Owner's Operator and Maintenance Manual

Power Tiger™

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.

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

INVACARE

Yes, you can.

⚠ WARNING

A QUALIFIED TECHNICIAN MUST PERFORM THE INITIAL SET UP OF THIS WHEELCHAIR. ALSO, A QUALIFIED TECHNICIAN MUST PERFORM ALL PROCEDURES IN THE SERVICE MANUAL.

WHEELCHAIR USERS: DO NOT SERVICE OR OPERATE THIS EQUIPMENT WITHOUT FIRST READING AND UNDERSTANDING (1) THE OWNER'S OPERATOR AND MAINTENANCE MANUAL AND (2) THE SEATING SYSTEM'S MANUAL (IF APPLICABLE). IF YOU ARE UNABLE TO UNDERSTAND THE WARNINGS, CAUTIONS, AND INSTRUCTIONS, CONTACT INVACARE TECHNICAL SUPPORT BEFORE ATTEMPTING TO SERVICE OR OPERATE THIS EQUIPMENT - OTHERWISE INJURY OR DAMAGE MAY RESULT.

DEALERS AND QUALIFIED TECHNICIANS: DO NOT SERVICE OR OPERATE THIS EQUIPMENT WITHOUT FIRST READING AND UNDERSTANDING (1) THE OWNER'S OPERATOR AND MAINTENANCE MANUAL, (2) THE SERVICE MANUAL (IF APPLICABLE) AND (3) THE SEATING SYSTEM'S MANUAL (IF APPLICABLE). IF YOU ARE UNABLE TO UNDERSTAND THE WARNINGS, CAUTIONS AND INSTRUCTIONS, CONTACT INVACARE TECHNICAL SUPPORT BEFORE ATTEMPTING TO SERVICE OR OPERATE THIS EQUIPMENT - OTHERWISE, INJURY OR DAMAGE MAY RESULT.

REFERENCE DOCUMENTS

Refer to the table below for part numbers of additional documents which are referenced in this manual.

MANUAL	PART NUMBER
MKIV™ Electronics Manual	1043576
MKIV RII Electronics Manual	1095272

NOTE: Updated versions of this manual are available on www.invacare.com.

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

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 ❑ Dealer/Provider ❑ Other_____
❑ Advertisement (circle one): TV, Radio, Magazine, Newspaper ❑ No Referral_____

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

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

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

POSTAGE WILL BE PAID BY ADDRESSEE

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

SPECIAL NOTES

Signal words are used in this manual and apply to hazards or unsafe practices which could result in personal injury or property damage. Refer to the table below for definitions of the signal words.

SIGNAL WORD	MEANING
DANGER	Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Caution indicates a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE

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

WHEELCHAIR USER

As a manufacturer of wheelchairs, Invacare endeavors to supply a wide variety of wheelchairs to meet many needs of the end user. However, final selection of the type of wheelchair to be used by an individual rests solely with the user and his/her healthcare professional capable of making such a selection. Invacare highly recommends working with a certified rehab technology supplier and/or a member of NRRTS or RESNA.

WHEELCHAIR TIE-DOWN RESTRAINTS AND SEAT RESTRAINTS

Wheelchair users should not be transported in vehicles of any kind while in wheelchairs. As of this date, the Department of Transportation has not approved any tie-down systems for transportation of a user while in a wheelchair, in a moving vehicle of any type.

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

⚠ WARNING

Invacare products are specifically designed and manufactured for use in conjunction with Invacare accessories. Accessories designed by other manufacturers have not been tested by Invacare and are not recommended for use with Invacare products.

The seat positioning strap is a positioning belt only. It is not designed for use as a safety device withstanding high stress loads such as auto or aircraft safety belts. If signs of wear appear, belt MUST be replaced immediately.

Wheelchairs should be examined during maintenance for signs of corrosion (water exposure, incontinence, etc.). Electrical components damaged by corrosion should be replaced IMMEDIATELY.

Wheelchairs that are used by incontinent users and/or are frequently exposed to water may require replacement of electrical components more frequently.

⚠ TILT WARNINGS

TO HEALTHCARE PROFESSIONALS/ASSISTANTS:

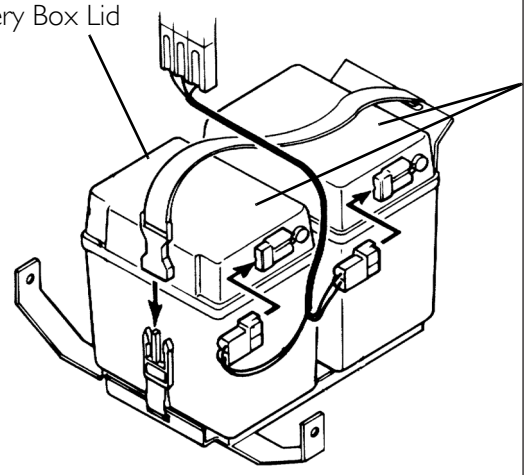
Make sure the occupant of the wheelchair is properly positioned.

When returning the occupant of the wheelchair to the full upright position, more body strength will be required for approximately the last twenty (20) degrees of incline (reverse recline). Make sure to use proper body mechanics (use your legs) or seek assistance if necessary to avoid injury.

LABEL LOCATIONS

NOTE: The battery label is found on the inside of each battery box lid.

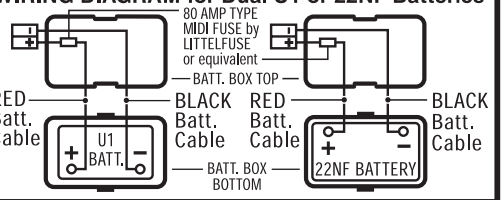
Battery Box Lid



⚠ WARNING

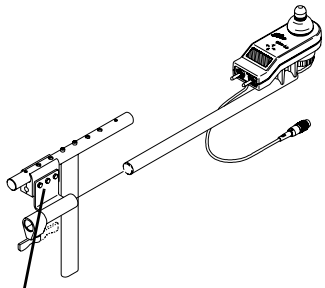
The POSITIVE (+) RED Battery Cable MUST connect to the POSITIVE (+) Battery Terminal(s)/ Post(s). The NEGATIVE (-) BLACK Battery Cable MUST connect to the NEGATIVE (-) Battery Terminal(s)/Post(s). DO NOT allow Battery Cable(s) to contact the opposite Battery Terminal(s)/Post(s). Replace cable(s) immediately if cable(s) insulation becomes damaged. Failure to observe these warnings may result in an electrical short with serious personal injury and/or damage to the electrical system. See Owner's Manual.

WIRING DIAGRAM for Dual U1 or 22NF Batteries

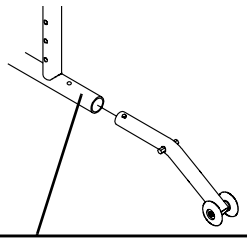


DO NOT remove this label. 1098360

NOTE: This label is located on both sides of the wheelchair.



WEIGHT CAPACITY
150 LBS. (68 kgs.)
REFER TO OWNER'S MANUAL
P/N 1111010



⚠ WARNING

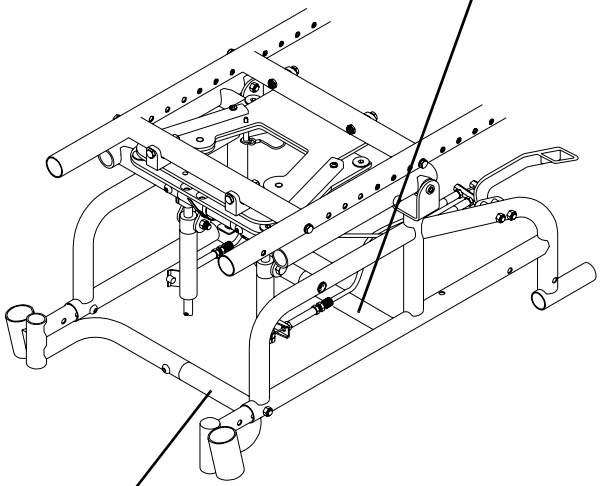
DO NOT OPERATE WITHOUT
THE ANTI-TIP TUBES
INSTALLED.

REV. 5/98 P/N 60106X144

NOTE: This label is located on both sides of the wheelchair.

NO WHEELCHAIR HAS BEEN APPROVED FOR USE AS A SEATING SURFACE WITHIN A MOTOR VEHICLE. THIS LABEL IS FOR INFORMATIONAL PURPOSES ONLY. LIABILITY ISSUES WERE NOT CONSIDERED IN THE ATTACHMENT OF THIS LABEL.

AUCUN FAUTEUIL ROULANT N'A ÉTÉ APPROUVÉ POUR ÊTRE UTILISÉ COMME SIÉGE À L'INTÉRIEUR D'UN VÉHICULE MOTORISÉ. CETTE ÉTIQUETTE NE PEUT ÊTRE UTILISÉE QU'A TITRE D'INFORMATION ET N'A PAS ÉTÉ AFFICHÉE ICI POUR DES RAISONS DE RESPONSABILITÉ LEGALE



⚠ WARNING

Care must be taken so the configuration set up for the user is stable. Stability adjustments must be performed by a qualified technician 1074106

TYPICAL PRODUCT PARAMETERS

	POWER TIGER
SEAT WIDTH:	10 to 16 inches in 1-inch increments
SEAT DEPTH:	10 to 16 inches in 1-inch increments
BACK ANGLE RANGE:	80° to 110°
SEAT-TO-FLOOR:	17¾ inches
OVERALL WIDTH OF BASE WITHOUT JOYSTICK: WITH SIDE-MOUNT JOYSTICK:	 22.6 inches 23.6 inches with 16-inch seat width
OVERALL HEIGHT:	38 inches
TILT ANGLE:	5° to 30°
OVERALL LENGTH WITH 90° SWINGAWAY FOOTREST 10 to 13 Inch Seat: 14 Inch Seat: 15 to 16 Inch Seat: WITH FIXED OR ONE-PIECE FOOTBOARD 10 to 13 Inch Seat: 14 Inch Seat: 15 to 16 Inch Seat:	 34 inches 35 inches 36 inches 35 inches 36 inches 37 inches
WEIGHT WITHOUT 22NF BATTERIES: WITH 22NF BATTERIES:	 94 lbs ± 10% 159 lbs ± 10%
REAR AXLE:	Fixed
DRIVE WHEELS/TIRES:	12.5 x 2.25 inch
CASTERS W/ PRECISION SEALED BEARINGS SEMI-PNEUMATIC: PNEUMATIC:	 8 x 1¾ inches (Opt), 6 x 2 inches (Std) 8 x 2 inches (Opt)
ANTI-TIPPER:	Standard
FOOTRESTS:	Articulating Footboard (Opt), Swing-Away (Std) Articulating Swing-Away (Opt)
ARMRESTS:	Adjustable Height (Desk and Full Length)
ARM HEIGHT:	7 to 11 inches in 1 inch increments
SEAT:	Removable
BATTERY REQUIREMENTS:	Two 22NF
***WEIGHT LIMITATION:**	Up to 150 lbs.
PERFORMANCE Rating: Speed:	 150 lbs. Up to 3.6 mph +/- 10% mph

NOTE: All dimensions are ± ½-inch.

**NOTE: Weight limitation is total weight (user weight plus any additional items that the user may require [back pack, etc.]). Example: If weight limitation of the wheelchair is 150 lbs and additional items equal 25 lbs, subtract 25 lbs from 150 lbs. This means the maximum weight limitation of the user is 125 lbs.*

SECTION 1—GENERAL GUIDELINES

⚠ WARNING

SECTION 1 - GENERAL GUIDELINES contains important information for the safe operation and use of this product. DO NOT use this product or any available optional equipment without first completely reading and understanding these instructions and any additional instructional material such as Owner's Manuals, Service Manuals or Instruction Sheets supplied with this product or optional equipment. If you are unable to understand the Warnings, Cautions or Instructions, contact a healthcare professional, dealer or technical personnel before attempting to use this equipment - otherwise, injury or damage may occur.

Repair or Service Information

Set-up of the Electronic Control Unit is to be performed only by a qualified technician. The final adjustments of the controller may affect other activities of the wheelchair. Damage to the equipment could occur if improperly setup or adjusted.

Except for programming, DO NOT service or adjust the wheelchair while occupied, unless otherwise noted.

Wheelchairs should be examined during maintenance for signs of corrosion (water exposure, incontinence, etc.). Electrical components damaged by corrosion should be replaced IMMEDIATELY.

Wheelchairs that are used by incontinent users and/or are frequently exposed to water may require replacement of electrical components more frequently.

Tilt Seats Only - Pinch point may occur when returning the tilted seat to the full upright position. Make sure the hands and body of the occupant, attendants and bystanders are clear of all pinch points before returning the tilted seat to the full upright position.

Before adjusting, repairing or servicing the wheelchair, ALWAYS turn the wheelchair power Off, otherwise, injury or damage may occur.

Invacare products are specifically designed and manufactured for use in conjunction with Invacare accessories. Accessories designed by other manufacturers have not been tested by Invacare and are not recommended for use with Invacare products.

Operation Information

Performance adjustments should only be made by professionals of the healthcare field or persons fully conversant with this process and the driver's capabilities. Incorrect settings could cause injury to the driver, bystanders, damage to the wheelchair and to surrounding property.

After the wheelchair has been set-up, check to make sure that the wheelchair performs to the specifications entered during the set-up procedure. If the wheelchair does NOT perform to specifications, turn the wheelchair Off immediately and reenter set-up specifications. Repeat this section until the wheelchair performs to specifications.

DO NOT leave the power button On when entering or exiting your wheelchair.

DO NOT operate on roads, streets or highways.

DO NOT climb, go up or down ramps or traverse slopes greater than 9°.

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

DO NOT stand on the frame of the wheelchair.

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

DO determine and establish your particular safety limits by practicing bending, reaching and transferring activities in the presence of a qualified healthcare professional before attempting active use of the wheelchair.

DO NOT attempt to reach objects if you have to move forward in your seat.

DO NOT attempt to reach objects if you have pick them up from the floor by reaching between your knees.

DO NOT lean over the top of the back upholstery to reach objects behind you, as this may cause the wheelchair and/or seating system (if any) to tip over.

DO NOT shift your weight or sitting position toward the direction you are reaching as the wheelchair and/or seating system (if any) may tip over.

ALWAYS shift your weight in the direction you are turning. DO NOT shift your weight in the opposite direction of the turn. Shifting your weight in the opposite direction of the turn may cause the inside drive wheel to lose traction and the wheelchair to tip over.

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

DO NOT stand on the footplates. When getting in or out of the wheelchair, make sure that the footplates are in the upward position or swing footrests towards the outside of the wheelchair.

NEVER leave an unoccupied wheelchair unattended on an incline.

DO NOT attempt to stop a moving wheelchair with the wheel locks. Wheel locks are not brakes.

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

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

ALWAYS keep hands and fingers clear of moving parts to avoid injury.

ALWAYS wear your seat positioning strap. The seat positioning strap is a positioning belt only. It is not designed for use as a safety device withstanding high stress loads such as auto or aircraft safety belts. If signs of wear appear, belt MUST be replaced immediately.

ALWAYS turn the wheelchair power Off and engage the clutches to prevent the wheels from moving before attempting to transfer in or out of the wheelchair. Also make sure every precaution is taken to reduce the gap distance. Align both casters parallel with the object you are transferring onto.

ALWAYS engage both wheel locks and reduce the gap distance before transferring to and from the wheelchair. Turn all casters parallel to the object you are transferring onto.

DO NOT engage or disengage the clutches until the power is in the Off position.

DO NOT use with a broken or missing joystick knob.

DO NOT use if joystick does not spring back to the neutral position or becomes sticky or sluggish.

DO NOT use if joystick boot is torn or damaged.

ALWAYS check foam grips for looseness before using the wheelchair. If loose, contact a qualified technician for instructions.

ALWAYS use anti-tippers. When outdoors on wet, soft ground or on gravel surfaces, anti-tippers may not provide the same level of protection against tip over. Extra caution must be observed when traversing such surfaces.

Avoid storage or use near open flame or combustible products.

DO NOT allow user to leave the wheelchair while the seat is tilted. ALWAYS return the back to the upright position when transferring the user in or out of the wheelchair.

Tire Pressure

DO NOT use your wheelchair unless it has the proper tire pressure (P.S.I.). DO NOT overinflate the tires. Failure to follow these recommendations may cause the tire to explode and cause bodily harm. The recommended tire pressure is listed on the side wall of the tire.

Electrical

Grounding Instructions:

DO NOT, under any circumstances, cut or remove the round grounding prong from any plug used with or for Invacare products. Some devices are equipped with three-prong (grounding) plugs for protection against possible shock hazards. Where a two-prong wall receptacle is encountered, it is the personal responsibility and obligation of the customer to contact a qualified electrician and have the two-prong receptacle replaced with a properly grounded three-prong wall receptacle in accordance with the National Electrical Code. If you must use an extension cord, use only a three-wire extension cord having the same or higher electrical rating as the device being connected. In addition, Invacare has placed RED/ORANGE Warning Tags on some equipment. DO NOT remove these tags.

Batteries

The warranty and performance specifications contained in this manual are based on the use of deep cycle gel cell batteries. Invacare strongly recommends their use as the power source for this unit.

Carefully read battery/battery charger information prior to installing, servicing or operating your wheelchair.

Charging Batteries

⚠ DANGER

When using an extension cord, use only a three wire extension cord having at least 16 AWG (American Wire Gauge) wire and the same or higher electrical rating as the device being connected. Use of improper extension cord could result in risk of fire and electric shock.

Three prong to two prong adapters should not be used. Use of three prong adapters can result in improper grounding and present a shock hazard to the user.

NEVER attempt to recharge the batteries by attaching cables directly to the battery terminals.

DO NOT attempt to recharge the batteries and operate the wheelchair at the same time.

DO NOT operate wheelchair with extension cord attached to the AC cable.

DO NOT attempt to recharge the batteries when the wheelchair has been exposed to any type of moisture.

DO NOT attempt to recharge the batteries when the wheelchair is outside.

DO NOT sit in the wheelchair while charging the batteries.

Read and carefully follow the manufacturer's instructions for each charger (supplied or purchased). If charging instructions are not supplied, consult a qualified technician for proper procedures.

Ensure the pins of the extension cord plug are the same number, size, and shape as those on the charger.

DO NOT under any circumstances cut or remove the round grounding plug from the charger AC cable plug or the extension cord plug.

Rain Test

Invacare has tested its power wheelchairs in accordance with ISO 7176 "Rain Test". This provides the end user or his/her attendant sufficient time to remove his/her power wheelchair from a rain storm and retain wheelchair operation.

DO NOT leave power wheelchair in a rain storm of any kind.

DO NOT use power wheelchair in a shower.

DO NOT leave power wheelchair in a damp area for any length of time.

Direct exposure to rain or dampness will cause the wheelchair to malfunction electrically and mechanically; may cause the wheelchair to prematurely rust.

Check to ensure that the battery covers are secured in place, joystick boot is not torn or cracked where water can enter and that all electrical connections are secure at all times.

DO NOT use the joystick if the boot is torn or cracked. If the joystick boot becomes torn or cracked, replace immediately.

Weight Training

Invacare does not recommend the use of its wheelchairs as a weight training apparatus. Invacare wheelchairs have not been designed or tested as a seat for any kind of weight training. If occupant uses said wheelchair as a weight training apparatus, Invacare shall not be liable for bodily injury and the warranty is void.

Weight Limitation

Refer to Typical Product Parameters on page 14 to determine the weight limit (total combined weight of user and any attachments) of your wheelchair model. DO NOT exceed the limit - otherwise, injury or damage may result.

SECTION 2—SAFETY/HANDLING OF WHEELCHAIRS

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

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

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

Stability and Balance

⚠ WARNING

ALWAYS wear your seat positioning strap. The seat positioning strap is a positioning belt only. It is not designed for use as a safety device withstanding high stress loads such as auto or aircraft safety belts. If signs of wear appear, belt MUST be replaced immediately.

DO NOT climb, go up or down ramps or traverse slopes greater than 9°.

Invacare strongly recommends proceeding down ramps or slopes slowly to avoid hard braking or sudden stops.

Be aware that carrying heavy objects on your lap while occupying the wheelchair may adversely affect the stability of the wheelchair, resulting in serious bodily injury to the user, damage to the wheelchair and surrounding property.

This wheelchair has been designed to accommodate one individual only. If more than one individual occupies the wheelchair this may adversely affect the stability of the wheelchair, resulting in serious bodily injury to the user and passenger and damage to the wheelchair and surrounding property.

To assure stability and proper operation of your wheelchair, you must at all times maintain proper balance. Your wheelchair has been designed to remain upright and stable during normal daily activities as long as you do not move beyond the center of gravity. DO NOT lean forward out of the wheelchair any further than the length of the armrests. Make sure the casters are pointing in the forward position whenever you lean forward. This can be achieved by advancing the wheelchair and then reversing it in a straight line.

Coping With Everyday Obstacles

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

A Note to Wheelchair Assistants

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

Also, be aware of detachable parts such as arms or legrests. These must NEVER be used to move the wheelchair or as lifting supports, as they may be inadvertently released, resulting in possible injury to the user and/or assistant(s).

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

Percentage of Weight Distribution

⚠ WARNING

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

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

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

Reaching, Leaning and Bending - Forward

⚠ WARNING

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

NOTE: For this procedure, refer to FIGURE 2.1.

Position the casters so that they are extended away from the drive wheels and engage wheel locks/clutches.

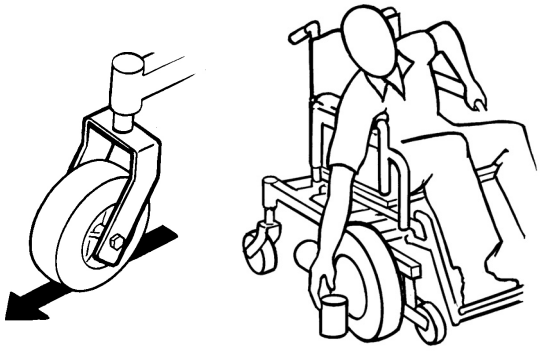


FIGURE 2.1 Reaching, Leaning and Bending - Forward

Reaching, Leaning and Bending - Backward

⚠ WARNING

DO NOT lean over the top of the back upholstery. This will change your center of gravity and may cause you to tip over.

NOTE: For this procedure, refer to FIGURE 2.2.

Position wheelchair as close as possible to the desired object. Position the casters so that they are extended away from the drive wheels to create the longest possible wheelbase. Reach back only as far as your arm will extend without changing your sitting position.

FIGURE 2.2 Reaching, Leaning and Bending - Backward

Pinch Points

⚠ WARNING

TILT SEATS ONLY - Pinch point may occur when returning the tilted seat to the full upright position. Make sure the hands and body of both the occupant, attendants and bystanders are clear of all pinch points before returning the tilted seat to the full upright position.

Stairways

⚠ WARNING

DO NOT attempt to move an occupied power wheelchair between floors using a stairway. Use an elevator to move an occupied power wheelchair between floors. If moving a power wheelchair between floors by means of a stairway, the occupant MUST be removed and transported independently of the power wheelchair.

Extreme caution is advised when it is necessary to move an unoccupied power wheelchair up or down the stairs. Invacare recommends using two assistants and making thorough preparations. Make sure to use only secure, non-detachable parts for hand-hold supports.

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

The weight of the wheelchair without the user and without batteries is approximately 94 lbs. Use proper lifting techniques (lift with your legs) to avoid injury.

Follow this procedure for moving the wheelchair between floors when an elevator is not available:

NOTE: When using a stairway to move the wheelchair and any accessories, move all wheelchair components away from the stairway prior to reassembly.

1. Remove the occupant from the wheelchair.
2. Turn the anti-tippers so the wheels face up.
3. Remove battery box(es) from wheelchair. Refer to Batteries on page 72.
4. Bend your knees and keep your back straight.
5. Using non-removable (non-detachable) parts of the wheelchair, lift the wheelchair off of the ground and transfer the wheelchair up or down the stairs.
6. The wheelchair should not be lowered until the last stair has been negotiated and the wheelchair has been carried away from the stairway.
7. Turn the anti-tippers so the wheels face down.
8. Verify anti-tippers are locked in position.

⚠ WARNING: ESCALATORS

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

Transferring To and From Other Seats

⚠ WARNING

ALWAYS turn the wheelchair power Off and engage the clutches to prevent the wheels from moving before attempting to transfer in or out of the wheelchair. Also make sure every precaution is taken to reduce the gap distance. Align both casters parallel with the object you are transferring onto.

CAUTION

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

NOTE: For this procedure, refer to FIGURE 2.3.

NOTE: Adequate mobility and upper body strength is required to perform this activity independently.

1. Position the wheelchair as close as possible along side the seat to which you are transferring, with the casters aligned parallel with the object.
2. Engage clutches and wheel locks. Refer to Engaging/Disengaging the Wheel Locks on page 42 and Disengaging/Engaging Clutch Levers on page 43.
3. Shift body weight into seat with transfer.

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

FIGURE 2.3 Transferring To and From Other Seats

SECTION 3—EMI INFORMATION

⚠ WARNING

CAUTION: IT IS VERY IMPORTANT THAT YOU READ THIS INFORMATION REGARDING THE POSSIBLE EFFECTS OF ELECTROMAGNETIC INTERFERENCE ON YOUR POWERED WHEELCHAIR.

Electromagnetic Interference (EMI) From Radio Wave Sources

Powered wheelchairs and motorized scooters (in this text, both will be referred to as powered wheelchairs) may be susceptible to electromagnetic interference (EMI), which is interfering electromagnetic energy (EM) emitted from sources such as radio stations, TV stations, amateur radio (HAM) transmitters, two way radios, and cellular phones. The interference (from radio wave sources) can cause the powered wheelchair to release its brakes, move by itself, or move in unintended directions. It can also permanently damage the powered wheelchair's control system. The intensity of the interfering EM energy can be measured in volts per meter (V/m). Each powered wheelchair can resist EMI up to a certain intensity. This is called its "immunity level". The higher the immunity level, the greater the protection. At this time, current technology is capable of achieving at least a 20 V/m immunity level, which would provide useful protection from the more common sources of radiated EMI.

There are a number of sources of relatively intense electromagnetic fields in the everyday environment. Some of these sources are obvious and easy to avoid. Others are not apparent and exposure is unavoidable. However, we believe that by following the warnings listed below, your risk to EMI will be minimized.

The sources of radiated EMI can be broadly classified into three types:

1) **Hand-held Portable transceivers (transmitters-receivers with the antenna mounted directly on the transmitting unit. Examples include: citizens band (CB) radios, "walkie talkie", security, fire and police transceivers, cellular telephones, and other personal communication devices).**

NOTE: Some cellular telephones and similar devices transmit signals while they are On, even when not being used.

2) **Medium-range mobile transceivers, such as those used in police cars, fire trucks, ambulances and taxis. These usually have the antenna mounted on the outside of the vehicle; and**

3) **Long-range transmitters and transceivers, such as commercial broadcast transmitters (radio and TV broadcast antenna towers) and amateur (HAM) radios.**

NOTE: Other types of hand-held devices, such as cordless phones, laptop computers, AM/FM radios, TV sets, CD players, cassette players, and small appliances, such as electric shavers and hair dryers, so far as we know, are not likely to cause EMI problems to your powered wheelchair.

⚠ WARNING

Powered Wheelchair Electromagnetic Interference (EMI)

Because EM energy rapidly becomes more intense as one moves closer to the transmitting antenna (source), the EM fields from hand-held radio wave sources (transceivers) are of special concern. It is possible to unintentionally bring high levels of EM energy very close to the powered wheelchair's control system while using these devices. This can affect powered wheelchair movement and braking. Therefore, the warnings listed below are recommended to prevent possible interference with the control system of the powered wheelchair.

Electromagnetic interference (EMI) from sources such as radio and TV stations, amateur radio (HAM) transmitters, two-way radios, and cellular phones can affect powered wheelchairs and motorized scooters.

FOLLOWING THE WARNINGS LISTED BELOW SHOULD REDUCE THE CHANCE OF UNINTENDED BRAKE RELEASE OR POWERED WHEELCHAIR MOVEMENT WHICH COULD RESULT IN SERIOUS INJURY.

1) **DO NOT operate hand-held transceivers (transmitters receivers), such as citizens band (CB) radios, or turn On personal communication devices, such as cellular phones, while the powered wheelchair is turned On;**
2) **Be aware of nearby transmitters, such as radio or TV stations, and try to avoid coming close to them;**
3) **If unintended movement or brake release occurs, turn the powered wheelchair Off as soon as it is safe;**
4) **Be aware that adding accessories or components, or modifying the powered wheelchair, may make it more susceptible to EMI (NOTE: There is no easy way to evaluate their effect on the overall immunity of the powered wheelchair); and**
5) **Report all incidents of unintended movement or brake release to the powered wheelchair manufacturer, and note whether there is a source of EMI nearby.**

Important Information

1) **20 volts per meter (V/m) is a generally achievable and useful immunity level against EMI (as of May 1994) (the higher the level, the greater the protection);**
2) **The immunity level of this product is unknown.**

Modification of any kind to the electronics of this wheelchair as manufactured by Invacare may adversely affect the RFI immunity levels.

SECTION 4—SAFETY INSPECTION/ TROUBLESHOOTING

NOTE: Every six months take your wheelchair 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 wheelchair. To operate properly and safely, your wheelchair must be cared for just like any other vehicle. Routine maintenance will extend the life and efficiency of your wheelchair.

Safety Inspection Checklists

Initial adjustments should be made to suit your personal body structure needs and preference. Thereafter follow these maintenance procedures:

Inspect/Adjust Initially

CAUTION

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

- ❑ Make sure wheelchair rolls straight (no excessive drag or pull to one side).
- ❑ Inspect all fasteners.
- ❑ Inspect electrical components for signs of corrosion. Replace if corroded or damaged.
- ❑ Make sure clothing guards are secure.
- ❑ Make sure arms are secure but easy to release and adjustment levers engage properly.
- ❑ Make sure adjustable height arms operate and lock securely.
- ❑ Make sure upholstery has no rips.
- ❑ Make sure armrest pad sits flush against arm tube.
- ❑ Make sure axle nut and wheel mounting nuts are secure on drive wheels.
- ❑ Make sure there is no excessive side movement or binding when drive wheels are lifted and spun when disengaged (free-wheeling).
- ❑ Inspect wheel/fork assembly for proper tension by spinning caster; caster should come to a gradual stop.
- ❑ Loosen/tighten caster locknut if wheel wobbles noticeably or binds to a stop.
- ❑ Make sure all caster/wheel/fork/headtube fasteners are secure and not damaged/ missing.
- ❑ Make sure wheel locks do not interfere with tires when rolling.
- ❑ Make sure wheel lock pivot points are free of wear and looseness.
- ❑ Make sure wheel locks are easy to engage.
- ❑ Inspect tires for flat spots and wear.
- ❑ Check pneumatic tires for proper inflation.

- ❑ Check that all labels are present and legible. Replace if necessary.

Inspect/Adjust Weekly

CAUTION

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

- ❑ Inspect wheel/fork assembly for proper tension by spinning caster; caster should come to a gradual stop.
- ❑ Make sure all caster/wheel/fork/headtube fasteners are secure and not damaged/missing.
- ❑ Inspect tires for flat spots and wear.
- ❑ Check pneumatic tires for proper inflation.

Inspect/Adjust Monthly

- ❑ Make sure axle nut and wheel mounting nuts are secure on drive wheels.
- ❑ Loosen/tighten caster locknut if wheel wobbles noticeably or binds to a stop.
- ❑ Make sure wheel locks do not interfere with tires when rolling.
- ❑ Make sure wheel lock pivot point are free of wear and looseness.
- ❑ Inspect seat positioning strap for any signs of wear. Ensure buckle latches. Verify hardware that attaches strap to frame is secure and undamaged. Replace if necessary.

Inspect/Adjust Periodically

- ❑ Make sure wheelchair rolls straight (no excessive drag or pull to one side).
- ❑ Inspect all fasteners.
- ❑ Inspect electrical components for signs of corrosion. Replace if corroded or damaged.
- ❑ Make sure clothing guards are secure.
- ❑ Make sure arms are secure but easy to release and adjustment levers engage properly.
- ❑ Make sure adjustable height arms operate and lock securely.
- ❑ Make sure upholstery has no rips.
- ❑ Make sure armrest pad sits flush against arm tube.
- ❑ Inspect wheel/fork assembly for proper tension by spinning caster; caster should come to a gradual stop.
- ❑ Make sure wheel locks are easy to engage.
- ❑ Inspect foam handgrips for damage. If damaged, have them replaced by a qualified technician.
- ❑ Check that all labels are present and legible. Replace if necessary.

Troubleshooting - Mechanical

WHEELCHAIR VEERS LEFT/RIGHT	SLUGGISH TURN/ PERFORMANCE	CASTERS FLUTTER	SQUEAKS AND RATTLES	LOOSENESS IN WHEELCHAIR	WHEELCHAIR 3 WHEELS	SOLUTIONS
X	X	X		X	X	Check pneumatic tires for correct and equal pressure.
X	X	X	X			Check for loose stem nuts/bolts.
X		X				Check that casters contact ground at the same time.

Troubleshooting - Electrical

NOTE: For additional troubleshooting information and explanation of error codes, refer to the individual Electronics Manual supplied with each wheelchair.

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
Batteries draw excessive current when charging.	Battery failure.	Check batteries for shorted cell. Replace if necessary (Refer to Replacing Batteries on page 78).
	Electrical malfunction.	Contact Dealer/Invacare for Service.
Battery indicator flashes the charge level is low— immediately after recharge.	Battery failure.	Check batteries for shorted cell. Replace if necessary (Refer to Replacing Batteries on page 78).
	Malfunctioning battery charger.	Contact Dealer/Invacare for Service.
	Electrical malfunction.	Poor connections between charger/ wheelchair. Contact Dealer/Invacare.
Battery indicator flashes the charge level is low—too soon after being recharged.	Batteries not charged.	Have charger checked.
	Weak batteries.	Replace batteries if necessary.
		Contact Dealer/Invacare for Service.
Motor “chatters” or runs irregularly.	Electrical malfunction.	Contact Dealer/Invacare for Service.
Only one drive wheel turns.	Electrical malfunction.	Contact Dealer/Invacare for Service.
	One clutch is disengaged.	Engage clutch (Refer to Disengaging/ Engaging Clutch Levers on page 43).

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
Joystick erratic or does not respond as desired.	Damaged motor coupling.	Contact Dealer/Invacare for Service.
	Electrical malfunction.	Contact Dealer/Invacare for Service.
	Controller programmed improperly.	Reprogram controller. (Refer to electronics manual supplied with wheelchair).
Wheelchair does not respond to commands.	Electrical malfunction.	Contact Dealer/Invacare for Service.
Power indicator Off—even after recharging.	Poor battery terminal connection.	Clean terminals (Refer to Cleaning Battery Terminals on page 79).

Checking Battery Charge Level

The following "Do's" and "Don'ts" are provided for your convenience and safety.

DON'T	DO
Don't perform any installation or maintenance without first reading this manual.	Read and understand this manual and any service information that accompanies a battery and charger before operating the wheelchair.
Don't perform installation or maintenance of batteries in an area that could be damaged by battery spills.	Move the wheelchair to a work area before cleaning terminals, or opening battery box.
Don't make it a habit to discharge batteries to the lowest level.	Recharge as frequently as possible to maintain a high charge level and extend battery life.
Don't use randomly chosen batteries or chargers.	Follow recommendations in this manual when selecting a battery or charger.
Don't put new batteries into service before charging.	Fully charge a new battery before using.
Don't tip or tilt batteries.	Use a carrying strap to remove, move or install a battery.
Don't tap on clamps and terminals with tools.	Push battery clamps on the terminals. Spread clamps wider if necessary.
Don't mismatch your battery and chargers.	Use only a gel charger for a gel battery.

SECTION 5—SETUP

Preparing to Use the Power Tiger

NOTE: For this procedure, refer to FIGURE 5.1.

1. Connect the battery harness/charger connectors to the battery box(es).
2. Attach the right and left motor connectors to the controller connectors.
3. Connect the battery harness/charger connectors (BLUE) to the controller connector (BLUE).
4. Connect the joystick cable to the controller connector.

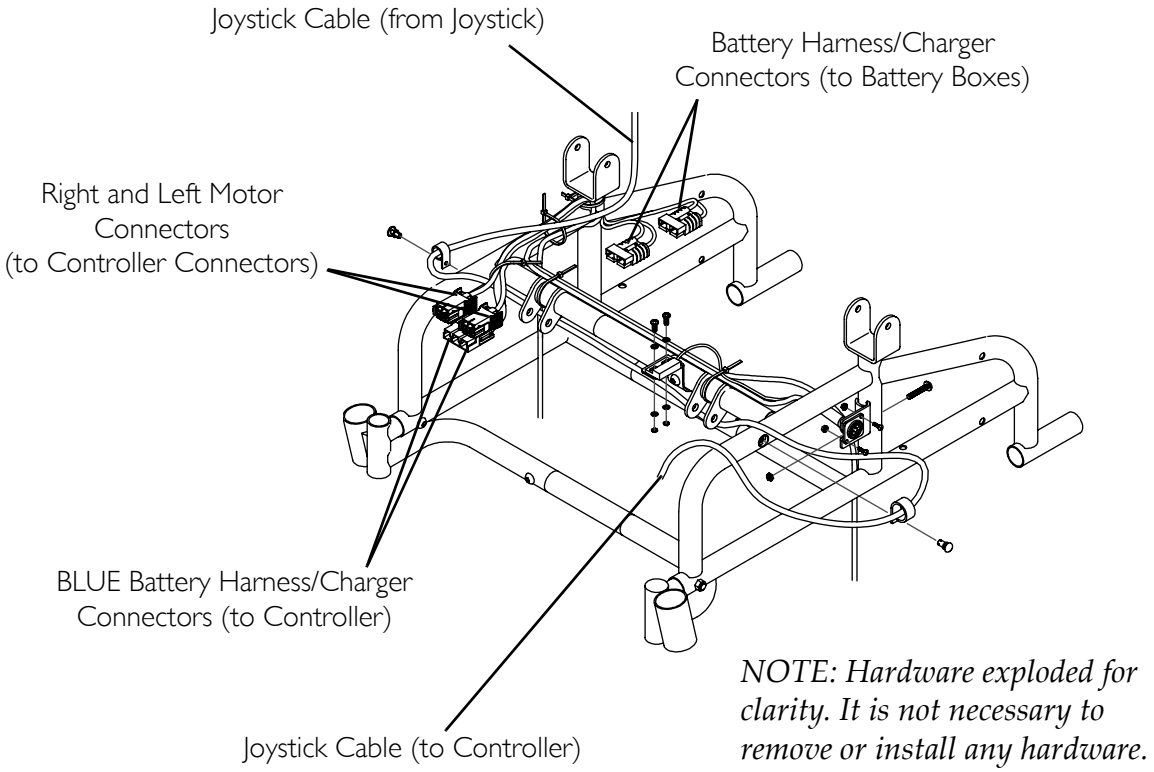


FIGURE 5.1 Preparing to Use the Power Tiger

Preparing MKIV™ Joystick for Use

NOTE: For this procedure, refer to FIGURE 5.2.

NOTE: The MKIV joystick is factory installed on the right side of the wheelchair. To reposition the MKIV joystick onto the left side of the wheelchair, contact a qualified technician.

1. Turn the adjustment lock lever to release the adjustment lock from joystick mounting tube.
2. Slide joystick mounting tube to the desired position.
3. Turn the adjustment lock lever to secure the adjustment lock to the joystick mounting tube.

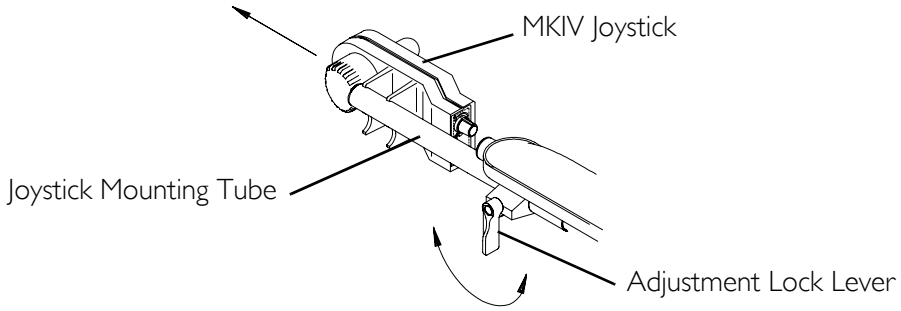


FIGURE 5.2 Preparing MKIV™ Joystick for Use

SECTION 6—WHEELCHAIR OPERATION

⚠ WARNING

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

Set-up of the Electronic Control Unit is to be performed only by a qualified technician. The final adjustments of the controller may affect other activities of the wheelchair. Damage to the equipment could occur under these circumstances.

Turning the Power On/Off

NOTE: For this procedure, refer to FIGURE 6.1.

1. To turn the power on, perform one of the following:
   - MKIV RII Joystick - Move the on/off toggle switch up to the On position.
   - MKIV A, A+ and RX Joystick - Move the on/off drive select toggle switch up to the On Position.

NOTE: After turning power on, all indicators will light briefly and the display gauge will indicate one of the following:

- *The Current Battery Charge - Information gauge shows all LEDs lit or partial LEDs lit.*
- *Out of Neutral at Power up - Information Gauge shows all LEDs flashing slowly. This occurs when the power is turned on when the joystick is out of neutral. This feature prevents sudden and unexpected movements of the power wheelchair. To correct this, turn the joystick Off, let go of the joystick and turn the joystick back On.*

2. To turn the power Off, move the on/off toggle switch down to the Off position.

NOTE: For the location of the information gauge, refer to one of the following procedures:

- *MKIV-A Joystick Switches and Indicators on page 45*.
- *MKIV-A+ Joystick Switches and Indicators on page 48*.
- *MKIV-RII Joystick Switches and Indicators on page 50*.
- *MKIV-RX Joystick Switches and Indicators on page 51*.

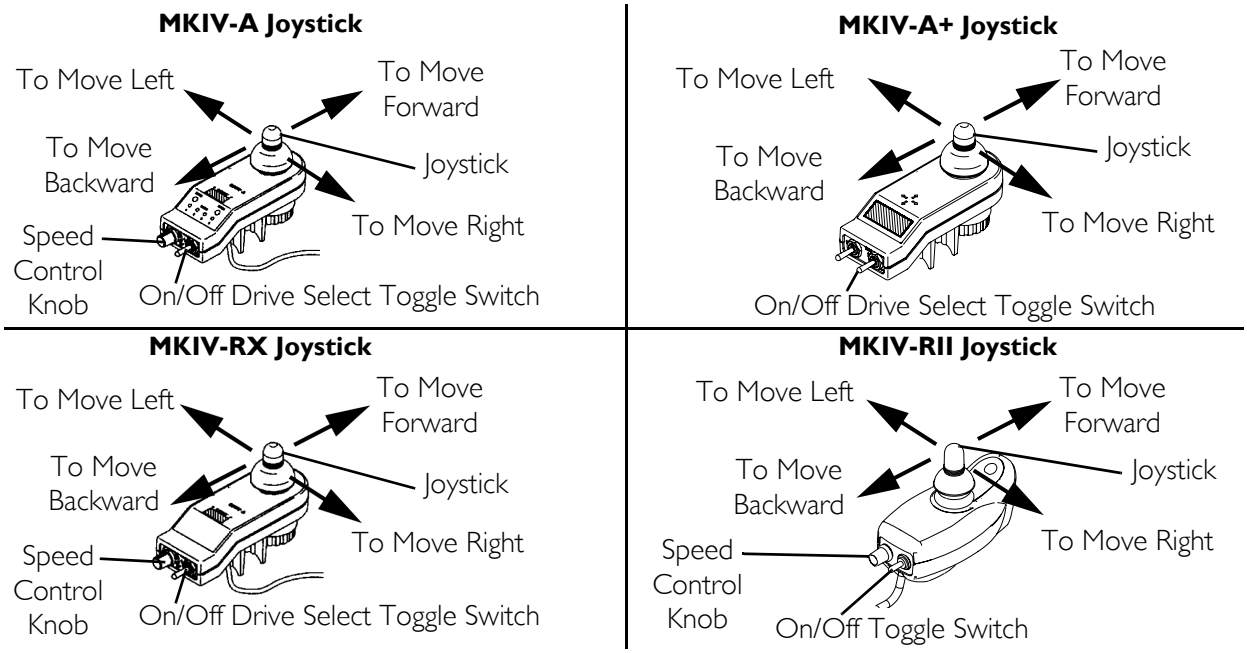


FIGURE 6.1 Turning the Power On/Off

Using The Joystick To Drive The Wheelchair

NOTE: For this procedure, refer to FIGURE 6.1.

The joystick is located at the front of the joystick housing and provides smooth control of speed and direction. It is equipped with 360 degrees of mobility for ease of operation. The joystick is spring-loaded, and automatically returns to the upright (neutral) position when released. Pushing the joystick in a given direction causes the wheelchair to move in that direction.

The joystick has proportional drive control, meaning that the further it is pushed from the upright (neutral) position, the faster the wheelchair moves. The maximum speed, however, is limited by the setting of the speed-control knob.

To slow the wheelchair to a stop, simply release the joystick. The wheelchair has automatic speed and direction compensation to minimize corrections.

When first learning to drive, select a slow speed and try to drive the wheelchair as slowly as possible by pushing the joystick slightly forward. This exercise will help you learn to utilize the full potential of the proportional control and allow you to start and stop smoothly.

To drive the wheelchair, perform the following steps:

1. Perform one of the following:
    - MKIV-A , MKIV-RX and MKIV-RII Joysticks - Adjust speed control knob to the appropriate setting.
    - MKIV-A+ Joysticks - Select the desired drive program.

2. Turn the power on. Refer to Turning the Power On/Off on page 33 in this section of the manual.
3. Maneuver the joystick in the following manner:

MOVEMENT	ACTION
Forward	Push forward on the joystick.
Reverse	Pull back on the joystick.
Turn Left	Move the joystick left.
Turn Right	Move the joystick right.
Stop	Release the joystick and the wheelchair will quickly slow down.

NOTE: For specific information about the joystick installed on the wheelchair, refer to one of these procedures:

- *MKIV-A Joystick Switches and Indicators on page 45.*
- *MKIV-A+ Joystick Switches and Indicators on page 48.*
- *MKIV-RII Joystick Switches and Indicators on page 50.*
- *MKIV-RX Joystick Switches and Indicators on page 51.*

A Note About Drive Lock-Out

⚠ WARNING

NEVER operate the wheelchair while the back is in any tilted back angle position over 20° relative to the vertical position. If the drive lock-out does not stop the wheelchair from operating in a tilt back angle position over 20° relative to the vertical position, DO NOT operate the wheelchair. DO NOT attempt to adjust the drive lock-out. Have the wheelchair serviced by a qualified technician.

The wheelchair user MUST have a clear line of sight to drive safely. On initial wheelchair delivery and after adjusting the back angle, drive lock-out switch or tilt system, tilt the seat back to the farthest driving position immediately before drive lock-out engages and ensure there is a clear line of sight present in which to drive the wheelchair. If a clear line of sight is not present, have the back angle repositioned or readjust the lockout angle such that safe driving with a clear line of sight is achieved. Otherwise injury or damage may occur.

Drive lock-out is a feature designed to prevent the wheelchair from being driven after the seating system has been tilted beyond 10°. The back angle can be increased 10° relative to the seat base, thereby resulting in a back angle potential of 20°* relative to the vertical position before which the drive lock-out is activated. This may affect the wheelchair user's line of sight while driving. Make sure the wheelchair user can see properly to ensure safe driving.

**NOTE: 20° back angle can be any combination of tilt, back angle and/or surface angle.*

NOTE: Refer to Typical Product Parameters on page 14 for tilt angle ranges.

Folding/Unfolding the Back Canes

NOTE: For this procedure, refer to FIGURE 6.2.

1. To fold back canes, lift up on actuator pins and fold back canes forward.
2. To unfold back canes, pull back canes up until actuator pins are locked in place.

NOTE: Actuator pins are locked in place when an audible click is heard.

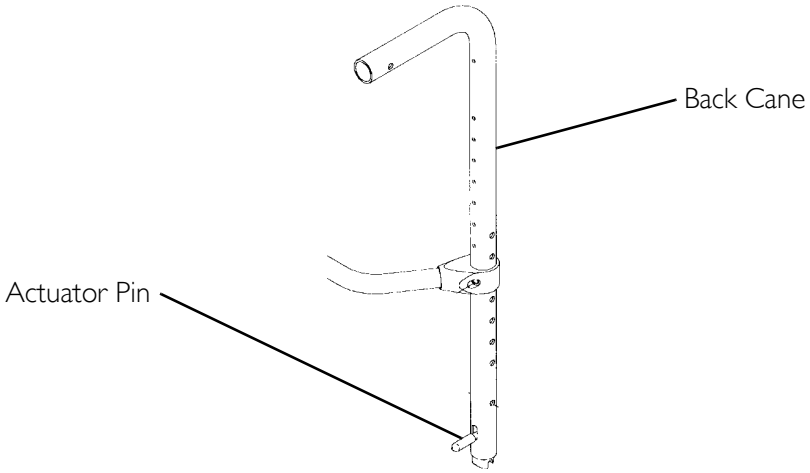


FIGURE 6.2 Folding/Unfolding the Back Canes

Engaging the Tilt-in-Space

⚠ WARNING

ALWAYS make sure that the wheelchair is stable before using the tilt-in-space.

NEVER operate the wheelchair while in any tilt position over 20° relative to the vertical position. If the limit switch does not stop the wheelchair from operating in a tilt position greater than 20° relative to the vertical position, have the limit switch adjusted by a qualified technician.

Make sure the occupant of the wheelchair is properly positioned and always use the seat positioning strap.

ALWAYS engage both wheel locks.

DO NOT use the release pedal of the tilt mechanism to gain leverage in tipping the wheelchair. The release pedal was not designed to be used in this manner and may cause injury to the assistant and/or user or damage to the wheelchair.

NOTE: For this procedure, refer to FIGURE 6.3.

1. Place the wheelchair on a level surface.
2. Engage both wheel locks. Refer to Engaging/Disengaging the Wheel Locks on page 42.
3. Move the locking mechanism on the release pedal to the unlocked position. See Detail "A".

4. Inform the occupant of the wheelchair that the wheelchair is about to be tilted and remind them to lean back.
5. Make sure the occupant's hands and body are clear of all pinch points.
6. Stand behind the wheelchair and apply pressure to the release pedal.
7. Slowly pull back on the back canes while stepping on the release pedal.
8. To lower the seat, reverse STEPS 1-7.
9. When the seat reaches the desired angle, slowly relieve the pressure on the release pedal.
10. Move the locking mechanism on the release pedal to the locked position. See Detail "A".
11. Disengage wheel locks before attempting to move occupant. Refer to Engaging/ Disengaging the Wheel Locks on page 42.

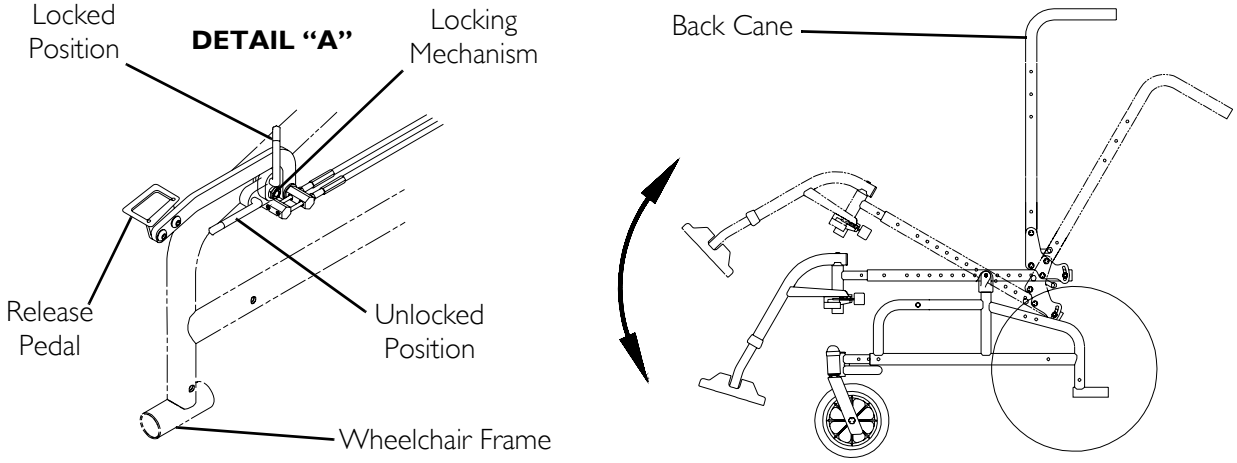


FIGURE 6.3 Engaging the Tilt-in-Space

Installing/Removing Footrests

NOTE: For this procedure, refer to FIGURE 6.4.

1. Turn the footrest to the side (open footplate is perpendicular to the wheelchair).
2. Insert the footrest mounting pin into footrest mounting tube.
3. Push the footrest towards the inside of the wheelchair until it locks into place.

NOTE: The footrest will be on the inside of the wheelchair when locked in place.

4. Repeat STEPS 1- 3 for the other footrest assembly.
5. To remove the footrest, push the footrest release lever inward, rotate footrest outward.
6. Adjust footrest height if desired. Refer to Adjusting Footrest Height on page 38.

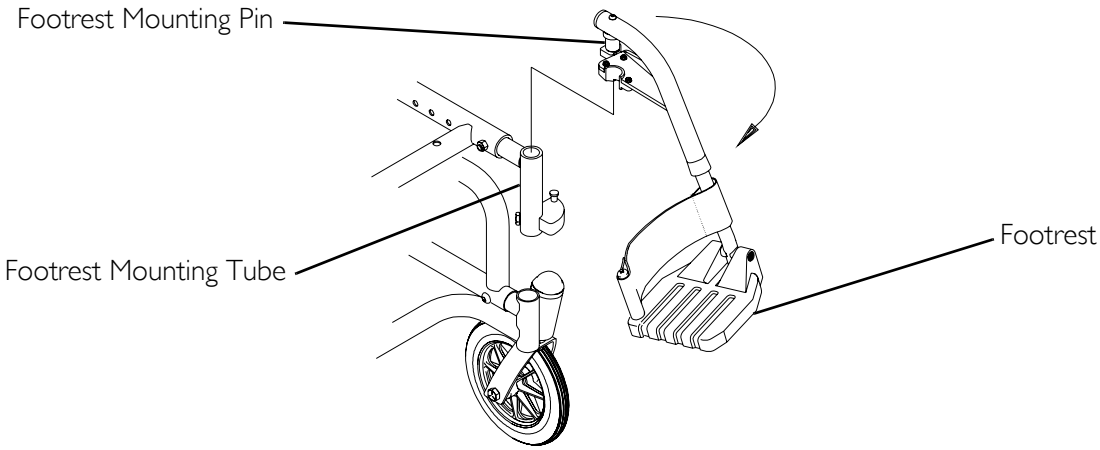


FIGURE 6.4 Installing/Removing Footrests

Adjusting Footrest Height

60°, 70°, 70° MFX, 90°

NOTE: For this procedure, refer to FIGURE 6.5.

1. Remove any accessory from the footrest(s).
2. Remove the footrest from the wheelchair. Refer to Installing/Removing Footrests on page 37.

NOTE: Lay the footrest on a flat surface to simplify this section.

3. Remove the mounting screw, washers and locknut that secure the lower footrest assembly to the upper footrest support.
4. Reposition the lower footrest to the desired height.
5. Reinstall the mounting screw, washers and locknut that secure the lower footrest assembly to the upper footrest support and tighten securely.
6. Repeat STEPS 1-5 for the other footrest, if necessary.
7. Reinstall the footrest(s) onto the wheelchair. Refer to Installing/Removing Footrests on page 37.
8. Reinstall any accessory onto the footrest(s).

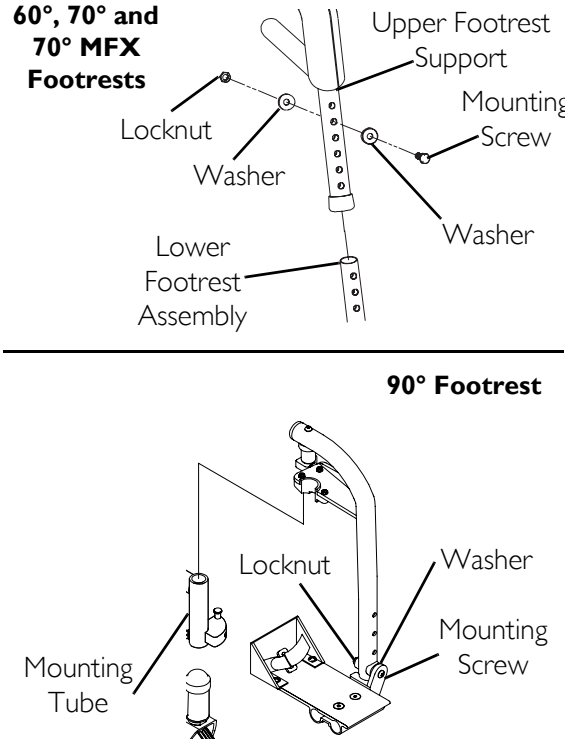


FIGURE 6.5 Adjusting Footrest Height - 60°, 70°, 70° MFX, 90°

60° MFX, 70° Taper

NOTE: For this procedure, refer to FIGURE 6.6.

1. Remove any accessory from the footrest(s).
2. Remove the footrest from the wheelchair. Refer to Adjusting Footrest Height on page 38.

NOTE: Lay the assembly on a flat surface to simplify this section.

NOTE: Note the position of the coved spacers before disassembly.

3. Remove the mounting screw and coved spacer that secures the lower footrest assembly.
4. Position the footrest assembly to the desired height.
5. Secure footrest assembly with existing mounting screw and coved spacer. Securely tighten.

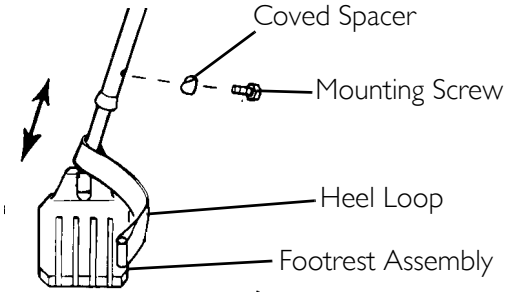


FIGURE 6.6 Adjusting Footrest Height - 60° MFX, 70° Taper

NOTE: Make sure spacers are positioned properly when reassembling so as not to damage the frame mounting tubes.

6. Reinstall the footrest(s) onto the wheelchair. Refer to Installing/Removing Footrests on page 37.
7. Reinstall any accessory onto the footrest(s).
8. Repeat STEPS 1-7 for other footrest.

Removing/Installing the Calf Strap

NOTE: For this procedure, refer to FIGURE 6.7.

1. Remove the calf strap from the package.
2. Secure the calf strap to the wheelchair using the hook and loop strips (not shown) on the vertical seat frame tubing just above the footrest locking mechanism and below the horizontal seat frame tubing.

Front View of Wheelchair

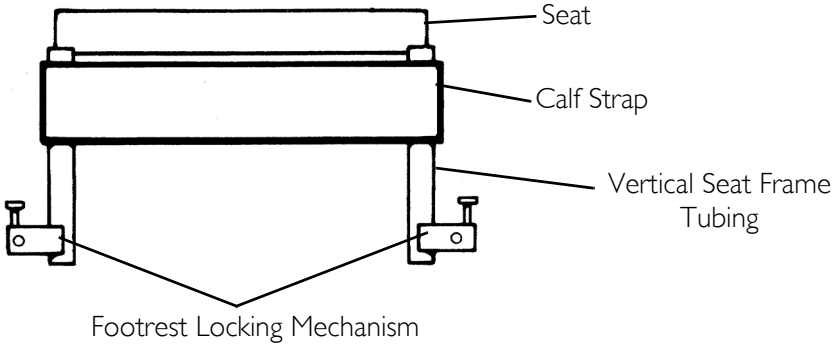


FIGURE 6.7 Removing/Installing the Calf Strap

Installing/Removing T-Arms

NOTE: For this procedure, refer to FIGURE 6.8.

Installing T-Arms

1. Position the T-arm over the T-arm socket on the wheelchair frame.

NOTE: Make sure the locking lever is towards the front of the wheelchair.

2. Slide T-arm into T-arm socket until the locking lever is in the slot in the T-arm socket and an audible "click" is heard.
3. Pull up on T-arm to make sure T-arm is locked in place.

NOTE: If the T-arm does not slide in the T-arm socket as desired, contact a qualified technician.

4. Adjust the T-arm for desired height. Refer to Adjusting T-Arm Height on page 41.

NOTE: If width and/or depth adjustments are necessary, contact a qualified technician.

5. Repeat STEPS 1-4 for opposite side of wheelchair.

Removing T-Arms

1. Press in on the locking lever and lift the T-arm straight up and out of the T-arm socket.

NOTE: If the T-arm does not slide up and down in the T-arm socket as desired, contact a qualified technician.

2. Repeat STEP 1 for opposite side of the wheelchair.

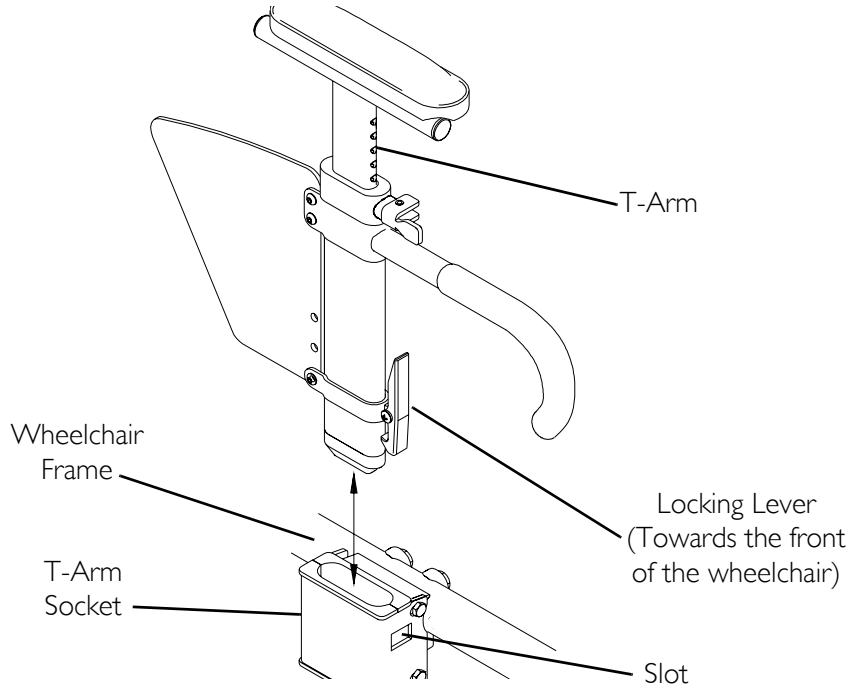


FIGURE 6.8 Installing/Removing T-Arms

Adjusting T-Arm Height

NOTE: For this procedure, refer to FIGURE 6.9.

1. Unlock the T-arm by flipping the T-arm release lever towards the inside of the wheelchair.

NOTE: If necessary, pull out on the T-arm release lever and rotate 180° so it can be flipped towards the outside of the wheelchair.

2. Slide the T-arm to one of:
    - Low Height T-Arms - Nine positions.
    - High Height T-Arms - Seven positions.

NOTE: If the inside T-arm post does not slide up and down in the outside T-arm post as desired, perform one of the following:

- *Tighten - Tightening the set screws on the outside T-arm post will make it harder to move the inside T-arm post up and down.*
- *Loosen - Loosening the set screws on the outside T-arm post will make it easier to move the inside T-arm post up and down.*

3. Lock the T-arm by flipping the T-arm release lever towards the front of the wheelchair.

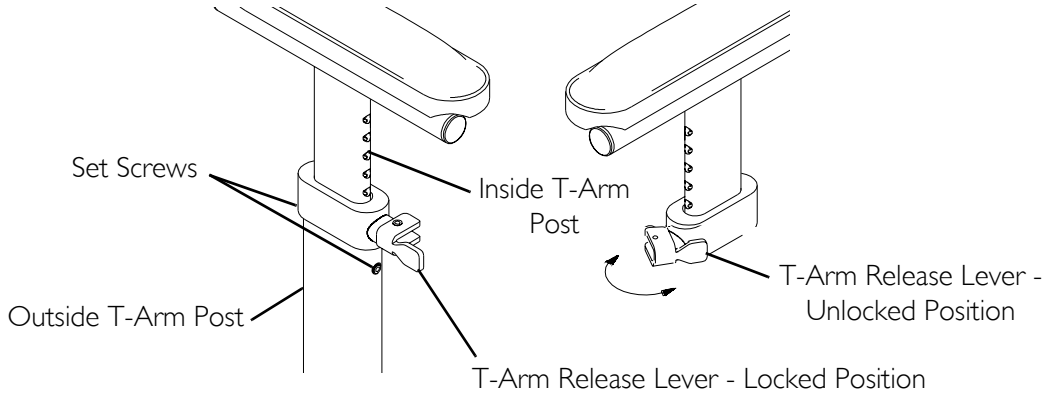


FIGURE 6.9 Adjusting T-Arm Height

Installing/Removing Stroller Handles

NOTE: For this procedure, refer to FIGURE 6.10.

Installing

1. Remove the back cane grips and plug buttons from both back canes.
2. Slide the stroller handle into the back canes.
3. Align the mounting holes of the stroller handle and the back canes.

4. Insert the two quick-release pins through the mounting holes of the stroller handle and the back cane.
5. Ensure the detent balls are fully protruding from the quick-release pins and the stroller handle is secured to the back cane.

Removing

1. Press and hold the button on the two quick-release pins.
2. Remove the quick-release pins from the stroller handle and back canes.
3. Remove the stroller handle from the back canes.

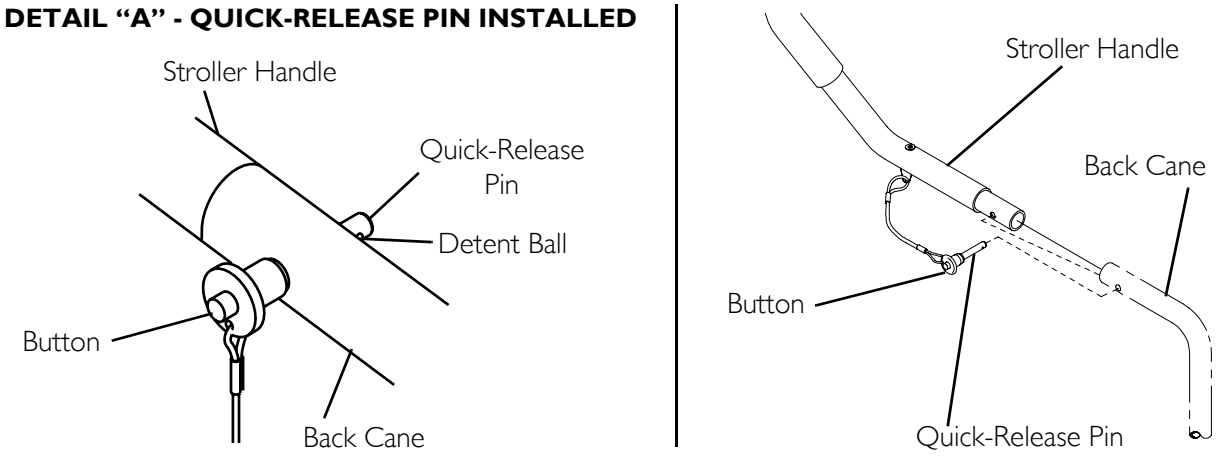


FIGURE 6.10 Installing/Removing Stroller Handles

Engaging/Disengaging the Wheel Locks

NOTE: For this procedure, refer to FIGURE 6.11.

Engaging

1. Push handle forward away from tire to engage wheel lock.
2. Repeat STEP 1 for opposite wheel.

Disengaging

1. Pull handle back toward tire to disengage wheel lock.
2. Repeat STEP 1 for opposite wheel.

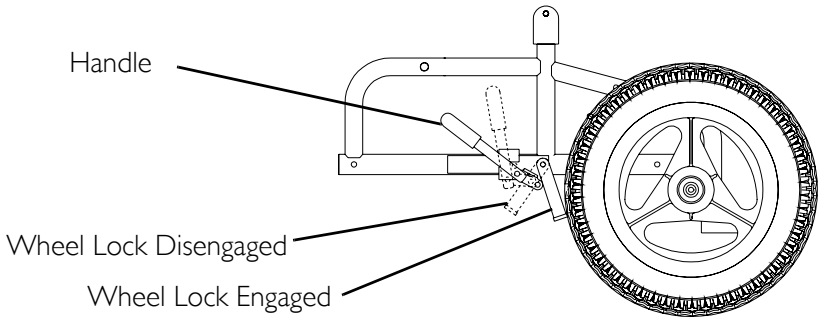


FIGURE 6.11 Engaging/Disengaging the Wheel Locks

Disengaging/Engaging Clutch Levers

⚠ WARNING

DO NOT engage or disengage clutches until the power is in the Off position.

NOTE: For this procedure, refer to FIGURE 6.12.

NOTE: Clutch disengagement allows free wheeling and clutch engagement allows joystick controlled operation. Free wheeling allows an assistant to maneuver the wheelchair without power.

1. Perform one of the following:
   - Disengage (Push Wheelchair) - Push clutch levers outward.
   - Engage (Drive Wheelchair) - Pull clutch levers inward.

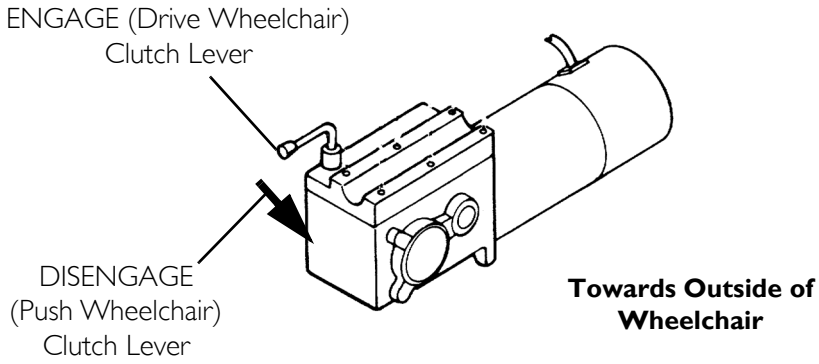


FIGURE 6.12 Disengaging/Engaging Clutch Levers

Installing Anti-Tippers

⚠ WARNING

Anti-tippers MUST be fully engaged and spring buttons fully protruding out of adjustment holes before using the wheelchair.

Anti-tippers MUST be used at all times. When outdoors on wet, soft ground or on gravel surfaces, anti-tippers may not provide the same level of protection against tip over. Extra caution MUST be observed when traversing such surfaces.

Make sure the anti-tipper wheels are pointing towards the ground/floor before using the wheelchair.

NOTE: For this procedure, refer to FIGURE 6.13.

1. Press the release buttons in and insert anti-tippers with the anti-tipper wheels pointing toward the ground/floor into the wheelchair frame until the two locking pins on each anti-tipper are secured in place.

NOTE: A 1½ to 2-inch clearance between the bottom of the anti-tipper wheels and the ground/floor MUST be maintained at all times.

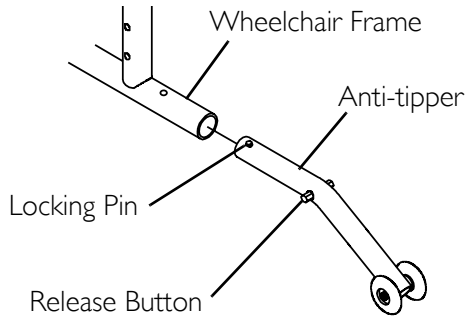


FIGURE 6.13 Installing Anti-Tippers

MKIV-A Joystick Switches and Indicators

NOTE: For this procedure, refer to FIGURE 6.14.

On/Off/Drive Select Switch

A three position toggle switch is located at the back of the joystick housing. The Drive Select position is momentary.

This switch allows the operator to select the type of operation or performance which best suits a particular control need or situation. The Drive 1 program uses performance values which are independent of those used for the Drive 2 or 3 or 4 program. As an example, an operator may have a control need for spasticity in the morning and a very different need in the afternoon. Drive 1 can be programmed for higher speeds and quicker response while Drive 2 can be programmed for slower speeds and less responsiveness or vise versa. The other two drive programs could be indoor and outdoor versions of Drive 1 and Drive 2.

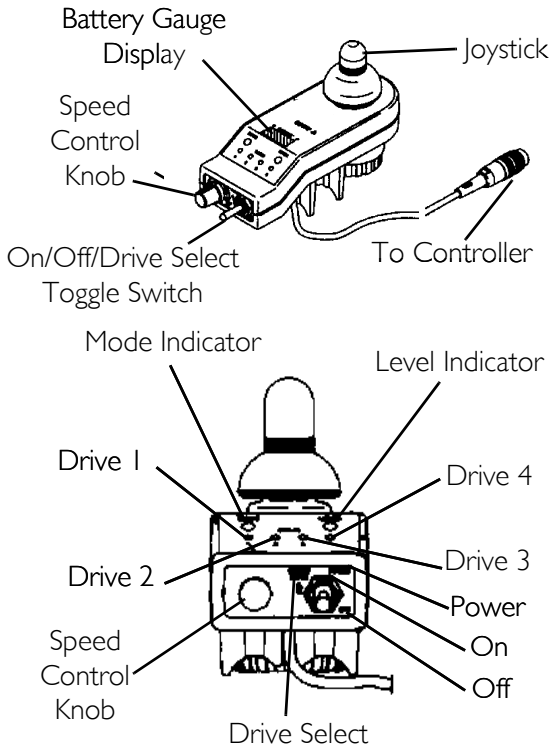


FIGURE 6.14 MKIV-A Joystick Switches and Indicators

Selecting the Drive Mode

1. To select Drive 1 mode, move the on/off/drive select toggle up and release. Drive 1 indicator becomes lighted.
2. To select Drive 2 mode, move the on/off/drive select toggle up and release again. Drive 2 indicator becomes lighted.
3. To select Drive 3 mode, move the on/off/drive select toggle up and release again. Drive 3 indicator becomes lighted.
4. To select Drive 4 mode, move the on/off/drive select toggle up and release again. Drive 4 indicator becomes lighted.
5. Move the toggle up and release one more time to select Drive 1.

Speed Control

A rotary knob is located at the back of the joystick housing. Turning the knob clockwise increases the maximum speed of the wheelchair.

Joystick

Proportional drive control located at the front of the control provides smooth control of speed and direction.

Battery Gauge Display (BGD)

The battery gauge display (BGD) is located at the rear of the control and provides information on the remaining charge in the batteries. At full charge, the two left segments and the farthest right segment of the bar graph are lit. As the battery becomes discharged, the farthest right segment will progressively move to the left until only the last two bars are lit; at this level the last two bars will start to flash on and off to indicate the user should charge the batteries as soon as possible.

The BGD also serves as a system diagnostic device when a fault is detected by the control module. A specific number of bars (up to eight bars) will start to flash on and off to indicate the type of fault detected. A chart of the diagnostic indications is given in the Diagnostic Code Section of the electronics manual listed in Reference Documents on page 2.

Mode and Level Indicators

Two LED indicators are located on either side of the battery bar graph display.

The Mode light is On (operational) with no options attached and level indicators are only operational when the optional ECU/Recliner Control or optional joysticks are utilized or the Reset switch is activated. These indicators provide information of the status of the control system and the environmental controls. The GREEN Mode indicator shows one of five control states.

MODE (GREEN LED)	INDICATION
Drive	Continuously on
Attendant	Flashing (twice/second)
E.C.U. or Recliner Control	Off
Stand-by	Flashing rapidly (four/second)
Remote Drive Selection	Slow Flashing (once/second)

The RED Level indicator provides information on the control level within each mode. Its operation changes with each mode:

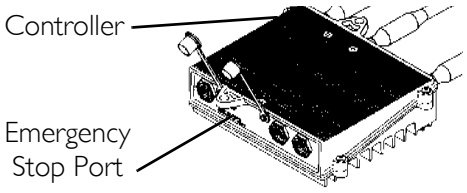
MODE	LEVEL INDICATOR	MEANING
Latched	Off	N/A
Proportional	Off	N/A
Attendant	Off	N/A
Momentary	Off	Slowest speed has been selected.
	Flashing	Medium speed has been selected.
	Rapid Flashing	Fastest speed has been selected.

MODE	LEVEL INDICATOR	MEANING
ECU	Off	ECU 1 and/or ECU 3 are active.
	On	ECU 2 and/or ECU 4 are active.
	Flashing	Recliner control
RIM	Off	Wheelchair moves forward when forward command is given.
	On	Wheelchair moves in reverse when forward command is given.

Emergency Stop Reset Switch

NOTE: For this procedure, refer to FIGURE 6.15.

The emergency stop switch is used to stop the wheelchair and to select the operating mode for the wheelchair. The switch reset port is located on the control module next to the joystick input connector. An emergency stop switch may be needed whenever any of the following operating modes are programmed:



NOTE: The controller is located under the seat at the front of the wheelchair.

FIGURE 6.15 Emergency Stop Reset Switch

- Environmental Control Units (E.C.U.):
- Recliner Controls
- 3 Speed Mode in Momentary
- Latched Modes
- Pneumatic Control
- Stand-by Mode
- RIM Control
- Remote Drive Selection Mode

If any of the above modes are selected, the control will require activation of the switch immediately after the power switch is turned on in order to enter the drive mode. The GREEN mode indicator will be flashing rapidly. A second after the switch is released, the GREEN LED will light continuously to indicate the drive mode is active.

Emergency Stop Reset Input Connector

The input connector accepts a 1/8-inch diameter Phono plug. The Emergency Stop switch must be an open contact for normal driving and a closed contact to activate the Emergency Stop function.

PIN	DESIGNATION
TIP	RESET (EMERGENCY STOP)
RING	COMMON (B–)

MKIV-A+ Joystick Switches and Indicators

NOTE: For this procedure, refer to FIGURE 6.16 and FIGURE 6.17.

On/Off/Drive Select Switch

A three position toggle switch is located at the back of the joystick housing. The Drive Select position is momentary.

This switch allows the operator to select the type of operation or performance which best suits a particular control need or situation. The Drive 1 program uses performance values which are independent of those used for the Drive 2 or 3 or 4 program. As an example, an operator may have a control need for spasticity in the morning and a very different need in the afternoon. Drive 1 can be programmed for higher speeds and quicker response while Drive 2 can be programmed for slower speeds and less responsiveness or vise versa. The other two drive programs could be indoor and outdoor versions of DRIVE 1 and Drive 2.

Selecting the Drive Mode

1. Move the on/off/drive select toggle up and release. Drive 1 will appear on the LCD.
2. Move the on/off/drive select toggle up and release again. Drive 2 will appear on the LCD.
3. Move the on/off/drive select toggle up and release again. Drive 3 will appear on the LCD.
4. Move the on/off/drive select toggle up and release again. Drive 4 will appear on the LCD.
5. Move the toggle up and release one more time to select Drive 1.

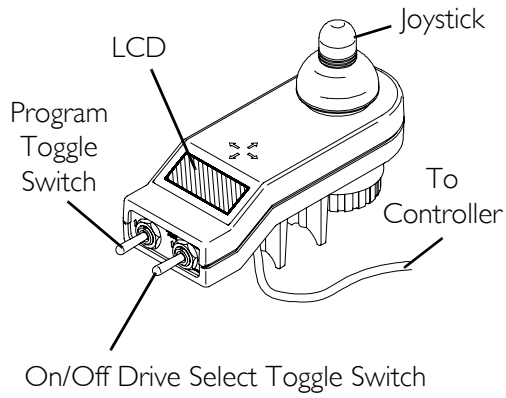


FIGURE 6.16 MKIV-A+ Joystick Switches and Indicators - On/Off/Drive Select Switch

Program Toggle Switch

The program toggle switch is located on the left side at the rear of the joystick housing. This switch is used to program the wheelchair. Refer to the electronics manual listed in Reference Documents on page 2 for more information about programming the wheelchair.

Joystick

Proportional drive control knob located at the front of the joystick housing provides smooth control of speed and direction.

LCD Display

NOTE: For this procedure, refer to FIGURE 6.17.

Located in front of the joystick, it provides information on the status of the wheelchair through a two line by twelve character length back lighted display. The LCD display is easily readable in both bright sunlight and complete darkness.

During normal operation the active drive is displayed on the left half of the first line. The left half of the second line is the Battery Discharge Indicator (BDI). It provides information on the remaining charge in the batteries. At full charge, solid blocks fill in all ten segments between E (Empty) and F (Full). As the battery becomes discharged, the farthest right segments will progressively disappear a half bar at a time until no segments appear between E and F. At this level the word RECHARGE will appear on the second line to indicate that the user should charge the batteries as soon as possible.

FIGURE 6.17 shows the factory default display.

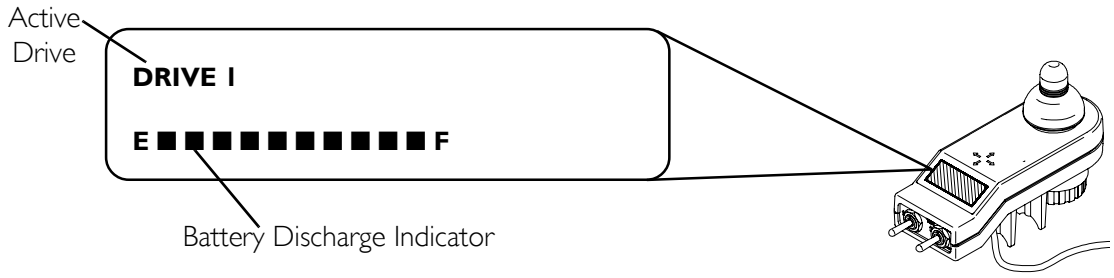


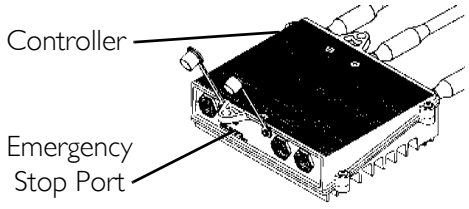
FIGURE 6.17 MKIV-A+ Joystick Switches and Indicators - LCD Display

Emergency Stop Reset Switch

NOTE: For this procedure, refer to FIGURE 6.18.

The emergency stop switch is used to stop the wheelchair and to select the operating mode for the wheelchair. The switch input connector is located on the control module next to the joystick input connector. An emergency stop switch is needed whenever any of the following operating modes are programmed:

- Environmental Controls (E.C.U.) including actuator controls
- 3 Speed Mode in Momentary
- Latched Modes
- Pneumatic Control
- Stand-by Mode
- RIM Control
- Remote Drive Selection Mode
- Information Center Display Selection (does not require Reset activation at power up)



NOTE: The controller is located under the seat at the front of the wheelchair.

FIGURE 6.18 Emergency Stop Reset Switch

If any of the above modes are selected, the control will require activation of the switch immediately after the power switch is turned on in order to enter the drive mode. The second line of the LCD will display - press Reset.

Emergency Stop Reset Input Connector

NOTE: For this procedure, refer to FIGURE 6.18.

The input connector accepts a 1/8-inch diameter Phono plug. The Emergency Stop switch must be an open contact for normal driving and a closed contact to activate the Emergency Stop function.

PIN	DESIGNATION
TIP	RESET (EMERGENCY STOP)
RING	COMMON (B–)

MKIV-RII Joystick Switches and Indicators

NOTE: For this procedure, refer to FIGURE 6.19.

On/Off Switch

Two position toggle is located at the back of the joystick housing.

Speed Control

Rotary knob is located at the back of the joystick housing. Turning the knob clockwise increases the maximum speed of the wheelchair.

Joystick

Proportional drive control located at the front of the joystick housing provides smooth control of speed and direction.

Battery Discharge Indicator (BDI)

Located at the front of the joystick housing provides information on the remaining charge in the batteries. At full charge, the BDI will be GREEN. As the battery becomes discharged, the BDI will become YELLOW (Amber), then RED and finally the BDI will flash On and Off RED. At this level, the user should charge the batteries as soon as possible.

The BDI will flash On and Off YELLOW to indicate a reduced speed or power output.

The BDI also serves as a system diagnostic device when a fault is detected by the control module. A specific number of Green flashes will indicate the type of fault detected. A chart of the diagnostic indications is given in the Diagnostic Code Section of the Electronics manual, listed in Reference Documents on page 2.

NOTE: When reading the Battery Discharge Indicator (BDI), the joystick MUST be in the Neutral position for an accurate reading.

Multi Function Charger Port

Located at the front of the joystick housing provides easy access for charging the wheelchair batteries. This port also serves as the Remote Programmer connection.

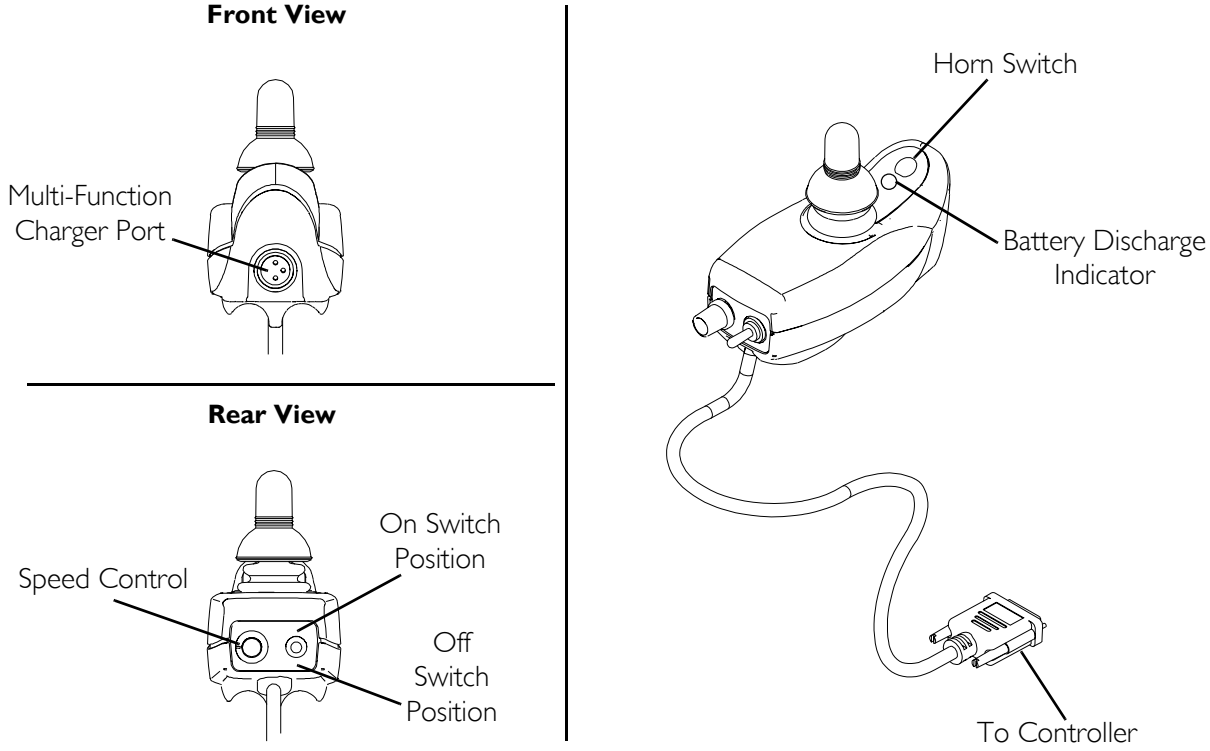


FIGURE 6.19 MKIV-RII Joystick Switches and Indicators

MKIV-RX Joystick Switches and Indicators

NOTE: For this procedure, refer to FIGURE 6.20.

On/Off/Drive Select Switch

A three position toggle switch is located at the back of the joystick housing. The Drive Select position is momentary.

This switch allows the operator to select the type of operation or performance which best suits a particular control need or situation. The Drive 1 program uses performance values which are independent of those used for the Drive 2 or 3 or 4 program. As an example, an operator may have a control need for spasticity in the morning and a very different need in the afternoon. Drive 1 can be programmed for higher speeds and quicker response while Drive 2 can be programmed for slower speeds and less responsiveness or vise versa. The other two drive programs could be indoor and outdoor versions of Drive 1 and Drive 2.

Selecting the Drive Mode

1. Move the on/off/drive select toggle up and release. Drive 1 will appear on the LED.
2. Move the on/off/drive select toggle up and release again. Drive 2 will appear on the LED.
3. Move the on/off/drive select toggle up and release again. Drive 3 will appear on the LED.
4. Move the on/off/drive select toggle up and release again. Drive 4 will appear on the LED.
5. Move the on/off/drive select toggle up and release one more time to select Drive 1.

Speed Control

Rotary knob is located at the back of the joystick housing. Turning the knob clockwise increases the maximum speed of the wheelchair.

Joystick

Proportional drive control located at the front of the joystick housing provides smooth control of speed and direction.

Battery Gauge Display (BGD)

The battery gauge display (BGD) is located at the rear of the control and provides information on the remaining charge in the batteries. At full charge, the two left segments and the farthest right segment of the bar graph are lit. As the battery becomes discharged, the farthest right segment will progressively move to the left until only the last two bars are lit. At this level the last two bars will start to flash on and off to indicate the user should charge the batteries as soon as possible.

The BGD also serves as a system diagnostic device when a fault is detected by the control module. A specific number of bars (up to eight bars) will start to flash on and off to indicate the type of fault detected. A chart of the diagnostic indications is given in the Diagnostic Code Section of the electronics manual, listed in Reference Documents on page 2.

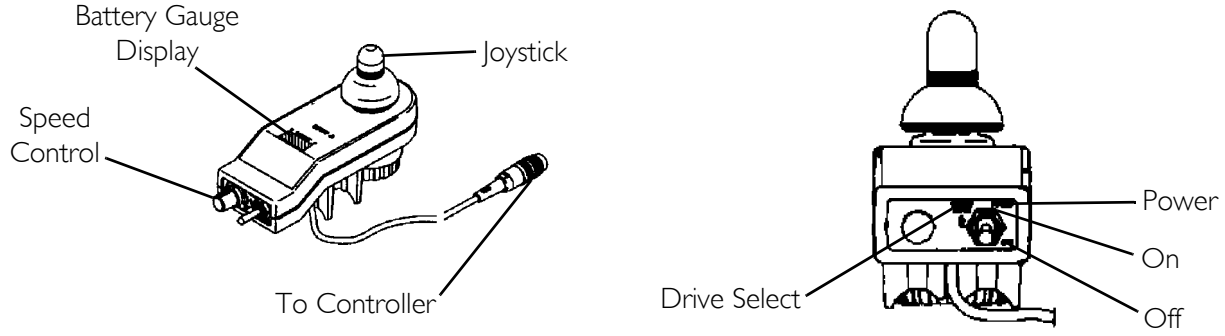


FIGURE 6.20 MKIV-RX Joystick Switches and Indicators

ADJUSTMENT, REPLACEMENT AND/OR MAINTENANCE SECTIONS

Overview

The following pages contain adjustment, replacement and/or maintenance information. Refer to the appropriate section listed below:

SECTION 7—FRONT RIGGINGS

⚠ WARNING

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

For the following procedures, make sure the On/Off switch on the joystick is in the Off position.

Installing Adjustable Angle Flip-Up Footplate Hinge

NOTE: For this procedure, refer to FIGURE 7.1.

1. Position footplate hinge on the footrest support tube at the desired height.
2. Position mounting screw, washers, spacer, and locknut on the footrest support as shown in FIGURE 7.1.
3. Flip the footplate hinge to the up position.

NOTE: The footplate hinge will fall to the down position.

4. Tighten the mounting screw, washer, and locknut that secure the footplate hinge to the footrest support until the footplate hinge remains in the up position.
5. Check the up and down motion of the footplate hinge to make sure the user of the wheelchair can operate the footplates easily.

NOTE: If footplate's motion is too tight, loosen the mounting screw and locknut approximately ¼-turn counter clockwise.

NOTE: If the footplate's motion is too loose, tighten mounting screw and locknut approximately ¼-turn clockwise.

6. Adjust footplate. Refer to Installing Adjustable Angle Flip-Up Footplate Hinge on page 54.

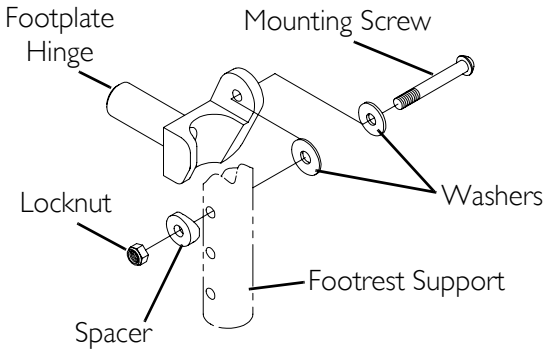


FIGURE 7.1 Installing Adjustable Angle Flip-Up Footplate Hinge

Installing/Adjusting Adjustable Angle Flip-Up Footplates

Installing Flip-Up Footplates

NOTE: For this procedure, refer to FIGURE 7.2.

1. Slide the half clamp over the footplate hinge.
2. Loosely tighten the two flat screws that secure the footplate to the half clamp.
3. Adjust the footplates to the necessary angle and depth for the user. Refer to Adjusting Flip-Up Footplate Angle on page 55.

Adjusting Flip-Up Footplate Depth

NOTE: For this procedure, refer to FIGURE 7.2.

1. Remove the two flat screws, washers and locknuts that secure articulating footplate to the half clamp.

NOTE: Note the angle of the articulating footplate for reinstallation.

2. Move articulating footplate to one of four mounting positions.

NOTE: If desired depth is still not obtained, rotate the half clamp on the footplate hinge 180°.

3. Retighten the two flat screws, washers and locknuts.

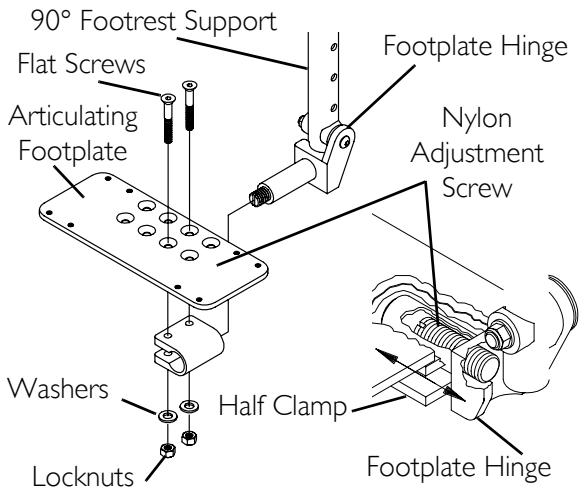


FIGURE 7.2 Adjusting Flip-Up Footplate Depth

NOTE: The settings for positioning the articulating footplates on the half-clamps may vary for each footplate.

4. Adjust footrest. Refer to Adjusting Flip-Up Footplate Angle on page 55 or Adjusting Flip-Up Footplate Perpendicular and/or Inversion/Eversion on page 56.

Adjusting Flip-Up Footplate Angle

NOTE: For this procedure, refer to FIGURE 7.3.

NOTE: It is not necessary to remove the footplate to perform this adjustment.

1. Insert a flathead screwdriver through the half clamp on the articulating footplate.
2. Slowly turn nylon adjustment screw in or out until articulating footplate is perpendicular to the footrest assembly or the desired inversion or eversion is obtained.

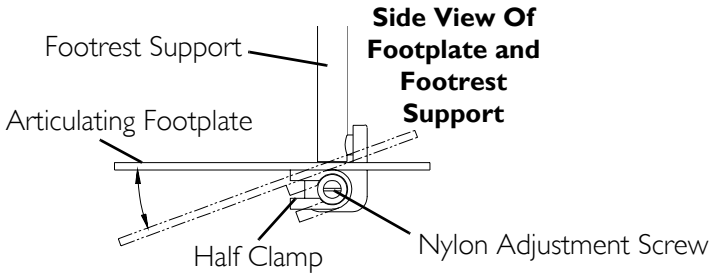


FIGURE 7.3 Adjusting Flip-Up Footplate Angle

Adjusting Flip-Up Footplate Perpendicular and/or Inversion/Eversion

NOTE: For this procedure, refer to FIGURE 7.4.

1. Loosen, but DO NOT remove, the two flat screws, washer and locknuts that secure the footplate to the footplate hinge.
2. Position the articulating footplate to the necessary angle to accommodate the user.
3. Retighten the two flat screws, washers and locknuts.

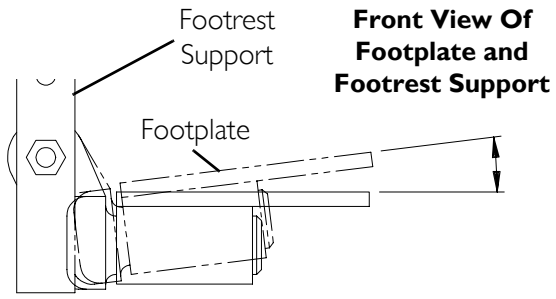


FIGURE 7.4 Adjusting Flip-Up Footplate Perpendicular and/or Inversion/Eversion

Replacing Heel Loops

NOTE: For this procedure, refer to FIGURE 7.5.

Composite Footplates

1. Remove the mounting screw and coved washer that secures the lower half of the footrest to the swingaway footrest assembly.
2. Remove the lower footrest assembly.
3. Remove the mounting screw, spacer and locknut that secure the heel loop to the footrest.
4. Slide heel strap over cane of footrest assembly.
5. Replace heel strap/loop.
6. Reverse STEPS 1-4 to reassemble.

NOTE: When securing heel loop to the footrest assembly, tighten mounting screw until the spacer is secure.

Articulating Footplates

1. Remove the two mounting screws that secure the heel loop to the articulating footplate.
2. Replace heel strap/loop.
3. Reverse STEP 1 to reassemble.

NOTE: When securing heel loop to the footrest assembly, tighten mounting screw until the spacer is secure.

Adjustable Footplate

NOTE: For this procedure, refer to FIGURE 7.5.

1. Remove the four mounting screws and washers that secure the existing heel loop to the footplate.
2. Position the mounting holes of the new heel loop with the mounting holes in the adjustable footplate.
3. Secure the new heel loop to the footplate with the four mounting screws and washers. Securely tighten.

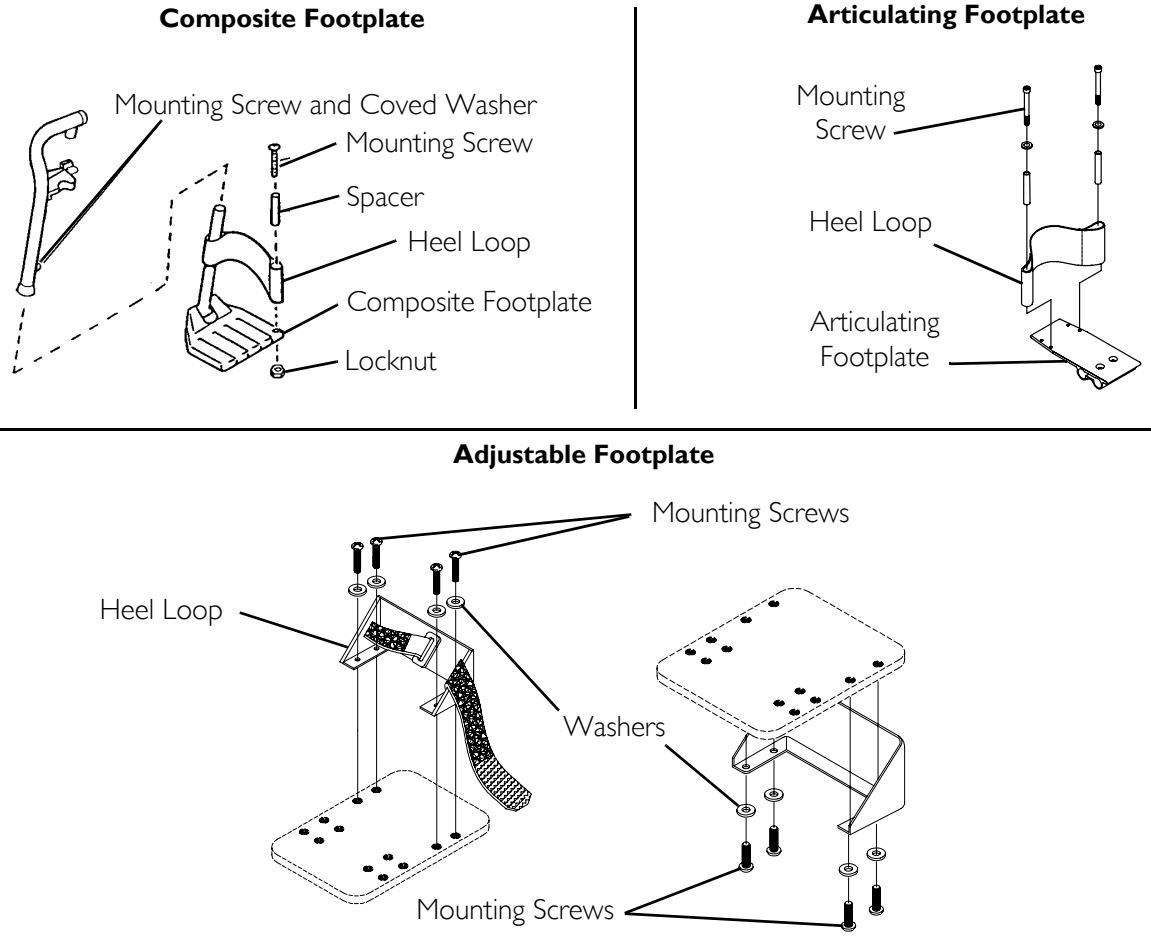


FIGURE 7.5 Replacing Heel Loops

Adjusting Footrest Height

NOTE: Release the footrest locking mechanism and lift the mounting pin out of the mounting tube. Lay the assembly on a flat surface to simplify this procedure.

Pivot Slide Tube

NOTE: For this procedure, refer to FIGURE 7.6

1. Remove any accessories that are attached to the footrests.
2. Remove the hex screw and coved washer.
3. Position the lower footrest assembly to the desired height.
4. Align the mounting hole in the footrest support, reinsert the hex screw and coved washer and securely tighten.
5. Repeat STEPS 1-4 for the other footrest.
6. Reinstall any accessories that are attached to the footrest.

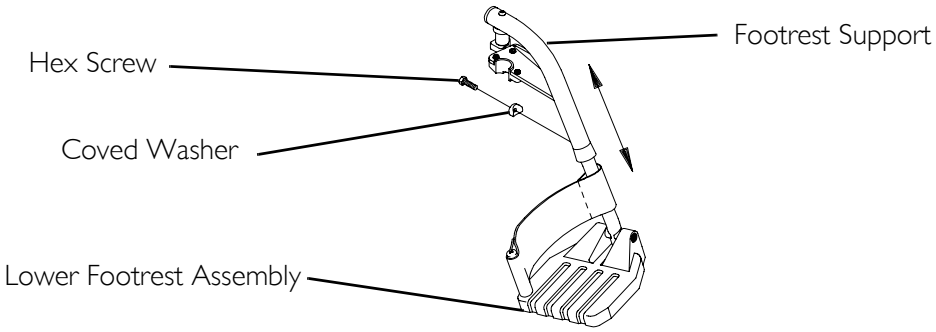


FIGURE 7.6 Pivot Slide Tube

70° MFX and 90° Footrests Only

NOTE: For this procedure, refer to FIGURE 7.7.

1. Remove any accessories that are attached to the footrests.
2. Remove the socket screw, coved washer and locknut that secure the footplate to the footrest support.
3. Reposition the footplate to the desire height.

⚠ WARNING

DO NOT overtighten. Footrest must be able to rotate upward from the horizontal to vertical position.

4. Reinstall the socket screw through the mounting holes of the footplate and footrest support.
5. Secure the footplate to the footrest support with the coved washer and locknut. Securely tighten.

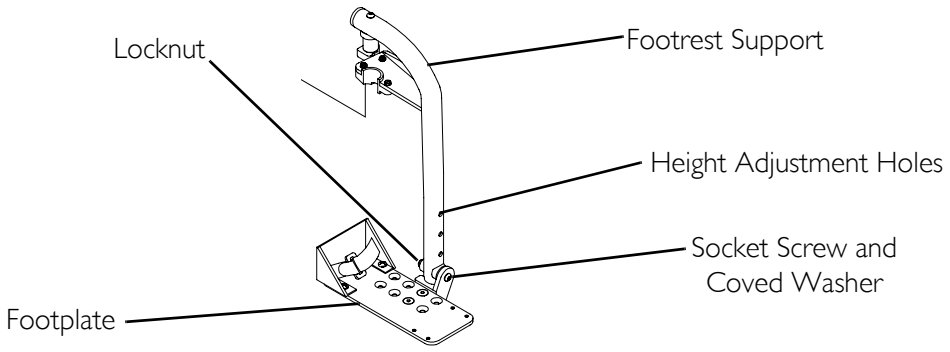


FIGURE 7.7 70° MFX and 90° Footrests Only

Installing 3-Inch Extension

NOTE: For this procedure, refer to FIGURE 7.8.

NOTE: Note the position of the attaching hardware for proper reassembly of the footrest.

NOTE: If using any type of extension with the adjustable angle footplate, refer to Installing Flip-Up Footplates on page 55.

1. Remove any accessories that are attached to the footrests.
2. Remove the socket screw, coved washer and locknut that secure the footplate to the footrest support.
3. Insert the 3-inch extension into the footrest support and align the mounting holes.
4. Secure the 3-inch extension to the footrest support with new hex screw, washer and locknut. Securely tighten.
5. Position the footplate at the desired height.

⚠ WARNING

DO NOT overtighten. Footrest must be able to rotate upward from the horizontal to vertical position.

6. Reinstall the socket screw through the mounting holes of the footplate and footrest support.
7. Secure the footplate to the footrest support with the coved washer and locknut. Securely tighten.

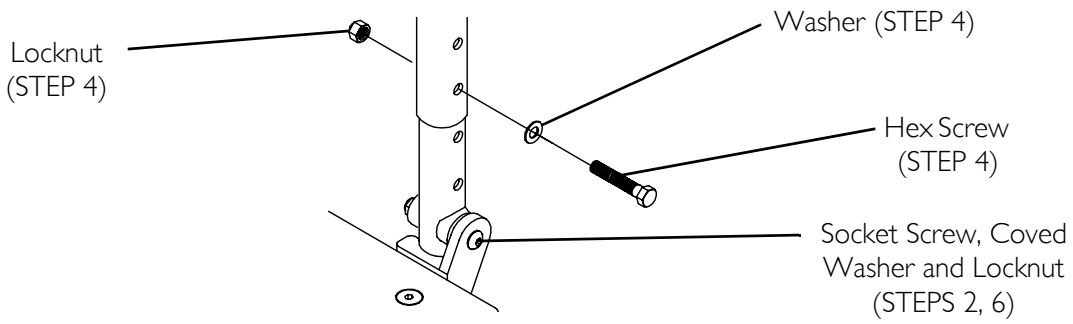


FIGURE 7.8 Installing 3-Inch Extension

Replacing Sector Block

NOTE: For this procedure, refer to FIGURE 7.9.

1. Remove the hex screw and washer that secure the existing sector block to the wheelchair frame.
2. Position the new sector block on the wheelchair frame. Make sure the locking pin is facing up.
3. Secure the new sector block to the wheelchair frame with the existing hex screw and washer. Use Loctite® 242 and securely tighten.

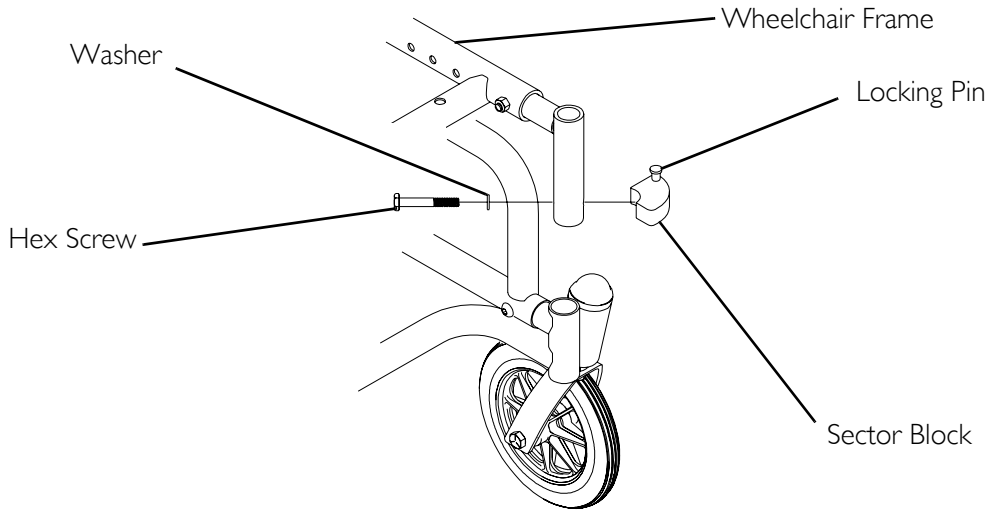


FIGURE 7.9 Replacing Sector Block

SECTION 8—ARMS

⚠ WARNING

After any adjustments, repair or service and before use, make sure all attachment hardware is tightened securely - otherwise, injury or damage may result.

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

Adjusting the T-Arms

Adjusting T-Arm Width

NOTE: For this procedure, refer to FIGURE 8.1.

1. Remove the two mounting screws that secure the arm pad to the arm tube.
2. Turn the arm pad around and reposition the arm pad on the arm tube.
3. Secure the arm pad to the arm tube with the two mounting screws. Tighten securely.
4. Repeat for the opposite side, if necessary.

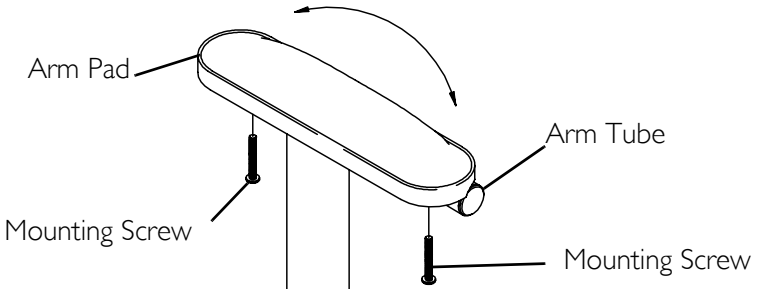


FIGURE 8.1 Adjusting T-Arm Width

Adjusting T-Arm Depth

NOTE: For this procedure, refer to FIGURE 8.2.

1. Remove the two mounting screws that secure the arm pad to the arm tube.
2. Remove the two socket screws that secure the arm tube to the T-arm post.
3. Reposition the arm tube on the T-arm post:
   - Desk Length Arms - to one of three positions depending on the desired arm pad depth.
   - Full Length Arms - to one of five positions depending on the desired arm pad depth.

NOTE: Additional positions are obtainable by turning the arm tube 180°.

4. Re-secure the arm tube to the T-arm post with the two socket screws. Torque to 60-70 in-lbs.
5. Reattach the arm pad to the arm tube with the two mounting screws. Tighten securely.
6. Repeat for the opposite side, if necessary.

NOTE: Desk length arm shown.

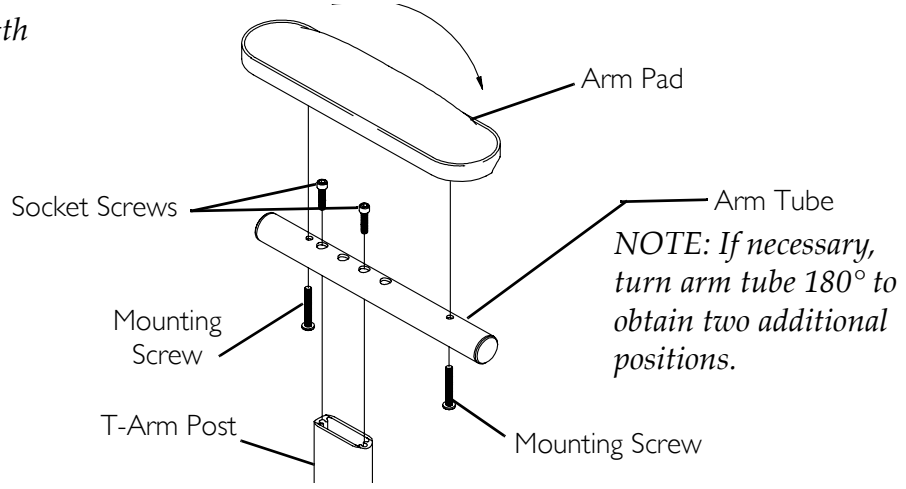


FIGURE 8.2 Adjusting T-Arm Depth

Adjusting T-Arm Sockets

NOTE: For this procedure, refer to FIGURE 8.3.

1. Loosen, but DO NOT remove, the four hex screws and washers that secure T-arm socket to T-arm clamp.

NOTE: The T-arm socket will disassemble if the four hex screws and washers are removed.

2. Slide the T-arm into the T-arm socket until the locking lever is in the slot in the T-arm socket and an audible "click" is heard.
3. Squeeze the T-arm socket and the T-arm clamp together until the socket is flush with the T-arm.
4. While holding the T-arm socket and the T-arm clamp together, tighten the four hex screws and washers. Torque to 80-90 in-lbs.
5. Press in on the locking lever and lift the T-arm straight up and out of the T-arm socket.
6. Repeat STEPS 3-5, if necessary, until the T-arm slides in the T-arm socket as desired.

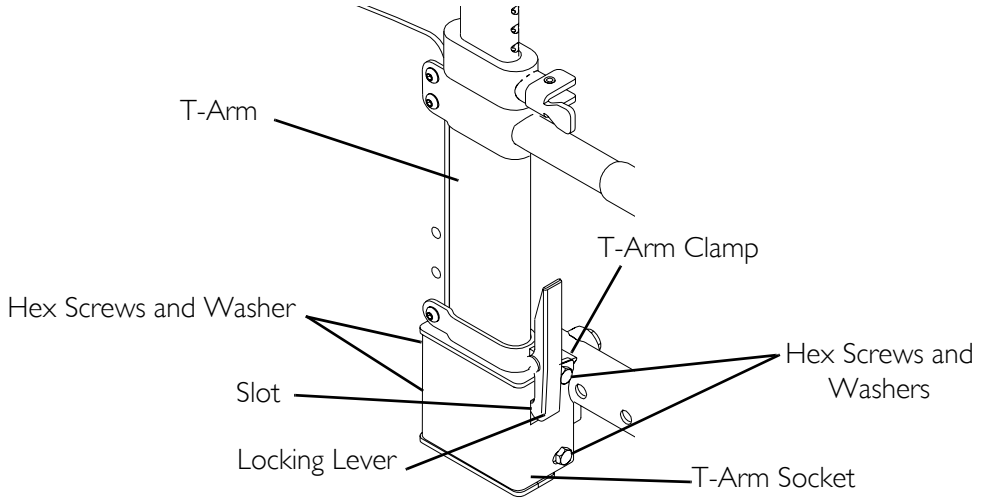


FIGURE 8.3 Adjusting T-Arm Sockets

Adjusting T-Arm Transfer Assists and/or Side Guards

NOTE: For this procedure, refer to FIGURE 8.4.

1. Remove the T-arm from the wheelchair. Refer to Installing/Removing T-Arms on page 40.
2. Remove the two socket screws that secure the side guard to the bottom clamp.

NOTE: Adjusting the side guards will directly affect the position of the transfer assist.

3. Perform one of the following:
   - Small Side Guards - Move the bottom clamp up one of two mounting positions in the side guard.
   - Large Side Guards - Move the bottom clamp up one of three mounting positions in the side guard.
4. Re-secure the side guard to the bottom clamp with the two socket screws. Torque to 80-90 in-lbs.
5. Install the T-arm onto the wheelchair. Refer to Installing/Removing T-Arms on page 40.

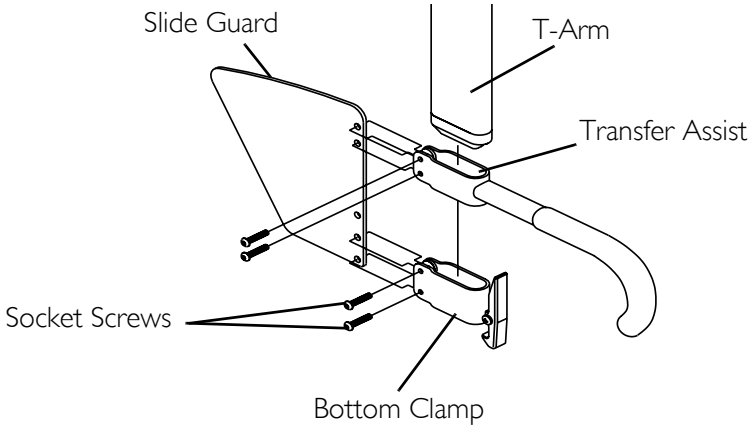


FIGURE 8.4 Adjusting T-Arm Transfer Assists and/or Side Guards

SECTION 9—SEAT

⚠ WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely.

Removing/Installing the Seat Frame

Removing the Seat Frame

NOTE: For this procedure, refer to FIGURE 9.1.

1. Return the wheelchair to 0° tilt. Refer to Engaging the Tilt-in-Space on page 36.
2. Remove occupant from wheelchair.
3. Remove the joystick from the mounting bracket. Refer to Removing/Installing Joystick on page 90.
4. Remove the footrests. Refer to Installing/Removing Footrests on page 37.

NOTE: Tilting the wheelchair makes the plungers under the seat plate more accessible.

5. Tilt the wheelchair. Refer to Engaging the Tilt-in-Space on page 36.
6. Pull down and turn plungers located on underside of base frame plate. See Detail "A".
7. Push in on the tip of the quick release pin located on underside of base frame plate and pull out of seat/base frame plate assembly. See Detail "A".
8. To disengage the seat frame from the base frame, push/pull the seat frame forward.

⚠ WARNING

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

9. If transporting is desired, perform the following steps:
   A. If so equipped, remove the existing seating system from the seat frame.
   B. Remove the T-arms. Refer to Installing/Removing T-Arms on page 40.
   C. Fold down the back canes. Refer to Folding/Unfolding the Back Canes on page 36.
   D. Remove the batteries from the base frame. Refer to Removing/Installing Batteries From/Into Battery Boxes on page 77.

Installing the Seat Frame onto the Base Frame

NOTE: For this procedure, refer to FIGURE 9.1.

1. Turn the plungers located on the underside of the base frame plate until an audible click is heard. See Detail "A".
2. Visually inspect the base frame plate to ensure the locking buttons protrude all the way through the plate.
3. Place seat frame plate on base frame plate depressing the locking buttons.
4. Slide seat frame rearward.

⚠ WARNING

Ensure both sides of seat frame plate are underneath the locking channels of the base frame plate and the seat frame is securely locked in place before using the wheelchair. Otherwise injury may result.

5. With both sides of seat frame plate underneath the locking channels of the base frame plate, continue to slide until an audible click from both locking buttons is heard.

NOTE: If an audible click is not heard from both locking buttons, wiggle seat frame plate back and forth until an audible click is heard. This will ensure the seat frame is locked into position.

⚠ WARNING

Make sure the detent balls of the quick-release pin are fully released before operating the wheelchair.

The detent balls MUST be protruding past the top of the seat plate assembly for a positive lock.

Keep detent balls clean.

6. Push in on the tip of the quick-release pin and reinstall in the seat/base frame plate assembly. See Detail "A".
7. Pull down on quick-release pin to ensure positive lock.
8. Install the footrests. Refer to Installing/Removing Footrests on page 37.
9. Install joystick onto mounting bracket. Refer to Removing/Installing Joystick on page 90.
10. If necessary, perform the following:
    A. Unfold the back canes. Refer to Folding/Unfolding the Back Canes on page 36.
    B. Install the T-arms. Refer to Installing/Removing T-Arms on page 40.

NOTE: If a seating system is being used on the wheelchair, refer to the seating system Owner's Manual for installation and removal of the seating system.

    C. Install the existing seating system onto the wheelchair, if so equipped.
    D. Install the batteries. Refer to Removing/Installing Batteries From/Into Battery Boxes on page 77.

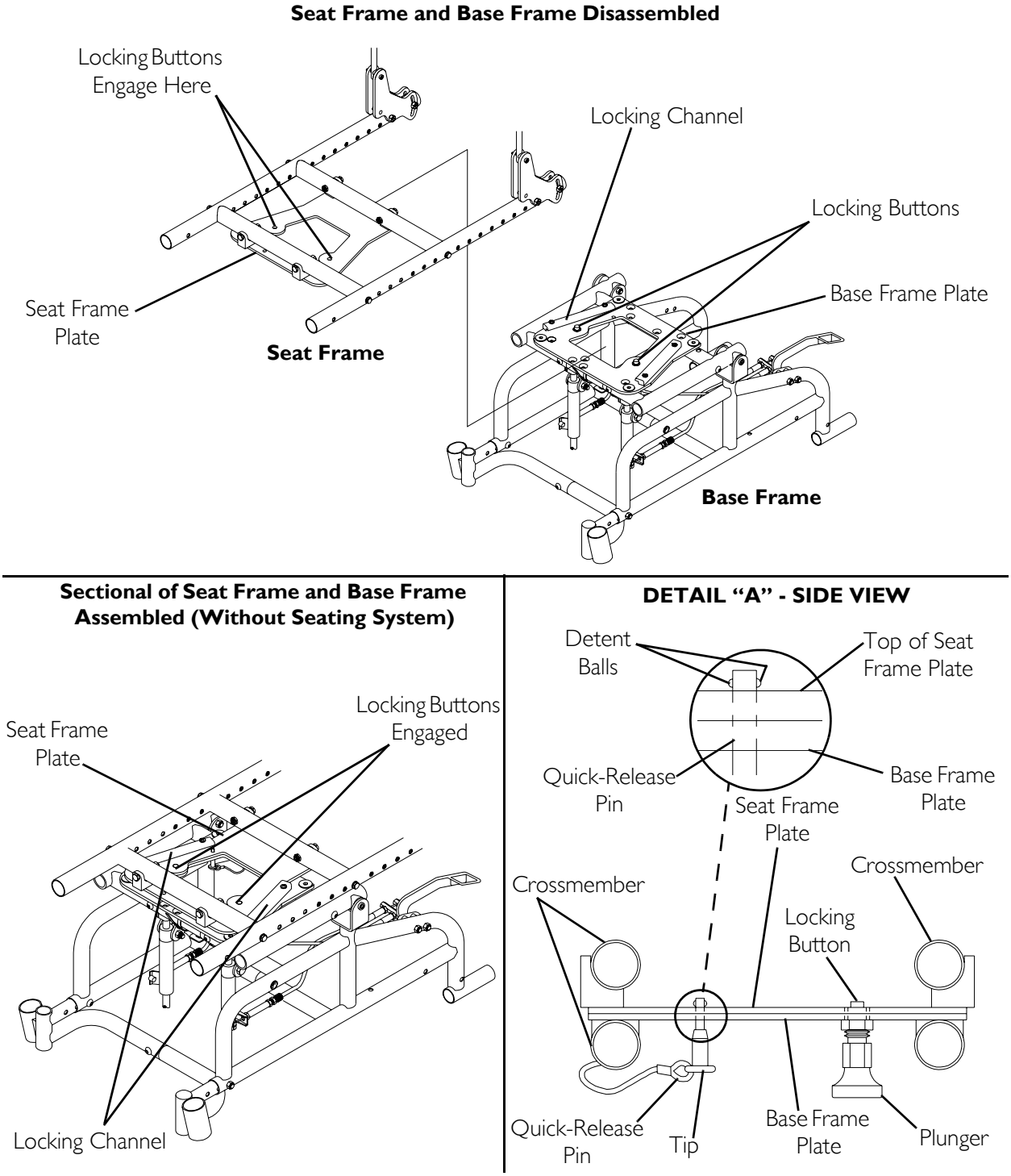


FIGURE 9.1 Removing/Installing the Seat Frame

Adjusting the Telescoping Front Frame Tubes

CAUTION

When determining the depth of the telescoping front frame tubes, make sure the rear of the footrests DO NOT interfere with the movement of the front casters. Otherwise, damage to the wheelchair may result or proper operation may be impeded.

NOTE: For this procedure, refer to FIGURE 9.2.

1. Remove the mounting screw and locknut that secure the telescoping tube to the seat rail.
2. Adjust telescoping tube in or out to desired mounting adjustment hole.
3. Reinsert mounting screw and install locknut. Securely tighten.
4. Repeat STEPS 1-3 for opposite telescoping front frame tube.
5. Rotate front casters to ensure there is no interference between the footrests and front casters.
6. If interference occurs, repeat procedure and adjust telescoping front frame tube accordingly.

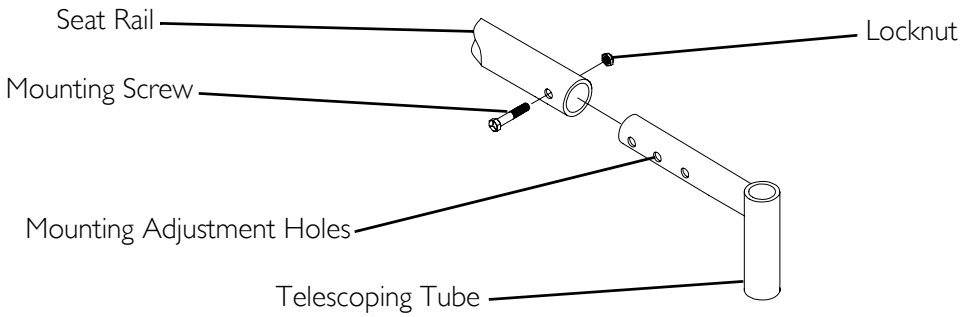


FIGURE 9.2 Adjusting the Telescoping Front Frame Tubes

Removing/Installing the Seat Pan

NOTE: For this procedure, refer to FIGURE 9.3.

Removing

NOTE: If a seating system is being used on the wheelchair, refer to your particular seating system manufacturer's Owner's Manual for installation and removal of the seating system.

1. If so equipped, remove seating system from wheelchair.
2. Remove the four mounting screws that secure the seat pan to the seat rails.
3. Remove existing seat pan and discard.

Installing

1. Position the new seat pan on crossmembers.
2. Secure with the existing four mounting screws. Securely tighten.
3. Reinstall seating system onto wheelchair.

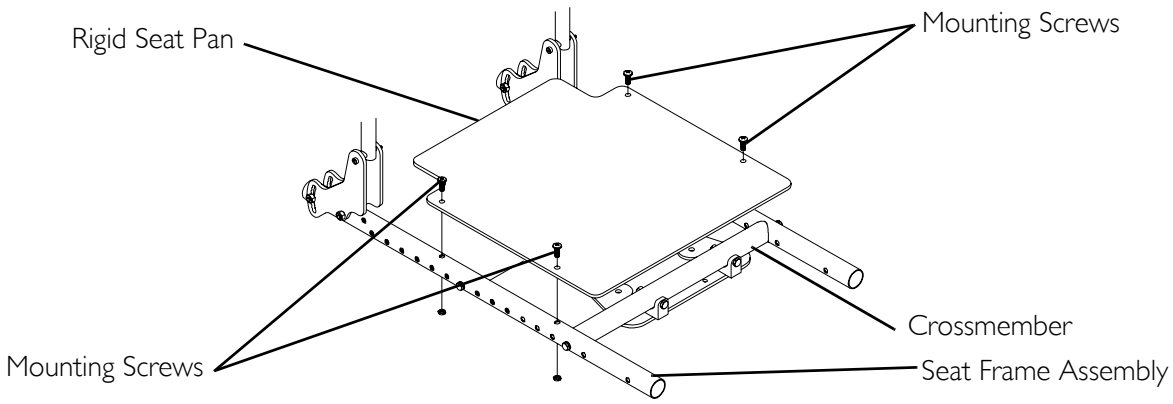


FIGURE 9.3 Removing/Installing the Seat Pan

SECTION 10—TILT

Removing/Installing/Adjusting the Cable Assembly

Removing/Installing the Cable Assembly

NOTE: For this procedure, refer to FIGURE 10.1.

1. Remove the seat frame from the base frame. Refer to Removing/Installing the Seat Frame on page 65.
2. Loosen back locknut and rotate counterclockwise five to six revolutions.
3. Rotate cable adjuster and jam nut counterclockwise all the way out to the end of the threads.
4. Rotate front locknut counterclockwise completely off of threads and onto the exposed cable.
5. Pull threaded portion of cable assembly back beyond back tab of the tilt mechanism.
6. Slide the exposed cable out the side of the back tab.
7. Remove anchor end of cable from front tab.
8. To install, perform the following:
   A. Reverse STEPS 1-7.
   B. Adjust cable. Refer to Removing/Installing the Seat Frame on page 65.

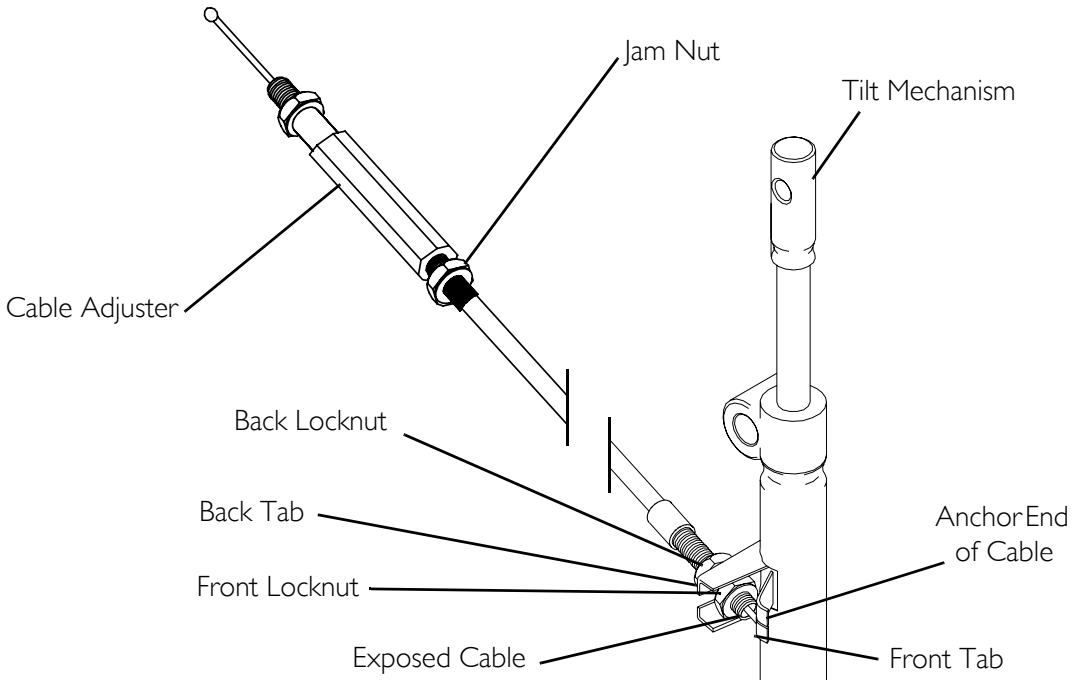


FIGURE 10.1 Removing/Installing the Cable Assembly

Adjusting the Cable Assembly

⚠ WARNING

DO NOT operate the tilt-in-space if the lock cylinder handles and cables are not properly adjusted to ensure that the lock cylinders lock in place when engaged.

NOTE: For this procedure, refer to FIGURE 10.2.

1. Loosen the jam nut (counterclockwise) on the lock cylinder cable.
2. Turn the cable adjuster until the desired play in the release pedal is achieved.
3. Retighten the jam nut (clockwise) on the cable.
4. Tilt the wheelchair to any tilt position. Make sure the wheelchair holds the position.

NOTE: If the wheelchair does not hold the position, repeat STEPS 1-4 until the wheelchair is able to hold the tilted position.

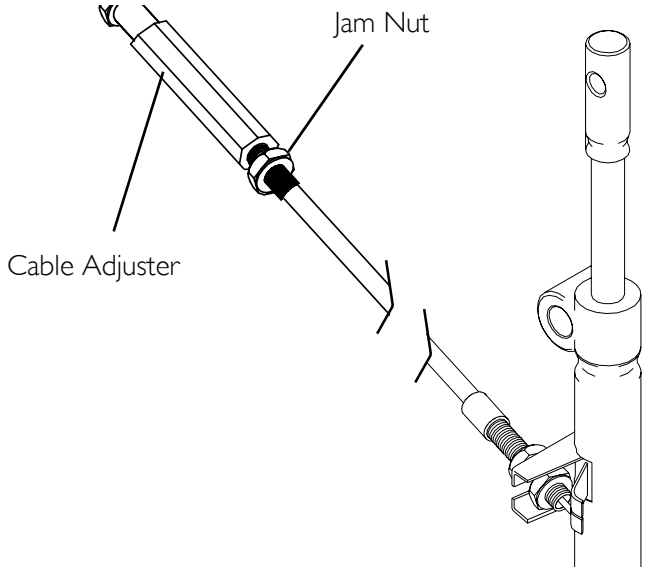


FIGURE 10.2 Adjusting the Cable Assembly

SECTION 11—BATTERIES

Warnings for Handling and Replacing Batteries

⚠ WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely - otherwise injury or damage may occur.

Make sure power to the wheelchair is Off before performing these procedures.

The use of rubber gloves is recommended when working with batteries.

Invacare strongly recommends that battery installation and battery replacement ALWAYS be done by a qualified technician.

22NF batteries weigh 37 pounds each. Use proper lifting techniques (lift with your legs) to avoid injury.

Use 22NF batteries only. Failure to use the correct battery size and/or voltage may cause damage to your wheelchair and give you unsatisfactory performance.

ALWAYS use a battery lifting strap when lifting a battery. It is the most convenient method and assures that the battery acid will not spill. It also helps to prolong the life of the battery.

DO NOT tip the batteries. Keep the batteries in an upright position.

NEVER allow any of your tools and/or battery cable(s) to contact both battery post(s) at the same time. An electrical short may occur and serious personal injury or damage may occur.

When tightening the clamps, always use a box wrench. Pliers will "round off" the nuts. NEVER wiggle the battery terminal(s)/post(s) when tightening. The battery may become damaged.

The POSITIVE (+) RED battery cable must connect to the POSITIVE (+) battery terminal(s), otherwise serious damage will occur to the electrical system.

Install protective caps on POSITIVE (+) and NEGATIVE (-) battery terminals.

NOTE: If there is battery acid in the bottom of the battery tray or on the sides of the battery(ies), apply baking soda to these areas to neutralize the battery acid. Before reinstalling the existing or new battery(ies), clean the baking soda from the battery tray or battery(ies) being sure to avoid contact with skin and eyes. Determine source of contamination. Never install/reinstall a battery with a cracked or otherwise damaged case.

Using the Proper Batteries

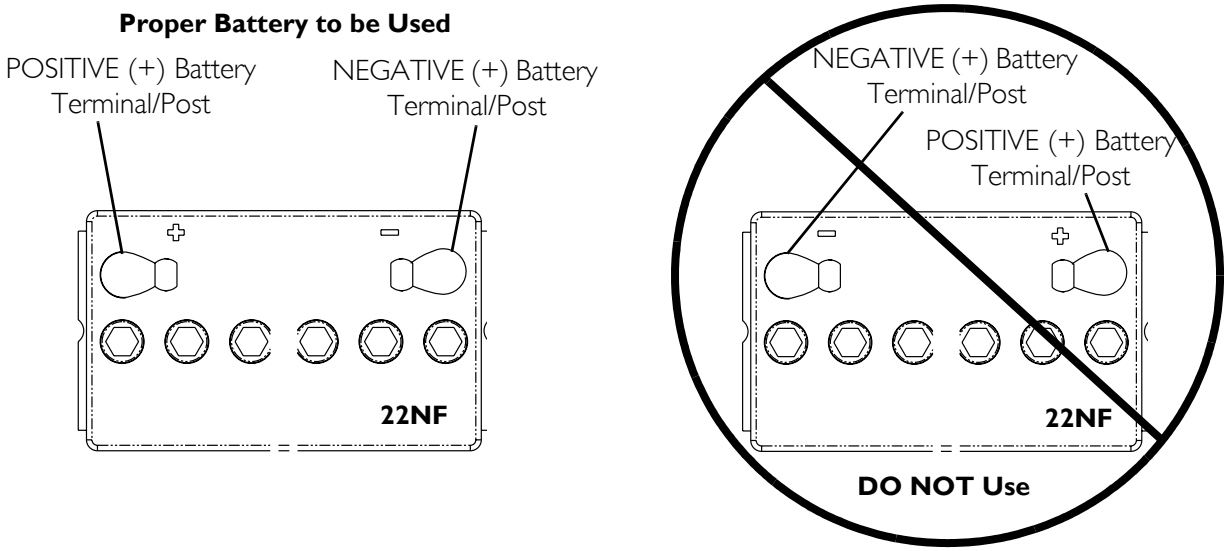
NOTE: For this procedure, refer to FIGURE 11.1.

1. Place battery on ground/flat surface.
2. Visually inspect the battery to ensure the correct position of the POSITIVE and NEGATIVE terminals:

⚠ WARNING

Batteries with terminal configuration (POSITIVE on the left and NEGATIVE on the right) MUST be used. Batteries that have the reverse terminal configuration MUST not be used. Otherwise injury and damage may occur.

Terminals MUST have a cross hole in them as shown in Detail "A" below.



DETAIL "A" - TERMINAL CROSS HOLES

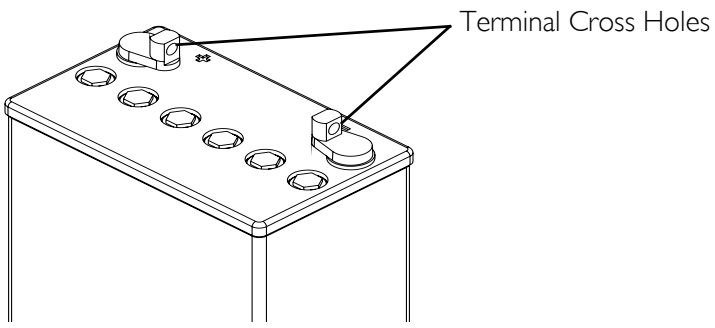


FIGURE 11.1 Using the Proper Batteries

Removing/Installing the Battery Boxes

NOTE: For this procedure, refer to FIGURE 11.2.

NOTE: To install the battery box onto the wheelchair, reverse the following steps.

1. Place the wheelchair in a well ventilated area where work can be performed without risking damage to carpeting or floor covering.
2. Verify the joystick On/Off switch is in the Off position.
3. Disconnect the battery cables from the battery box lid connectors.
4. Disconnect the battery box retention strap.
5. Remove the battery boxes from the battery box trays.

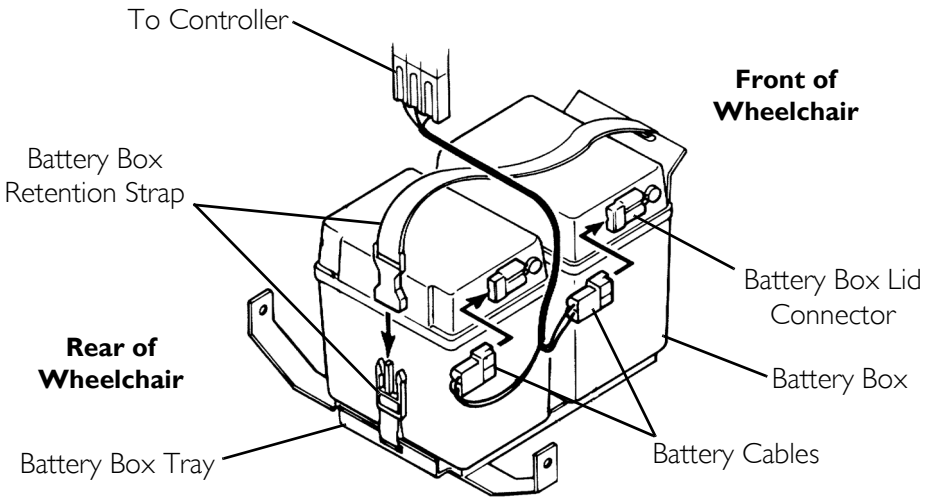


FIGURE 11.2 Removing/Installing the Battery Boxes

Disconnecting/Connecting Battery Cables

⚠ WARNING

NEVER allow any of your tools and/or battery cable(s) to contact both battery post(s) at the same time. An electrical short may occur and serious personal injury or damage may occur.

The use of rubber gloves and safety glasses is recommended when working with batteries.

When tightening the clamps, always use a box wrench. Pliers will "round off" the nuts. NEVER wiggle the battery terminal(s)/post(s) when tightening. The battery may become damaged.

The POSITIVE (+) RED battery cable MUST connect to the POSITIVE (+) battery terminal(s)/post(s). Otherwise serious damage will occur to the electrical system.

Install protective caps on POSITIVE (+) and NEGATIVE (-) battery terminals.

NOTE: For this procedure, refer to FIGURE 11.3.

Disconnecting

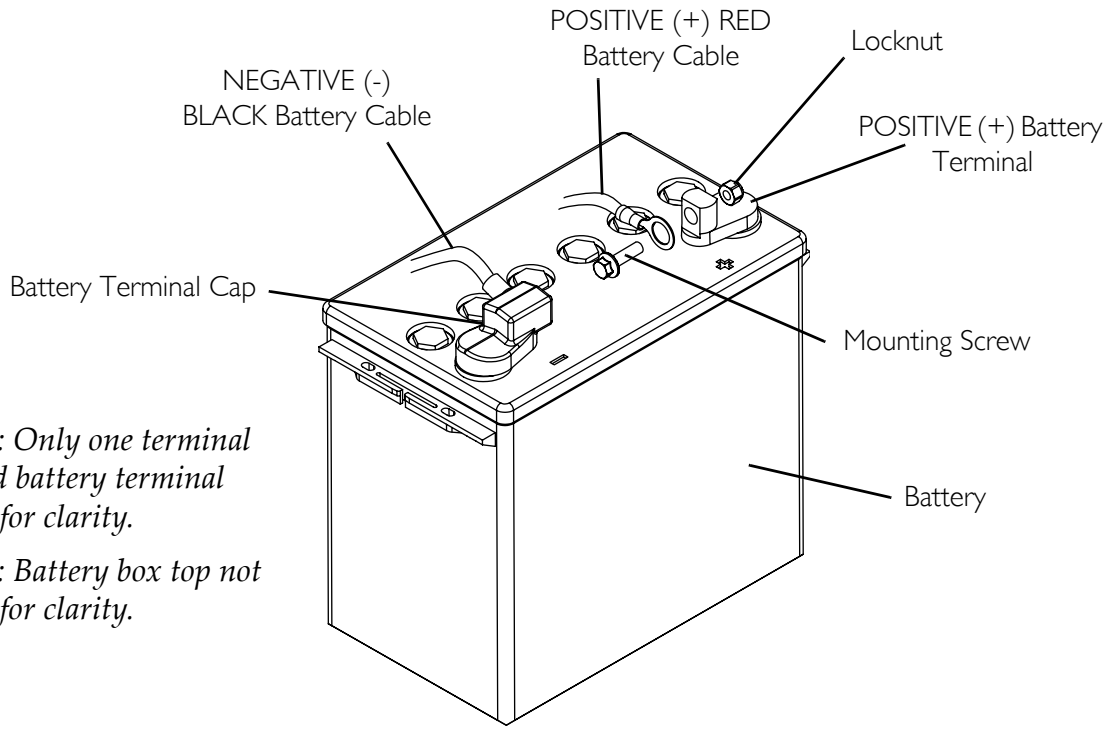
1. Remove the battery boxes from the wheelchair. Refer to Removing/Installing the Battery Boxes on page 74.
2. Remove battery terminal cap(s) from battery terminal(s) ends.
3. Disconnect NEGATIVE (-) BLACK battery cable of the battery box top from NEGATIVE (-) battery terminal/post of the battery.
4. Disconnect POSITIVE (+) RED battery cable on battery box top from POSITIVE (+) battery terminal/post of the battery.
5. Repeat STEPS 2-4 for the remaining battery.

Connecting

1. Remove battery terminal cap(s) from battery terminal(s) ends.
2. Place battery top upside down on top of battery.
3. Connect POSITIVE (+) RED battery cable of the battery box top to POSITIVE (+) battery terminal/post of battery using the mounting screw and locknut.
4. Connect NEGATIVE (-) BLACK battery cable of the battery box top to NEGATIVE (-) battery terminal/post of battery using the mounting screw and locknut.
5. Replace battery terminal caps onto battery cable terminal ends.
6. Install battery box top onto battery box.
7. Repeat STEPS 1-6 for remaining battery.
8. Install the battery boxes into the wheelchair. Refer to Removing/Installing the Battery Boxes on page 74 in this section of the manual.

NOTE: New battery(ies) MUST be fully charged before using. Otherwise the life of the battery(ies) will be reduced.

9. If necessary, charge the battery(ies). Refer to Charging Batteries on page 80 in this section.



NOTE: Only one terminal cap and battery terminal shown for clarity.

NOTE: Battery box top not shown for clarity.

FIGURE 11.3 Disconnecting/Connecting Battery Cables

Removing/Installing Batteries From/Into Battery Boxes

⚠ WARNING

ALWAYS use a battery lifting strap when lifting a battery. It is the most convenient method and assures that the battery acid will not spill. It also helps to prolong the life of the battery.

DO NOT tip the batteries. Keep the batteries in an upright position.

The warranty and performance specifications contained in this manual are based on the use of deep cycle gel cell batteries. Invacare strongly recommends their use as the power source for this unit.

CAUTION

Place the wheelchair in a well ventilated area where work can be performed without risking damage to carpeting or floor covering.

NOTE: For this procedure, refer to FIGURE 11.4.

NOTE: To install the battery(ies) into the battery box(es), reverse the following steps.

NOTE: Have the following tools available:

- *Battery Lifting Strap*
- *1/2-inch (6 pt) Box Wrench*

NOTE: If there is battery acid in the bottom or on the sides of the battery boxes or batteries, apply baking soda to these areas to neutralize the battery acid. Before reinstalling the new or existing batteries, clean the baking soda from the battery boxes or batteries.

NOTE: When securing battery lifting strap to battery, observe polarity markings located on the ends of the battery lifting strap, (+) side to POSITIVE (+) battery post and (-) side to NEGATIVE (-) battery post.

1. Remove the battery box(es) from the wheelchair. Refer to Removing/Installing the Battery Boxes on page 74.
2. Disconnect battery cables. Refer to Disconnecting/Connecting Battery Cables on page 75 for 22NF batteries.
3. Secure battery lifting strap to battery terminal(s)/post(s).

⚠ WARNING

Some battery manufacturers mold a carrying strap and/or hold down flanges directly into the battery case. Batteries which interfere with the battery box cannot be used for these applications. Attempting to "wedge" a battery into a battery box may damage the box, the battery and/or be a fire hazard, resulting in serious injury or further damage to property.

4. Remove batteries from battery box(es).

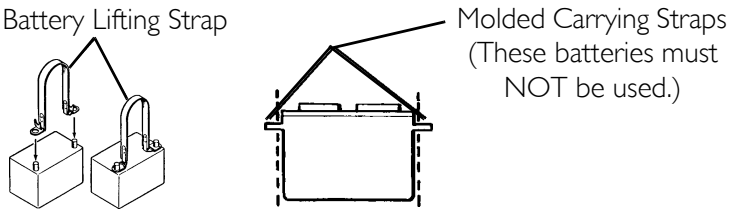


FIGURE 11.4 Removing/Installing Batteries From/Into Battery Boxes

Replacing Batteries

NOTE: Invacare recommends that both batteries be replaced if one battery is defective.

Recommended Battery Types

⚠ WARNING

Use 22NF batteries only. Failure to use the correct battery size and/or voltage may cause damage to your wheelchair and give you unsatisfactory performance.

The warranty and performance specifications contained in this manual are based on the use of deep cycle gel cell batteries. Invacare strongly recommends their use as the power source for this unit.

NOTE: Charge batteries daily. It is critical not to let them run low at any time.

1. Remove the battery box(es) from the wheelchair. Refer to Removing/Installing the Battery Boxes on page 74.
2. Remove existing batteries from the battery box(es). Refer to Removing/Installing Batteries From/Into Battery Boxes on page 77 in this section of manual.
3. Clean the new battery terminals. Refer to Cleaning Battery Terminals on page 79.
4. Install the new batteries into the battery box(es). Refer to Removing/Installing Batteries From/Into Battery Boxes on page 77.

Cleaning Battery Terminals

⚠ WARNING

Most batteries are not sold with instructions. However, warnings are frequently noted on the cell caps. Read them carefully.

DO NOT allow the liquid in the battery to come in contact with skin, clothes or other possessions. It is a form of acid and harmful or damaging burns may result. Should the liquid touch your skin, wash the area immediately and thoroughly with cool water. In serious cases or if eye contact is made, seek medical attention immediately.

1. Examine battery clamps and terminals for corrosion.
2. Verify the plastic caps are in place over battery cell holes.
3. Clean terminals and inside battery clamps by using a battery cleaning tool, wire brush, or medium grade sand paper.

NOTE: Upon completion, areas should be shiny, not dull.

4. Carefully dust off all metal particles.

When to Charge Batteries

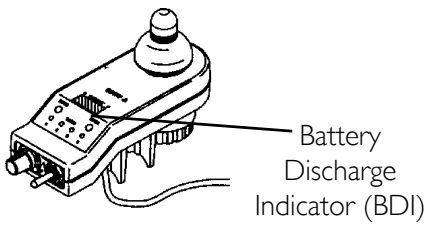
NOTE: For this procedure, refer to FIGURE 11.5.

MKIV-A, MKIV-RX and MKIV-RII Joysticks

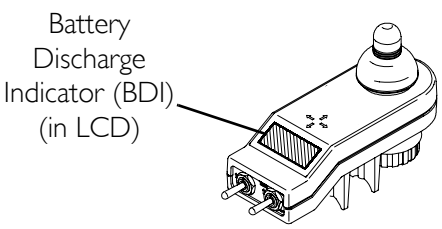
The Battery Discharge Indicator (BDI) is a bar graph display located on the MKIV joystick. It will keep you informed as to power availability. A visual warning is given before the power becomes too low to operate the wheelchair. At full charge, the two left segments and the farthest right segment of the bar graph will be illuminated. As the battery becomes discharged, the farthest right segment will progressively move to the left until only the last two bars (left) are illuminated. At this level, the last two bars (left) will start to Flash On and Off to indicate that the end user should charge the batteries as soon as possible.

MKIV-A+ Joysticks

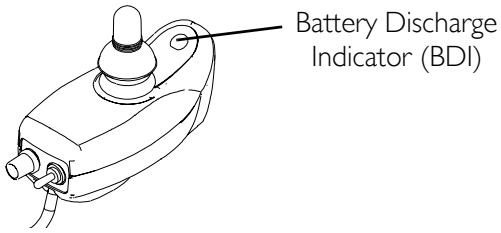
The left half of the second line on the LCD is the Battery Discharge Indicator (BDI). It provides information on the remaining charge in the batteries. At full charge solid blocks fill in all ten segments between E (Empty) and F (Full). As the battery becomes discharged, the farthest right segments will progressively disappear a half bar at a time until no segments appear between E and F. At this level the word RECHARGE will appear on the second line to indicate that the user should charge the batteries as soon as possible.



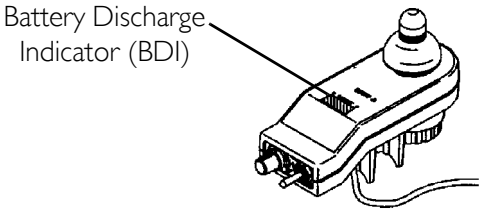
MKIV - A Joystick



MKIV - A+ Joystick



MKIV - RII Joystick



MKIV - RX Joystick

FIGURE 11.5 When to Charge Batteries

Charging Batteries

⚠ WARNING

NEVER attempt to recharge the batteries by attaching cables directly to the battery terminals or clamps. ALWAYS use the recharging plug located on the side of the wheelchair frame.

DO NOT attempt to recharge the batteries and operate the power wheelchair at the same time.

During use and charging, batteries may vent hydrogen gas which is explosive in the right concentration with air.

DO NOT sit in wheelchair while charging batteries.

CAUTION

ALWAYS charge new batteries before initial use or battery life will be reduced.

NOTE: For this procedure, refer to FIGURE 11.6.

NOTE: New batteries MUST be fully charged prior to initial use of the wheelchair.

NOTE: As a general rule, batteries should be recharged daily to assure the longest possible life and minimize the required charging time. Plan to recharge the batteries when it is anticipated the wheelchair will not be used for a long period of time.

The range per battery charge using recommended batteries should be approximately five to nine hours of typical operation. Extensive use on inclines may substantially reduce per charge mileage.

Description and Use of Battery Chargers

The charger automatically reduces the charge from an initially high rate to a zero reading at a fully charged condition. If left unattended, the charger should automatically stop charging when full charge is obtained.

There are some basic concepts which will help you understand this automatic process. They are:

The amount of electrical current drawn within a given time to charge a battery is called the "charge rate". If, due to usage, the charge stored in the battery is low, the charge rate is high, as indicated by the GREEN light on the charger. Initially, the GREEN light will stay illuminated for a short period of time followed by a longer period of off time. As a charge builds up, the charge rate is reduced, and the GREEN light will stay illuminated for a longer period of time followed by a shorter off time.

⚠ WARNING

NEVER leave the charger unattended when the charger circuit breaker is tripping On and Off. A problem exists between the battery charger and batteries. Contact an Invacare dealer.

NOTE: If performing the charging sections independently, read and carefully follow the individual instructions for each charger (supplied or purchased).

NOTE: If charging instructions are not supplied, consult a qualified service technician for proper instructions.

NOTE: Have the following tools available:

- *Battery Charger*
- *Extension Cord (3-prong plug, 15 ampere current rating; industrial type)*

1. Perform one of the following:
   - Wheelchairs Equipped with MKIV A, A+ and RX Joysticks - Attach the battery charger connector to the charger cable/battery harness.

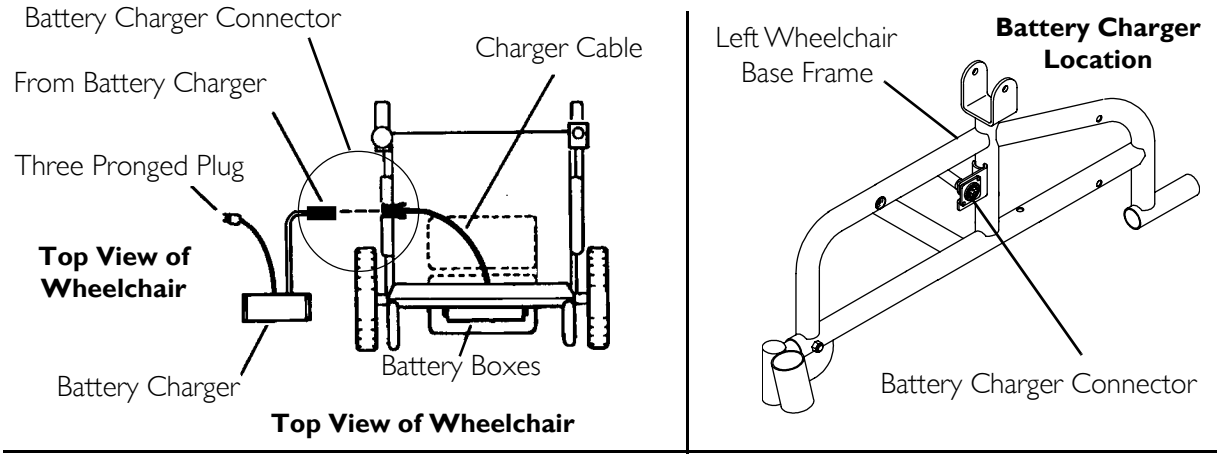
     NOTE: The battery charger connector is factory installed on the left side of the wheelchair. It can be positioned on either side of the wheelchair for user convenience.

   - MKIV RII Joystick - Attach the battery charger connector to the charger port on the front of the joystick.
2. Plug the charger's AC power cord, or extension, into the grounded 120 VAC wall outlet.
3. Wait until charging is complete.

NOTE: It is advantageous to recharge frequently rather than only when necessary. In fact, a battery's life is extended if the charge level is maintained well above a low condition.

NOTE: If the batteries need to be charged more often or take longer to charge than normal, they may need to be replaced.

DETAIL "A" -WHEELCHAIRS EQUIPPED WITH MKIV - A, A+ OR RX JOYSTICKS



DETAIL "B" - WHEELCHAIRS EQUIPPED WITH MKIV - RII JOYSTICK

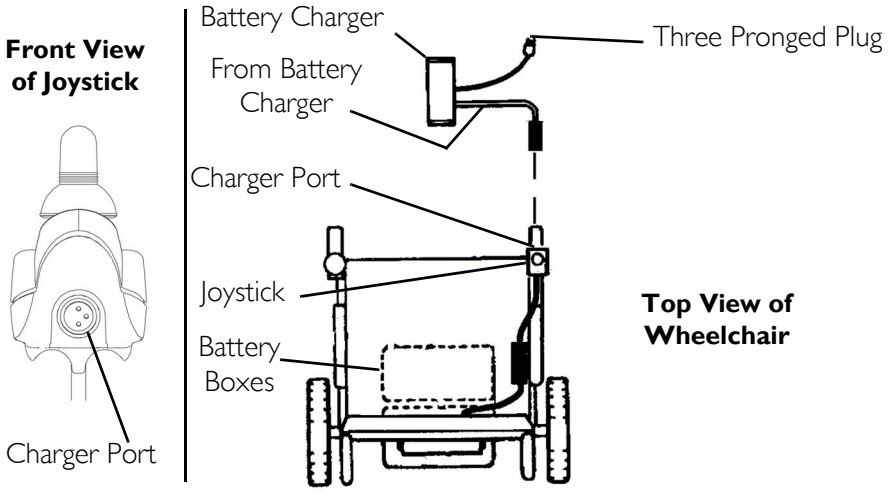


FIGURE 11.6 Charging Batteries

SECTION 12—WHEELS

⚠ WARNING

After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely. Otherwise injury or damage may result.

Before performing any maintenance, adjustment or service verify that On/Off switch on the joystick is in the Off position.

Adjusting Wheel Locks

NOTE: For this procedure, refer to FIGURE 12.1.

1. Make sure wheel lock is disengaged from drive wheel.
2. Measure distance between the wheel lock shoe and the drive wheel.
3. Loosen the wheel lock from the wheel lock mounting bracket.
4. Slide the wheel lock along the slots in the wheel lock mounting bracket until the measurement is between 5/32 and 5/16-inches. Securely tighten mounting screws.
5. Repeat STEPS 1-4 for the opposite wheel lock.
6. Disengage clutches. Refer to Disengaging/Engaging Clutch Levers on page 43.
7. Engage the wheel locks and push against the wheelchair to determine if the wheel locks engage the drive wheels enough to hold the wheelchair.
8. Repeat STEPS 1-7 until the wheel locks engage the drive wheels enough to hold the wheelchair.
9. Engage clutches. Refer to Disengaging/Engaging Clutch Levers on page 43.

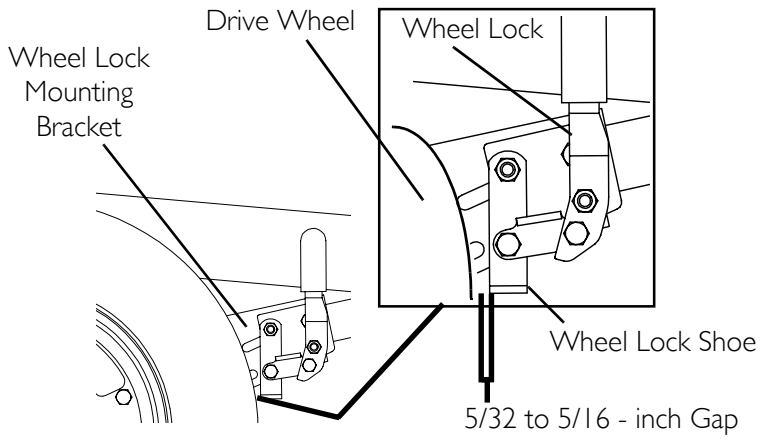


FIGURE 12.1 Adjusting Wheel Locks

Adjusting Forks

NOTE: For this procedure, refer to FIGURE 12.2.

1. Remove the dust cover (not shown) from the caster headtube.
2. To properly tighten caster journal system and guard against flutter, perform the following check:
   A. Tip back the wheelchair to floor.
   B. Pivot both forks and casters to top of their arc simultaneously.
   C. Let casters drop to bottom of arc (wheels should swing once to one-side, then immediately rest in a straight downward position).
   D. Adjust locknuts according to freedom of caster swing.
3. Test wheelchair for maneuverability.
4. Readjust locknuts if necessary, and repeat STEPS 2-3 until correct.
5. Snap dust cover into the caster headtube.

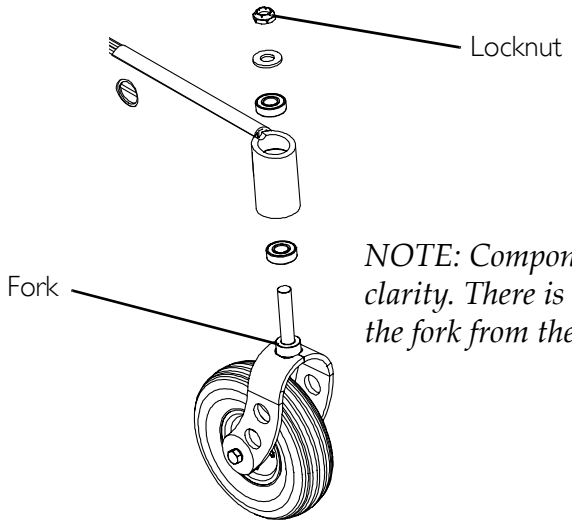


FIGURE 12.2 Adjusting Forks

Removing/Installing the Rear Wheel

NOTE: For this procedure, refer to FIGURE 12.3.

Removing the Drive Wheel

1. Fold down tab of existing locking tab washer (Detail "A" of FIGURE 12.3).
2. Remove mounting bolt and locking tab washer (Detail "B" of FIGURE 12.3). Discard existing locking tab washer.
3. Remove the wheel from the drive shaft. If necessary, use wheel puller to remove the drive wheel from the drive shaft.

Installing the Drive Wheel

NOTE: Ensure keystock is in the cutout on the drive shaft (Detail "B" of FIGURE 12.3). The keystock MUST line up with the wheel hub cutout.

CAUTION

DO NOT apply more than a 1-inch (in length) thin film of anti-seize compound to the drive shaft. Applying more than 1-inch (in length) can cause the anti-seize compound to leak resulting in damage to flooring (carpet, tile, etc.).

1. Apply an anti-seize compound to drive shaft and keystock.
2. Align the keystock in the drive shaft with the cutout in the wheel hub and position the wheel on to the drive shaft (Detail "B" of FIGURE 12.3).

⚠ WARNING

Failure to properly install locking tab washer can result in wheel separation and potential user injury or property damage. When replacing wheels, ALWAYS use a new locking tab washer. DO NOT reuse locking tab washers.

NOTE: The locking tab of the locking tab washer MUST be inserted into the cutout in the rim and hub (Detail "B" of FIGURE 12.3).

3. Using the mounting bolt, washer and new locking tab washer, secure the wheel to the drive shaft (Detail "B" of FIGURE 12.3).
4. Fold one tab of the locking tab washer up so that the tab rests against one side of the mounting bolt (Detail "A" of FIGURE 12.3).

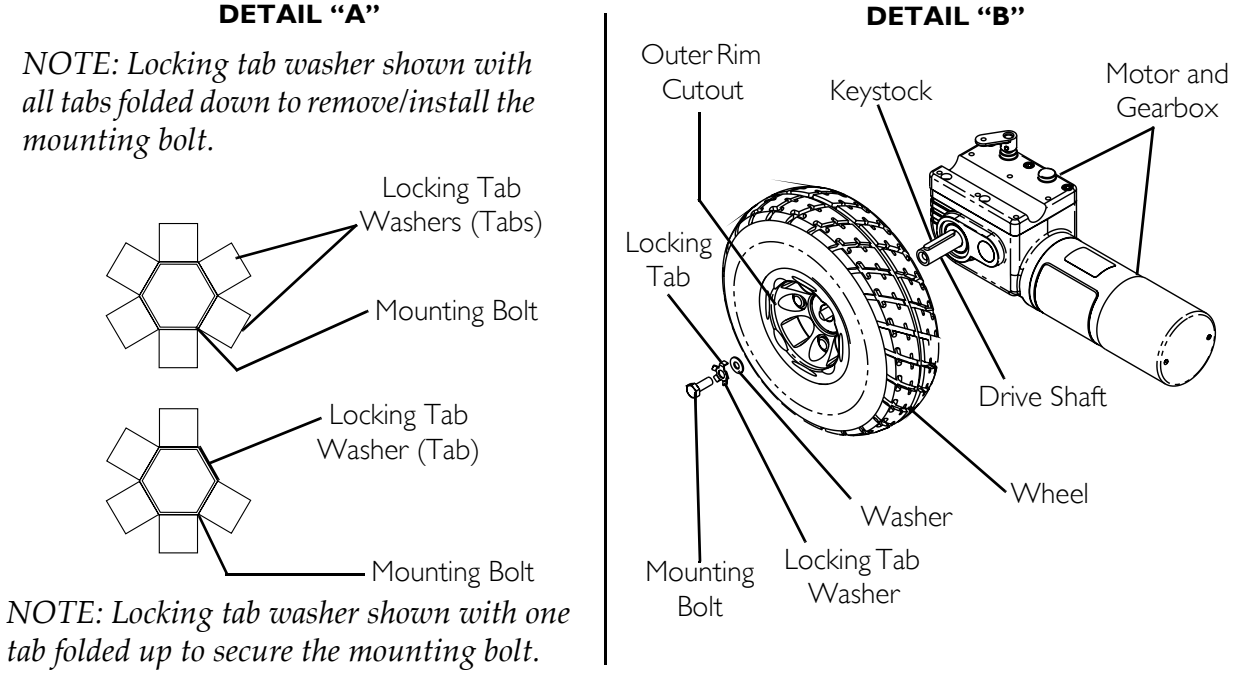


FIGURE 12.3 Removing/Installing the Rear Wheel

Removing/Installing Front Casters

NOTE: For this procedure, refer to FIGURE 12.4.

Periodically, the tires will need to be replaced due to wear or puncture.

Removing

1. Remove the mounting screw, spacers and locknut that secure the existing caster to the fork.
2. Remove the existing caster from the fork.

Installing

1. Position the new/existing caster into the fork.
2. Reinstall the mounting screw, spacers and locknut. Securely tighten.
3. Torque locknut to 10 ft-lbs (120 in-lbs).
4. Loosen the locknut 1/8 of a turn.
5. Move the caster side to side.

NOTE: If the caster moves side to side, tighten the locknut slightly. Repeat STEP 4 until there is no side to side movement of the caster.

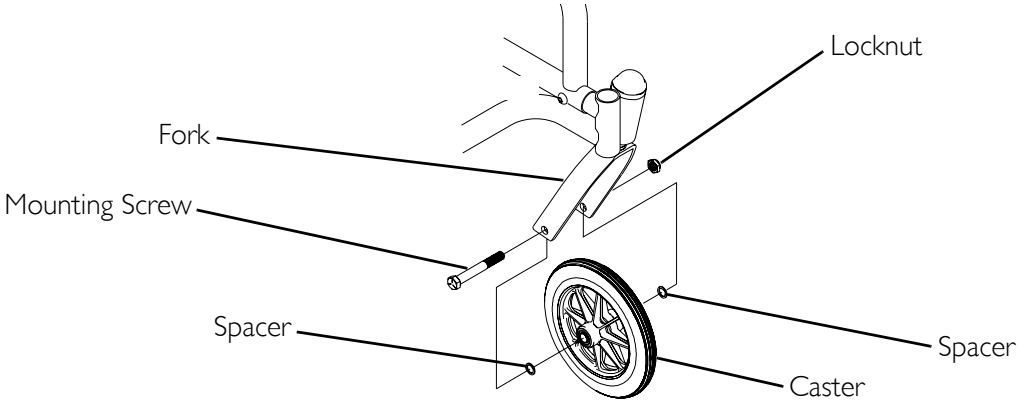


FIGURE 12.4 Removing/Installing Front Casters

Replacing Forks

NOTE: For this procedure, refer to FIGURE 12.5.

1. Remove the caster from the existing fork. Refer to Removing/Installing Front Casters on page 86.
2. Remove the head tube cap.
3. Remove the locknut and nylon washer.
4. Drop the existing fork out of the caster head tube.

5. Slide the new fork into the caster head tube.

NOTE: Check bearing assemblies. Replace if necessary.

6. Ensure new fork slides completely into caster headtube.
7. Install nylon washer and secure with locknut.

⚠ WARNING

Improper positioning of the washer will prohibit the free movement of the forks which may result in injury to the occupant.

8. Install the caster onto the new fork. Refer to Removing/Installing Front Casters on page 86.
9. Install headtube cap.

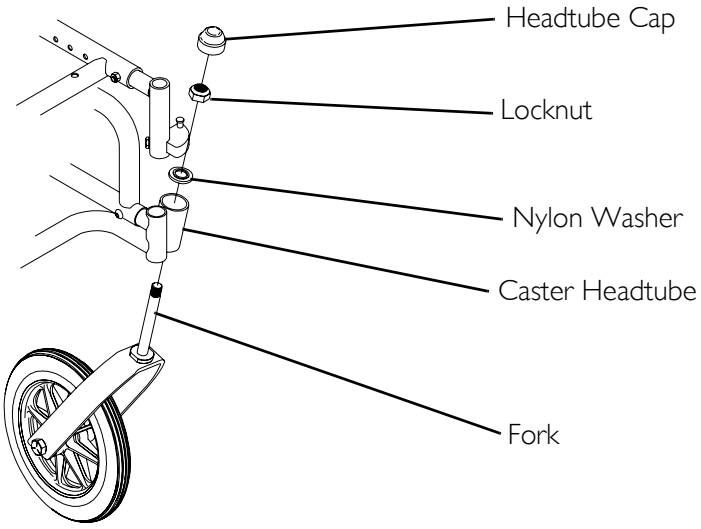


FIGURE 12.5 Replacing Forks

Changing the Caster Position

⚠ WARNING

DO NOT decrease the wheelbase length by adjusting the front casters to either of the two forward positions. ALWAYS use the rear most mounting hole. Moving the front casters back by using the forward positions causes the wheelchair to decrease in stability which may result in injury to the occupant and/or assistant.

NOTE: For this procedure, refer to FIGURE 12.6.

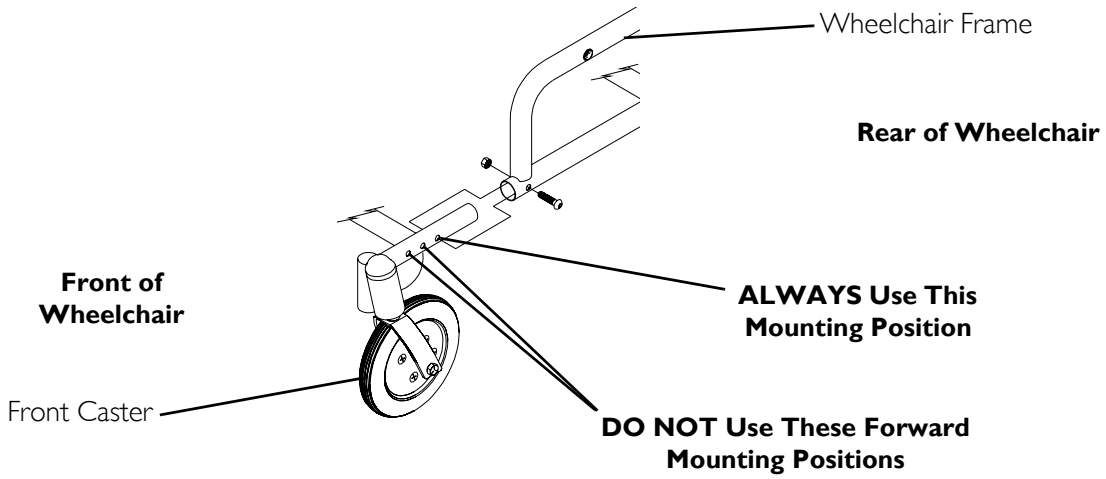


FIGURE 12.6 Changing the Caster Position

SECTION 13—ELECTRONICS

⚠ WARNING

After any adjustments, repair or service and before use, make sure that all attaching hardware is tightened securely. Otherwise injury or damage may result.

Repositioning MKIV Joystick

NOTE: For this procedure, refer to FIGURE 13.1.

1. Turn the adjustment lock lever to release the joystick mounting tube from the mounting bracket.
2. Remove the joystick from the wheelchair.
3. Remove the three hex screws that secure both halves of the mounting bracket to the arm tube.
4. Reposition mounting bracket on opposite arm tube ensuring the threaded plate of the mounting bracket is on the inside of the arm tube as shown in FIGURE 13.1.
5. Using the three hex mounting screws and washers, secure both halves of the mounting bracket to the arm tube.
6. Slide the joystick mounting tube through the mounting bracket to the desired position.
7. Turn the adjustment lock lever to secure the joystick mounting tube into the mounting bracket.

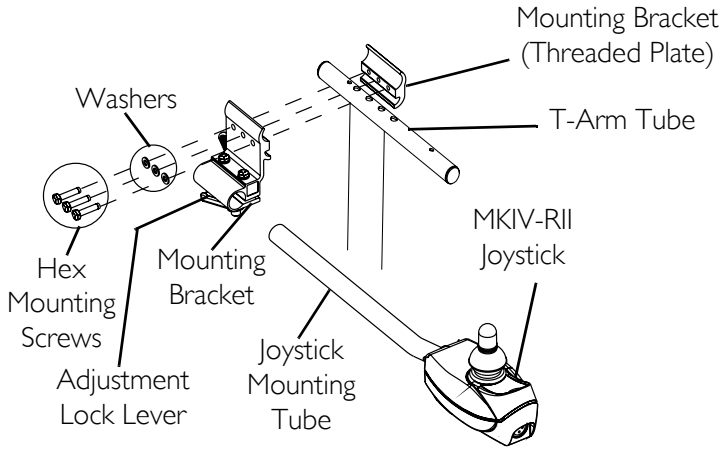


FIGURE 13.1 Repositioning MKIV Joystick

Removing/Installing Joystick

NOTE: For this procedure, refer to FIGURE 13.2.

1. Disconnect joystick from controller.
2. Cut plastic clips that secure cord to wheelchair frame.
3. Rotate release lever counterclockwise to unlock the joystick mounting tube.

NOTE: Illustration depicts the locked position of the release lever facing forward and the unlocked position facing rearward. The unlocked and locked positions will not always be as shown. Positions shown for reference only.

4. Remove joystick from T-arm mounting bracket.
5. To install, reverse STEPS 1-4.

NOTE: When installing, ensure joystick is facing front of wheelchair.

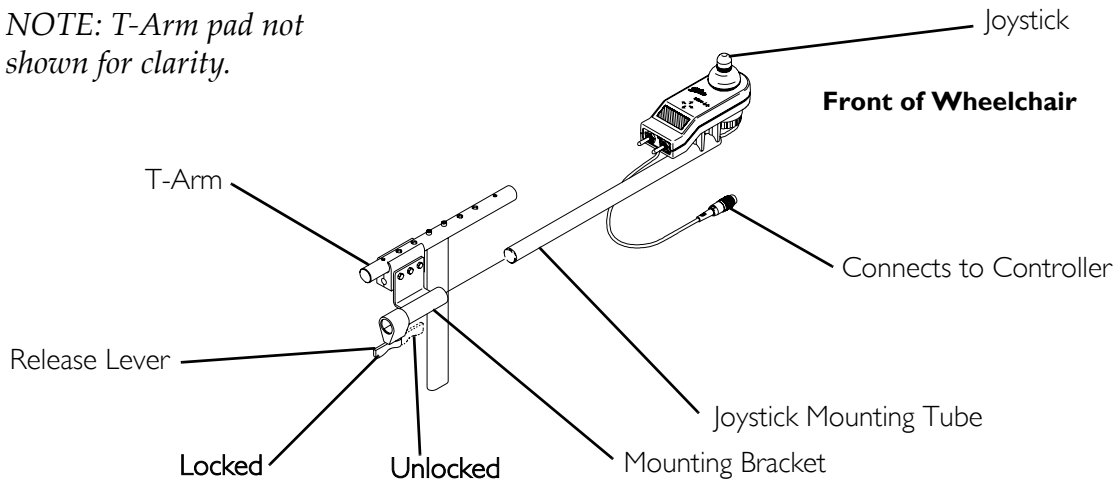


FIGURE 13.2 Removing/Installing Joystick

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 product to be free from defects in materials and workmanship for the periods of time from date of purchase listed below:

One (1) Year	**Electrical components**
One (1) Year	**All remaining components (including gas cylinders and clutch pads) except for upholstered materials, padded materials and tires/wheels**
Eighteen (18) Months	**Gearbox/Motors (2 Pole)**
Life of Product	**Base frame**

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 at the bottom of the back cover. 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.

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. INVACARE 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.

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