Invacare® TDX® SP and TDX SR Power Wheelchair Base

en **TDX SP and TDX SR**
User Manual

This manual MUST be given to the user of the product.
BEFORE using this product, read this manual and save for future reference.

INVACARE®

Yes, you can.®

Contents

1 General

1.1 Symbols

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

DANGER!
– Danger indicates a imminently hazardous situation which, if not avoided, could 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 or minor injury or both.

IMPORTANT
– Indicates a hazardous situation that could result in damage to property if it is not avoided.

Gives useful tips, recommendations and information for efficient, trouble-free use.

1.2 Reference Documents

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

MANUAL	PART NUMBER
MK6i™ Electronics Programming Guide	1141471
Adjustable ASBA Owner's Manual	1143192
Van Seat Owner's Manual	1143195
Formula™ CG Seating System	1143155
Adjustable ASBA Service Manual	1143238

1.3 General Guidelines

The safety section contains important information for the safe operation and use of this product.

DANGER!
Risk of Death, Injury or Damage
Improper use of this product may cause injury or damage
– If you are unable to understand the warnings, cautions or instructions, contact a health care professional or dealer before attempting to use this equipment.
– 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 user manual, service manuals or instruction sheets supplied with this product or optional equipment.

DANGER!
Risk of Death, Serious Injury, or Damage
Incorrect repair and/or servicing of this wheelchair performed by users/caregivers or unqualified technicians can result in death, serious injury, or damage.
– Users/Caregivers — DO NOT attempt to repair and/or service this wheelchair.
– Repair and/or service of this wheelchair MUST be performed by a qualified technician. Contact a dealer or Invacare technician.

WARNING!
– DO NOT connect any medical devices such as ventilators, life support machines, etc. directly to the batteries used to power the wheelchair. This could cause unexpected failure of the device and the wheelchair.

WARNING!
Risk of Serious Injury or Damage
Use of non-Invacare accessories may result in serious injury or damage.
– 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.
– DO NOT use non-Invacare accessories.
– To obtain Invacare accessories, contact Invacare by phone or at www.invacare.com

DANGER!
Risk of Death, Serious Injury, or Damage
Use of incorrect or improper replacement (service) parts may cause death, serious injury, or damage.
– Replacement parts MUST match original Invacare parts.
– ALWAYS provide the wheelchair serial number to assist in ordering the correct replacement parts.

WARNING!
Risk of Serious Injury or Damage
Attaching hardware that is loosely secured could cause loss of stability resulting in serious injury or damage.
– After ANY adjustments, repair or service and before use, make sure that all attaching hardware is tightened securely.

DANGER!
Risk of Death, Serious Injury, or Damage
Missing attaching hardware could cause instability resulting in death, serious injury or damage.
– Ensure all attaching hardware is present and tightened securely

WARNING!
Risk of Serious Injury or Damage
Loss of power due to loose electrical connections could cause the wheelchair to suddenly stop resulting in serious injury or damage.
– ALWAYS ensure that all electrical connections are tightly connected so they don't vibrate loose.

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

Check all parts for shipping damage and test before using. In case of damage, DO NOT use. Contact Invacare/Carrier for further instruction

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 recommends working with a qualified rehab technology provider, such as an ATP, (Assisstive Technology Professional).

1.3.1 Set Up

WARNING!
Risk of Injury or Damage
Incorrect set up of this wheelchair performed by users/caregivers or unqualified technicians can result in injury or damage.
- User/Caregivers- DO NOT attempt to set up this wheelchair.
- Initial set up of this wheelchair MUST be performed by a qualified technician.

DANGER!
Risk of Death, Serious Injury, or Damage
Continued use of the wheelchair that is not set to the correct specifications may cause erratic behavior of the wheelchair resulting in death, serious injury, or damage.
- Performance adjustments should only be made by professionals of the healthcare field or persons fully conversant with this process and the driver's capabilities.
- After the wheelchair has been set up/adjusted, 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. Contact Invacare, if wheelchair still does not perform to correct specifications.

WARNING!
Risk of Serious Injury or Damage
Moving the seating system from the factory setting may reduce driver control, wheelchair stability, traction and increase caster wear resulting in serious injury or damage.
- Move the seating system ONLY when necessary to fit the wheelchair to the user.
- If the seating system must be moved, ALWAYS inspect the wheelchair to ensure the front rigging DOES NOT interfere with the front casters.
- If the seating system must be moved, ALWAYS inspect to ensure the wheelchair DOES NOT easily tip forward or backward.

DANGER!
Risk of Death, Serious Injury or Damage
Operating the wheelchairs outdoor or in areas of poor lighting may result in death, serious injury, or damage.
Operating the wheelchair near motor vehicles may result in death, serious injury or damage.
– DO NOT operate on roads, streets or highways.
– Use caution when operating the wheelchair outdoors at night or in areas with poor lighting.
– ALWAYS be aware of motor vehicles when using the wheelchair.

WARNING!
Risk of Minor to Serious Injury
Pinch points can cause minor to serious injury.
– Be mindful of potential pinch points and use caution when using this product.

WARNING!
Risk of Serious Injury
Impacting objects in the surrounding environment can cause serious injury.
– When maneuvering the wheelchair around, ALWAYS have assured cleared distance with all objects in environment.

WARNING!
Risk of Serious Injury
Sharp edges can cause serious injury.
– Be mindful that some parts may have sharp edges. Use caution when encountering these sharp edges.

WARNING!
Risk of Serious Injury
Hot surfaces can cause severe burns.
– Be mindful of potential hot surfaces and avoid touching.

DANGER!
Risk of Death, Serious Injury, or Damage
Lighted cigarettes dropped onto an upholstered seating system can cause a fire resulting in death, serious injury, or damage.
Wheelchair occupants are at particular risk of death or serious injury from these fires and resulting fumes because they may not have the ability to move away from the wheelchair.
– DO NOT smoke while using this wheelchair.

1.3.2 Transport - Wheelchair Tie-Down Restraints and Seat Restraints (TRRO or TRBKTS)

WARNING!
Risk of Death, Serious Injury, or Property Damage
Failure to observe the following transport warnings may result in death, serious injury, or property damage.

WARNING!

– Only use the transport brackets included with TRRO or TRBKTS for the purposes described in this manual.
– TRRO (Transport Ready Option) - TRRO includes four factory-installed transport brackets and a wheelchair anchored pelvic belt. TRRO has been crash-tested in accordance with ANSI/RESNA WC Vol 1 Section 19 Frontal Impact Test requirements for wheelchairs with a 130 lb (59 kg) crash test dummy, which corresponds to a person with a weight of 125 lbs (57 kg) to 165 lbs (75 kg) for Junior seat sizes or a 168 lb (76 kg) crash dummy, which corresponds to a person with a weight of 165 lbs (75 kg) to 300 lbs (136 kg) for Adult seat sizes.
– TRBKTS (Wheelchair Transport Brackets) - TRBKTS includes four factory-installed wheelchair transport brackets. TRBKTS has not been crash-tested in accordance with WC 19. Use these transport brackets only to secure an unoccupied wheelchair during transport.

WARNING!

– 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.
– Battery support brackets MUST be installed at all times. Otherwise, the wheelchair will not be WC/19 compliant. Refer to the Transport section in the base user manual that was shipped with the product for more information about transporting the wheelchair.

1.3.3 Stairways and Escalators

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 use an escalator to move a wheelchair between floors. Serious bodily injury may occur.
- 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 varies depending on the model. Refer to the Technical Data section of this manual for the weight of the wheelchair. ALWAYS 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:

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. Remove the batteries from wheelchair. Refer to Removing the Batteries procedure in this manual.
3. Bend your knees and keep your back straight.
4. 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.
5. The wheelchair should not be lowered until the last stair has been negotiated and the wheelchair has been carried away from the stairway.

1.3.4 Repair and Service Information — Dealers and/or Qualified Technicians

WARNING!
Risk of Serious Injury or Damage
- DO NOT service or operate this equipment without first reading and understanding (1) the user 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.
- Set up of the driver control is to be performed only by a qualified technician. The final adjustments of the driver control may affect other activities of the wheelchair. Serious injury or damage to the equipment could occur if improperly set up or adjusted.
- Except for programming, DO NOT service or adjust the wheelchair while occupied, unless otherwise noted.
- Before adjusting, repairing or servicing the wheelchair, ALWAYS turn the wheelchair power Off.

DANGER!
Risk of Death, Serious Injury, or Damage
Corroded electrical components due to water, liquid exposure, or incontinent users can result in death, serious injury, or damage.
- Minimize exposure of electrical components to water and/or liquids. Electrical components damaged by corrosion MUST be replaced immediately.
- Wheelchairs that are used by incontinent users and/or are frequently exposed to water/liquids may require replacement of electrical components more frequently.

WARNING!
- DO NOT overtighten hardware attaching to the frame. This could cause damage to the frame tubing.
- Transport ready packages are not able to be retrofitted to existing models and are not field serviceable.
- Replace gas-locking cylinders every two years or if performance issues are encountered. Performance issues include forward tipping and veering.

1.3.5 Wear and Tear Information

General Information

Normal wear and tear items and components include but are not limited to: all upholstery items including seat and back upholstery, arm and calf pads, cushions, wheels, tires and casters, all types of batteries, joystick overlays and inductive rubberized protective boots.

Invacare reserves the right to ask for any item back that has an alleged defect in workmanship. Refer to the Warranty section in this manual for specific warranty information.

Refer to the Inspection Checklists for proper preventative maintenance schedule.

This is just a general guideline and does not include items damaged due to abuse and misuse.

Product Type	Product Wear and Tear
Wheelchairs	Wheels, Brake Assembly, Hand Grips
Scooters	Wheels, Braking System, Armrest, Seat
Mobility Hardware and Electronics	Rubber Urethane Tires and Casters, Handgrips, Joystick Inductive Tops, Joystick Overlays, Motors and Gearboxes (if exposed to prolonged moisture, urine, etc.), Stability Lock
Upholstery and Seating	Arm pads, Seat Cushion Foam, Seat Cushion Covers, Back Cushion Foam, Back Cushion Covers, Headrest Foam, Headrest Covers, Footplate Covers, Calf Pad (if applicable)Foam and Cover
Batteries	Lead acid/Lithium, Coin cell (watch type), Gel (6 months)

1.3.6 Global Limited Warranty (Excluding Canada)

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 who purchases this product within any country excluding CANADA when new and unused from Invacare or a dealer. This warranty is not extended to any other person or entity and is not transferable or assignable to any subsequent purchaser or owner. Coverage under this warranty will end upon any such subsequent sale or other transfer of title to any other person. For product purchased in Canada, please refer to the Canada Limited Warranty.

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

Invacare warrants the base frame to be free from defects in materials and workmanship for a period of five (5) years from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all electronics and electrical components (excluding batteries), motors, powered seating actuators and gearboxes to be free from defects in materials and workmanship for a period of one (1) year from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all batteries to be free from defects in materials and workmanship for a period of six (6) months from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all remaining components (excluding all upholstered materials, padded materials, tires and wheels) to be free from defects in materials and workmanship for a period of one (1) year from the date of purchase from Invacare or

a dealer, with a copy of the seller's invoice required for coverage under this warranty. If within such warranty periods any such product component shall be proven to be defective, the product component 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 on 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 subject 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 and tear or failure to adhere to the product instructions. A change in operating noise, particularly relative to motors and gearboxes does not constitute a failure or defect and will not be repaired; all devices will exhibit changes in operating noise due to aging.

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 and Invacare shall not be liable for any consequential or incidental damages whatsoever; SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGE, OR LIMITATION OF HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE EXCLUSION AND LIMITATION MAY NOT BE APPLICABLE.

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

1.3.7 Canada Limited Warranty

This warranty is extended only to the original purchaser who purchases this product within Canada when new and unused from Invacare or a dealer. This warranty is not extended to any other person or entity and is not transferable or assignable to any subsequent purchaser or owner. Coverage under this warranty will end upon any such subsequent sale or other transfer of title to any other person.

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

Invacare warrants the base frame to be free from defects in materials and workmanship for a period of five (5) years from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all electronics and electrical components (excluding batteries), powered

seating actuators, 2-pole motors and gearboxes to be free from defects in materials and workmanship for a period of two (2) years from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all batteries to be free from defects in materials and workmanship for a period of six (6) months from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all remaining components (excluding all upholstered materials, padded materials, tires and wheels) to be free from defects in materials and workmanship for a period of one (1) year from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. If within such warranty periods any such product component shall be proven to be defective, the product component 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 on 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 subject 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 and tear or failure to adhere to the product instructions. A change in operating noise, particularly relative to motors and gearboxes does not constitute a failure or defect and will not be repaired; all devices will exhibit changes in operating noise due to aging.

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 and Invacare shall not be liable for any consequential or incidental damages whatsoever; SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGE, OR LIMITATION OF HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE EXCLUSION AND LIMITATION MAY NOT BE APPLICABLE.

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

2 Safety Handling

2.1 Safety/Handling

"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.

Users and assistants must be aware that the handling and maneuverability characteristics of front wheel drive wheelchairs are inherently different from center and rear wheel drive wheelchairs. Handling and maneuverability differences will be most noticeable when traveling down declines (Example: ramps and slopes) or over obstacles and rough terrain as this may shift the users center of mass forward resulting in decreased stability. ALWAYS reduce speed and wear the seat positioning strap when driving under these conditions.

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.

Invacare strongly recommends that initial use of front wheel drive wheelchairs be supervised by an assistant.

DANGER!
Risk of Death, Serious Injury, or Damage
Misuse of the wheelchair may cause component failure and/or the wheelchair to start smoking, sparking, or burning. Death, serious injury, or damage may occur due to fire.
– DO NOT use the wheelchair other than its intended purpose. If the wheelchair starts smoking, sparking, or burning, discontinue using the wheelchair and seek service IMMEDIATELY.

DANGER!
Risk of Death or Serious Injury
Not wearing your seat positioning strap could result in death or serious injury.
– ALWAYS wear your seat positioning strap. Your seat positioning strap helps reduce the possibility of a fall from the wheelchair. 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, seat positioning strap MUST be replaced IMMEDIATELY.

WARNING!
- DO NOT leave the power button On when entering or exiting your wheelchair.
- DO NOT go up or down ramps or traverse slopes greater than 9°.
- Never leave an unoccupied wheelchair unattended on an incline.
- 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.
- 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 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 keep hands and fingers clear of moving parts to avoid injury.
- 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.

WARNING!
- DO NOT attempt to stop a moving wheelchair with the wheel locks. Wheel locks are not brakes.
- DO NOT engage or disengage the motor locks until the power is in the off position.
- If wheelchair is equipped with pneumatic tires - 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 35 p.s.i. (24 kilopascals). The recommended tire pressure is also listed on the side wall of the tire

WARNING!
Risk of Serious Injury or Damage
Accidental activation of wheelchair caused by pets, children, etc. can result in serious injury or damage.
- ALWAYS turn power off when around pets and/or children to prevent unintended movement.

2.1.1 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.

WARNING!
- 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.

2.1.2 Stability Lock

DANGER!
Risk of Death or Serious Injury
Not performing periodic maintenance on stability lock could result in death or serious injury.
– ALWAYS perform the periodic maintenance to the stability lock listed in the inspection checklist of this manual.

2.1.3 Stability and Balance

To assure stability and proper operation of your wheelchair, you MUST at all times maintain proper balance. Your wheelchair has been designed to remain upright and stable during normal daily activities as long as you DO NOT move beyond the center of gravity. DO NOT lean forward out of the wheelchair any further than the length of the armrests.

The drive behavior initially experienced by the user may be different from other wheelchairs previously used. This power wheelchair has Invacare's SureStep® technology, a feature that provides the wheelchair with optimum traction and stability when driving forward over transitions and thresholds. Refer to Coping with Everyday Obstacles for maximum height of transitions and thresholds. The following warnings apply specifically to the SureStep feature:

WARNING!
– To determine and establish your particular safety limits, practice use of this product on various sloping surfaces in the presence of a qualified healthcare provider before attempting active use of this wheelchair. Other general warnings listed within this document also apply.
– ALWAYS reduce speed when traveling up or down an incline or over obstacles and rough terrain. Traveling under these conditions may shift the users weight forward resulting in reduced stability.

WARNING!
– DO NOT leave elevating legrests in the fully extended position when proceeding down ramps or slopes.
– 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.

WARNING!
Risk of Injury or Damage
This wheelchair has been designed to accommodate one individual. 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.
– DO NOT have more than one individual occupy the wheelchair.
– DO NOT have any one stand on the frame at any time.

2.1.4 Driving Surfaces

Your power wheelchair has been designed to operate on dry, level surfaces (i.e. concrete, blacktop, and asphalt). Other acceptable surfaces likely to be encountered include packed soil, grass, and gravel.

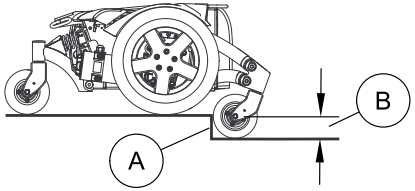
Avoid driving on the following surfaces:

- Uneven terrain, soft surfaces
- Tall grass
- Loose gravel and/or sand
- Do not operate the wheelchair in any type or depth of water (edges of streams, lakes, or oceans.)
- If you approach an unfamiliar surface and feel uneasy about driving on that surface, avoid that surface.

2.1.5 Coping with Everyday Obstacles

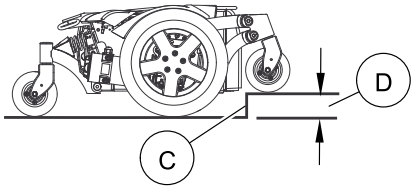
Coping with the irritation of everyday obstacles can be somewhat alleviated by learning how to manage your wheelchair. Keep in mind your center of gravity to maintain stability and balance.

While the wheelchair is designed for use primarily in and around the home, the provider should determine whether this wheelchair is suitable for the actual environment in which the wheelchair will be used.

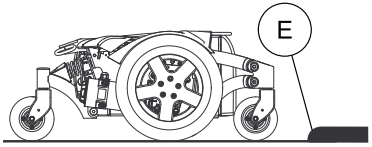


WARNING!
Risk of Serious Injury or Damage
Driving (forward or reverse) down off *curbs/obstacles Ⓐ greater than 70mm (2.76 inches) Ⓑ may cause your wheelchair to turn over and cause serious injury or damage to the wheelchair.

– DO NOT attempt to drive down off curbs/obstacles greater than 70mm (2.76 inches).
– ALWAYS stop before negotiating an obstacle.
– Approach slowly until caster wheels are approximately 18 inches (46 cm) away from the obstacle. Slowly apply power to move forward/reverse while negotiating the obstacle.

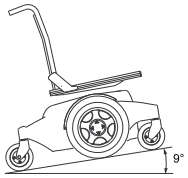
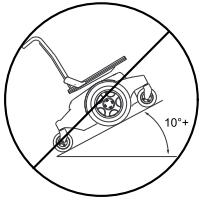
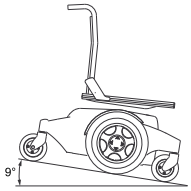
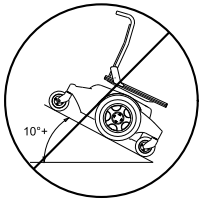


WARNING!
Risk of Serious Injury or Damage
Serious injury or damage to the wheelchair may result from driving forward up over *curbs/obstacles Ⓒ greater than 70mm (2.76 inches) Ⓓ or driving reverse up over *curbs/obstacles Ⓒ greater than 40mm (1.57 inches) Ⓓ.
– DO NOT attempt to drive up over *curbs/obstacles greater than 70mm (2.76 inches) going forward or 40mm (1.57 inches) in reverse.
– ALWAYS stop before negotiating an obstacle.
– Approach slowly until caster wheels are approximately 18 inches (46 cm) away from the obstacle. Slowly apply power to move forward/reverse while negotiating the obstacle.



* Improved performance can be achieved when climbing over rolled curbs Ⓔ.

2.1.6 Negotiating Inclines

Acceptable Incline Angles 0° to 9°	Avoid Inclines of 10° and above
	
	

WARNING!
Risk of Death or Serious Injury
Traversing inclines greater than 9° could impair line of sight required for safe driving, resulting in death or serious injury.
– DO NOT use on inclines greater than 9°.
– If line of sight is impaired, DO NOT traverse any incline.

WARNING!
Risk of Death or Serious Injury
Traversing inclines with the seat reclined could cause your wheelchair to become unstable and tip over resulting in death or serious injury.
– DO NOT attempt to traverse inclines with the seat reclined.

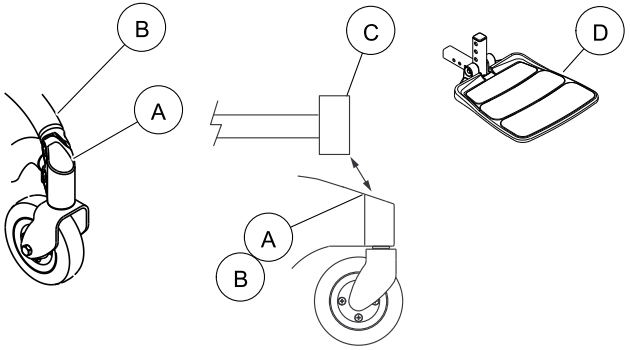
DANGER!
Risk of Death or Serious Injury
Traveling on inclines with wet, slippery, icy or oily surfaces could cause loss of traction resulting in death or serious injury.
– DO NOT use on inclines with wet, slippery, icy or oily surfaces. This may include certain painted or otherwise treated wood surfaces.

DANGER!
Risk of Death or Serious Injury
Traveling down inclines in reverse could cause the wheelchair to tip over resulting in death or serious injury
– DO NOT travel down inclines in reverse.

WARNING!
Risk of Death or Serious Injury
Braking hard and/or sudden stops while on inclines could cause loss of stability resulting in death or serious injury.
– While on inclines, ALWAYS travel at a reduced, constant speed to maintain stability. Traveling down ramps at high speeds will reduce traction and increase stopping distance.
– DO NOT brake hard and avoid sudden stops while traveling on an incline.
– If stopping becomes necessary while on an incline, release the joystick and allow the wheelchair to come to a full stop. Then proceed at a slower speed.

WARNING!
Risk of Death or Serious Injury
Driving in an elevated position while on an incline could cause loss of stability resulting in death or serious injury.
– DO NOT drive in an elevated position while on an incline.

2.1.7 Pinch Points



WARNING!
Risk of Injury
Pinch Point
- Be aware that a pinch point exists between head tube cap Ⓐ and walking beam Ⓑ.
- Be aware that a pinch point exist between walking beam/head tube cap and telescoping tube Ⓒ when the wheelchair is at the lowest seat to floor height.
- Be aware that a pinch point may occur when rotating the center mount front rigging assembly Ⓓ.

2.1.8 Footplates and Front Rigging

WARNING!
Risk of Serious Injury or Damage
Operating the wheelchair with a ground clearance of less than 75 mm (3 inches) between the footplates and the ground/floor may cause serious injury or property damage.
- ALWAYS maintain a minimum of 75 mm (3 inches) between the bottom of the footplates and ground/floor to ensure proper ground clearance while the wheelchair is in motion. If necessary, adjust the footplates height to achieve proper ground clearance. After footplates height adjustment, if the wheelchair dips forward and the footplates touch the ground while in motion, please contact your dealer for an inspection and avoid use of the wheelchair if possible.

2.1.9 Reaching, Leaning and Bending - Forward

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

WARNING!
Risk of Serious Injury or Damage
Improper positioning while leaning or bending could cause the wheelchair to tip forward resulting in serious injury or damage.
- 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.
- 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.

Engage motor locks and turn power off before reaching, leaning or bending only as far as your arm will extend without changing your sitting position. Position the casters so that they are extended away from the drive wheels and engage wheel locks/motor locks/clutches.

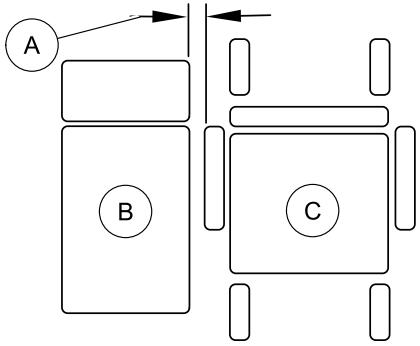
2.1.10 Reaching, Bending - Backward

WARNING!
Risk of Serious Injury or Damage
Leaning backward over the top of the seat back will change your center of gravity and may cause you to tip over resulting in serious injury or damage.
- Proper positioning is essential for your safety. DO NOT lean over the top of the seat back.

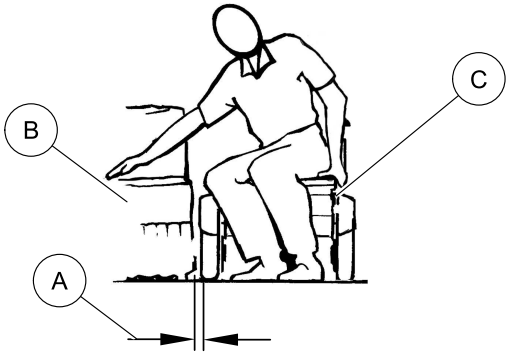
Position wheelchair as close as possible to the desired object. Position the casters so that they are extended away from the drive wheels to create the longest possible wheelbase, engage the motor locks and turn power off. Reach back only as far as your arm will extend without changing your sitting position.

2.1.11 Transferring To and From Other Seats

TOP VIEW



FRONT VIEW



WARNING!
Risk of Serious Injury or Damage
Improper transfer techniques may cause serious injury or damage.

- Before attempting transfers, consult a health care professional to determine proper transfer techniques for the user and type of wheelchair.
- Reduce gap between transfer surface and wheelchair seat to the minimum distance necessary to perform transfer.
- Align casters parallel to the drive wheels to improve stability during transfer.
- ALWAYS turn the wheelchair power off.
- ALWAYS engage both motor locks/clutches and free wheel hubs (if equipped) to prevent the wheels from moving before transferring into or from the wheelchair.

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

1. Position the wheelchair to minimize the gap distance between the transporter seat and the seat to which you are transferring to.
2. Ensure the casters are aligned parallel with the object.
3. Engage motor locks. Refer to Disengaging/Engaging Motor Locks.
4. Shift body weight into seat with transfer

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

2.1.12 Storage

WARNING!
Risk of Serious Injury or Damage
Storing or using the wheelchair near open flame or combustible products can result is serious injury or damage.
– Avoid storing or using the wheelchair near open flame or combustible products.

CAUTION!
Risk of Damage
Operating the wheelchair in rain or dampness may cause the wheelchair to malfunction electrically and mechanically; may cause the wheelchair to prematurely rust or may damage the upholstery.
– DO NOT leave wheelchair in a rain storm of any kind.
– DO NOT use wheelchair in a shower.
– DO NOT leave wheelchair in a damp area for any length of time.
– 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 if the joystick boot is torn or cracked. If the joystick boot becomes torn or cracked, replace IMMEDIATELY.

Leakage current has been tested in accordance to ISO 7176–14:2008.

Invacare has tested its power wheelchairs in accordance with RESNA Section 9 “Rain Test”.

DANGER!

Risk of Death, Serious Injury, or Damage
Even though this power wheelchair has been tested and meets the requirements for ingress of liquids, ALWAYS keep electrical connections away from sources of dampness, this includes direct exposure to water, bodily fluids, and incontinence. Electrical components damaged by corrosion MUST be replaced immediately. Wheelchairs that are used by incontinent users and/or are frequently exposed to water/liquids may require replacement of electrical components more frequently.

2.1.13 Electrical - Grounding Instructions

DANGER!
Risk of Death or Serious Injury
Electric shock can cause death or serious injury
– To avoid electric shock, inspect plug and cord for cuts and/or frayed wires. Replace cut cords or frayed wires immediately.

DANGER!
Risk of Death or Serious Injury
Electric shock can cause death or serious injury
– DO NOT, under any circumstances, cut or remove the round grounding prong (i.e charger AC cable plug or the extension cord plug) 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.

2.1.14 Electrical - Batteries

The warranty and performance specifications contained in this manual are based on the use of deep cycle gel sealed 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.

WARNING!
Risk of Serious Injury or Damage
Dropping the battery can result in serious injury or property damage.
– Batteries can weigh up to 52 lbs (23.6 kg). ALWAYS use a battery lifting strap when lifting the battery. It is the most reliable method of carrying a battery and preventing serious injury.

2.1.15 Electrical - Charging Batteries

DANGER!
Risk of Death or Serious Injury
Use of improper extension cord could cause electric shock or cause a fire resulting in death or serious injury.
– When using an extension cord, use an extension cord having at least 16 AWG (American Wire Gauge) wire and the same or higher electrical rating as the device being connected.

WARNING!

– 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.

2.1.16 Recycling Batteries

Lead acid batteries are almost entirely recyclable. Discarding these batteries in the trash is considered “improper disposal” and is illegal in most states. Old, used batteries are “hazardous material” and MUST be recycled through an approved agency. Contact your dealer or Invacare on proper disposal and recycling of your batteries.

2.1.17 Weight Training

WARNING!
– 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.

2.1.18 Weight Capacity

WARNING!
– Refer to Technical Data section in this manual to determine the weight limit (total combined weight of user and any attachments) of your wheelchair model.

2.1.19 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).

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

Other types of handheld 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.

2.1.20 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 handheld 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.

WARNING!

- DO NOT operate handheld 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;
- Be aware of nearby transmitters, such as radio or TV stations, and try to avoid coming close to them;
- If unintended movement or brake release occurs, turn the powered wheelchair OFF as soon as it is safe;

WARNING!

– 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
– Report all incidents of unintended movement or brake release to the powered wheelchair manufacturer, and note whether there is a source of EMI nearby.

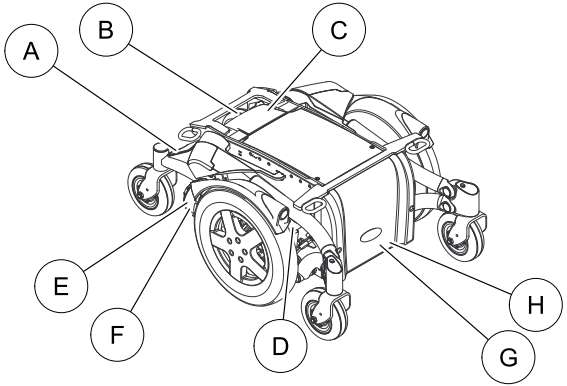
WARNING!

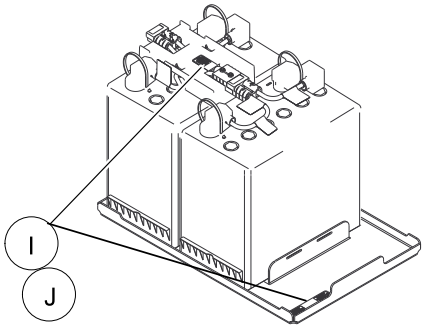
Important Information

– 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);
– This device has been tested to a radiated immunity level of 20 volts per meter.
– The immunity level of the product is unknown.
– Modification of any kind to the electronics of this power wheelchair as manufactured by Invacare may adversely affect the EMI immunity levels.

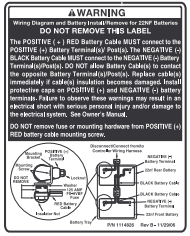
3 Label Locations

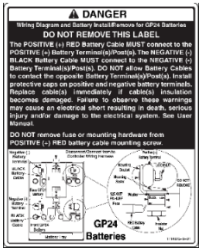
3.1 All Wheelchairs





ITEM	PART NUMBER	DESCRIPTION
A	1183487	Serial Number Label 
B	1167422	Controller Label Label located under the controller 
C	1035900	Transportation Label 
D	See Notes	Weight Capacity Label (Base Only) Label depends on model 

E	1167424	Replacing Motor/Gearbox Label 
F	1104802	Push/Drive Label 
G	1114826 and 1114847	*22NF Battery Wiring Diagram Labels 

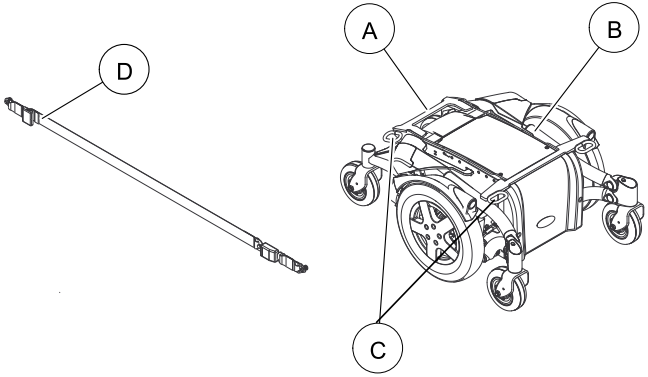
H	1114825 and 1114848	*GP24 Battery Wiring Diagram Labels 
I	1118356	** 22NF Battery Label 
J	1118355	** GP24 Battery Label 

* Labels located under front shroud. Only one set of labels will appear depending on chair model.

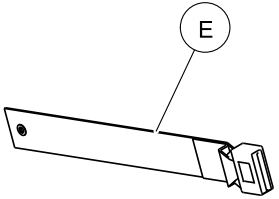
** Only one of the battery labels (22NF or GP24) will appear depending on chair model.

3.2 Wheelchairs with TRRO

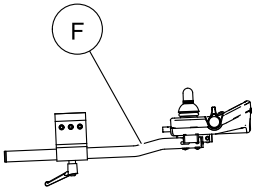
Wheelchairs with TRRO



Wheelchairs without TRRO



Wheelchairs with Running Lights



ITEM	PART NUMBER	DESCRIPTION
A	1082692	Compliance Label 
B	1134848	Adjustment TRRO Label Also on opposite side of wheelchair. 
C	1083199	Tie Down Point Label Also on opposite side of wheelchair. 
D	1134840	Buckle Label 

ITEM	PART NUMBER	DESCRIPTION
E	1134811	Non Compliance Label Auto style seat positioning strap shown. This label is also on the airline style seat positioning strap. 
F	1171793	Running Lights Label 

4 Technical Data

4.1 Specifications

4.1.1 Models

TDX SP	TDXSPBASE, TDXSP, TDXSP-CG, TDXSP-MCG, TDXSP-CG-GT, TDXSP-GT, TDXSP-MCG-GT
TDX SR	TDXSR, TDXSRV, TDXSR-CG, TDXSR-MCG
TDX SR HD	TDXSR-HD, TDXSR-CG-HD, TDXSR-MCG-HD

4.1.2 Overall Dimensions

	SP	SR	SR HD
Base Width (Without Joystick):			
With two 22NF Batteries:	24 in (61 cm)	25.5 in (65 cm)	25.5 in (65 cm)
With two GP 24 Batteries	25.5 in (65 cm)	25.5 in (65 cm)	25.5 in (65 cm)
With three 22NF Batteries	25.5 in (65 cm)	25.5 in (65 cm)	25.5 in (65 cm)
Base Length (Without Front Rigging):	35.25 in (89 cm)		
Overall Height -			
With ASBA Seat:	35.5 into 39.5 in (90 cm to 100 cm)		
With Van Seat:	38 in (96 cm)		
With Van Seat equipped with headrest:	45 in (114 cm)		
With Formula CG Tilt Only:	36.5 in to 40.5 in (93 cm to 103 cm)		
With Elevating ASBA Seat:	35.5 to 41.5 in (35.5 cm to 105 cm)		
Overall Length -			
With Center Mount Front Rigging:	42.9 in (109 cm) @ 0°		
Without Front Rigging:	35.25 in (89 cm)		

All dimensions are ± .50 inches unless otherwise indicated.

4.1.3 Seat

	SP	SR	SR HD
Tilt Angle Adjustment:	Adjustable (0° - 10°)		

4.1.4 Wheels

Caster:	6 in x 2 in (15 cm x 5 cm) in Semi-pneumatic with Precision Sealed Bearings
Drive Wheel/Tires:	TDX SP – 14 in x 3 in (35 cm 8 cm) in Foam Filled or Pneumatic (Standard) TDXS SR and SR HD — 14 x 3 Foam Filled ONLY
Caster Forks:	Two sided fork (Standard), One sided fork (Optional)
Drive Axle:	Non-adjustable

The size of tire is marked on the side wall of each drive tire. The caster tires do not have the tire size marked as the caster tires are not serviceable. If new tire is needed, the entire caster wheel assembly MUST be replaced.

4.1.5 Axle

	SP	SR	SR HD
Drive Axle:	Non-adjustable		

4.1.6 Battery

	Battery Type	
	GP24	22NF
Number of Batteries Needed	2	2
Manufacturer	MK batteries	MK batteries
Model	p/n M24SLDG batteries only	p/n M22NFSLDG batteries only
Voltage	12	12
Capacity (Amp-hours) for 5 hour rating	63	43.2

Only sealed non-spillable batteries that meet DOT CFR 173.159 (d), IATA Packing Instructions 806, and IATA Provision A67 shall be installed in this wheelchair.

4.1.7 Footrests

	SP	SR	SR HD
Footrest:	Telescoping Front Rigging Supports, 2 in and 4 in. long Pivot Slide Tube		

4.1.8 Weight

	SP	SR	SR HD
Weight (Base Only)	-	-	-
Without 22NF Batteries:	123 lbs (56 Kg)	N/A	N/A
With two 22NF Batteries:	221 lbs (100 Kg)	N/A	N/A
Without GP24 Batteries:	158 lbs (72 Kg)	252 lbs (114 Kg)	252 lbs (114 Kg)
With (2) GP24 Batteries:	260 lbs (118 Kg)	350 lbs (159 Kg)	350 lbs (159 Kg)
With Transport Ready Option:	Add 10 lbs (4.5 Kg)	Add 10 lbs (4.5 Kg)	Add 10 lbs (4.5 Kg)

4.1.9 Weight Capacity Warnings

WARNING!
Risk of Death or Serious Injury
Exceeding the weight capacity of the wheelchair/seating system could cause instability resulting in death or serious injury.
– DO NOT exceed the weight capacity.

WARNING!
Risk of Serious Injury or Death
Failure to observe this warning can result in serious injury or death.
Loss of traction on ramps and inclines can occur for a variety of reasons including; water, ramp material, surface conditions, steepness or grade etc. Lighter weight users may be at an increased risk for loss of traction.
– As such, when using on ramps or inclines always reduce speed and proceed with caution.

4.1.10 Weight Capacity Values

	TDX SP	
	4 POLE	HD 4 POLE
With ASBA Seat:	Up to 300 lbs (136 Kg)	Up to 400 lbs (181 Kg)
With ASBA Jr. Seat:	Up to 165 lbs (75 Kg)	N/A
With Van Seat:	Up to 300 lbs (136 Kg)	Up to 400 lbs (181 Kg)
With Formula CG Seating:	Up to 300 lbs (136 Kg)	Up to 400 lbs (181 Kg)
With Elevating ASBA Seat:	Up to 300 lbs (136 Kg)	N/A

	TDX SR	TDX SR HD
	Gearless Brushless	
With ASBA Seat:	Up to 300 lbs (136 Kg)	Up to 400 lbs (181 Kg)
With ASBA Jr. Seat:	N/A	N/A
With Van Seat:	Up to 300 lbs (136 Kg)	Up to 400 lbs (181 Kg)
With Formula CG Seating:	Up to 300 lbs (136 Kg)	Up to 400 lbs (181 Kg)
With Elevating ASBA Seat:	Up to 300 lbs (136 Kg)	N/A

5 Wheelchair Operation

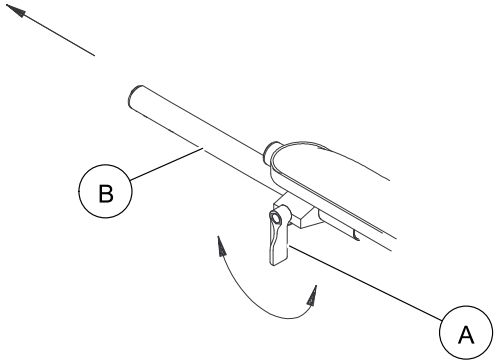
5.1 Preparing the Joystick for Use

WARNING!
Risk of Serious Injury or Damage
Attaching hardware that is loosely secured could cause loss of stability resulting in serious injury or damage.
– After ANY adjustments, repair or service and before use, make sure that all attaching hardware is tightened securely.

WARNING!
– Set-up of the driver control is to be performed only by a qualified technician. The final adjustments of the driver control may affect other activities of the wheelchair. Damage to the equipment could occur under these circumstances.

WARNING!
Risk of Death, Serious Injury, or Damage
Improperly connected joystick could cause loss of power resulting in death, serious injury, or damage.
– Ensure the joystick is securely connected to controller.

DANGER!
Risk of Death, Serious Injury, or Damage
Malfunctioning joystick could cause unintended/erratic movement resulting in death, serious injury, or damage.
– If unintended/erratic movement occurs, stop using the wheelchair immediately and contact a qualified technician.

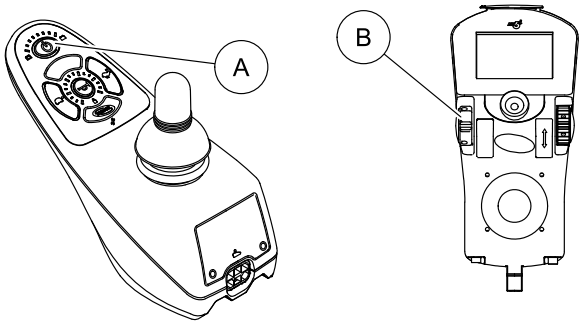


The joystick is factory installed on the right side of the wheelchair. To reposition the joystick onto the left side of the wheelchair, refer to Repositioning the Joystick.

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.

5.2 Turning the Power On/Off

SPJ+ Joysticks **CMPJ+ Joysticks**



1. To turn the power On, perform one of the following steps:

Joystick	Action
CMPJ+	Move the On/Off switch Ⓑ Forward to the On position.
SPJ+	Press the On/Off button Ⓐ.

2. Turning the power Off can be achieved by performing one of the following steps:

Joystick	Action
CMPJ+	Move the On/Off switch Ⓑ Back to the Off position.
SPJ+	Press the On/Off button Ⓐ.

5.3 Using the Joystick to Drive the Wheelchair

The joystick is located on 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.

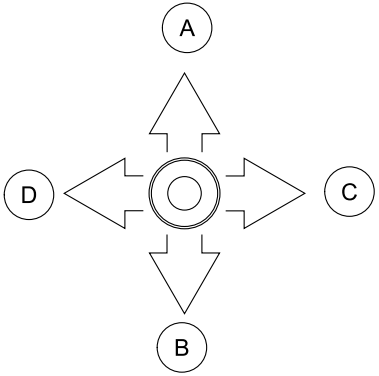
The joystick has proportional drive control, meaning that the further it is pushed from the upright (neutral) position, the faster the wheelchair moves. The maximum speed, however, is limited by the setting of the speed-control knob.

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:

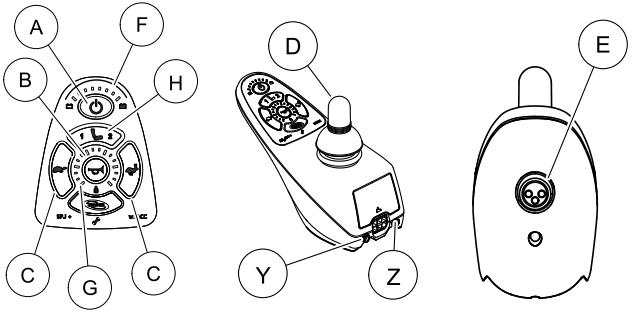
1. Adjust speed control knob to the appropriate setting.
2. Turn the power On. Refer to Turning the Power On/Off.
3. Maneuver the joystick in the following manner:



MOVEMENT	ACTION
FORWARD Ⓐ	Push joystick forward, towards the front of the wheelchair.
REVERSE Ⓑ	Pull joystick back, towards the rear of the wheelchair.
Turn RIGHT Ⓒ	Move joystick toward the right side of the wheelchair.
Turn LEFT Ⓓ	Move joystick toward the left side of the wheelchair.
STOP	Release the joystick and the wheelchair will slow to a stop.

ⓘ For specific information about the joystick installed on the wheelchair, refer to SPJ+, MK6i SPJ+ w/PSS and MK6i SPJ+ w/ACC Joystick Switches and Indicators or CMPJ+ Joystick Switches and Indicators.

5.4 SPJ+™ , MK6i™ SPJ+ w/PSS and MK6i SPJ+ w/ACC Joystick Switches and Indicators



ⓘ Ⓨ Additional input for powered seating switch.

Ⓩ Active (if programmed)

5.4.1 On/Off Button

The On/Off button Ⓐ is located at the front of the joystick housing. It is used to turn the wheelchair On and Off.

5.4.2 Speedometer

The speedometer Ⓑ is used to show the maximum speed. The right-most LED indicates current maximum speed setting. The

bottom left GREEN LED Ⓖ flashes to indicate that the joystick is in speed limit mode. Speed limit mode limits the drive speed to a pre-programmed value, typically when the seat has been elevated and the wheelchair is required to drive at 20% speed.

5.4.3 Speed Control Buttons

The speed control buttons Ⓒ [tortoise button (🐢) and hare button (🐇)] are used to set and adjust the maximum speed.

1. To adjust the speed, perform one of the following:
   - Adjust Speed in 20% Increments (5 Speed Mode) -

     Press the tortoise button (🐢) or hare button (🐇) to decrease/increase the speed in 20% increments. The larger bars in the speedometer will light.
   - Adjust Speed in Smaller Increments (VSP Mode) - Perform the following steps:

     a. Press and hold both the tortoise button (🐢) and hare button (🐇) until the joystick beeps.

     b. Perform one of the following:

        – Press the tortoise button (🐢) or hare button (🐇) to decrease/increase the speed in 20% increments. The larger bars in the speedometer will light.

        – Press and hold the tortoise button (🐢) or hare button (🐇) to decrease/increase the speed in smaller increments. The smaller bars in the speedometer will light.

5.4.4 Joystick

The joystick Ⓓ has proportional drive control, meaning that the further the joystick is pushed from the upright (neutral) position, the faster the wheelchair or seat moves. Your top speed, however, is limited by the programmed settings.

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

5.4.5 Charger/Programming Input

The charger/programming input Ⓔ is located at the front of the joystick housing. This provides easy access for charging the wheelchair batteries. This port also serves as the Remote Programmer Communication connection. Driving is prevented while the system is charging.

5.4.6 Information Gauge Display

The information gauge display Ⓕ is located on the front of the joystick housing and provides the following information to the user on the status of the wheelchair:

1. Power is On.
2. True state-of-battery-charge, including notification of when the battery requires charging:
   - Green LEDs are lit, indicating well charged batteries.
   - Amber LEDs are lit, indicating batteries are moderately charged. Recharge batteries before taking a long trip.
   - Red LEDs are lit, indicating batteries are running out of charge. Recharge batteries as soon as possible.

ⓘ The Information Gauge display also serves as a system diagnostic device when a fault is detected by the control module. A specific number of flashes of the LEDs indicate the type of fault detected.

Refer to Information Gauge Display Diagnostics for the diagnostic indications of the wheelchair status.

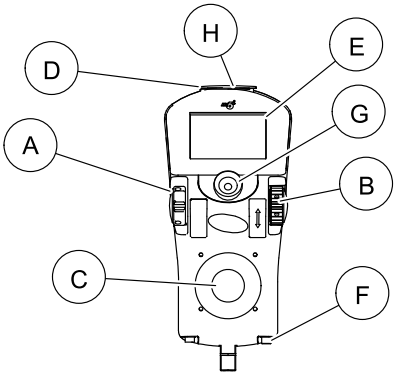
5.4.7 Service Indicator

The AMBER service indicator (🔧) will light when an error or fault occurs.

5.4.8 Mode Button

The mode button Ⓗ is only present on SPJ+ w/ACC joystick

5.5 CMPJ+ Joystick, Switches and Indicators



5.5.1 On/Off - Drive Select Toggle Switch (CMPJ+ Joystick)

The drive select toggle switch Ⓐ is located on the left side, below the LCD. The drive select position is momentary, meaning that it will return to the neutral position after a selection is made.

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

5.5.2 Speed Control

The speed control knob Ⓑ is located on the side of the joystick housing.

1. Rotate the knob clockwise (forward) to increase the speed of the wheelchair to the programmed max speed.
2. Rotate the knob counterclockwise (backward) to decrease the speed of the wheelchair to the programmed max speed.

5.5.3 Joystick

The joystick Ⓒ has proportional drive control, meaning that the further the joystick is pushed from the upright (neutral) position, the faster the wheelchair or seat moves. Your top speed, however, is limited by the programmed settings.

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

5.5.4 Charger/Programming Input

The charger/programming input Ⓓ is located at the front of the joystick housing. This provides easy access for charging

the wheelchair batteries. This port also serves as the Remote Programmer Communication connection. Driving is prevented while the system is charging.

5.5.5 LCD Display Screens

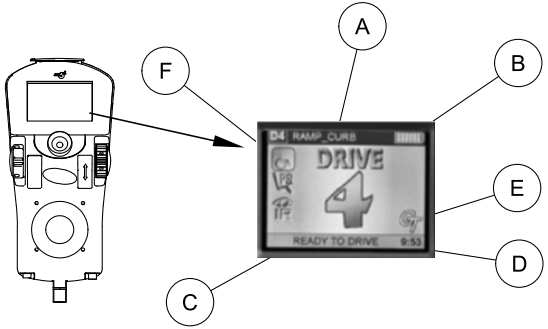
The LCD Display Ⓔ is located in front of the joystick and provides information on the status of the wheelchair through a backlit display. The LCD display is readable in both bright sunlight and complete darkness.

Splash Screen

This screen is displayed at startup of the joystick for about 2 seconds. This screen displays the software version and date information.

After this screen, the joystick displays the Main Screen.

Main Screen



The callouts in this illustration correspond to the LCD Display chart only.

During normal operation, the active drive is displayed in the upper half of the LCD display. Battery charge level is shown in the Battery Gauge Display (BGD) located on the right side of the LCD display. At full charge, solid blocks fill in all ten segments between E (Empty) and F (Full). As the battery becomes discharged, the top most segments will progressively disappear until no segments appear between E and F. At this level, the user should charge the batteries as soon as possible.

The lower half of the LCD display is the Information Center. The Information Center displays current data on the wheelchair.

LCD DISPLAY	
ITEM	**DESCRIPTION**
DRIVE NAME — A	This field shows the currently selected Drive's Name. Available choices are as follows:

Color MPJ+

				
Drive 1*	Drive 2*	Drive 3*	Drive 4*	** No Drive**

*Drive names can be customized. Actual drive names may display differently.

** No Drive selected via the programmer

Battery Level Indicator — B	This symbol shows the Battery Level and will change depending on the available battery power. This indicator is shown on every screen.
Status Message — C	This area displays status or instructions.

Clock — D	Displays current time.
Status Indicator — E	The status indicator will show a "Warning" (exclamation point inside a triangle) indicator when the chair has a condition that requires attention. The status indicator will show a "STOP" sign when a serious condition exists. The chair will not be allowed to operate. The status indicator shows an Attendant Icon if the attendant's override switch is active.

Modes — F	The dotted-box shows the area that contains the available "modes" in the currently selected drive. The modes are programmed for each drive and are based upon the configuration of the chair. These modes are highlighted when the Mode is active. The operator changes modes by pressing the Mode Select Switch. The available modes are as follows:

				
Digital 3 Speed 1 - 3	RIM Mode	No Driving	Automatic Positioning	Powered Seating

4-Switch Level 1(L1, L1 Latched)	4-Switch Level 2(L2, L2 Latched)		ECU Output Activated	
ASM 2	Infrared	Mouse	Mouse B	

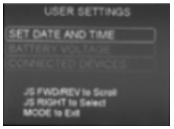
Driving Screen

This screen is shown when the operator issues a drive command and the Drive Icon on the main screen was highlighted.

The Drive's name, warning/info message, status icon and battery indicator are displayed on this screen.

5.5.6 User Settings

Depress the mode button of the CMPJ+ joystick for 10 seconds and the User Settings screen will appear with three choices shown. Move the joystick forward or reverse to scroll through the list. Move the joystick to the right to select a user setting.

User Settings	
	
Set Date and Time	**Battery Voltage**
	
Fault Codes	**Connected Devices**
	

User Settings	
Set Date and Time	SET DATE AND TIME - Sets the clock on the CMPJ+ joystick. Adds date and time stamp to error codes. • Move the joystick Up or Down to change the highlighted value (hour, minute, AM/PM, month, day, year) • Move the joystick Right or Left to select a value or the Set icon. • Highlight the Set icon and move the joystick forward to enter new date and time.
Battery Voltage	BATTERY VOLTAGE - Displays current battery voltage. This is a diagnostic test a user can perform prior to a service call.
Fault Code	FAULT CODES - Displays time and date stamped fault codes. This information can be helpful to a provider prior to making a service call.
Connected Devices	CONNECTED DEVICES - Displays device connections.

Connected Devices Screen

This screen is displayed if the Mode Select switch is held active for about 10 seconds. This screen shows an icon that represents any additional devices that are connected to the chair

ICON	DESCRIPTION	ICON	DESCRIPTION
	Intelligent Tilt Actuator		RIM Control
	Intelligent Recline Actuator		ECU 1/2 and ECU 3/4
	Intelligent Center Leg Actuator		Proportional Attendant Control
	Elevate Actuator		Compact Joystick
	Generic Tilt Actuator		Sip and Puff Control
	Generic Recline Actuator		Digital Attendant Control
	Generic Leg Actuator		Micro Extremity Control
	Generic Right Leg Actuator		Peachtree Control
	Generic Left Leg Actuator		ASL Digital Control

	Intelligent CG Tilt		Generic Analog Control
	Shark Power Module (SPM) Actuator		This is displayed if the controller supports G-Trac
	SANODE or Single Actuator Control Interface		Mouse Only
	4–way Switch Box		IR/Mouse
	Multiple Actuator Control Box		

5.5.7 CMPJ+ Joystick - Programmable Mono Ports 1 and 2 with External Mode Switch

The programmable mono port with external mode switch input is located at the rear of the joystick on the left side. The programmable mono port input offers the choice of three options:

- Remote drive select
- Remote stop/mode (reset) input
- Single actuator input

The single switch functions operate through mono port 1. An optional y-cable allows a second programmable function through mono port 2.

Remote Stop Switch

he remote reset switch may be used to stop the wheelchair if the wheelchair is in motion.

The remote reset switch also functions in the same way as the joystick mode switch when the wheelchair is not in motion. Refer to Mode Switch (CMPJ+ Joystick).

5.5.8 Remote On/Off Switch

The remote On/Off switch input is located at the rear of the joystick on the right side and allows the power switch to be operated by an ability switch (normally open momentary switch with mono plug). To use the remote On/Off feature, the Drive Select/On/Off switch must be in the On position. Each activation of the ability switch will alternately turn the joystick On or Off.

5.5.9 Mode Switch (CMPJ+ Joystick)

The mode switch [CMPJ+ Joystick ⓖ] is used to select the operating mode for the wheelchair. The mode switch is located on the joystick. A mode switch is needed whenever any of the following operating modes are programmed:

*In these modes, Standby Select allows the reset switch to be bypassed for users unable to activate the switch.

- Environmental Controls (ECU 1, ECU 2, ECU 3, ECU 4)*
- 3 Speed Mode in Digital 3 Speed (Slow, Medium, Full)
- Sleep Mode
- RIM Mode*
- Remote Drive Selection Mode*
- Tilt/Recline Mode*
- Information Center Display Selection (does not require Reset activation at power up)

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.

5.5.10 Memory Card Slot

The memory card slot is used with the basic or professional memory card for saving or reading wheelchair parameters.

5.6 When to Charge Batteries

Keep Batteries charged. When possible, DO NOT allow battery charge to empty.

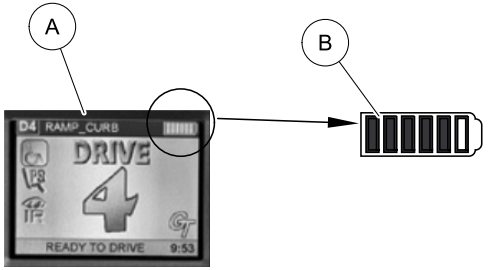
If battery charge becomes so low that no battery indicators are lit, allow the batteries to charge overnight.

5.6.1 SPJ+, SPJ+ w/PSS and SPJ+ w/ACC Joysticks

The Information Gauge Display located on the front of the joystick housing, it provides the state-of-battery charge, including notification of when the battery requires charging. It also provides the following information to the user on the status of the wheelchair:

- Green LEDs are lit, indicating well charged batteries.
- Amber LEDs are lit, indicating batteries are moderately charged. Recharge batteries before taking a long trip.
- Red LEDs are lit, indicating batteries are running out of charge. Recharge batteries as soon as possible.

5.6.2 CMPJ+ Joystick



The far right side of the display screen Ⓐ is the Battery Gauge Display Ⓑ. It provides information on the remaining charge in the batteries.

At full charge, solid blocks fill in battery gauge. As the battery becomes discharged, the segments will progressively disappear starting on the right and moving towards the left a bar at a time until no segments appear. At this level the user should charge the batteries as soon as possible.

5.7 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 front of the joystick.
- DO NOT sit in the wheelchair while charging the batteries.
- DO NOT attempt to recharge the batteries and operate the power wheelchair at the same time.
- During use and charging, unsealed batteries will vent hydrogen gas which is explosive in the right concentration with air.

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

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 5 to 9 hours of typical operation. Extensive use on inclines may substantially reduce per charge mileage.

5.7.1 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 shut-off when full charge is obtained or enter a trickle charge mode to maintain the batteries depending on charger model.

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

Once the charger has been connected to the wheelchair and wall outlet and, if necessary, the charger has been turned on, the battery charger indicator lights will flash and light to show the battery charger status and condition of batteries to be charged. Refer to owner's manual shipped with battery charger.

WARNING!
- NEVER leave the charger unattended when the breaker has tripped. A fault condition exists. Unplug and discontinue using immediately. Contact an Invacare dealer.

If performing the charging procedures, READ and CAREFULLY follow the individual instructions for each charger (supplied or purchased).

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

Required Items

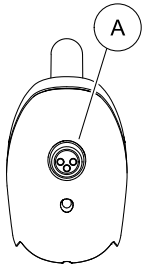
TOOL	QTY	COMMENTSs
Battery Charger	1	Supplied

1. Attach the battery charger connector to the charger port on 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.

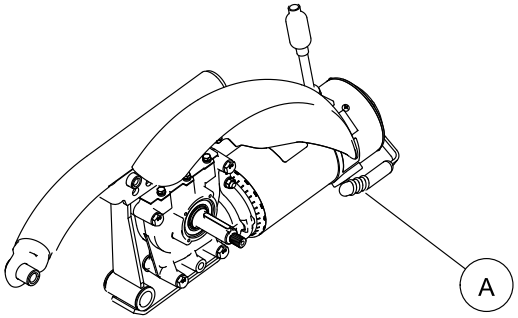
Allow eight hours for normal charging. Larger batteries (greater than 55 ampere-hours) or severely discharged batteries may require up to sixteen hours to be properly charged and equalized.

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.

If the batteries need to be charged more often or take longer to charge than normal, they may need to be replaced. Contact an Invacare dealer for service.

SPJ+, SPJ+ w/PSS and SPJ+ w/ACC Joysticks	**CMPJ+ Joystick**	**Display**
A — Charger Programming Port		
Located on Back of Joystick	Located on Front of Joystick	Located on Back of Display
		

5.8 Disengaging/Engaging the Motor Lock Levers



WARNING!
– DO NOT engage or disengage motor locks until the power is in the OFF position.

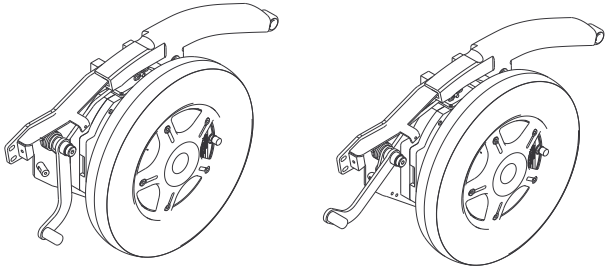
Motor lock Ⓐ disengagement/engagement allows free-wheeling or joystick controlled operation. Free-wheeling allows an assistant to maneuver the wheelchair without power.

Motor lock levers are located between the rear caster assembly and drive wheel on both sides of the wheelchair.

1. Perform one of the following as if viewing the motors from behind the wheelchair (Detail "A"):
   - Disengage (PUSH) - Move the motor lock levers UP to disengage the motors and push the wheelchair.
   - Engage (DRIVE) - Move the motor lock levers DOWN to engage the motors and drive the wheelchair.

5.9 Disengaging/Engaging the Motor Lock Levers - TDX SR

Engaged Position | Disengaged Position



WARNING!
– DO NOT engage or disengage motor locks until the power is in the OFF position.

Motor lock disengagement/engagement allows free-wheeling or joystick controlled operation. Free-wheeling allows an assistant to maneuver the wheelchair without power.

Motor lock levers are located between the rear caster assembly and drive wheel on both sides of the wheelchair.

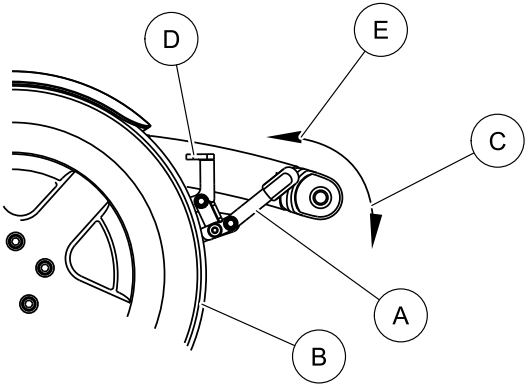
1. Perform one of the following:

- Disengage (PUSH) - Pull motor lock levers up.
- Engage (DRIVE) - Push motor lock levers down.

5.10 Disengaging/Engaging the Wheel locks

WARNING!
– DO NOT use the wheel locks when the wheelchair power is on and the clutches are engaged - otherwise damage to the wheelchair may result.

Use the wheel locks whenever the clutches are disengaged and the wheelchair is being pushed.



5.10.1 Engaging

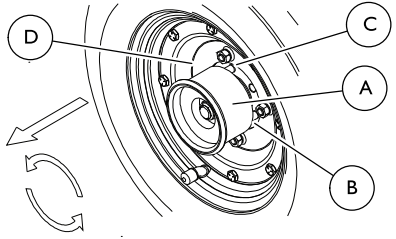
1. Push handle forward away from tire to engage wheel lock.
2. Repeat STEP 1 for opposite wheel.

5.10.2 Disengaging

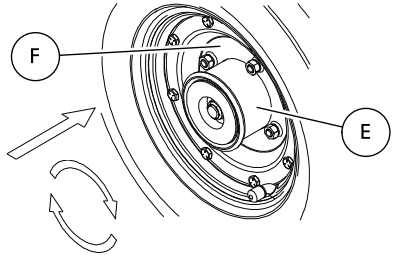
1. Pull handle back toward tire to disengage wheel lock.
2. Repeat STEP 1 for opposite wheel.

5.11 Disengaging/Engaging the Wheel Hubs

Disengaged



Engaged



Disengaging (Free Wheel)

If the pins on the engagement knob are not in the free wheel detents, the engagement knobs can engage the motors unexpectedly while the wheelchair is being pushed.

1. Pull out on engagement knob Ⓐ and rotate approximately 1/6 turn until the pins Ⓑ of the engagement knob fall into the free wheel detents Ⓒ of the wheel hub Ⓓ.
2. Repeat STEP 1 for opposite wheel.

Engaging

1. Pull engagement knob out Ⓔ and rotate approximately 1/6 turn until the engagement knob pins sink into the holes in the wheel hub Ⓕ.
2. Repeat STEP 1 for opposite wheel.
3. Gently rock the wheelchair until the engagement knob snaps into place and fully engage the wheel hub.

6 Transport Ready Option(TRRO)

6.1 About Transport Ready Packages

WARNING!
- This section applies only to wheelchairs equipped with TRRO (Transport Ready Option).
- Contact Invacare Corporation (800-333-6900) with any questions about using this wheelchair for seating in a motor vehicle.
- When feasible, wheelchair occupants should transfer into the vehicle seat and use the OEM (Original Equipment Manufacturer) vehicle-installed restraint system.
- This wheelchair has been dynamically tested in a forward-facing mode with the specified crash test dummy restrained by BOTH pelvic and upper-torso belt(s) (shoulder belts), and that BOTH pelvic and upper torso belt(s) should be used to reduce the possibility of head and chest impacts with vehicle components.
- Use ONLY Wheelchair Tie-down and Occupant Restraint Systems (WTORS) which meet the requirements of the SAE (Society of Automotive Engineers) J2249 Recommended Practice during travel in a motor vehicle.
- This wheelchair has been tested for seating in a motor vehicle with the factory installed seating system only.
- This wheelchair MUST be in a forward facing position during travel in a motor vehicle.
- This wheelchair is equipped, and has been dynamically tested to rely on WHEELCHAIR-ANCHORED pelvic belts. If desired, vehicle-anchored pelvic belts may be used.

WARNING!
- IT IS STRONGLY RECOMMENDED THAT BOTH PELVIC AND UPPER-TORSO BELT(S) BE USED TO REDUCE THE RISK OF INJURY.
- To reduce the potential of injury to vehicle occupants, wheelchair-mounted accessories, including but not limited to IV poles, trays, respiratory equipment, backpacks, and other personal items should be removed and secured separately.
- Postural supports, positioning devices, and/or strap(s) should not be relied on for occupant restraint. These items may be used in addition to the wheelchair-anchored or vehicle-anchored belts.
- Seat angle is factory set at time of shipment. Adjustments to the wheelchair may void ANSI/RESNA WC/Vol. 1– Section 19 compliance. To maintain compliance, refer to wheelchair service manual before making any adjustments.
- DO NOT alter or substitute wheelchair frame parts, components, or seating systems.
- A sudden stop and/or collision may structurally damage your wheelchair. Wheelchairs involved in such incidents should be replaced.
- Spill proof batteries, such as “gel sealed”, should be installed on wheelchairs to be used during travel in a motor vehicle.
- Transport ready packages are not retrofittable to existing models and are not field serviceable.

ANSI = American National Standards Institute, RESNA= Rehabilitation Engineering and Assistive Technology Society of North America.

TRRO includes four factory-installed transport brackets and a wheelchair anchored pelvic belt. TRRO has been crash-tested in accordance with ANSI/RESNA WC Vol 1 Section 19 Frontal Impact Test requirements for wheelchairs with a 130 lb (59 kg) crash test dummy, which corresponds to a person with a weight of 125 lb (57 kg) to 165 lb (75 kg) for Junior seat sizes or a 168 lb (76 kg) crash dummy, which corresponds to a person with a weight of 165 lb (75 kg) to 300 lbs (136 kg) for Adult seat sizes.

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 system.

6.2 Compliance Information

This wheelchair conforms with the requirements of the ANSI/RESNA WC/Vol. 1 - Section 19 (Frontal Impact Test)

ANSI = American National Standards Institute, RESNA= Rehabilitation Engineering and Assistive Technology Society of North America.

This wheelchair has been dynamically tested in a forward-facing mode with the specified crash test dummy, which corresponds to a person with a weight of 114 lbs (52 kg) - 209 lbs (95 kg), restrained by Both pelvic and shoulder belts in accordance with ANSI/RESNA WC/Vol 1 – Section 19. Both pelvic and upper torso belts should be used to reduce the possibility of head and chest impacts with vehicle components.

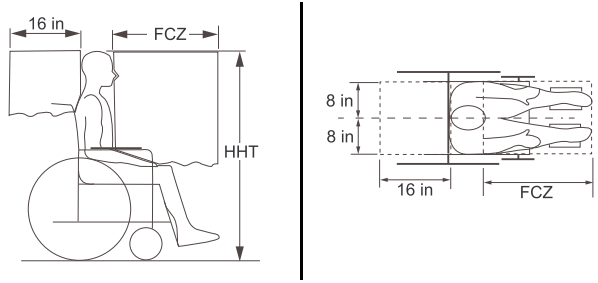
6.3 Specifications

MODEL	MOTOR	WEIGHT LIMIT	
		Adult	Junior
TDX SP HD	4 Pole HD	Up to 400 lbs (181 kg)	N/A
TDX SP		Up to 300 lbs (136 kg)	Up to 150 lbs (68 kg)
TDX SR		Up to 300 lbs (136 kg)	Up to 150 lbs (68 kg)
TDX SR HD		Up to 400 lbs (181 kg)	N/A

6.4 Positioning the Wheelchair in the Vehicle

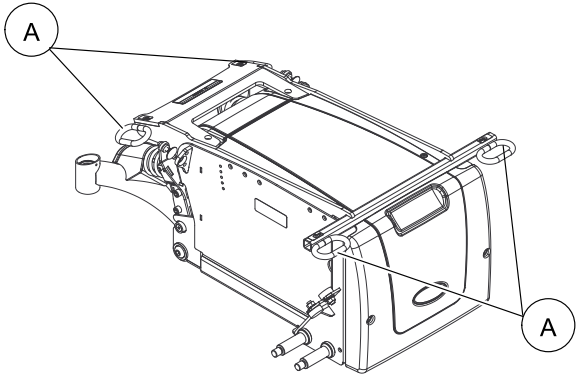
WARNING!

- This wheelchair MUST be in a forward facing position during travel in a motor vehicle.
- The recommended clear zones for wheelchair seated occupants restrained by both pelvic and upper torso belt(s) and only by a pelvic belt are shown in the diagrams and described below.
- Frontal Clear Zones (FCZ) need to be LARGER when upper torso belt(s) are NOT used.
- The rear clear zone of 16 inches (41 cm) is measured from the rearmost point on an occupant's head.
- The frontal clear zone is measured from the frontmost point on an occupant's head and is 26 inches (66 cm) with pelvic and upper-torso belt(s) and 37 inches (94 cm) with ONLY a pelvic belt.
- The frontal clear zone may not be achievable for wheelchair-seated drivers.
- The estimated seated height (HHT) from the ground or floor to the top of the wheelchair-seated occupant's head ranges from approximately 47 inches (119 cm) for a small adult female to about 61 inches (155 cm) for a tall adult male



6.5 Securement Points

ITEM	DESCRIPTION
A	TIE DOWN BRACKETS



6.6 Securing the Wheelchair

This wheelchair is to be used only with Wheelchair Tie-down and Occupant Restraint Systems (WTORS) that have been installed in accordance with the manufacturer's instructions and SAE J2249.

A copy of SAE J2249 Wheelchair Tie-down and Occupant Restraint Systems (WTORS) for use in Motor Vehicles can be obtained from: SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, (877) 606-7232 or (724) 776-4970.

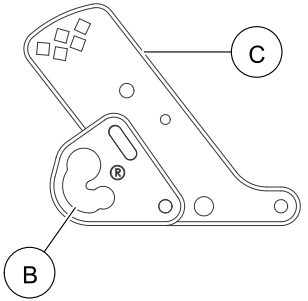
Attach WTORS to the tie-down brackets in accordance with the manufacturer's instructions and SAE J2249.

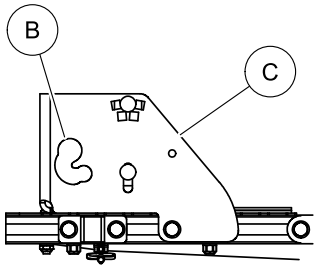
6.7 Securing the Occupant

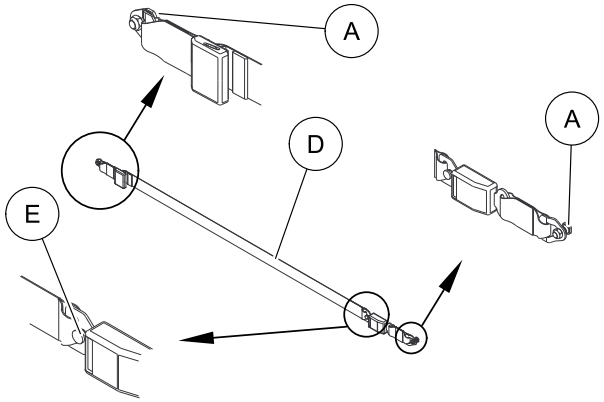
6.7.1 Wheelchair-Anchored Belts

WARNING!
– The pelvic belt that is provided by Invacare has been tested for use in a motor vehicle on this wheelchair only. Do not replace the pelvic belt with a different style pelvic belt.

SP JUNIOR SEATS ONLY







The wheelchair has been provided with a pelvic belt which meets the requirements of ANSI/RESNA WC/19.

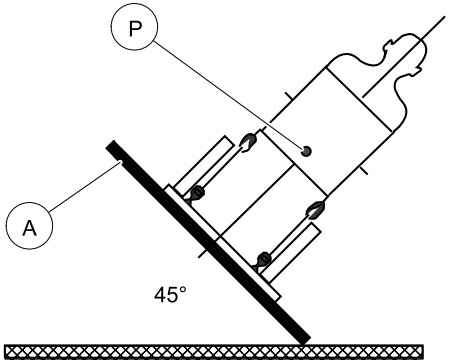
The pelvic belt provided by Invacare has been designed to accommodate use on either side of the vehicle. If necessary, follow the instructions below to reverse the orientation of the pelvic belt to accommodate the vehicle-anchored upper torso belt.

1. Install the pelvic belt pin Ⓐ into slotⒷ in the pelvic belt bracket Ⓒ. Pull upwards until it snaps into place.

   Both ends of the pelvic belt Ⓓ have a pin which is used to secure the vehicle-anchored upper torso belt.

2. Repeat step 1 for the opposite pelvic belt bracket.
3. Install the vehicle-anchored upper torso belt onto the pin Ⓔlocated at either end of the pelvic belt.

6.7.2 Vehicle-Anchored Belts



Rear view of wheelchair and human surrogate secured on test platform Ⓐ and tilted to 45°.

With regard to accommodating the use and fit of vehicle-anchored belts, this wheelchair has an overall rating of:

- TDX SP/TDX SR Adult/TDX SR Junior - “A”
- TDX SP Junior - “B”

This rating is scored as follows:

RATING	DESCRIPTION
A	Excellent
B	Good

RATING	DESCRIPTION
C	Fair
D	Poor

The test for Lateral Stability Displacement for Point Ⓟ is shown in:

- TDX SP with Two 22NF Batteries -
  - TDX SP Adult - 0.53 in (13.4 mm)
  - TDX SP Junior - 0.57 in (14.4 mm)
- TDX SP/SR with Two GP24 Batteries -
  - TDX SP/SR Adult - 0.54 in (13.7 mm)
  - TDX SP Junior - 0.51 in (12.95 mm)
  - TDXR Junior - 0.29 in (7.46 mm)

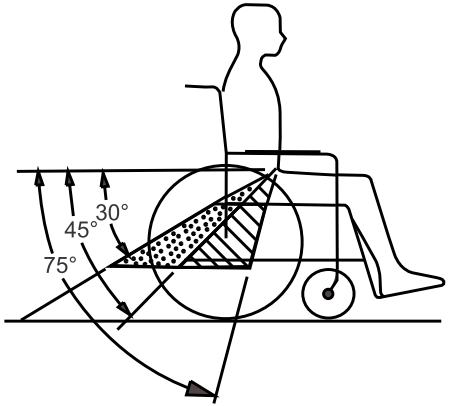
6.7.3 Seating System

WARNING!
- This wheelchair has been tested for seating in a motor vehicle with the factory installed seating system only.
- When feasible, wheelchair occupants should transfer into the vehicle seat and use the OEM (Original Equipment Manufacturer) vehicle-installed restraint system

Ensure that the factory installed seating system is secured to the wheelchair frame before operation. Refer to the seating system user manual.

6.7.4 Positioning Belts

	Preferred Zone
	Optional Zone



WARNING!

– The angle of the pelvic belt should be within the preferred zone of 45 to 75 degrees to the horizontal OR within the optional zone of 30 to 45 degrees to the horizontal.
– Steeper side-view pelvic belt angles are especially important if the pelvic belt is intended to be used for postural support in addition to occupant restraint in a frontal crash. Steeper angles will reduce the tendency for a vertical gap to develop between the user and the belt due to compliance of seat cushions and belt movement, thereby reducing the tendency for the user to slip under the belt and for the belt to ride up on the soft abdomen during normal use
– Steeper belt angles also reduce the tendency for upper-torso belts to pull the pelvic belt onto the abdomen during frontal impact loading.

DO position belts INSIDE of armrests, wheels, etc.	DO NOT position belts OUTSIDE of armrest, wheels, etc.
	

1. The pelvic belt should be worn low across the front of the pelvis.
2. Position the upper torso belt(s) over the shoulders.
3. The belt(s) should not be held away from the body by wheelchair components or parts, including but not limited to wheelchair armrests or wheels.
4. Ensure the belt(s) are not be twisted.
5. Adjust belts as firmly as possible, being mindful of user comfort.

7 Setup and Maintenance

7.1 Setup/Delivery Inspection

Setup/delivery inspection should be performed by dealer at time of delivery/set up.

Initial adjustments should be made to suit your personal body structure needs and preference. Thereafter weekly, monthly and periodic inspections should be performed by user/attendant between the six month service inspections.

Every six months, and as necessary, take your wheelchair to a qualified technician for a thorough inspection and servicing.

- ❑ Check all parts for shipping damage. In case of damage, DO NOT use.
- ❑ Ensure wheelchair rolls straight (no excessive drag or pull to one side).
- ❑ Ensure clothing guards are secure.
- ❑ Ensure arms are secure but easy to release and adjustment levers engage properly.
- ❑ Ensure adjustable height arms operate and lock securely.
- ❑ Ensure axle nut or bolt and wheel mounting nuts are secure on drive wheels.
- ❑ Ensure caster/anti-tipper wheels are free of debris, and all mounting hardware is secure and not damaged/missing.
- ❑ Check that cables are routed and secured properly to ensure that cables do NOT become entangled and damaged during normal operation of seating system.
- ❑ Ensure proper operation of powered functions (Example: drive, seating and legrests).

7.2 User/Attendant Inspection Checklists

Every six months, and as necessary, take your wheelchair to a qualified technician for a thorough inspection and servicing.

Weekly, monthly, and periodic inspections should be performed by user/attendant between the six month service inspections.

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.

CAUTION!

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

7.2.1 Inspect/Adjust Weekly

- ❑ Ensure that the casters are free of debris.
- ❑ Inspect tires for flat spots and wear.
- ❑ Inspect all fasteners.
- ❑ Inspect TRBKTS fasteners and hardware.
- ❑ Ensure proper operation of powered functions (Example: drive, seating and legrests).

7.2.2 Inspect/Adjust Monthly

- ❑ Clean upholstery and armrests.
- ❑ Clean dirt and lint from axles.
- ❑ Clean dirt and lint from bearings.
- ❑ Ensure that the casters are free of debris.

- ❑ 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.

7.2.3 Inspect/Adjust Periodically

- Ensure wheelchair rolls straight (no excessive drag or pull to one side).
- Inspect all operator (user/attendant) adjustable fasteners including the back pan, back cane and angle adjustment fasteners, and the arm support, flip back and height adjustment fasteners. Ensure fasteners are securely tightened.
- Inspect TRBKTS fasteners and hardware.
- Ensure clothing guards are secure.
- Ensure arms are secure but easy to release and adjustment levers engage properly.
- Ensure adjustable height arms operate and lock securely.
- Ensure upholstery does not have any rips or tears.
- Armrest pad sits flush against arm tube.
- Ensure that the casters are free of debris.
- Inspect foam handgrips for damage. If damaged, have them replaced by a qualified technician.
- Check center mount front riggings for loose fasteners. Replace /tighten if necessary.
- Check that all labels are present and legible. Replace if necessary.

7.3 Service Inspection

Every six months take your wheelchair to a qualified technician for a thorough inspection and servicing.

Service inspections MUST be performed by a qualified technician.

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.

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

The following are recommended items to inspect during regular service inspections performed by a qualified technician. Actual items to be inspected during the service inspection may vary according to the specific wheelchair:

7.3.1 Six Month Inspection

DANGER!
Risk of Death, Serious Injury, or Damage
Failure to complete the inspection of the critical components listed below could result in death or serious injury.
– Inspect stability control components which could include anti-dive spring, anti-dive cylinder, ratcheting gears, or end stops to ensure proper operation.
– Inspect drive axle nut, locking tab, wheel fasteners or quick release to ensure drive wheel is secure

- ❑ Inspect stability lock cylinders, front and rear swing arms to ensure proper operation.
- ❑ Ensure adjustable height arms operate and lock securely.
- ❑ Ensure arms are secure but easy to release and adjustment levers engage properly.

- ❑ 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.
- ❑ Ensure axle nut or bolt and wheel mounting nuts are secure on drive wheels.
- ❑ Inspect tires for flat spots and wear.
- ❑ Loosen/tighten caster locknut if wheel wobbles noticeably or binds to a stop.
- ❑ Ensure all caster/wheel/fork/headtube fasteners are secure and not damaged/missing.
- ❑ Check center mount front riggings for loose fasteners. Replace /tighten if necessary.
- ❑ Cables shall be inspected periodically to ensure that they are routed and secured properly. Periodic inspection is recommended as it may reveal loose and/or damaged cables. Re-secure all loose cables and replace by following the recommendations outlined in the Power Wheelchair Wiring Guide, p/n 1167603.
- ❑ Ensure proper operation of powered functions (drive, seating, legrests, etc.).
- ❑ Inspect motor brushes and gearbox coupling.
- ❑ Inspect electrical components for signs of corrosion. Replace if corroded or damaged.
- ❑ Inspect battery terminals for loose cable connection. Tighten if necessary.
- ❑ Ensure swingarm stops are in place and not deteriorated or damaged. Replace if necessary.
- ❑ Clean upholstery and armrests.
- ❑ Clean dirt and lint from axles.
- ❑ Clean dirt and lint from bearings.
- ❑ Check that all labels are present and legible. Replace if necessary.
- ❑ Ensure clothing guards are secure.
- ❑ Ensure upholstery does not have any rips or tears.
- ❑ Ensure armrest pad sits flush against arm tube.
- ❑ Ensure wheelchair rolls straight (no excessive drag or pull to one side).
- ❑ Ensure that the casters are free of debris.
- ❑ Inspect all fasteners including the back pan, back cane and angle adjustment fasteners, and the arm support, flip back and height adjustment fasteners. Ensure fasteners are securely tightened.
- ❑ Inspect TRBKTS fasteners and hardware.
- ❑ Inspect foam handgrips for damage. If damaged, have them replaced by a qualified technician.

7.3.2 Inspect/Adjust Every 18 Months

Replace motor brushes and gearbox coupling.

7.3.3 Inspect/Adjust Every 2 Years

The stability locking cylinders MUST be replaced every two years.

7.4 Cleaning

CAUTION!
Risk of Damage
Spraying the wheelchair with water or any type of liquid may permanently damage the electronics.
– NEVER spray the wheelchair with any type of water or liquid.

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.

For upholstery that is severely stained or surface finish that is badly damaged, contact Invacare for further information.

7.4.1 Cleaning Upholstery, Cloth, Vinyl

Lukewarm water and a mild non-abrasive soap should be used to clean the upholstery. Wipe off surface with dry cloth. Repeat as necessary to remove persistent stains.

If necessary, remove cover to aid in cleaning.

7.4.2 Cleaning Metal Surfaces

Hot water and a mild detergent on soft cloth should be used for cleaning metal surfaces. Wipe down with damp cloth. Dry surface by wiping down with dry cloth.

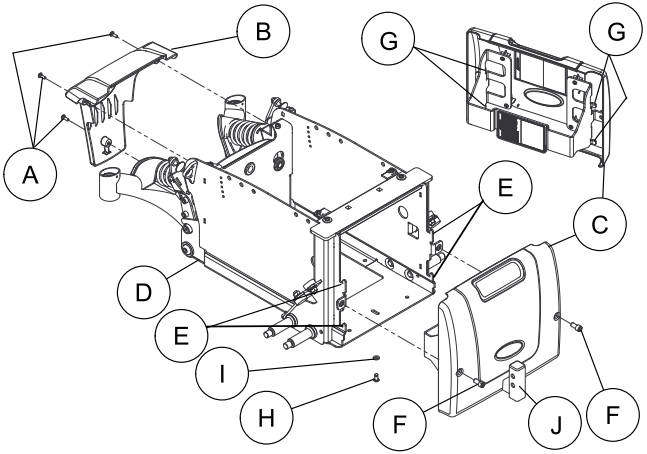
Car polish and soft wax can be used to remove abrasions and restore gloss (Follow manufacturer's instructions).

7.4.3 Cleaning Plastic Surfaces

Plastic surfaces should be cleaned with soft cloth, mild detergent, and hot water. Rinse surface with clean water. Dry surface with soft cloth. Solvents or kitchen cleaners MUST not be used on plastic surfaces.

7.5 Removing/Installing the Shrouds

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



7.5.1 Removing the Rear Shroud

1. Verify the joystick On/Off switch is in the Off position.
2. Remove the three mounting screw Ⓐ securing the rear shroud Ⓑ to the wheelchair.
3. Remove the rear shroud from the wheelchair Ⓓ.

7.5.2 Installing the Rear Shroud

1. Install the rear shroud Ⓑ and secure in place with mounting screw(s) Ⓐ.

   New Batteries MUST be fully charged before using, otherwise the life of the battery(ies) will be reduced.

7.5.3 Removing/Installing the Front Shroud/Battery Retention Bracket

Removing

The front shroud/battery retention bracket Ⓒ is removed from and installed onto the wheelchair frame Ⓓ as a single unit.

Front shroud/battery retention bracket Ⓒ mounts on hooks Ⓔ located on the wheelchair frame Ⓓ.

Have the following tools available: 1/4 inch Allen Wrench, 7/16 inch Box Wrench.

1. Remove the mounting screws Ⓕ securing the front shroud/battery retention bracket to the wheelchair frame Ⓓ.
2. Lift up to unhook the front shroud/battery retention bracket from the base frame and remove.

Installing

CAUTION!
– Wheelchairs with TRRO or TRBKTS Only - Battery retention brackets MUST be installed at all times. Otherwise, the wheelchair will not be WC/19 compliant.

When performing STEP 1, ensure that the tabs Ⓖ located on the sides of the front shroud/battery retention bracket Ⓒ are positioned on the hooks Ⓔ located on the front of the wheelchair frame Ⓓ.

1. Reinstall the front shroud/battery retention bracket onto front of wheelchair frame.
2. Secure the front shroud/battery retention bracket Ⓒ to the wheelchair frame Ⓓ with two mounting screws Ⓕ. Securely tighten.
3. Gently, pull on the front shroud to ensure the mounting screws are fully engaged into the battery box.
4. Wheelchairs with Footboards Only: Using the mounting screw Ⓗ and washer Ⓘ, secure the footboard support Ⓙ to the wheelchair frame.

7.6 Batteries

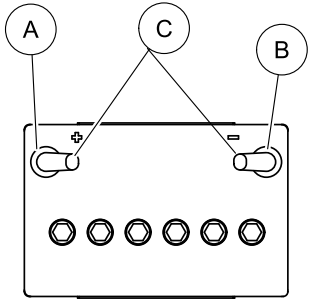
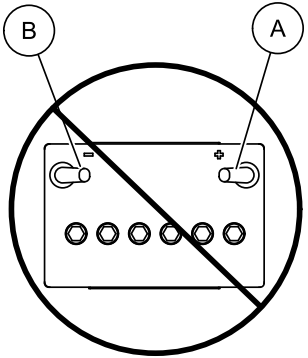
WARNING!
– Invacare strongly recommends that battery installation and battery replacement always be done by a qualified technician.
– The use of rubber gloves is recommended when working with batteries.
– After ANY adjustments, repair or service and before use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.
– When lifting batteries, use proper lifting techniques (lift with your legs) to avoid injury. Refer to Technical Data for battery weight.
– DO NOT tip the batteries. Keep the batteries in an upright position.
– 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.
– Unless otherwise indicated, make sure power to the wheelchair is OFF before performing these procedures.

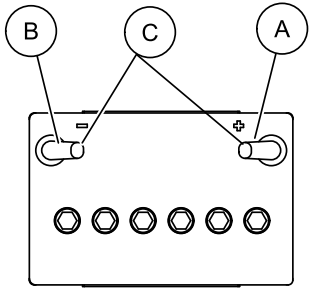
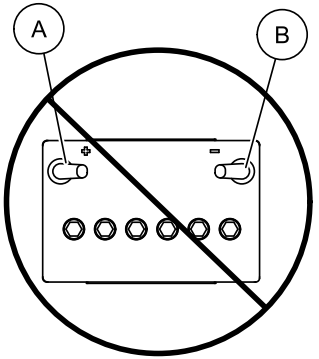
DANGER!
Risk of Death or Serious Injury
Failure to observe these warnings can cause an electrical short resulting in death, serious injury, or damage to the electrical system.
- The POSITIVE (+) RED battery cable MUST connect to the POSITIVE (+) battery terminal(s)/post(s).
- The NEGATIVE (-) BLACK battery cable MUST connect to the NEGATIVE (-) battery terminal(s)/post(s).
- 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 injury or damage may occur.
- Install protective caps on positive and negative battery terminals.
- Replace cable(s) immediately if cable(s) insulation becomes damaged.
- DO NOT remove fuse or mounting hardware from POSITIVE (+) red battery cable mounting screw.

If there is battery acid in the bottom of the battery box 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.

7.7 Using the Proper Batteries

1. Position battery on ground/flat surface as shown below.
2. Visually inspect the battery to ensure proper polarity:

FOR WHEELCHAIRS USING 22NF BATTERIES	
Batteries with terminal configuration (POSITIVE Ⓐ on the left and NEGATIVE Ⓑon the right) as shown below MUST be used. Batteries that have the reverse terminal configuration MUST not be used - otherwise injury and damage may occur. Terminals must be have a cross hole Ⓒ in them as shown below.	
PROPER BATTERIES TO USE	**DO NOT USE THIS TYPE OF BATTERY**
	

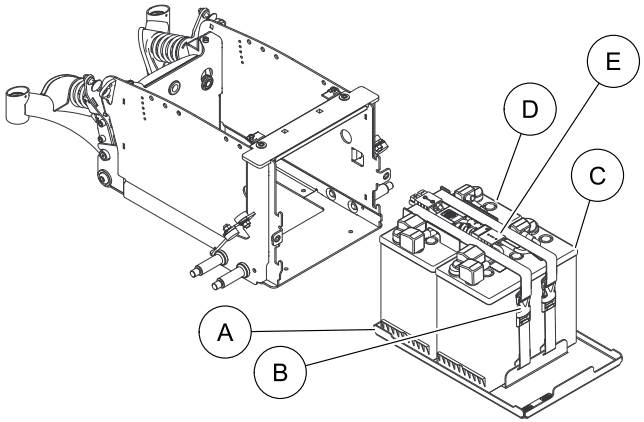
FOR WHEELCHAIRS USING GP24 BATTERIES	
Batteries with terminal configuration (POSITIVE Ⓐ on the right and NEGATIVE Ⓑon the left) as shown below MUST be used. Batteries that have the reverse terminal configuration MUST not be used - otherwise injury and damage may occur. Terminals must be have a cross hole Ⓒ in them as shown below.	
PROPER BATTERIES TO USE	**DO NOT USE THIS TYPE OF BATTERY**
	

7.8 Removing/Installing the Batteries From/Into the Wheelchair

7.8.1 Removing the Batteries from the Wheelchair

CAUTION!
Risk of Damage
Damage to carpeting or flooring.
– Place the wheelchair in a well ventilated area where work can be performed without risking damage to carpeting or floor covering.

22NF Batteries shown



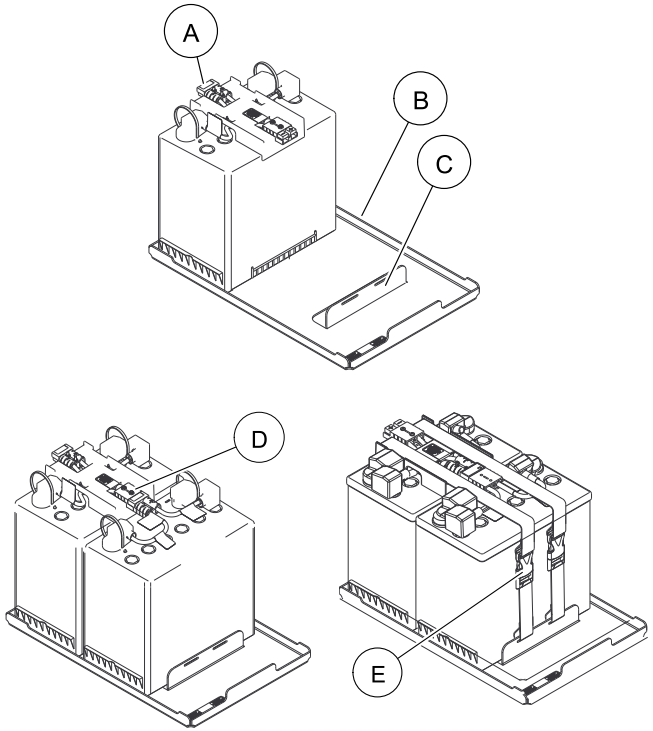
1. Place the wheelchair in a well ventilated area.
2. Verify the joystick On/Off switch is in the Off position and disconnect joystick. Refer to 7.14.1 Disconnecting SPJ+ Joysticks or 7.15.2 Disconnecting the CMPJ+ Joysticks.
3. Remove the rear shroud, front shroud and battery retention bracket. Refer to 7.5 Removing/Installing the Wheelchair Shrouds.
4. Disconnect the controller from the batteries at the rear of the wheelchair.
5. Slide battery tray Ⓐ with batteries out.
6. Disconnect the battery straps Ⓑ.

   Battery connection Ⓔ located on top.

7. Disconnect batteries.
8. Remove the front Ⓒ battery.
9. Slide the rear battery Ⓓ forward and remove it from the tray.

7.8.2 Installing Batteries into the Wheelchair

WARNING!
Risk of Serious Injury
Improperly installed battery tray can cause instability resulting in serious injury.
– Ensure batteries and battery tray are installed properly to maintain stability.



Positioning of the batteries into the battery tray is completed with battery tray positioned in wheelchair and partially pulled out. Illustrations are shown without the wheelchair for clarification purposes only.

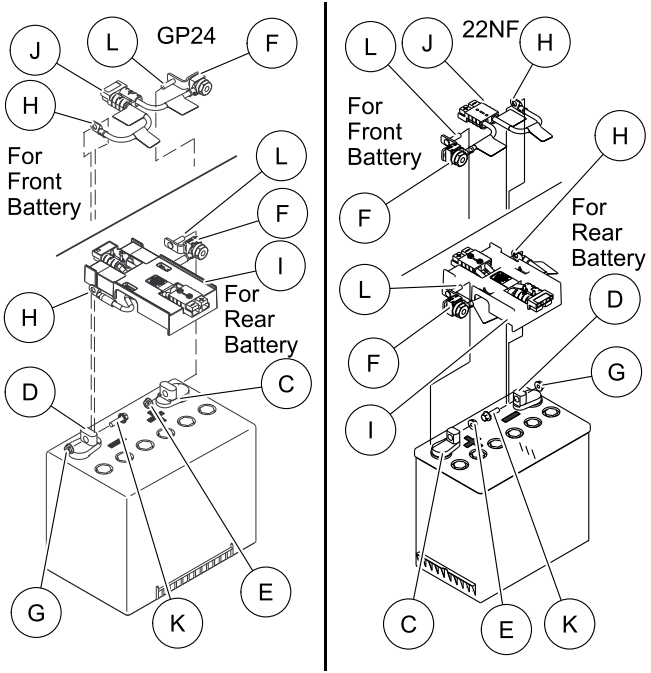
1. Position the battery with battery connector bracket Ⓐ against the back edge of the battery tray Ⓑ in the orientation as shown.

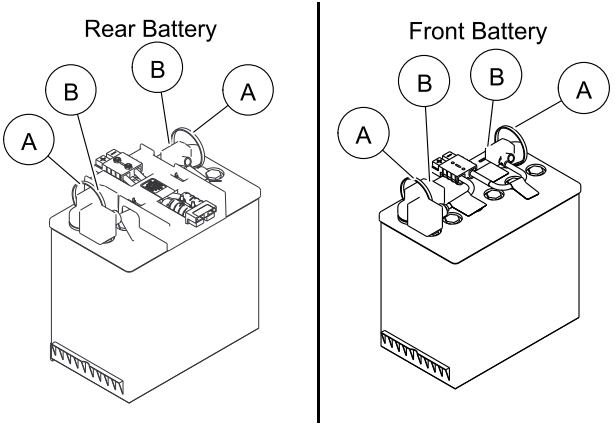
   Batteries MUST be installed in the orientation shown so that the wiring harnesses can be connected together.

2. Position the remaining battery between the battery on the tray and battery stop Ⓒ.
3. Connect batteries together Ⓓ.
4. Connect battery straps Ⓔ.
5. Slide the battery tray into the wheelchair
6. Install the rear shroud, front shroud and battery retention bracket. Refer to 7.5 Removing/Installing the Wheelchair Shrouds.

7.9 Replacing Batteries and/or Battery Cables

Have the following tools available: 7/16 inch (6pt) Box Wrench and Diagonal Cutters.





1. Remove the batteries from the wheelchair. Refer to 7.8 Removing/Installing the Batteries From/Into the Wheelchair.
2. Cut the tie-wraps Ⓐ that secure the battery terminal covers Ⓑ to the battery terminals.
3. Slide the RED battery terminal cover back on the red battery cable to expose the POSITIVE battery terminal Ⓒ.
4. Slide the BLACK battery terminal cover back on the Black battery cable to expose NEGATIVE battery terminal Ⓓ.

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.

5. Remove the locknut Ⓔ that secures the bracket Ⓕ of the POSITIVE battery cable to the POSITIVE (+) battery post of the battery.

6. Remove the locknut Ⓖ that secures the NEGATIVE battery cable Ⓗ to the NEGATIVE (-) battery post of the battery.
7. Discard the existing battery.
8. Position battery connector bracket Ⓘ or wiring harness Ⓙ onto the new 22NF battery or GP24 battery as shown.
9. Secure the NEGATIVE battery cable Ⓗ to the NEGATIVE (-) battery post with existing mounting screw Ⓚ and locknut Ⓖ.
10. Secure the bracket Ⓕ of the POSITIVE battery cable to the POSITIVE (+) battery post with existing mounting screw Ⓛ and locknut Ⓔ.
11. Position each battery terminal cover over top of each battery terminal.
12. Secure battery terminal covers in place with one tie-wrap.
13. Install batteries into wheelchair. Refer to 7.8 Removing/Installing the Batteries From/Into the Wheelchair.

7.9.1 Cleaning Battery Terminals

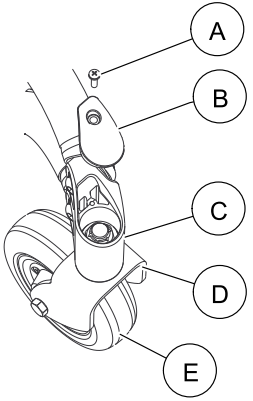
WARNING!
– Most batteries are not sold with instructions. However, warnings are frequently noted on the cell caps. Read them carefully.
– DO NOT allow the liquid in the battery to come in contact with skin, clothes or other possessions. It is a form of acid and harmful or damaging burns may result. Should 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 terminals for corrosion.
2. Verify the plastic caps are in place over battery cell holes.
3. Clean terminals by using a battery cleaning tool, wire brush, or medium grade sand paper.

   Upon completion, areas should be shiny, not dull.

4. Carefully dust off all metal particles.

7.10 Adjusting Forks



This procedure must be performed by a qualified technician.

This procedure applies to both Forks.

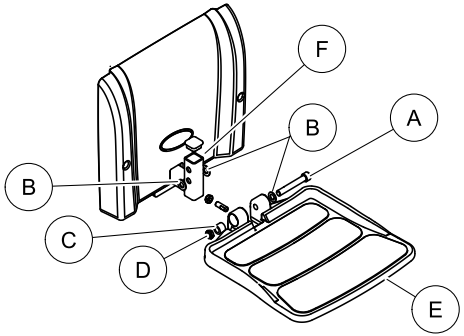
1. Remove the retaining screw Ⓐ securing the head tube cover Ⓑ in place.
2. Remove the head tube cover (not shown) from the caster head tube Ⓒ.

3. To properly tighten caster journal system and guard against flutter, perform the following check:
   a. Tip the wheelchair forward, toward the 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.
4. Test wheelchair for maneuverability.
5. Readjust locknuts if necessary, and repeat STEPS 1-3 until correct.
6. Snap headtube cover into the caster headtube.
7. Reinstall retaining screws.

7.11 Removing/Installing the Footboard or Adjusting the Footboard Height

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.
– Before performing any maintenance, adjustment or service, verify that ON/OFF switch on the joystick is in the OFF position.
– do not stand on the flip-up footboard. When getting in or out of the wheelchair, make sure that the flip-up footboard is in the upward position.

WARNING!
– **LIMITED CLEARANCE BETWEEN FOOTBOARD AND CASTER** - The user's feet must remain on the footboard while operating the wheelchair. If the user's feet are allowed to rest off the side of the footboard they may come in contact with the caster possibly resulting in injury.



Removing the Footboard

1. Remove the socket head screw Ⓐ, three washersⒷ, spacer Ⓒ and locknut Ⓓ that secures the footboard Ⓔ to the footboard support Ⓕ.
2. Remove the footboard from the footboard support.

Installing the Footboard

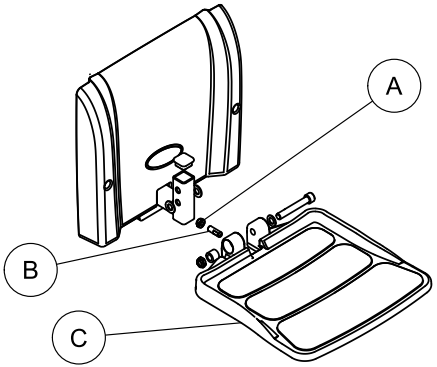
WARNING!
– Pinch point may occur when rotating the footboard assembly.

1. Position the footboard onto the footboard support so that the mounting holes in the wheelchair frame align with the desired mounting holes in the footboard support.
2. Using the socket heat screw, three washers, spacer and locknut secure the footboard to the footboard support.

Adjusting the Footboard Height

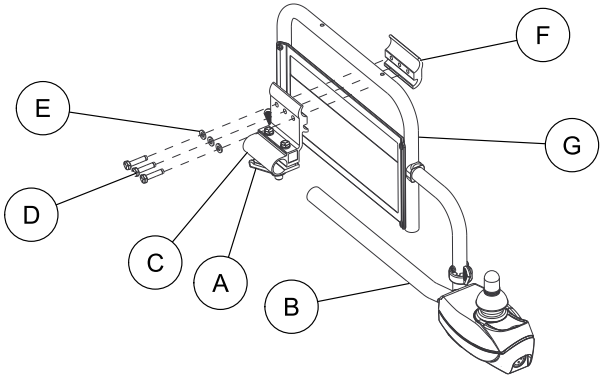
1. Remove the footboard. Refer to Removing the Footboard.
2. Adjust the footboard to one of two mounting holes in the footboard support to adjust the footboard height by 1 inch.
3. Install the footboard. Refer to Installing the footboard

7.12 Adjusting the Footboard Angle



1. Loosen the jam nut and set screw located underneath on the rear of the footplate.
2. Adjust the mounting screw in or out to obtain the desired footboard angle.
3. Thread the jam nut inward until it is flush with the footboard bracket.
4. Securely tighten the jam nut and washer to secure the mounting screw in place.

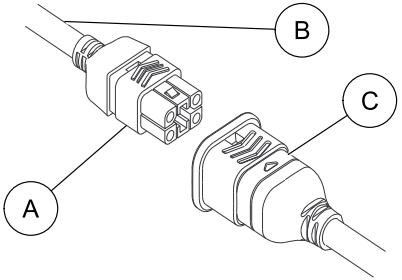
7.13 Repositioning Joystick



1. Turn the adjustment lock lever Ⓐ to release the joystick mounting tube Ⓑ from the joystick mounting bracket Ⓒ.
2. Remove the joystick from the wheelchair.
3. Remove the three hex screws Ⓓ and washers Ⓔ that secures the joystick mounting bracket to the threaded mounting bracket Ⓕ.
4. Reposition threaded mounting bracket on the inside of the opposite arm tube Ⓖ as shown.
5. Using the three hex mounting screws and washers, secure joystick mounting bracket to the threaded mounting bracket.
6. Slide the joystick mounting tube through the joystick mounting bracket to the desired position.
7. Turn the adjustment lock lever to secure the joystick mounting tube into the mounting bracket.

7.14 Disconnecting/Connecting the SPJ+ Joysticks

The joystick connector is located at the rear of the seat frame.



7.14.1 Disconnecting the SPJ+ Joysticks

1. Hold the light grey collar portion Ⓐ of the joystick connector Ⓑ with one hand and the controller connector Ⓒ on the wheelchair in the other and disconnect them by pulling them apart.

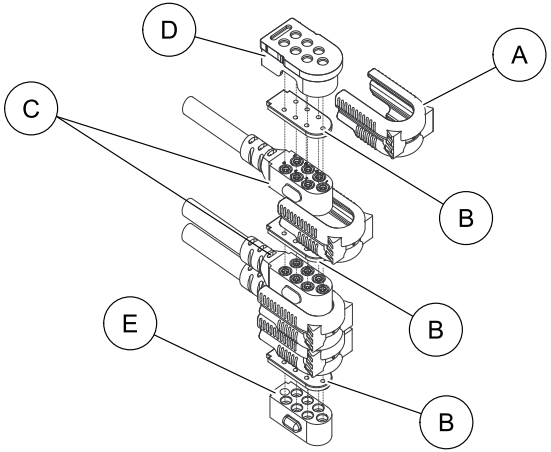
7.14.2 Connecting the SPJ+ Joysticks

WARNING!
– The joystick connector and controller connector fit together in one way only. DO NOT force them together.

1. Hold the light grey collar portion Ⓐ of the joystick connector Ⓑ with one hand and the controller connector Ⓒ on the wheelchair in the other and align them.
2. Lightly push to engage the joystick connector and the controller connector.

7.15 Disconnecting/Connecting the CMPJ+ Joysticks

The joystick connector is located at the rear of the seat frame.



7.15.1 Connecting the CMPJ+ Joysticks

Ensure the gaskets Ⓑ are installed in the top connector cap and between network connectors Ⓒ.

1. Ensure the latch is pulled away from the network connector.
2. Connect the network connector to the other connectors.
3. Top Ⓓ and Bottom Ⓔ Connectors - Install connector caps onto the network connector.
4. Push the latch in to secure the network connectors and caps.
5. If necessary secure excess cable using tie-wraps.

7.15.2 Disconnecting the CMPJ+ Joysticks

1. Pull the latch Ⓐ away from the joystick connector.
2. Disconnect the joystick connector from the remaining connectors.

8 Troubleshooting

8.1 Driving Performance

	Solutions		
	Check for loose stem nuts/bolts, bearings or signs of wear.	Check for uneven tire wear, bent fork/frame or loose hardware.	If pneumatic, check tires for correct and equal pressure.
Wheelchair Veers Left or Right	X	X	X
Sluggish Turn or Performance	X		X
Casters Flutter	X	X	X
Squeaks and Rattles		X	
Looseness in Wheelchair		X	X
Wheelchair 3 Wheels		X	X

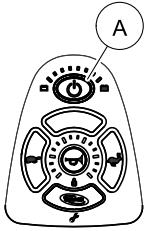
8.2 Electrical

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

8.2.1 SPJ+, SPJ+ w/PSS or SPJ+ w/ACC Joysticks

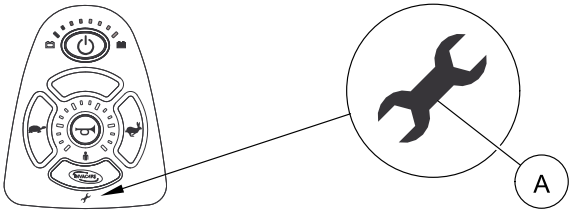
The joystick information gauge and the service indicator give indications of the type of fault or error detected by the control module. When a fault is detected, the wheelchair may stop and not drive. The LEDs on the information gauge may flash in a particular pattern or the service indicator light will flash. The number or type of flashes indicates the nature of the error. If multiple errors are found, only the first error encountered by the control module will be displayed.

Information Gauge Display Ⓐ Diagnostics

Display	Description	Definition	Comments
			
	All LEDs are off.	Power is off.	

Display	Description	Definition	Comments
	All LEDs are on.	Power is on.	Fewer than three LEDs on implies reduced battery charge.
	Left Red LED is flashing.	Battery charge is low.	The batteries should be charged as soon as possible.
	Left to Right “chase” alternating with steady display.	Joystick is in program-ming, in-hibit and/or charging mode.	The steady LEDs indicate the current state of the battery charge.
	All LEDs are flashing slowly.	Joystick has detected Out-of-Neutral-at-Power-Up mode.	Release the joystick back to Neutral.

Service Indicator Light Ⓐ Diagnostics



NUMBER OF FLASHES	ERROR CODE DESCRIPTION	POSSIBLE SOLUTION
1	User Fault	Release joystick to neutral and try again.
2	Battery Fault	Charge the batteries. Check that battery cables are connected properly. If necessary, replace batteries.
3	Left Motor Fault	Contact Invacare/Dealer for service.
4	Right Motor Fault	Contact Invacare/Dealer for service.

NUMBER OF FLASHES	ERROR CODE DESCRIPTION	POSSIBLE SOLUTION
5	Left Park Brake Fault	Ensure brake lever is in the drive position before turning on the wheelchair. Ensure motor cable is plugged into the controller. Contact Invacare/Dealer for service.
6	Right Park Brake Fault	Ensure brake lever is in the drive position before turning on the wheelchair. Ensure motor cable is plugged into the controller. Contact Invacare/Dealer for service.
7	Remote Fault	Check to make sure joystick is connected properly. Turn Joystick off then on. Contact Invacare/Dealer for service.
8	Controller Fault	Contact Invacare/Dealer for service.
9	Communications Fault	Check joystick cable connections. Check joystick cable and connectors for damage. Contact Invacare/Dealer for service.
10	General Fault	Contact Invacare/Dealer for service.
11	Incompatible or incorrect Remote	Wrong type of remote connected. Contact Invacare/Dealer for service.

8.2.2 CMPJ+ Joysticks or Displays

Error codes are displayed in the Fault Log on the hand help programmer.

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
LEFT BRAKE FAULT or RIGHT BRAKE FAULT displays and wheelchair does not drive.	Motor lock levers disengaged (Error code E9 or E10).	Engage motor lock levers. Refer to Disengaging/Engaging Motor Lock Levers.
CHARGER PLUGGED IN displays.	Battery charger connected (Error code E28).	Unplug battery charger from the wheelchair. Refer to Charging Batteries.
BATTERY FAULT displays and the wheelchair does not drive.	Batteries need to be charged (Error code E14).	Charge batteries. Refer to Charging Batteries. If batteries fail to charge properly, check battery charger or replace batteries. Refer to Replacing Batteries and/or Battery Cables.
JOYSTICK TIMEOUT displays and the wheelchair does not drive.	Joystick or input device is disconnected (Error code 32).	Turn off power, reconnect the joystick of input device and turn power on.
JOYSTICK FAULT displays and the wheelchair does not drive.	The joystick or input device is sending a value outside of the reverse, forward, left or right limits (Error codes E01, E02, E03 or E04).	Replace joystick or input device.
NEUTRAL TESTING displays.	The joystick neutral test has failed (Error code E18).	Release the joystick and try to get the joystick back into the center-most position.
BAD JOYSTICK CAL VALUES displays and the wheelchair does not drive.	The joystick calibration values are outside of the expected range (Error code E19).	Recalibrate the joystick (joystick throw procedure).
CTRL NOT CONNECTED	The CMPJ or Display module is not communicating with the control module (Error code E200).	Check the connections between the joystick or display and the controller. Turn the power off and then back on. Replace the controller if necessary.

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
CTRL COM FAULT displays and the wheelchair drives slowly.	The controller has determined a fault during a previous turn-off process (Error code E41).	Turn the wheelchair off and back on.
MISSING CONFIGURATION displays at power up.	One or more devices have been removed or disconnected from the wheelchair.	Reconnect the device.
ATTENDANT ACTIVE and displays.	The Proportional or Digital Attendant control is active and can be used to drive the chair.	This is normal behavior.
Batteries draw excessive current when charging.	Battery failure. Electrical malfunction.	Have batteries checked for shorted cell. Replace if necessary. Contact Dealer/Invacare for service.
Battery indicator flashes the charge level is low - immediately after recharge.	Battery failure. Malfunctioning battery charger. Electrical malfunction.	Check batteries for shorted cell. Replace if necessary. Contact Dealer/Invacare for Service. Contact Dealer/Invacare for Service.
Battery indicator flashes the charge level is low - too soon after being recharged.	Batteries not charged. Weak batteries.	Have charger checked. Replace batteries if necessary. Refer to Replacing Batteries and/or Battery Cables.
Motor “chatters” or runs irregular.	Motor/gearbox malfunction.	Stop use of Wheelchair. Contact Dealer/Invacare for Service.

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
Joystick erratic or does not respond as desired.	Damaged motor coupling. Electrical malfunction. Controller programmed improperly.	Contact Dealer/Invacare for Service. Contact Dealer/Invacare for Service. Contact Dealer/Invacare to have controller reprogrammed.
Wheelchair does not respond to commands.	Electrical malfunction.	Contact Dealer/Invacare for Service.
Power indicator off - even after recharging.	Poor battery terminal connection.	Have terminals cleaned.

8.3 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.

8.4 Usability Survey

Please complete the survey below to evaluate this manual.
Your participation in the evaluation assists in the development of effective and usable manuals for our customers.
The survey is also available online:
http://www.invacare.com/TechnicalDocumentSurvey

Yes, you can.

1. Please indicate your primary involvement with the product (choose one):

   ❑ Product User/Owner
   ❑ User Assistant
   ❑ Product Dealer
   ❑ Product Service Technician
   ❑ Health Care Provider
   ❑ Other (please specify): _____

2. Please indicate which product manual you are evaluating: _____

3. Evaluate the content:

	YES	NO
After reading this document, do you have a better understanding of how to use the product?	❑	❑
Do you have a better understanding of any limitations on the use of this product?	❑	❑
Is there any irrelevant information?	❑	❑
Is the Table of Contents useful?	❑	❑
Does any information seem inaccurate/misleading?	❑	❑
Do you understand that misuse of the product can cause injury or damage?	❑	❑

Explain: _____

4. Evaluate the Warnings/Cautions:

	YES	NO
Are there any warnings/cautions that you do not understand?	❑	❑
Are there too many warnings/cautions?	❑	❑
Are there warnings/cautions that you feel do not apply to this product?	❑	❑

Explain: _____

5. Evaluate the style:

	YES	NO
Is anything hard to locate/follow?	❑	❑
Are any headings missing/confusing?	❑	❑
Are there too many headings?	❑	❑
Should any material be a bulleted list or checklist instead of numbered steps or a paragraph?	❑	❑
Is there material that might be clarified by a visual?	❑	❑

Explain: _____

6. Evaluate the illustrations:

	YES	NO
Are the illustrations useful?	❑	❑
Do the illustrations need more or less detail?	❑	❑
Is the number/size of illustrations adequate?	❑	❑

Explain:

_____

_____

7. Do you have suggestions for other ways of making this document easier to use?

Explain:	YES	NO
_____	❑	❑
_____		

Thank You! Thank you for completing this survey. If you have any questions or we may be of assistance to you, please feel free to contact us.

Send your survey to Invacare Technical Writing Department: TechnicalWriting@invacare.com or Invacare Corporation: One Invacare Way, Elyria, Ohio 44035 FAX: 440–329–6975

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

Canada 570 Matheson Blvd E Unit 8, Mississauga Ontario, L4Z 4G4 Canada, 800–668–5324

www.invacare.com

1143190-M~04 2016-5-12

Making Life's Experiences Possible™

INVACARE®

Yes, you can.®