROCEDURE 4) Inspect for bent or broken spokes. All spokes uniformly tight.	X X	X X		
FRONT WHEEL/FORK (PROCEDURE 5) Keep axle nuts tight. Wheel should be centered in fork. Keep wheel bearings adjusted and keep spokes tight and wheel in proper alignment. Check rim and fork assembly for damage. CAUTION: As with any vehicle, the wheels and tires should be checked periodically for cracks and wear, and should be replaced.	X X	X X		X X
TIRES (PROCEDURE 4) Inspect for flat spots and wear. Check for proper inflation. CAUTION: As with any vehicle, the wheels and tires should be checked periodically for cracks and wear, and should be replaced.	X	X		X
CHAIN/CHAIN GUARD (PROCEDURE 7) Check for damage, rust, tension and stretch. Adjust if necessary. Lubricate each link often (3-in-1 oil or a quality bike lubricant). Check for damage or looseness.	X	X		X
CONTROL CABLES (PROCEDURE 6) Adjust accordingly.	X	X		X
FRONT FORK (GOOSE NECK) (PROCEDURE 5) Keep tight and lubricate (All purpose grease).	X	X		X
FOOTREST (PROCEDURE 11) Check that mounting hardware is tight and footrest secure. Check footrest straps for wetness and/or damage.	X X	X X	X	X
UPHOLSTERY (PROCEDURE 10) Clean upholstery with light detergent and water.	X			X
MOUNTAIN DRIVE OPTION (PROCEDURE 12) Oil Hand crank. Adjust bearing play				X X

TROUBLESHOOTING

VEERS RIGHT	VEERS LEFT	SLUGGISH TURN OR PERFORMANCE	WHEEL FLUTTERS	SQUEAKS AND RATTLES	LOOSENESS IN EXCELERATOR	SOLUTIONS
X	X	X	X			Check tires for correct and equal pressure.
		X	X	X	X	Check for loose axle nuts.
				X	X	Check spokes and nipples.
		X		X	X	Check chain for proper tension and adjustment.
			X		X	Check that goose neck fittings are secure.

MAINTENANCE

Maintenance Safety Precautions

WARNING

After ANY adjustments, repair or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.

CAUTION

DO NOT overtighten hardware attaching to the frame. This could cause damage to the frame tubing.

WARNING

Do not use the wheelchair unless it has the proper tire pressure (p.s.i.). DO NOT overinflate the tires. Failure to follow these suggestions may cause the tire to explode and cause bodily harm.

- Recommended tire pressure is listed on the side wall of the tire. If tire needs replaced, see local bike shop.

CAUTION

As with any vehicle, the wheels and tires should be checked periodically for cracks and wear, and should be replaced.

Suggested Maintenance Procedures

- Before using your Excelerator, make sure all nuts and bolts are tight. Check all parts for damage or wear and replace. Check all parts for proper adjustment.
- Check parking brake cable and shifter adjustment cables for proper adjustment and operation. Refer to PROCEDURES 6 AND 7 of this manual.
- If equipped, keep quick release axles free of dirt and lint to ensure positive locking and proper operation. Refer to INSTALLING/ADJUSTING THE REAR WHEEL AND QUICK-RELEASE AXLES - EXCELERATOR AND LI'L EXCELERATOR in PROCEDURE 4 of this manual. Oil quick-release axles at least once (1) a month (3-in-1[®] oil or equivalent).
- The wheels and tires should be checked periodically for cracks and wear, and should be replaced.
- Check chain for slack and readjust. Refer to EXCELERATOR/LI'L EXCELERATOR CHAIN ADJUSTMENT in PROCEDURE 7 of this manual.
- Regularly check for loose spokes in the front and rear wheels. If loose, have them aligned at your local bike shop.
- If equipped, check tension spring for proper operation. Refer to EXCELERATOR/LI'L EXCELERATOR TENSION SPRING INSTALLATION in PROCEDURE 5 of this manual.
- Check Upholstery for sagging, rips or tears Refer to BACK UPHOLSTERY REPLACEMENT or SEAT UPHOLSTERY REPLACEMENT in PROCEDURE 10 of this manual.
- Check alignment of front wheel. If it wobbles or takes too much effort to turn by hand, have it aligned at your local bike shop.

3-in-1[®] - Registered trademark of American Home Products Corporation.

This Procedure Includes the Following:
Excelerator/Li'l Excelerator Assembly Procedures
Excelerator XLT/XLT 2000 Assembly Procedures

WARNING
 After ANY adjustments, repair or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.
 DO NOT operate the Excelerator if the hand crank obstructs your view. If the hand crank obstructs your view, adjust the hand crank height BEFORE using the Excelerator - Otherwise injury or damage may occur.

EXCELERATOR/LI'L EXCELERATOR ASSEMBLY PROCEDURES (FIGURE 1)

NOTE: Invacare recommends that the following procedures be performed by a qualified technician.

Tools required:

- Adjustable wrench (10-12-inches)
- 6, 8 and 9mm wrench
- 1/8-inch allen wrench
- 1/2-inch box wrench
- Two (2) medium screwdrivers (flathead and phillips)

1. Secure and adjust rear wheels (PROCEDURE 4).
2. Secure the fork assembly (PROCEDURE 5).
3. Secure and adjust tension spring (PROCEDURE 5).
4. Secure and adjust hand crank assembly (PROCEDURE 5).
5. Secure and adjust STANDARD three (3) speed shifter or Seven (7) speed shifter (PROCEDURE 6).
6. Adjust chain (PROCEDURE 7).
7. Tension and adjust cantilever brake cable (Optional [PROCEDURE 8]).
8. Fasten and adjust parking brake (PROCEDURE 8).
9. Secure and adjust back height (PROCEDURE 9).
10. Secure and adjust seat position/upholstery (PROCEDURE 10).
11. Secure and adjust footrest (PROCEDURE 11).
12. Check that all hardware is tight.

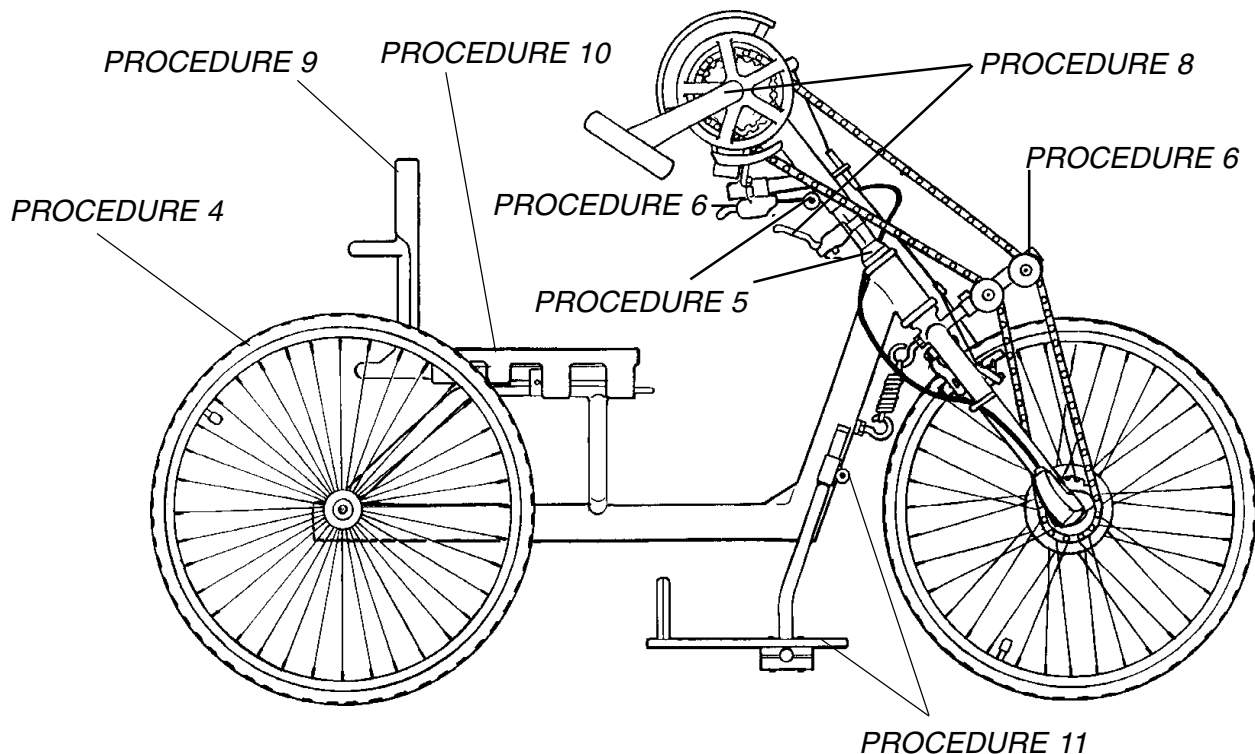


FIGURE 1 - EXCELERATOR/LI'L EXCELERATOR ASSEMBLY PROCEDURES

**EXCELERATOR XLT/XLT 2000
ASSEMBLY PROCEDURES
(FIGURE 2)**

NOTE: Invacare recommends that the following procedures be performed by a qualified technician.

Tools required:

- Adjustable Wrench (10-12-inches)
- 5, 8 and 32 mm Wrench
- 3/16-inch Allen Wrench
- 1/4-inch Allen Wrench
- 1/2-inch Box Wrench
- 1/2-inch Socket Wrench
- Two (2) Medium Screwdrivers (**Flathead and Phillips**)

1. Secure and adjust rear wheels (PROCEDURE 4).
2. Adjust hand crank assembly (PROCEDURE 5).
3. Adjust chain (PROCEDURE 7).
4. Adjust the optional cantilever brake cable (PROCEDURE 8).
5. Adjust parking brake (PROCEDURE 8).
6. Adjust back height and/or angle (PROCEDURE 9).
7. Adjust seat position/upholstery (PROCEDURE 10).
8. Adjust footrest (PROCEDURE 11).
9. Check that all hardware is tight.

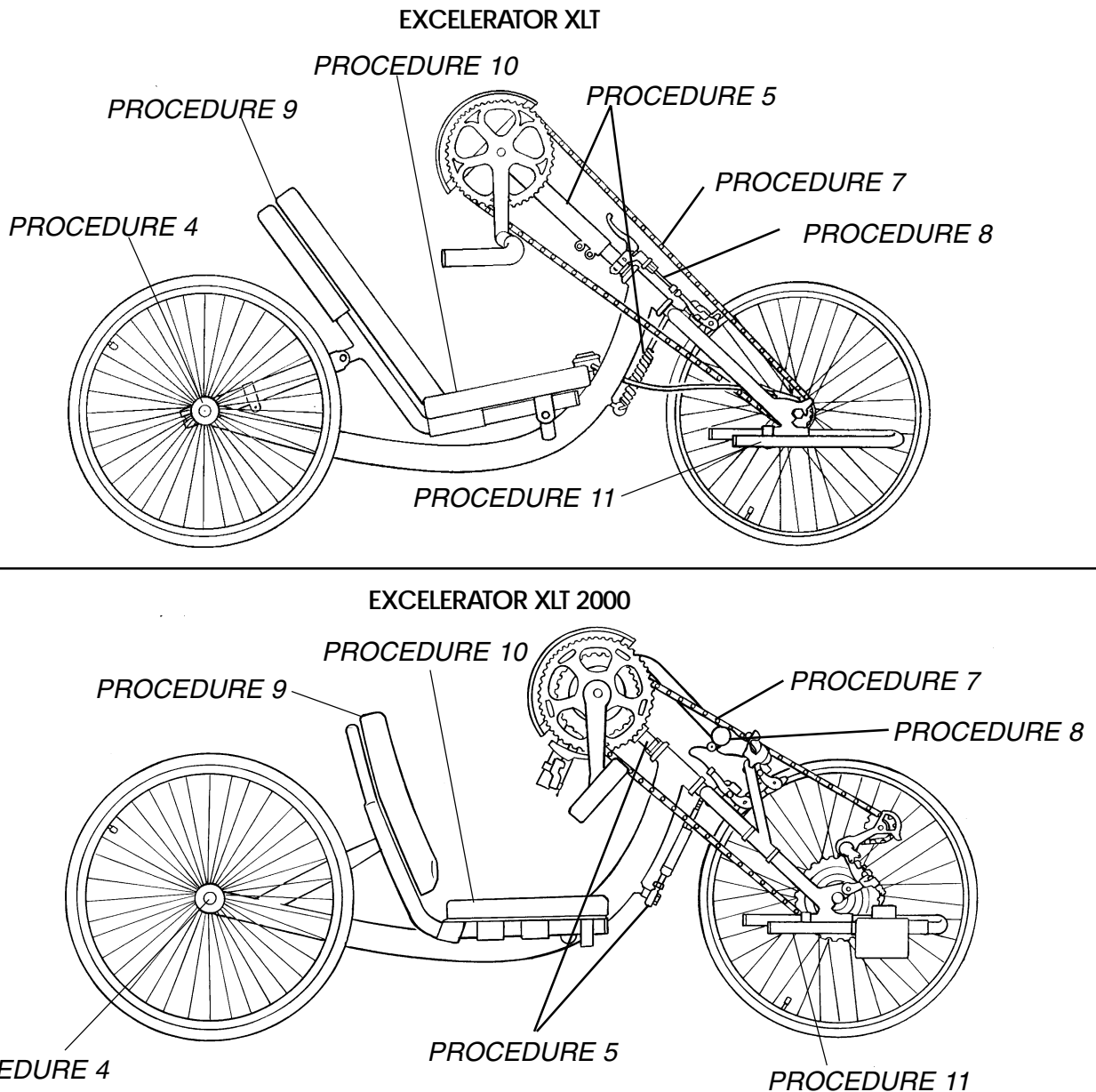


FIGURE 2 - EXCELERATOR XLT/XLT 2000 ASSEMBLY PROCEDURES

REAR WHEELS

This Procedure includes the following:

- Installing/Adjusting the Rear Wheels and Quick-Release Axles**
- Installing the Rear Wheels with Threaded Axle Option - Excelerator XLT/XLT 2000**
- Tire/Tube Replacement and Tuning/Replacement of Spokes**
- Tire Pressure**
- Determining/Adjusting Toe In/Toe Out**
- Replacing Camber Inserts**

WARNING

After ANY adjustments, repair or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.

INSTALLING/ADJUSTING THE REAR WHEEL AND QUICK-RELEASE AXLES (FIGURE 1)

1. Make sure that the axle receiver hex nut is securely tightened before installing the rear wheels.
2. Depress detent pin in the quick-release axle and slide axle through the axle receiver.
3. Release detent pin ensuring that the locking pins are fully released.

NOTE: Locking pins MUST protrude past the end of the axle receiver to fully release. Any excessive play MUST also be eliminated.

4. Increase or decrease end play by adjusting the locknut on the end of the quick-release axle.

WARNING

Make sure detent pin is fully released BEFORE operating the Excelerator, Li'l Excelerator or Excelerator XLT.

Keep locking pins clean.

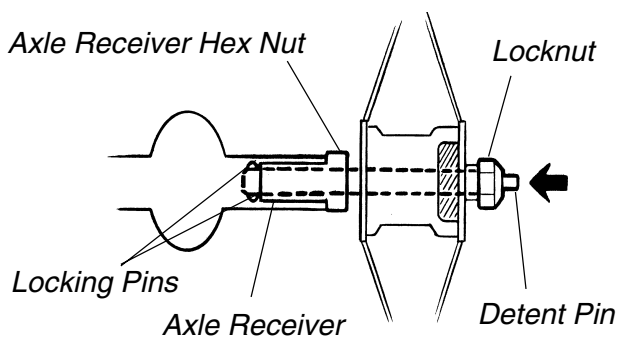


FIGURE 1 - INSTALLING/ADJUSTING THE REAR WHEEL AND QUICK-RELEASE AXLES

5. Reinstall rear wheel on the Excelerator.
6. Tilt Excelerator onto either rear wheel and spin raised wheel. It should spin freely with no excessive drag.
7. Repeat procedure for opposite rear wheel.

NOTE: If drag to either side occurs, repeat the procedure until the Excelerator rolls correctly.

INSTALLING THE REAR WHEELS WITH THREADED AXLES - EXCELERATOR XLT/XLT 2000 (FIGURE 2)

1. Apply a small amount of grease onto the axle.
2. Insert the axle into the axle mounting hole on the chair frame.
3. Securely tighten the axle to the frame.

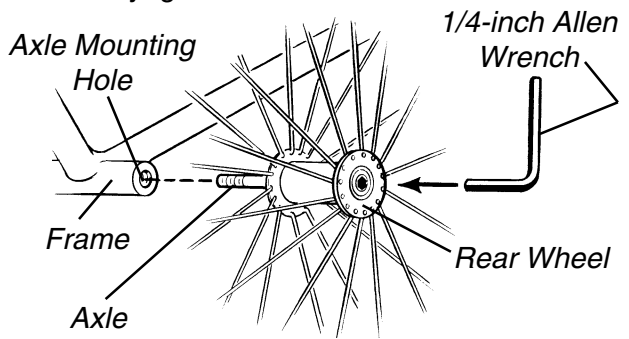


FIGURE 2 - INSTALLING THE REAR WHEELS WITH THREADED AXLES - EXCELERATOR XLT/XLT 2000

TIRE/TUBE REPLACEMENT AND TUNING/REPLACEMENT OF SPOKES

NOTE: Invacare recommends that these procedures be performed by a qualified technician.

TIRE PRESSURE

WARNING

DO NOT use the Excelerator unless it has the proper tire pressure (p.s.i.). DO NOT overinflate the tires. Failure to follow these suggestions may cause the tire to explode and cause bodily harm. Tire p.s.i. is printed on the tire wall.

DETERMINING/ADJUSTING TOE IN/TOE OUT (FIGURE 3)

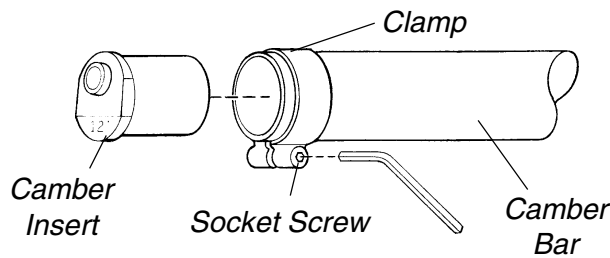
Determining Toe In/Toe Out

1. Inflate all pneumatic tires to recommended tire pressures (listed on the sidewall of the tire).

2. Measure the distance between the center lines at the rear and front of the rear wheels at approximately 12-inches from the ground/floor (FIGURE 3).

NOTE: For optimum accuracy, perform STEP 2 with the wheelchair occupied.

3. Determine the difference between the two (2) measurements. If the **difference** between the **two (2) measurements** is **GREATER** than **1/2-inch (0 ± 1/4-inch for maximum rollability)**, one (1) of two (2) conditions exists:
 - a. If the **back centerline measurement** of the rear wheels is **SMALLER** than the **front centerline measurement** of the rear wheels, a **TOE-OUT** condition exists (FIGURE 3).
 - b. If the **back centerline measurement** of the rear wheels is **LARGER** than the **front centerline measurement** of the rear wheels, a **TOE-IN** condition exists (FIGURE 3).
4. If the difference between the measurements is greater than 1/2-inch, correct the toe-in/toe-out condition. Refer to ADJUSTING TOE-IN/TOE-OUT in this procedure of the manual.



FRONT OF WHEELCHAIR

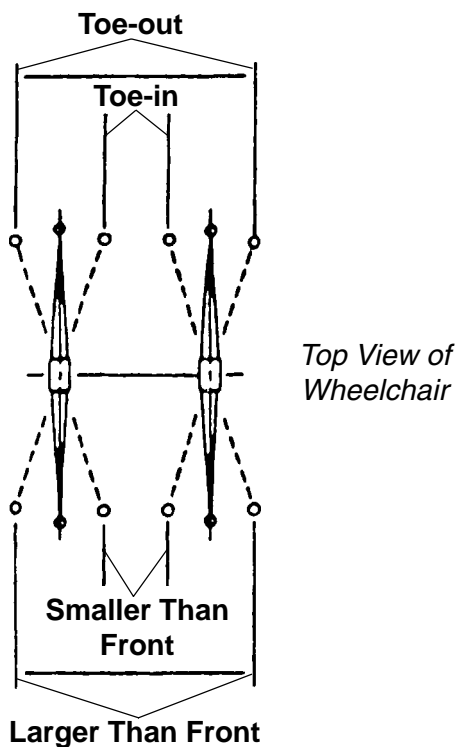


FIGURE 3 - DETERMINING/ADJUSTING TOE IN/TOE OUT

Adjusting Toe In/Toe Out

1. Loosen, but do not remove the socket screws and clamps that secure camber inserts to the camber bar.
2. Slowly rotate the camber insert until the rear wheels are approximately in a straight line.
3. Securely tighten the socket screws and clamps that secure the camber inserts to the camber bar.
4. Measure the distance between the center lines at the rear and front of the rear wheels at approximately 12-inches from the ground/floor. Refer to DETERMINING TOE IN/TOE OUT in this procedure of the manual.
5. Repeat STEPS 1-4 until the toe in/toe out measurement is less than 1/2-inch (0 ± 1/4-inch for maximum rollability).

REPLACING CAMBER INSERTS (FIGURE 4)

1. Loosen, but do not remove the socket screws and clamps that secure the camber inserts to the camber bar.
2. Remove the existing camber insert from the camber bar.
3. Install the new camber insert into the camber bar.
4. Adjust the toe in/toe out of the wheelchair. Refer to DETERMINING/ADJUSTING TOE IN/TOE OUT in this procedure of the manual.

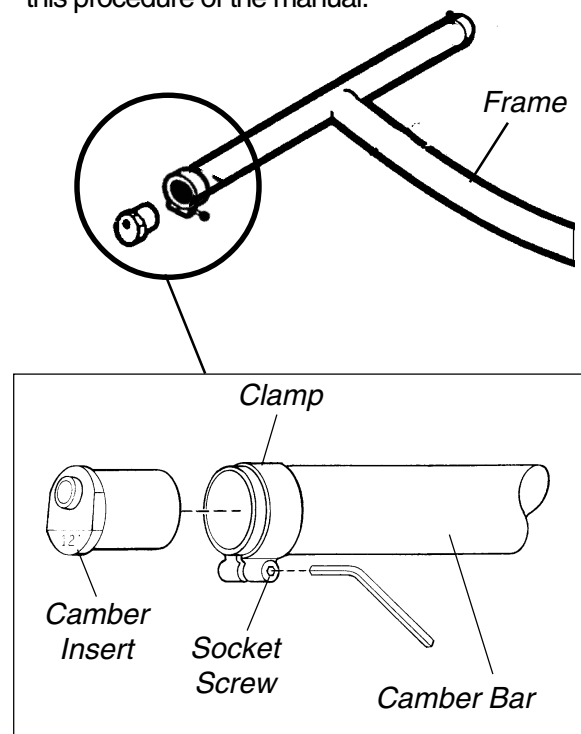


FIGURE 4 - REPLACING CAMBER INSERTS

FORK / SPRING / CRANK

This Procedure includes the following:
EXCELERATOR/LI'L EXCELERATOR:
 Fork Assembly Installation
 Tension Spring Installation
 Hand Crank Assembly Installation
EXCELERATOR XLT/XLT 2000:
 Fork /Crank Assembly Replacement
 Tension Spring or Road Crown Compensator Replacement/Adjustment

WARNING

After ANY adjustments, repair or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.

DO NOT operate the Excelerator if the hand crank obstructs your view. If the hand crank obstructs your view, adjust the height BEFORE using the Excelerator - Otherwise injury or damage may occur.

EXCELERATOR/LI'L EXCELERATOR FORK ASSEMBLY INSTALLATION (FIGURE 1)

1. Remove the fork assembly from the packaged container.
2. Slide fork assembly through the opening in the front frame (**Goose Neck**) making sure to seat washer and ball bearing housing.
3. Seat ball bearings on fork assembly.
4. Place locknut over fork assembly and tighten.
5. Tighten locknut setscrews.

EXCELERATOR/LI'L EXCELERATOR TENSION SPRING INSTALLATION (FIGURE 1)

NOTE: The tension spring is NOT intended to keep the Excelerator straight when pedaling but to keep the Excelerator from leaning excessively to one side or another.

1. Tighten eye bolts into fork assembly and front frame.
2. Using a medium flat head screwdriver, hook the tension spring to the fork assembly and front frame eye bolts.

NOTE: Tension is applied by loosening or tightening the eye bolts. This should be done before installation of the tension spring.

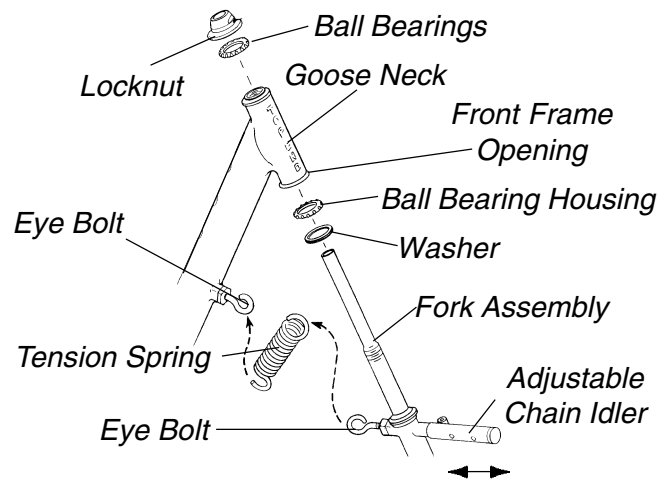


FIGURE 1 - EXCELERATOR/LI'L EXCELERATOR FORK ASSEMBLY/TENSION SPRING INSTALLATION

EXCELERATOR/LI'L EXCELERATOR HAND CRANK ASSEMBLY INSTALLATION (FIGURE 2)

1. Remove the chain from the front wheel hub so it moves with the hand crank assembly.
2. Slide the hand crank assembly over and completely down the fork stem.
3. Position the chain on the hand crank sprocket assembly and the front wheel hub.
4. Move the hand crank assembly up or down on the fork stem until you are comfortable with the position for operational purposes.

NOTE: Positioning of the hand crank assembly loosens or tightens the chain in an UP/DOWN position.

5. Tighten hex nut to secure the hand crank assembly.
6. Adjust the tautness of the chain by moving the adjustable chain idler **IN** or **OUT**.
7. Tighten the hex screw to secure the adjustable chain idler in place.

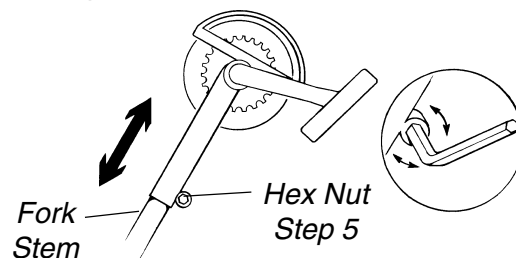


FIGURE 2 - EXCELERATOR/LI'L EXCELERATOR HAND CRANK ASSEMBLY INSTALLATION

**EXCELERATOR XLT/XLT 2000
FORK/CRANK ASSEMBLY
REPLACEMENT (FIGURE 3)**

NOTE: Invacare recommends that the following procedure be performed by a qualified technician.

1. Note the position of the crank handles.
2. Loosen, but do not remove the two (2) socket screws that secure the crank handles to the existing fork.
3. Slide the crank handles down towards the front wheel.
4. Remove the chain from the crank handles.
5. Remove the crank handles from the existing fork.
6. Remove the two (2) socket screws and half clamp that secure the brake handle to the existing fork.
7. Remove the socket nut on the **BACK** of the existing fork that secures the brake assembly.

FORK / SPRING / CRANK

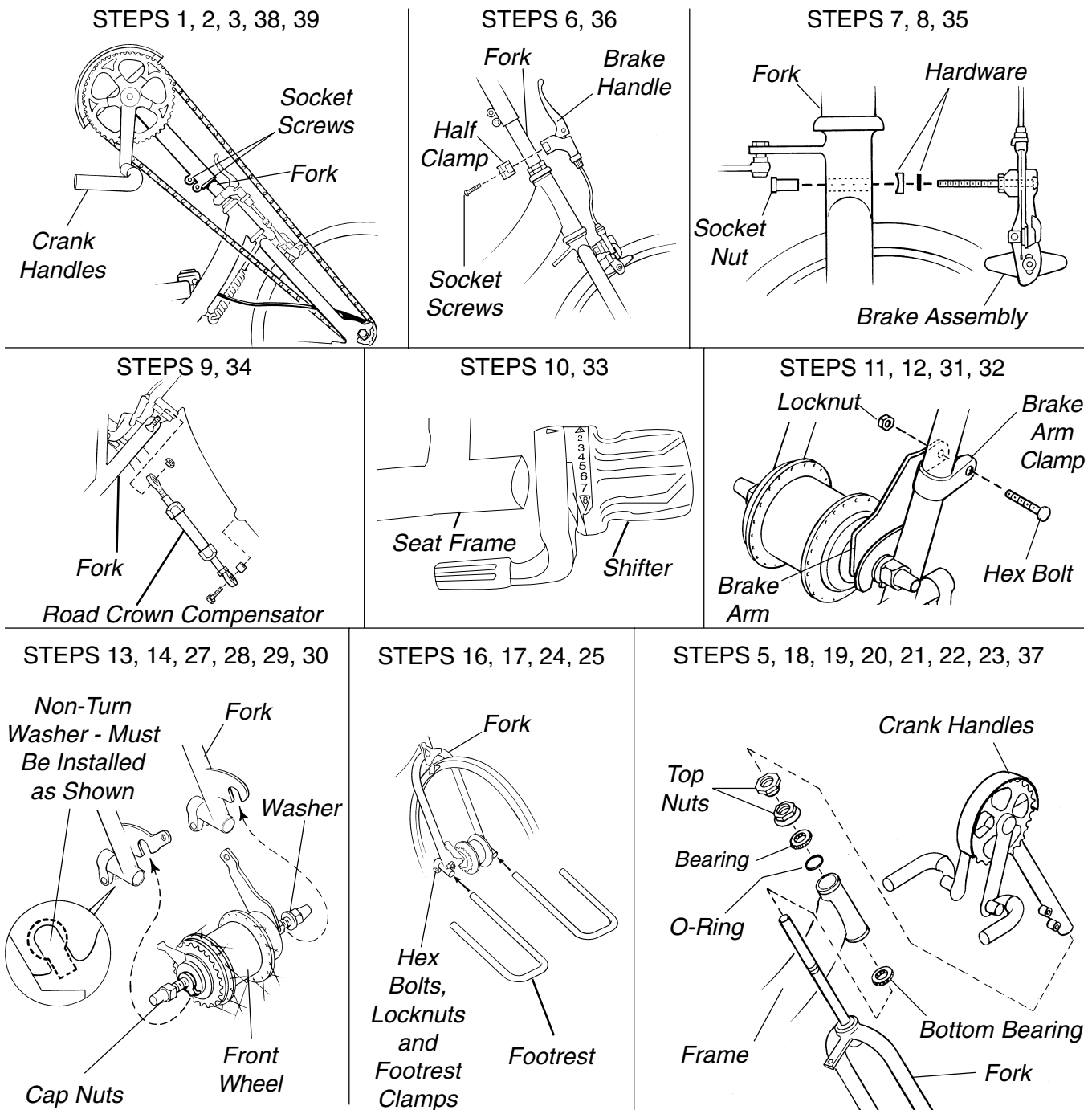


FIGURE 3 - EXCELERATOR XLT/XLT 2000 FORK/CRANK ASSEMBLY REPLACEMENT

8. Note brake assembly hardware position and remove the brake assembly from the existing fork.
9. Remove the tension spring or road crown compensator from the existing fork. Refer to EXCELERATOR XLT/XLT 2000 TENSION SPRING OR ROAD CROWN COMPENSATOR REPLACEMENT in this procedure of the manual.
10. Loosen, but do not remove the socket screw that secures the shifting lever to the seat frame.
11. Remove the hex bolt and locknut that secure the brake arm to the brake arm clamp.
12. Remove the brake arm clamp from the existing fork.
13. Loosen, but do not remove the two (2) cap nuts that secure the front wheel to the existing fork.
14. Remove the front wheel from the existing fork.
15. Lay the chain flat.

NOTE: Laying the chain flat will prevent kinks in the chain.

16. Remove the two (2) hex bolts, locknuts and clamps that secure the footrests to the existing fork.
17. Note the position of the footrests and remove the footrests from the existing fork.
18. Remove the two (2) top nuts that secure the existing fork to the frame.
19. Note the o-ring and bearing position and remove the existing fork from the frame.
20. Slide the bottom bearing onto the new fork. Refer to FIGURE 3 for correct orientation.
21. Slide the new fork into the frame.
22. Position the o-ring and bearing on the new fork. Refer to FIGURE 3 for correct orientation.
23. Install the two (2) nuts onto the new fork and tighten securely. Refer to FIGURE 3 for correct orientation.
24. Position the footrest clamps on the new frame.
25. Install the footrests onto the new fork to the position noted in STEP 17 and secure with the two (2) hex bolts and locknuts.
26. Position the chain around the hub of the front wheel.
27. Install the front wheel onto the new fork.

NOTE: Make sure the washer and the non-turn washer are on the OUTSIDE of the new fork.

28. Line up the projecting ends of the non-turn washer with the slot in the new fork.
29. Repeat STEPS 27-28 until the projecting ends of the non-turn washer line up with the slot in the new fork.

30. Torque the two (2) cap nuts 260-390 inch-pounds.
31. Install the brake arm clamp onto the new fork.
32. Secure the brake arm to the brake arm clamp with the hex bolt and locknut. Torque to 22-26 inch-pounds.
33. Reinstall the shifting lever onto the seat frame and secure with the socket screw.
34. Install the tension spring or road crown compensator onto the new fork. Refer to EXCELERATOR XLT/XLT 2000 TENSION SPRING OR ROAD CROWN COMPENSATOR REPLACEMENT/ADJUSTMENT in this procedure of the manual.

NOTE: EXCELERATOR XLT BUILT BEFORE 9/99 ONLY- Make sure the shifting cable is between the spring and the frame.

35. Install the brake assembly onto the new fork. Refer to the hardware position noted in STEP 8 and tighten securely with the socket nut.
36. Install the brake handle and half clamp onto the new fork and secure with the two (2) socket screws.
37. Slide the crank handles onto the new fork.

NOTE: Make sure the sprocket on the crank handles is in line with the sprocket on the front wheel.

38. Reinstall the chain onto the crank handle sprocket.
39. Move the crank handle to the position determined in STEP 1 and tighten the two (2) socket screws securely.

EXCELERATOR XLT/XLT 2000 TENSION SPRING OR ROAD CROWN COMPENSATOR REPLACEMENT/ADJUSTMENT

NOTE: Excelsator XLTs built before 9/99 have the tension spring. All Excelsator XLTs built after 9/99 have the road crown compensator.

NOTE: The tension spring or road crown compensator is NOT intended to keep the Excelsator XLT/XLT 2000 straight when pedaling but to keep the Excelsator XLT/XLT 2000 from leaning excessively to one side or another.

Tension Spring Replacement/Adjustment (FIGURE 4)

REMOVING TENSION SPRING.

1. Using a medium flat head screwdriver, unhook the existing tension spring from fork and frame eye bolt.

ADJUSTING TENSION SPRING.

NOTE: Adjustments should be performed BEFORE installation of the tension spring.

1. Rotate the frame eye bolt to adjust the tension.
CLOCKWISE - INCREASES tension.
COUNTERCLOCKWISE - DECREASES tension.

INSTALLING TENSION SPRING.

1. Using a medium flat head screwdriver, hook the new tension spring onto the fork eye bolt and frame eye bolt.

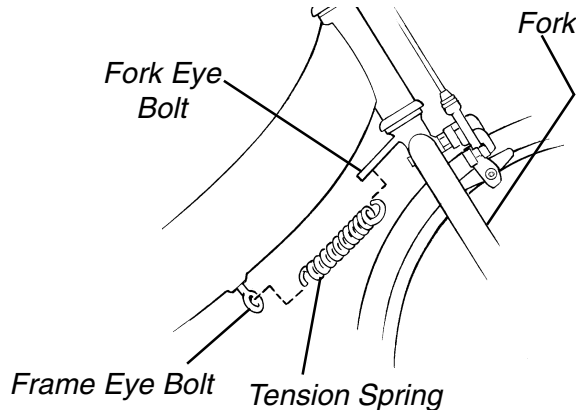


FIGURE 4 - TENSION SPRING REPLACEMENT/ADJUSTMENT

Road Crown Compensator Replacement/Adjustment (FIGURE 5)

REMOVING ROAD CROWN COMPENSATOR.

1. Remove the locknut securing the fork end of the road crown compensator to the fork bolt.
2. Remove the fork end of the the road crown compensator from the fork bolt.
3. Remove the bolt and spacer securing the frame end of the road crown compensator to the frame.

ADJUSTING ROAD CROWN COMPENSATOR.

1. Rotate the fork end of the road crown compensator to adjust the length.

CLOCKWISE - shortens the road crown compensator and pulls the front wheel to the left.

COUNTERCLOCKWISE - lengthens the road crown compensator and pushes the front wheel to the right.

INSTALLING ROAD CROWN COMPENSATOR.

1. Position the bolt through the frame end of the road crown compensator.
2. Position the spacer on the bolt.
3. Install the bolt with spacer and road crown compensator into the mounting hole on the frame.

4. Rotate the fork to ensure the front wheel is pointing directly forward.
5. Position the fork end of the road crown compensator on the fork bolt.

NOTE: If necessary, lengthen or shorten the road crown compensator to position the fork end onto the fork bolt. Refer to the ADJUSTING procedure in this section.

6. Secure the road crown compensator to the fork bolt with the locknut. Tighten securely.

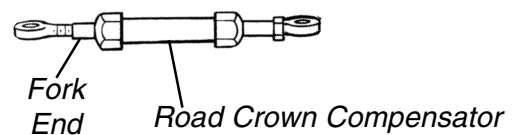
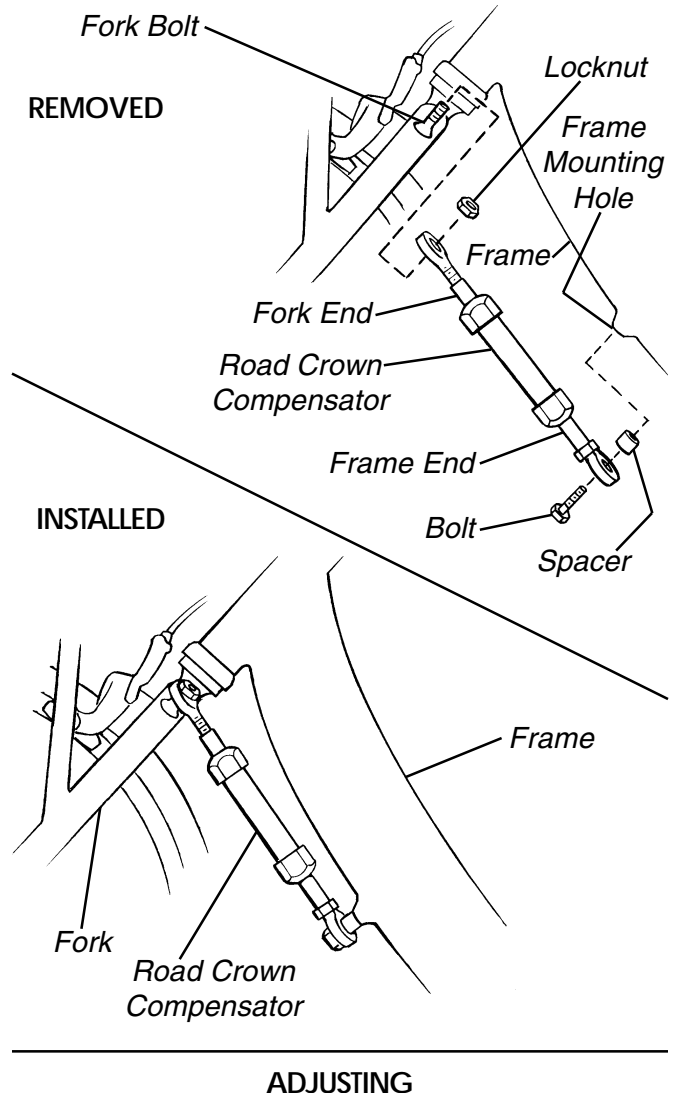


FIGURE 5 - ROAD CROWN COMPENSATOR REPLACEMENT/ADJUSTMENT

This Procedure includes the following:
LI'L EXCELERATOR:
 Three (3) Speed Shifter Cable Installation
 Three (3) Speed Shifter Cable Adjustment
EXCELERATOR/EXCELERATOR - XLT:
 Seven (7) Speed Shifter Cable Installation
 Seven (7) Speed Shifter Cable Adjustment/
 Replacement

WARNING
 After ANY adjustments, repair or service and **BEFORE** use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.

LI'L EXCELERATOR - THREE (3) SPEED SHIFTER CABLE INSTALLATION (FIGURE 1)

NOTE: The THREE (3) SPEED Shifter Cable runs from the LEFT-SIDE of the FRONT FRAME to its mounting position on the HAND CRANK Assembly Shaft.

1. Run the cable from the left-side of the fork assembly to mounting position just below the hand crank assembly.
2. Attach the three (3) speed cable to the hand crank assembly extension.
3. Secure with hardware provided.

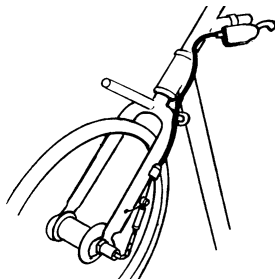


FIGURE 1 - LI'L EXCELERATOR THREE (3) SPEED SHIFTER CABLE INSTALLATION

LI'L EXCELERATOR - THREE (3) SPEED SHIFTER CABLE ADJUSTMENT

CAUTION
 DO NOT ride the Excelerator if the hub is out of adjustment. This will damage the internal parts and cause hub to malfunction.

Procedure A (FIGURE 2)

1. Loosen the hex nut.
2. Using a pair of pliers, pull cable to increase tension. Retighten hex nut.

3. Shift gears to check for correct adjustment.

NOTE: If gears do NOT shift, increase cable tension and retest proper shifting of gears. If the chain skips a gear, loosen the cable tension until correct operation is achieved.

CAUTION
 DO NOT overtighten the cables. Doing so may cause the cable to break. If PROCEDURE A does NOT solve the problem, take your Li'l Excelerator to an authorized Invacare Dealer or qualified technician for proper adjustment.

NOTE: Shift gears when pedals are stationary or when minimum amount of pedaling is being done to avoid wear on rotating parts of hub.

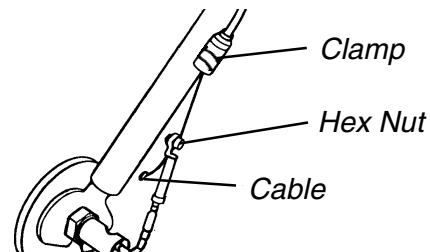


FIGURE 2 - LI'L EXCELERATOR THREE (3) SPEED SHIFTER CABLE ADJUSTMENT

Procedure B (FIGURE 3)

NOTE: If the following procedure does not enable all three (3) gears, contact a qualified technician or Invacare for assistance.

1. Ensure that the indicator chain is fully screwed into the axle. Turn back a maximum of half a turn.
2. Check that the indicator chain runs freely through the indicator protector if fitted.
3. Select third gear and loosely connect the cable adjuster onto the indicator coupling.
4. Select second gear position on the gear control. Looking through the window in the right-hand axle nut, turn the cable adjuster until the end of the indicator is exactly level with the end of the axle.
5. Tighten the locknut against the adjuster.

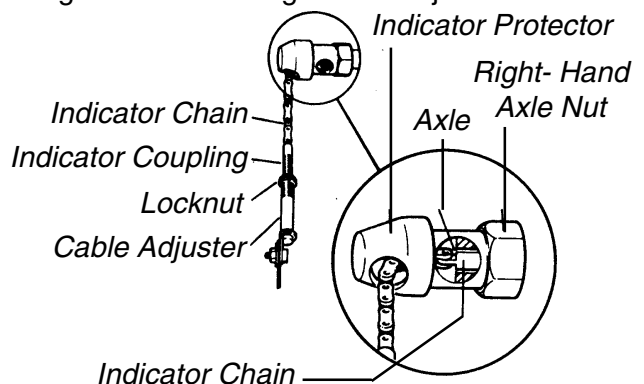


FIGURE 3 - LI'L EXCELERATOR THREE (3) SPEED INDICATOR CHAIN ADJUSTMENT

EXCELERATOR/EXCELERATOR XLT - SEVEN (7) SPEED SHIFTER CABLE INSTALLATION (FIGURE 4)

NOTE: The SEVEN (7) SPEED Shifter Cable runs from the RIGHT-SIDE of the FRONT FRAME to its mounting position on the HAND CRANK Assembly Shaft.

1. Run the cable from the right-side of the fork assembly to mounting position on the left side just below the hand crank assembly.
2. Attach the seven (7) speed cable to the hand crank assembly extension.
3. Secure with hardware provided.

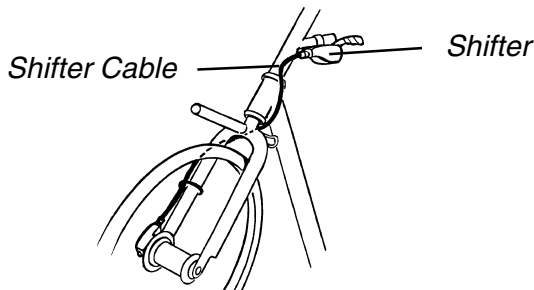


FIGURE 4 - EXCELERATOR/EXCELERATOR XLT SEVEN (7) SPEED SHIFTER CABLE INSTALLATION

EXCELERATOR/EXCELERATOR XLT SEVEN (7) SPEED SHIFTER ADJUSTMENT/REPLACEMENT - BEFORE 1997 ONLY (FIGURE 5)

NOTE: Excelerator/Excelerator XLTs manufactured AFTER 1997 are equipped with SHIMANO hubs. If equipped with a SHIMANO hub, it MUST be serviced and adjusted by a qualified technician.

NOTE: QUALIFIED TECHNICIANS ONLY - Contact Invacare, 1-800-532-8677 for complete SHIMANO hub instructions.

NOTE: There is no cable adjustment for the seven (7) speed shifter cable. Loosening the knurled screw will enable you to pull the gear box from the hub axle.

It is recommended that you take your Excelerator to a qualified technician for any shifter adjustment.

If adjustment or replacement of internal parts is required, i.e., won't shift into ALL seven (7) gears, perform the following replacement:

1. Ensure that the hub and shifter are properly installed.
- NOTE: Shifter is installed with a 4 mm hex key to a torque of 1.8 to 2.1 ft. lbs.*
2. Loosen knurled screw and pull gearbox (clickbox) from the hub axle.
3. Run the cable and clickbox along the frame and above the bottom bracket until it reaches the rear axle.

4. Ensure that there are no extreme bends in the cable and there is ample slack for the handlebars to turn without binding the cable.
5. Use a light oil and lubricate shift rod and the shift tube.

CAUTION

Ensure that the inner lug of the guiding rib is run into the shift tube slot until it snaps into place.

6. Push the rod and tube into the drive side of the axle as far as it will go. The shift rod should fit inside of the shift tube.
7. Position the shifter in gear number one.
8. Push the RED adjusting sleeve (guiding rib first) over the axle.
9. Position the guiding rib above the axle and slide it onto the clickbox.

NOTE: The guiding rib complete MUST be seated into the clickbox housing groove.

10. Ensure that the guiding rib fits into the slot in the top of the clickbox.

CAUTION

Ensure that knurled screw is secure.

11. Finger tighten knurled screw on clickbox.
12. If more technical assistance is required, contact the manufacturer direct at (800) 346-2928.
13. To maintenance, periodically lubricate the shift rod and shift tube.

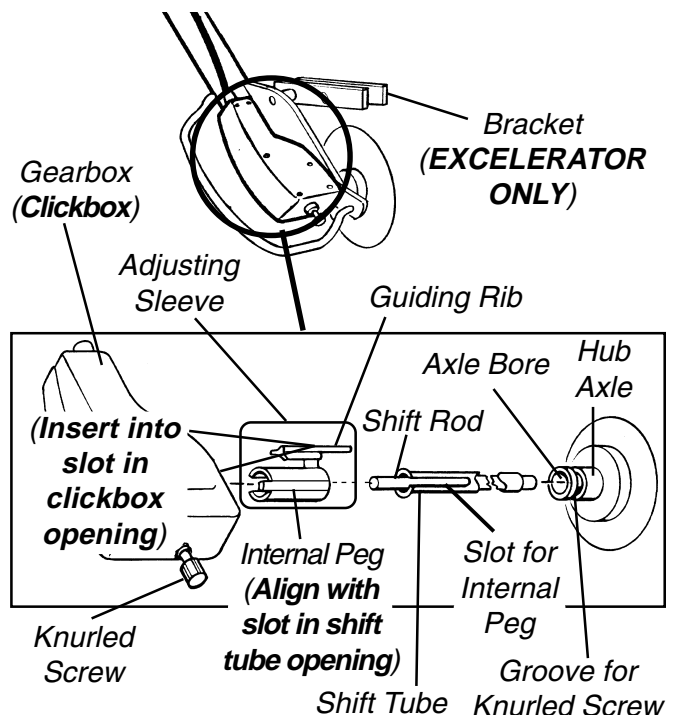


FIGURE 5 - EXCELERATOR/EXCELERATOR XLT SEVEN (7) SPEED SHIFTER CABLE ADJUSTMENT/REPLACEMENT - SACHS HUB ONLY

This Procedure includes the following:

EXCELERATOR/LI'L EXCELERATOR:
Chain Installation w/Seven (7) Speed Hub
Chain Adjustment
Chain Stay Adjustment

EXCELERATOR XLT/XLT 2000:
Chain Adjustment
Chain Installation w/Twenty-Four (24) or Twenty-Seven (27) Speed Cassette

WARNING

Chain **MUST** be tight. If noisy, loosen. After chain is assembled, start in first gear and on straight-away.

After **ANY** adjustments, repair or service and **BEFORE** use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.

EXCELERATOR/ LI'L EXCELERATOR /CHAIN INSTALLATION W/SEVEN (7) SPEED HUB (FIGURE 1)

1. Spread the chain out flat and run it over the **BOTTOM** chain tensioner upwards to the hand crank sprocket assembly.
 2. Position chain over the hand crank assembly sprocket.
- NOTE: It may be necessary to turn the hand crank in a clockwise motion to position the chain on the sprocket.*
3. Run the chain over the top chain tensioner.
 4. Position the chain around the wheel sprocket and back up towards the bottom chain tensioner.

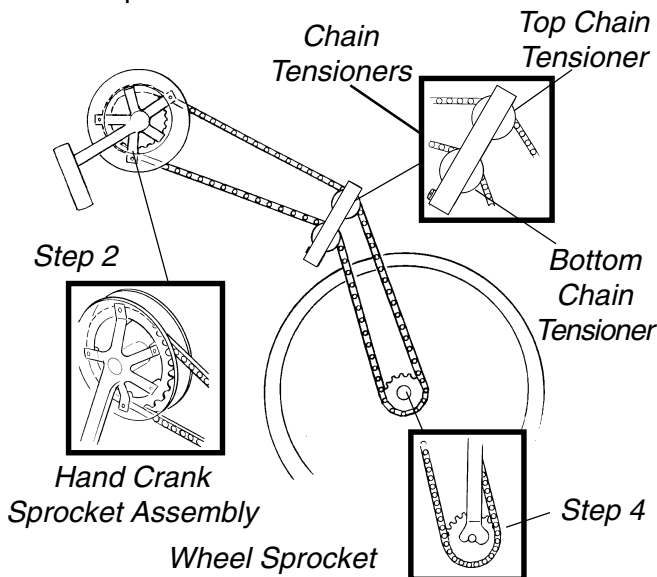


FIGURE 1 - EXCELERATOR / LI'L EXCELERATOR /CHAIN INSTALLATION W/SEVEN (7) SPEED HUB

5. Place chain over the top of the bottom chain tensioner.
6. Attach the chain together using the master link (w/ clip) provided.

EXCELERATOR/LI'L EXCELERATOR CHAIN ADJUSTMENT

1. Move the hand crank assembly up and down on the fork stem until you are comfortable with the position for operational purposes (PROCEDURE 2).

NOTE: Positioning of the hand crank assembly loosens or tightens the chain in an UP/DOWN position.

2. Tighten the hex screw to secure the hand crank assembly (PROCEDURE 2).
3. Adjust the tautness of the chain by moving the adjustable chain idler **IN** or **OUT** (PROCEDURE 2).
4. Tighten the hex screw to secure the adjustable chain idler in place (PROCEDURE 2).

EXCELERATOR CHAIN STAY ADJUSTMENT (FIGURE 2)

1. Loosen button screw and adjust bracket upward. Retighten button screw.

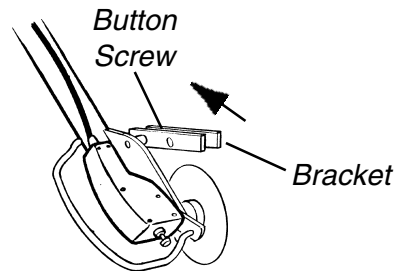


FIGURE 2 - EXCELERATOR CHAIN STAY ADJUSTMENT

EXCELERATOR XLT/XLT 2000 CHAIN ADJUSTMENT (FIGURE 3)

1. Loosen, but do not remove the two (2) socket screws that secure the crank handles to the fork.
2. Slide the crank handles up and/or down until the proper tension on the chain is achieved.

NOTE: The proper chain tension will be approximately 1/2-inch of chain slack.

NOTE: If crank is in desired position but chain tension is not correct, links must be added to or removed from the chain to correct the tension.

3. Tighten the two (2) socket screws that secure the crank handles to the fork securely.

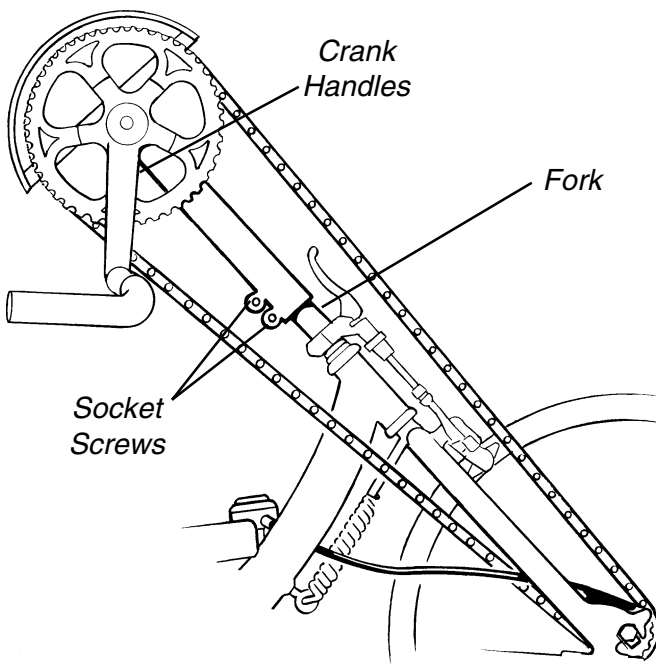


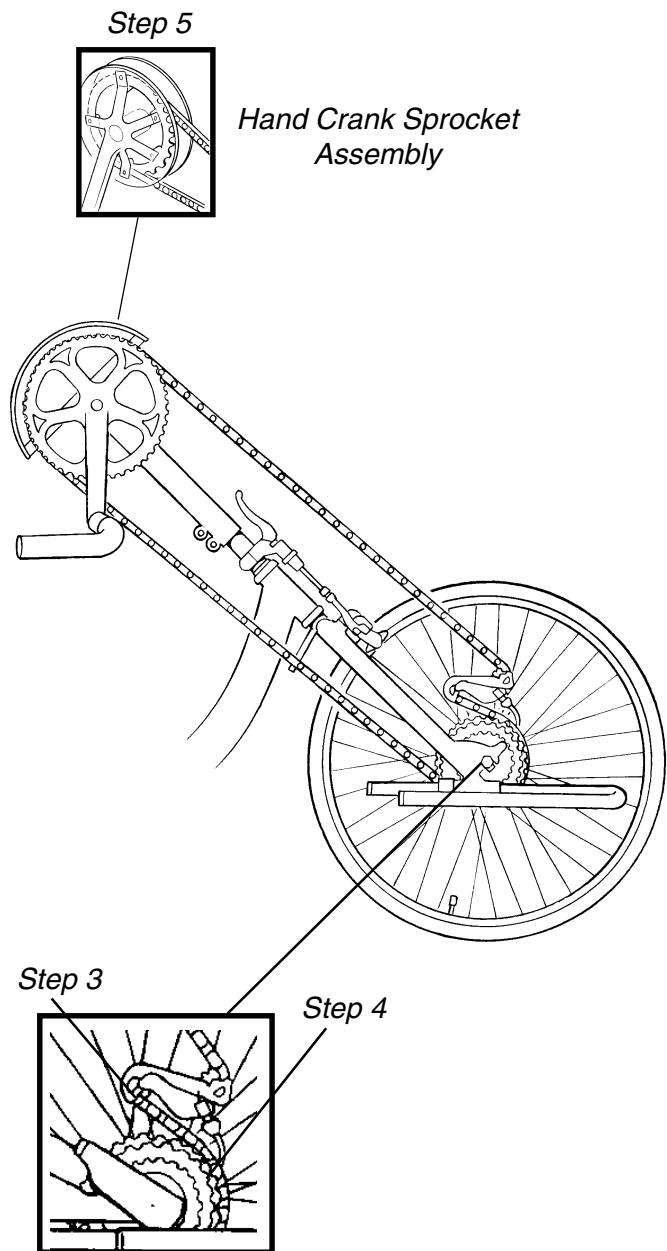
FIGURE 3 - EXCELERATOR - XLT CHAIN ADJUSTMENT

EXCELERATOR XLT/XLT 2000 CHAIN INSTALLATION - TWENTY- FOUR (24) OR TWENTY-SEVEN (27) SPEED CASSETTE (FIGURE 4)

1. Spread the chain out flat and run it around the chain ring on the crank and the sprocket on the hub.

NOTE: It may be necessary to turn the hand crank in a clockwise motion to position the chain on the small sprocket.

2. Ensure that crank assembly is loosened and movable.
3. Lift **UP** on the chain derailleur and thread the chain under the derailleur.
4. Thread the chain around the wheel sprocket.
5. Run the chain around the **BOTTOM** of the wheel sprocket and back up towards the hand crank sprocket.
6. Attach the chain together using the master link (**w/ clip**) provided.
7. To tension chain, refer to EXCELERATOR XLT/XLT 2000 FORK/CRANK ASSEMBLY REPLACEMENT in PROCEDURE 5 of this manual.



Chain Derailleur and
Wheel Sprocket

FIGURE 4 - EXCELERATOR XLT/XLT 2000 CHAIN
INSTALLATION - TWENTY-FOUR (24) OR TWENTY-
SEVEN (27) SPEED CASSETTE

This Procedure includes the following:
Using Parking Brake
Parking Brake Adjustment/Replacement

WARNING
 After ANY adjustments, repair or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.

USING PARKING BRAKE (FIGURE 1)

NOTE: The parking brake on the Excelerator, Li'l Excelerator and Excelerator XLT is factory installed. No installation is necessary.

1. To engage the parking brake, squeeze the handle and push in the stop button on the side of the parking brake or move stop lever to the highest position.
2. To disengage the parking brake, release the handle.

PARKING BRAKE ADJUSTMENT/REPLACEMENT (FIGURE 1)

WARNING
 Before using your particular Excelerator, inspect the parking brake for proper operation.

Adjustment

CABLE.

1. Loosen the hex nut and turn the adjuster barrel clockwise (tighten) or counterclockwise (loosen) to adjust the cable. Retighten hex nut.

BRAKE PADS.

1. Adjust the brake pad assembly so that when the parking brake is engaged the brake pads rest solely on the rim of the wheel.

Replacement

PARKING BRAKE PADS.

1. Remove the mounting nuts and replace brake pads.
2. Secure with existing hardware and adjust.

PARKING BRAKE.

WARNING
 Replacement of the parking brake MUST be performed by a qualified technician.

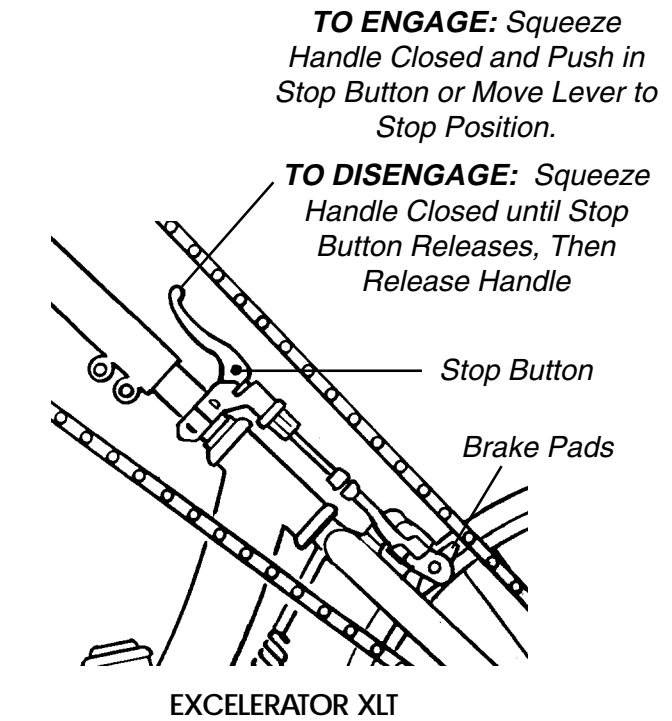
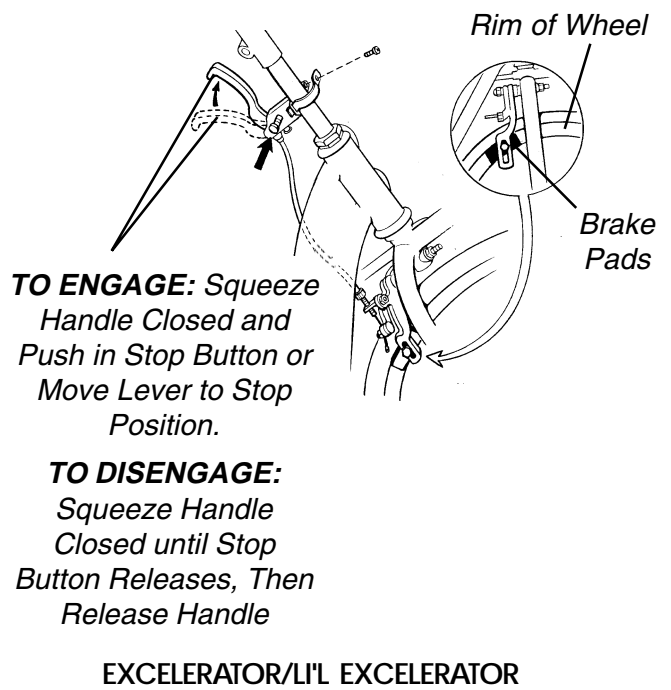


FIGURE 1 - PARKING BRAKE INSTALLATION/ADJUSTMENT/REPLACEMENT

This Procedure includes the following:
Back Height Adjustment (Adjustable Backs Only)
Sliding Seat Adjustment
Excelerator XLT/XLT 2000 Back Angle Adjustment

WARNING

After ANY adjustments, repair or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.

**BACK HEIGHT ADJUSTMENT
 (ADJUSTABLE BACKS ONLY)
 (FIGURE 1)**

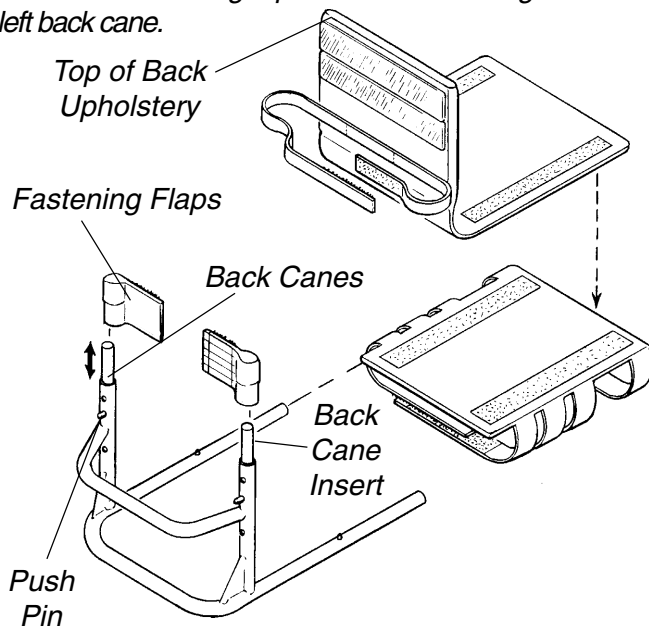
1. Unlatch the two (2) fastening flaps that secure the top of the back upholstery to the back canes.

WARNING

Push pin MUST protrude through hole in back cane. Ensure that both back cane inserts are at the same height BEFORE reassembling the chair.

2. Press the push pin on the back cane insert tube in and adjust the back height to one (1) of three (3) heights depending on original back height.
3. Reinstall the fastening flaps onto the back canes, ensuring the fastening strips face towards the front of the Excelerator.

NOTE: The fastening flap with the Invacare logo is for the left back cane.



**FIGURE 1 - BACK HEIGHT ADJUSTMENT
 (ADJUSTABLE BACKS ONLY)**

4. Secure the top of the back upholstery to the fastening flaps ensuring the top of the back upholstery is even with the top of the back canes.

**SLIDING SEAT ADJUSTMENT
 (FIGURES 2 AND 3)**

Excelerator/Li'l Excelerator (FIGURE 2)

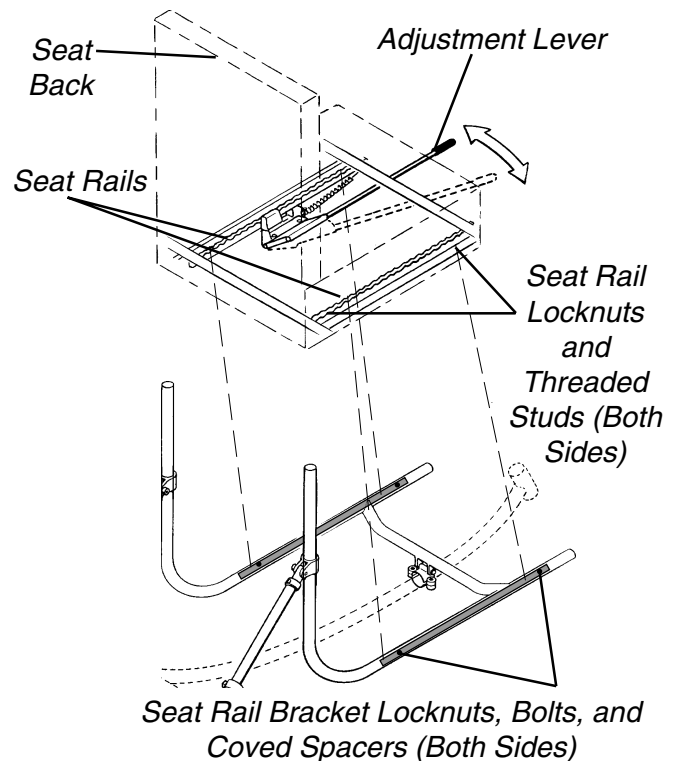
NOTE: The seat is supported on adjustment rails to allow forward/rearward adjustment. The adjustment lever is located on the underside of the seat, at the front left.

1. Activate parking brake.
2. Grasp forward/rearward adjustment lever and push it to the right and slide seat forward or rearward.
3. Ensure that seat is properly engaged into the seating position you desire by "jiggling" the seat, making sure that the seat engages into the locking notch and adjustment lever returns to its original forward facing position.

NOTE: User need not be in seat to slide seat forward or rearward.

REPLACEMENT.

1. Remove the locknuts, bolts, and covered spacers from both sliding seat rail brackets.
2. Remove sliding seat and seat rails from brackets.



**FIGURE 2 - SLIDING SEAT ADJUSTMENT -
 EXCELERATOR/LI'L EXCELERATOR**

3. Remove the locknuts from the threaded studs from seat rails on both sides of seat.
4. Remove seat from seat rails.
5. Reverse STEPS 3-4 to install NEW seat onto seat rails.
6. Reverse STEPS 1-2 to install sliding seat and seat rails onto the seat frame.

Excelerator XLT/XLT 2000 (FIGURE 3)

1. Activate parking brake.
2. Loosen, but do not remove the six (6) socket screws that secure the seat frame to the handcycle frame.

NOTE: There are three (3) socket screws on the right and left side of the handcycle.

3. Loosen, but do not remove the hex bolts and locknuts that secure the two (2) seat angle adjustment clamps to the rear seat supports.

NOTE: There is one (1) clamp on the right and left side of the handcycle.

4. Perform one (1) of the following:
 - A. **Moving the seat rearward** - While lifting up on the back support tubes, push the seat rearward to the desired position.
 - B. **Moving the seat forward** - While pushing down on the back support tubes, pull the seat forward to the desired position.
5. Tighten the six (6) socket screws that secure the seat frame to the handcycle frame securely.

Seat Angle Adjustment Clamps

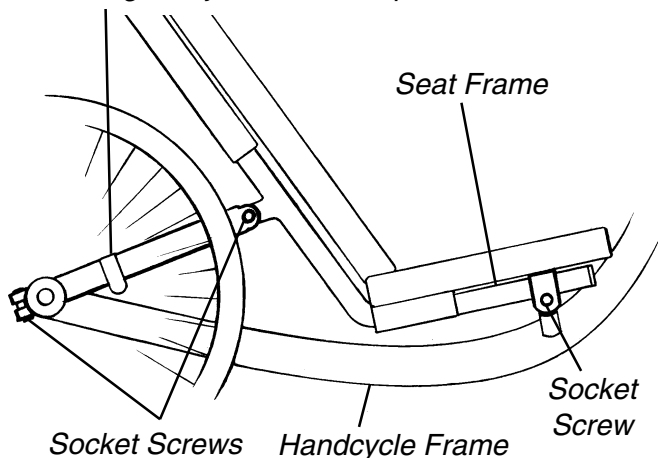


FIGURE 3 - SLIDING SEAT ADJUSTMENT - EXCELERATOR XLT/XLT 2000

6. Tighten the hex bolts and locknuts that secure the two (2) seat angle adjustment clamps to the rear seat supports securely.

EXCELERATOR XLT/XLT 2000 BACK ANGLE ADJUSTMENT (FIGURE 4)

1. Activate parking brake.
2. Loosen, but do not remove the four (4) rear socket screws that secure the seat frame to the handcycle frame.

NOTE: There are two (2) socket screws on the right and left side of the handcycle.

3. Loosen, but do not remove the hex bolts and locknuts that secure the two (2) seat angle adjustment clamps to the rear seat supports.

NOTE: There is one (1) clamp on the right and left side of the handcycle.

4. Perform one (1) of the following:
 - A. **Increasing Back Angle** - While lifting up on the back support tubes, pull the seat upward to the desired position.
 - B. **Decreasing Back Angle** - While pushing down on the back support tubes, push the seat down to the desired position.
5. Tighten the three (3) socket screws that secure the seat frame to the handcycle frame securely.
6. Tighten the hex bolts and locknuts that secure the two (2) seat angle adjustment clamps to the rear seat supports securely.

Seat Angle Adjustment Clamps

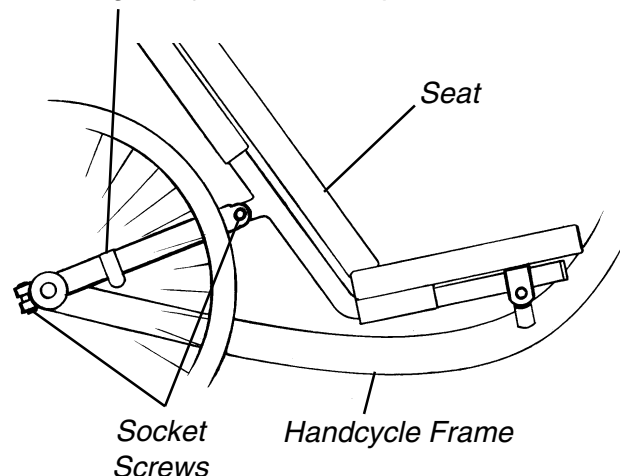


FIGURE 4 - EXCELERATOR XLT/XLT 2000 BACK ANGLE ADJUSTMENT

This Procedure includes the following:
Seat Upholstery Replacement
Back Upholstery Replacement

WARNING
 After ANY adjustments, repair or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.
 Upholstery MUST be inspected BEFORE each use. Exposure to moisture (ie. - wet weather or puddles) will damage fastening straps/flaps/strips. DO NOT operate excelerator if upholstery is wet or damaged, otherwise severe injury may occur.

SEAT UPHOLSTERY REPLACEMENT (FIGURE 1)

1. Remove seat cushion and back upholstery from chair.
2. Unlatch the four (4) fastening flaps that secure the seat upholstery to the seat frame.
3. Remove the existing seat upholstery.
4. Install the new seat upholstery making sure that the three (3) fastening flaps that are in close proximity to one another are to the rear of the seat frame.
5. Secure the four (4) fastening flaps together.
6. Reinstall back upholstery and seat cushion onto chair.

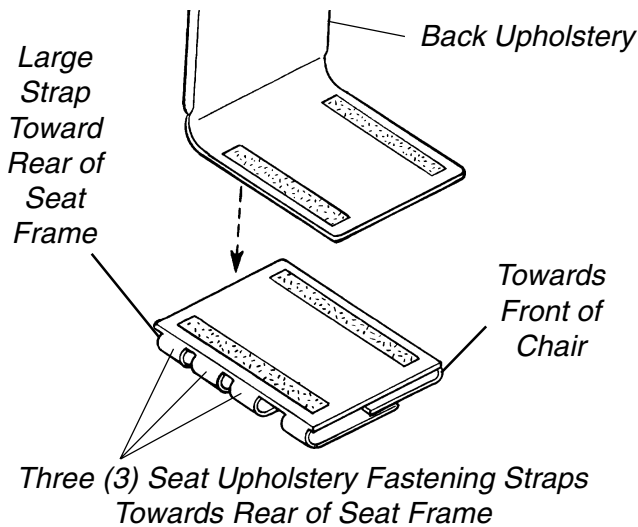


FIGURE 1 - SEAT UPHOLSTERY REPLACEMENT

BACK UPHOLSTERY REPLACEMENT

All Excelerators Except XLT/XLT 2000 Narrow Back (FIGURE 2)

1. Unlatch the two (2) fastening flaps that secure the bottom of existing back upholstery to the back canes.
2. Unlatch the top of the existing back upholstery.
3. Lift up on the existing back upholstery and remove from the wheelchair.

4. Install the new back upholstery onto the wheelchair.
5. Securely latch the fastening flaps on the bottom of the new back upholstery to the back canes.

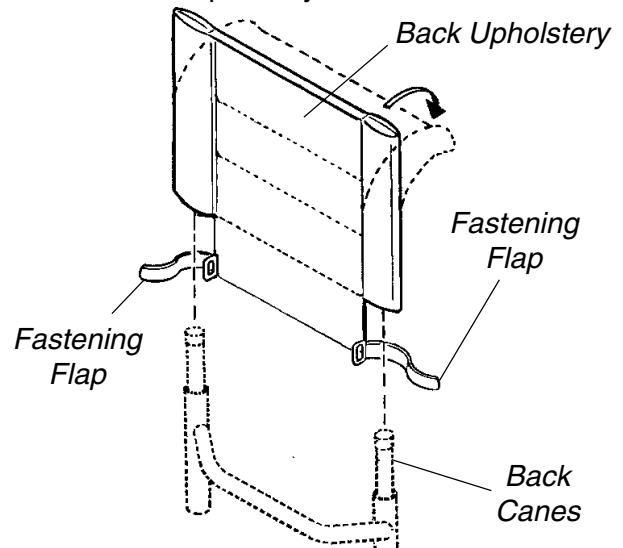


FIGURE 2 - BACK UPHOLSTERY REPLACEMENT - ALL EXCELERATORS EXCEPT XLT/XLT 2000 NARROW BACK

EXCELERATOR XLT/XLT 2000 Narrow Back (FIGURE 3)

1. Pull the back cushion off the back frame.
2. Align the fastening strips on the back frame with the fastening strips on the new back cushion.
3. Press the back cushion firmly against the back frame to secure.

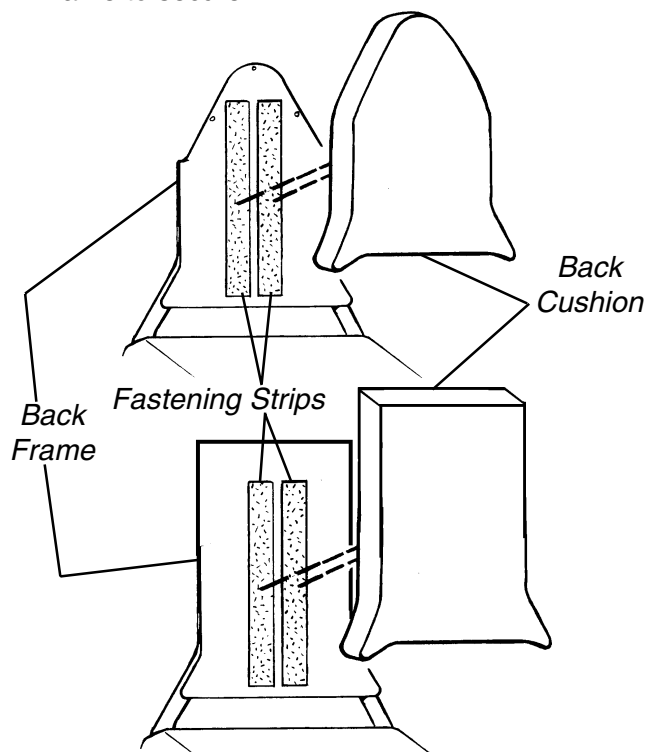


FIGURE 3 - EXCELERATOR XLT/XLT 2000

This Procedure includes the following:

EXCELERATOR LIL EXCELERATOR:
Footrest Adjustment/Replacement

EXCELERATOR - XLT/XLT 2000: *Footrest and Leg Guard Replacement*

Using/Replacing Footrest Strap

WARNING

After ANY adjustments, repair or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.

EXCELERATOR/LIL EXCELERATOR FOOTREST ADJUSTMENT/REPLACEMENT (FIGURE 1)

NOTE: Range of the Footrest is 0 to 4-1/2-inches.

Adjusting Footrest Height:

1. Loosen the socket screws on both footrests.
2. Slide the footplate up or down to desired height.
3. Retighten the socket screw that secures the footplate.
4. Secure straps over top of feet before using your Excelelator.

Adjusting Footrest Angle

1. Loosen the button screws and locknuts that secure the half clamps to the footrest weldment.

NOTE: The footplate clamps are located under the footplates.

2. Position footplates to an appropriate angle for user.
3. Securely tighten the button screws and locknuts that secure the half clamps to the footrest weldment.

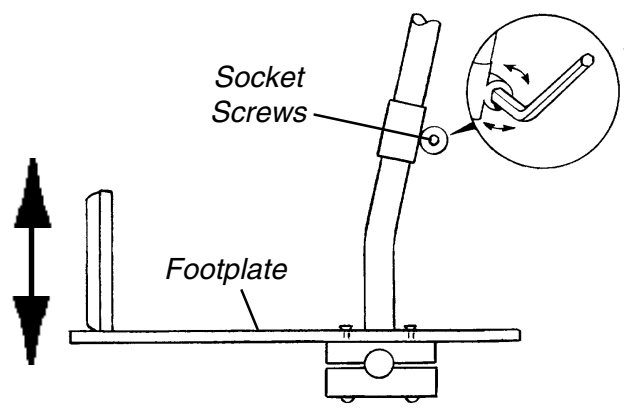
Adjusting Footrest Depth

1. Remove the two (2) button screws and locknuts that secure the footplates to the half clamps.
2. Adjust the footplates to one (1) of five (5) depths.
3. Line up the mounting holes in the footplates with the mounting holes in the footplate clamps.
4. Install the button screws into the mounting holes and tighten securely with the locknuts.

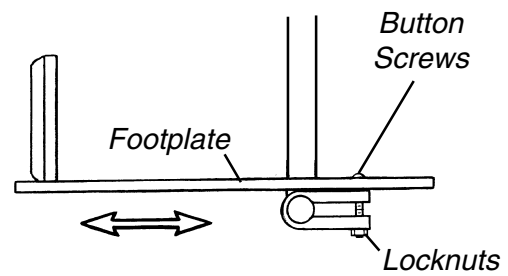
Replacing Individual Footplates

1. Remove the two (2) button screws and locknuts that secure the footrests to the footplate clamps.
2. Align new footplates on the footplate clamps at the desired depth.
3. Line up the mounting holes in the footplates with the mounting holes in the footplate clamps.
4. Install the button screws into the mounting holes and tighten securely with the locknuts.

Height Adjustment



Depth Adjustment



Angle Adjustment or Replacement

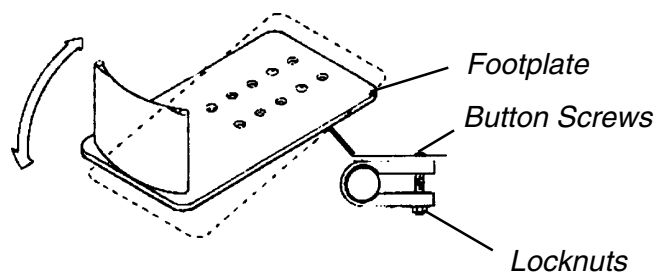


FIGURE 1 - FOOTREST ADJUSTMENT/REPLACEMENT

EXCELERATOR XLT/XLT 2000 FOOTREST AND LEG GUARD REPLACEMENT (FIGURE 2)

Footrest

1. Note the position of the existing footrest.
2. Remove the hex bolt and locknut that secure the existing footrest to the fork.
3. Remove the existing footrest from the clamp on the fork.
4. Slide the new footrest into the clamp on the fork to the position noted in STEP 1.
5. Reinstall the hex bolt and locknut. Tighten securely.
6. Repeat STEPS 1-5 for the opposite footrest, if necessary.

Leg Guard

1. Loosen the two (2) allen screws on each mounting clamp.
2. Position each mounting clamp onto the fork under the brake cable as shown in FIGURE 2.

NOTE: The leg guard should surround, but not touch the REAR of the front tire.

3. Tighten the two (2) allen screws on each mounting clamp securely.

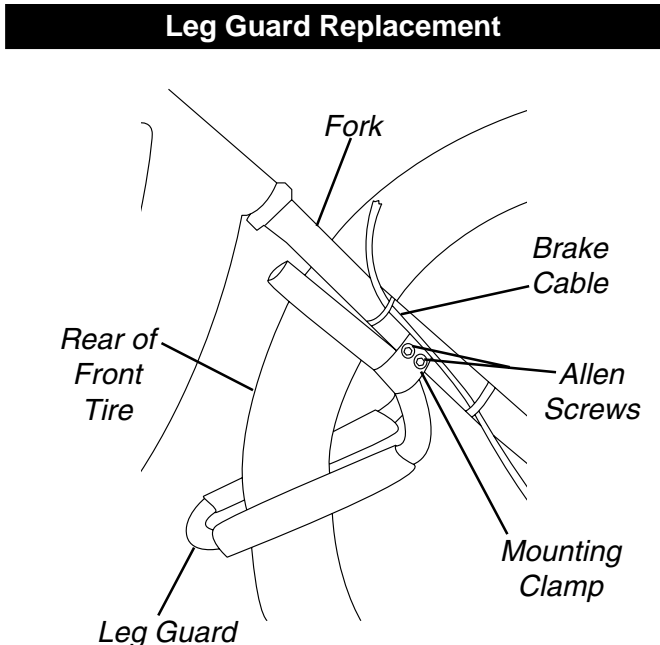
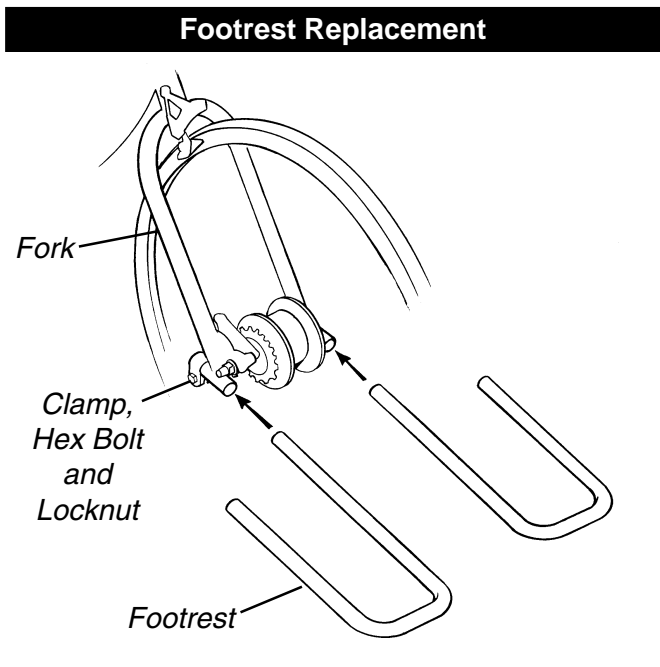


FIGURE 2 - EXCELERATOR XLT/XLT 2000 FOOTREST AND LEG GUARD REPLACEMENT

EXCELERATOR XLT/XLT 2000 - USING/REPLACING FOOTREST STRAP

FOOTREST

WARNING

Footrest straps **MUST** be inspected **BEFORE** each use. Exposure to moisture (ie.- wet weather or puddles) will damage fastening strips. Footrest strap will not hold feet securely in footrest if fastening strips are damaged. **DO NOT** operate excelerator if footrest straps are wet or damaged, otherwise severe injury may occur.

Always wear shoes and securely strap feet in using straps provided. Severe injury may occur if feet are not secured while the Excelerator is in motion.

Using Footrest Strap (FIGURE 3)

1. Place feet in footrests.
2. Secure feet to footrest strap using small fastening straps.

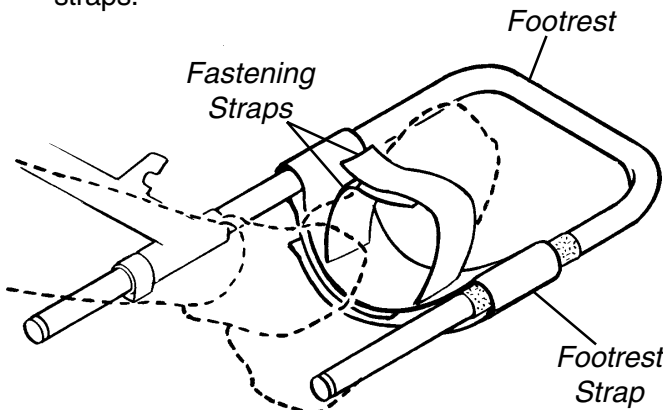


FIGURE 3 - USING FOOTREST STRAP

Replacing Footrest Strap (FIGURE 4)

1. Pull apart fastening straps securing existing footrest strap to footrest.
2. Position the footrest strap around the inner footrest tube as shown in DETAIL "A".

NOTE: The small fastening straps should face UP.

3. Firmly connect the hook and loop portion of the footrest strap to the inner footrest tube as shown in DETAIL "A".
4. Wrap end of footrest strap over and around the outer footrest tube and under the inner footrest tube as shown in DETAILS "A" and "B".
5. Press the end of the footrest strap against the portion of the footrest strap installed onto the inner footrest tube as shown in DETAIL "B".
6. Ensure the footrest strap is firmly attached to the loop fastening strip on the outer footrest tube.

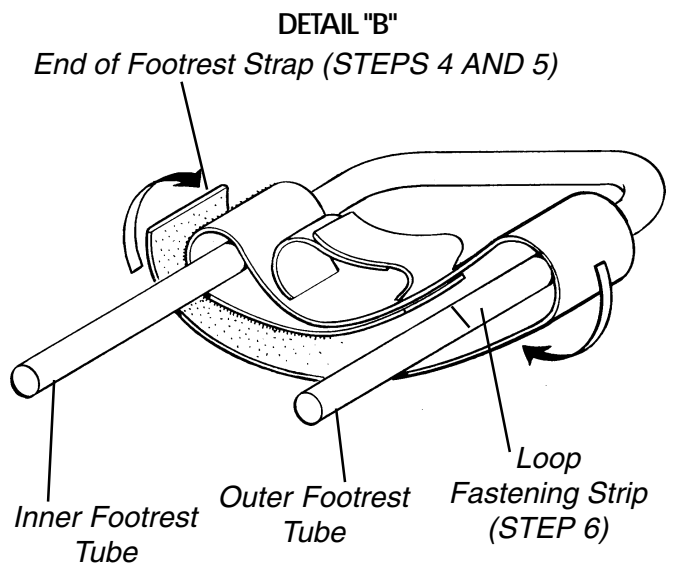
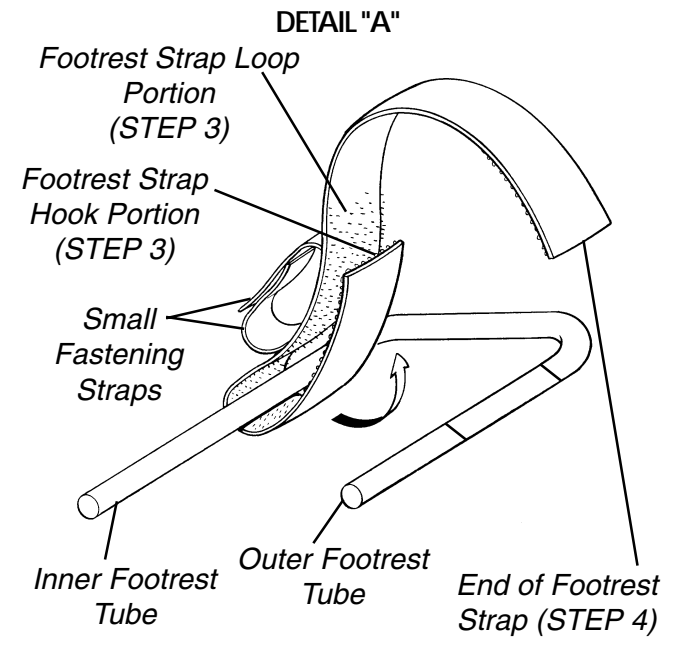


FIGURE 4 - REPLACING FOOTREST STRAP

This Procedure includes the following:
Hand Crank Assembly
Shifting Gears
Backing Up/Braking/Parking Brake
Steering/Cornering
Mountain Drive Option

WARNING
 After ANY adjustments, repair or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.

HAND CRANK ASSEMBLY

NOTE: For Installation or Adjustment of the Hand Crank Assembly, refer to PROCEDURE 5 in this manual.

NOTE: Adjust the seat to fit your particular requirements for a comfortable position when operating the Excelerator. Refer to PROCEDURE 9 in this manual.

The hand crank assembly is used for propelling and steering of the Excelerator. At least one (1) hand MUST be on the hand crank assembly at all times.

SHIFTING GEARS

**Li'l Excelerator (Three [3] Speed)
 Excelerator (Seven [7] Speed)**

To shift gears, hold onto the hand crank assembly with one (1) hand, continue pedaling, but ease pressure on the pedals and select the gear required. If the Excelerator is stationary, simply select gear required. The neutral position is constant except when pedaling forward or applying the brakes.

Excelerator/Excelerator XLT (Seven [7] Speed) (FIGURE 1)

1. Perform one (1) of the following:
 - A. **UPSHIFT** - Push the shifting lever towards the indicator and release. Repeat until the desired gear is obtained.
 - B. **DOWNSHIFT** - Push shifting lever down and away from the indicator. Repeat until the desired gear is obtained.

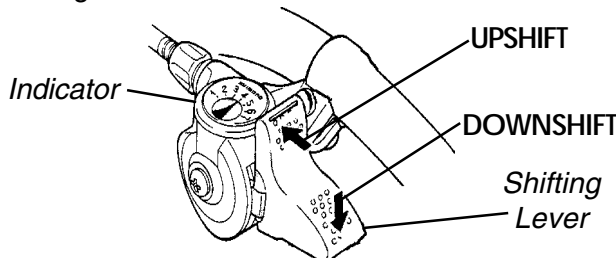


FIGURE 1 - SHIFTING GEARS - EXCELERATOR/ EXCELERATOR XLT (SEVEN [7] SPEED)

Excelerator XLT Twenty-four (24) Speed (FIGURE 2)

To shift gears, you **MUST** turn the crank forward with the chain under some tension while the bike is moving. **DO NOT** attempt to shift gears while bike is stationary. Shifting the chain towards the centerline of the handcycle is for climbing/accelerating and is called a downshift. Moving the chain out or away from the centerline of the handcycle is for speed and is called an upshift.

There are two (2) grips installed on the seat rails. The **RIGHT** grip has eight (8) speeds and the **LEFT** grip has three (3) speeds.

1. Rotate the **RIGHT** grip until the indicator points to a higher number.
2. Perform one (1) of the following:
 - A. **INDICATOR POINTS TO "8"** - Rotate the **LEFT** grip until the indicator points to a higher number. Rotate the **RIGHT** grip until the indicator points to "1".
 - B. **INDICATOR POINTS TO "1-7"** - Repeat **STEP 1** until desired gear is achieved.
3. Repeat **STEPS 1-2** until the desired gear is achieved.
4. To downshift, reverse **STEPS 1-3**.

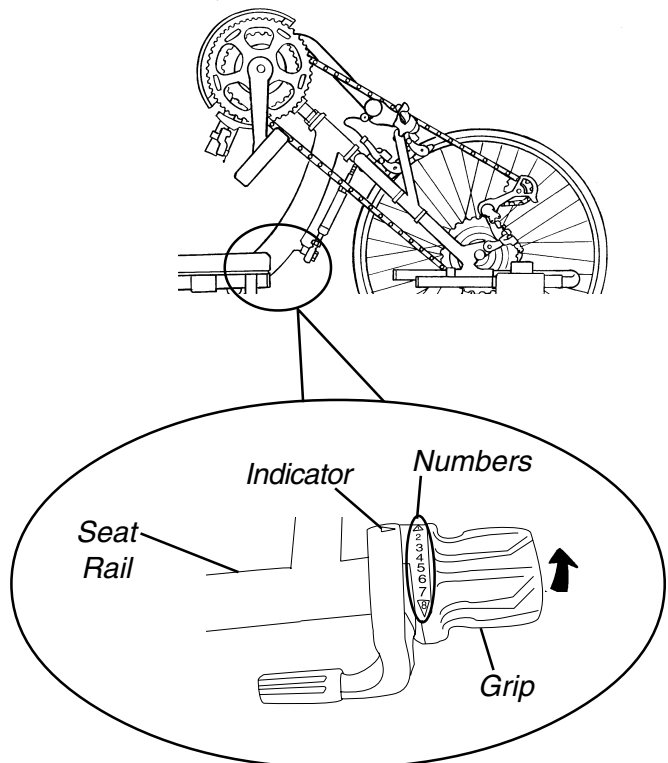


FIGURE 2 - EXCELERATOR XLT TWENTY-FOUR (24) SPEED

Excelerator XLT 2000 Twenty-seven (27) Speed Cassette (FIGURE 3)

To shift gears, you **MUST** turn the crank forward with the chain under some tension while the bike is moving. **DO NOT** attempt to shift gears while bike is stationary. Shifting the chain towards the centerline of the handcycle is for climbing/accelerating and is called a downshift. Moving the chain out or away from the centerline of the handcycle is for speed and is called an upshift.

1. Perform one (1) of the following:
 - A. **UPSHIFT** - Press the shifter handle **DOWN** and release. Repeat until the desired gear is obtained.
 - B. **DOWNSHIFT** - Press the brake handle **DOWN** and release. Repeat until the desired gear is obtained.

NOTE: The Left shifter handle operates the top derailleur and the Right shifter handle operates the bottom derailleur.

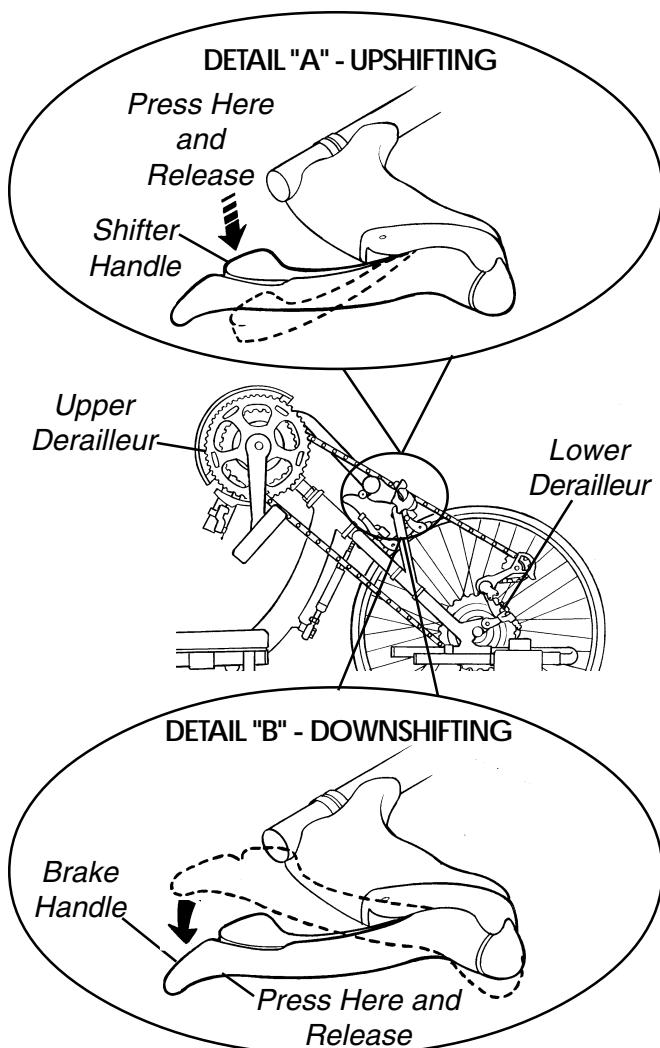


FIGURE 3 - EXCELERATOR XLT 2000 TWENTY-SEVEN (27) SPEED CASSETTE

BACKING-UP

Use the rear wheels (i. e. like a manual wheelchair) to backup. When backing up keep the front wheel straight.

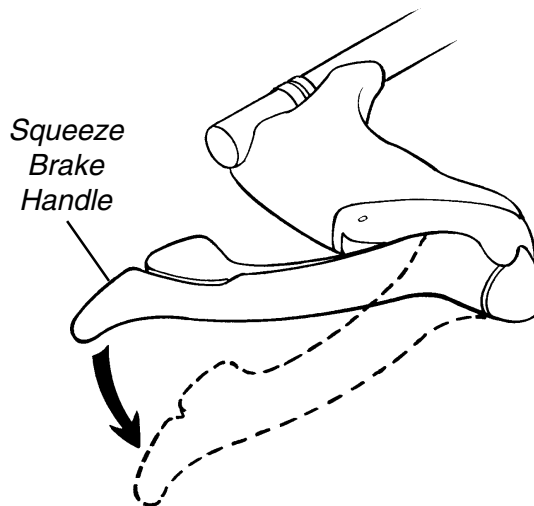
BRAKING

Reversing Drum Brakes - Seven (7) Speed ONLY

Use the brakes intermittently on your Excelerator cycle to bring it to a complete stop. Apply by pedaling in reverse.

Hand Brakes - Twenty-Four (24) and Twenty-Seven (27) Speed ONLY (FIGURE 4)

1. Squeeze brake handle(s) as needed to slow or come to a complete stop.
2. Release when desired speed is achieved.



NOTE: Twenty-seven (27) speed hand brake shown.

FIGURE 4 - HAND BRAKES - TWENTY-FOUR (24) AND TWENTY-SEVEN (27) SPEED ONLY

PARKING BRAKE

WARNING

Before attempting to transfer IN or OUT of the Excelerator, every precaution should be taken to reduce the gap distance. Position the Excelerator on level ground and as close as possible to the object you are transferring INTO or OUT of. The parking brake of the Excelerator **MUST** be engaged and the object you are transferring INTO or OUT of **MUST** also be secured before attempting any transfer.

To engage the parking brake, squeeze the handle and push the stop button **IN** until the handle locks in place.

To disengage the parking brake, release the handle.

WARNING

The twenty-seven (27) speed cassette on the Excelerator XLT 2000 uses the hand brake as the primary brake. Reverse pedaling **WILL NOT** stop the bike.

STEERING/CORNERING**WARNING**

DO NOT attempt to corner the handcycle at high speeds. This could result in a fall causing injury and/or damage to the handcycle.

DO NOT shift the mountain drive under load. This may cause damage to the handcycle and **WILL VOID THE WARRANTY**.

Steering the Handcycle

To steer the handcycle, use the hand pedals to direct the front crank and wheel assembly in the direction you intend to go (**straight, right, or left**). Steering can be done while pedaling or coasting. When cornering, it is recommended that you slow the handcycle, stop pedaling, steer the handcycle and coast through the turn.

MOUNTAIN DRIVE OPTION - SEVEN (7) SPEED SHIFTER ONLY**CAUTION**

DO NOT shift the mountain drive option under load (i.e. using a high gear to start the handcycle in motion or to climb a hill, etc.). Shifting the mountain drive option under load will damage the internal workings of the mountain drive option.

Switching to Mountain Drive Option

1. Perform one (1) of the following:
 - A. Switching Mountain Drive Option ON - Push the gear shift button on the **RIGHT** side of the hand crank **IN** while the option is **UNDER NO LOAD**.
 - B. Switching Mountain Drive Option OFF - Push the gear shift button on the **LEFT** side of the hand crank **IN** while the option is **UNDER NO LOAD**.

Tightening Hand Crank

NOTE: If hand crank will not engage the chain, it will be necessary to tighten the Mountain Drive Crank nut.

1. Insert the open end of the hooked wrench (**provided**) around the nut between the hand crank and axle and cup tube.
2. Hold the hand crank and turn the wrench clockwise.
3. Continue until nut is tight.
4. Perform the same for the other side of the crank.
5. Turn crank and ensure that the crank operates and turns the chain.

Lubrication (FIGURE 5)

NOTE: Refer to the SAFETY INSPECTION CHECK-LIST to determine how often lubrication is necessary.

1. Remove the screw on the hand crank.
2. Insert a few drops of bicycle or machine oil.
3. Reinstall the screw on the hand crank.

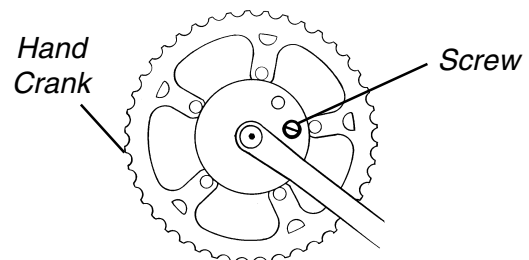


FIGURE 5 - MOUNTAIN DRIVE OPTION - LUBRICATION

Bearing Play Adjustment (FIGURE 6)

NOTE: Refer to the SAFETY INSPECTION CHECKLIST to determine how often bearing play adjustment is necessary.

NOTE: This adjustment is required only if there is some play in the hand crank in a SIDE TO SIDE motion.

NOTE: There will be some play in a forward/rearward motion.

1. Slightly tighten self-locking nut on the left side (sitting in the handcycle) of the hand crank. DO NOT over-tighten.

NOTE: Overtightening the self-locking nut will cause the gears to engage improperly after shifting.

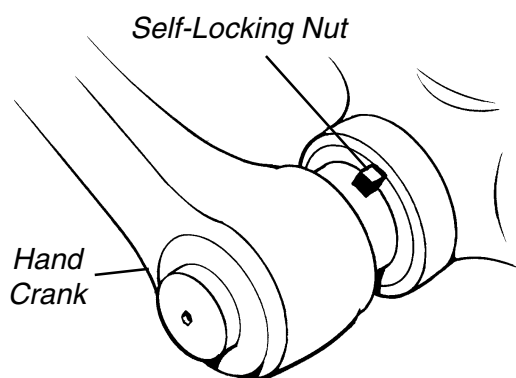


FIGURE 6 - MOUNTAIN DRIVE OPTION - BEARING PLAY ADJUSTMENT

Adjusting Gear Shift Push Button (FIGURE 7)

WARNING

Incorrect adjustment of gear shift push button may result in a failure of the coaster brake, possibly causing injury and or damage.

1. Loosen, but do not remove the allen set screw in the middle of the gear shift push button.
2. Turn in the gear shift push button approximately two (2) revolutions.
3. Push the gear shift push button IN.
4. Move the hand crank slightly until the switch position engages audibly.
5. Turn the gear shift push button until it is flush with the hand crank.

NOTE: Make sure there is some play underneath the button.

6. Securely tighten the allen set screw in the middle of the gear shift push button.

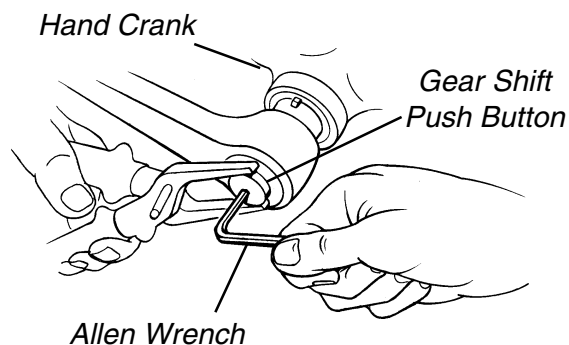


FIGURE 7 - MOUNTAIN DRIVE OPTION - ADJUSTING GEAR SHIFT PUSH BUTTON

<i>This Procedure includes the following:</i>
<i>Water Bottle Installation</i>
<i>Tow Bar Installation</i>
<i>Safety Light Installation</i>
<i>Computer Installation</i>
<i>Seat Positioning Strap Installation</i>
<i>Horizontal Handles</i>
<i>Tri-Pin Spinning Quad Handles</i>
<i>Gloves</i>
<i>Safety Flag</i>
<i>Safety Helmet</i>

WARNING

After ANY adjustments, repair or service and BEFORE use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.

WATER BOTTLE INSTALLATION (FIGURE 1)

1. Secure the black water bottle mounting tube to the seat frame using the hardware provided.
- NOTE: Make sure that the water bottle mounting bracket mounting holes are facing downward.*
2. Attach the water bottle mounting bracket to the black mounting tube using the hardware provided.
 3. Push water bottle into mounting bracket until secure.

TOW BAR INSTALLATION (FIGURE 1)

1. Attach the tow bar mounting brackets to the rear chair frame of the Excelerator using the hardware provided.
- NOTE: Make sure that the mounting hardware is centered on the rear chair frame.*
2. Insert tow bar into mounting bracket and secure with hardware provided.

REAR SAFETY LIGHT (FIGURE 1)

WARNING

Operation of the Excelerator is subject to all traffic rules and regulations. (This may include the use of a safety light and reflectors for dusk/night riding.)

Batteries

1. Remove the lens cover.
2. Insert the **AAA** batteries with correct polarity (+ or -).
3. Reinstall lens cover.

Operating the Safety Light

1. Press **GREY** button for **ON/OFF**.
2. Remove lens cover and slide Black switch back and forth for pulse or constant mode.

Mounting the Safety Light

1. Open clip on back of safety light.
2. Place clip over back upholstery fastening flap and release.

COMPUTER INSTALLATION (FIGURE 1)

1. Install metal plug onto spoke of front wheel approximately 2-inches from wheel rim.
 2. Align metal plug with fork assembly.
 3. Secure sensor to fork using hardware provided.
- NOTE: Slot in sensor MUST align with metal plug for mileage etc. to be registered on the computer.*
4. Remove one (1) of the chain guard screws and attach the computer mounting bracket.
 5. Snap computer into mounting bracket.

SEAT POSITIONING STRAP INSTALLATION (FIGURE 1)

1. Secure seat positioning strap to back canes using hardware provided.

HORIZONTAL HANDLES (FIGURE 1)

1. Remove existing handles and replace as shown in FIGURE 1.

TRI-PIN QUAD HANDLES (FIGURE 1)

1. Remove existing handles and replace.
2. Loosen socket screws and adjust.

GLOVES (FIGURE 1)

1. Wrap palm loop around horizontal handle (**using top slot only**) and secure by attaching velcro strips together.
2. Run velcro strip (back of hand) through bottom slot on palm and over back of hand until tight. Secure by attaching velcro strips together.
3. Reattach glove strips to back of glove.

SAFETY FLAG INSTALLATION (FIGURE 1)

1. Mount safety flag in holder secured to back tube on bike frame.

O P T I O N S

SAFETY HELMET (FIGURE 1)

1. Secure helmet using the chin strap.
2. Ensure proper fit.

3. Three (3) different brackets included for different widths.
4. Change bracket by removing the existing button screws and attach the new bracket with the existing button screws.

LATERAL SUPPORT (FIGURE 1)

1. Position lateral support on frame as shown.
2. Secure with button screws.

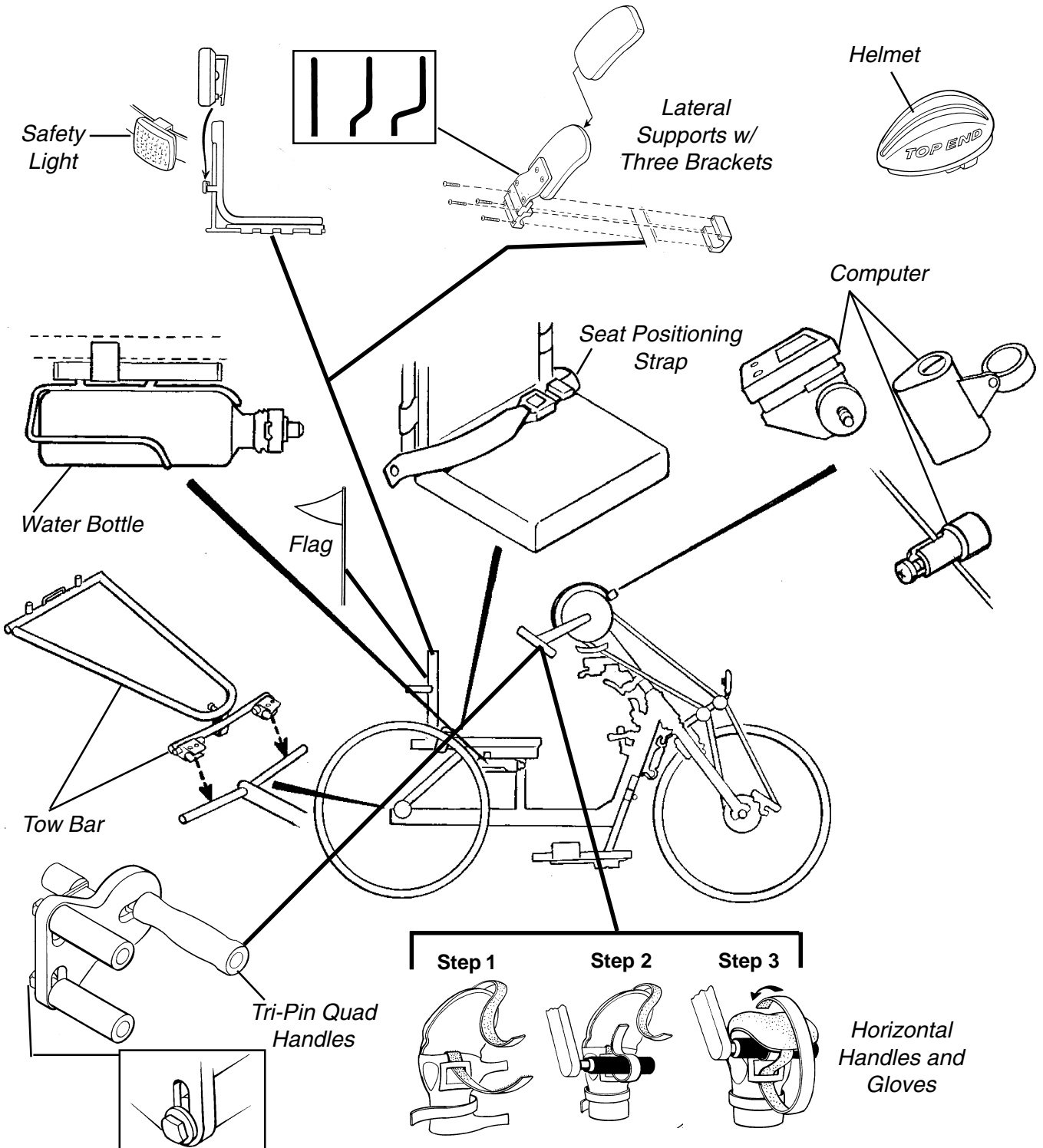


FIGURE 1 - INSTALLATION OF OPTIONS

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.

Invacare warrants the frame to be free from defects in materials and workmanship for a period of three (3) years from date of purchase; distributed parts and components including compensators, forks, upholstery and miscellaneous bicycle components are warranted for a period of one (1) year from the date of purchase; except all tires, tubes, push handles grips, foam parts, plastic coated parts, bushings, bearings and cables which are not warranted. The Mountain Drive Option is not warranted. If within such warranty period any such product shall be proven to be defective, such product shall be repaired or replaced, at Invacare's option. This warranty does not include any labor or shipping charges incurred in replacement part installation or repair of any such product. Invacare'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 Invacare product. In the event you do not receive satisfactory warranty service, please write directly to Invacare at the address below. Provide dealer's name, address, 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, COMMERCIAL OR INSTITUTIONAL USE, PRODUCTS MODIFIED WITHOUT INVACARE'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 INVACARE, OR TO A PRODUCT DAMAGED BY CIRCUMSTANCES BEYOND INVACARE'S CONTROL, AND SUCH EVALUATION WILL BE SOLELY DETERMINED BY INVACARE. THE WARRANTY SHALL NOT APPLY TO PROBLEMS ARISING FROM NORMAL WEAR OR FAILURE TO ADHERE TO THESE INSTRUCTIONS.

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