

TOP END[®]

EXCELERATOR[™] SERIES

Excelerator[™]

Li'l Excelerator[™]

DEALER:

THIS MANUAL MUST BE GIVEN TO THE USER OF
THE HANDCYCLE.

REFER TO THE INFORMATION ON PAGE 7 OF THIS
MANUAL.

USER:

BEFORE USING THIS HANDCYCLE, READ THIS MANUAL
AND SAVE FOR FUTURE REFERENCE.

For more information regarding
Invacare products, parts, and services,
please visit: www.invacare.com



Yes, you can.™

WARNING

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 OR DAMAGE MAY RESULT.

THE INITIAL SET UP OF THIS WHEELCHAIR MUST BE PERFORMED BY A QUALIFIED TECHNICIAN.

SAVE THESE INSTRUCTIONS

TABLE OF CONTENTS

| | |
|--|-----------|
| DEALER/TECHNICIAN INFORMATION | 7 |
| SPECIAL NOTES | 7 |
| TYPICAL PRODUCT PARAMETERS | 8 |
| SECTION 1 - GENERAL GUIDELINES | 9 |
| Proper fit | 9 |
| Operating Information | 9 |
| Tire Pressure | 11 |
| Weight Limitation | 11 |
| Safety/Handling of the handcycle | 12 |
| Transferring into/out of the handcycle | 13 |
| SECTION 2 - SAFETY INSPECTION | 15 |
| Safety Inspection Checklist | 15 |
| Maintenance | 16 |
| Troubleshooting | 16 |
| SECTION 3 - INITIAL SETUP | 18 |
| Initial Setup | 18 |
| Riding the Handcycle | 20 |
| SECTION 4 - OPERATION | 20 |
| Shifting Gears | 21 |
| Backing Up | 22 |
| Braking | 22 |
| Parking Brake | 22 |
| Steering/Cornering | 22 |
| Hand Crank Height Adjustment | 23 |
| Footrest Adjustment/Replacement | 23 |
| SECTION 5 - RIDING POSITION | 23 |
| Sliding Seat Adjustment/Replacement | 25 |
| Back Height Adjustment (Adjustable Backs Only) | 26 |
| SECTION 6 - WHEELS | 27 |
| Installing/Adjusting the Rear Wheels and Quick-Release Axles | 27 |
| Tire/Tube Replacement and Tuning/Replacement of Spokes | 28 |
| Tire Pressure | 28 |
| Determining/Adjusting Toe In/Toe Out | 28 |
| Replacing Camber Inserts | 29 |

TABLE OF CONTENTS

TABLE OF CONTENTS

| | |
|--|-----------|
| SECTION 7 - SERVICE PROCEDURES | 30 |
| Fork Assembly Installation | 30 |
| Tension Spring Installation | 30 |
| Seven (7) Speed Shifter Cable Installation | 31 |
| Seven (7) Speed Shifter Adjustment/Replacement | 31 |
| Seven (7) Speed Hub Chain Installation | 32 |
| Chain Adjustment | 33 |
| Parking Brake Adjustment/Replacement | 34 |
| Seat Upholstery Replacement | 35 |
| Back Upholstery Replacement | 36 |
| SECTION 8 - OPTIONS | 37 |
| Water Bottle Installation | 37 |
| Rear Safety Light | 38 |
| Tow Bar Installation and Use | 38 |
| Seat Positioning Strap Installation | 39 |
| Computer Installation | 39 |
| Hand Crank Handles | 40 |
| Gloves | 40 |
| Safety Flag Installation | 41 |
| Safety Helmet | 41 |
| Lateral Support | 41 |
| Using the Alignment Gauge | 42 |
| Mountain Drive Option | 43 |
| Assembling/Using/Adjusting the Handcycle Rack | 44 |
| LIMITED WARRANTY | 47 |

REGISTER YOUR PRODUCT!

The benefits of registering:

1. Safeguard your investment.
2. Ensure long term maintenance and servicing of your purchase.
3. Receive updates with product information, maintenance tips, and industry news.
4. Invacare can contact you or your provider, if servicing is needed on your product.
5. It will enable Invacare to improve product designs based on your input and needs.

Register **ONLINE** at www.invacare.com

- or -

Complete and mail the form on the next page

Any registration information you submit will be used by Invacare Corporation only, and protected as required by applicable laws and regulations.



PRODUCT REGISTRATION FORM

Register **ONLINE** at www.invacare.com - or -
Complete and mail this form

Name _____

Address _____

City _____ State/Province _____

Zip/Postal Code _____

Email _____ Phone No. _____

Fold
here

Invacare Model No. _____ Serial No. _____

Purchased From _____ Date of Purchase: _____

1. Method of purchase: (check all that apply)

Medicare Insurance Medicaid Other _____

2. This product was purchased for use by: (check one)

Self Parent Spouse Other

3. Product was purchased for use at:

Home Facility Other

4. I purchased an Invacare product because:

Price Features (list features) _____

5. Who referred you to Invacare products? (check all that apply)

Doctor Therapist Friend Relative Other _____

No referral Advertisement (circle one): TV, Radio, Magazine, Newspaper

6. What additional features, if any, would you like to see on this product?

Fold
here

7. Would you like information sent to you about Invacare products that may be available for a particular medical condition? Yes No

If yes, please list any condition(s) here and we will send you information by email and/or mail about any available Invacare products that may help treat, care for or manage such condition(s):

8. Would you like to receive updated information via email or regular mail about the Invacare home medical products sold by Invacare's dealers? Yes No

9. What would you like to see on the Invacare website?

10. Would you like to be part of future online surveys for Invacare products? Yes No

11. User's Year of birth: _____

If at any time you wish not to receive future mailings from us, please contact us at Invacare Corporation, CRM Department, 39400 Taylor Parkway, Elyria, OH 44035, or fax to 877-619-7996 and we will remove you from our mailing list.

To find more information about our products, visit www.invacare.com.

Cut Along Line



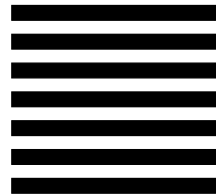
Fold
here



BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 196 ELYRIA OH

POSTAGE WILL BE PAID BY ADDRESSEE

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



INVACARE CORPORATION
CRM DEPARTMENT
39400 TAYLOR PARKWAY
ELYRIA OH 44035-9836



Fold
here

Invacare Product Registration Form

Please Seal with
Tape Before Mailing

Cut Along Line



DEALER/TECHNICIAN INFORMATION

The term "qualified technician" in this manual refers to an Invacare qualified technician or a Shimano® certified bicycle repair technician.

SPECIAL NOTES

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

NOTICE

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

WARNING

HANDCYCLE USER

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

HANDCYCLE TIE-DOWN RESTRAINTS AND SEAT POSITIONING STRAPS

Invacare recommends that handcycle users **NOT** be transported in vehicles of any kind while in a handcycle. As of this date, the Department of Transportation has not approved any tie-down systems for transportation of a user while in a handcycle, 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 A HANDCYCLE.

TYPICAL PRODUCT PARAMETERS

TYPICAL PRODUCT
PARAMETERS

| | EXCELERATOR | LI'L EXCELERATOR |
|----------------------------------|--|--|
| Seat Width: | 14 to 20-inches | 12 or 14-inches |
| Seat Depth: | 15 | 12 or 14-inches |
| Seat-to-Floor (approx.): | Fixed 20/18-inches | Fixed 17.5/15.5-inches |
| Back Style: | Rigid | Rigid |
| Back Height (Adjustable): | 11to14 with a 90° Angle | 11 to 14-inches |
| Footrest: | Adjustable Height/Angle | Adjustable Height/Angle |
| Side - Wheel Clearance: | 2-inches - *2.5-inches | 2-inches - 2.5-inches |
| Rear Axle: | Quick-Release | Quick-Release |
| Rear Wheel Camber: | 9° - Standard | 9° - Standard |
| Wheels: | 24-inch Spoke (Cruiser Tires) | 20-inch Spoke (Cruiser Tires) |
| Brakes: | Hand Crank (Internal) Parking Brake | Hand Crank (Internal) Parking Brake |
| Hand Pedals: | Ergonomic, Vertical or Horizontal | Ergonomic, Vertical or Horizontal |
| Hub: | FRONT - Shimano Nexus® 7 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 |
| Spokes: | 14 Gauge Stainless | 14 Gauge Stainless |
| Shift Levers: | Shimano | Shimano |
| Gears: | 7 Speed | 7 Speed |
| Seat Cushion: | Foam Insert | Foam Insert |
| Back Upholstery: | Nylon-Adjustable Tension | Nylon-Adjustable Tension |
| Weight: | 50 lbs. | 40 lbs. |
| Shipping Weight: | 80 lbs. | 70 lbs. |
| Options: | Computer, Tow Bar, 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, Tri-pin Quad Handles | Computer, Tow Bar, Safety Light, Helmet and Flag, Custom Color, Seat Positioning Strap, Quad Cuffs & Gloves, Mountain Drive, Bike Rack, Water Bottle and Cage, Tri-pin Quad Handles |
| Weight Limitation: | 350 lbs. | 150 lbs. |

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

Section 1 - General Guidelines - includes the following:

Proper Fit

Operating Information

Tire Pressure

Weight Limitation

Safety/Handling of the Handcycle

Transferring Into/Out of the Handcycle

PROPER FIT

WARNING

The handcycle **MUST** be adjusted to fit the rider. For a proper fit:

- The rider **MUST** be able to see over the hand crank.
- The rider **MUST** have a slightly bent elbow when the hand pedals are toward the front of the handcycle (farthest from the rider's face).
- The rider **MUST** have a 90° bend at the knee when feet are in the footrests.
- Footrests **MUST** be adjusted to allow a minimum of a 2-inch clearance between the bottom of the footrest and the ground.
- The rider's knees **MUST** not obstruct hand crank operation.

Check the seat position, back height, quick-release threaded axles, footrest height, hand crank height for proper fit and smooth operation of your handcycle.

OPERATING INFORMATION

WARNING

Wear your helmet at **ALL** times when riding the handcycle.

Before riding your handcycle, check your brakes by **PEDALING BACKWARDS**. Be sure that the brakes and all other features of your handcycle are operating properly.

ALWAYS keep fingers or hands **AWAY** from the chain while pedaling.

DO NOT let children play near the handcrank or the chain. Otherwise, injury or damage may occur.

The user is responsible for normal upkeep and maintaining the handcycle 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 handcycle.

OPERATING INFORMATION (CONTINUED)**WARNING**

Before attempting to transfer IN or OUT of the handcycle, every precaution should be taken to reduce the gap distance. Position the handcycle on level ground and as close as possible to the object you are transferring INTO or OUT of. The parking brake of the handcycle **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 handcycle 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 intersections 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 or speed bumps. Doing so may cause your handcycle to "bottom out" and/or turn over and cause bodily harm or damage to the handcycle.

DO NOT use parts, accessories, or adapters other than those authorized by Invacare. Otherwise, the warranty is void.

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

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

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 handcycle properly.

DO NOT attempt to adjust or clean the internal gear hub with reversing drum brake. This should only be performed by a bicycle professional.

TIRE PRESSURE

WARNING

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

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

WEIGHT LIMITATION

WARNING

The Invacare Excelerator has a weight limitation of 350 lbs. The Invacare Li'l Excelerator has a weight limitation of 150 lbs.

SAFETY/HANDLING OF THE HANDCYCLE

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

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 handcycle user and assistant with “safety” as the most important consideration for all.

STABILITY AND BALANCE

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

Invacare recommends using seat positioning straps for additional safety.

A NOTE TO HANDCYCLE ASSISTANTS

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

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

Also, be aware of detachable parts. These must NEVER be used for lifting supports or to move the handcycle, 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 handcycle will cause a change to the normal balance, the center of gravity, and the weight distribution of the handcycle. 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 HANDCYCLE (FIGURE 1)

WARNING

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

1. Position the handcycle on level ground and as close as possible along side the object to/from which you are transferring.
2. If possible, position the handcycle at a 45° angle to the object to/from which you are transferring as shown in FIGURE 1.
3. Apply the parking brake on the handcycle.
4. Position the hand crank handles as far forward as possible as shown in FIGURE 1. This will create more room to transfer.

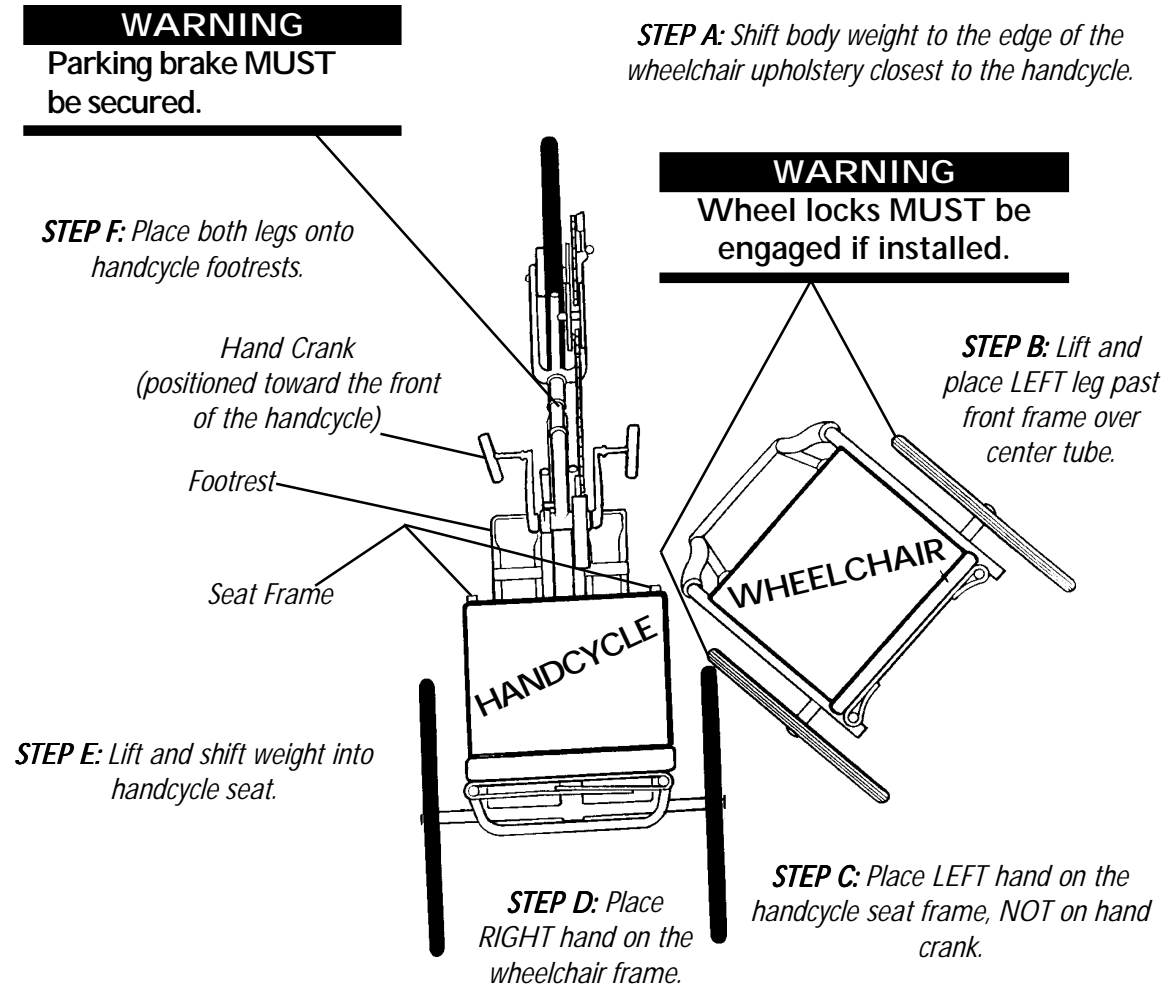
NOTE: If necessary, lift the front wheel off the ground and rotate the front tire to position the hand crank.

5. If necessary, adjust the seat position of the handcycle to create more room to transfer. Refer to SLIDING SEAT ADJUSTMENT/REPLACEMENT in SECTION 5 of this manual.
6. Secure the object that you are transferring into or out of. Apply wheel locks (if installed) if the object is a wheelchair.

NOTE: During independent transfer, little or no seat platform will be beneath you. Although it may be difficult to wedge the transfer board between the wheelchair seat and the handcycle seat, use a transfer board if necessary.

NOTE: Refer to STEPS A-F in FIGURE 1 for details regarding transfer to/from a wheelchair.

7. Shift body weight onto object while transferring.
8. Lift and place LEFT leg past front frame, across seat and over center tube.



**NOTE:* The steps in FIGURE 1 are specifically for transfer to/from a wheelchair and do not correspond to the steps in the procedure on the previous page. Follow a similar procedure to transfer to/from an object other than a wheelchair. Refer to the steps on the previous page for more information.

FIGURE 1 - TRANSFERRING INTO/OUT OF A WHEELCHAIR

Section 2 - Safety Inspection - includes the following:

Safety Inspection Checklist

Troubleshooting

Maintenance

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 | WEEKLY | MONTHLY | PERIODICALLY |
|--|-------------|-------------|---------|--------------|
| FRAME Check for bent or broken frame. | X | | X | |
| BRAKES 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. Brakes engages easily when pedaling backwards. | X X X | X X X | | |
| UPHOLSTERY Inspect for rips or sagging. | X | | | X |
| REAR WHEELS Quick release axles lock properly and are clean. 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 if damaged. | X X | X X | | |
| SPOKES Inspect for bent or broken spokes. Check that all spokes are uniformly tight. | X X | X X | | |
| FRONT WHEEL/FORK 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 if damaged. | X X | X X | | |
| TIRES Inspect for flat spots, wear and proper inflation. CAUTION: As with any vehicle, the wheels and tires should be checked periodically for cracks and wear, and should be replaced if damaged. | X | X | | |
| CHAIN/CHAIN GUARD Check for damage, rust, tension and stretch. Adjust if necessary. Lubricate each link (3-in-1 oil® or a quality bike lubricant). Check for damage or looseness. | X | X | | |
| SHIFTER/BRAKE CABLES Adjust according to manufacturer's instructions (included with handcycle) | X | X | | |
| FRONT FORK Keep tight and lubricate (all-purpose grease). | X | X | | |
| FOOTREST Check that mounting hardware is tight and footrest secure. Check footrest straps for wetness and/or damage. | X X | X X | | |
| UPHOLSTERY Clean upholstery with mild detergent and water. | X | | | X |
| HAND GRIPS Check periodically for looseness. If loose, replace. | | | | 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 occur.

CAUTION

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

SUGGESTED MAINTENANCE PROCEDURES

1. Before using your handcycle, make sure all nuts and bolts are tight. Check all parts for damage or wear and replace. Check all parts for proper adjustment.
2. Check parking brake cable and shifter adjustment cables for proper adjustment and operation. Refer to SECTION 7 of this manual.
3. If equipped, keep quick release axles free of dirt and lint to ensure positive locking and proper operation. Refer to INSTALLING/ADJUSTING THE REAR WHEELS AND QUICK-RELEASE AXLES in SECTION 6 of this manual.

WARNING

DO NOT use WD-40®, 3-in-1 oil®, or other penetrating lubricants on quick-release axles. Otherwise, binding and/or damage to the handcycle may occur.

4. Clean/oil quick-release axles once (1) a week with a Teflon® lubricant.
5. Keep optional quick release levers on axle tubes free of dirt and lint to ensure positive locking and proper operation.

WARNING

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

4. Recommended tire pressure is listed on the side wall of the tire. If tire needs replacement, 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 if damaged.

5. The wheels and tires should be checked periodically for cracks and wear, and should be replaced if damaged.
6. Check chain for slack and readjust. Refer to CHAIN ADJUSTMENT in SECTION 7 of this manual.
7. Regularly check for loose spokes in the front and rear wheels. If loose, have them aligned at your local bike shop.
8. If equipped, check tension spring for proper operation. Refer to TENSION SPRING INSTALLATION in SECTION 7 of this manual.
9. Check upholstery for sagging, rips or tears. Refer to BACK UPHOLSTERY REPLACEMENT or SEAT UPHOLSTERY REPLACEMENT in SECTION 7 of this manual.
10. 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.

Section 3 - Initial Setup - includes the following:

Initial Setup

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 handcycle if the hand crank obstructs your view. If the hand crank obstructs your view, adjust the hand crank height BEFORE using the handcycle - otherwise injury or damage may occur.

INITIAL SETUP (FIGURE 1)

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

Tools required:

Adjustable wrench (10 to 12-inches)

1/2-inch box wrench

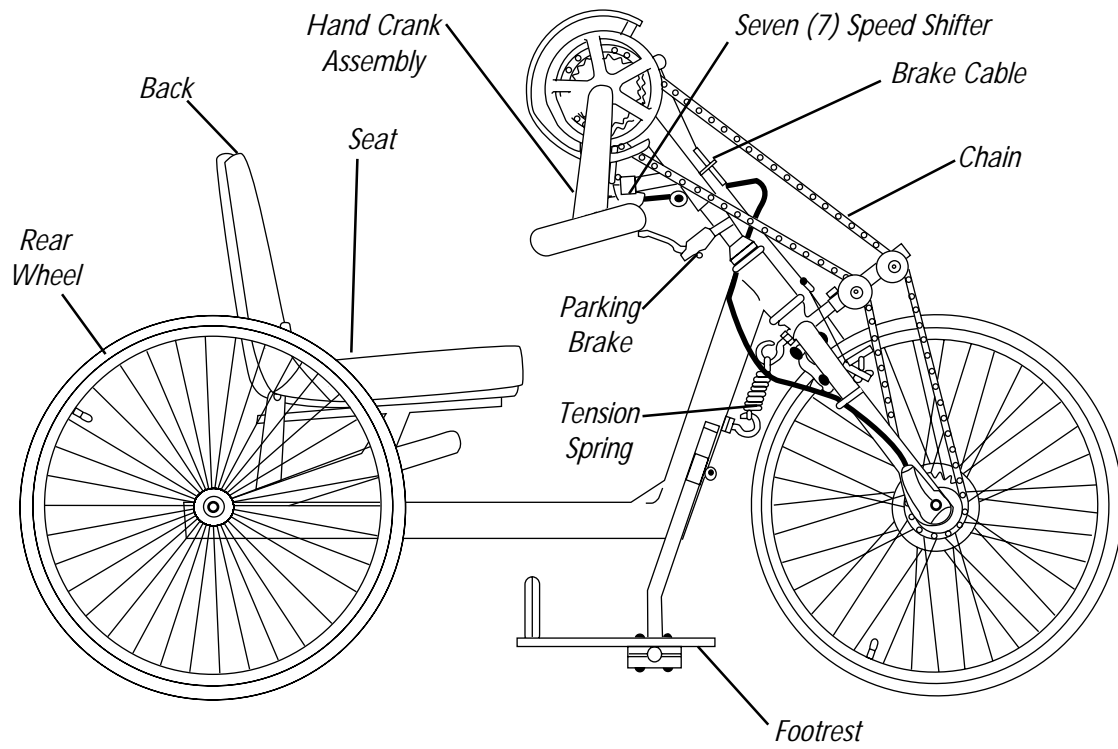
6, 8 and 9mm wrench

1/8-inch allen wrench

Medium phillips screwdriver

Medium flat screwdriver

1. Install and adjust rear wheels (SECTION 6). Ensure quick release axles secure wheels to the handcycle.
2. Adjust footrest (SECTION 5) so that knees are at a 90° angle.
3. Adjust hand crank assembly (SECTION 5) if unable to see over hand crank or if knees obstruct hand crank rotation.
4. Adjust chain length (SECTION 7) if crank has been adjusted.
5. Ensure parking brake (SECTION 7) functions properly. Check tension and adjust parking brake cable (SECTION 7) if necessary.
6. Pedal backwards to ensure reversing drum brake works properly.
7. Adjust back height (SECTION 5).
8. Adjust seat position/upholstery (SECTIONS 5 and 7).
9. Check that all hardware is tight.



INITIAL SETUP

FIGURE 1 - INITIAL SETUP

Section 4 - Operation - includes the following:

Riding the Handcycle

Shifting Gears

Backing Up

Braking

Parking Brake

Steering/Cornering

WARNING

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

RIDING THE HANDCYCLE (FIGURE 1)

WARNING

BEFORE operating the handcycle, review the GENERAL GUIDELINES in SECTION 1 of this manual.

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

1. Engage the parking brake. Refer to PARKING BRAKE in this section of the manual.
2. Transfer into the handcycle. Refer to TRANSFERRING INTO/OUT OF THE HANDCYCLE in SECTION 1 of this manual.
3. Ensure that the hand crank is not obstructing your view. For height adjustment of the hand crank assembly, refer to ADJUSTING HAND CRANK HEIGHT in SECTION 5 of this manual.

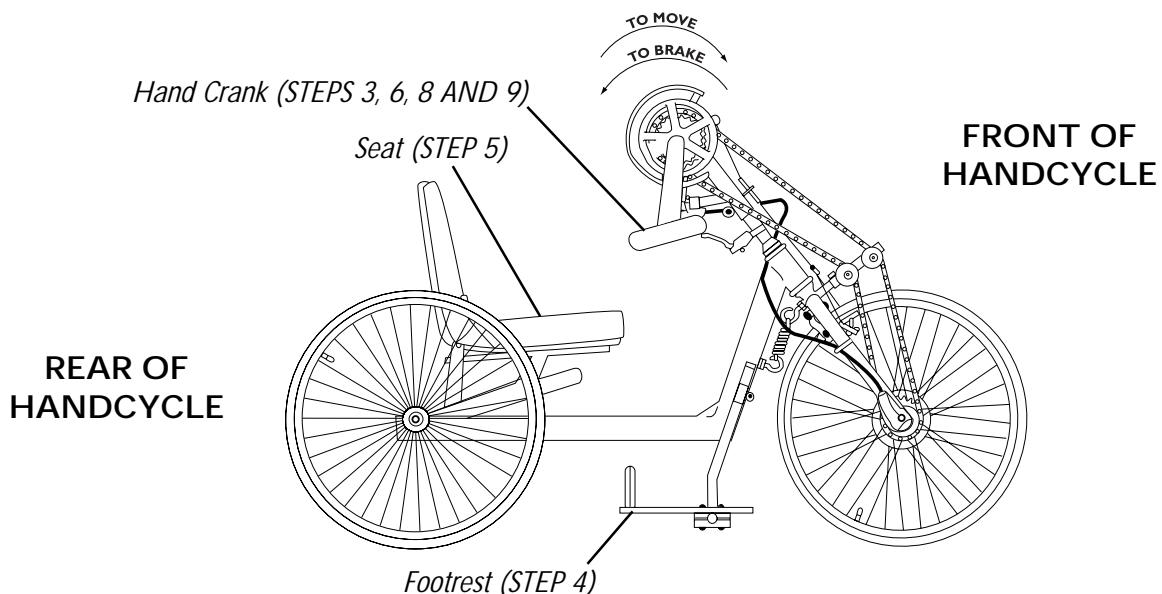


FIGURE 1 - RIDING THE HANDCYCLE

4. Ensure the footrest is adjusted properly. If necessary, adjust the footrest. Refer to FOOTREST ADJUSTMENT/REPLACEMENT in SECTION 5 of this manual.

NOTE: Footrest height should be adjusted so that when seated with feet in the footrests, there is a 90° bend at the knee.

5. Ensure the seat is adjusted properly. If necessary, adjust the seat. Refer to SLIDING SEAT ADJUSTMENT in SECTION 5 of this manual.

NOTE: Sliding seat should be adjusted so that when seated with feet in the footrests, there is a 90° bend at the knee and a slight bend at the elbow when the hand crank is farthest away.

6. Release the parking brake. Refer to PARKING BRAKE in this section of the manual.

WARNING

At least one (1) hand MUST be on the hand crank assembly at all times. Otherwise, injury or damage may occur.

7. Place at least one (1) hand onto the hand crank.

NOTE: The hand crank assembly is used for propelling and steering of the handcycle.

8. Rotate (pedal) the hand crank FORWARD (toward the front) to propel the handcycle forward.
9. Rotate (pedal) the hand crank BACKWARD (toward the rear) to apply the brake and slow down or stop.

SHIFTING GEARS (FIGURE 2)

To shift gears while moving, hold onto the hand crank assembly with one (1) hand, continue pedaling, but ease pressure on the pedals and select the gear required with the other hand. When the Excelerator is stationary, simply select gear required.

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.

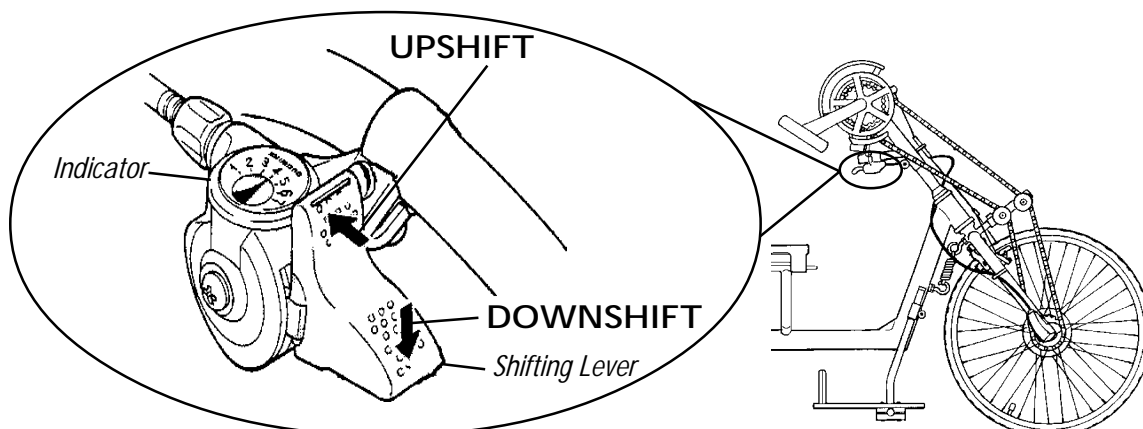


FIGURE 2 - SHIFTING GEARS

BACKING UP

Use the rear wheels (i.e. like a manual wheelchair) to backup. When backing up, keep the front wheel straight. The weight of the hand crank may engage the reversing drum brakes while backing up. Lift the handles up to avoid this problem.

BRAKING

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

PARKING BRAKE (FIGURE 3)

WARNING

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

1. To ENGAGE the parking brake, squeeze the handle and push the stop button **IN** until the handle locks in place.
2. To DISENGAGE the parking brake, squeeze and release the handle.

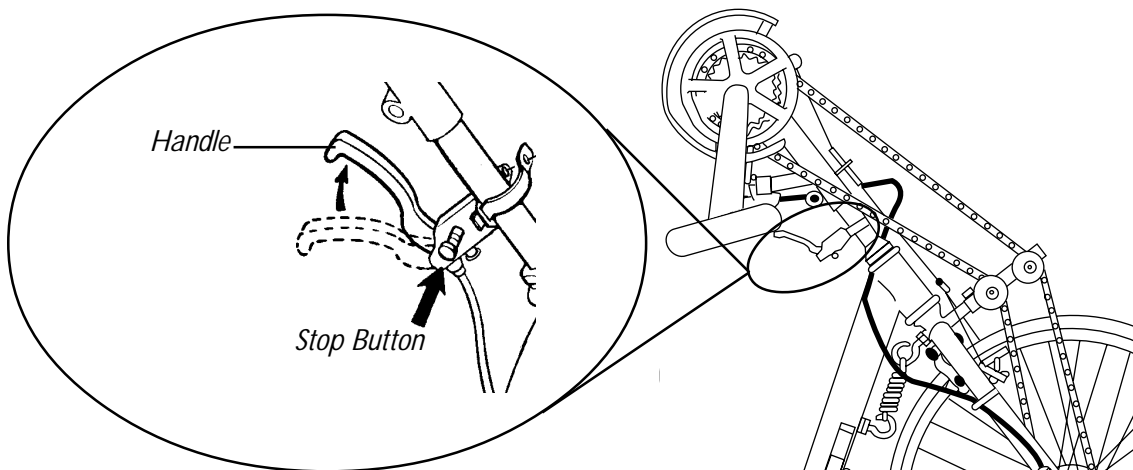


FIGURE 3 - PARKING BRAKE

STEERING/CORNERING

WARNING

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

To steer the handcycle, use the hand crank to direct the front fork and wheel assembly in the direction you intend to go (straight, right, or left). Steering can be done while rotating the hand crank (pedaling) or coasting. When cornering, it is recommended that you slow the handcycle, stop pedaling, steer the handcycle and coast through the turn. Hands should be UP in the crank cycle (between approximately the 11 and 12 o'clock position).

Section 5 - Riding Position - includes the following:

Hand Crank Height Adjustment

Footrest Adjustment/Replacement

Sliding Seat Adjustment/Replacement

Back Height Adjustment (Adjustable Backs Only)

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 HEIGHT ADJUSTMENT (FIGURE 1)

WARNING

DO NOT operate the handcycle 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.

1. Loosen, but do not remove the hex nut securing the hand crank to the fork stem.
2. Move the hand crank assembly up or down on the fork stem until you are comfortable with the position for operational purposes.

NOTE: The hand crank should be positioned so that when the hand is toward the front of the handcycle, the arm is slightly bent. The arm should never be fully extended (locked) at any point while cranking.

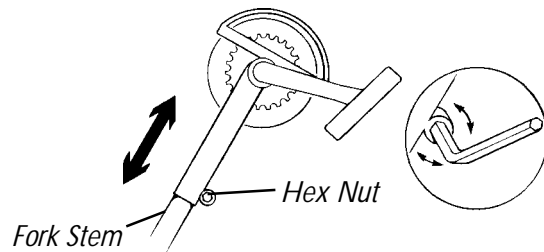


FIGURE 1 - HAND CRANK ASSEMBLY INSTALLATION

3. Tighten the hex nut to secure the hand crank in the desired position.
4. Tighten the chain if necessary. Refer to CHAIN ADJUSTMENT in SECTION 7 of this manual.

FOOTREST ADJUSTMENT/REPLACEMENT (FIGURE 2)

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

ADJUSTING FOOTREST HEIGHT

NOTE: Footrest height should be adjusted so that when seated with feet in the footrests, there is a 90° bend at the knee. If this cannot be achieved by adjusting the footrest height, adjust the seat position. Refer to SLIDING SEAT ADJUSTMENT in SECTION 5 of this manual.

1. Loosen the socket screws on both footrests.
2. Slide the footplate up or down to desired height. Allow at least 2-inches of ground clearance.
3. Retighten the socket screw that secures the footplate.
4. Secure straps over top of feet before using your Excelerator.

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.

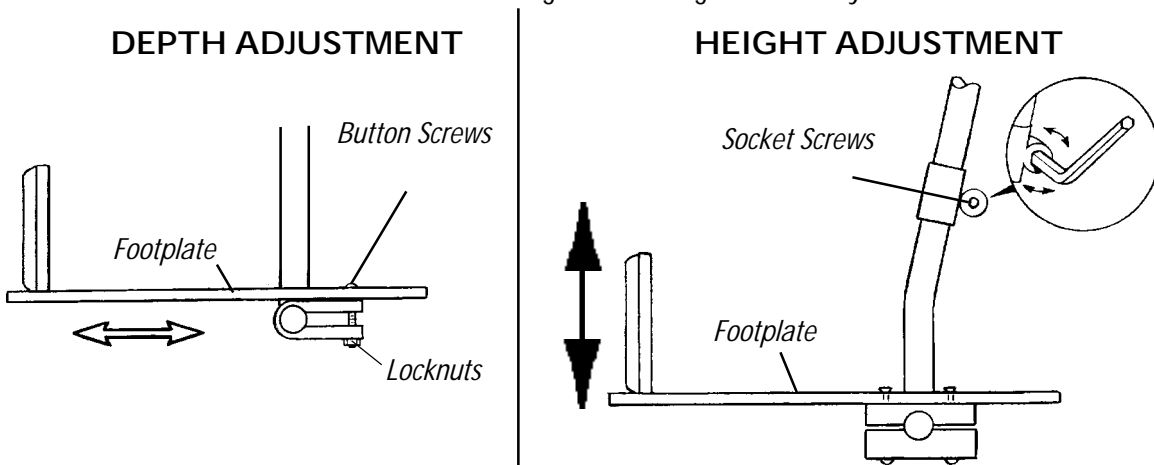
2. Position footplates to an appropriate angle for user.
3. Securely tighten the button screws and locknuts that secure the half clamps to the footrest weldment.

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.



ANGLE ADJUSTMENT OR REPLACEMENT

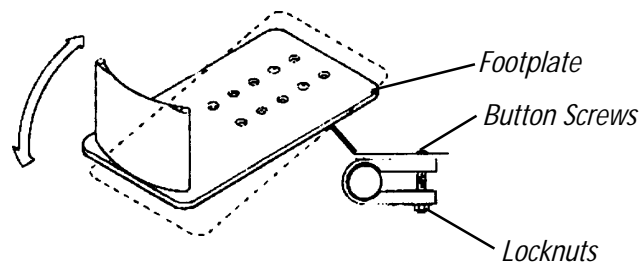


FIGURE 2 - FOOTREST ADJUSTMENT/REPLACEMENT

SLIDING SEAT ADJUSTMENT/REPLACEMENT (FIGURE 3)

NOTE: To ensure proper fit, adjust the height of the footrest BEFORE adjusting the sliding seat. Sliding seat should be adjusted so that when seated with feet in the footrests, there is a 90° bend at the knee.

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.

ADJUSTMENT

1. Activate parking brake.
2. Grasp forward/rearward adjustment lever and push it to the right and slide seat forward or rearward. If necessary, hold onto the hand crank to stabilize your body while adjusting seat.
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.
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.

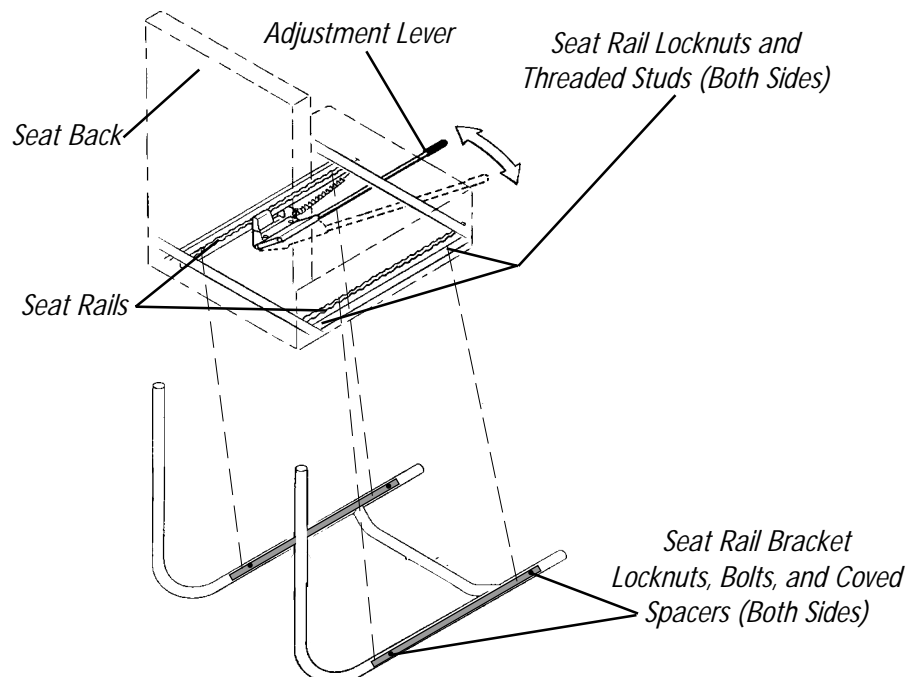


FIGURE 3 - SLIDING SEAT ADJUSTMENT/REPLACEMENT

BACK HEIGHT ADJUSTMENT (ADJUSTABLE BACKS ONLY) (FIGURE 4)

1. Remove the back upholstery from the handcycle. Refer to BACK UPHOLSTERY REPLACEMENT in SECTION 7 of this manual.

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 back upholstery onto the handcycle. Refer to BACK UPHOLSTERY REPLACEMENT in SECTION 7 of this manual.

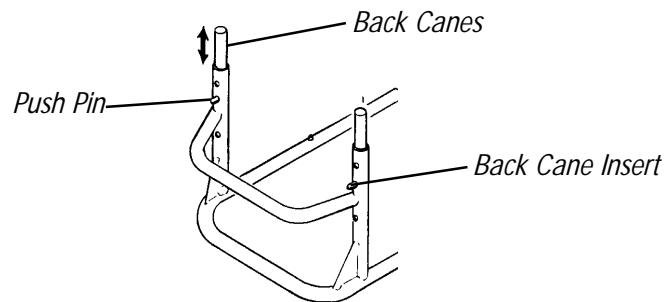


FIGURE 4 - BACK HEIGHT ADJUSTMENT (ADJUSTABLE BACKS ONLY)

Section 6 - Wheels - includes the following:

Installing/Adjusting the Rear Wheels and Quick-Release Axles

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 WHEELS 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 with rear wheel 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 handcycle.
Keep locking pins clean.

5. Tilt handcycle onto either rear wheel and spin raised wheel. It should spin freely with no excessive drag.
6. Repeat STEPS 1-5 for opposite rear wheel.

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

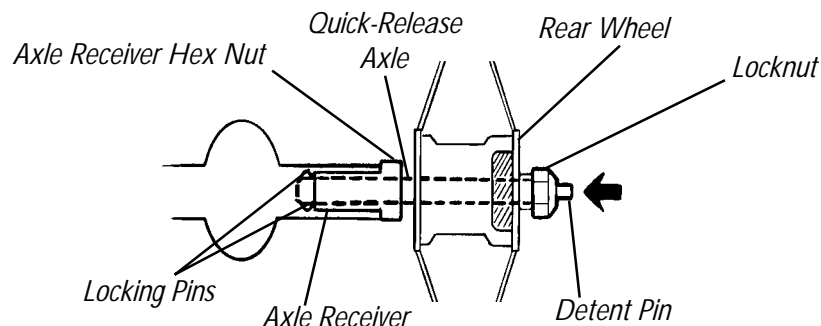


FIGURE 1 - INSTALLING/ADJUSTING THE REAR WHEELS AND QUICK-RELEASE AXLES

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 handcycle unless it has the proper tire pressure (p.s.i.). **DO NOT** overinflate the tires. Failure to follow these warnings 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 2)

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 2).

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

NOTE: STEP 2 may be performed with using alignment gauge (available as an option for the handcycle). Refer to USING THE ALIGNMENT GAUGE in SECTION 8 of this manual.

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 exist:
 - 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 2).
 - 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 2).
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.

ADJUSTING TOE IN/TOE OUT

1. Loosen, but do not remove the socket screws and clamps that secure camber inserts to the camber bar (DETAIL "A").
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 ($0 \pm 1/4$ -inch for maximum rollability).

DETAIL "A" CAMBER INSERTS

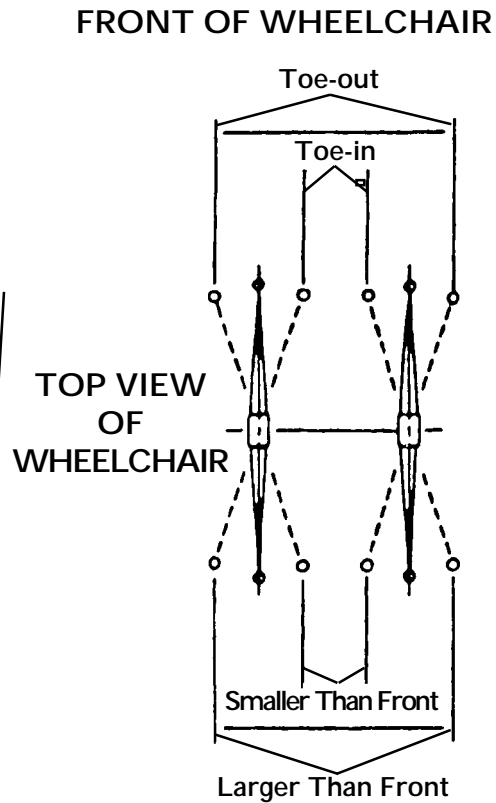
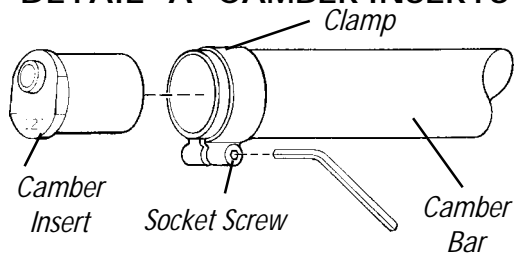


FIGURE 2 - DETERMINING/ADJUSTING TOE IN/TOE OUT

REPLACING CAMBER INSERTS (FIGURE 3)

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.

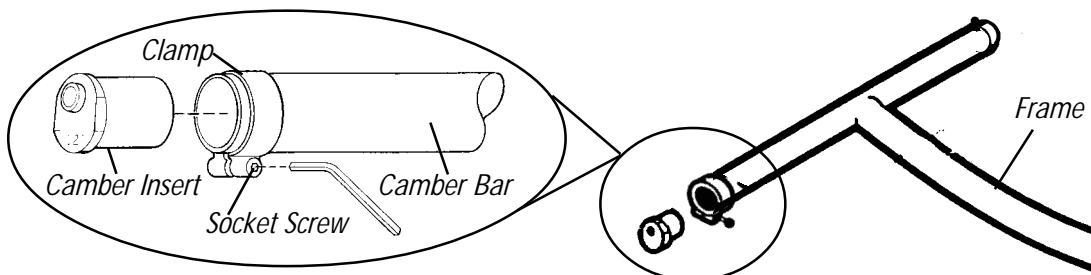


FIGURE 3 - REPLACING CAMBER INSERTS

Section 7 - Service Procedures - includes the following:

Fork Assembly Installation

Tension Spring Installation

Seven (7) Speed Shifter Cable Installation

Seven (7) Speed Shifter Adjustment/Replacement

Seven (7) Speed Hub Chain Installation

Chain Adjustment

Parking Brake Adjustment/Replacement

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.

FORK ASSEMBLY INSTALLATION (FIGURE 1)

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

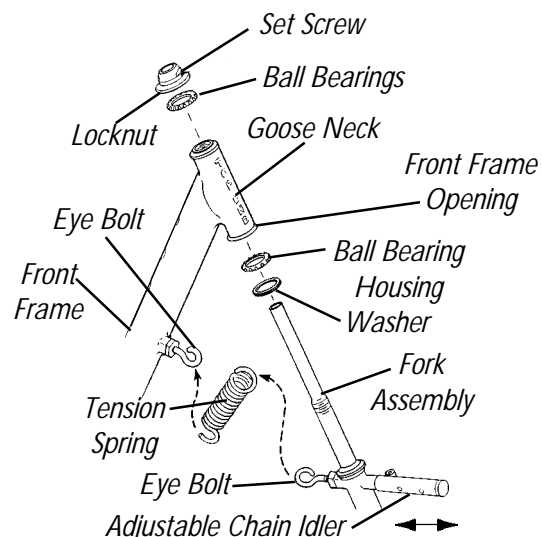
TENSION SPRING INSTALLATION (FIGURE 1)

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

1. Tighten eye bolts into fork assembly and front frame.

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

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



**FIGURE 1 - FORK ASSEMBLY/
TENSION SPRING INSTALLATION**

SEVEN (7) SPEED SHIFTER CABLE INSTALLATION (FIGURE 2)

NOTE: This procedure applies to the Excelerator ONLY.

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 shifter to the hand crank assembly extension.
3. Secure with hardware provided.

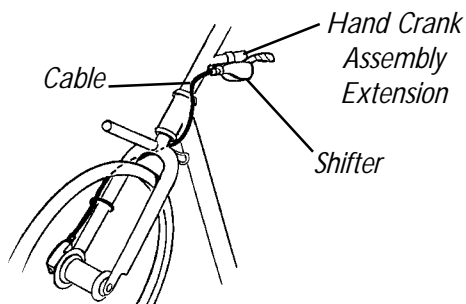


FIGURE 2 - SEVEN (7) SPEED SHIFTER CABLE INSTALLATION

SEVEN (7) SPEED SHIFTER ADJUSTMENT/ REPLACEMENT

Excelerators 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.

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

SEVEN (7) SPEED HUB CHAIN INSTALLATION (FIGURE 3)

WARNING

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

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 sprocket assembly.

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

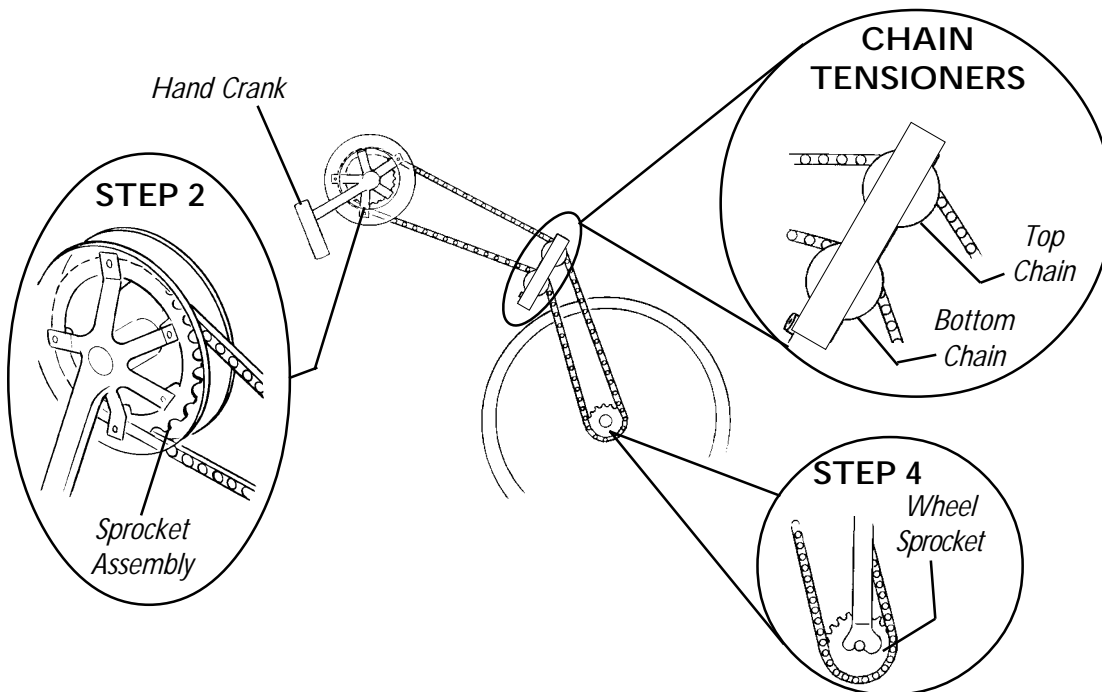


FIGURE 3 - SEVEN (7) SPEED HUB CHAIN INSTALLATION

CHAIN ADJUSTMENT (FIGURE 4)

WARNING

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

1. Ensure the hand crank is adjusted to the proper height. Refer to HAND CRANK HEIGHT ADJUSTMENT in SECTION 5 of this manual.

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

2. Loosen the hex screw securing the adjustable chain idler.
3. Adjust the tautness of the chain by moving the adjustable chain idler **IN** or **OUT** as shown in FIGURE 4.
4. Tighten the hex screw to secure the adjustable chain idler in place.

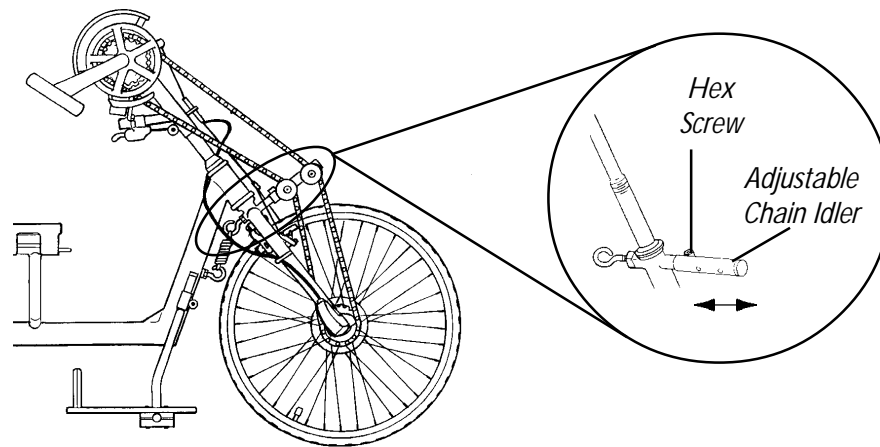


FIGURE 4 - CHAIN ADJUSTMENT

PARKING BRAKE ADJUSTMENT/REPLACEMENT (FIGURE 5)

WARNING

Before using your handcycle, 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.

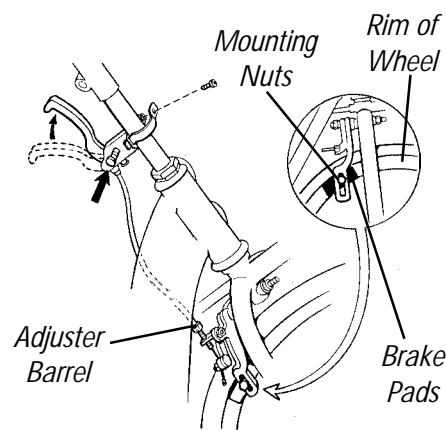


FIGURE 5 - PARKING BRAKE ADJUSTMENT/REPLACEMENT

SEAT UPHOLSTERY REPLACEMENT (FIGURE 6)

WARNING

Upholstery **MUST** be inspected **BEFORE** each use. Exposure to moisture (ie.- wet weather or puddles) will damage fastening straps/flaps/strips. **DO NOT** operate handcycle if upholstery is wet or damaged, otherwise severe injury may occur.

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.

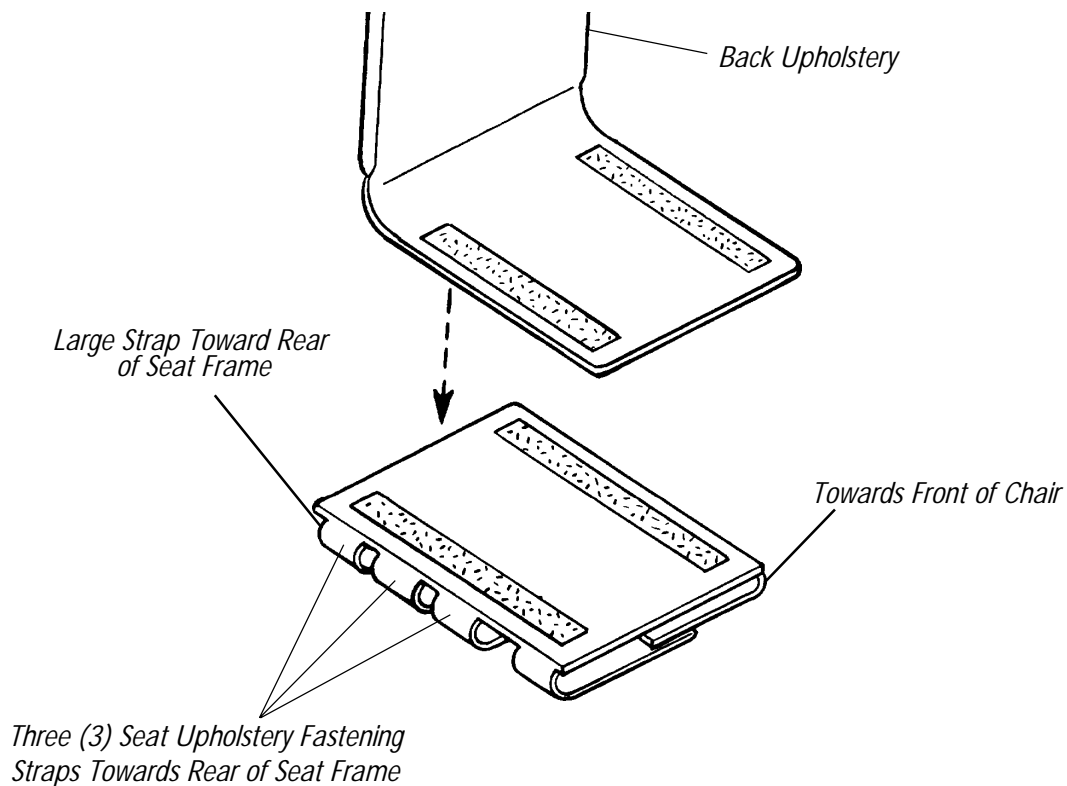


FIGURE 6 - SEAT UPHOLSTERY REPLACEMENT

BACK UPHOLSTERY REPLACEMENT (FIGURE 7)

WARNING

Upholstery **MUST** be inspected **BEFORE** each use. Exposure to moisture (ie.- wet weather or puddles) will damage fastening straps/flaps/strips. **DO NOT** operate handcycle if upholstery is wet or damaged, otherwise severe injury may occur.

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.

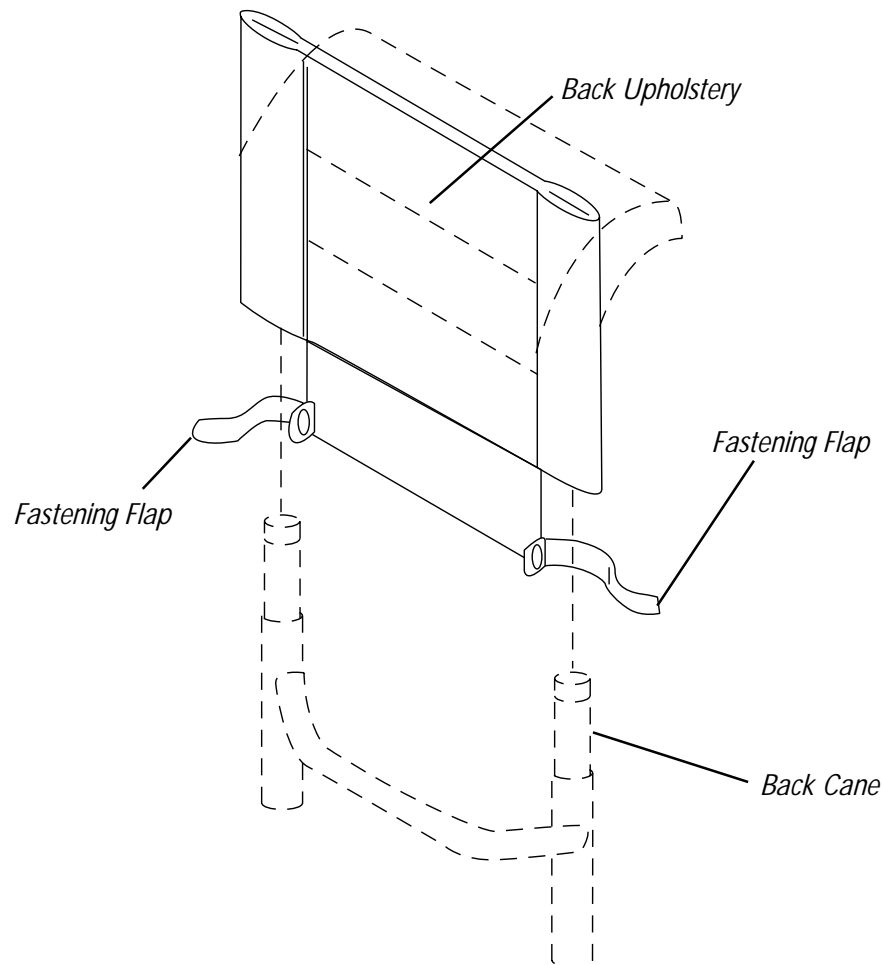


FIGURE 7 - BACK UPHOLSTERY REPLACEMENT

Section 8 - Options - includes the following:

Water Bottle Installation

Tow Bar Installation and Use

Rear Safety Light

Computer Installation

Seat Positioning Strap Installation

Hand Crank Handles

Gloves

Safety Flag Installation

Safety Helmet

Lateral Support

Using the Alignment Gauge

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.

WATER BOTTLE INSTALLATION (FIGURE 1)

1. Secure the 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 mounting tube using the hardware provided.
3. Push water bottle into mounting bracket until secure.

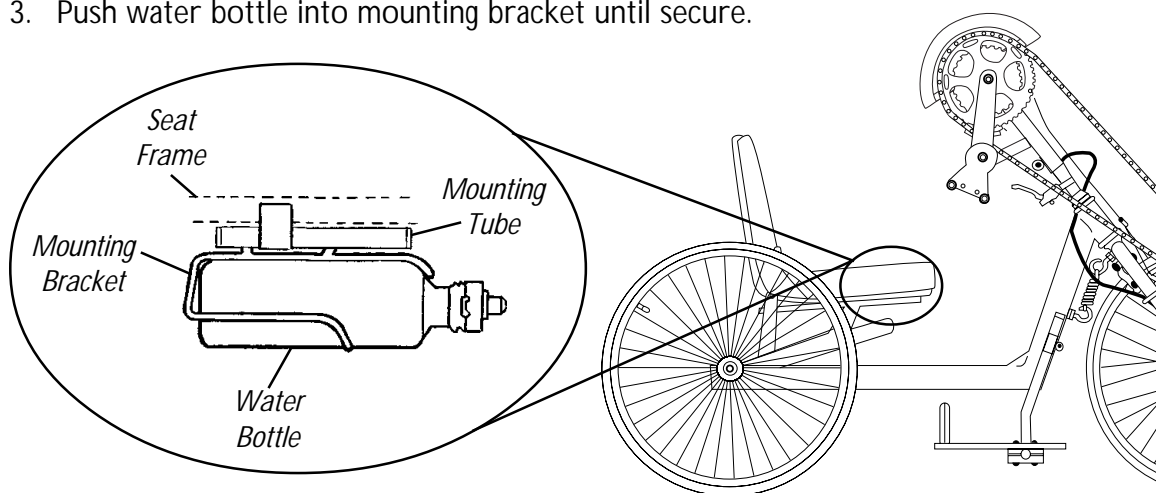


FIGURE 1 - WATER BOTTLE INSTALLATION

TOW BAR INSTALLATION AND USE (FIGURE 2)

NOTE: The tow bar will not work with wheelchairs with swingaway front riggings. Only rigid wheelchairs with tubular style footrest can be towed using the tow bar.

1. Remove the two (2) set screws on each tow bar mounting bracket.
2. Attach the tow bar to the rear frame of the handcycle.

NOTE: Make sure that the tow bar is centered on the rear handcycle frame.

3. Secure the tow bar to the handcycle with the mounting brackets and set screws.
4. Secure the wheelchair to the tow bar with the fastening strips provided.

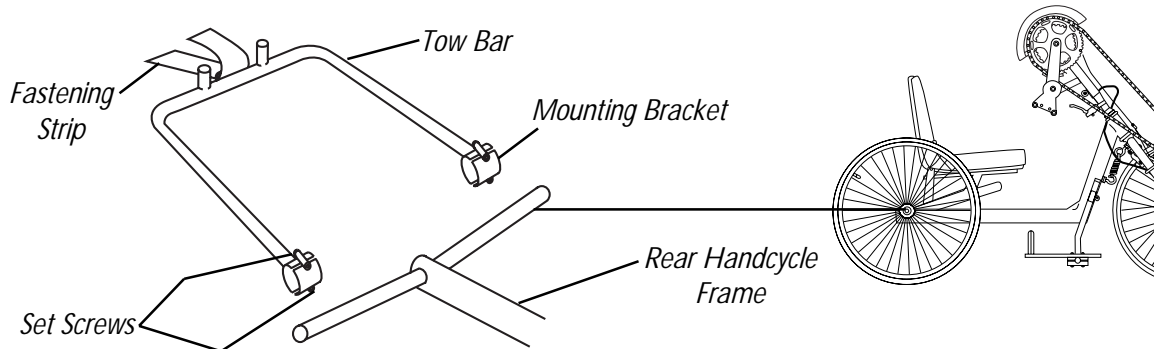


FIGURE 2 - TOW BAR INSTALLATION

REAR SAFETY LIGHT (FIGURE 3)

WARNING

Operation of the handcycle 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.

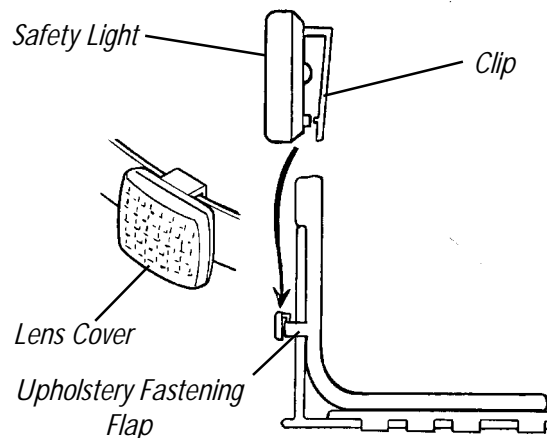


FIGURE 3 - REAR SAFETY LIGHT

MOUNTING THE SAFETY LIGHT

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

OPERATING THE SAFETY LIGHT

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

COMPUTER INSTALLATION (FIGURE 4)

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.

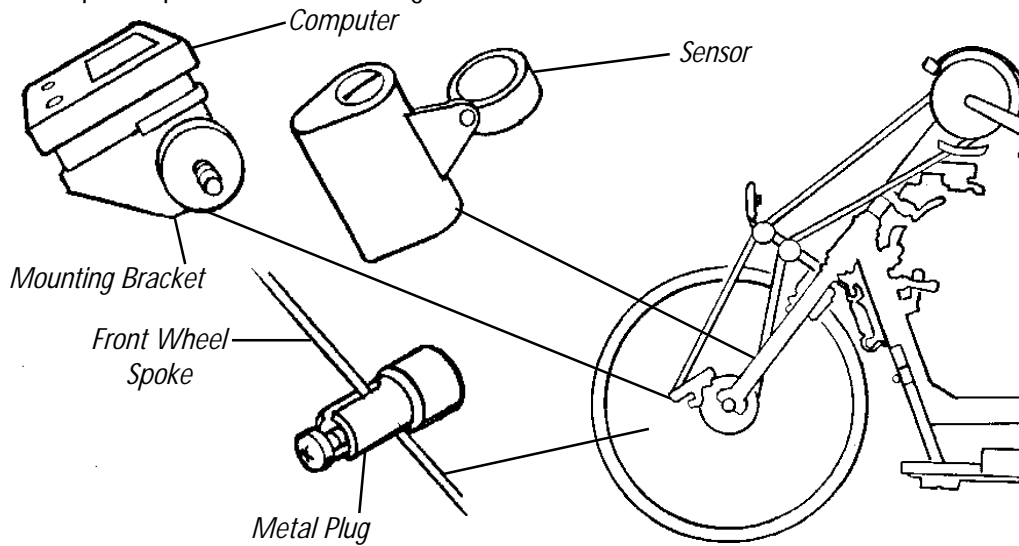


FIGURE 4 - COMPUTER INSTALLATION

SEAT POSITIONING STRAP INSTALLATION (FIGURE 5)

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

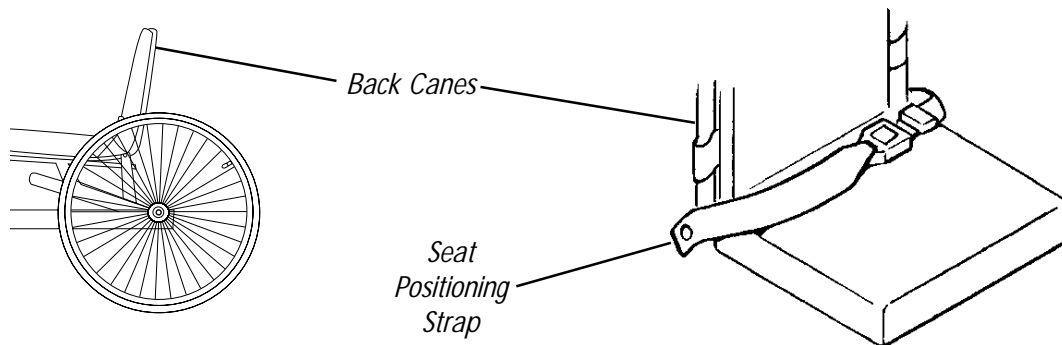


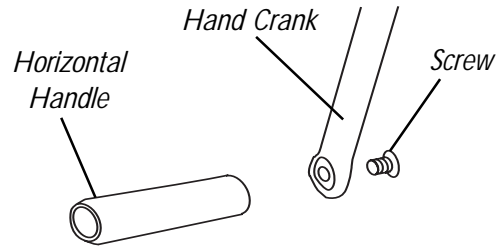
FIGURE 5 - SEAT POSITIONING STRAP INSTALLATION

HAND CRANK HANDLES (FIGURE 6)

HORIZONTAL HANDLES/ DELTRIN HANDLES

1. Secure handle to hand crank with the screw.
2. Remove the screw to remove handle from hand crank.

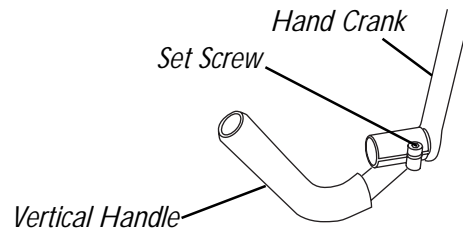
DETAIL "A" - HORIZONTAL HANDLES/DELTRIN HANDLES



VERTICAL HANDLES

1. Position handle onto crank as shown in DETAIL "B" of FIGURE 6.
2. Tighten set screw to secure handle to crank.
3. Reverse STEPS 1-2 to remove handle.

DETAIL "B" - VERTICAL HANDLES



TRI-PIN QUAD HANDLES

1. Refer to VERTICAL HANDLES in this procedure to remove/install tri-pin quad handles.
2. Loosen socket screws to adjust handle position, as shown in DETAIL "C" of FIGURE 6.
3. Tighten socket screws to secure handles in desired position.

DETAIL "C" - TRI-PIN QUAD HANDLES

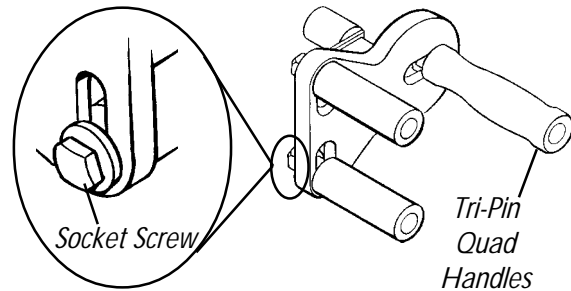


FIGURE 6 - HANDCRANK
HANDLES

GLOVES (FIGURE 7)

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

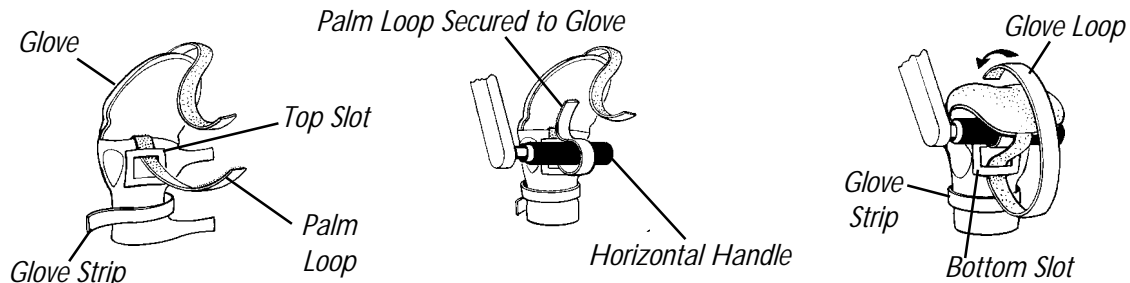


FIGURE 7 - GLOVES

SAFETY FLAG INSTALLATION (FIGURE 8)

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

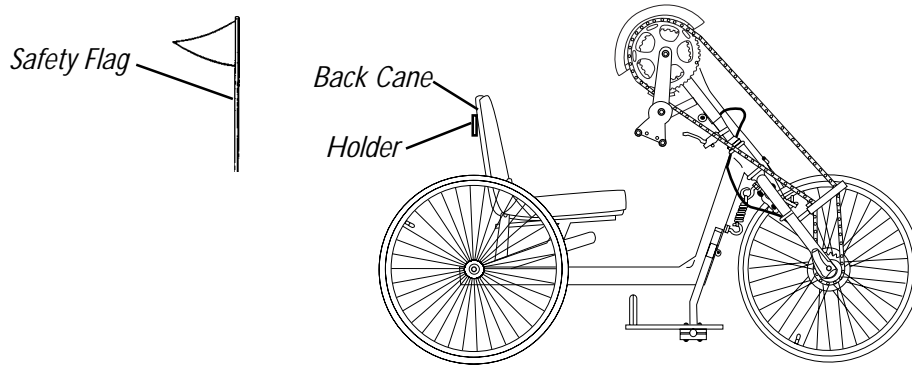


FIGURE 8 - SAFETY FLAG INSTALLATION

SAFETY HELMET (FIGURE 9)

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

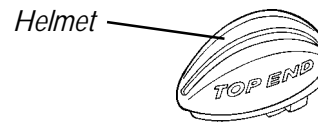


FIGURE 9 - SAFETY HELMET

LATERAL SUPPORT (FIGURE 10)

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

NOTE: Three (3) different brackets are included for different widths.

3. Change bracket by removing the existing button screws and attach the new bracket with the existing button screws.

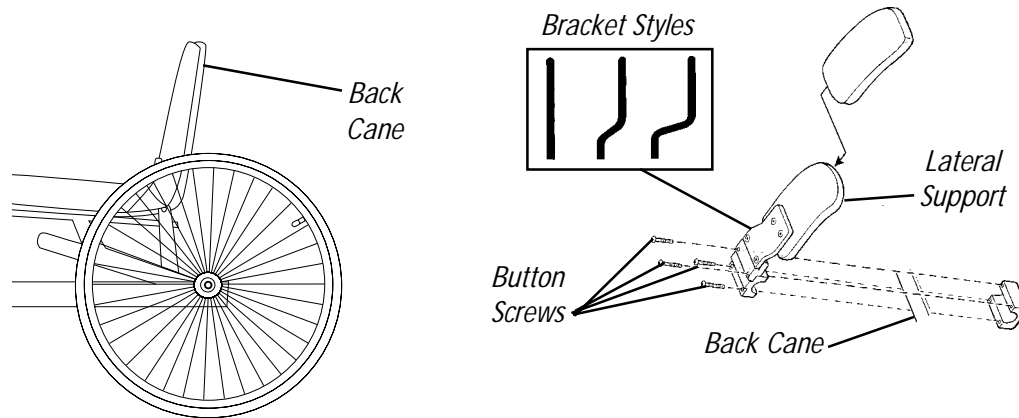


FIGURE 10 - LATERAL SUPPORT

USING THE ALIGNMENT GAUGE (FIGURE 11)

NOTE: The alignment gauge is used to determine toe in/toe out. Refer to DETERMINING/ADJUSTING TOE IN/TOE OUT in SECTION 6 of this manual for more information.

1. Inflate all pneumatic tires to recommended tire pressures (listed on the sidewall of the tire).
2. Place the handcycle and alignment gauge on a flat surface.
3. Position the alignment gauge near the rear of the rear tires.
4. Loosen the height adjustment screw.
5. Raise/lower the alignment bar so the bar is approximately 12-inches from the ground/floor.
6. Tighten the height adjustment screw.
7. Loosen the alignment screw.
8. Position the alignment gauge between the rear of the rear tires.
9. Adjust the alignment bar so the alignment gauge fits snugly between the rear of the rear tires.
10. Tighten the alignment screw to secure the alignment bar position.
11. Position the alignment gauge at the front of the rear tires.
12. Examine the gauge. Perform one (1) of the following:
 - A. **ALIGNMENT GAUGE FITS SNUGLY BETWEEN THE FRONT OF THE REAR TIRES** - Wheels are aligned. No toe in/toe out adjustment is needed.
 - B. **THERE IS EXTRA SPACE BETWEEN THE ALIGNMENT GAUGE AND THE SIDES OF THE TIRES** - The tires have a toe out condition. Proceed to DETERMINING/ADJUSTING TOE IN/TOE OUT in SECTION 6 of this manual.
 - C. **THE ALIGNMENT GAUGE DOES NOT FIT BETWEEN THE TIRES** - The tires have a toe in condition. Proceed to DETERMINING/ADJUSTING TOE IN/TOE OUT in SECTION 6 of this manual.

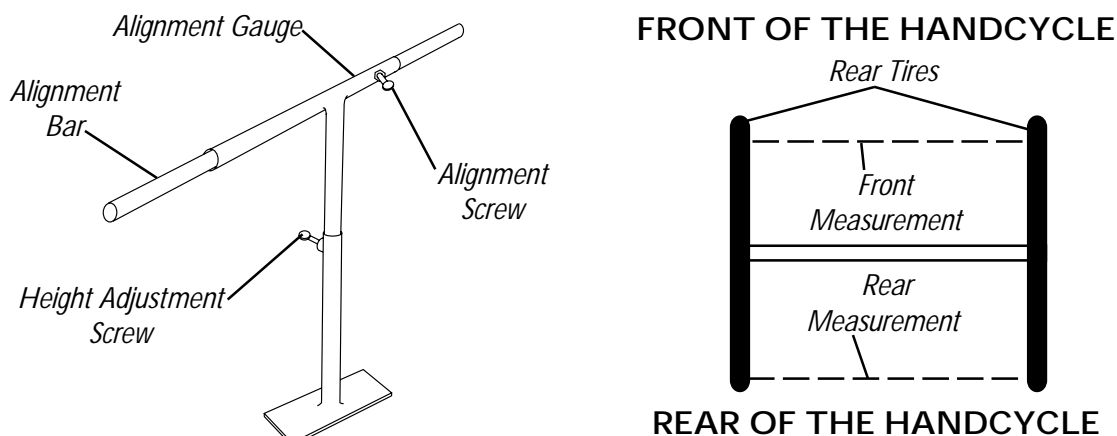


FIGURE 11 - USING THE ALIGNMENT GAUGE

MOUNTAIN DRIVE OPTION

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 and **WILL VOID THE WARRANTY**.

SWITCHING TO MOUNTAIN DRIVE OPTION

1. Perform one (1) of the following:
 - A. **SWITCHING MOUNTAIN DRIVE OPTION ON** - Push IN the gear shift button in the middle of the **RIGHT** side of the hand crank 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**.

MAINTENANCE

The mountain drive option should be maintained by a qualified technician according to the manufacturer's instructions included with the handcycle.

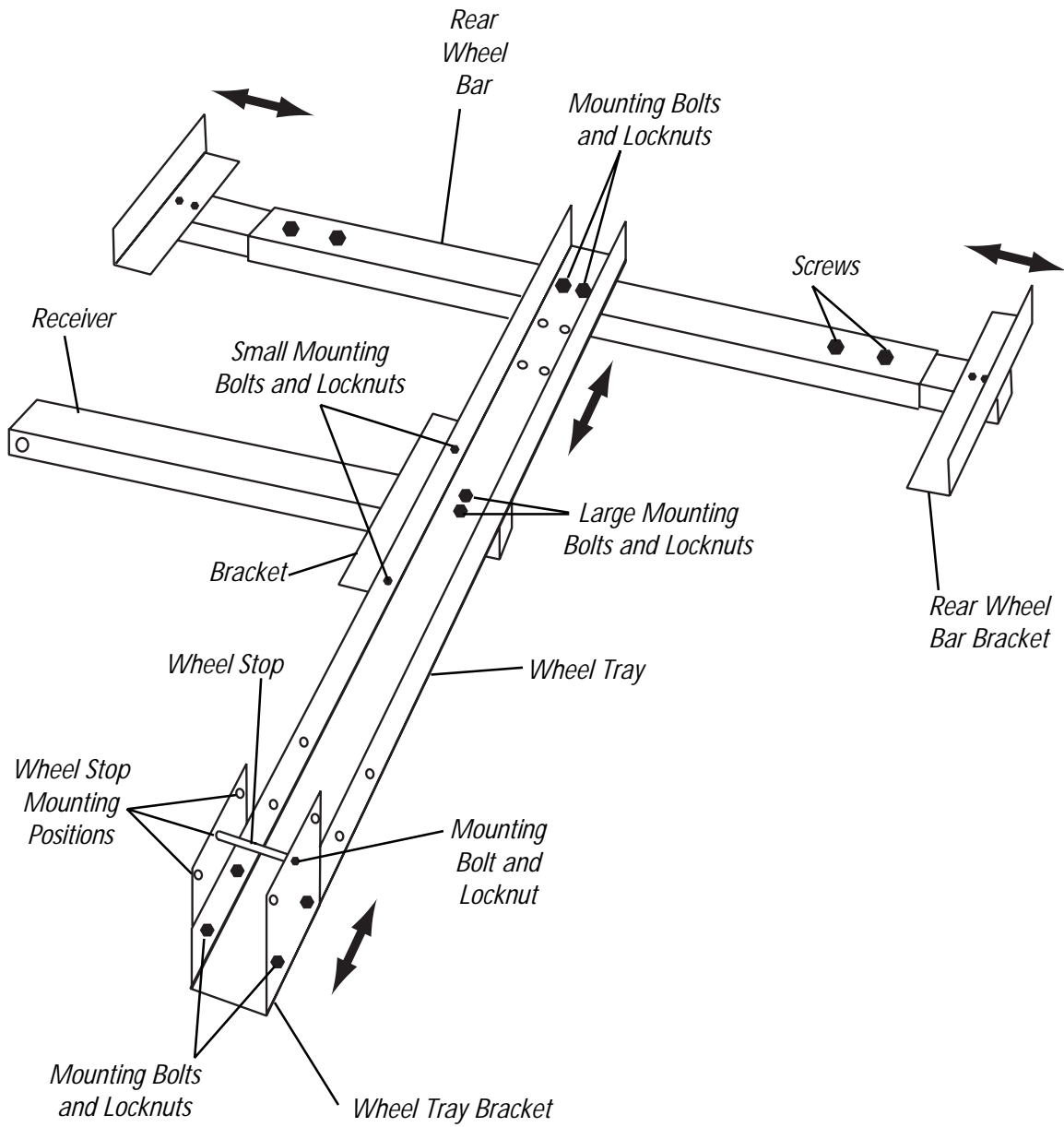
ASSEMBLING/USING/ADJUSTING THE HANDCYCLE RACK (FIGURE 12)

ASSEMBLING THE HANDCYCLE RACK

1. Position the receiver with the bracket facing UP as shown in FIGURE 12.
2. Position the rear wheel bar with the wheel brackets facing up as shown in FIGURE 12.
3. Remove the two (2) large mounting bolts and locknuts from the receiver and set aside.
4. Remove the two (2) small mounting bolts and locknuts from the receiver bracket and set aside.
5. Secure the wheel tray to the receiver with the two (2) large mounting bolts and locknuts.
6. Secure the receiver bracket to the wheel tray with the two (2) small mounting bolts and locknuts.
7. Remove the two (2) mounting bolts and locknuts from the rear wheel bar and set aside.
8. Secure the rear wheel bar to the wheel tray with the two (2) mounting bolts and locknuts.
9. Install the receiver onto the trailer hitch of the vehicle, according to the vehicle manufacturer's instructions.

USING THE HANDCYCLE RACK

1. Position the handcycle on the rack with the front wheel in the wheel tray bracket.
2. Adjust the handcycle rack so the wheel tray bracket sits against the front wheel and the rear wheel bar brackets sit against the rear wheels. Refer to ADJUSTING THE HANDCYCLE RACK in this procedure.
3. Secure the front wheel to the wheel tray bracket using the strap provided.
4. Secure the rear wheels to the rear wheel bar using the straps provided.



OPTIONS

FIGURE 12 - ASSEMBLING/USING/ADJUSTING THE HANDCYCLE RACK

ADJUSTING THE HANDCYCLE RACK

Wheel Tray Bracket.

NOTE: To properly secure the handcycle, the wheel tray bracket should be adjusted to sit against the front wheel.

1. Remove the four (4) mounting bolts and locknuts securing the wheel tray bracket to the wheel tray.
2. Position the wheel tray bracket in the desired position.
3. Secure the wheel tray bracket to the wheel tray with the four (4) mounting bolts and locknuts.
4. If necessary, the wheel stop may be adjusted to one (1) of three (3) positions to sit against the front wheel. To adjust the wheel stop, perform the following steps:
 - A. Remove the mounting bolt and locknut securing the wheel stop to the wheel tray bracket.
 - B. Position the wheel stop in the desired mounting position.
 - C. Secure the wheel stop to the wheel tray bracket with the mounting bolt and locknut.

Rear Wheel Bar Brackets.

NOTE: To properly secure the handcycle, the rear wheel bar brackets should be adjusted to sit against the rear wheels.

1. Loosen the two (2) screws securing the rear wheel bar bracket to the rear wheel bar.
2. Adjust the rear wheel bar bracket IN/OUT until they sit against the rear wheel.
3. Secure the rear wheel bar bracket to the rear wheel bar with the two (2) screws.
4. Repeat STEPS 1-3 for the opposite side if necessary.

Rear Wheel Bar.

NOTE: To properly secure the handcycle, the rear wheel bar should be adjusted so the rear wheels sit in the rear wheel bar brackets.

1. Remove the two (2) mounting bolts and locknuts securing the rear wheel bar to the wheel tray.
2. Position the rear wheel bar to one (1) of three (3) mounting positions on the wheel tray.
3. Secure the rear wheel bar to the wheel tray with the two (2) mounting bolts and locknuts.

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 THE THESE INSTRUCTIONS.

THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTIES WHATSOEVER, WHETHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND THE SOLE REMEDY FOR VIOLATIONS OF ANY WARRANTY WHATSOEVER, SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT PURSUANT TO THE TERMS CONTAINED HEREIN. THE APPLICATION OF ANY IMPLIED WARRANTY WHATSOEVER SHALL NOT EXTEND BEYOND THE DURATION OF THE EXPRESS WARRANTY PROVIDED HEREIN. THE MANUFACTURER SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES WHATSOEVER.

THIS WARRANTY SHALL BE EXTENDED TO COMPLY WITH STATE/PROVINCIAL LAWS AND REQUIREMENTS.



Yes, you can.™

Invacare Corporation www.invacare.com

USA
One Invacare Way
Elyria, Ohio USA
44036-2125
800-333-6900

Invacare Top End
4501 63RD Circle North
Pinellas Park, FL 33781
800-532-8677

Invacare and Top End are registered trademarks of Invacare Corporation. Excelerator and Yes, you can. are trademarks of Invacare Corporation. Shimano, Nexus, and Ultegra are registered trademarks of Shimano Inc. 3-in-1 and WD-40 are registered trademarks of the WD-40 Company. Teflon is a registered trademark of E.I. Du Pont De Nemours and Company.
© 2004 Invacare Corporation

Part No. 1056188 Rev C - 02/04