

Invacare® FDX® Power Wheelchair Base

en **FDX, FDX-CG, FDX-MCG**
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.



Yes, you can.®

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I General

I.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.

I.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

I.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, (Assistive 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 I 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.

I.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 **Battery Removal**.
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
Scoters	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 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.

2.1.3 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:

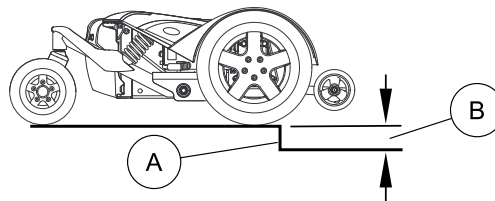
- Uneven terrain, soft surfaces
- Tall grass
- loose gravel and/or sand
- Do not operate the wheelchair in any type or depth of water (edges of streams, lakes, or oceans.)
- If you approach an unfamiliar surface and feel uneasy about driving on that surface, avoid that surface.

2.1.4 Coping with Everyday Obstacles

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

While the wheelchair is primarily designed for indoor use (i.e. home), it is also designed to remain stable in the outdoor environment on dry level surfaces such as concrete, blacktop, and asphalt. Your provider should determine whether this wheelchair is suitable for the actual environment in which the wheelchair will be used.

This wheelchair is capable of negotiating (climbing and descending) an obstacle with a height of 60mm (2.36 inches) as tested per RESNA WC-2:2009-10.

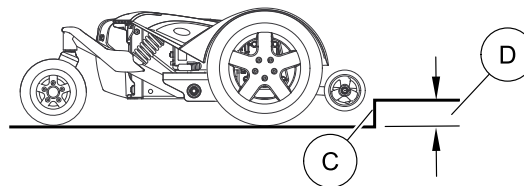


WARNING!

Risk of Serious Injury or Damage

Driving (forward or reverse) down off *curbs/obstacles (A) greater than 60mm (2.36 inches) (B) 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 60mm (2.36 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.



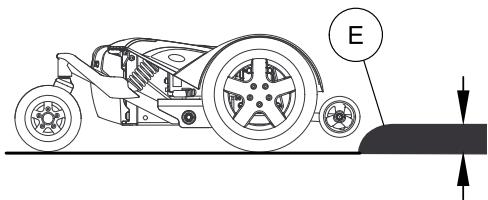


WARNING!

Risk of Serious Injury or Damage

Serious injury or damage to the wheelchair may result from driving forward up over *curbs/obstacles © greater than 60mm (2.36 inches) ④ or driving reverse up over *curbs/obstacles © greater than 40mm (1.57 inches) ④.

- DO NOT attempt to drive up over *curbs/obstacles greater than 60mm (2.36 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 ④.

2.1.5 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.

2.1.6 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.

Risk of Injury or Damage

- Using the footplates as a platform may cause injury or damage.
- DO NOT use the footplates/footboard as a platform. DO NOT stand on the footplates/footboard. When getting in or out of the wheelchair, make sure that the footplates are in the upward position or swing footrests towards the outside of the wheelchair.

2.1.7 Reaching, Leaning and Bending - Forward



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.

2.1.8 Reaching, Bending - Backward



WARNING!

Risk of Serious Injury or Damage

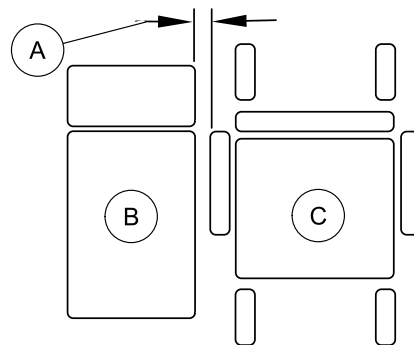
Leaning backward over the top of the seat back will change your center of gravity and may cause you to tip over resulting in serious injury or damage.

- Proper positioning is essential for your safety. **DO NOT** lean over the top of the seat back.

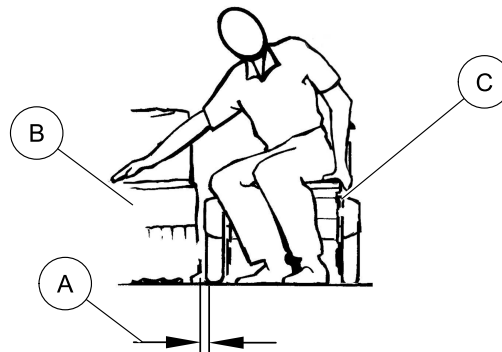
Position wheelchair as close as possible to the desired object. Position the casters so that they are extended away from the drive wheels to create the longest possible wheelbase, engage the motor locks and turn power off. Reach back only as far as your arm will extend without changing your sitting position.

2.1.9 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 personal transporter 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.

2.1.10 Storage**WARNING!****Risk of Serious Injury or Damage**

Storing or using the wheelchair near open flame or combustible products can result in 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.



2.1.11 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.

2.1.12 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.

2.1.13 Electrical - Charging Batteries**DANGER!****Risk of Death or Serious Injury**

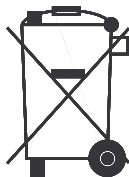
Use of improper extension cord could cause electric shock or cause a fire resulting in death or serious injury.

- 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.

2.1.14 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.

2.1.15 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.

2.1.16 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.

2.1.17 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.

2.1.18 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 Invacare 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 Label Locations

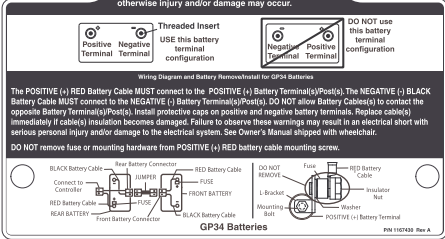
⚠ WARNING
 Replace controller ONLY with original Invacare part number(s) - otherwise injury or damage may occur.

⚠ MISE EN GARDE
 Remplacez le contrôleur UNIQUEMENT par la référence Invacare originale – sous risque de blessures ou de dégâts.

P/N 1167422 Rev A

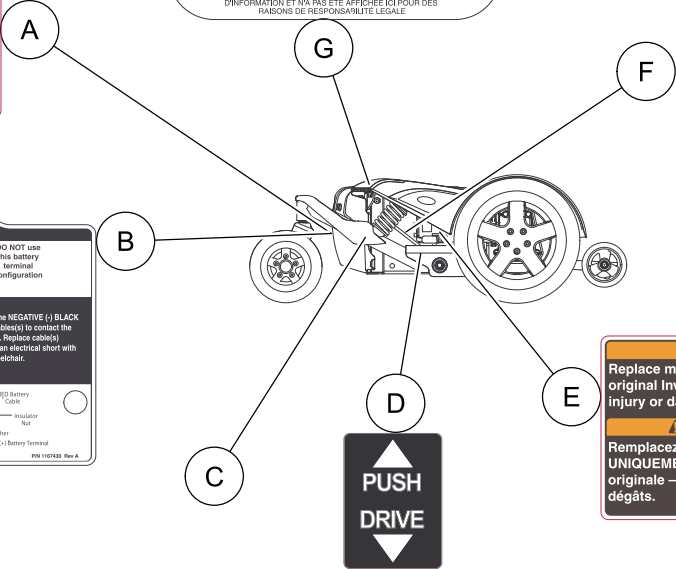
⚠ WARNING
 DO NOT REMOVE THIS LABEL.

GP34 batteries with terminal configuration (positive on the left and negative on the right) as shown MUST be used. GP34 batteries that have the reverse terminal configuration MUST not be used. Terminals MUST have a threaded insert located as shown for proper battery connection. See Owner's Manual. These recommendations MUST be followed otherwise injury and/or damage may occur.



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

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




⚠ WARNING
 Replace motor and/or gearbox ONLY with original Invacare part number(s) - otherwise injury or damage may occur.

⚠ MISE EN GARDE
 Remplacez le moteur et/ou le réducteur UNIQUEMENT par la référence Invacare originale – sous risque de blessures ou de dégâts.

P/N 1167424 Rev A

ITEM	P/N	DESCRIPTION	LOCATION/COMMENTS
A	1167422	Controller Replacement Warning Label	Label located under the rear shroud and under the controller.
B	1167430	GP34 Rear Battery Warning Label	Label located under the rear shroud and on the inside of the controller bracket.
C	P/N depends on model of wheelchair.	Weight Capacity Label	On Base Only
D	1104802	Push/Drive Label	Located each side of wheelchair
E	1167424	Motor/Gearbox Replacement Label	Located on each motor
F		Serial Number Label	Located on the right side of the wheelchair base frame.
G	1035900	Transport Label	

H

User/Attendant Information  Yes, you can.

DEALER: This card MUST be given to the wheelchair user/attendant.

WARNING

Wheelchair users and attendants **MUST** read and understand the following information regarding the handling and stability of the front wheel drive wheelchair.

Innovac strongly recommends that actual use of this wheelchair be supervised by an assistant.

DO NOT use this product with out first reading and understanding the wheelchair base owner's manual and the seating system owner's manual (if ordered with seating system).

HANDLING AND STABILITY: Exercise caution when traveling up or down an incline or over obstacles and rough terrain. If slipping becomes necessary when driving under these conditions, release the joystick and allow the wheelchair to come to a full stop then proceed at a slower speed.

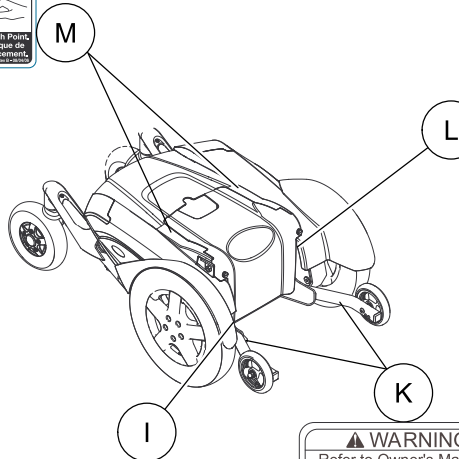
SEATING SYSTEM: **DO NOT** reposition seating system beyond the original manufacturer's mounting position. Doing so will alter wheelchair stability and injury or damage may occur.

FRONT RIGGING (All Models): A minimum of 3 inches **MUST** be maintained between the bottom of the front rigging and the floor/wheel while the wheelchair is in motion to ensure proper ground clearance. If necessary, release the front rigging on the seat to achieve proper ground clearance.

Part No. 116378 Part A

WARNING

Pinch Point:
Evitez les pincements.
Evite los pellizcos.

WARNING

DO NOT OPERATE WITHOUT THE ANTI-TIP TUBES INSTALLED.

REV. 5/98 RPN 60100X144

WARNING





Refer to Owner's Manual for proper anti-tipper setting.

1085379

WARNING

DO NOT REMOVE THIS LABEL.

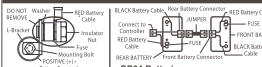
GP34 batteries with terminal configuration (positive on the left and negative on the right) as shown **MUST** be used. GP34 batteries that have the reverse terminal configuration **MUST NOT** be used. Terminals **MUST** have a threaded insert located as shown for proper battery connection. See Owner's Manual. These recommendations **MUST** be followed otherwise injury and/or damage may occur.

 Positive Terminal	 Negative Terminal	Threaded Insert USE this battery terminal configuration	 Positive Terminal	 Negative Terminal	DO NOT use this battery terminal configuration
---	---	---	---	---	---

Wiring Diagram and Battery Removal/Install for GP34 Batteries

The **POSITIVE (+) RED Battery Cable MUST** connect to the **POSITIVE (+) Battery Terminal(s) (Positive)**. The **NEGATIVE (-) BLACK Battery Cable MUST** connect to the **NEGATIVE (-) Battery Terminal(s) (Negative)**. **DO NOT** allow Battery Cable(s) to contact the opposite Battery Terminal(s) (Positive). Install protective caps on positive and negative battery terminals. Replace cable(s) immediately if cable(s) insulation becomes damaged. Failure to observe these warnings may result in an electrical short with serious personal injury and/or damage to the electrical system. See Owner's Manual ahead of your wheelchair.

DO NOT remove fuse or mounting hardware from **POSITIVE (+) RED** battery cable mounting screw.



DO NOT REMOVE: Positive Terminal, Negative Terminal, Fuse, Mounting Hardware, Battery Terminal


BLACK Battery Cable, Rear Battery Connection: Connect to POSITIVE (+) BATTERY TERMINAL

RED Battery Cable, Front Battery Connection: Connect to NEGATIVE (-) BATTERY TERMINAL

GP34 Batteries

PN 116378 Rev. A

J



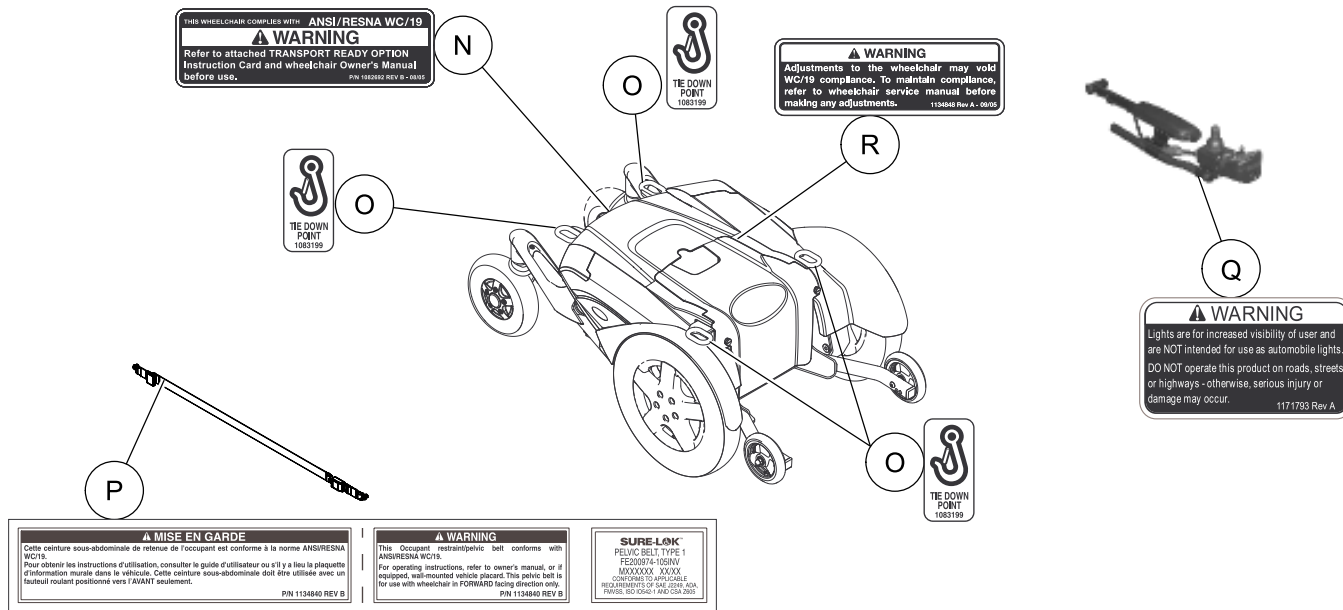
WARNING

This seat/other positioning strap is NOT intended for accident restraint. It is only to be used for transport. Do not use with ANTI-TIPPER. If you are new driver, performing this MUST be replaced IMMEDIATELY. DO NOT USE.

MISE EN GARDE

Cette ceinture de positionnement est destinée à être utilisée pour le transport. Elle n'est pas destinée à servir de dispositif de retenue en cas d'accident. Ne l'utilisez pas avec un dispositif anti-dérive. Si vous êtes un nouveau conducteur, vous devez remplacer cette ceinture IMMÉDIATEMENT. NE PAS L'UTILISER.

ITEM	PART NUMBER	DESCRIPTION	LOCATION/COMMENTS
H	1167423	User/Attendant Information Tag	This card is secured to the joystick at the time of shipment.
I	60106X144	Anti Tip Warning Label	This label is on the anti-tip tubes
J	1134811	Non Compliance Warning Label	This label is located on the airline seat positioning strap and is for models without TRRO
K	1085379	Anti Tip Warning Label	This label is on the anti-tip tubes
L	1167421	GP34 Front Battery Warning Label	Label located under the front shroud
M	1079203	Pinch Point Warning Label	Wheelchairs with elevating seats



ITEM	PART NUMBER	DESCRIPTION	LOCATION/COMMENTS
N	1082692	WC/19 Compliance Label	For wheelchairs with TRRO
O	1083199	Tie Down Point Label	
P	1134840	Buckle Warning Label	
Q	1171793	Running Lights Warning Label	
R	1134848	TRRO Adjustment Label	

4 Technical Data

4.1 Specifications

4.1.1 Models

FDX	FDX, FDX-CG, FDX-MCG
-----	----------------------

4.1.2 Overall Dimensions

	FDX	
Base Width (Without Joystick):	24 in	
Base Length (Without Front Rigging):	43 in	
Seat-to-Floor Height - ADJASBA	0° Seat Angle	5° Seat Angle
Low:	15.75 in Adult, 16.00 in Jr.	16.75 in Adult, 17.00 in Jr.
Medium:	17.75 in Adult, 18.00 in Jr.	18.75 in Adult, 19.00 in Jr.
High:	19.75 in Adult, 20.00 in Jr.	20.75 in Adult, 21.00 in Jr.
With Elevate:	16.00 in Adult and Jr.	17.00 in Adult and Jr.
Seat-to-Floor Height — Powered Seating Without Elevate:	0° Seat Angle	5° Seat Angle

Low:	16.5 in Adult and Jr.	17.5 in Adult and Jr.
Medium:	17.5 in Adult and Jr.	18.5 in Adult and Jr.
High:	18.5 in Adult and Jr.	N/A
All Powered Seating With Elevate:	0° Seat Angle	5° Seat Angle
	17.75 in Adult and Jr.	18.75 in Adult and Jr.

4.1.3 Seat

	FDX
Rehab (ASBA) -	
Seat Width (1 in Increments):	12 in - 22 in
Seat Depth (1 in Increments):	12 in - 22 in
Back Angle (5° Increments):	85° - 105°

4.1.4 Wheels

	FDX
Rear Caster:	8 x 2 in Foam Filled with Precision Sealed Bearings
Drive Wheel:	14 x 3 in Foam Filled

4.1.5 Driving

	FDX
Speed Range:	0 - 5 mph (Standard 2 Pole Motor), 0 - 6.8 mph (Optional 4 Pole Motor)
Maximum Incline Capability:	9°
Turning Radius:	23 in

4.1.6 Maximum Weight Capacity



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.

	FDX	
Base Weight (Without Batteries):	245 lbs	
Battery Weight:	42 lbs Each (Use GP 34 Batteries Only)	
Maximum Weight Limitation -	16 and 17 in Seat Depth:	18 in Seat Depth:
With ASBA seat:	Up to 300 lbs	Up to 300 lbs
With ASBA Jr. seat	Up to 165 lbs	Up to 165 lbs
With Formula™ CG Powered Seating -		
Tilt, Tilt/Recline:	Up to 250 lbs (Excluding Tall Seat-to-Floor Height)	Up to 300 lbs
Elevate, Tilt/Elevate, Tilt/Recline/Elevate:	Up to 250 lbs	Up to 300 lbs



All dimensions are ± .50 inches unless otherwise indicated.

Weight limitation is total weight (user weight plus any additional items that the user may require [back pack, etc.]). Example: If weight limitation of the wheelchair is 300 lbs and additional items equal 25 lbs, subtract 25 lbs from 300 lbs this means the maximum weight limitation of the user is 275 lbs.

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.

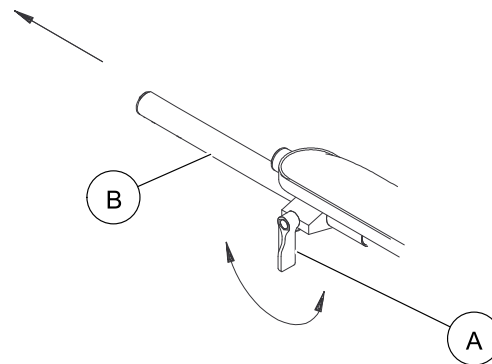


DANGER!

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.

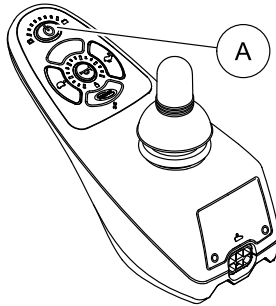


The joystick is factory installed on the right side of the wheelchair. To reposition the joystick onto the left side of the wheelchair, refer to Repositioning the Joystick.

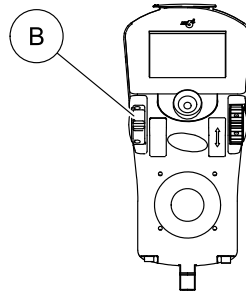
1. Turn the adjustment lock lever (A) to release the adjustment lock from joystick mounting tube (B).
2. Slide joystick mounting tube to the desired position.
3. Turn the adjustment lock lever to secure the adjustment lock to the joystick mounting tube.

5.2 Turning the Power On/Off

SPJ+ Joysticks



CMPJ+ Joysticks



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

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

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

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

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 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.

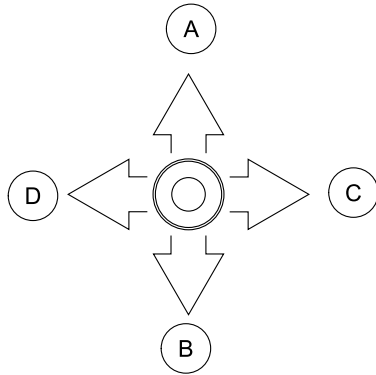
The joystick has proportional drive control, meaning that the further it is pushed from the upright (neutral) position, the faster the wheelchair moves. The maximum speed, however, is limited by the setting of the speed-control knob.

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:

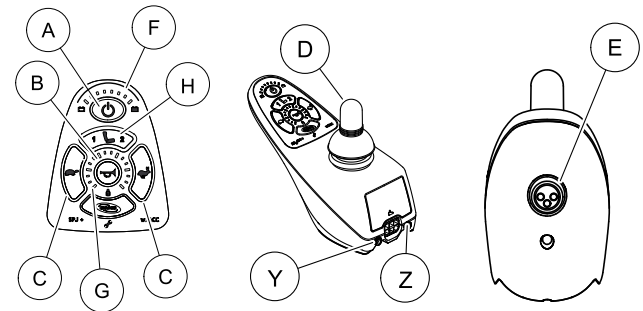
- Adjust speed control knob to the appropriate setting.
- Turn the power On. Refer to Turning the Power On/Off.
- Maneuver the joystick in the following manner:



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

i 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




i **Y** Additional input for powered seating switch.
Z Active (if programmed)

5.4.1 On/Off Button




The On/Off button **A** 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 **B** 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.


- I. 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

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 vice 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.

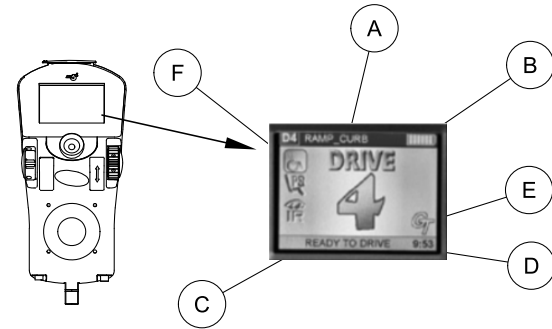
Splash Screen



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



ⁱ 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+				
	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>DRIVE 1 Drive 1*</td> <td>DRIVE 2 Drive 2*</td> <td>DRIVE 3 Drive 3*</td> <td>DRIVE 4 Drive 4*</td> <td> ** No Drive**</td> </tr> </table> <p> *Drive names can be customized. Actual drive names may display differently. ** No Drive selected via the programmer</p>	DRIVE 1 Drive 1*	DRIVE 2 Drive 2*	DRIVE 3 Drive 3*	DRIVE 4 Drive 4*
DRIVE 1 Drive 1*	DRIVE 2 Drive 2*	DRIVE 3 Drive 3*	DRIVE 4 Drive 4*	 ** No Drive**	

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:										
<table border="1" style="width: 100%; text-align: center;"> <tr> <td> to </td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Digital 3 Speed 1 - 3</td> <td>RIM Mode</td> <td>No Driving</td> <td>Automatic Positioning</td> <td>Powered Seating</td> </tr> </table>	 to 					Digital 3 Speed 1 - 3	RIM Mode	No Driving	Automatic Positioning	Powered Seating	
 to 											
Digital 3 Speed 1 - 3	RIM Mode	No Driving	Automatic Positioning	Powered Seating							

 4-Switch Level 2(L2, L2 Latched)	 Drive Select	 ECU Output Activated	 ASM 1
 ASM 2	 Infrared	 Mouse	 Mouse B
			 Running Lights

Driving Screen

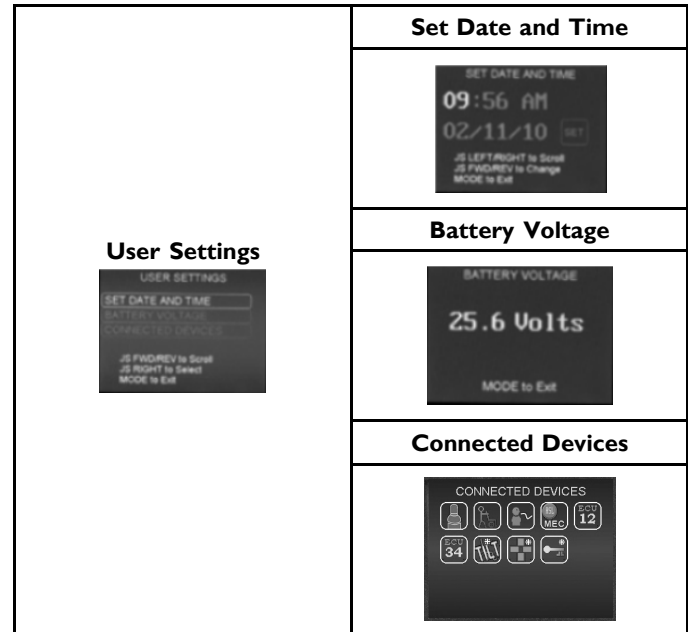


This screen is shown when the operator issues a drive command and the Drive Icon on the main screen was highlighted.

-  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	<p>SET DATE AND TIME - Sets the clock on the CMPJ+ joystick. Adds date and time stamp to error codes.</p> <ul style="list-style-type: none"> 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

CONNECTED DEVICES			
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		Lighting Mode (If equipped)

5.5.7 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

The 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.

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

The mode switch 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:

- 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.



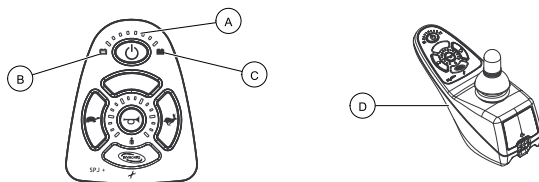
*In these modes, Standby Select allows the reset switch to be bypassed for users unable to activate the switch.

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

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

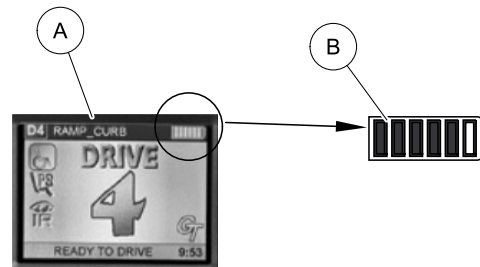


ITEM	DESCRIPTION
A	Information Gauge Display
B	Batteries Empty Indicator
C	Batteries Full Indicator
D	Battery Charger/Programming Port

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 **A** is the Battery Gauge Display **B**. 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

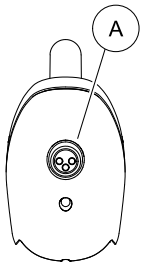
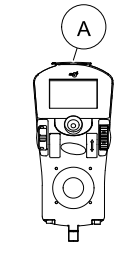
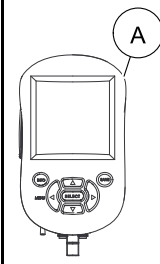
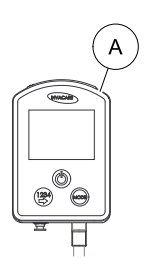
TOOL	QTY	COMMENTs
Battery Charger	1	Supplied

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.

i 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	Mini-Display
A — Charger Programming Port			
Located on Back of Joystick	Located on Front of Joystick	Located on Back of Display	Located on Back of Display
			

5.8 Running Lights



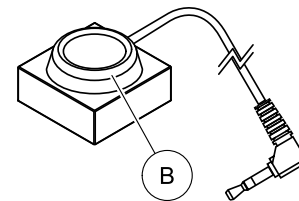
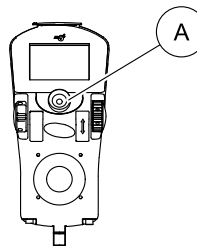
WARNING!

- Running lights are for increased user visibility **ONLY** and are **NOT** intended for use as automobile head/signal lights.
- **DO NOT** operate vehicle on roads, streets or highways - otherwise, serious injury or damage may occur.



The running lights offered on this product are an option intended to increase the visibility of the vehicle and user. Running lights are **NOT** intended to be used as automobile head/signal lights.


Inasmuch as this product may be equipped with running lights, this product is **NOT** intended for use on roads, streets or highways.



5.8.1 Running Lights Through CMPJ+ Joystick

1. Use the mode switch to select the light mode.
2. Move the joystick to turn the lights on or move and hold the joystick for 3 seconds to turn the lights on in strobe mode.
3. Move the joystick again to turn lights off.

5.8.2 Running Lights Through Single Function Switch

 Location of single function switch will depend on wheelchair configuration.

1. Press the single function switch to turn the lights on or hold the single function switch for 3 seconds to turn the lights on in strobe mode.
2. Press the single function switch again to turn lights off.

5.9 Disengaging/Engaging Motor Lock Levers



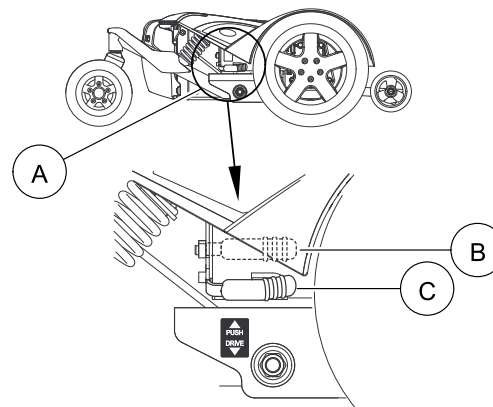
WARNING!

– 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.



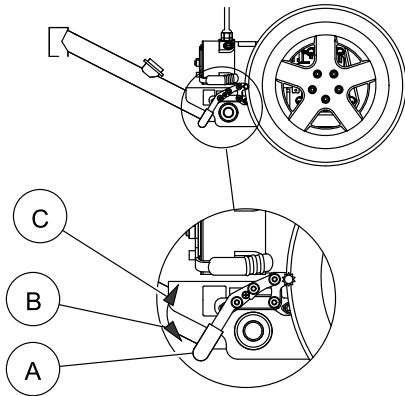
1. Perform one of the following as if viewing the motors from behind the wheelchair (Detail “A”):
 - Engage (DRIVE) - Move the motor lock levers DOWN to engage the motors and drive the wheelchair.
 - Disengage (PUSH) - Move the motor lock levers UP to disengage the motors and push the wheelchair.

5.10 Operating the Wheel Locks



WARNING!

– DO NOT use the wheel locks when the wheelchair power is on and the motor locks are engaged — otherwise damage to the wheelchair may result.



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

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

- I. Perform one of the following as if viewing the motors from behind the wheelchair:
 - Engage (LOCKED) - Move the wheel lock levers DOWN to engage the wheel locks.
 - Disengage (UNLOCKED) - Move the wheel lock levers UP to disengage the wheel locks.

6 TransportReadyOption(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 I 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. I - 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 a 130 lb crash test dummy, which corresponds to a person with a **weight of 125 to 165 lbs.** for Junior seat sizes or a 168 lb crash dummy, which corresponds to a person with a **weight of 165 to 300 lbs.** for Adult seat sizes, restrained by Both pelvic and

upper-torso belts in accordance with ANSI/RESNA wc Vol I 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

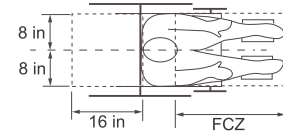
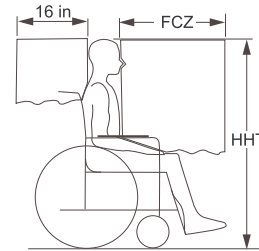
MODEL	MOTOR	SEATING SYSTEM	WEIGHT LIMIT
FDX	2 Pole/4 Pole	Adult ADJASBA	300 lbs
FDX JR	2 Pole/4 Pole	Jr. ADJASBA	165 lbs

6.4 Positioning the Wheelchair in the Vehicle



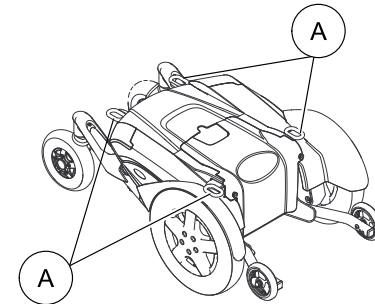
WARNING!

- 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.

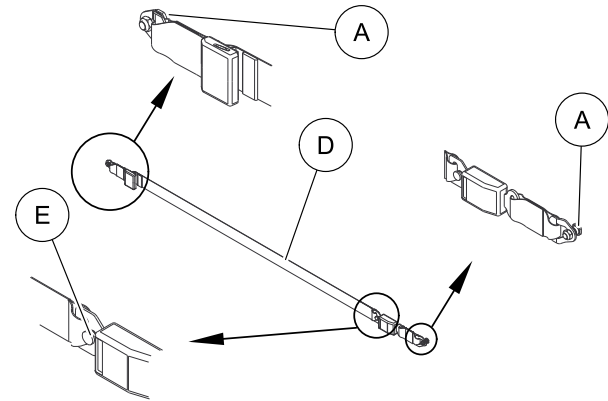
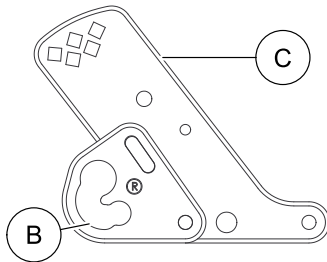
6.7 Securing the Occupant

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.



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.

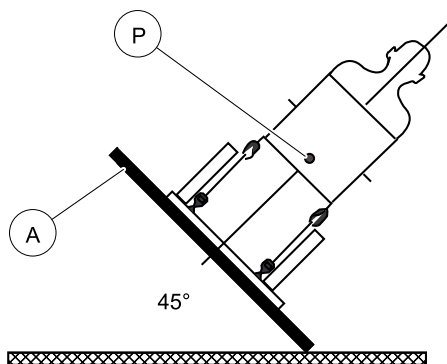
1. Install the pelvic belt pin (A) into slot (B) in the pelvic belt bracket (C). Pull upwards until it snaps into place.



Both ends of the pelvic belt (D) 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 (E) 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 (A) and tilted to 45°.

This wheelchair has an overall rating of “A” with regard to accommodating the use and fit of vehicle-anchored belts. This rating is scored as follows:

RATING	DESCRIPTION
A	Excellent
B	Good
C	Fair
D	Poor

The test for Lateral Stability Displacement for Point (P) is shown in the above illustration:

The average test result for point (P) is:

- FDX Adult — 0.476 in (12.1 mm)
- FDX Junior — 0.445 in (11.3 mm)

6.7.3 Seating System





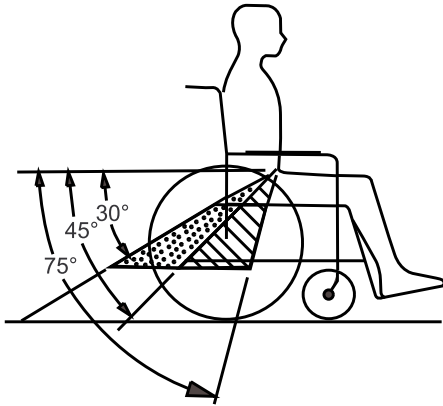
WARNING!

- 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 owner’s 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 Set Up 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 TRRO/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 TRRO/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

7.3.1 Six Month Inspection

- 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 adjustable height arms operate and lock securely.

- Ensure upholstery does not have any rips or tears.
- Ensure armrest pad sits flush against arm tube.
- 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 wheelchair rolls straight (no excessive drag or pull to one side).
- Ensure that there is no excessive side movement or binding when drive wheels are lifted and spun when disengaged (free-wheeling).
- Ensure axle nut or bolt and wheel mounting nuts are secure on drive wheels.
- Inspect tires for flat spots and wear.
- Ensure that the casters are free of debris.
- Ensure wheels/casters have proper tension when wheels/casters are spun (when free-wheeling). Wheels/casters should come to a gradual stop.
- 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.
- Ensure wheel locks DO NOT interfere with tires when rolling.
- Ensure wheel lock pivot point are free of wear and looseness.
- Ensure wheel locks are easy to engage.
- Check center mount front riggings for loose fasteners. Replace /tighten if necessary.
- 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 (drive, seating, legrests, ect...).

- ❑ 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.
- ❑ 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.
- ❑ Ensure swingarm stops are in place and not deteriorated or damaged. Replace if necessary.

7.3.2 Inspect/Adjust Every 18 Months

Replace motor brushes and gearbox coupling.

7.3.3 Inspect/Adjust Every 2 Years

For optimum performance, replace gas-locking cylinders.

7.4 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.

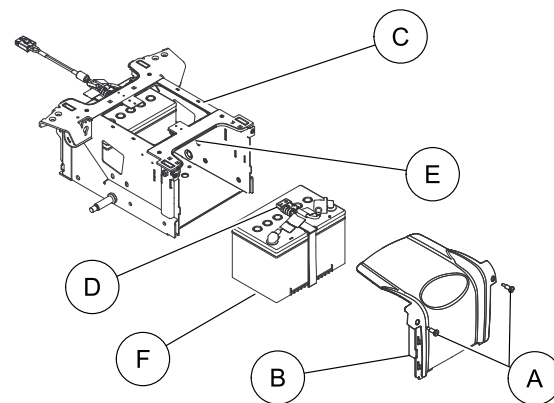
**DANGER!****Risk of Death or Serious Injury**

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.

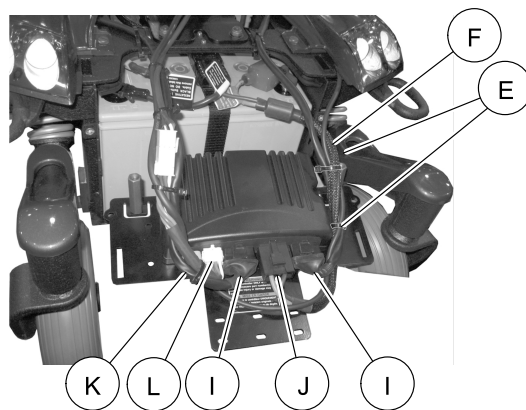
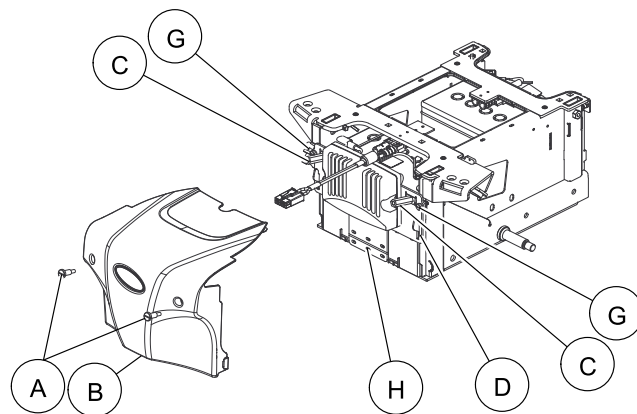
7.5 Using the Proper Batteries**7.6 Removing/Installing the Batteries****7.6.1 Removing/Installing the Front Battery**

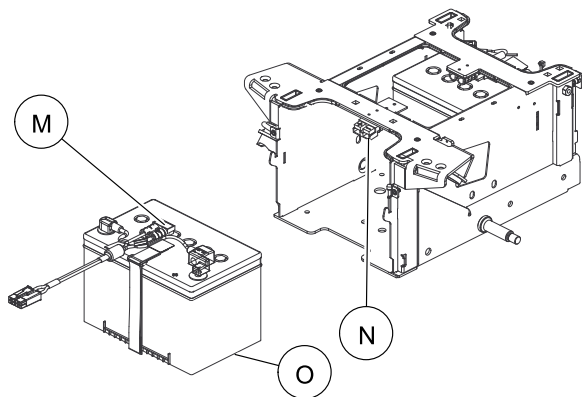
Reverse this procedure to install the front battery.


1. Place the wheelchair in a well ventilated area where work can be performed without risking damage to carpeting or floor covering
2. If necessary, elevate the seat to the up most position.
3. Verify the joystick On/Off switch is in the Off position and disconnect joystick cable (not shown).
4. Remove the mounting screws (A) securing the front shroud/battery retention bracket (B) to the wheelchair base frame (C).
5. Remove the front shroud/battery retention bracket from the wheelchair base frame.

6. Disconnect the front battery connector **D** from the front connector of the battery cable **E**.
7. Remove the front battery **F** from the wheelchair base frame.


7.6.2 Removing/Installing the Rear Battery





 Reverse this procedure to install the rear battery.

1. Remove the mounting screws **A** securing the rear shroud **B** to the rear shroud stand offs **C**.
2. Remove the rear shroud from the wheelchair base frame **D**.

 Take note of position and orientation of the tie-wraps and wiring bundles before cutting necessary tie-wraps and repositioning the wiring bundles.
3. Locate the two wiring bundles, one on each side of the controller and if necessary, cut the tie-wraps securing the wiring bundles to the controller bracket.
4. Remove the tie-wraps **E** securing the right side wiring bundle **F** together
5. Remove the two mounting screws **G** securing the controller bracket **H** to the wheelchair base frame.

6. Lifting up on the controller bracket, disengage the controller bracket from the wheelchair base frame.
7. Using one hand to support the controller bracket, use the other hand to disconnect the two motor connectors **I**, the rear battery wiring connector **J**, the joystick connector **K** and the auxiliary wiring harness connector **L** (if equipped with power seating system, running light package or other powered accessory) from the controller
8. Set the controller bracket aside.
9. Disconnect the rear battery wiring connector **M** from the rear battery connector **N**



WARNING!

– When removing or installing the rear battery, **DO NOT** allow the controller bracket to come in contact with the top of the battery. **ALWAYS** remove the controller bracket from the wheelchair base frame when removing the batteries - otherwise injury or damage may occur.

10. Remove the rear battery **O** from the wheelchair base frame.

7.7 Replacing the Batteries and/or Battery Cables

7.7.1 Disconnecting Battery Cables

1. Remove the batteries **K**.
2. Cut the tie-wrap **I** that secures the battery terminal cap in place.
3. Slide terminal caps **I** up onto the battery cables.
4. Remove the mounting screw **A** and two lock washers **B** securing the POSITIVE (+) battery cable L-bracket **C** to the POSITIVE (+) battery terminal **D**.

5. Remove the mounting screw ⑤ and two lock washers ⑥ securing the Negative (-) battery cable ③ to the NEGATIVE (-) battery terminal ④.
6. Repeat STEPS 2-5 to remove the battery cables from the remaining battery.



WARNING!

- NEVER allow any of your tools and/or battery cables to contact both battery terminals at the same time. An electrical short may occur and serious personal injury or damage may occur.
- Connect same color connectors to each other (Gray to gray, black to black).
- Do not remove fuse or mounting hardware from positive (+) battery cable mounting screw. To replace the fuse, obtain and replace battery harness with fuse.

7.7.2 Connecting Battery Cables



WARNING!

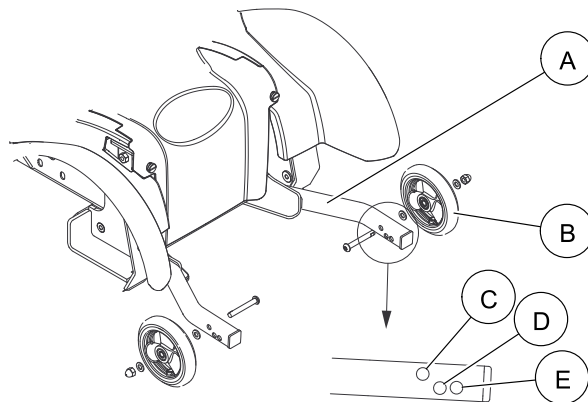
- The positive (+) battery cable must connect to the positive (+) battery terminal, otherwise serious damage will occur to the electrical system.
- The use of rubber gloves is recommended when working with batteries.
- Battery terminal configuration as shown in Detail “A” of FIGURE 4 MUST be used. Batteries that have the terminal configuration reversed MUST NOT be used - otherwise serious injury or damage may occur.
- Install protective caps on POSITIVE (+) and NEGATIVE (-) terminals.
- All battery terminal covers (two on the front battery and two on the rear battery) must be installed prior to use.



CAUTION!

- When connecting the battery cables to the battery, the battery cables MUST be connected to the battery terminals. Otherwise, damage to the battery cable may result when installing battery caps.

1. Secure the battery cables to the battery terminals as described below. Securely tighten:
 - a. Using the mounting screw (A) and two lock washers (B), secure the POSITIVE (+) battery cable L-bracket (C) to the POSITIVE (+) battery terminal (D).
 - b. Using the mounting screw (E) and two lock washers (F), secure the Negative (-) battery cable (G) to the NEGATIVE (-) battery terminal (H).
2. Repeat STEP 1 to connect the battery cables to the remaining battery.
3. Verify all battery cables are correctly installed and securely tightened.
4. Slide terminal caps (I) down battery cables and onto battery terminals.
5. Secure each terminal cap in place with a tie-wrap (J) (use tie-wraps 11-1/2-inches long).
6. Position the batteries (K) into the wheelchair.



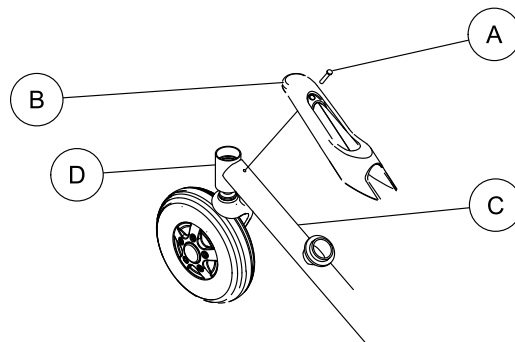
7.9 Adjusting Forks

7.8 Anti-Tippers



WARNING!

- DO NOT Operate the wheelchair without anti-tippers installed - otherwise injury or damage may result
- The anti-tipper wheels MUST be mounted in the correct location according to the seat size and occupant weight to maintain wheelchair stability.
- DO NOT reposition the anti-tipper wheel. Changing the anti-tipper wheel location will effect the wheelchair stability and injury or damage may result.



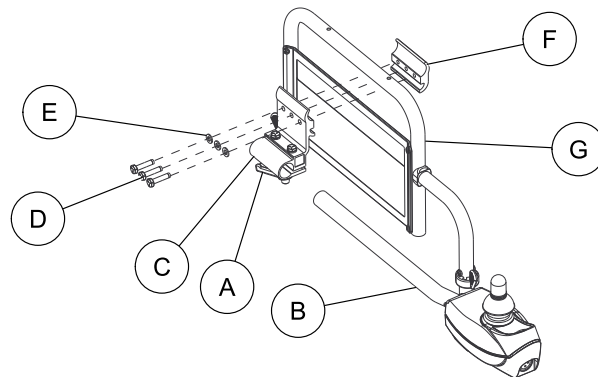


This procedure must be performed by a qualified technician.

This procedure applies to both Forks.


1. Remove the mounting screw securing the suspension arm shroud to the suspension arm.
2. Remove the suspension arm shroud from the suspension arm and caster headtube.
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. Reverse STEPS 1 and 2 to reinstall the suspension arm shroud.

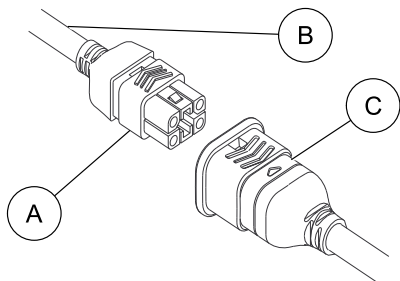
7.10 Repositioning Joystick



1. Turn the adjustment lock lever **A** to release the joystick mounting tube **B** from the joystick mounting bracket **C**.
2. Remove the joystick from the wheelchair.
3. Remove the three hex screws **D** and washers **E** that secures the joystick mounting bracket to the threaded mounting bracket **F**.
4. Reposition threaded mounting bracket on the inside of the opposite arm tube **G** 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.

7.11 Disconnecting/Connecting the SPJ+ Joysticks

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



7.11.1 Disconnecting the SPJ+ Joysticks

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

7.11.2 Connecting the SPJ+ Joysticks




WARNING!

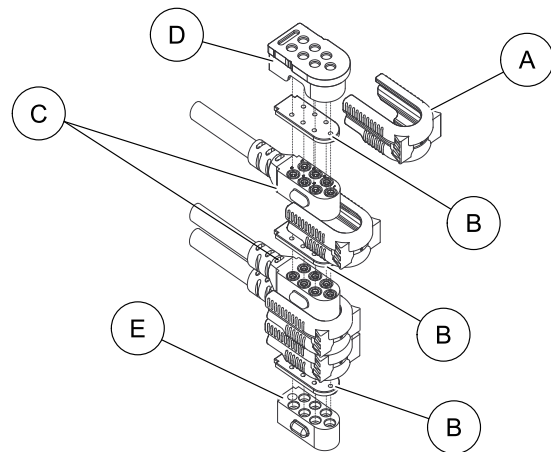
– The joystick connector and controller connector fit together in one way only. **DO NOT** force them together.

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


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7.12 Disconnecting/Connecting the CMPJ+ Joysticks

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




7.12.1 Connecting the CMPJ+ Joysticks

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

1. Ensure the latch is pulled away from the network connector.
2. Connect the network connector to the other connectors.
3. Top **D** and Bottom **E** 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.

7.12.2 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

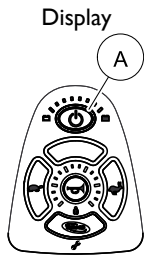







For additional troubleshooting information and explanation of error codes, refer to the individual Electronics Manual supplied with each wheelchair.

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

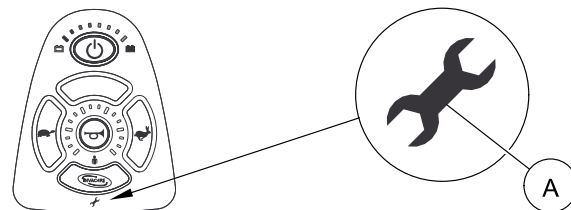
The joystick information gauge and the service indicator give indications of the type of fault or error detected by the control module. When a fault is detected, the wheelchair may stop and not drive. The LEDs on the information gauge may flash in a particular pattern or the service indicator light will 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.	

	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 programming, inhibit 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 **A** 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.

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+, PSR+, PSF+ 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 Dis-engaging/Engaging Motor Lock Levers .
CHARGER PLUGGED IN displays.	Battery charger connected (Error code E28).	Unplug battery charger from the wheelchair. Refer to Charging Batteries .

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
BATTERY FAULT displays and the wheelchair does not drive.	Batteries need to be charged (Error code E14).	Charge batteries. Refer to <u>Charging Batteries</u> . If batteries fail to charge properly, check battery charger or replace batteries. Refer to <u>Replacing Batteries and/or Battery Cables</u> .
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.

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
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.
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.

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
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.

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
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.
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.

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
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	DO
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.

Notes

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

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