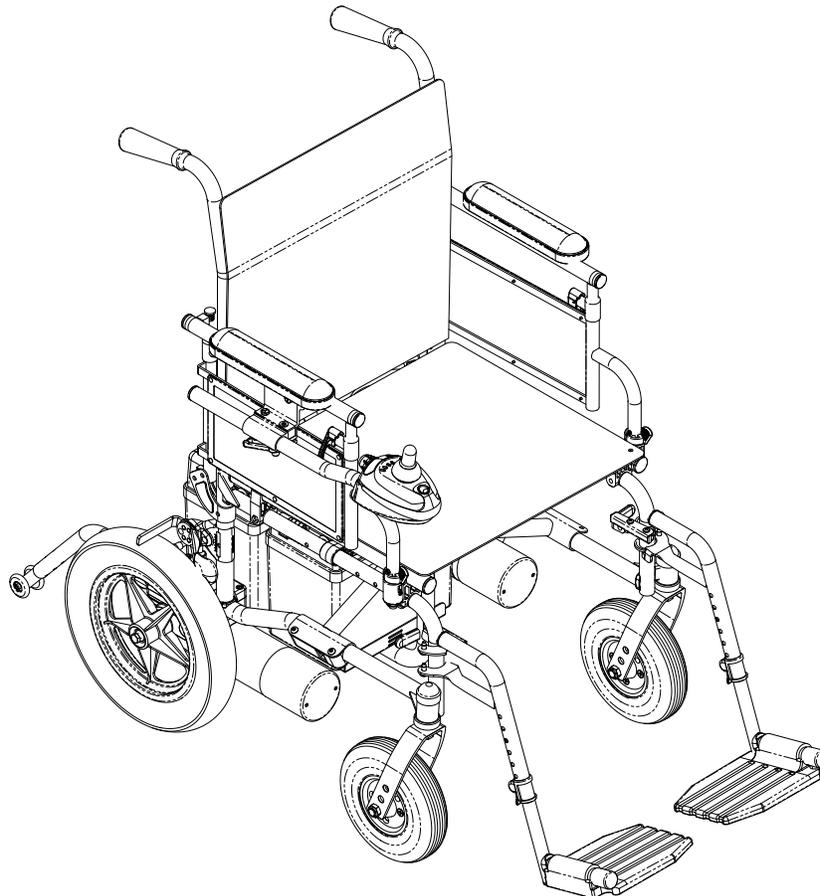


# Owner's Operator and Maintenance Manual

## P9000™ XDT



This manual **MUST** be given to the user of the product.

**BEFORE** using this product, read this manual and save for future reference.

For more information regarding Invacare products, parts, and services, please visit [www.invacare.com](http://www.invacare.com)



**Yes, you can.®**

**⚠ DANGER**

**Risk of Death, Serious 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.

---

**⚠ 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.

---

**⚠ WARNING**

A qualified technician must perform all procedures in the service manual.

**DEALERS AND QUALIFIED TECHNICIANS:** do not service or operate this equipment without first reading and understanding (1) the owner's operator and maintenance manual, (2) the service manual (if applicable) and (3) the seating system's manual (if applicable). if you are unable to understand the warnings, cautions and instructions, contact invacare technical support before attempting to service or operate this equipment - otherwise, injury or damage may result.

---

**REFERENCE DOCUMENTS**

DOCUMENT	PART NUMBER
MK <sub>5</sub> <sup>™</sup> NX <sup>™</sup> Electronics Manual	1110532

*NOTE: Updated versions of this manual are available on [www.invacare.com](http://www.invacare.com).*

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# SPECIAL NOTES

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

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

## NOTICE

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

### WHEELCHAIR USER

As a manufacturer of wheelchairs, Invacare endeavors to supply a wide variety of wheelchairs to meet many needs of the end user. However, final selection of the type of wheelchair to be used by an individual rests solely with the user and his/her healthcare professional capable of making such a selection.

### WHEELCHAIR TIE-DOWN RESTRAINTS AND SEAT RESTRAINTS

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

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

## 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**.

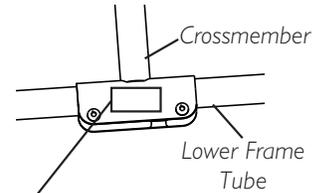
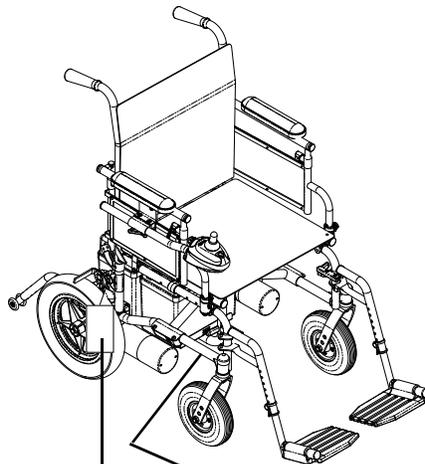
# SPECIFICATIONS

P9000 XDT	
<b>SEAT WIDTH</b>	18 inches
<b>SEAT DEPTH</b>	16 or 18-inches (by extension)
<b>BACK HEIGHT</b>	17, 18, or 19 inches
<b>SEAT-TO-FLOOR</b>	19½ inches
<b>OVERALL WIDTH (EXCLUDING JOYSTICK)</b>	Unfolded - 24½ inches; Folded - 13 inches
<b>OVERALL HEIGHT</b>	38 inches (with 17 inch back)
<b>OVERALL LENGTH</b>	28 inches (base only) to 47 inches (with riggings and anti-tippers)
<b>WEIGHT</b> W/O BATTERIES AND FRONT RIGGINGS WITH UI BATTERIES SHIPPING	82 lbs 142 lbs 100 lbs
<b>DRIVE WHEELS/TIRES (FLAT FREE)</b>	12½ inches x 2¼ inches
<b>CASTERS W/PRECISION SEALED BEARINGS</b>	8 x 1¾ inches semi-pneumatic
<b>ANTI-TIPPERS</b>	Removable
<b>FOOTRESTS/ LEGRESTS</b>	Swingaway, Removable
<b>ARMRESTS</b>	Adjustable Height - Desk
<b>UPHOLSTERY</b>	Black Nylon
<b>BATTERIES(2 REQUIRED) BATTERY/SIZE (NOT SUPPLIED)</b>	UI
<b>SPEED (M.P.H.)</b>	0 to 4
<b>TURNING RADIUS</b> CHAIR ONLY CHAIR WITH FOOTREST CHAIR WITH ANTI-TIPPERS	Front - 26 inches; Rear - 13 inches 36 inches 16 inches
<b>*RANGE (VARIABLE)</b>	12-14 miles with UI batteries
<b>**WEIGHT LIMITATION</b>	250 lbs
<b>OPERATING TEMPERATURE</b> <b>STORAGE TEMPERATURE</b>	122 F (50 C) Maximum to -13 F (-25 C) Minimum 149 F (65 C) Maximum to -58 F (-40 C) Minimum

\*NOTE: Values for range are calculated for maximum chair weight rating using largest batteries applicable (U1), per test procedures described in ANSI/RESNA WC/VOL2-1998 Section 4 and meet federal reimbursement requirements for this product. While considered typical, they are derived based on certain ideal conditions. Variances in battery condition, user weight, usage pattern or overall terrain conditions will result in actual values for range that differ from these stated values. Users should become accustomed to how their unique conditions impact their individual results. Users should become familiar with the battery discharge indicator on the joystick to determine the range of their wheelchair. Refer to When to Charge Batteries on page 50 for more information about the battery discharge indicator.

\*\*NOTE: Includes seating system and accessories.

# LABEL LOCATIONS



**WEIGHT CAPACITY**  
**250 LBS. (114 kgs.)**  
 REFER TO OWNER'S MANUAL  
P/N 1111013

Serial Number Label Location

**IMPORTANT NOTICE**

The wheel locks on this wheelchair have been pre-set at the factory to comply with the Veterans Administration functional Standard 8320.01 of the Federal Register, paragraph 3.2.4.5.3. If these wheel locks do not meet your needs, follow instructions below.

**⚠ CAUTION**

Any wheel lock adjustments should embed wheel lock shoe at least 1/8" into tire when locked (3/16" on pneumatic tires).

**INSTRUCTIONS FOR WHEEL LOCK ADJUSTMENTS**

1. Loosen wheel lock mounting fastener, which runs through mounting bracket and frame.
2. Slide clamp toward rear wheel until wheel lock shoe is embedded into tire material at least 1/8" when handle is engaged to the lock position (3/16" for pneumatic tires).
3. Tighten mounting fastener to secure mounting bracket in desired location and recheck lock shoe embedding.
4. Inspect for correct locking action **BEFORE** actual use.

00078X021-0394

**⚠ WARNING**

Refer to Owner's Manual for proper anti-tipper setting. 1085379



**⚠ WARNING**

DO NOT OPERATE WITHOUT THE ANTI-TIP TUBES INSTALLED. P/N 60106X144

REV. 5/98

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# SECTION I—GENERAL GUIDELINES

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## **⚠ WARNING**

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

---

## **⚠ DANGER**

**Risk of Death, Serious 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.

---

## Accessories Information

---

## **⚠ 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](http://www.invacare.com).

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## **⚠ WARNING**

Extreme care should be exercised when using oxygen in close proximity to electric circuits and other combustible materials. Contact your oxygen supplier for instruction in the use of oxygen.

---

## Batteries

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### **⚠ WARNING**

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

If wet cell batteries are used, follow all manufacturer guidelines and instructions for installation and maintenance. Regardless of battery type, proper battery footprint and use of battery terminal caps as defined in **Batteries** on page 50 must be followed.

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

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## Charging Batteries

---

### **⚠ DANGER**

When using an extension cord, use only a three wire extension cord having at least 16 AWG (American Wire Gauge) wire and the same or higher electrical rating as the device being connected. Use of improper extension cord could result in a risk of fire and electric shock. Three prong to two prong adapters should not be used. Use of three prong adapters can result in improper grounding and present a shock hazard to the user.

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

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

**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.

**DO NOT** attempt to recharge batteries using at the same time **BOTH** the on-board battery charger **AND** an independent battery charger plugged into the joystick charger port. Doing so will reduce the life of 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.

After charging batteries, **ALWAYS** make sure that the battery charger cord is unplugged. Failure to do this could result in damage to the cord or personal injury to the user or bystanders.

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

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

---

## Grounding Instructions

---

### **WARNING**

**DO NOT**, under any circumstances, cut or remove the round grounding prong from any plug used with or for Invacare products. Some devices are equipped with three-prong (grounding) plugs for protection against possible shock hazards and fire. 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.

---

## Operating Information

---

### **DANGER**

#### **Risk of Death, Serious Injury or Damage**

Operating the wheelchairs outdoors 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.

---

**⚠ 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.

---

**⚠ 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**.

---

---

**⚠ WARNING****Risk of Serious Injury or Damage**

Operating the wheelchair with a ground clearance of less than 3 inches between the footplates and the ground/floor may cause serious injury or property damage.

**ALWAYS** maintain a minimum of 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.

*This warning applies to the use of the footboard as well.*

---

**⚠ WARNING**

**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 may tip over.

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

**DO NOT** lean over the top of the back upholstery to reach objects from behind as this may cause the wheelchair to tip over.

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

**DO NOT** engage or disengage the motor release levers until the power is in the off position.

**DO NOT** attempt to lift the wheelchair by lifting on 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.

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

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

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

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

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

**DO NOT** leave the power button in the on position when entering or exiting your wheelchair.

---

**⚠ WARNING**

**DO NOT** stand on the frame of the wheelchair.

**DO NOT** use the footplates as a platform. When getting in or out of the wheelchair, make sure that the footplates are in the upward position or swing the footrests toward the outside of the chair.

**DO NOT** stand on the front riggings, otherwise damage may occur. When getting in or out of the wheelchair, make sure that the footplates on the front riggings are in the upward position or moved out of the way.

Always verify that hand grips on the rear cane are secure prior to use when an assistant is used to propel or lift the chair. Check for any signs of looseness or deterioration and if found, contact a qualified technician. Do not attempt to move the wheelchair by using the hand grips if they are found to be unsecure or have deteriorated.

When cleaning rear cane or hand grip areas use only a clean towel lightly dampened with cool water. Verify that grips are dry prior to use. Use of soap or ammonia based cleaning solutions will result in the hand grips sliding off the cane assembly. Failure to observe this warning may result in injury to the user or bystanders.

**DO NOT** sit or transfer into the wheelchair unless it is fully open and the seat frame rails are fully seated into the side frame H-blocks.

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

Avoid storing or using near external flame or combustible products. Serious injury or damage to property may result.

---

## Repair or Service

---

**⚠ 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.

---

**⚠ 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**

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

---

**⚠ 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.

---

## Tire Pressure

---

**⚠ WARNING**

**DO NOT** use your wheelchair unless it has the proper tire pressure (P.S.I.).

**DO NOT** overinflate the tires. Failure to follow these suggestions can cause the tire to explode and cause bodily harm. The recommended tire pressure is listed on the side wall of the tire.

---

## Rain Test

---

**⚠ 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**.

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

---

---

**⚠ WARNING**

Check to ensure that the **RED** and **GREY** battery terminal caps are secured in place, joystick boot is **NOT** torn or cracked where water can enter and that all electrical connections are secure at all times.

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

---

## 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.

---

## Weight Limitation

---

**⚠ WARNING**

The P9000 XDT has a weight limitation, including seating system and accessories, of 250 lbs. Invacare recommends that only heavy-duty wheelchairs should be used for individuals weighing more than 250 lbs. Further, the activity level of the individual wheelchair user is important. For instance, a 170 lb. active wheelchair could subject the wheelchair to more stress than a 250 lb. user. Invacare recommends that very active users consider the use of heavy-duty wheelchairs.

---

---

# SECTION 2—SAFETY GUIDELINES

---

## **⚠ 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.

### **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.

### **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.

### **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.

### **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.

---

## **⚠ 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**

**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.

**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.

**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.

**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.

**Risk of Death, Serious Injury, or Damage**

Operating the wheelchair without anti-tippers could result in death, serious injury or damage.

**DO NOT** operate the wheelchair without antitippers installed.

**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.

**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 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.

**Risk of Death, Serious Injury or Damage**

Exceeding the weight capacity of the wheelchair/seating system could cause instability resulting in death or serious injury.

**DO NOT** exceed the weight capacity.

**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.

**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.

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## SECTION 3—EMI INFORMATION

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### **⚠ WARNING**

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

#### **Electromagnetic Interference (EMI) From Radio Wave Sources**

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

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

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

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

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

- 2) **Medium-range mobile transceivers, such as those used in police cars, fire trucks, ambulances and taxis. These usually have the antenna mounted on the outside of the vehicle; and**
- 3) **Long-range transmitters and transceivers, such as commercial broadcast transmitters (radio and TV broadcast antenna towers) and amateur (HAM) radios.**

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

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**⚠ WARNING****Powered Wheelchair Electromagnetic Interference (EMI)**

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

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

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

- 1) Do not operate hand-held transceivers (transmitters receivers), such as citizens band (CB) radios, or turn ON personal communication devices, such as cellular phones, while the powered wheelchair is turned ON;
- 2) Be aware of nearby transmitters, such as radio or TV stations, and try to avoid coming close to them;
- 3) If unintended movement or brake release occurs, turn the powered wheelchair OFF as soon as it is safe;
- 4) Be aware that adding accessories or components, or modifying the powered wheelchair, may make it more susceptible to EMI.

**NOTE:** There is no easy way to evaluate their effect on the overall immunity of the powered wheelchair).

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

**Important Information**

- 1) 20 volts per meter (V/m) is a generally achievable and useful immunity level against EMI (as of May 1994) (the higher the level, the greater the protection).
- 2) This device has been tested to a radiated immunity level of 20 volts per meter.
- 3) The immunity level of the product is unknown.

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

---

# SECTION 4—SAFETY/HANDLING OF WHEELCHAIRS

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

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

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

## Stability and Balance

---

### **⚠ WARNING**

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

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

---

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

## Coping With Everyday Obstacles

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

While the P9000 XDT is designed for use primarily in and around the home, the provider should determine whether this chair is suitable for the actual environment the chair will be used in.

DO NOT go down ramp at full speed. Some seat/back positions will cause wheelchair to feel unstable.

---

### **CAUTION**

**Be aware of condition of ramp. Traction will be diminished/nonexistent on a slippery surface. Proceed with caution.**

---

## **A Note to Wheelchair Assistants**

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

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

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

## **Tipping**

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### **⚠ WARNING**

**DO NOT tip the wheelchair without assistance.**

---

When tipping the wheelchair, an assistant should grasp the back of the wheelchair on a non-removable (non-detachable) part. Inform the wheelchair occupant before tipping the wheelchair and remind him/her to lean back. Be sure the occupant's feet and hands are clear of all wheels.

### **Tipping - Curbs**

After mastering the techniques of tipping the wheelchair, use this procedure to tackle curbs, short stairs, etc.

This procedure requires two assistants. The second assistant should be positioned at the front of the wheelchair lifting upward on a non-removable (non-detachable) part of the wheelchair frame when lifting the wheelchair and stabilizing the wheelchair when the wheelchair is being lowered to the ground.

The first assistant should turn the anti-tippers so the wheels are pointing up, apply a continuous downward motion until the balance point is achieved and the front casters clear the curb. At this point, the assistants will feel a difference in the weight distribution.

**⚠ WARNING**

**DO NOT let the wheelchair drop the last few inches to the ground. This could result in injury to the occupant.**

---

Roll the wheelchair forward and SLOWLY lower the wheelchair in one continuous movement. Push the wheelchair forward until the rear wheels roll up and over the curb.

---

**⚠ WARNING**

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

---

Turn the anti-tipper wheels down towards the ground/floor.

## Lifting/Stairways

---

**⚠ WARNING**

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

**Extreme caution is advised when it is necessary to move an unoccupied power wheelchair up or down the stairs. Invacare recommends using two assistants and making thorough preparations.**

**Use ONLY secure, nondetachable parts for hand-hold supports.**

**It is strongly recommended to lift the wheelchair only by the rear frame and the front forks - otherwise injury or damage 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 without the user and batteries is between 80 and 127 lbs.**

---

Follow this procedure for moving the wheelchair between floors when an elevator is NOT available or lifting the wheelchair is necessary:

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

1. Remove the occupant from the wheelchair.
  2. Remove the battery boxes from the wheelchair. Refer to Removing/Installing the Battery Boxes on page 53.
  3. If necessary, fold the wheelchair. Refer to Transporting the P9000 XDT on page 69.
  4. Bend your knees and keep your back straight.
-

5. Using non-removable (non-detachable) parts of the wheelchair, lift the wheelchair off the ground and transfer the wheelchair up or down the stairs.
6. The wheelchair should not be lowered until the last stair has been negotiated and the wheelchair has been carried away from the stairway.

---

**⚠ ESCALATORS WARNING**

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

---

## Transferring to and From Other Seats

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**⚠ 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.

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**CAUTION**

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

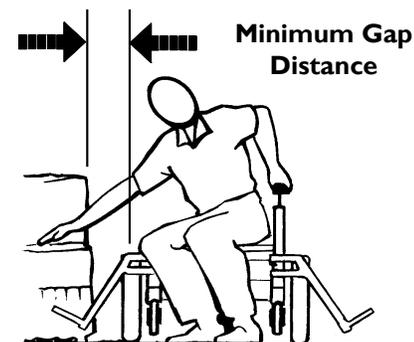
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*NOTE: This activity may be performed independently provided you have adequate mobility and upper body strength.*

*NOTE: For this procedure, refer to For this procedure, refer to FIGURE 4.1.*

1. Position the wheelchair as close as possible along side the seat to which you are transferring, with the casters pointing parallel to it.
2. After the wheelchair is positioned properly for transfer, verify that the clutches are engaged. Refer to [Engaging/Disengaging the Clutches](#) on page 64.
3. 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.



**FIGURE 4.1** Transferring to and From Other Seats

## Reaching, Leaning and Bending - Forward

*NOTE: For this procedure, refer to FIGURE 4.2 on page 27.*

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

1. Position the front casters as far forward as possible.
2. Engage clutches and, if applicable, wheel locks\*.

---

### **⚠ WARNING**

**\*Wheel locks are an option. You can order the wheelchair with or without wheel locks. Transfer to and from the wheelchair in the presence of a qualified healthcare professional to determine individual safety limits. Invacare strongly recommends ordering the wheel locks as an additional safeguard for the wheelchair user.**

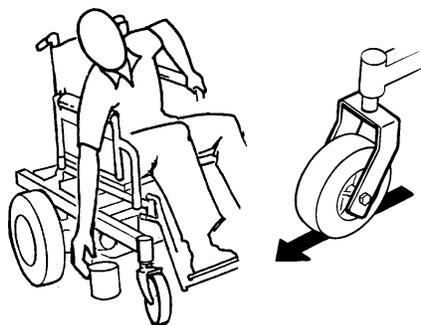
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**⚠ WARNING****Risk of Serious Injury or Damage**

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.



**FIGURE 4.2** Reaching, Leaning and Bending - Forward

**Reaching and Bending - Backward****⚠ WARNING**

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

*NOTE: For this procedure, refer to For this procedure, refer to FIGURE 4.3.*

1. Position wheelchair as close as possible to the desired object.
2. Point the front and rear casters rearward to create the longest possible wheelbase.
3. Reach back only as far as your arm will extend without changing your sitting position.



**FIGURE 4.3** Reaching and Bending - Backward

# SECTION 5—SAFETY INSPECTION/TROUBLESHOOTING

*NOTE: Every six months or as necessary take your wheelchair to a qualified dealer for a thorough inspection and servicing. Regular cleaning will reveal loose or worn parts and enhance the smooth operation of your wheelchair. To operate properly and safely, your wheelchair must be cared for just like any other vehicle. Routine maintenance will extend the life and efficiency of your wheelchair.*

## Safety Inspection Checklists

---

### **DANGER**

#### **Risk of Death or Serious Injury**

**Failure to complete the inspection of the critical components listed below could result in death or serious injury.**

**Inspect stability control components which could include anti-dive spring, anti-dive cylinder, ratcheting gears, or end stops to ensure proper operation.**

**Inspect drive axle nut, locking tab, wheel fasteners or quick release to ensure drive wheel is secure.**

---

### **CAUTION**

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

---

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

#### **Inspect/Adjust Initially**

- Ensure that the wheelchair rolls straight (no **excessive** drag or pull to one side).
  - Ensure that all fasteners on the clothing guards are secure.
  - Ensure that the arms are secure but easy to release and adjustment levers engage properly.
  - Ensure that adjustable height arms operate and lock securely.
  - Ensure armrest pads sit flush against arm tubes.
  - Ensure seat is secured to wheelchair frame.
  - Clean seat upholstery and armrests.
  - Ensure wheel mounting nuts are secure on drive wheels.
  - Ensure no excessive side movement or binding occurs when drive wheels are lifted and spun when disengaged (free-wheeling).
  - Ensure that drive wheel axle bolts and locking tab washers are secure.
-

- Ensure that the wheel locks engage properly and do not interfere with the tires when rolling. Also, ensure that the pivot points are free of wear and looseness.
- Inspect caster assembly has proper tension when caster is spun. Caster 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.
- Ensure that casters are free of debris.
- Inspect tires for flat spots and wear. If tires are pneumatic, check for proper inflation.
- Ensure seat and/or back upholstery have no rips and do not sag. Replace if necessary.

### **Inspect/Adjust Weekly**

- Ensure seat is secured to wheelchair frame.
- Ensure seat release latch is not worn and is functional. Replace if necessary.
- Inspect tires for flat spots and wear. If the tires are pneumatic, check for proper inflation.
- Ensure all caster/wheel/fork/headtube fasteners are secure.
- Ensure that casters are free of debris.
- Ensure arm pivot points are not worn and/or loose. Replace if necessary.

### **Inspect/Adjust Monthly**

- Ensure wheel mounting nuts are secure on drive wheels.
- Ensure no excessive side movement or binding occurs when drive wheels are lifted and spun when disengaged (free-wheeling).
- Ensure that drive wheel axle bolts and locking tab washers are secure.
- Inspect caster assembly has proper tension when caster is spun. Caster should come to a gradual stop.
- Ensure that casters are free of debris.
- Loosen/tighten caster locknut if wheel wobbles noticeably or binds to a stop.
- Ensure that the wheel locks engage properly and do not interfere with the tires when rolling. Also, ensure that the pivot points are free of wear and looseness.
- Inspect the seat positioning strap for any signs of wear. Ensure buckle latches. Verify hardware that attaches strap to frame is secure and undamaged. Replace if necessary.

### **Inspect/Adjust Periodically**

- Ensure wheelchair rolls straight (no excessive drag or pull to one side).
- Ensure that all fasteners on the 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 arm pivot points are not worn and/or loose. Replace if necessary.
- Ensure armrest pads sit flush against arm tubes.
- Ensure seat and/or back upholstery have no rips and do not sag. Replace if necessary.
- Ensure seat release latch is not worn. Replace if necessary.
- Ensure seat and/or back upholstery have no rips and do not sag. Replace if necessary.
- Clean upholstery and armrests.
- Inspect charger AC power cord for damage. Replace if necessary.
- Ensure that casters are free of debris.
- Check that all labels are present and legible. Replace if necessary.
- Ensure that casters are free of debris.
- Inspect electrical components for signs of corrosion. Replace if corroded or damaged.

## Troubleshooting - Mechanical

Chair Veers Left/Right	Sluggish Turn/Performance	Casters Flutter	Squeaks and Rattles	Looseness In Chair	Chair 3 Wheels	Solutions
X	X	X			X	If pneumatic, check tires for correct and equal pressure.
X	X	X	X	X		Check for loose stem nuts/bolts.
X		X				Check that both casters contact ground at the same time.

## Troubleshooting Guide

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
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 recharging.	Battery failure. Charger malfunction. Electrical malfunction.	Check batteries for shorted cell. Replace if necessary. Contact dealer/Invacare. Poor connections between charger and wheelchair. Contact dealer/Invacare for service.
Battery indicator flashes the charge level is low too soon after being recharged.	Batteries not charged. Weak batteries. Electrical malfunction.	Have charger checked. Replace batteries if necessary. Contact dealer/Invacare for service.
Motor chatters or runs irregularly.	Electrical malfunction.	Contact dealer/Invacare.
Wheelchair does not respond to commands. Power on, battery indicator flashes.	One or both clutches disengaged.	Engage motor locks/clutches.
Only one drive wheel turns.	Electrical malfunction. One clutch is disengaged.	Contact dealer/Invacare for service. Engage clutch.
Joystick erratic or does not respond as desired.	Electrical malfunction. Controller programmed improperly.	Contact dealer/Invacare for service. Reprogram controller. Contact dealer/Invacare for service.
Wheelchair does not respond to commands. Power indicator off - even after recharging.	Poor battery terminal connection. Electrical malfunction.	Clean terminals. Contact dealer/Invacare.

*NOTE: For additional troubleshooting information and explanation of error codes, refer to the Electronics Manual (P/N 1110532) supplied with each wheelchair.*

## Checking Battery Charge Level

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 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/chargers.	Follow recommendations in this manual when selecting a battery or charger.
Don't put new batteries into service before charging.	Fully charge a new battery before using. Use a carrying strap to remove, move or install a battery.
Don't tip or tilt batteries.	
Don't tap on clamps or terminals with tools.	Push battery clamps onto terminals. Spread clamps wider if necessary.
Don't mismatch your battery and chargers. Don't use randomly chosen batteries or chargers.	Use <b>ONLY</b> a GEL charger for a GEL or sealed battery and a regular charger for regular batteries.

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# SECTION 6—WHEELCHAIR OPERATION

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## **⚠ WARNING**

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

Set-up/programming of the Electronic Control Unit is to be performed **ONLY** by a qualified technician. The fine tuning adjustments of the controller may affect other activities of the wheelchair. Damage to the equipment could occur under these circumstances. **IF UNQUALIFIED INDIVIDUALS PERFORM ANY WORK ON THESE UNITS, THE WARRANTY IS VOID.**

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## **SPJ™ Joystick Switches and Indicators**

*NOTE: For the following information, refer to FIGURE 6.1 on page 34.*

### **Multi Function Charger Port**

The multi function charger port 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.

### **On/Off Toggle Switch**

This toggle switch is located at the back of the joystick housing.

### **Speed Control switch**

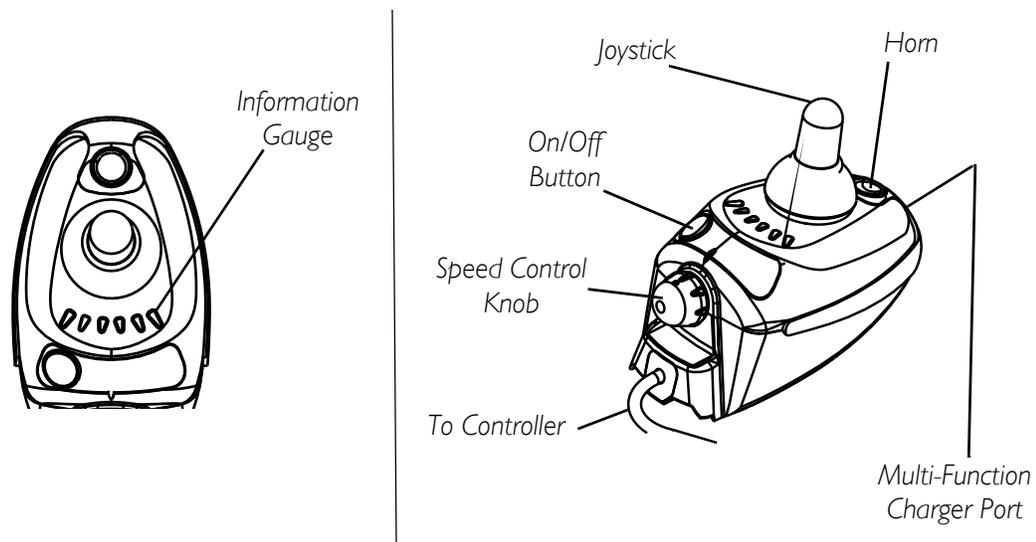
The speed control switch is located on the back of the joystick housing. This rotary switch is used for controlling the speed and acceleration of the wheelchair.

1. Turn the switch clockwise to increase the speed of the wheelchair.
2. Turn the switch counterclockwise to decrease the speed of the wheelchair.

### **Joystick**

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

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



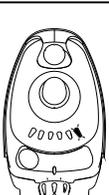
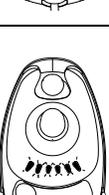
**FIGURE 6.1** SPJ™ Joystick Switches and Indicators

### Information Gauge Display

The Information Gauge Display is located on the front of the joystick housing. It 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:
  - A. GREEN LED is lit, indicating well charged batteries.
  - B. Only AMBER LEDs are lit, indicating batteries are moderately charged. Recharge batteries before taking a long trip.
  - C. Only RED LED is lit, indicating batteries are running out of charge. Recharge batteries as soon as possible.
3. Program, inhibit or charge modes.
4. Fault indication (Flash Codes).

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 the following table of the diagnostic indications of the wheelchair status.

DISPLAY	DESCRIPTION	DEFINITION	COMMENTS
	All LEDs are off.	Power is Off.	
	All LEDs are on.	Power is On.	Fewer than three (3) 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.
	Right GREEN LED is flashing.	Joystick is in Speed Limit mode.	The current state of battery charge will be displayed at the same time.
	All LEDs are flashing slowly.	Joystick has detected Out-of-Neutral-at-Power-Up mode.	Release the joystick back to Neutral.
	All LEDs are flashing quickly.	Joystick has detected a fault.	Joystick uses Flash codes to indicate faults. Refer to the electronics manual (Part Number 1110532).

## Operating the Wheelchair

*NOTE: For this procedure, refer to FIGURE 6.2 on page 37.*

### Turning the Power On/Off

1. To turn the power ON, press the on/off button.

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

- A. The Current Battery Charge - Shows all LEDs lit or partial LEDs lit. Refer to the preceding information gauge display table.
  - B. Out Of Neutral At Power up - Shows all LEDs flashing slowly. This occurs when the power is turned on when the joystick is out of neutral. This feature prevents sudden and unexpected movements of the power chair.
2. To turn the power off, press the on/off button.

### Using the Horn

1. Press the horn button located above the information gauge on the joystick housing.

### Using the Joystick to Drive the Chair

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

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

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

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

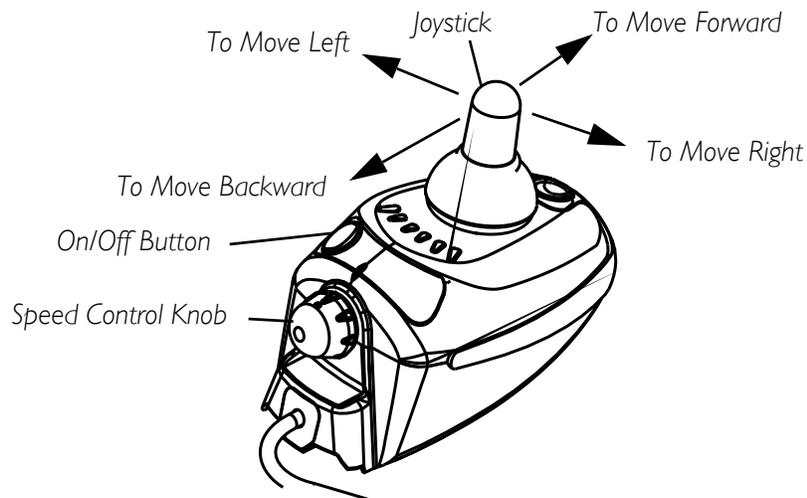
To drive the wheelchair, perform the following:

1. Adjust speed control switch to the appropriate setting.
2. Turn the power on. Refer to Turning the Power On/Off on page 36.

3. Move the joystick in the following manner:

MOVEMENT	ACTION
FORWARD	Push forward on the joystick.
REVERSE	Pull back on the joystick.
Turn RIGHT	Move the joystick RIGHT.
Turn LEFT	Move the joystick LEFT.
STOP	Release the joystick and the wheelchair will quickly slow down.

*NOTE: The joystick MUST be in the NEUTRAL position for an accurate reading of battery charge.*



**FIGURE 6.2** Using the Joystick to Drive the Chair

# SECTION 7—FRONT RIGGINGS

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## **⚠ WARNING**

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

**While the wheelchair is moving, minimum ground clearance for the front rigging is three inches. If the wheelchair is not moving, the front rigging **MUST** maintain a minimum of one inch ground clearance - otherwise personal injury and damage may result.**

**Before performing any maintenance, adjustment or service verify that ON/OFF switch on the joystick is in the OFF position.**

---

## **Installing/Removing/Using the Footrest/Legrest**

*NOTE: For this procedure, refer to FIGURE 7.1.*

*NOTE: This procedure applies to the swingaway footrest and elevating legrest.*

### **Installing**

1. Turn the swingaway footrest assembly to the side (open footplate is perpendicular to wheelchair).
2. Install the hinge plates on the swingaway footrest assembly onto the hinge pins on the wheelchair frame.
3. Push the swingaway footrest assembly towards the inside of the wheelchair until it locks into place.

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

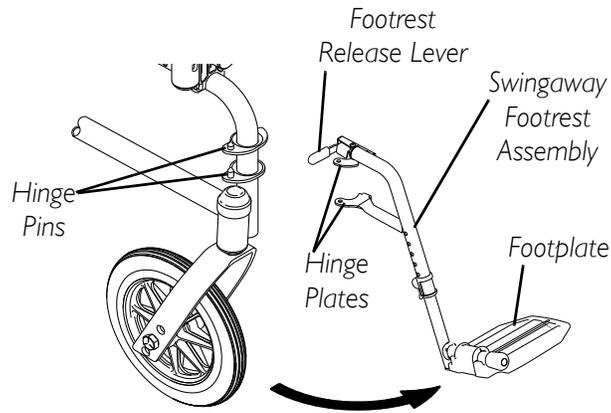
4. Repeat this procedure for the other footrest assembly.

### **Removing**

1. Push the footrest release lever inward.
2. Rotate swingaway footrest assembly outward.
3. Lift the swingaway footrest assembly off of the hinge pins.

### **Using**

1. To move the footrest out of the way without removing, push the footrest release lever inward, rotate footrest outward.
2. To lock the footrest, push the swingaway footrest assembly towards the inside of the wheelchair until it locks into place.



**FIGURE 7.1** Installing/Removing/Using the Footrest/Legrest

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

## Adjusting the Footrest Height

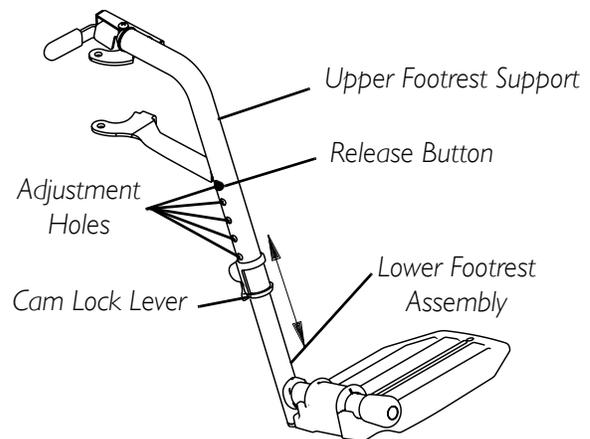
*NOTE: For this procedure, refer to FIGURE 7.2.*

*NOTE: This procedure applies to the swingaway footrest and elevating legrest.*

1. Remove the swingaway footrest assembly. Refer to Installing/Removing/Using the Footrest/Legrest on page 38.

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

2. Remove impact guards and/or calf strap, if installed.
3. Pull the cam lock lever up to the unlocked position.
4. Push in the release buttons and reposition the lower footrest assembly to the desired height.
5. Ensure that the release buttons fully protrude from holes on both sides of the upper footrest support.
6. Rotate cam lock lever down to locked position.
7. Replace impact guards and/or calf strap.
8. Repeat this procedure for the other footrest, if necessary.
9. Reinstall the swingaway footrest assembly. Refer to Installing/Removing/Using the Footrest/Legrest on page 38.

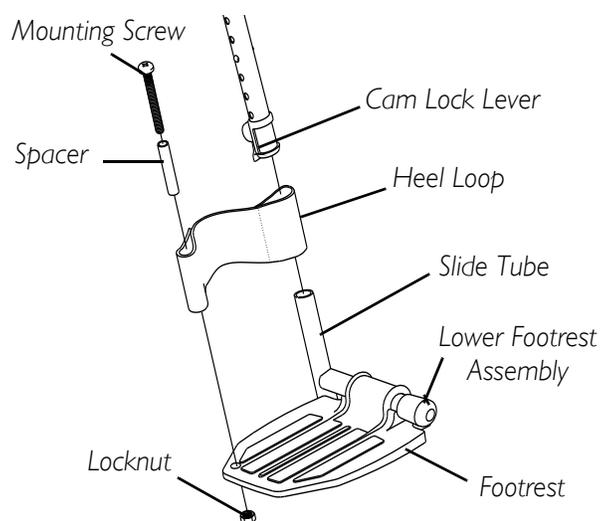


**FIGURE 7.2** Adjusting the Footrest Height

## Replacing the Heel Loop

*NOTE: For this procedure, refer to FIGURE 7.3.*

1. Pull the cam lock lever up to the unlocked position.
2. Push in the release buttons and remove the lower footrest assembly.
3. Remove the mounting screw, spacer and locknut that secure the heel loop to the footrest.
4. Remove existing heel loop from slide tube.
5. Install new heel loop onto slide tube.
6. Install the mounting screw, spacer and locknut to secure the heel loop to the footrest. Tighten until the spacer is secure.
7. Insert the lower footrest assembly into the upper footrest assembly to desired height.
8. Ensure that the release buttons fully protrude from holes on both sides of the upper footrest support.
9. Rotate cam lock lever down to locked position.



**FIGURE 7.3** Replacing the Heel Loop

## Raising/Lowering the Legrest Assembly

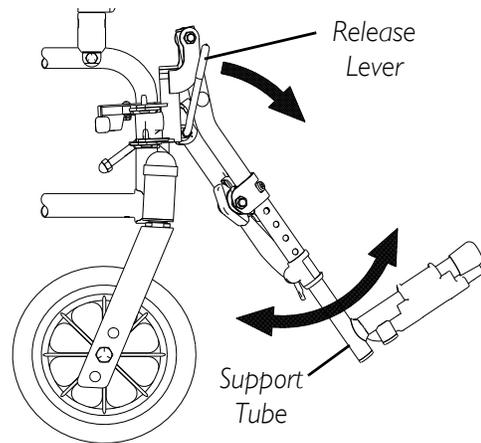
### **⚠ WARNING**

Ensure hands and fingers are clear of elevating legrest mechanism before pushing release lever to lower the elevating legrest. Otherwise injury may occur due to pinch points.

The wheelchair user's leg **MUST** be supported by an assistant before attempting to lower legrest.

*NOTE: For this procedure, refer to FIGURE 7.4.*

1. To raise the elevating legrest, the assistant should hold the support tube and raise elevating legrests until the desired height is obtained.
2. To lower the elevating legrest, perform the following:
  - A. Support user leg with one hand.
  - B. Push release lever downward with other hand.
  - C. Gently, lower user leg down and rest against the legrest.



**FIGURE 7.4** Raising/Lowering the Legrest Assembly

## SECTION 8—ARMS

### ⚠ WARNING

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

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

### Adjusting Armrest Height

### ⚠ WARNING

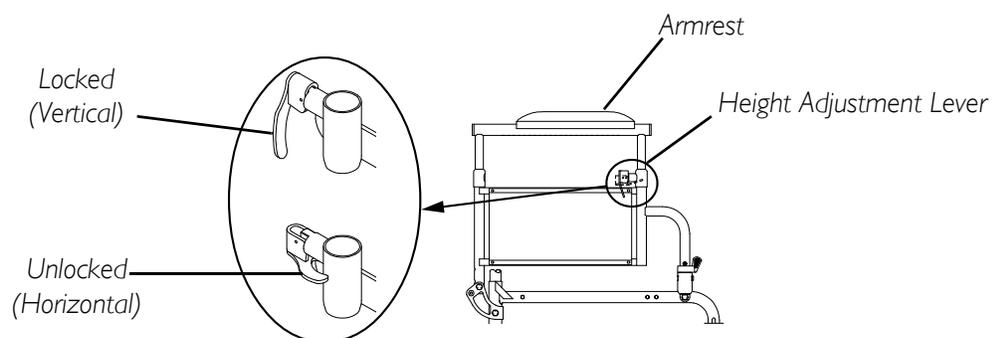
Make sure the height adjustment lever is in the locked position before using the wheelchair.

*NOTE: For this procedure, refer to FIGURE 8.1.*

1. Unlock the armrest by flipping the height adjustment lever on the top front of the armrest to the up (horizontal) position.
2. Adjust armrest to one of five positions.

*NOTE: Height adjustment lever MUST be in the unlocked position when placing armrest into the arm assembly.*

3. Lock the armrest by pressing the height adjustment lever into the down (vertical) position when the desired armrest height is achieved.
4. Repeat STEPS 1-3 for other armrest.



**FIGURE 8.1** Adjusting Armrest Height

## Swing-Back Arms

### **⚠ WARNING**

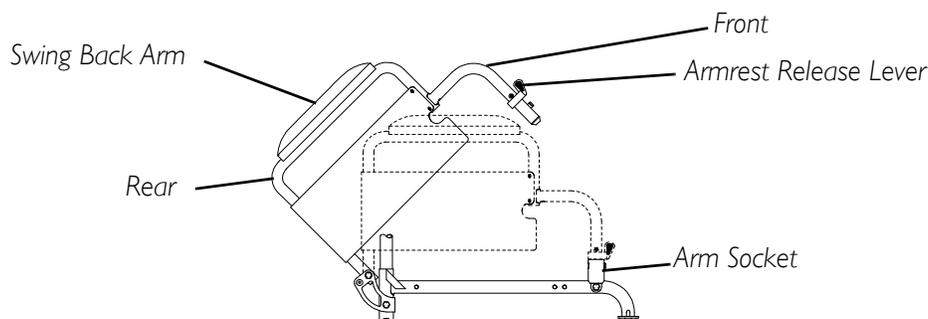
**Make sure the armrest release lever is in the locked position before using the wheelchair.**

*NOTE: For this procedure, refer to FIGURE 8.2.*

1. Unlock the swing-back arms by rotating the armrest release lever towards the outside of the wheelchair.
2. Pull the front of the swing-back arm straight up/out of the arm socket and towards the rear of the wheelchair.
3. To use the swing-back arm, push the swing-back arm towards the front of the wheelchair and then downward into the arm socket.

*NOTE: Armrest release lever MUST be in the unlocked position when placing armrest into the arm sockets.*

4. Lock the swing-back arms by rotating the armrest release lever towards the inside of the wheelchair.

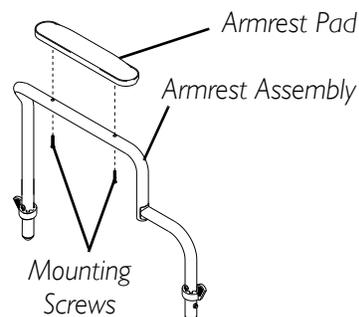


**FIGURE 8.2** Swing-Back Arms

## Replacing Armrest Pad

*NOTE: For this procedure, refer to FIGURE 8.3*

1. Remove the mounting screws that secure the armrest pad to the armrest assembly.
2. Replace armrest pad and securely tighten with the existing mounting screws.



**FIGURE 8.3** Replacing Armrest Pad

# SECTION 9—SEAT AND BACK

## ⚠ WARNING

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

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

## Replacing the Seat Upholstery

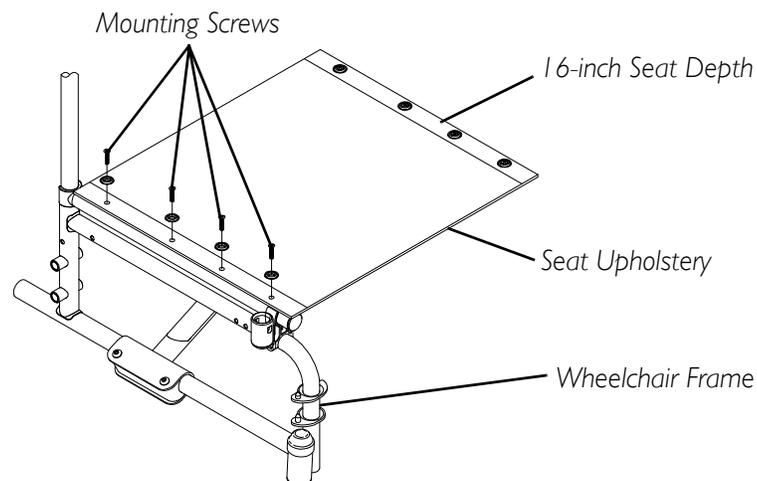
*NOTE: For the following procedure, refer to FIGURE 9.1.*

1. Remove the mounting screws that secure the existing seat upholstery to the wheelchair frame.

*NOTE: Refer to the following table to determine the number of mounting screws for each seat depth.*

SEAT DEPTH	NUMBER OF SCREWS
16 inch	8
18 inch	10

2. Remove the existing seat upholstery from the wheelchair frame.
3. Install new seat upholstery by reversing Steps 1-2.

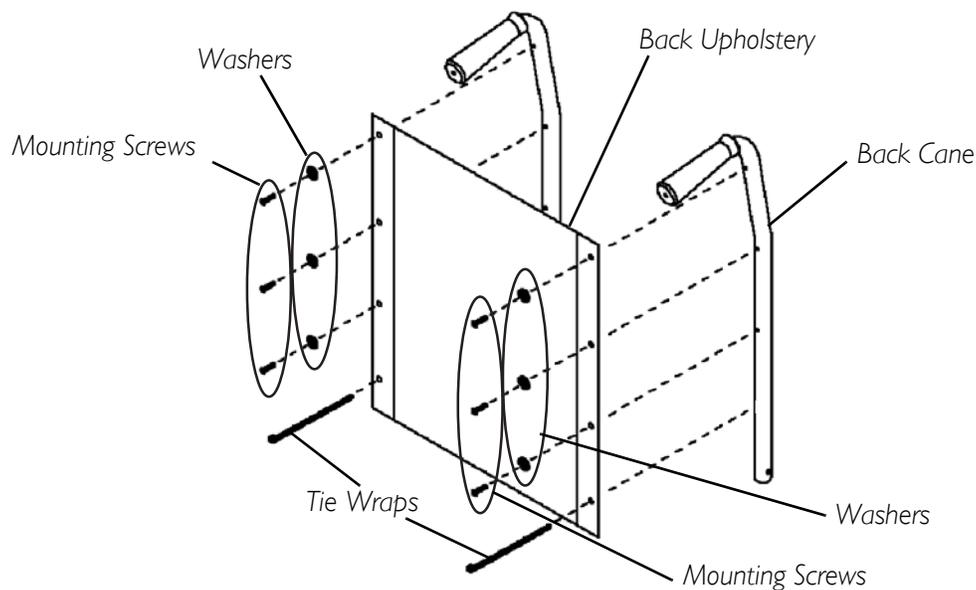


**FIGURE 9.1** Replacing the Seat Upholstery

## Replacing the Back Upholstery

*NOTE: For the following procedure, refer to FIGURE 9.2.*

1. Flip swing back arms up and out of the way. Refer to [Swing-Back Arms](#) on page 43.
2. Remove the six mounting screws and washers that secure the existing back upholstery to the back canes.
3. Cut the tie wraps that secure the existing back upholstery to the wheelchair frame.
4. Securely tighten the new back upholstery to the back canes with the six mounting screws and washers starting with the top hole of the back cane.
5. Install two new tie wraps through the bottom holes of the upholstery to the bottom of the back upholstery to the back canes.
6. Flip swing-back arms down for use. Refer to [Swing-Back Arms](#) on page 43.



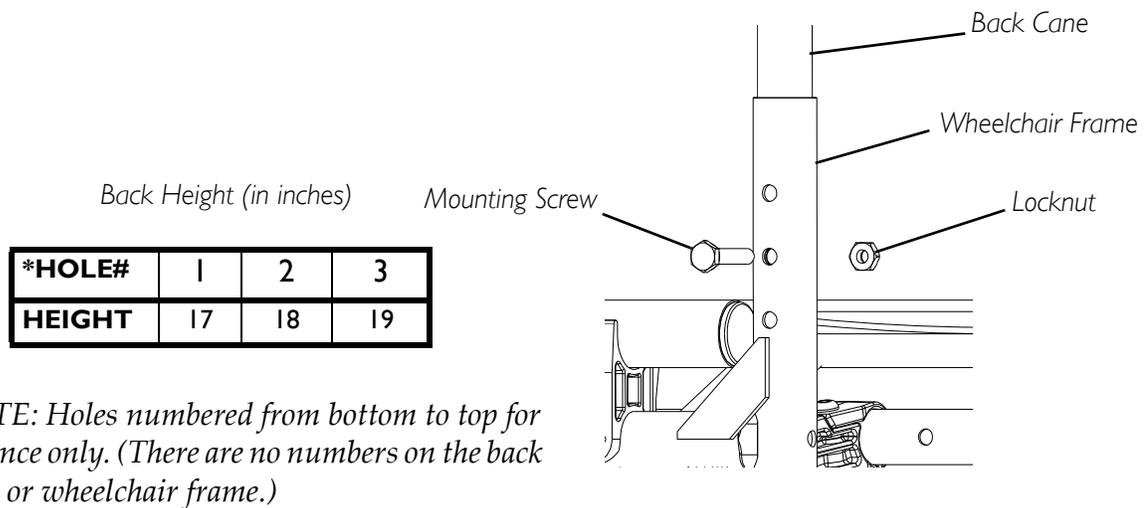
**FIGURE 9.2** Replacing the Back Upholstery

## Adjusting the Back Height

*NOTE: For this procedure, refer to FIGURE 9.3.*

*NOTE: Back canes must be adjusted to the same height.*

1. Remove the two mounting screws and locknuts that secure the two back canes to the wheelchair frame.
2. Reposition the back canes to the desired height adjustment position.
3. Reinstall the mounting screws and locknuts that secure the back canes to the wheelchair frame and securely tighten.



**FIGURE 9.3** Adjusting the Back Height

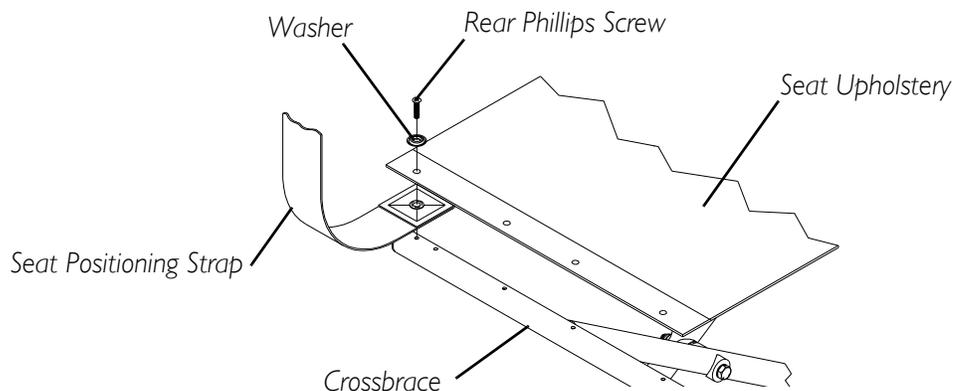
## Replacing Seat Positioning Strap

NOTE: For this procedure, refer to FIGURE 9.4.

1. If necessary, remove the seat cushion from the seat upholstery.
2. Remove the two rear phillips screws and washers that secure the seat upholstery and seat positioning strap to the crossbraces.
3. Remove the two halves of the seat positioning strap from the crossbraces.
4. Position the two new seat positioning strap halves between the seat upholstery and the crossbraces.
5. Reinstall the rear phillips screws and washers that secure the seat upholstery and seat positioning strap to the crossbraces.

NOTE: Washer is positioned on top of seat upholstery.

6. If necessary, reinstall the seat cushion onto the seat upholstery.



**FIGURE 9.4** Replacing Seat Positioning Strap

# SECTION 10—JOYSTICK

## ⚠ WARNING

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

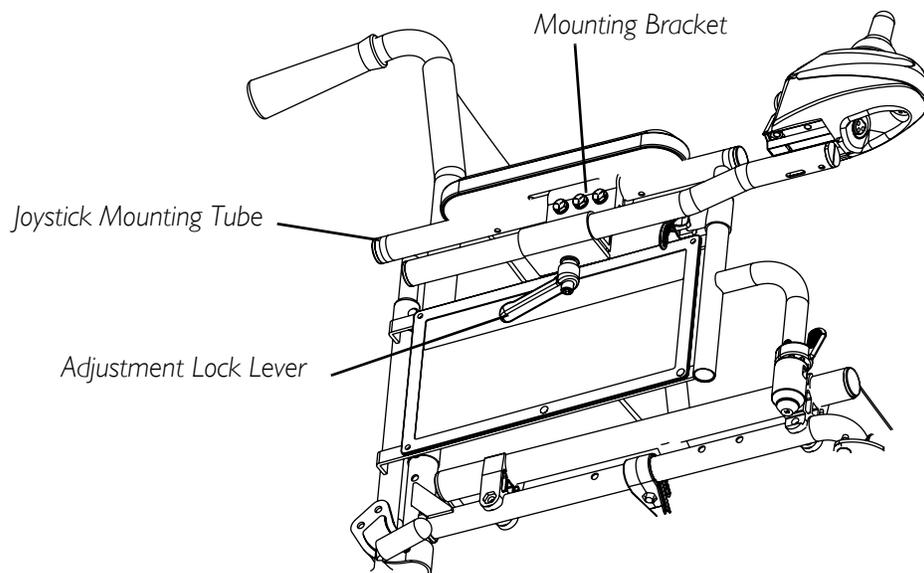
Before performing any maintenance, adjustment or service verify that On/Off switch on the joystick is in the **OFF** position.

## Preparing the Joystick for Use

*NOTE: For this procedure, refer to FIGURE 10.1.*

*NOTE: 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 on page 48. The joystick should be repositioned by a qualified technician.*

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



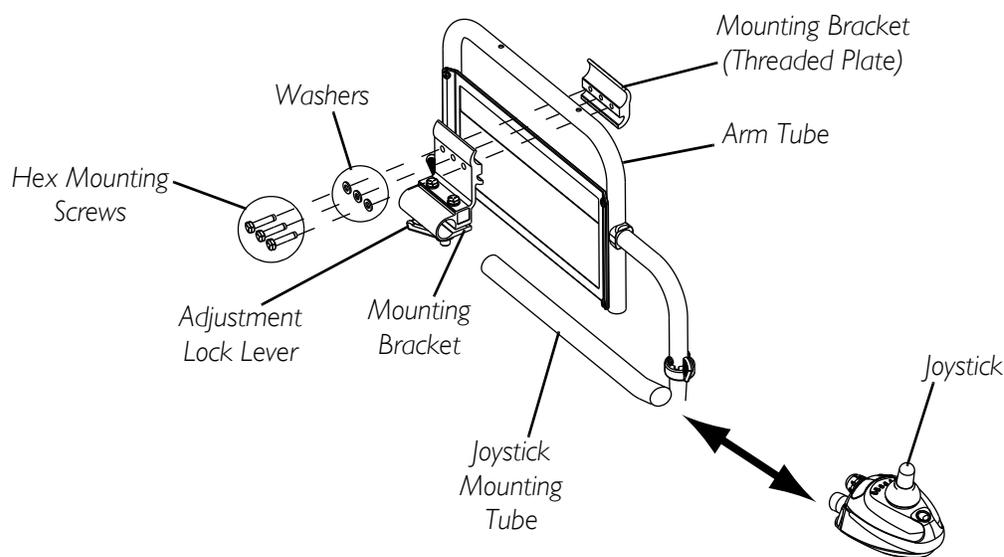
**FIGURE 10.1** Preparing the Joystick for Use

## Repositioning the Joystick

*NOTE: For this procedure, refer to FIGURE 10.2.*

*NOTE: Before starting this procedure, it may be necessary to snip the tie-wraps (not shown in FIGURE 10.2) securing the joystick control cord to the wheelchair. Before snipping the tie-wraps, note the way the cord is secured to the chair so that it can be re-secured in the same way at the end of the procedure.*

1. Turn the adjustment lock lever to release the joystick mounting tube from the mounting bracket.
2. Remove the joystick from the wheelchair.
3. Remove the three hex screws that secure both halves of the mounting bracket to the arm tube.
4. Reposition mounting bracket on opposite arm tube ensuring the threaded plate of the mounting bracket is on the inside of the arm tube.
5. Using the three hex mounting screws and washers, secure both halves of the mounting bracket to the arm tube.
6. Slide the joystick mounting tube through the mounting bracket to the desired position.
7. Turn the adjustment lock lever to secure the joystick mounting tube into the mounting bracket.
8. If the tie-wraps securing the joystick control cord to the wheelchair were snipped at the beginning of this procedure, re-secure the cord to the wheelchair with new tie-wraps in such a way that the control cord will not be pinched or cut during operation of the wheelchair.



**FIGURE 10.2** Repositioning the Joystick

# SECTION 11—CASTER

## ⚠ WARNING

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

Before performing any maintenance, adjustment or service verify that **ON/OFF** switch on the joystick is in the **OFF** position.

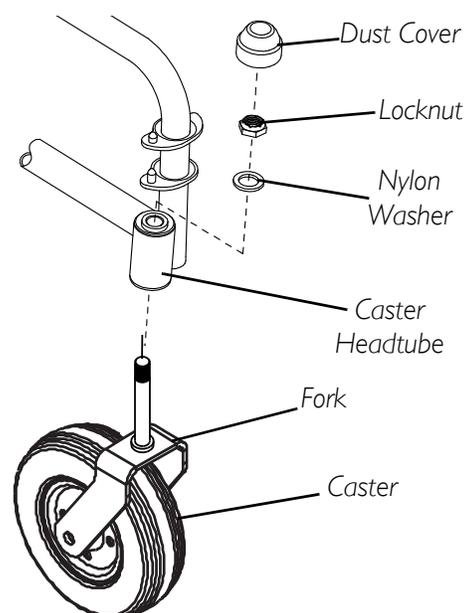
## CAUTION

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

## Adjusting Forks

*NOTE: For this procedure, refer to FIGURE 11.1.*

1. Remove the dust cover from the caster headtube.
2. To properly tighten caster journal system and guard against flutter, perform the following check:
  - A. Remove battery boxes and battery tray from wheelchair. Refer to Removing/Installing the Battery Boxes on page 53 and Installing/Removing Battery Tray on page 54.
  - B. Tip back the wheelchair to floor.
  - C. Pivot both forks and casters to top of their arc simultaneously.
  - D. Let casters drop to bottom of arc (wheels should swing once to one-side, then immediately rest in a straight downward position).
  - E. Adjust locknuts according to freedom of caster swing.
3. Test wheelchair for maneuverability.
4. Readjust locknuts if necessary, and repeat STEPS 1-3 until correct.
5. Snap dust cover into the caster headtube.



**FIGURE 11.1** Adjusting Forks

# SECTION 12—BATTERIES

## ⚠ WARNING

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

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

## ⚠ DANGER

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.

## When to Charge Batteries

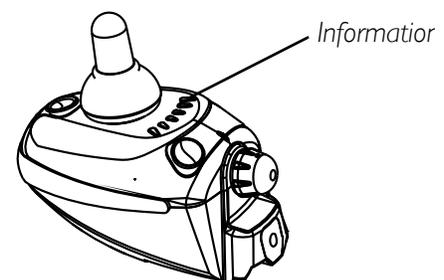
*NOTE: For this procedure, refer to FIGURE 12.1.*

Recharge the batteries frequently. Do not wait until the battery charge is low to recharge. A battery's life is extended if the charge level is maintained well above a low condition.

The information gauge is the primary source of user feedback. The true state-of-battery-charge notification is as follows:

- Any GREEN LED lit: Batteries are at full or well charged.
- Only AMBER and RED LEDs lit:  
Batteries are moderately charged.  
Recharge before undertaking a long trip.
- Only RED LED lit: Battery charge is low. Recharge as soon as possible.

*NOTE: Accurate readings are displayed when the joystick is in neutral.*



**FIGURE 12.1** When to Charge Batteries

## Charging Batteries

### **⚠ WARNING**

**Never attempt to recharge the batteries by attaching cables directly to the battery terminals or clamps. Use the recharging plug located on the front of the joystick.**

**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. Follow the manufacturer's charging instructions.**

### **CAUTION**

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

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

The range per battery charge using recommended batteries should be approximately 5 to 9 hours of typical operation. Extensive use on inclines may substantially reduce per charge mileage.

### **Description and Use of Battery Chargers**

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

Some basic concepts which will help you understand this automatic process are:

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

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

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

TOOLS	QUANTITY	COMMENTS
Battery charger	1	Supplied
*Extension cord	1	Not Supplied

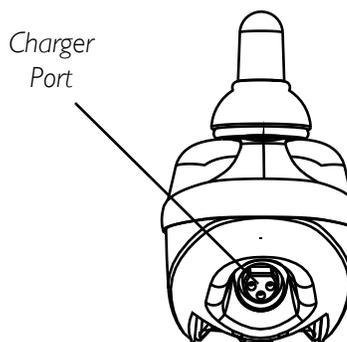
*\*NOTE: 3-prong plug, 15 ampere current rating; industrial type*

## Connecting the Battery Charger

*NOTE: For this procedure, refer to FIGURE 12.2.*

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.

*NOTE: 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.*



**FIGURE 12.2** Connecting the Battery Charger

## Replacing the Batteries

### **⚠ WARNING**

**Most batteries are not sold with instructions. However, warnings are frequently noted on the cell caps. Read them carefully, otherwise injury or damage can occur. The use of rubber gloves and chemical goggles or face shields is recommended when working with batteries.**

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

### Recommended Battery Types

### **⚠ WARNING**

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

### **CAUTION**

**Failure to use the correct battery size and/or voltage may cause damage to your wheelchair and give you unsatisfactory performance.**

CHAIR SEAT WIDTH	QTY	VOLTS	BATTERY SIZE	REMARKS
18- inches	2	12	U1	Deep Cycle
18-inches	2	12	Group 22NF	Deep Cycle

1. Remove the battery boxes and tray from the wheelchair. Refer to [Removing/Installing the Battery Boxes](#) on page 53 and [Installing/Removing Battery Tray](#) on page 54.

2. Remove the existing batteries from the battery boxes. Refer to Installing/Removing Batteries Into/From Battery Boxes on page 55.
3. Clean the new battery terminals.
4. Install the new batteries into the battery boxes. Refer to Installing/Removing Batteries Into/From Battery Boxes on page 55.
5. Install the battery boxes and tray onto the wheelchair. Refer to Removing/Installing the Battery Boxes on page 53 and Installing/Removing Battery Tray on page 54.

## Cleaning Battery Terminals

---

### **⚠ WARNING**

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

**NEVER** smoke or strike a match near batteries. If the caps of the battery cells are removed, **NEVER** look directly into them while charging batteries.

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

*NOTE: When done, these areas should be shiny, not dull.*

4. Carefully dust off all metal particles.

## Removing/Installing the Battery Boxes

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### **⚠ WARNING**

**NEVER** unplug the battery cables by pulling on the wires. Unplug the battery cables by pulling on the connector **ONLY**. Otherwise injury or damage may result.

---

*NOTE: For this procedure, refer to FIGURE 12.3 on page 54.*

*NOTE: To remove the battery boxes from the wheelchair, reverse the following procedure.*

1. Verify that the on/off switch on the joystick is in the off position.
2. Place the front battery box onto the battery tray and connect controller connector to the front battery box. Refer to Electronics Manual (P/N 1110532).
3. Slide front battery box toward the front of the wheelchair.

- Place rear battery box onto the battery tray and connect the rear battery box to the front battery box.
- Connect the front battery box to the controller.

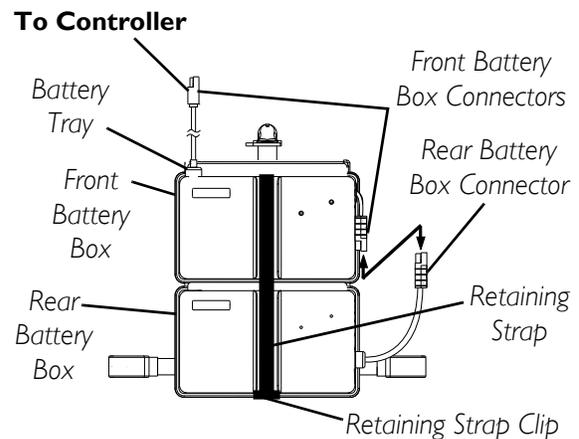
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**⚠ WARNING**

**The battery box retaining strap MUST be fastened securely and adjusted properly to hold battery boxes in place before using the wheelchair.**

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- Connect the battery box retaining strap clip together and adjust if necessary.



**FIGURE 12.3** Removing/Installing the Battery Boxes

## Installing/Removing Battery Tray

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**⚠ WARNING**

**Risk of Serious Injury**

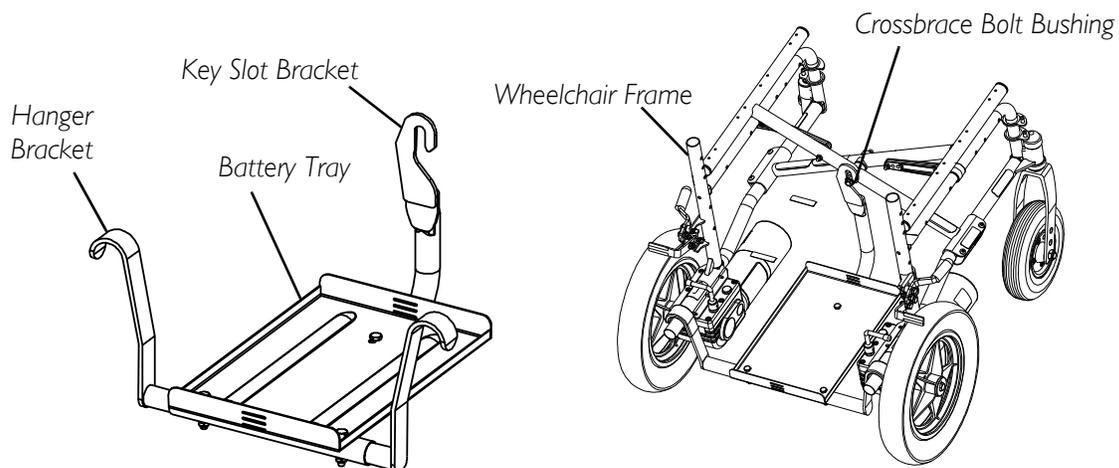
**Improperly installed battery tray can cause instability resulting in serious injury. Ensure batteries and battery tray are installed properly to maintain stability.**

---

*NOTE: For this procedure, refer to FIGURE 12.4.*

*NOTE: To remove the battery tray from the wheelchair, reverse the following procedure.*

- Attach the key slot bracket located at the front of the battery tray over the crossbrace bolt bushing under the seat upholstery of the wheelchair.
- Attach the hanger brackets to the wheelchair frame.



**FIGURE 12.4** Installing/Removing Battery Tray

## Installing/Removing Batteries Into/From Battery Boxes

### **⚠ WARNING**

**Make sure power to the wheelchair is OFF before performing this procedure.**

**The use of rubber gloves and chemical goggles or face shields is recommended when working with batteries.**

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

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

*NOTE: For this procedure, refer to FIGURE 12.5 on page 56.*

*NOTE: For changing or removing/installing the battery boxes, refer to Removing/Installing the Battery Boxes on page 53.*

*NOTE: To remove the battery(ies) from the battery box(es), reverse the following procedure.*

*NOTE: Have the following tools available:*

TOOL	QTY	COMMENTS
Battery Lifting Strap	1	See following note.
1/2-inch (6 pt.) Box Wrench	1	Not Supplied
7/16-inch (6pt) Box Wrench	1	Not Supplied
3/8-inch (6pt) Box Wrench	1	Not Supplied
Diagonal Cutters	1	Not Supplied

*NOTE: The battery lifting strap supplied is for Group 22NF batteries ONLY. Refer to the battery manufacturer for the proper lifting strap and/or battery tools for U1 battery removal/installation.*

### **⚠ WARNING**

**ALWAYS use a battery lifting strap when lifting a battery. It is the most convenient method and assures that the battery acid will not spill. It also helps to prolong the life of the battery. The battery lifting strap supplied is for Group 22NF batteries ONLY. Refer to the battery manufacturer for the proper lifting strap and/or battery tools for U1 battery removal/installation.**

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

*NOTE: If there is battery acid in the bottom or on the sides of the battery box(es) or battery(ies), apply baking soda to these areas to neutralize the battery acid. Before reinstalling the new or existing battery(ies), clean the baking soda from the battery box(es) or battery(ies).*

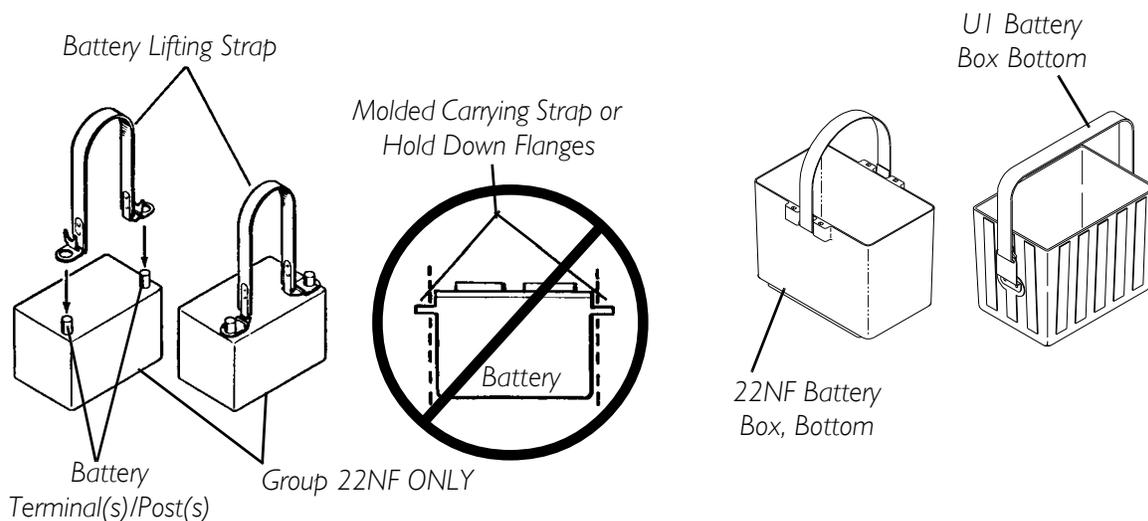
*NOTE: When securing battery lifting strap to battery, observe polarity markings located on the ends of the battery lifting strap, (+) side to POSITIVE (+) battery terminal/post and (-) side to NEGATIVE (-) battery terminal/post.*

1. If necessary, remove the battery boxes from the wheelchair. Refer to [Removing/Installing the Battery Boxes](#) on page 53.
2. Secure the battery lifting strap to battery terminal(s)/post(s).

### CAUTION

Some battery manufacturers mold a carrying strap and/or hold down flanges directly into the battery case. Batteries which interfere with the battery box cannot be used for these applications. Attempting to “wedge” a battery into a battery box may damage the box and/or the battery.

3. Place batteries into battery box bottom.



**FIGURE 12.5** Installing/Removing Batteries Into/From Battery Boxes

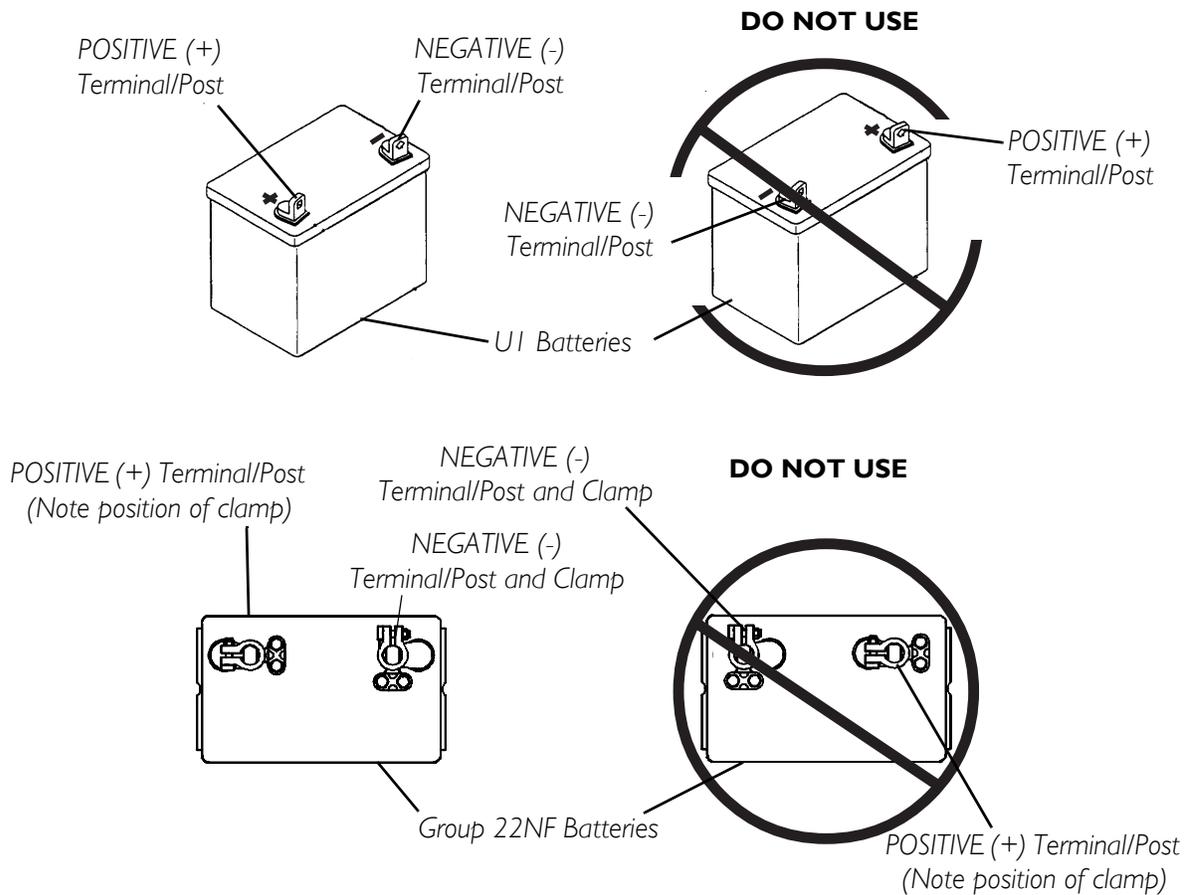
## Connecting Battery Cables

### ⚠ WARNING

The use of rubber gloves and chemical goggles or face shields is recommended when working with batteries.

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

The correct battery terminal configurations shown in **FIGURE 12.6** on page 57 **MUST** be used. Batteries that have the reversed terminal configuration **MUST NOT** be used. Otherwise, serious injury or damage may occur.



**FIGURE 12.6** Connecting Battery Cables

Perform one of the following methods for connecting the battery cable(s):

- Dual U1 Batteries - Use direct mount method described on page 57. Refer to FIGURE 12.7.
- Dual Group 22NF Batteries with Mounting Holes in the Terminal(s)/Post(s) - Use direct mount method described on page 57. Refer to FIGURE 12.7.
- Dual Group 22NF Batteries without Mounting Holes in the Terminal(s)/Post(s) - Use battery clamp method described on page 60. Refer to FIGURE 12.8 and FIGURE 12.9.

### Direct Mount Method

*NOTE: For this procedure, refer to FIGURE 12.7 on page 59.*

1. Install battery terminal cap(s) onto battery cable(s):
  - A. Dual U1 Batteries
    - i. ORANGE battery terminal cap onto RED battery cable.
    - ii. GREY battery terminal cap onto BLACK battery cable.
  - B. Dual Group 22NF BATTERIES
    - i. RED battery terminal cap onto RED battery cable.
    - ii. BLACK battery terminal cap onto BLACK battery cable.

### **CAUTION**

**When connecting the battery cables to the battery(ies), the battery cable(s) MUST be connected to the battery terminal(s)/post(s) as shown in Detail “A” or Detail “B” of FIGURE 12.7 (depending on battery type). Otherwise, damage to the battery cable may result when installing battery terminal caps.**

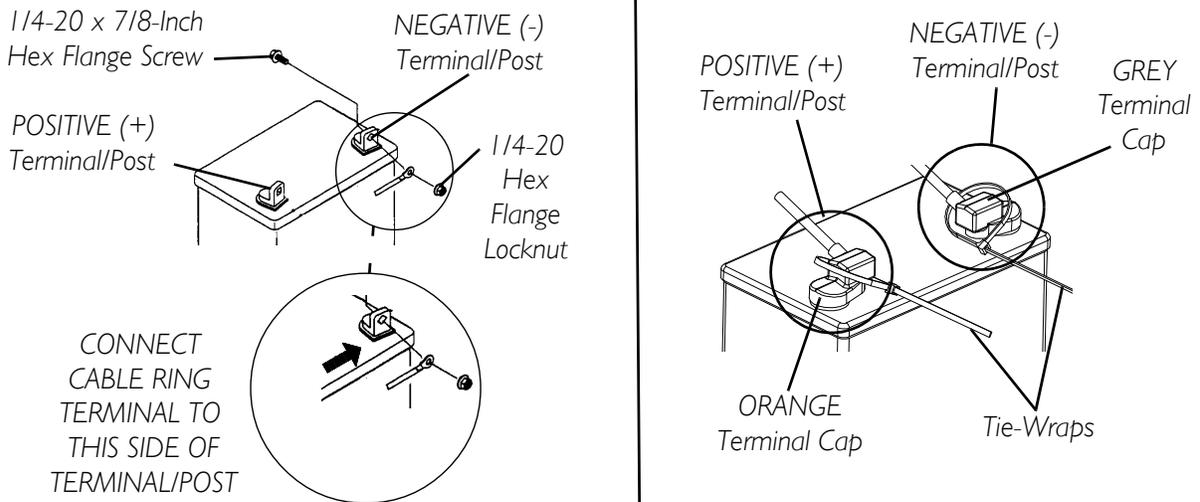
---

2. Connect battery cable(s) to battery(ies) terminal(s)/post(s) as shown in Detail “A” or Detail “B” of FIGURE 12.7, depending on battery type:
  - A. NEGATIVE (-) BLACK battery cable to NEGATIVE (-) battery terminal/post.
  - B. POSITIVE (+) RED battery cable to POSITIVE (+) battery terminal/post.
3. Secure the battery cable(s)/ring terminal(s) to the battery terminal(s)/post(s), BLACK to NEGATIVE (-) and RED to POSITIVE (+), with the provided 1/4-20 x 7/8-inch hex flange screw and hex flange locknut as shown in Detail “A” or Detail “B” of FIGURE 12.7, depending on battery type. Securely tighten.
4. Verify all battery cable(s)/ring terminal(s) are correctly installed and securely tightened.
5. Slide terminal cap(s) down battery cable(s) and onto battery clamps.
6. Using the 11½-inch long tie-wrap, secure each terminal cap in place (Detail “A” or Detail “B” of FIGURE 12.7).

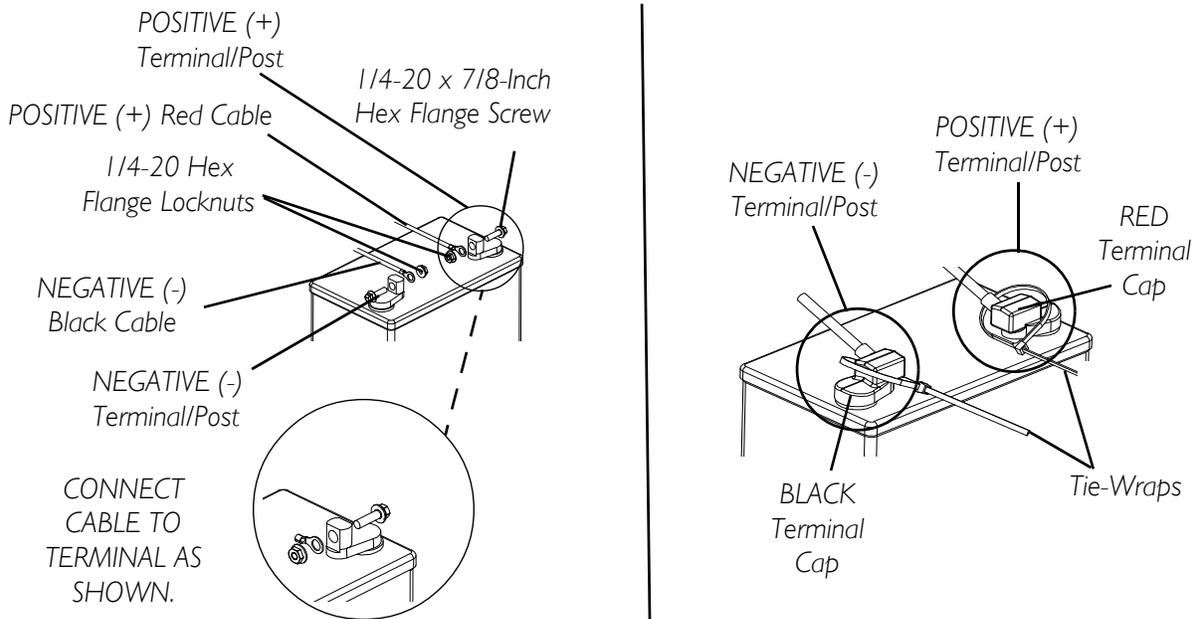
*NOTE: It will be necessary to trim excess tie-wrap in order to install the battery box top(s).*

7. Install the battery box top(s).

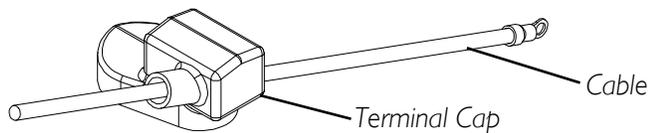
**Detail “A” - Dual UI Batteries**



**Detail “B” - Dual Group 22 NF Batteries**



**Detail “C” - Installing Battery Terminal Cap onto Battery Cable**



*NOTE: For clarity, only one cable and terminal cap are shown. Both caps install in the same manner.*

**FIGURE 12.7** Connecting Battery Cables - Direct Mount Method

8. Install the battery box(es) into the wheelchair. Refer to Removing/Installing the Battery Boxes on page 53.

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

9. If necessary, charge the battery(ies). Refer to Charging Batteries on page 51.

## Battery Clamp Method

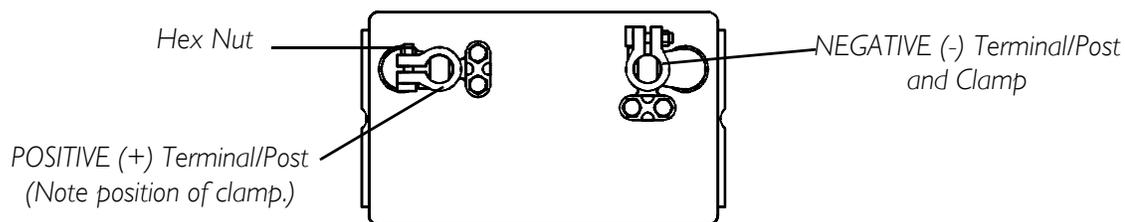
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### CAUTION

The battery clamp of the **POSITIVE (+)** battery terminal/post **MUST** be mounted in the position shown in **FIGURE 12.8**. Otherwise, the battery box top cannot be installed properly.

---

*NOTE: For this procedure, refer to FIGURE 12.8 and FIGURE 12.9 on page 62.*



**FIGURE 12.8** Connecting Battery Cables - Battery Clamp Method

1. Perform one of the following:
  - If the battery clamp of the POSITIVE (+) battery terminal/post is NOT mounted in the orientation shown in FIGURE 12.8, perform the following:
    - i. Loosen the hex nut that secures the battery clamp to the POSITIVE (+) battery terminal/post.

### CAUTION

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.

---

- ii. Remove the battery clamp from the POSITIVE (+) battery terminal/post.
    - iii. Reposition the battery clamp on the POSITIVE (+) battery terminal/post as shown in FIGURE 12.8.
    - iv. Securely tighten the hex nut that secures the battery clamp to the positive (+) battery terminal/post.
  - If the battery clamp on the POSITIVE (+) battery terminal/post is positioned as shown in FIGURE 12.8, proceed to STEP 2.

2. Install battery clamp covers onto battery cables (Detail “C” of FIGURE 12.9):
  - A. RED battery clamp cover onto RED battery cable.
  - B. BLACK battery clamp cover onto BLACK battery cable.

---

### **CAUTION**

**When connecting the battery cable/ring terminal(s) to the battery(ies) clamp(s), the battery cable(s) MUST be connected in the position shown in Detail “A” of FIGURE 12.9. Otherwise, damage may occur to the battery cable and/or battery clamp covers.**

---

3. Connect battery cable(s) to battery(ies) terminal(s)/post(s) as shown in Detail “A” of FIGURE 12.9:
  - A. NEGATIVE (-) BLACK battery cable/ring terminal between the mounting plate and battery clamp of NEGATIVE (-) battery terminal/post.
  - B. POSITIVE (+) RED battery cable/ring terminal between the mounting plate and battery clamp of POSITIVE (+) battery terminal/post.
4. Secure the battery cable(s)/ring terminal(s) to the battery clamp(s), BLACK to NEGATIVE (-) and RED to POSITIVE (+), with existing hex screws as shown in Detail “A” of FIGURE 12.9. Securely tighten.
5. Verify battery cable ring terminal(s) are correctly installed and securely tightened.
6. Slide battery clamp covers down battery cables and onto battery terminals as shown in Detail “B” of FIGURE 12.9.
7. Using 11½-inch long tie-wraps, secure each terminal cap in place as shown in Detail “B” of FIGURE 12.9.

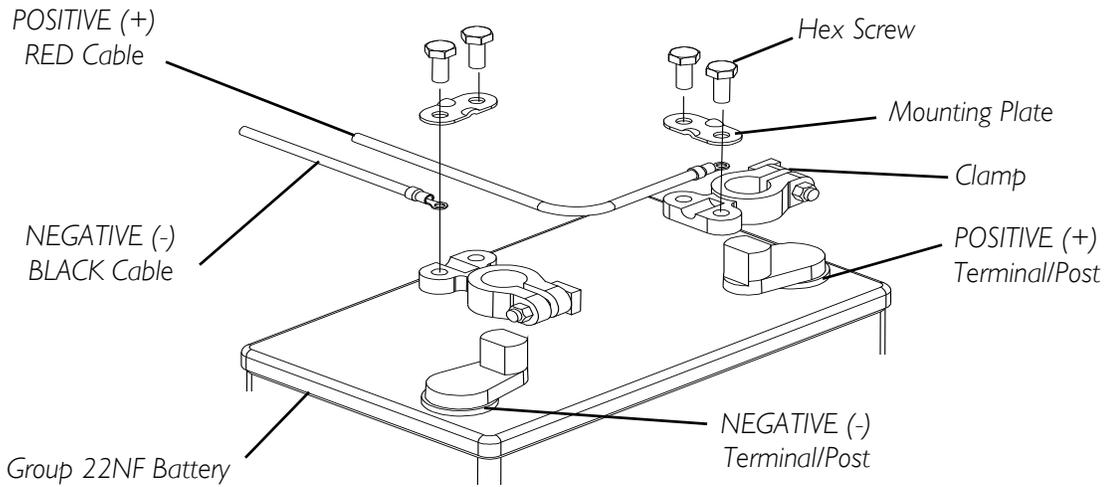
*NOTE: It will be necessary to trim excess tie-wrap in order to install the battery box top(s).*

8. Install the battery box top(s).
9. Install the battery box(es) into the wheelchair. Refer to Removing/Installing the Battery Boxes on page 53.

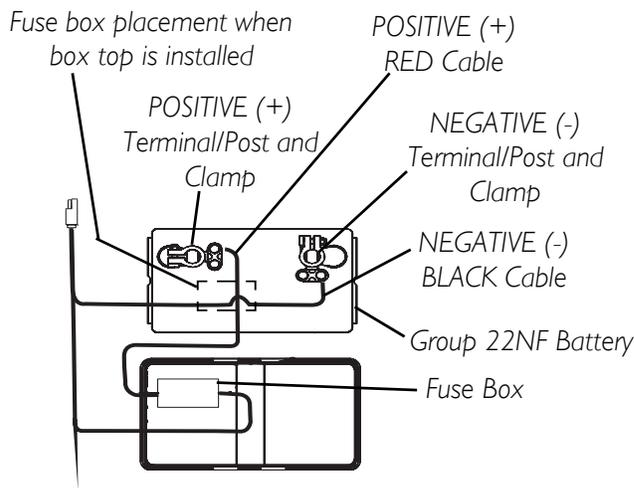
*NOTE: New battery(ies) MUST be fully charged BEFORE using, otherwise the life of the battery(ies) will be reduced.*

10. If necessary, charge the battery(ies). Refer to Charging Batteries on page 51.

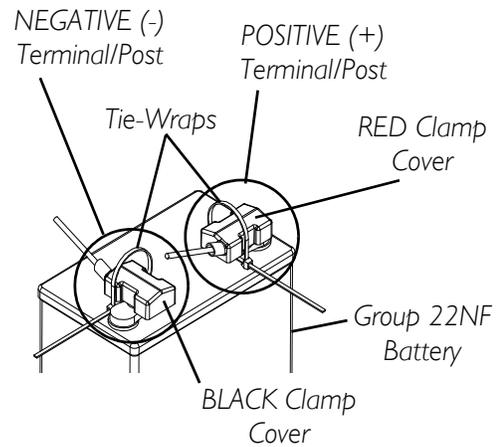
**Exploded View**



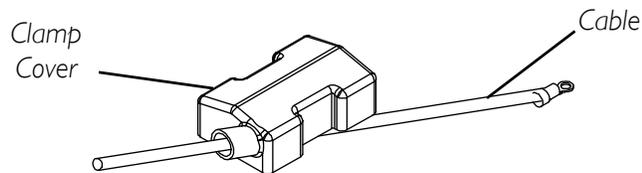
**Detail "A" - Top View**



**Detail "B" - Tie-Wraps**



**Detail "C" - Installing Battery Clamp Cover**



*NOTE: For clarity, only one cable and clamp cover are shown. Both clamp covers install in the same manner.*

**FIGURE 12.9** Connecting Battery Cables - Battery Clamp Method

## Replacing Battery Box Retaining Strap

### ⚠ WARNING

The battery box retaining strap **MUST** be fastened securely and adjusted properly to hold battery boxes in place before using the wheelchair.

*NOTE: For this procedure, refer to FIGURE 12.10.*

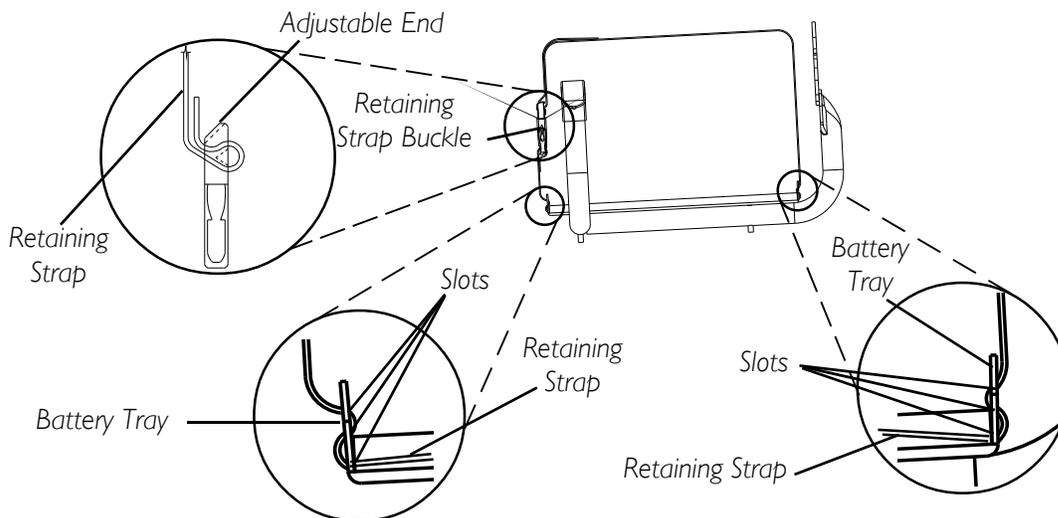
1. Remove the battery boxes from the wheelchair. Refer to Removing/Installing the Battery Boxes on page 53.
2. Remove the battery tray from the wheelchair. Refer to Installing/Removing Battery Tray on page 54.

### ⚠ WARNING

The retaining strap **MUST** be fed through the adjustable end of the battery box retaining strap buckle as shown in FIGURE 12.9.

*NOTE: Take note of the position and orientation of the battery box retaining strap as it passes through the slots of the battery tray and the adjustable end of the battery box retaining strap buckle.*

3. Feed the existing battery box retaining strap through the adjustable end of the battery box retaining strap buckle.
4. Feed the existing battery box retaining strap through the slots in the battery box tray.
5. Install the new battery box retaining strap by reversing STEPS 3 and 4.
6. Reinstall the battery tray from the wheelchair. Refer to Installing/Removing Battery Tray on page 54.
7. Reinstall the battery boxes from the wheelchair. Refer to Removing/Installing the Battery Boxes on page 53.



**FIGURE 12.10** Replacing Battery Box Retaining Strap

# SECTION 13—CLUTCH/MOTOR LOCK

## ⚠ WARNING

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

## Engaging/Disengaging the Clutches

## ⚠ WARNING

**DO NOT** engage or disengage the clutches until the power is off.

*NOTE: For this procedure, refer to FIGURE 13.1.*

The clutch engagement/disengagement allows freewheeling or joystick controlled operation. Freewheeling allows an attendant to maneuver the wheelchair without power. To engage/disengage the clutches:

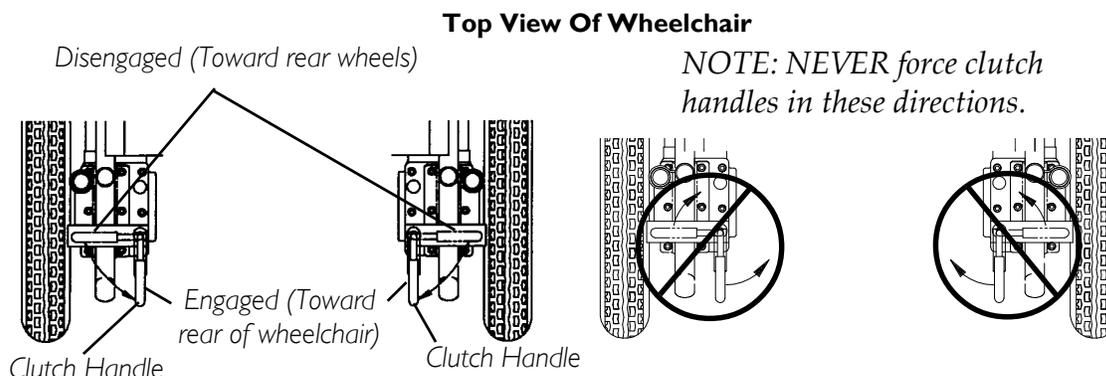
1. Locate the clutch handles on motors.

## ⚠ WARNING

If clutch handles are forced to engage in the wrong direction as shown in **FIGURE 13.1**, the motors will be damaged and will need to be replaced.

2. Perform one of the following:

- To Engage: turn the clutch handles until they are pointing towards the rear of the wheelchair. NEVER try to turn the clutch handles towards the front of the wheelchair.
- To Disengage: turn the clutch handles until they are pointing towards the rear wheels. NEVER try to turn the clutch handles towards the inside of the wheelchair.



**FIGURE 13.1** Engaging/Disengaging the Clutches

---

# SECTION 14—WHEEL LOCKS

---

## **⚠ WARNING**

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

---

## **Installing/Adjusting/Using the Wheel Locks**

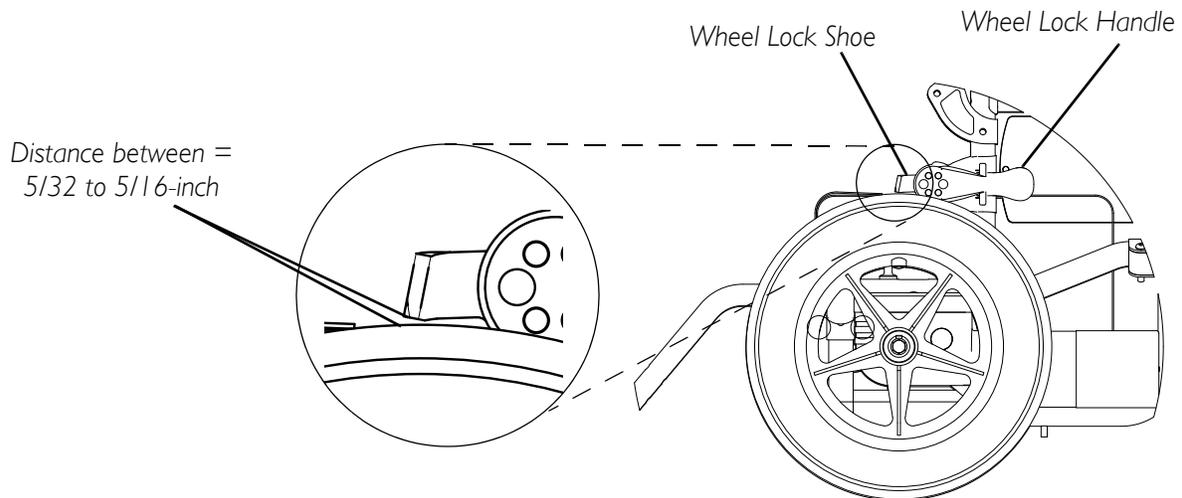
*NOTE: For this procedure, refer to FIGURE 14.1 on page 66.*

### **Installing/Adjusting**

*NOTE: Before adjusting or replacing the wheel lock assemblies, ensure that the tires are inflated to the recommended psi on the side wall of tire.*

*NOTE: If necessary, remove threaded plastic insert from the wheel lock mounting hole in the wheelchair frame.*

1. Position the wheel lock on the wheelchair frame.
2. Loosely install the hex screw and locknut that secures the wheel lock to the wheelchair frame.
3. Make sure wheel lock is disengaged from rear wheel.
4. Measure the distance between the wheel lock shoe and the rear wheel.
5. Slide the wheel lock along the wheelchair until the measurement is between 5/32 and 5/16-inches.
6. Tighten the wheel lock to the wheelchair frame.
7. Repeat STEPS 2-6 for the opposite wheel lock.
8. Disengage the clutches. Refer to Engaging/Disengaging the Clutches on page 64.
9. Engage the wheel locks and push against the wheelchair to determine if the wheel locks engage the rear wheels enough to hold the wheelchair.
10. Repeat STEPS 3-9 until the wheel locks engage the rear wheels enough to hold the wheelchair.
11. Engage clutches. Refer to Engaging/Disengaging the Clutches on page 64.



**FIGURE 14.1** Installing/Adjusting/Using the Wheel Locks

## Using

The wheelchair is equipped with a pair of independently operated wheel locks located just in front of the rear wheels.

1. To engage the wheel locks, grip the handle and push forward to the lock position.
2. To release, reverse STEP 1.

---

## CAUTION

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

---

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

# SECTION 15—ANTI-TIPPERS

## **⚠ WARNING**

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

## Installing/Removing/Adjusting Anti-Tippers

*NOTE: For this procedure, refer to FIGURE 15.1 on page 68.*

### Installing

## **⚠ WARNING**

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

Ensure both anti-tippers have the same ground clearance.

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

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

1. Press the two release buttons in and insert the anti-tippers with anti-tipper wheels pointing toward the ground/floor into the support tubes until the release buttons lock in place.
2. Measure the distance between the bottom of the anti-tipper wheels and the ground/floor and ensure that it is 1½-2-inches. If necessary, adjust height. To adjust the height of the anti-tippers, refer to [Adjusting Height](#) on page 67.

### Removing

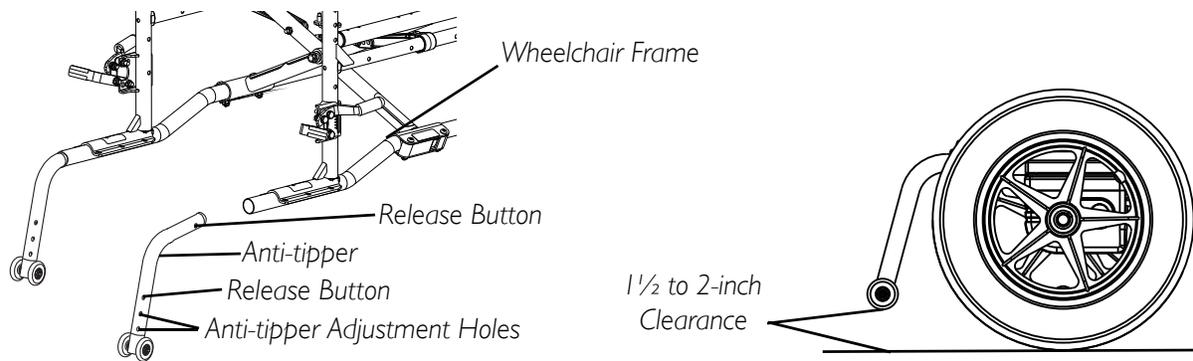
1. Press release buttons in and remove the anti-tippers from the support tubes.

### Adjusting Height

1. Press the release buttons in and adjust the anti-tippers to the desired height.

*NOTE: The distance between the bottom of the anti-tipper wheels and the ground/floor **MUST** be 1½ to 2-inches.*

*NOTE: Both anti-tippers should be adjusted to the same height.*



**FIGURE 15.1** Installing/Removing/Adjusting Anti-Tippers

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# SECTION 16—TRANSPORTING

---

## **⚠ WARNING**

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

---

## Transporting the P9000 XDT

---

## **⚠ WARNING**

The weight of the wheelchair without the user and batteries is approximately 82 lbs. Use proper lifting techniques (lift with your legs) to avoid injury. Extreme caution is advised when it is necessary to move an unoccupied power wheelchair. Invacare recommends using two assistants and making thorough preparations. Make sure to use **ONLY** secure, non-detachable parts for hand-hold supports.

---

*NOTE: For this procedure, refer to FIGURE 16.1 on page 70.*

## Unfolding/Folding the Wheelchair

---

## **⚠ WARNING**

Keep hands and fingers clear of moving parts to avoid injury.

**DO NOT** place hand or fingers on the underside of the seat rail when opening or closing the wheelchair.

**DO NOT** sit or transfer into the wheelchair unless it is fully open and the seat rails are fully seated into the side frame H-blocks.

---

### Unfolding

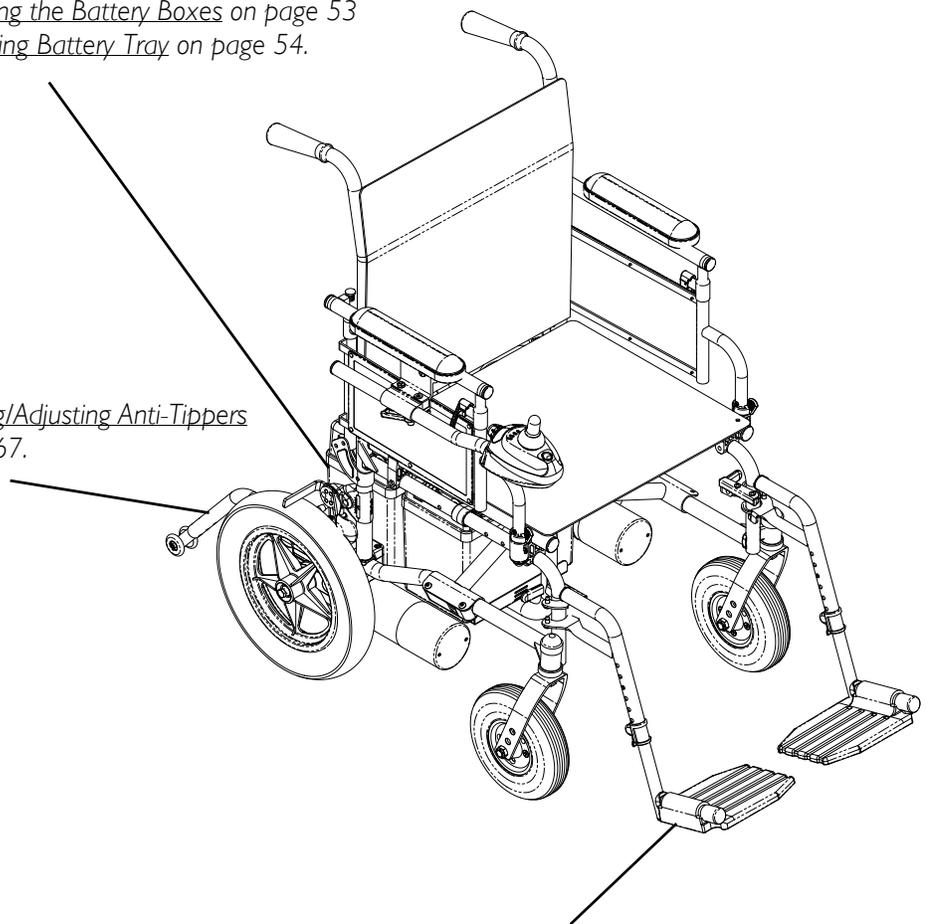
1. Push down on the seat rails until the seat rails are positioned in the seat guides.
2. Assemble the wheelchair by following the instructions in this manual.

### Folding

1. Remove the anti-tippers. Refer to Installing/Removing/Adjusting Anti-Tippers on page 67.
  1. Remove the batteries. Refer to Removing/Installing the Battery Boxes on page 53.
  2. Remove the footrests/legrests from the wheelchair. Refer to Installing/Removing/Using the Footrest/Legrest on page 38.
  3. Remove the battery tray from the wheelchair. Refer to Installing/Removing Battery Tray on page 54.
  4. Lift up on the seat rails of the wheelchair.
-

Refer to Removing/Installing the Battery Boxes on page 53  
and Installing/Removing Battery Tray on page 54.

Refer to Installing/Removing/Adjusting Anti-Tippers  
on page 67.



Refer to Installing/Removing/Using the  
Footrest/Legrest on page 38.

**FIGURE 16.1** Transporting the P9000 XDT

# SECTION 17—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 in this manual for proper preventative maintenance schedule.

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

<b>PRODUCT TYPE</b>	<b>PRODUCT WEAR AND TEAR</b>
<b>Wheelchairs</b>	Wheels, Brake Assembly, Hand Grips
<b>Scooters</b>	Wheels, Braking System, Armrest, Seat
<b>Mobility Hardware and Electronics</b>	Rubber Urethane Tires and Casters, Handgrips, Joystick Inductive Tops, Joystick Overlays, Motors and Gearboxes (if exposed to prolonged moisture, urine, etc.), Stability Lock
<b>Upholstery and Seating</b>	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
<b>Batteries</b>	Lead acid/Lithium, Coin cell (watch type), Gel (6 months)

# LIMITED WARRANTY

**PLEASE NOTE: THE WARRANTY BELOW HAS BEEN DRAFTED TO COMPLY WITH FEDERAL LAW APPLICABLE TO PRODUCTS MANUFACTURED AFTER JULY 4, 1975.**

This warranty is extended only to the original purchaser who purchases this product 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 three (3) 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 the seat frame for a period of three (3) 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 and gearboxes 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 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) 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.**



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