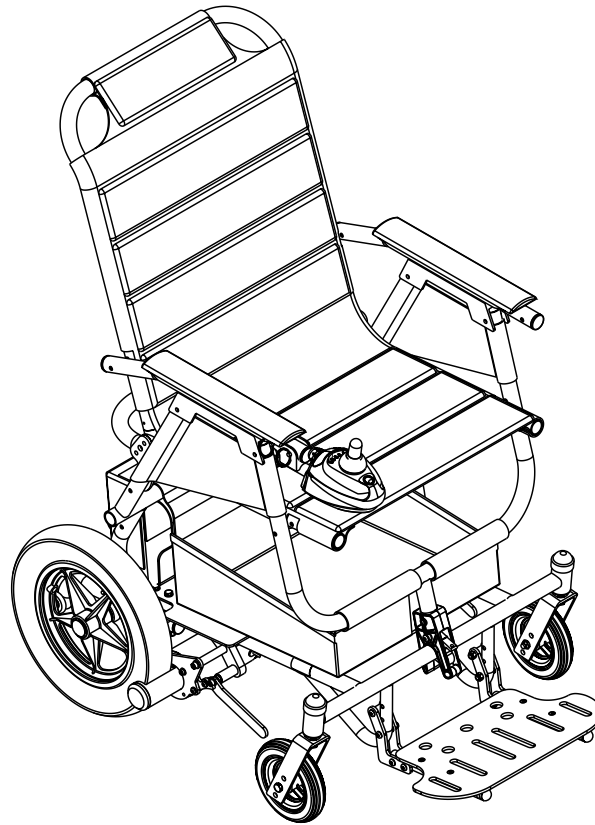


At'm and At'm QT



DEALER: Keep this manual. The procedures in this manual **MUST** be performed by a qualified technician.

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



Yes, you can.®

⚠ WARNING

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

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

REFERENCE DOCUMENTS

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

WHEELCHAIR TYPE	OWNER'S MANUAL	ELECTRONICS MANUAL
At'm and At'm QT	1125035	1110532

NOTE: Updated versions of this manual are available on 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.

WARNINGS

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

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

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

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

LABEL LOCATION

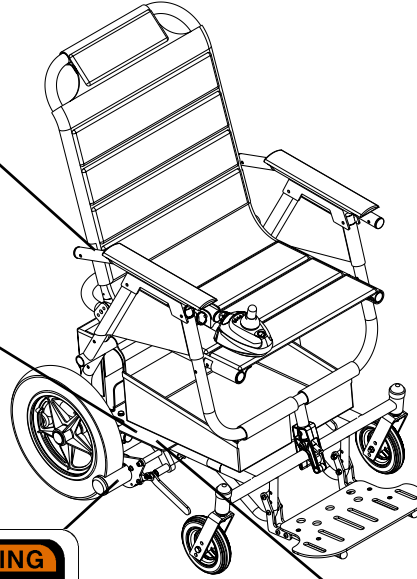
At'm

**WEIGHT CAPACITY
LIMITE DE POIDS
250 LBS. (114 kgs.)**
REFER TO OWNER'S MANUAL
SE RÉFÉRER AU MANUEL DE L'UTILISATEUR

P/N 1111026

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

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



⚠ WARNING
For use on substantially flat surfaces.
Use with **EXTREME CAUTION** on wet surfaces.
1125800 Rev A - 10/04

FOLD

1125800 Rev A - 10/04
CAUTION on wet surfaces.
Use with **EXTREME** flat surfaces.
For use on substantially flat surfaces.
⚠ WARNING

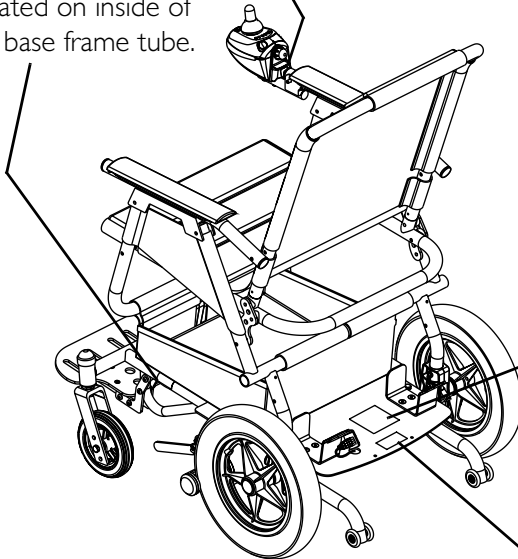
⚠ WARNING
Keep fingers and clothing clear of drive wheel.
P/N 1125069 Rev A - 8/04

⚠ WARNING
Push handle all the way down to engage motors.
P/N 1125068 Rev A - 8/04

NOTE: Warning label 1125069 is also located on the opposite side.

NOTE: Warning label 1125068 is also located on the opposite side.

Serial Number Label is located on inside of the base frame tube.



⚠ WARNING
DO NOT REMOVE THIS LABEL

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

P/N 1125064

⚠ WARNING
Maintain tire pressure at 30 p.s.i.
P/N 1125070 Rev A - 8/04

At'm QT

**WEIGHT CAPACITY
LIMITE DE POIDS
250 LBS. (114 kgs.)**
REFER TO OWNER'S MANUAL
SE RÉFÉRER AU MANUEL DE L'UTILISATEUR

P/N 1111026

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

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

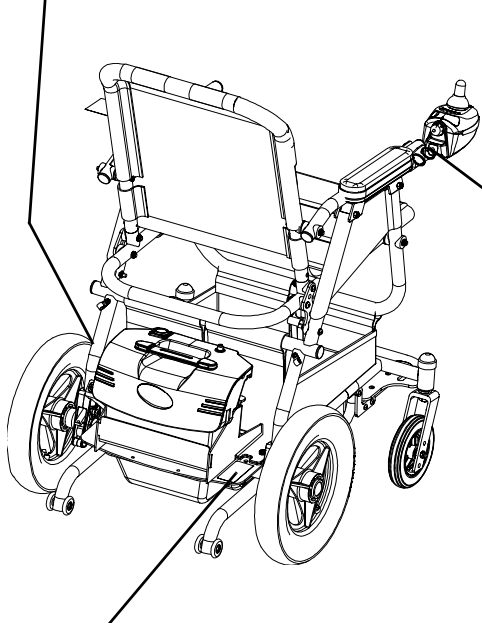
⚠ WARNING
Keep fingers and clothing clear of drive wheel.
P/N 1125069 Rev A - 8/04

NOTE: Warning label 1125069 is also located on the opposite side.

⚠ WARNING
Push handle all the way down to engage motors.
P/N 1125068 Rev A - 8/04

NOTE: Warning label 1125068 is also located on the opposite side.

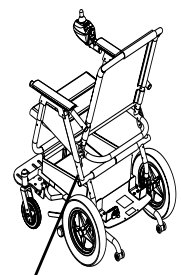
Serial Number Label is located on inside of the base frame tube.



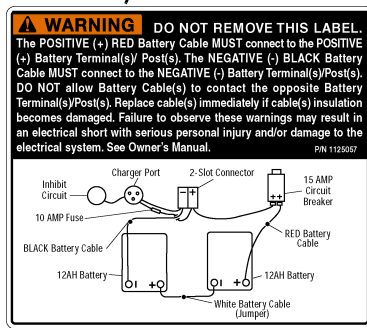
⚠ WARNING
For use on substantially flat surfaces.
Use with EXTREME CAUTION on wet surfaces.
112990 Rev A - 10/04

FOLD

⚠ WARNING
For use on substantially flat surfaces.
Use with EXTREME CAUTION on wet surfaces.
112990 Rev A - 10/04



⚠ WARNING
Maintain tire pressure at 30 p.s.i.
P/N 1125070 Rev A - 8/04



TYPICAL PRODUCT PARAMETERS

PARAMETERS	At'm	At'm QT
SEAT WIDTH:	16, 18 inches	18 inches
SEAT DEPTH:	14, 16 inches	16 inches
BACK HEIGHT:	18, 21 inches	21 inches
SEAT-TO-FLOOR:	20 inches	
OVERALL WIDTH (EXCLUDING JOYSTICK):	25.5 inches	
OVERALL HEIGHT FOR 16 INCHES WIDE: FOR 18 INCHES WIDE:	38 inches 41 inches	N/A 41 inches
OVERALL LENGTH (INCLUDING ANTI-TIPPERS):	35.5 inches	
WEIGHT BASE WITHOUT BATTERY PACK/BOX: SEAT: BATTERY PACK/BOX:	34 lbs 14 lbs 26 lbs	38 lbs 14 lbs 21 lbs
SHIPPING:	90 lbs	
DRIVE WHEELS/TIRES:	12½ x 2¼ inches	
CASTER WITH PRECISION SEALED BEARINGS:	6-inch solid	
UPHOLSTERY:	Black Nylon	
BATTERY SIZE (TWO REQUIRED):	M17 - 12 SLSM gel cell	PE 12V 12SLA
PERFORMANCE SPEED (M.P.H.): MAXIMUM RAMP/SLOPE CAPABILITY: *RANGE (VARIABLE): WEIGHT LIMITATION:	3¾ 6° Up to 12 miles 250 lbs	3¾ 6° Up to 6 miles 250 lbs

**NOTE: Values for range are calculated for maximum chair weight rating using largest batteries applicable (M17 - 12 SLSM gel cell/PE 12V 12SLA), 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 Charging Batteries on page 52 for more information about the battery discharge indicator.*

SECTION I—GENERAL GUIDELINES

⚠ WARNING

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

Repair or Service Information

Set-up of the Electronics 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.

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 the On/Off switch on the joystick is in the Off position.

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

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

Tire Pressure

DO NOT USE YOUR WHEELCHAIR UNLESS IT HAS THE PROPER TIRE PRESSURE (P.S.I.) - OTHERWISE THE WHEELCHAIR MAY NOT DRIVE CORRECTLY, STOP CORRECTLY OR MAY EXPERIENCE ERRATIC PERFORMANCE.

Maintain tire pressure at 30 p.s.i. Otherwise, the wheelchair may not drive correctly, stop correctly or may experience erratic performance.

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

Operation Information

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.

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

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

The basket under the seat is designed for light items such as jackets and umbrellas. DO NOT overload the basket.

Ensure that the items stored in the basket are fully contained within the basket - otherwise they could become entangled with the friction drive and may cause injury to the user or damage the wheelchair.

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

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

For use on substantially flat surfaces.

Use EXTREME CAUTION on wet surfaces.

Oxygen

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

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

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

ALWAYS transport the battery pack/box in an upright and secure manner. To prevent damage, DO NOT transport the battery pack/box with other objects that could suddenly shift during transportation, unless they are secured or in a different vehicle area. DO NOT transport battery pack/box with gas cans or similar containers in the same vehicle area.

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.

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.

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

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

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

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

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

DO NOT sit in the wheelchair while charging the batteries.

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

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

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

Grounding Instructions

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

Rain Test

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

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

DO NOT store power wheelchair in a damp area for an extended period of time.

Direct exposure to excessive rain or dampness may cause the chair to malfunction electrically and mechanically, may cause the chair to prematurely rust or may damage the upholstery.

Check to ensure that the battery pack/box is securely fastened, that all electrical connections are secure at all times and joystick boot is not torn or cracked where water can enter.

If the joystick boot becomes torn or cracked, replace IMMEDIATELY.

Weight Training

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

Weight Limitation

The At'm wheelchairs have a weight limitation of 250 lbs.

SECTION 2—EMI INFORMATION

⚠ WARNING

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

Electromagnetic Interference (EMI) From Radio Wave Sources

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

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

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

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

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

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

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

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

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

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

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

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

Important Information

- 1) 20 volts per meter (V/m) is a generally achievable and useful immunity level against EMI (as of May 1994) (the higher the level, the greater the protection);
- 2) 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 3—SAFETY INSPECTION/TROUBLESHOOTING

Checklist

These adjustments should be made whenever you service this product, especially as a part of the initial set up. Follow these maintenance procedures:

⚠ WARNING

Before performing any maintenance, adjustment or service, turn power off.

CAUTION

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

- Check pneumatic tires for proper inflation.
- Ensure that the wheelchair rolls straight (no excessive drag or pull to one side).
- Ensure all clothing guard fasteners are secure.
- Clean seat upholstery and armrests.
- Ensure armrest pads sit flush against arm tubes.
- Ensure seat is secured to wheelchair frame.
- Ensure seat release latches are functional. Replace if necessary.
- Inspect seat upholstery for rips or sagging.
- Ensure no excessive side movement or binding occurs when drive wheels are lifted and spun when disengaged (freewheeling).
- Ensure 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.
- Inspect for any loose hardware on the wheelchair.
- Inspect the seat positioning strap for signs of wear. Ensure buckle latches. Verify hardware that attaches strap to frame is secure and undamaged. Replace if necessary.
- Inspect charger AC power cord for damage. Replace if necessary.
- Check that all labels are present and legible. Replace if necessary.
- Inspect electrical components for signs of corrosion. Replace if corroded or damaged.

Troubleshooting

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

Wheels


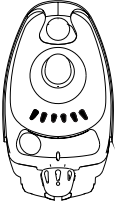



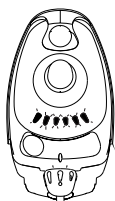
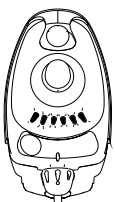
WHEELCHAIR VEERS LEFT/RIGHT	SLUGGISH TURN/ PERFORMANCE	CASTERS FLUTTER	SQUEAKS AND RATTLES	LOOSENESS IN WHEELCHAIR	WHEELCHAIR 3 WHEELS	SOLUTIONS
X	X	X		X	X	If pneumatic, check tires for correct and equal pressure.
X	X	X	X			Check for loose stem nuts/bolts.
X		X				Check that casters contact ground at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

Information Gauge and Diagnostics Codes

The joystick information gauge and the Remote Programmer give indications of the type of fault or error detected by the control module. When a fault is detected, the wheelchair will stop and not drive. All of the lights on the information gauge will begin to flash. The number of flashes indicates the nature of an abnormal condition. An error code and a quick description of the fault will begin to scroll across the Remote Programmer display. If multiple faults are found, only the first fault encountered by the control module program will be displayed. A table of the diagnostics codes and their causes follows.

**NOTE: The fault log displays a four digit number. The first two digits are the diagnostic code and the remaining two digits are the sub code.*

Information Gauge

DISPLAY	DESCRIPTION	DEFINITION	COMMENTS
	All LEDs are off.	Power is Off.	
	All LEDs are on.	Power is On.	Fewer than three LEDs on implies reduced battery charge.
	Left RED LED is flashing.	Battery charge is low.	The batteries should be charged as soon as possible.
	Left to Right "chase" alternating with steady display.	Joystick is in programming, inhibit and/or charging mode.	The steady LEDs indicate the current state of the battery charge.
	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).

Diagnostic Codes

NUMBER OF FLASHES	DIAGNOSTICS CODE	ERROR CODE DESCRIPTION	SUB CODE*	DETAILS OF ERROR CODE	POSSIBLE SOLUTION
1	E 01	User Fault	00	Stall Timeout or user error.	Release joystick to neutral and try again.
2	E02	Battery Fault	00	Recharge batteries or replace.	Check the batteries and cable. Try charging the batteries. Batteries may require replacing.
3	E03	Left Motor Fault	00	Left Motor Short Circuit	Check the left motor, connections and motor cable.
			01	Left Motor Open Circuit	
			02	Left Motor Connection Fault B-	
			03	Motor Terminal Connected to B+	
			04	Left Motor Voltage Fault	
			05	Left Motor Bridge Fault	
			06	Too Many Hardware Current Limit Events	
			07	Current Offset Out of Range	
			08	Hardware Current Limit Fault	
4	E04	Right Motor Fault	00	Right Motor Short Circuit	Check the right motor, connections and motor cable.
			01	Right Motor Open Circuit	
			02	Right Motor Connection Fault B-	
			03	Motor Terminal Connected to B+	
			04	Right Motor Voltage Fault	
			05	Right Motor Bridge Fault	
			06	Too Many Hardware Current Limit Events	
			07	Current Offset Out of Range	
			08	Hardware Current Limit Fault	

NUMBER OF FLASHES	DIAGNOSTICS CODE	ERROR CODE DESCRIPTION	SUB CODE*	DETAILS OF ERROR CODE	POSSIBLE SOLUTION
5	E05	Left Park Brake Fault	00	Left Park Brake Drive-Time Test Failed	Check the left park brake connections and cable.
			01	Left Park Brake Output Enabled When Wheelchair Idle	
			02	Left Park Brake Output Did not Enable When Entering Drive Mode	
			03	Left Park Brake fault during power-up testing	
			04	Left park brake feedback low during drive (park brake short)	
6	E06	Right Park Brake Fault	00	Right Park Brake Drive-Time Test Failed	Check the right park brake connections and cable.
			01	Right Park Brake Output Enabled When Wheelchair Idle	
			02	Right Park Brake Output Did not Enable When Entering Drive Mode	
			03	Right Park Brake fault during power-up testing	
			04	Right park brake feedback low during drive (park brake short)	
7	E07	Remote Fault	00	Local SR Fault (CPU, EEPROM, etc.)	Check the communications bus, connections and wiring. Replace the remote.
			01	Joystick fault at the remote	
			02	Speed pot fault at the remote	

NUMBER OF FLASHES	DIAGNOSTICS CODE	ERROR CODE DESCRIPTION	SUB CODE*	DETAILS OF ERROR CODE	POSSIBLE SOLUTION
8	E08	Controller Fault	00	Controller fault	Check connections and wiring. Replace power module.
			01	RAM fault	
			02	ROM fault	
			03	CPU fault	
			04	EEPROM fault	
			05	Watchdog fault	
			06	Stack fault	
			07	Software fault	
			08	Power-up testing fault	
			09	Relay fault or precharge fault	
			10	Bridge fault or disable all fault	
			11	Electronics fault: Thermistor	
			12	Calibration setting fault	
9	E09	Communications Fault	00	Remote connection lost	Check connections and wiring. Replace Bus cable.
			01	Low communication mode	
10	E10	General Fault	00	General fault	Check all connections and wiring. Contact Invacare Technical Service.
11	E11	Incompatible/incorrect Remote	00	Incompatible/incorrect Remote	Wrong type of remote connected. Ensure the branding of the joystick matches that of controller unit.

Motor/Gearbox/Brake

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
Erratic performance of wheelchair (driving uphill, increase in braking distance).	Low tire pressure.	Inflate tires to the proper tire pressure.
Wheelchair will not drive.	Low tire pressure. Motor engagement handles are disengaged. Batteries require charging. Charger plugged in. Circuit breaker tripped.	Inflate tires to the proper tire pressure. Engage motor engagement handles. Charge batteries. Make sure the setting on the charger is correct. Unplug charger from wall outlet before operating the wheelchair. Press the reset button. Refer to Resetting the Circuit Breaker on page 54.
Motors stall and start up again.	Current rollback.	Stop driving and let electronics cool.
Motor “chatters” or runs irregularly.	Electrical malfunction.	Contact Invacare.
Only one drive wheel turns.	Electrical malfunction. One motor is disengaged.	Contact Invacare for service. Engage motor engagement handle.
Joystick erratic or does not respond as desired.	Electrical malfunction. Controller programmed improperly.	Contact Invacare for service. Reprogram controller (Refer to electronics manual supplied with wheelchair).
Wheelchair does not respond to commands.	Poor battery terminal connection.	Have terminals cleaned.
Power indicator off - even after recharging.	Electrical malfunction.	Contact Invacare for service.

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
Wheelchair will not drive.	Low tire pressure.	Inflate tires to the proper tire pressure (30 psi).
	Motor engagement handles are disengaged.	Engage motor engagement handles.
	Batteries require charging.	Charge batteries. Make sure the setting on the charger is correct.
	Charger plugged in.	Unplug charger from wall outlet before operating the wheelchair.
	Circuit breaker tripped.	Press the reset button. Refer to Resetting the Circuit Breaker on page 54.
Motor chatters or runs erratically, or only one motor turns.	Damaged connector or worn brushes. Bad motor.	Ohm out motors. Replace motor if high reading is present. Normal reading is 0-5 Ohms. Refer to Electro-Mechanical Parking Brake Test on page 29.
	Controller malfunction.	Check for error codes with programmer. Refer to electronics manual provided.
Wheelchair veers to the left or right when driving on level surface.	Uneven tire pressure.	Inflate tires. Replace tires if worn.
	Motors out of balance.	Use programmer to balance motors.
E09/E10 error code will not go away.	Bad motor connection. Bad brake coil.	Check all connections. Ohm out each brake coil. Normal reading is 45-50 Ohms. Refer to Electro-Mechanical Parking Brake Test on page 29.
Excessive clicking coming from motor.	Bad bearing in motor.	Replace motor.
	Loose wheel hardware.	Tighten hardware, (use removable Loctite™ on hardware). Follow torque settings in this manual.
Motor stutters.	Poor connection or worn drive cylinder.	Check drive cylinders and replace if necessary.
Motor fails to start after initial installation.	Battery voltage is too low.	Check batteries and recharge if necessary.
	Bad connection.	Check connector.
Only one drive wheel turns.	One motor is disengaged.	Engage motor engagement handle.
	Electrical malfunction.	Replace motor.
Joystick erratic or does not respond as desired.	Electrical malfunction.	Replace joystick.
	Controller programmed improperly.	Reprogram controller. Refer to electronics manual provided.
Wheelchair does not respond to commands.	Poor battery terminal connection.	Clean the battery terminal connectors.

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
Motor is running then fails to restart when stopped.	Heavy load on the motors forcing controller into the current rollback mode.	Leave power ON and allow controller to count down, and recharge the wheelchair overnight with power ON.
	Blown fuse in battery wiring harness.	Replace battery wiring harness.
	Damaged Motor	Replace brushes if necessary, or replace motor if internal damage is determined.
		Ohm out motor to check for possible internal damage (worn out brushes may be possible). Refer to Electro-Mechanical Parking Brake Test on page 29.
	Controller power stage board or relays may be damaged.	Replace controller or send to Invacare for repair.
Motor runs but loses power.	Controller senses heavy load and has entered the current rollback mode.	Stop driving and let electronics cool. Leave power ON and allow controller to count down, and recharge the wheelchair overnight with power ON.
Wheelchair loses all power while driving.	Bad connection on wheelchair.	Turn power "OFF", wait ten seconds and turn power back "ON". Check joystick connection. Check battery connections and circuit breaker.
Power indicator off - even after recharging.	Electrical malfunction.	Contact Invacare for service.

Troubleshooting - Battery

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
Batteries draw excessive current when charging.	Battery failure. Electrical malfunction.	Have batteries checked for shorted cell. Replace if necessary. Contact Invacare.
Battery indicator shows low charge level immediately after charging.	Batteries weak, won't hold charge. Electrical malfunction. Charger malfunction.	Replace Batteries. Contact Invacare. Replace charger. Contact Invacare.
Batteries won't charge.	Tripped breaker or damaged cables. Batteries sat discharged too long.	Check cables for damage or replace battery wiring harness. Replace batteries
Short Charge Time	One or both batteries may be bad (if batteries charge up too soon).	Check each battery and replace if needed.
No power to wheelchair motors.	Bad connection or tripped breaker. Check Joystick connection.	Check all connections and housings for damage.
	Batteries are dead. Loose battery connections	Check battery voltage and replace if necessary. Check battery cable connections, may have vibrated loose when driving on rough terrain.
Corroded battery wiring connections.	Possible water, salt, or urine damage.	Replace battery wiring harness.
Batteries draw excessive current when charging.	Battery failure. Electrical malfunction.	Have batteries checked for shorted cell. Replace if necessary. Contact Invacare.
Battery indicator shows low charge level immediately after charging.	Batteries weak, won't hold charge. Electrical malfunction. Charger malfunction.	Replace Batteries. Contact Invacare. Replace charger. Contact Invacare.

Troubleshooting - Battery Charger

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
No LED's on Charger	Charger not plugged into outlet, or disconnected from wiring harness on wheelchair.	Make sure the charger is plugged into the outlet and check the wiring on the wheelchair.
	No AC power at outlet.	Check for AC power with digital volt meter.
	Damaged power cord.	Check for damage on the power cord, replace if damaged or send in for repair.
	Charger LED's burnt out.	Send charger to Invacare for repair.
	Charger may have internal fuse that is blown.	Remove charger cover and check for fuses. If fuses are present, Ohm out fuses and replace if necessary. Refer to <u>Electro-Mechanical Parking Brake Test</u> on page 29.
Batteries won't charge.	Tripped breaker in wiring harness, or charger.	Check battery wiring harness breaker on the wheelchair. If the breaker is tripped, determine the cause and correct it prior to resetting the breaker.
	Charger not plugged into outlet.	Make sure charger is plugged into the outlet.
	No AC power at the outlet.	Check for AC power with a digital volt meter.
	Charger power cord may be damaged, or the connector may be damaged.	Check for damage and replace if necessary, or send in for repair.
	Charger may have internal damage.	Charge batteries with known good charger.
	Battery voltage too low for charger to start charging cycle.	Replace batteries.
Batteries have short driving range during a single charge. Battery Gauge falls off faster than normal.	Consumer not charging batteries long enough.	Instruct consumer to charge for 8-10 hours minimum.
	Batteries may be weak.	Perform load test or check "Battery Quality Menu" with the programmer. Refer to <u>Field Load Test</u> on page 27.
	Check programming settings.	Torque setting and power level setting may be too high.

Checking Battery Charge Level

The following “Do’s” and “Don’ts” are provided for your convenience and safety.

DO	DON'T
Read and understand this manual and any service information that accompanies a battery and charger before operating the wheelchair.	DO NOT perform any installation or maintenance without first reading this manual.
Move the wheelchair to a work area before opening battery box or installing service batteries.	DO NOT perform installation or maintenance of batteries in an area that could be damaged by battery spills.
Recharge as frequently as possible to maintain a high charge level and extend battery life.	DO NOT make it a habit to discharge batteries to the lowest level.
Follow recommendations in this manual when selecting a battery or charger.	DO NOT use randomly chosen batteries or chargers.
Fully charge new batteries before using.	DO NOT put new batteries into service before charging.

Field Load Test

NOTE: For this procedure, refer to FIGURE 3.1.

NOTE: The following test can also be performed through the controller of the wheelchair along with a remote programmer. Refer to the electronics manual supplied with each wheelchair.

Old batteries lose their ability to store and release power, due to increased internal resistance. This means that as you try to take power from the battery, some of that power is used up in the process of passing through the battery, resulting in less voltage at the posts. The more power drawn, the lower the voltage available. When this lost voltage drops the output 1.0 volts under load (2.0 for a pair), replace the batteries.

To spot this problem, test batteries under load.

Use a digital voltmeter to check battery charge level at the charger connector. It is located on the joystick.

NOTE: READ these instructions and the manufacturer’s instructions CAREFULLY on the digital voltmeter before using the digital voltmeter.

NOTE: Invacare recommends that ONLY a qualified technician perform this test.

1. Ensure that power is OFF.
2. Make sure battery is fully charged. An extremely discharged battery will exhibit the same symptoms as a bad one.
3. Remove the footrests from the wheelchair
4. Connect the voltmeter leads to the charger port on the wheelchair as shown in FIGURE 3.1. Most digital voltmeters are not affected by polarity, however, analog meters (meters with swinging needles) can be and should be used carefully. A good meter reading should be 25.5 to 26 VDC.

⚠ WARNING

When performing STEPS 5 and 6, ensure feet are clear from casters and wall, otherwise injury may result.

5. Sit in wheelchair and place feet against a wall, workbench or other stationary object.
6. Turn the power ON and carefully push the joystick forward, trying to drive the wheelchair through the stationary object.

NOTE: This puts a heavy load on the batteries as they try to push through the stationary object. If the wheels spin, have two individuals (one on each arm) apply as much downward pressure as possible on the arms of the wheelchair.

7. Read the meter while the motors are straining, no longer than 3-4 seconds, to determine the voltage under load.

NOTE: If the voltage drops more than two volts from a pair of fully charged batteries while under load, they should be replaced regardless of the unloaded voltages.

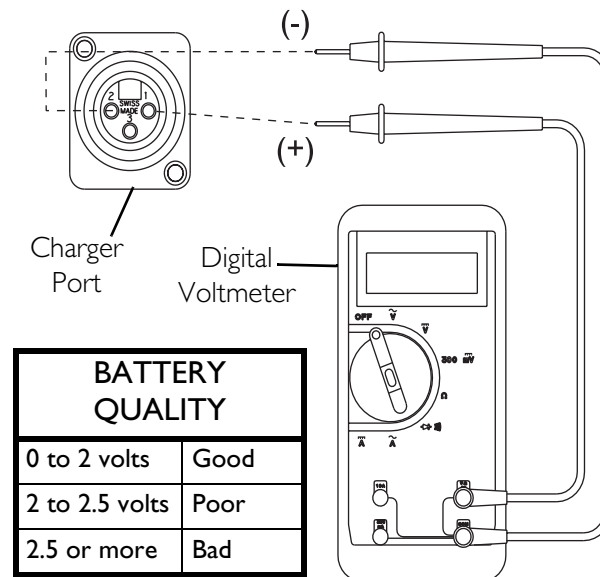


FIGURE 3.1 Field Load Test

Electro-Mechanical Parking Brake Test

NOTE: For this procedure, refer to FIGURE 3.2.

NOTE: This procedure should only be performed on wheelchairs with conventional motor/gearbox assembly.

1. On the four-pin motor connector, locate the side by side connectors in the black housings.
2. Set the digital multimeter to read ohms.
3. Measure the resistance between the two brake contacts. A normal reading is between 45-100 ohms depending on the motor. A reading of 0 ohms or a very high reading; i.e., MEG ohms or O.L. (out of limit) indicates a shorted brake or an open connection respectively. If either condition exists, send the motor to Invacare Technical Service for inspection/repair.

⚠ WARNING

A shorted electro-mechanical brake will damage the brake output section in the controller. DO NOT connect a shorted electro-mechanical brake to a good controller module. A shorted brake MUST be replaced.

Proper controller operation regarding brake function should be performed whenever a shorted brake is found and replaced.

NOTE: A bad motor can damage the controller module but a bad controller will NOT damage a motor.

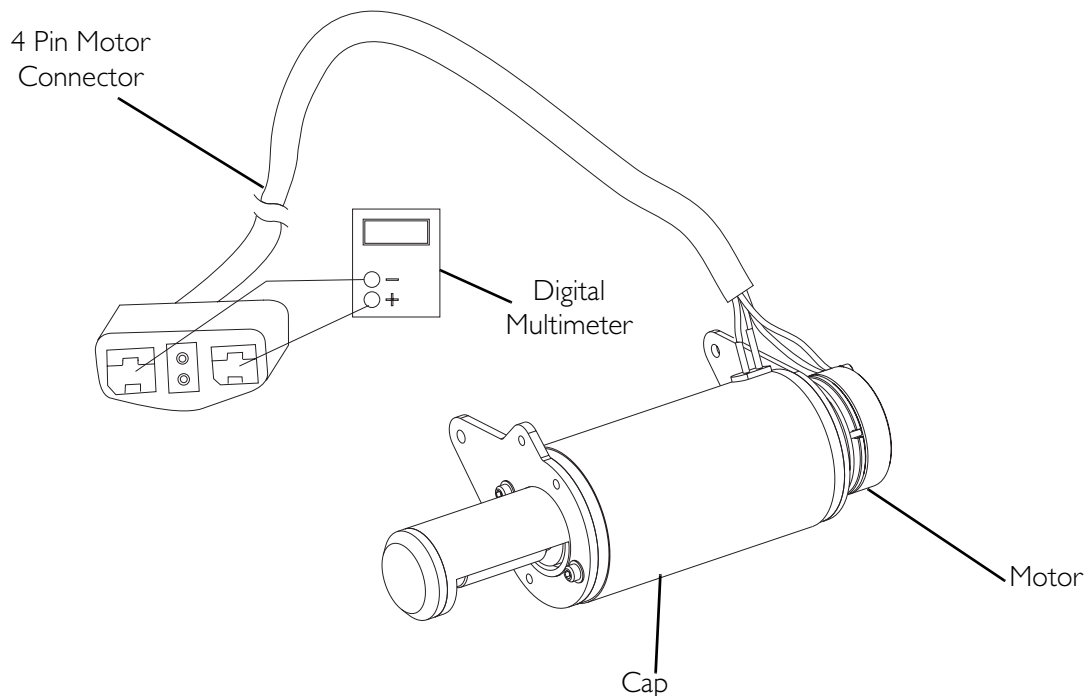


FIGURE 3.2 Electro-Mechanical Parking Brake Test

SECTION 4—FOOTBOARD ASSEMBLY

⚠ WARNING

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

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

DO NOT stand on the flip-up footboard. When getting in or out of the wheelchair, make sure that the flip-up footboard is in the upward position.

Limited clearance between footboard and caster - The user's feet **MUST** remain on the footboard while operating the chair. If the user's feet are allowed to rest off the side of the footboard they may come in contact with the caster possibly resulting in injury.

Removing/Installing the Footboard Assembly

NOTE: For this procedure, refer to FIGURE 4.1.

Removing

1. Remove the two mounting bolts that mount the footboard assembly to the base frame.
2. Remove the footboard assembly from the base frame.

Installing

1. Align the footboard assembly with the adjustment holes in the base frame.
2. Install the footboard assembly using the two mounting bolts and locknuts.

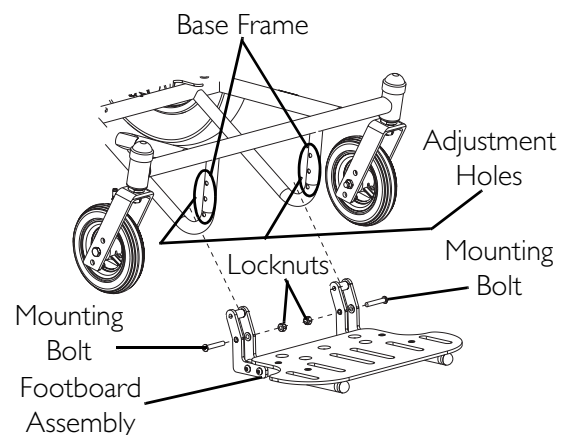


FIGURE 4.1 Removing/Installing the Footboard Assembly

Adjusting Footboard Assembly Height

NOTE: For this procedure, refer to FIGURE 4.1.

1. Remove the footboard assembly. Refer to [Removing/Installing the Footboard Assembly](#) on page 30.
2. Align the footboard assembly to one of three desired adjustment holes on the base frame.
3. Attach the footboard assembly to the base frame with two mounting bolts and locknuts. Securely tighten.

SECTION 5—SEAT

⚠ 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.

Removing/Installing the Seat

NOTE: For this procedure, refer to FIGURE 5.1 on page 32.

Removing

1. Disconnect the joystick. Refer to Disconnecting/Connecting the Joystick on page 40.
2. Remove the battery pack/box. Refer to Removing/Installing the Battery Pack on the At'm on page 45 or Removing/Installing the Battery Box on the At'm QT on page 46.
3. Pull up the front latch release loop and tilt the seat assembly back. Refer to Detail "A" of FIGURE 5.1.
4. Pull up the rear latch release cord with the other hand and lift the seat assembly off and away from the wheelchair base. Refer to Detail "B" of FIGURE 5.1.
5. Fold the seat assembly. Refer to Detail "C" of FIGURE 5.1.

Installing

1. Lower the rear latches onto the rear crossbrace.

NOTE: An audible click is heard as the rear latches lock into place.

NOTE: Ensure both latches sit flush against the rear crossbrace. If not flush, lift the rear latch release cord, remove the seat and repeat STEP 1.

2. Tilt back the seat assembly.
 3. Unfold the seat assembly.
 4. Lower the front latch onto the front crossbrace until it locks in place.
- NOTE: An audible click is heard as the front latch locks into place.*
5. Lift the seat assembly to ensure that the seat is secured to the wheelchair base.
 6. Reinstall the battery pack/box. Refer to Removing/Installing the Battery Pack on the At'm on page 45 or Removing/Installing the Battery Box on the At'm QT on page 46.
 7. Reconnect the joystick. Refer to Disconnecting/Connecting the Joystick on page 40.

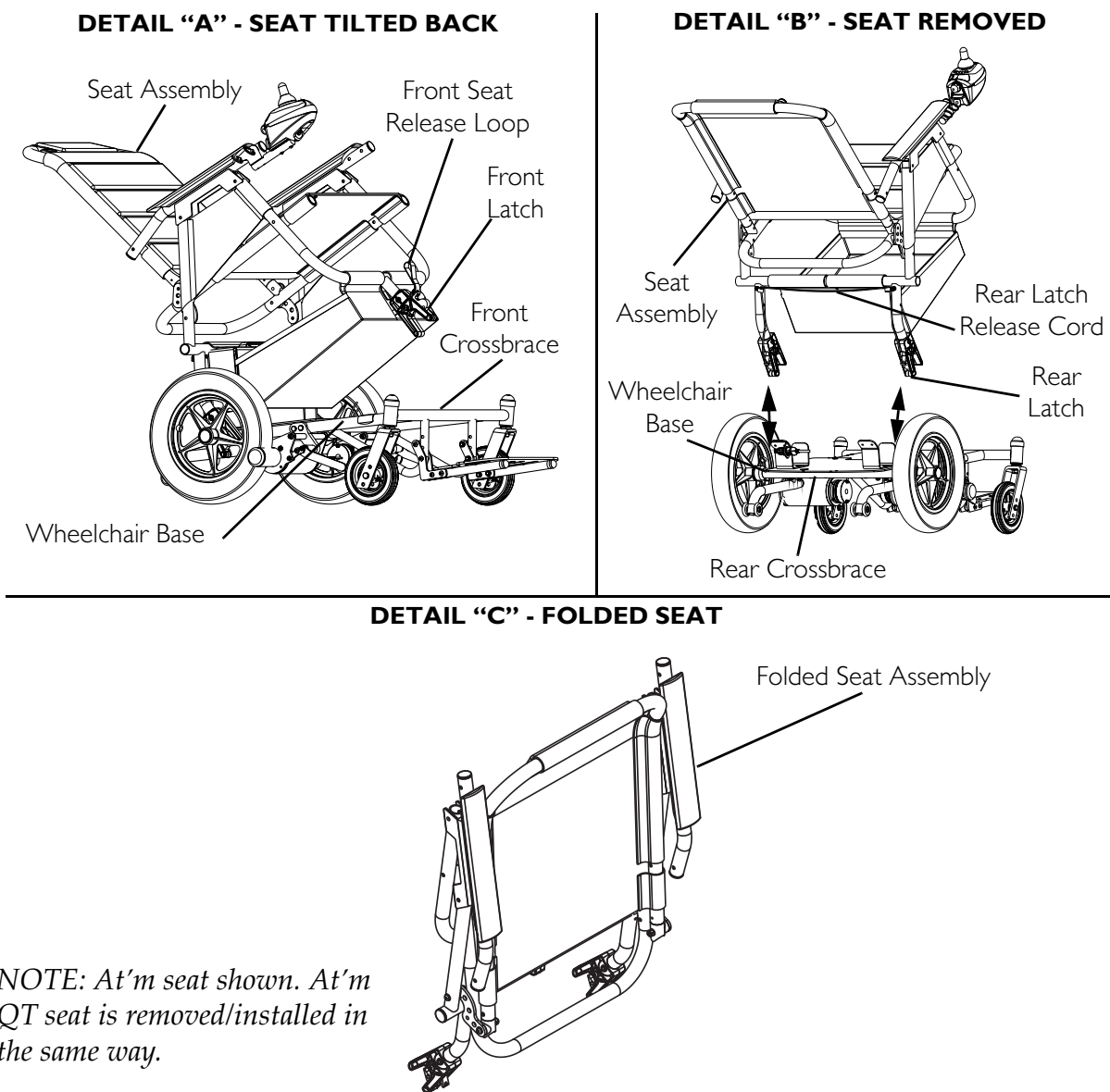


FIGURE 5.1 Removing/Installing the Seat

Replacing Seat Positioning Strap

⚠ WARNING

ALWAYS wear your seat positioning strap.

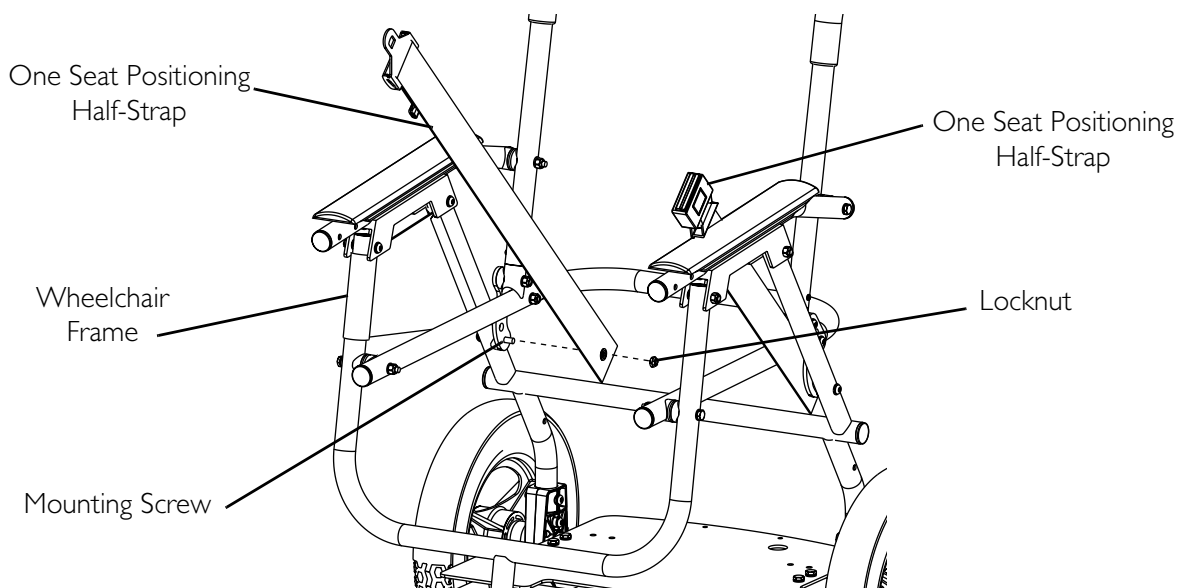
The seat positioning strap is a positioning belt only. It is not designed for use as a safety device withstanding high stress loads such as auto or aircraft safety belts. If signs of wear appear, belt **MUST** be replaced **IMMEDIATELY**.

NOTE: For this procedure, refer to FIGURE 5.2.

1. Remove the locknut that secures one seat positioning half-strap to the wheelchair frame.

NOTE: DO NOT remove the mounting screw.

2. Slide the seat positioning half-strap away from the wheelchair frame.
3. Position one new seat positioning half-strap on the mounting screw.
4. Reinstall the locknut that secures the seat positioning half-strap to the wheelchair frame.
5. Repeat STEPS 1- 4 for the other half of the seat positioning strap.



NOTE: DO NOT remove the mounting screw.

NOTE: Seat upholstery not shown for clarity.

FIGURE 5.2 Replacing Seat Positioning Strap

Removing/Installing Under-Seat Basket

NOTE: For this procedure, refer to FIGURE 5.3.

Removing

1. Remove the seat. Refer to [Removing/Installing the Seat](#) on page 31.
2. Unfasten the hook-and-loop fastening straps from the front and rear seat tubes.
3. Remove the basket.

Installing

1. Place the basket under the seat.
2. Fasten the hook-and-loop fastening straps around the front and rear seat tubes
3. Ensure that the hook-and-loop fastening straps are secured around the tubes.
4. Install the seat. Refer to [Removing/Installing the Seat](#) on page 31.

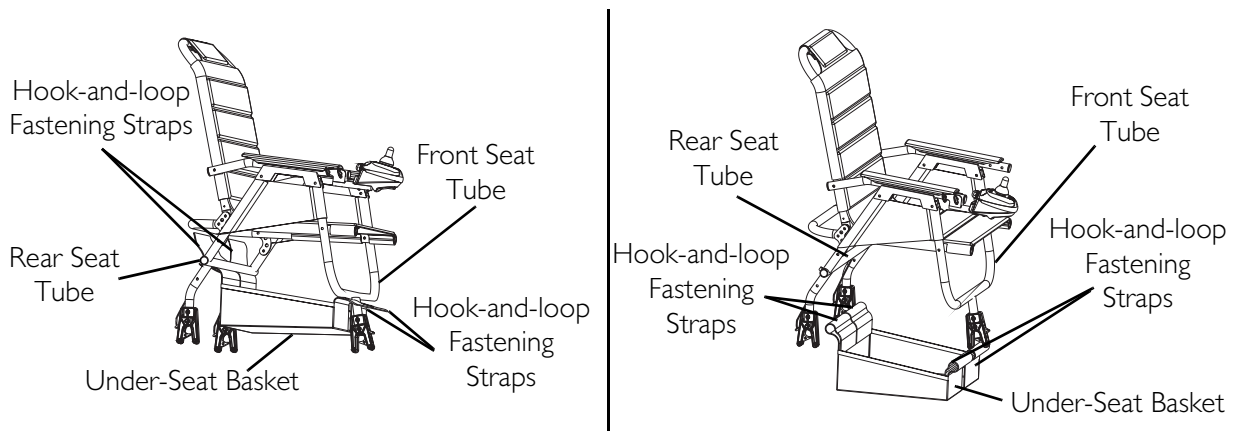


FIGURE 5.3 Removing/Installing Under-Seat Basket

Removing/Installing Seat Upholstery

NOTE: For this procedure, refer to FIGURE 5.4 on page 35.

NOTE: Ensure that the wheel locks are engaged and the chair is locked into place.

Removing

1. Remove the seat. Refer to [Removing/Installing the Seat](#) on page 31.
2. Remove the arm tubes. Refer to [Removing/Installing Arm Tube](#) on page 39.
3. Remove the under-seat basket. Refer to [Removing/Installing Under-Seat Basket](#) on page 34.
4. Remove the two mounting bolts that secure the front seat tube to the seat. Refer to Detail "A" of FIGURE 5.4.
5. Remove the two mounting bolts that secure the rear seat tube to the seat. Refer to Detail "A" of FIGURE 5.4.

6. Remove the four mounting bolts, covered washers, locknuts, and two brackets that secure the back frame to the seat frame. Refer to Detail "B" of FIGURE 5.4.
7. Lift up the hook-and-loop fastening strap and pull the back frame out of the upholstery. Refer to Detail "C" of FIGURE 5.4.
8. Pull the seat frame out of the upholstery. Refer to Detail "C" of FIGURE 5.4.

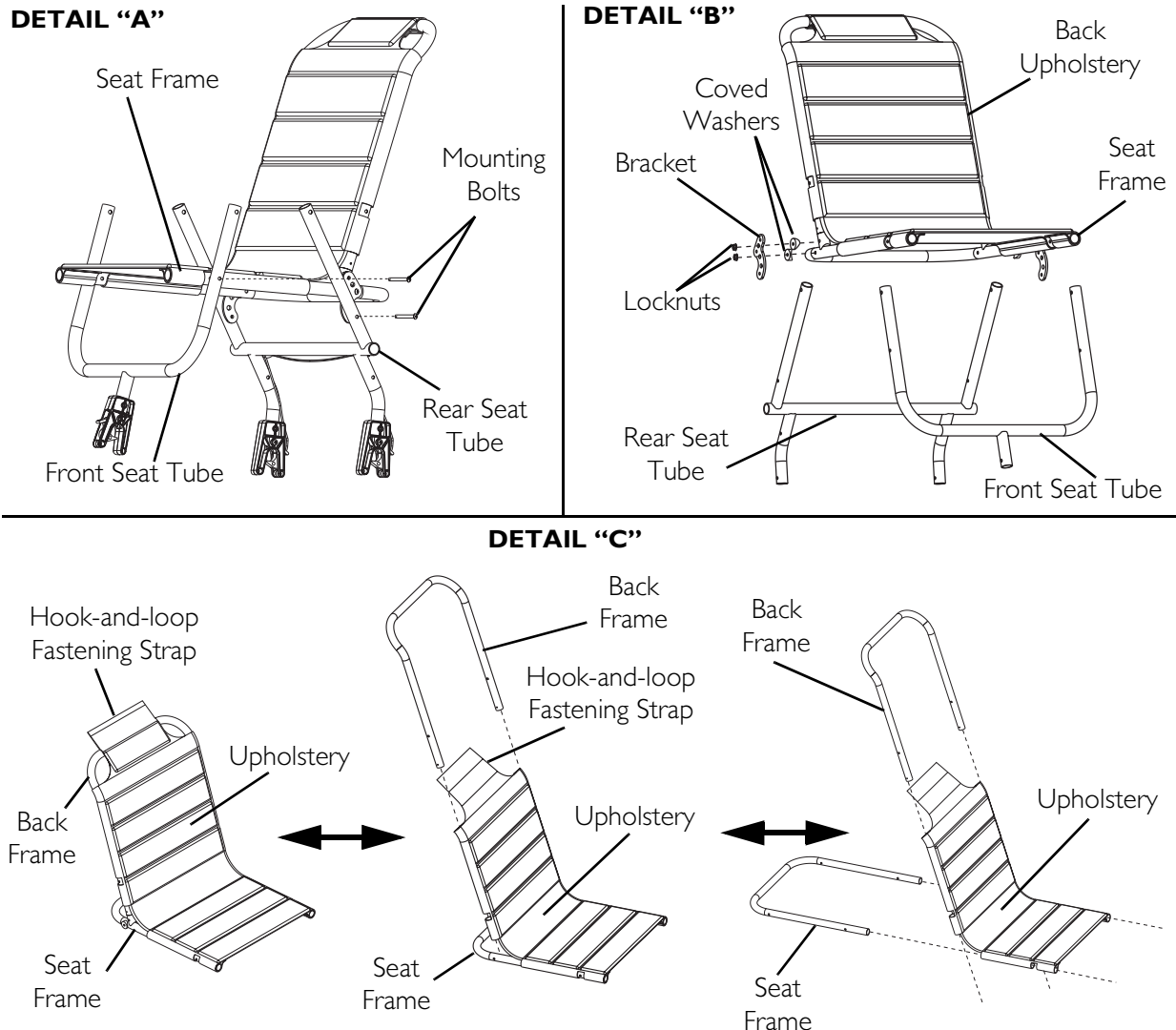


FIGURE 5.4 Removing/Installing Seat Upholstery

Installing

1. Insert the seat frame into the upholstery. Refer to Detail "C" of FIGURE 5.4.
2. Insert the back frame into the upholstery and secure the hook-and-loop fastening strap. Refer to Detail "C" of FIGURE 5.4.
3. Secure the back frame to the seat frame using the two brackets, and four mounting bolts, coved washers, and locknuts. Refer to Detail "B" of FIGURE 5.4.
4. Mount the rear seat tube to the seat frame with the two mounting bolts. Refer to Detail "A" of FIGURE 5.4.

5. Mount the front seat tube to the seat frame with the two mounting bolts. Refer to Detail "A" of FIGURE 5.4.
6. Install the under seat basket. Refer to [Removing/Installing Under-Seat Basket](#) on page 34.
7. Install the arm tubes. Refer to [Removing/Installing Arm Tube](#) on page 39.
8. Install the seat. Refer to [Removing/Installing the Seat](#) on page 31.

Replacing the Seat Latches

NOTE: For this procedure, refer to FIGURE 5.5.

1. Remove the seat. Refer to [Removing/Installing the Seat](#) on page 31.
2. Turn the seat upside down.
3. Perform one of the following:
 - For Rear Seat Latches - untie the release cord from the latch.
 - For Front Seat Latches - remove the front seat release loop.
4. Remove mounting bolt and locknut that secures the latch to the seat frame.

NOTE: DO NOT remove the latch bolt.

5. Insert the new latch onto the frame.
6. Install the mounting bolt and locknut.
7. Perform one of the following:
 - For Rear Seat Latches - insert the release cord through the hole in the latch and secure the cord to the latch.
 - For Front Seat Latches - secure the front seat release loop to the latch with the one locknut.
8. Install the seat. Refer to [Removing/Installing the Seat](#) on page 31.

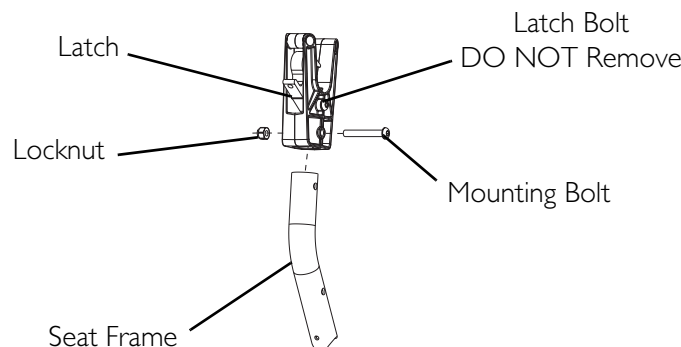


FIGURE 5.5 Replacing the Seat Latches

SECTION 6—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.

Removing/Installing Arm Pads

NOTE: For this procedure, refer to FIGURE 6.1 on page 38.

Removing

1. Disconnect the joystick. Refer to Disconnecting/Connecting the Joystick on page 40.
2. Remove the two mounting bolts, four nylon washers, two locknuts and steel washers that secure the arm bracket to the front and rear seat tubes (Detail "A").
3. Lift up arm tube.
4. Under the arm tube, remove the two mounting screws and washers that secure the arm pad to the arm tube and arm bracket (Detail "B").
5. Repeat STEPS 2 to 4 for the other arm pad.

Installing

1. Secure the arm pad and arm bracket to the arm tube using two mounting screws and washers (Detail "B").
2. Align the arm bracket with the front and rear seat tubes.
3. Secure the arm bracket to the front and rear seat tubes with the two mounting bolts, four nylon washers, two locknuts and steel washers (Detail "A").
4. Repeat STEPS 1 to 3 for other arm pad.
5. Connect the joystick. Refer to Disconnecting/Connecting the Joystick on page 40.

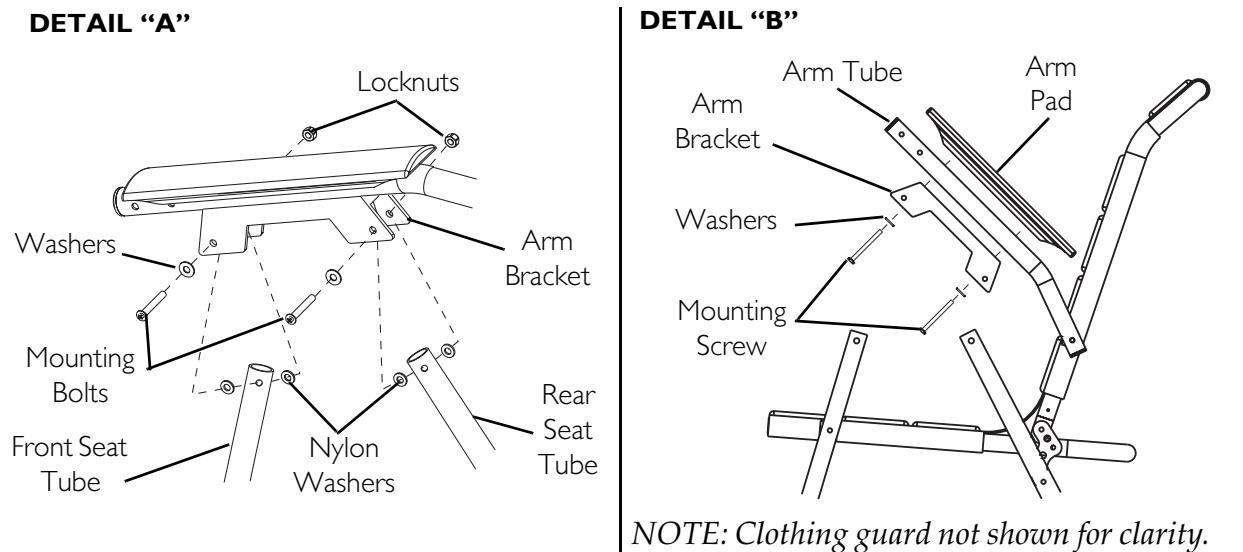


FIGURE 6.1 Removing/Installing Arm Pads

Replacing Clothing Guard

NOTE: For this procedure, refer to FIGURE 6.1 and FIGURE 6.2.

1. Disconnect the joystick. Refer to [Disconnecting/Connecting the Joystick](#) on page 40.
2. Remove the two mounting bolts, four nylon washers, two locknuts and steel washers that secure the arm bracket to the front and rear seat tubes (Detail "A" of FIGURE 6.1).
3. Lift up arm tube.
4. Slide the clothing guard off the front and rear seat tubes (FIGURE 6.2).
5. Slide the new clothing guard onto the front and back seat tubes.

NOTE: The mesh side of the clothing guard should face out.

6. Lower the arm tube.
7. Align the mounting holes in the arm bracket with those in the front and rear seat tubes.
8. Secure the arm bracket to front and back seat tubes with the two mounting bolts, four nylon washers, two locknuts and steel washers (FIGURE 6.1).
9. Repeat STEPS 2 to 8 for the other side.
10. Connect the joystick. Refer to [Disconnecting/Connecting the Joystick](#) on page 40.

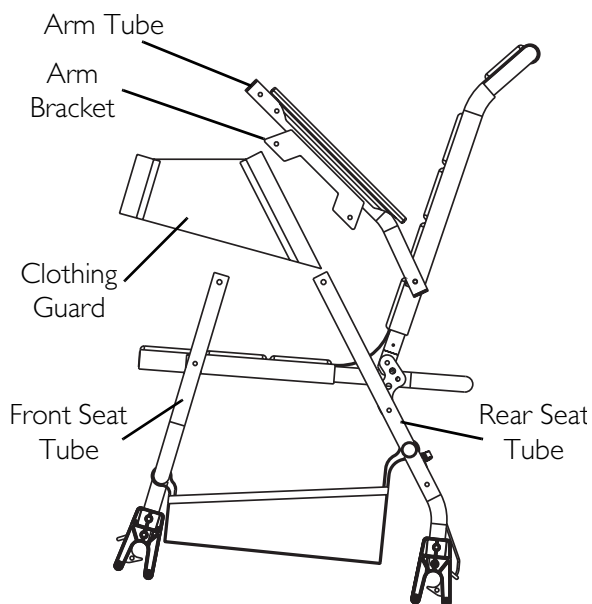


FIGURE 6.2 Replacing Clothing Guard

Removing/Installing Arm Tube

NOTE: For this procedure, refer to FIGURE 6.3.

Removing

1. If needed, remove the joystick. Refer to Removing/Installing the Joystick on page 41.
2. Remove arm pad. Refer to Removing/Installing Arm Pads on page 37.
3. Remove the mounting bolt, two nylon spacers, three coved washers, locknut, and washer attaching arm tube to rear seat tube.
4. Repeat for other arm tube if necessary.

Installing

1. Secure the arm tube to the rear seat tube with the mounting bolt, two nylon spacers, three coved washers, locknut, and washer. Securely tighten.
2. Install the arm pad. Refer to Removing/Installing Arm Pads on page 37.
3. If needed, install the joystick. Refer to Removing/Installing the Joystick on page 41.

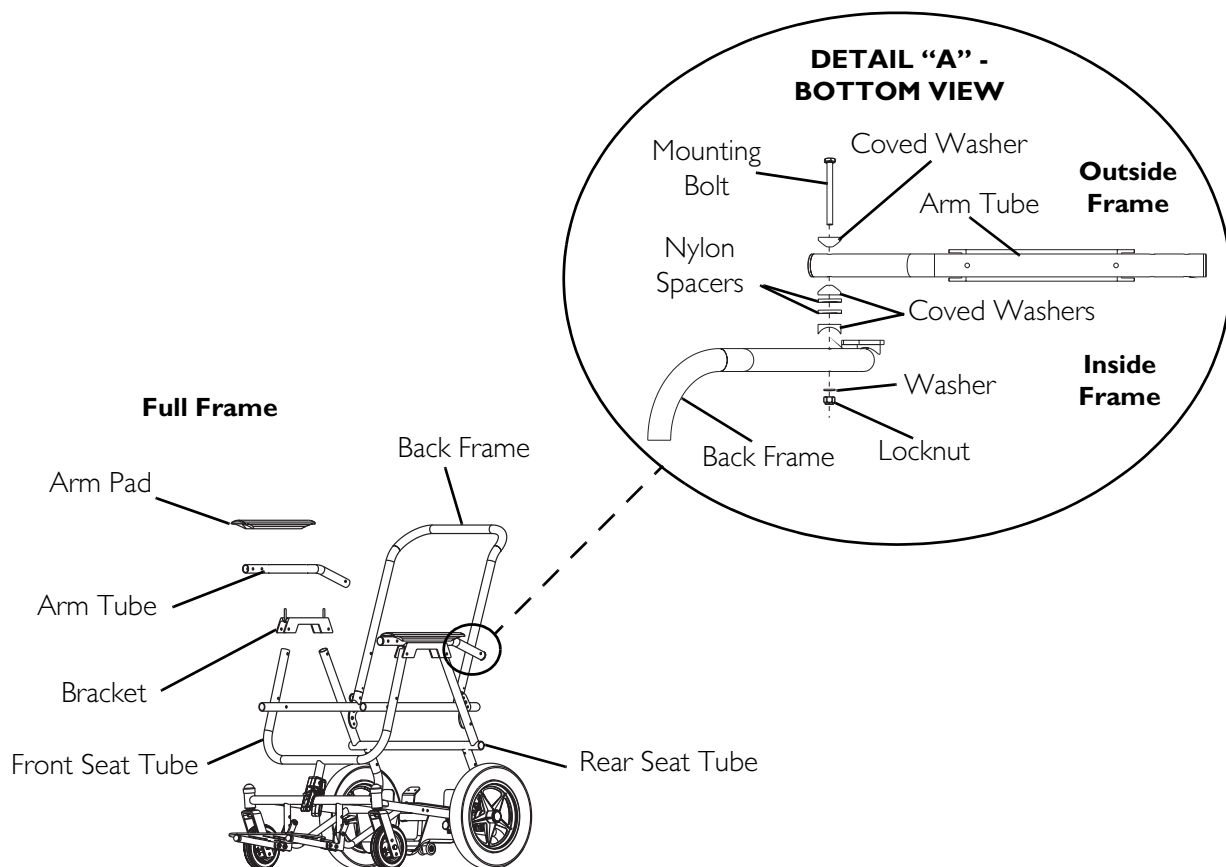


FIGURE 6.3 Removing/Installing Arm Tube

SECTION 7—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.

Disconnecting/Connecting the Joystick

NOTE: For this procedure, refer to FIGURE 7.1 on page 41.

Disconnecting

NOTE: Verify the joystick On/Off button is in the "Off" position before disconnecting the joystick connector.

1. Pull the light GREY collar portion of the joystick connector and disengage the grey collar from the controller connector.

Connecting

CAUTION

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

1. Hold the light GREY collar portion of the joystick connector with one hand and align the joystick connector with the controller connector.
2. Lightly push to engage the joystick connector and the controller connector.

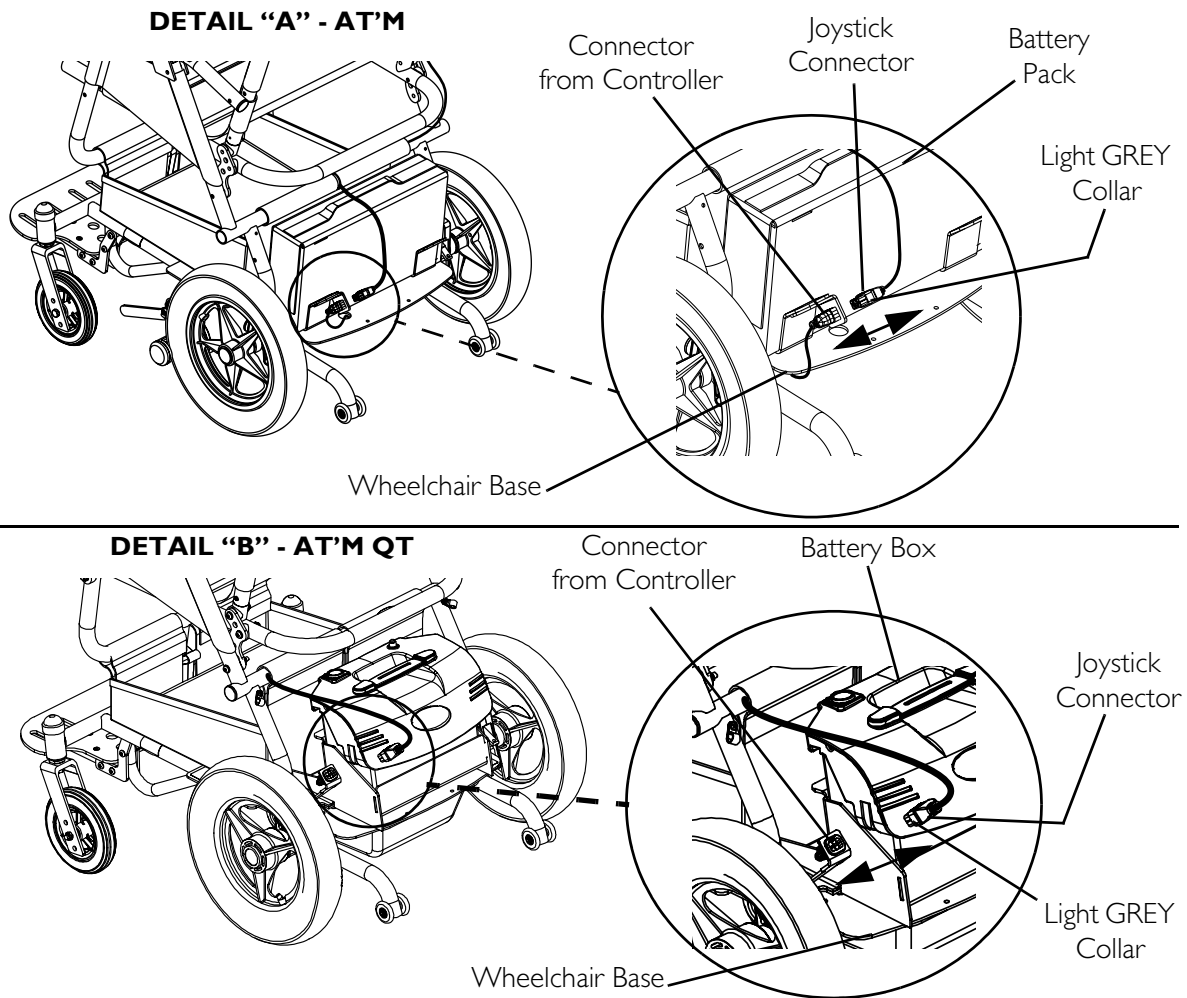


FIGURE 7.1 Disconnecting/Connecting the Joystick

Removing/Installing the Joystick

NOTE: For this procedure, refer to FIGURE 7.2 on page 42.

Removing

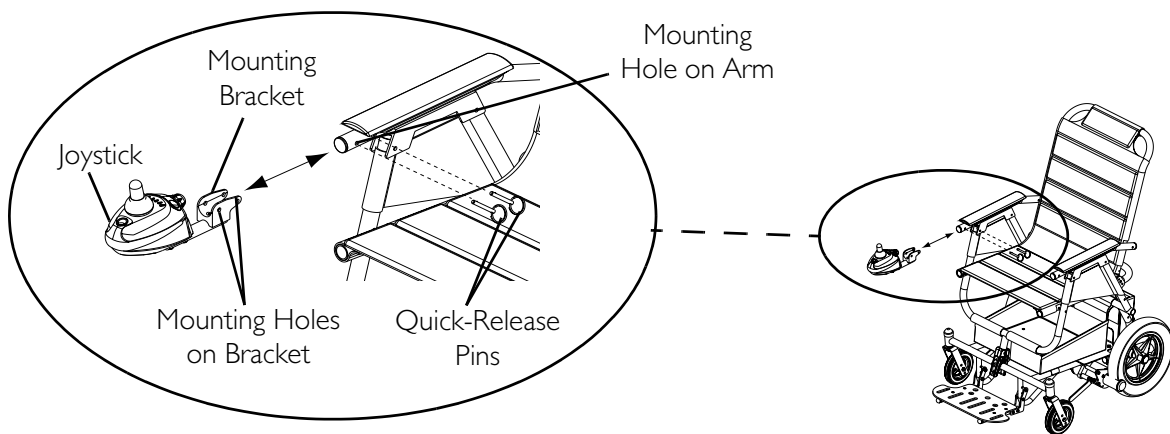
1. Disconnect the joystick. Refer to Disconnecting/Connecting the Joystick on page 40.
2. Cut the tie-wraps that secure the joystick cable to the wheelchair arm and frame. Refer to Detail "A" of FIGURE 7.2.
3. Pull the hook-and-loop fastening strap connecting the under seat basket to the chair.
4. Cut the three tie-wraps that secure the joystick cable to the wheelchair frame.
5. Remove the two quick-release pins that mount the joystick to the arm.
6. Remove the joystick and mounting bracket assembly.

Installing

1. Align the mounting bracket assembly with the mounting holes on the arm.
2. Install the two quick-release pins that mount the joystick to the arm.
3. Secure the joystick cable to the wheelchair arm with three tie-wraps. Refer to Detail "A" of FIGURE 7.2.
4. Secure the joystick cable to the wheelchair frame with three tie-wraps.
5. Secure the hook-and-loop fastening strap, over the cable and tie-wrap, to the base frame.

NOTE: Route the joystick cable under the basket upholstery to prevent it from interfering with wheelchair motion.

6. Connect the joystick. Refer to Disconnecting/Connecting the Joystick on page 40.



NOTE: At'm wheelchair shown. The joystick on the At'm QT repositions the same way.

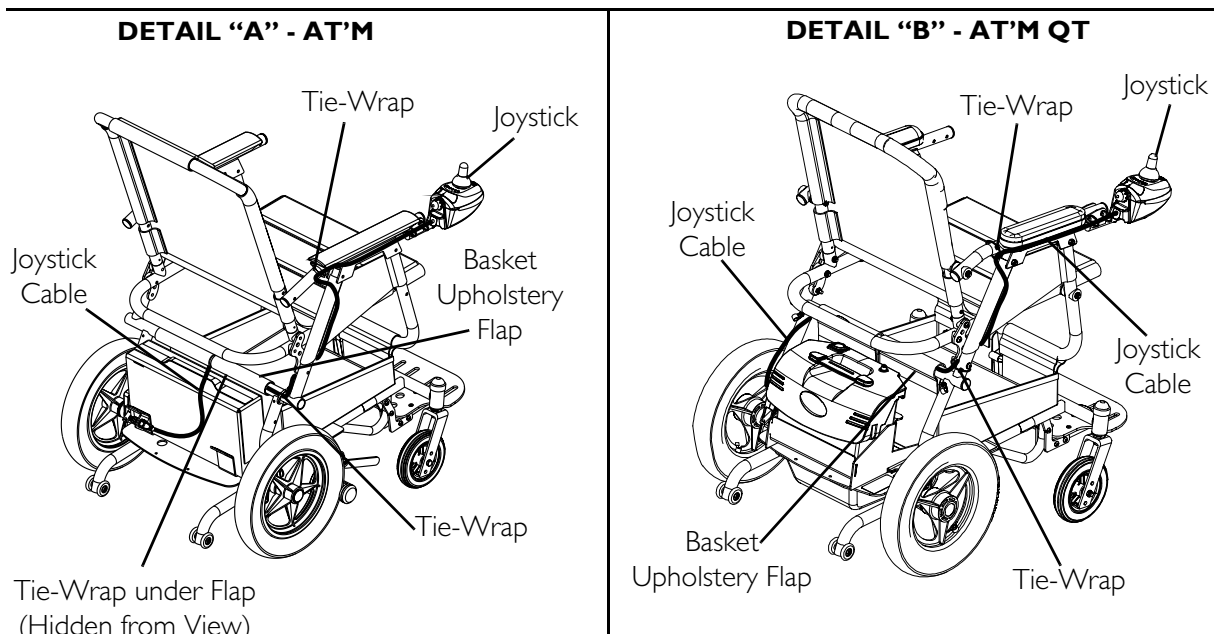


FIGURE 7.2 Removing/Installing the Joystick

Repositioning the Joystick to Opposite Arm

NOTE: For this procedure, refer to FIGURE 7.2.

1. Remove the joystick. Refer to Removing/Installing the Joystick on page 41.
2. Reposition the joystick and mounting bracket assembly on the opposite arm.

NOTE: Route the joystick cable under the basket upholstery to prevent it from interfering with wheelchair motion.

3. Install the joystick. Refer to Removing/Installing the Joystick on page 41.

SECTION 8—BATTERIES

Warnings For Handling and Replacing 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.

Most batteries are not sold with instructions. However, warnings are frequently noted on the cell caps. Read them carefully, otherwise serious injury or damage may occur.

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

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

ALWAYS transport the battery pack/box in an upright and secure manner. To prevent damage, do not transport the battery pack/box with other objects that could suddenly shift during transportation, unless they are secured or in a different vehicle area. **DO NOT** transport battery pack/box with gas cans or similar containers in the same vehicle area.

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

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

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

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

Recommended Battery Type

CAUTION

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

NOTE: For this procedure, refer to FIGURE 8.1.

At'm uses two M17-12 SLSM type batteries (Detail "A" of FIGURE 8.1).

At'm QT uses two PE 12V 12SLA batteries (Detail "B" of FIGURE 8.1).

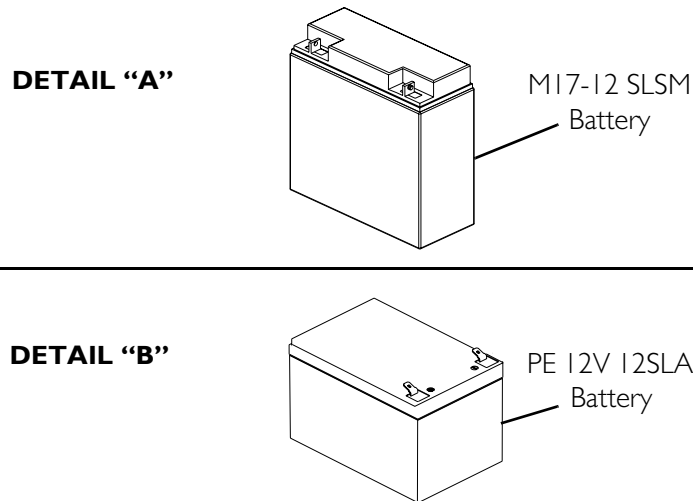


FIGURE 8.1 Recommended Battery Type

NOTE: Recommended battery type is spill proof and requires no maintenance except routine charging.

NOTE: Charge batteries daily. DO NOT allow batteries to completely discharge. To charge batteries, refer to Charging Batteries on page 52.

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

Removing/Installing the Battery Pack on the At'm

⚠ 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 8.2 on page 46.

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

Removing

1. Verify the joystick on/off button is in the off position and disconnect the joystick. Refer to Disconnecting/Connecting the Joystick on page 40.
2. Disconnect the battery connector from the wheelchair (RED and BLACK connector).
3. Using the battery handle, lift the battery pack up and away from the wheelchair base.

Installing

1. Verify the joystick on/off button is in the off position and disconnect the joystick. Refer to Disconnecting/Connecting the Joystick on page 40.
2. Position the battery pack into brackets located on the rear of the wheelchair.
3. Connect the battery connector to the connector on the rear of the wheelchair (RED and BLACK connector).
4. Connect the joystick. Refer to Disconnecting/Connecting the Joystick on page 40.

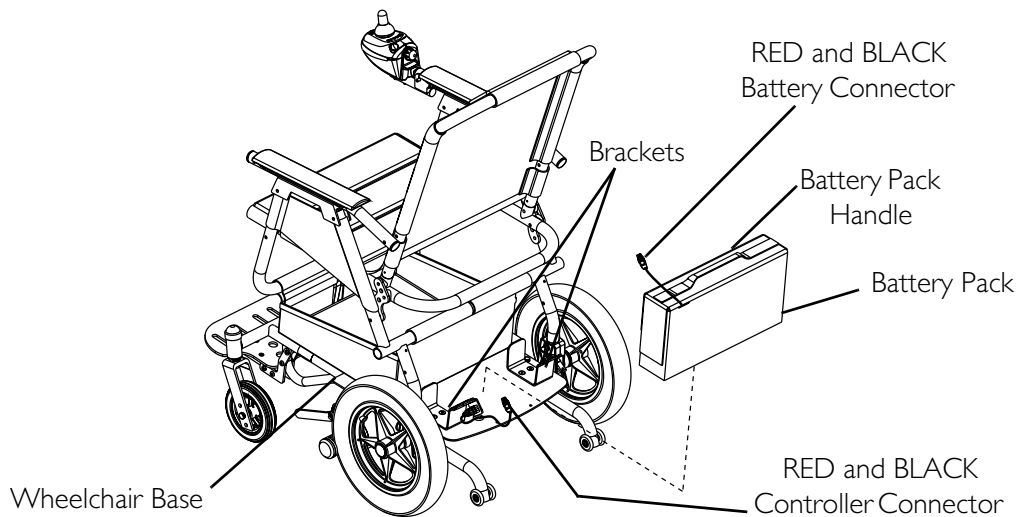


FIGURE 8.2 Removing/Installing the Battery Pack on the At'm

Removing/Installing the Battery Box on the At'm QT

NOTE: For this procedure, refer to FIGURE 8.3 on page 47.

Removing

1. Hold the battery box handle and lift the battery box up and away from the wheelchair.

Installing

1. Holding the battery box handle, carefully lower the battery box on to the battery tray in the wheelchair.
2. Press down the battery box to engage the connector on the battery box with the connector on the battery tray on the wheelchair base.
3. Turn on the wheelchair to verify that the battery box is connected properly. If power does not turn on, repeat STEP 2.

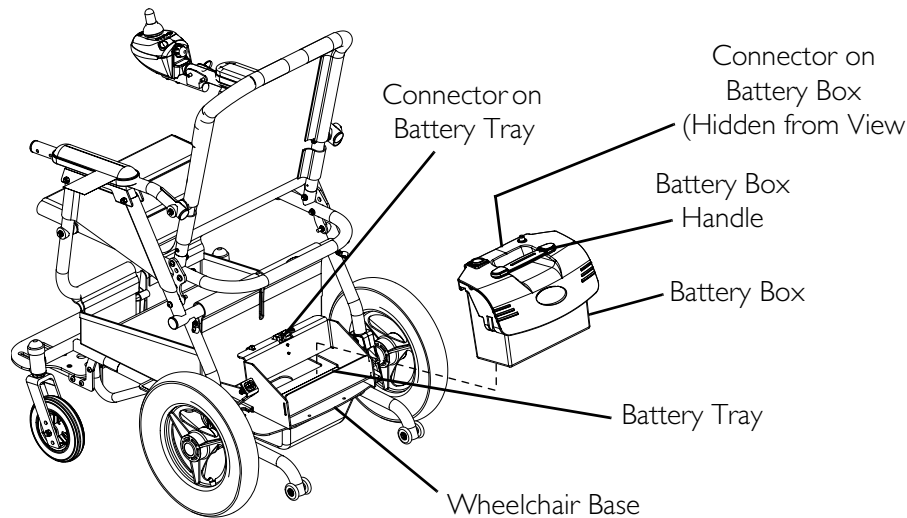


FIGURE 8.3 Removing/Installing the Battery Box on the At'm QT

Removing/Installing the Batteries From/Into the At'm Battery Pack

NOTE: For this procedure, refer to FIGURE 8.4 on page 48.

Removing

1. Remove the battery pack from the wheelchair. Refer to Removing/Installing the Battery Pack on the At'm on page 45.
2. Open the battery pack by performing the following -
 - A. Grasp the side flaps and pull up.
 - B. Grasp the front flap and pull up.
3. Disconnect the wiring harness from the batteries in the following order -
 - A. NEGATIVE (-) BLACK battery cable from the NEGATIVE (-) battery terminal on the left battery.
 - B. POSITIVE (+) RED battery cable from POSITIVE (+) battery terminal/post on the right battery.
 - C. WHITE battery cable (jumper) from the POSITIVE (+) battery terminal/post on the left battery and the NEGATIVE (-) battery terminal/post on the right battery.
4. Remove the batteries from the battery pack.

Installing

1. Install the batteries into the battery pack in the orientation shown in FIGURE 8.4.
 2. Connect the wiring harness to the batteries in the following order -
 - A. NEGATIVE (-) BLACK battery cable to the NEGATIVE (-) battery terminal on the left battery.
 - B. POSITIVE (+) RED battery cable to POSITIVE (+) battery terminal/post on the right battery.
 - C. WHITE battery cable (jumper) to the POSITIVE (+) battery terminal/post on the left battery and the NEGATIVE (-) battery terminal/post on the right battery.
 3. Slide the red and black battery connector out of the battery pack in the slit provided on the front flap.
 4. Close the battery pack by performing the following -
 - A. Fold down the front flap and press to engage the hook and loop straps.
 - B. Fold down the side flaps and press to engage the hook and loop straps.
- NOTE: Ensure that the hook and loop straps are securely fastened before lifting the battery pack.*
5. Install the battery pack on the wheelchair. Refer to Removing/Installing the Battery Pack on the At'm on page 45.

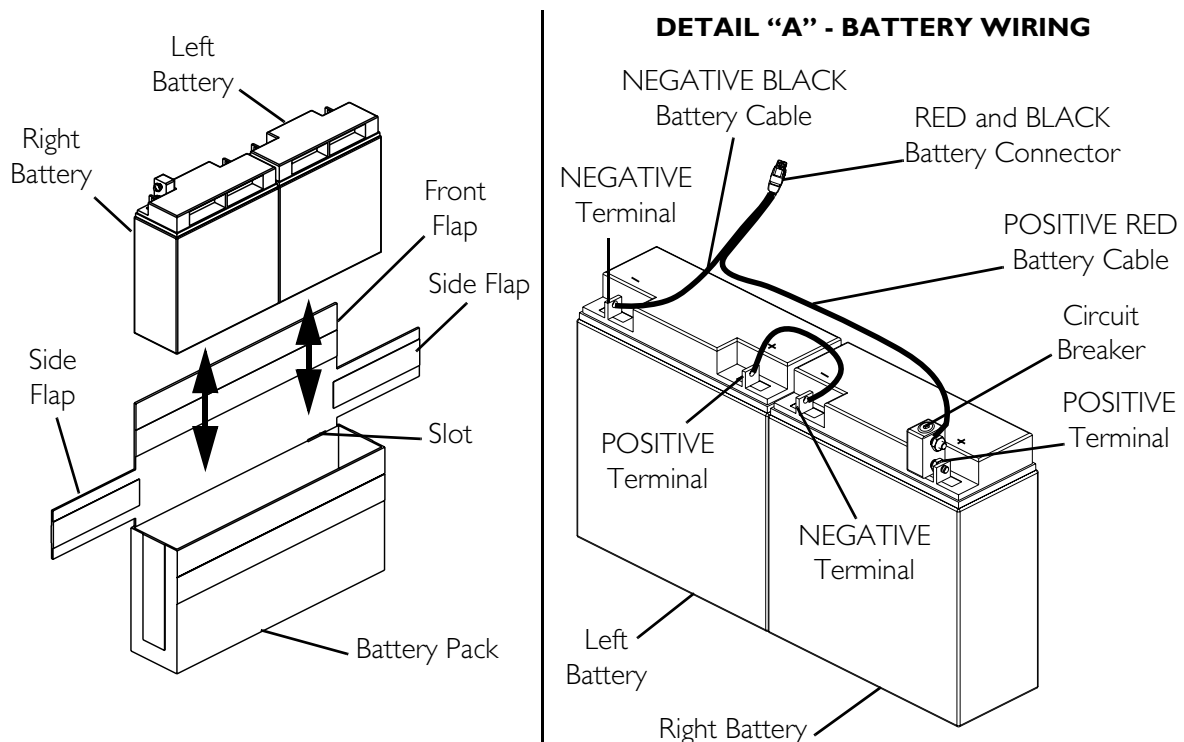


FIGURE 8.4 Removing/Installing the Batteries From/Into the At'm Battery Pack

Removing/Installing the Batteries From/Into the At'm QT Battery Box

NOTE: For this procedure, refer to FIGURE 8.5 on page 50.

Removing

1. Remove the battery box from the wheelchair. Refer to Removing/Installing the Battery Box on the At'm QT on page 46.
2. Remove the ten mounting screws that secure the battery box top to the battery box (Detail "A" of FIGURE 8.5).
3. Disconnect the wiring harness from the batteries by holding the connectors and pulling them in the following order (Detail "B" of FIGURE 8.5):
 - A. NEGATIVE (-) BLACK battery cable from the NEGATIVE (-) battery terminal on the left battery.
 - B. POSITIVE (+) RED battery cable from the POSITIVE (+) battery terminal on the right battery.
 - C. WHITE battery cable (Jumper) from the POSITIVE (+) battery terminal on the left battery and the NEGATIVE (-) battery terminal on the right battery.
4. Remove the batteries from battery box by lifting the batteries out.

Installing

1. Install the two new batteries into the battery box.
2. Connect the wiring harness to the batteries in the following order (Detail "B" of FIGURE 8.5):
 - A. NEGATIVE (-) BLACK battery cable to the NEGATIVE (-) battery terminal on the left battery.
 - B. POSITIVE (+) RED battery cable to the POSITIVE (+) battery terminal on the right battery.
 - C. WHITE battery cable (Jumper) to the POSITIVE (+) battery terminal on the left battery and the NEGATIVE (-) battery terminal on the right battery.
3. Replace the top of the battery box and secure with the ten mounting screws (Detail "A" of FIGURE 8.5). Securely tighten.
4. Reinstall the battery box on to the wheelchair. Refer to Removing/Installing the Battery Box on the At'm QT on page 46.

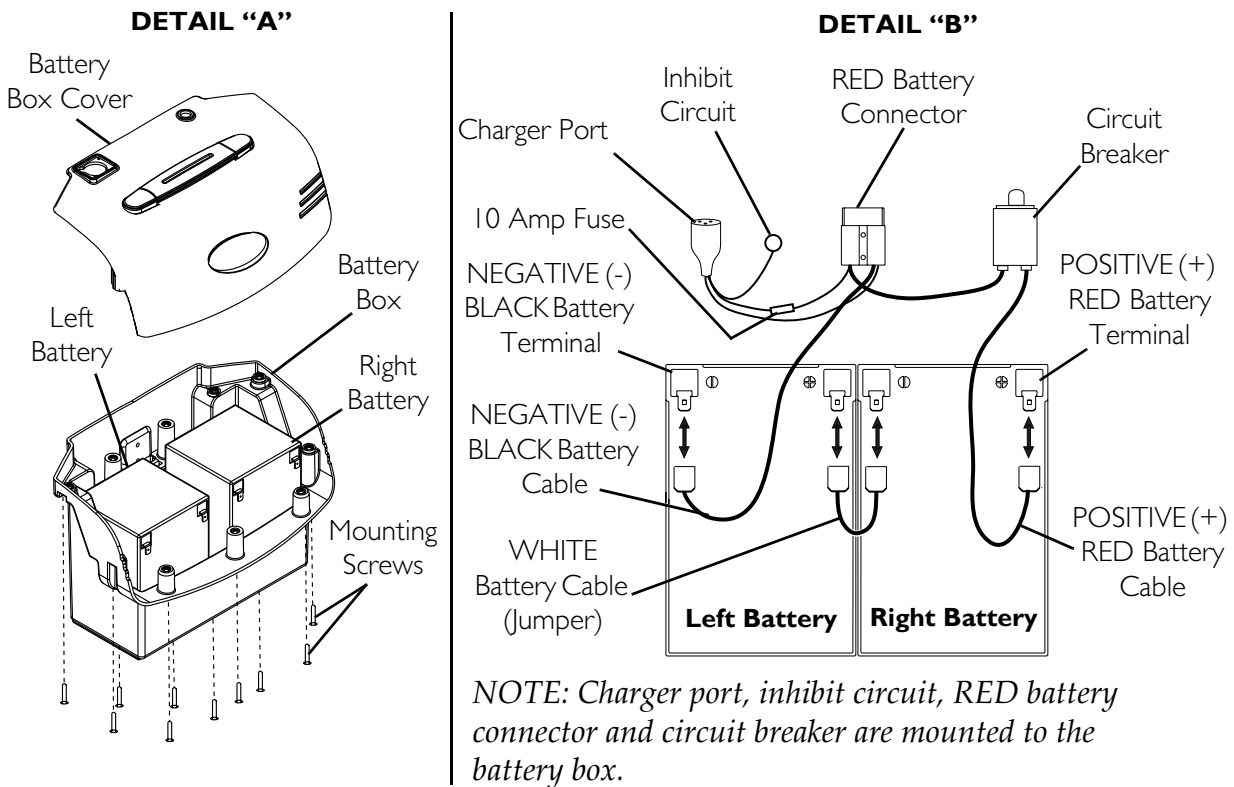


FIGURE 8.5 Removing/Installing the Batteries From/Into the At'm QT Battery Box

Removing/Installing the At'm QT Battery Box Assembly

NOTE: For this procedure, refer to FIGURE 8.6 on page 51.

Removing

1. Disconnect the joystick. Refer to [Disconnecting/Connecting the Joystick](#) on page 40.
2. Remove the two rear wheels. Refer to [Removing/Installing the Drive Wheels](#) on page 69.
3. Remove the four locknuts, eight washers, four hex head screws and twelve covered washers that secure the battery box assembly to the base frame.

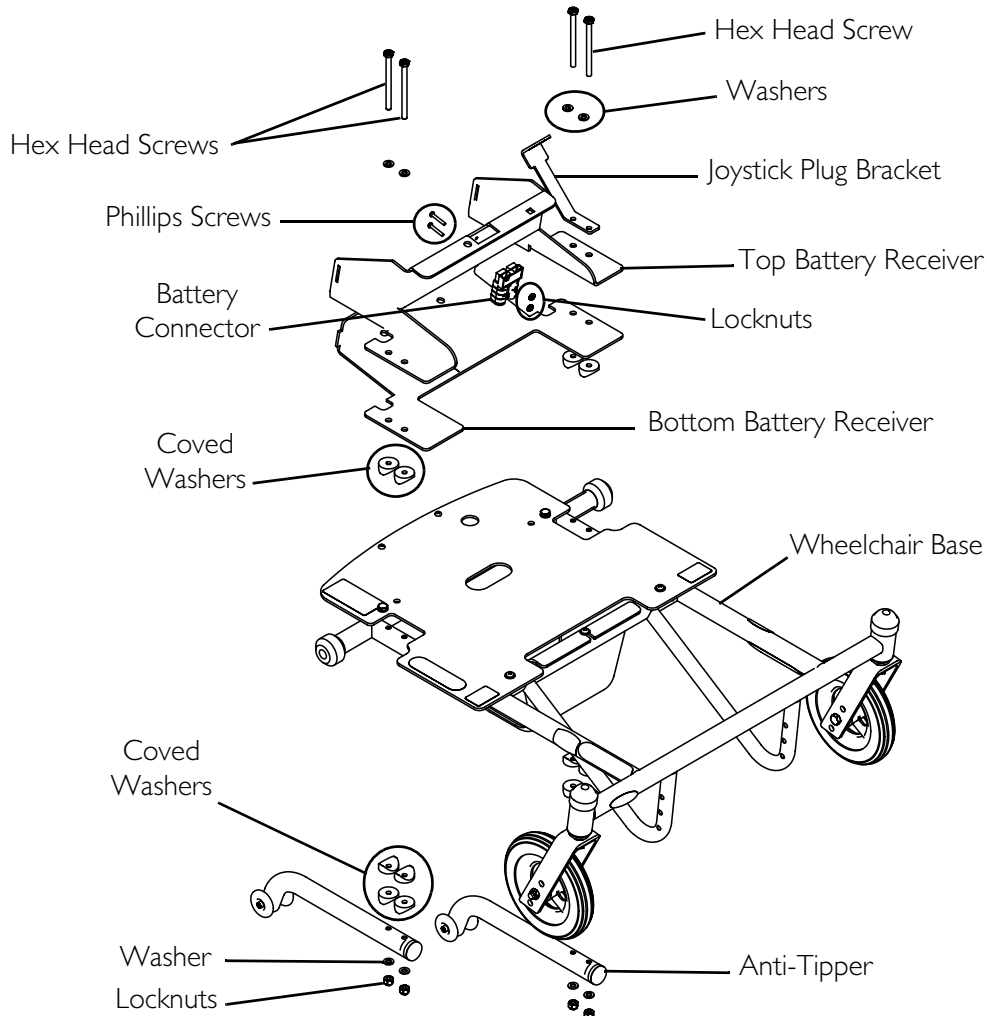
NOTE: Battery box assembly includes a top battery receiver and a bottom battery receiver.

4. Remove the two Phillips® screws and locknuts that secure the battery connector to the battery box assembly.

NOTE: Removing the battery box assembly will also remove the anti-tipper and the joystick plug bracket.

Installing

1. Install the battery box assembly, joystick plug bracket and anti-tippers onto the base frame using the four locknuts, eight washers, four hex head screws and twelve covered washers.
2. Install the battery connector to the battery box assembly using the two Phillips screws and locknuts.
3. Install the two rear wheels. Refer to [Removing/Installing the Drive Wheels](#) on page 69.
4. Connect the joystick. Refer to [Disconnecting/Connecting the Joystick](#) on page 40.



NOTE: The battery box assembly comprises the top and bottom battery receivers.

FIGURE 8.6 Removing/Installing the At'm QT Battery Box Assembly

Charging Batteries

⚠ WARNING

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

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

DO NOT 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 recharging the batteries.

CAUTION

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

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

As a general rule, you should recharge your batteries as frequently as possible to assure the longest possible life and to minimize required charging time. Plan to recharge them when you do not anticipate using the wheelchair.

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 a charge builds up, the charge rate is reduced, and the battery charger rate decreases to a “trickle charge”.

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

Charging Using an Independent Charger

⚠ WARNING

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

CAUTION

Only use a charger approved by Invacare when charging through the joystick on this wheelchair model.

DO NOT use an independent charger with an output rating of over 8A (Amps). Otherwise, damage may occur.

Charger Plugged Into the Joystick

NOTE: For this procedure, refer to FIGURE 8.7.

NOTE: The charger port located on the front of the joystick requires the use of an independent charger. The independent charger is supplied with the wheelchair.

1. Attach the battery charger connector to the charger port on the front of the joystick.
2. Plug the charger's AC power cord or extension into the grounded 110-volt wall outlet.
3. When charging is complete, turn charger off.
4. Disconnect output cable from joystick charger port.

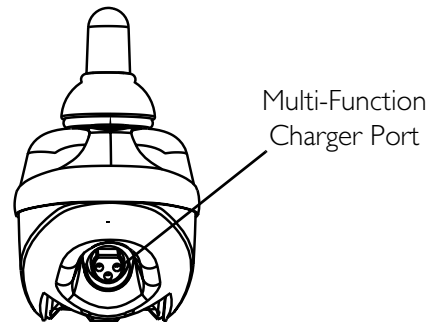


FIGURE 8.7 Charging Using an Independent Charger - Charger Plugged Into the Joystick

Charger Plugged Directly to Batteries - At'm Only

NOTE: For this procedure, refer to FIGURE 8.8.

1. Disconnect the RED and BLACK connector from the wheelchair harness.
2. Connect 3-pin charger connector to the female 3-pin connector on the charger jumper cable (supplied).
3. Connect RED and BLACK connector on the charger jumper cable to the RED and BLACK connector on the battery pack.
4. Plug the charger's AC power cord into the grounded 110-volt wall outlet.
5. When charging is complete, turn charger off.
6. Disconnect the charger jumper cable from the battery pack.
7. Reconnect the RED and BLACK connector from the battery pack to the wheelchair harness.

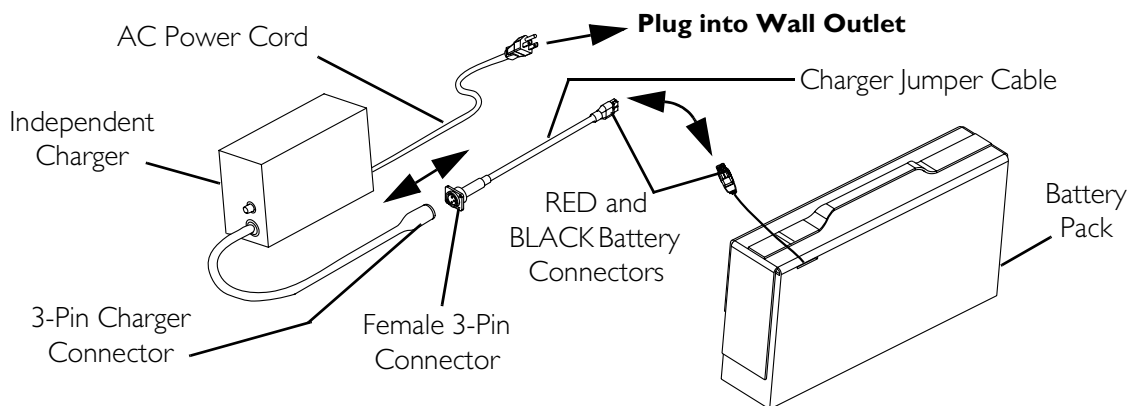


FIGURE 8.8 Charging Using an Independent Charger - Charger Plugged Directly to Batteries - At'm Only

Charger Plugged Directly to Batteries - At'm QT Only

NOTE: For this procedure, refer to FIGURE 8.9.

1. If necessary, remove the battery box from the wheelchair. Refer to Removing/Installing the Battery Box on the At'm QT on page 46.
2. Slide the charger port cap (located on the battery box) to one side.
3. Plug the charger connector into the charger port located on the battery box (FIGURE 8.9).
4. Plug the charger power cord into 110-volt wall outlet.

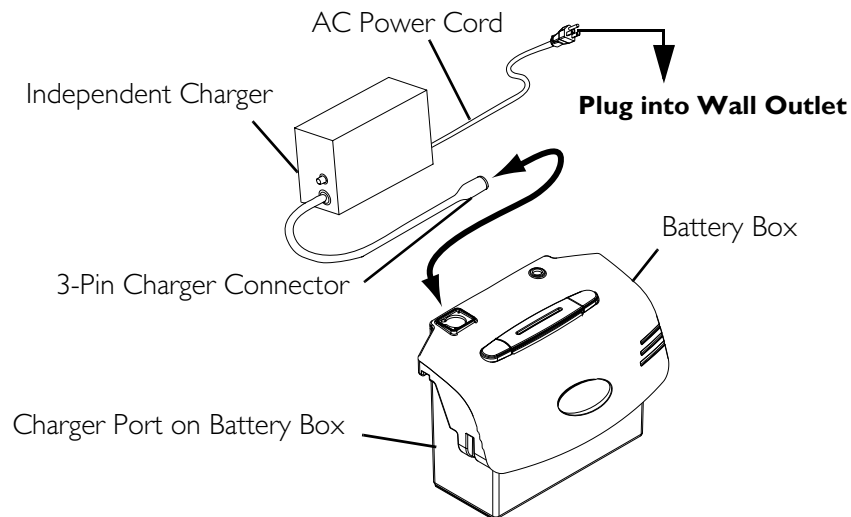


FIGURE 8.9 Charging Using an Independent Charger - Charger Plugged Directly to Batteries - At'm QT Only

Resetting the Circuit Breaker**⚠ WARNING**

NEVER defeat or bypass the circuit breaker. Only replace with a circuit breaker of the same rating.

At'm

NOTE: For this procedure, refer to FIGURE 8.10 on page 55.

1. Remove the battery pack from the wheelchair base. Refer to Removing/Installing the Battery Pack on the At'm on page 40.
2. Open the battery pack by performing the following -
 - A. Grasp the side flaps and pull up.
 - B. Grasp the front flap and pull up.

3. To reset - press the circuit breaker reset button located inside the protector ring on top of circuit breaker.
4. Close the battery pack by performing the following -
 - A. Fold down the front flap and press to engage the hook and loop straps.
 - B. Fold down the side flaps and press to engage the hook and loop straps.

NOTE: Ensure that the hook and loop straps are securely fastened before lifting the battery pack.

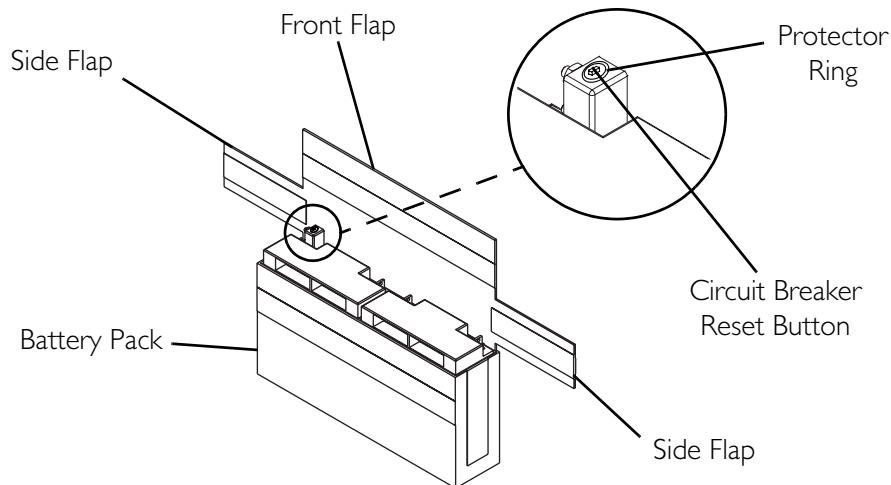


FIGURE 8.10 Resetting the Circuit Breaker - At'm

At'm QT

NOTE: For this procedure, refer to FIGURE 8.11.

1. To reset - press the circuit breaker button located on the battery box.

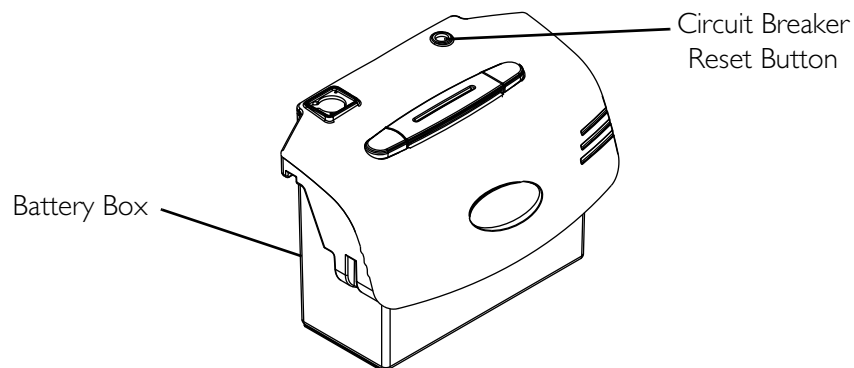


FIGURE 8.11 Resetting the Circuit Breaker - At'm QT

SECTION 9—MOTORS

⚠ 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.

Engaging/Disengaging the Motors

⚠ WARNING

DO NOT attempt to transfer into or out of the wheelchair without the motor engagement handles in the engaged (horizontal) position with the motor turned off.

DO NOT engage or disengage the motors until the power is off.

Push the motor engagement handles all the way down to engage the motors.

Engaging/Disengaging the motor allows free-wheeling the wheelchair or operating it by a joystick. Free-wheeling allows an attendant to maneuver the wheelchair without power.

NOTE: For this procedure, refer to FIGURE 9.1.

1. Locate the motor engagement handle on one motor.

CAUTION

If the motor engagement handles are forced to engage in the wrong direction, the motors will be damaged and will need to be replaced.

2. Perform one of the following:
 - To Engage - Push the motor engagement handle all the way down (to the horizontal position) towards the front of the wheelchair.
 - To Disengage - Pull up the motor engagement handle (to the vertical position).
3. Repeat STEPS 1-2 to engage/disengage the other motor.

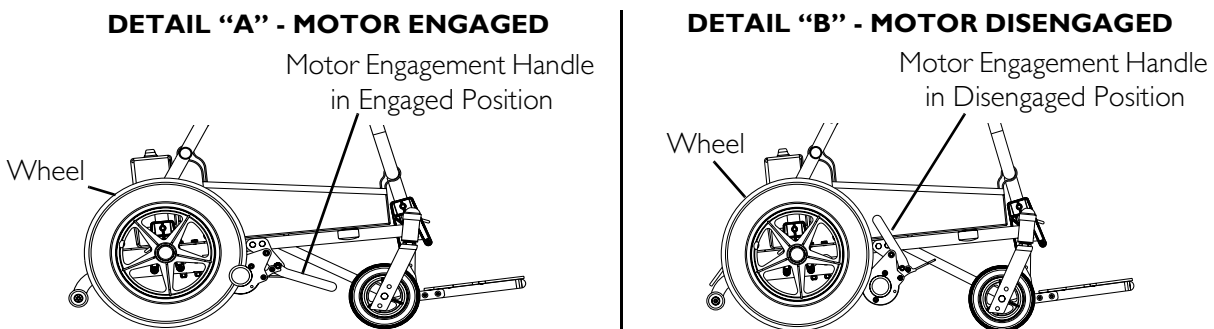


FIGURE 9.1 Engaging/Disengaging the Motors

Removing/Installing Motor Shroud

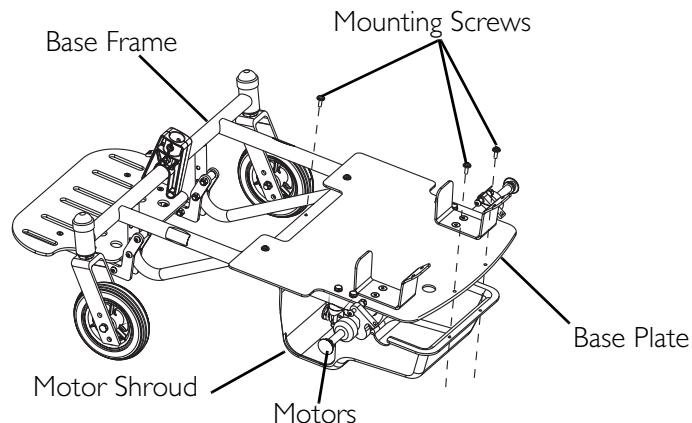
NOTE: For this procedure, refer to FIGURE 9.2.

Removing

1. Disconnect the joystick. Refer to Disconnecting/Connecting the Joystick on page 40.
2. Remove the battery pack/box. Refer to Removing/Installing the Battery Pack on the At'm on page 45 or Removing/Installing the Battery Box on the At'm QT on page 46.
3. Remove the seat. Refer to Removing/Installing the Seat on page 31.
4. Remove the three mounting screws that secure the motor shroud to the base frame and base plate.
5. Pull the motor shroud out from around the base frame and lift out.

Installing

1. Position the motor shroud over the motors.
2. Secure the shroud to the base frame and base plate with three mounting screws. Securely tighten.
3. Install the seat. Refer to Removing/Installing the Seat on page 31.
4. Install the battery pack/box. Refer to Removing/Installing the Battery Pack on the At'm on page 45 or Removing/Installing the Battery Box on the At'm QT on page 46.
5. Connect the joystick. Refer to Disconnecting/Connecting the Joystick on page 40.



NOTE: Drive Wheels not shown for clarity.

FIGURE 9.2 Removing/Installing Motor Shroud

Removing/Installing the Base Plate

NOTE: For this procedure, refer to FIGURE 9.3 on page 58.

Removing

1. Disconnect the joystick. Refer to Disconnecting/Connecting the Joystick on page 40.
2. Remove the seat. Refer to Removing/Installing the Seat on page 31.
3. Remove the battery pack/box. Refer to Removing/Installing the Battery Pack on the At'm on page 45 or Removing/Installing the Battery Box on the At'm QT on page 46.
4. Remove the motor shroud. Refer to Removing/Installing Motor Shroud on page 57.
5. Remove the two mounting screws, washers, and locknuts that secure the front of the base plate to the base frame.
6. Remove the two mounting bolts, washers, and locknuts to remove the left battery pack bracket.
7. Repeat STEP 6 for the right battery pack bracket.
8. Remove the base plate.

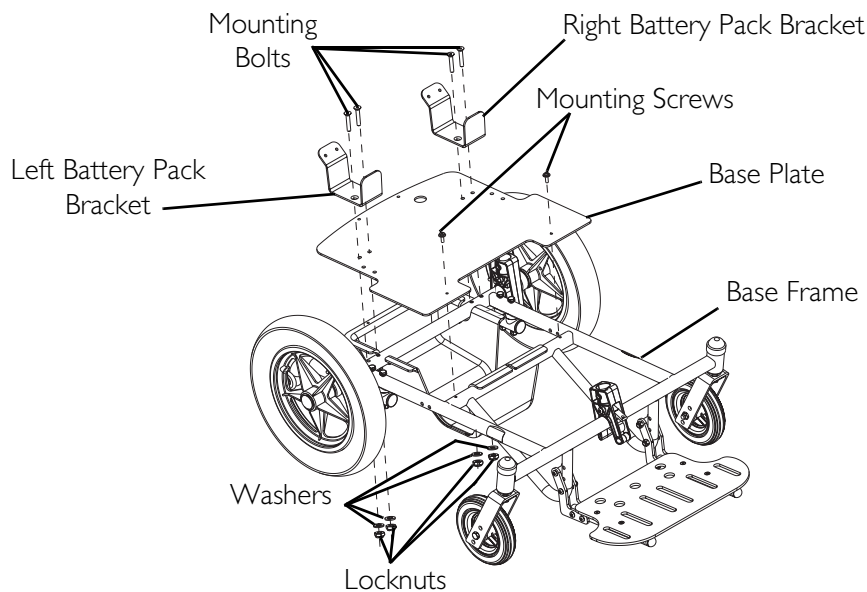


FIGURE 9.3 Removing/Installing the Base Plate

Installing

1. Install the left battery pack bracket using two mounting bolts, washers, and locknuts.
2. Repeat STEP 1 for the right battery pack bracket.
3. Secure the base plate on the base frame using the two mounting screws, washers, and locknuts. Securely tighten.

4. Install the battery pack/box. Refer to [Removing/Installing the Battery Pack on the At'm](#) on page 45 or [Removing/Installing the Battery Box on the At'm QT](#) on page 46.
5. Install the seat. Refer to [Removing/Installing the Seat](#) on page 31.
6. Connect the joystick. Refer to [Disconnecting/Connecting the Joystick](#) on page 40.

Removing/Installing MK5 Controller

NOTE: For this procedure, refer to FIGURE 9.4 on page 59 and FIGURE 9.5 on page 60.

Removing

1. Disconnect the joystick. Refer to [Disconnecting/Connecting the Joystick](#) on page 40.
2. Remove the battery pack/box. Refer to [Removing/Installing the Battery Pack on the At'm](#) on page 45 or [Removing/Installing the Battery Box on the At'm QT](#) on page 46.
3. Remove the seat. Refer to [Removing/Installing the Seat](#) on page 31.
4. Remove the motor shroud. Refer to [Removing/Installing Motor Shroud](#) on page 57.
5. From the controller, unplug the following connectors (not shown):
 - A. The joystick connector
 - B. The battery connector
 - C. The right motor connector
 - D. The left motor connector
6. Remove the two mounting screws and covered washers that secure the controller to the base frame.

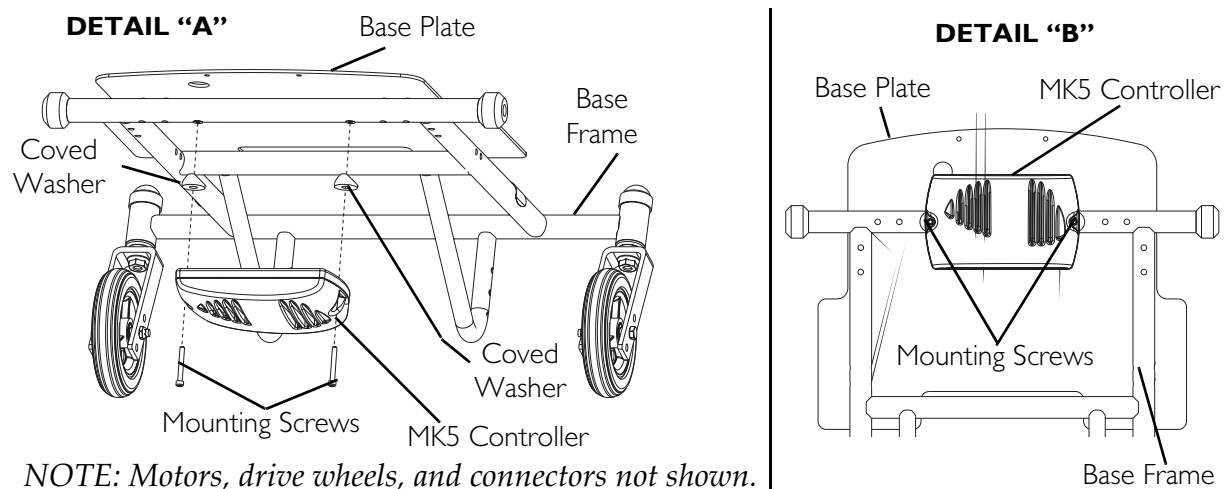


FIGURE 9.4 Removing/Installing MK5 Controller

Installing

1. Mount the controller to the base frame with the two mounting screws and covered washers.
2. Plug the following connectors into the controller:
 - A. The joystick connector
 - B. The battery connector
 - C. The right motor connector
 - D. The left motor connector
3. Install the motor shroud. Refer to [Removing/Installing Motor Shroud](#) on page 57.
4. Install the seat. Refer to [Removing/Installing the Seat](#) on page 31.
5. Install the battery pack/box. Refer to [Removing/Installing the Battery Pack on the At'm](#) on page 45 or [Removing/Installing the Battery Box on the At'm QT](#) on page 46.
6. Connect the joystick. Refer to [Disconnecting/Connecting the Joystick](#) on page 40.

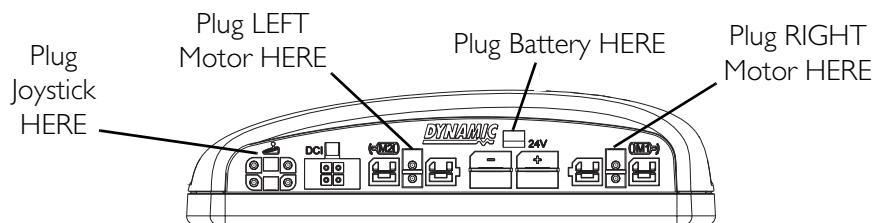


FIGURE 9.5 Removing/Installing MK5 Controller - Installing

Removing/Installing the Motors

NOTE: For this procedure, refer to FIGURE 9.6.

NOTE: Ensure that the motor engagement handles are disengaged.

Removing

1. Disconnect the joystick. Refer to [Disconnecting/Connecting the Joystick](#) on page 40.
2. Remove the seat. Refer to [Removing/Installing the Seat](#) on page 31.
3. Remove the battery pack/box. Refer to [Removing/Installing the Battery Pack on the At'm](#) on page 45 or [Removing/Installing the Battery Box on the At'm QT](#) on page 46.
4. Remove the drive wheel. Refer to [Removing/Installing the Drive Wheels](#) on page 69.
5. Remove the motor shroud. Refer to [Removing/Installing Motor Shroud](#) on page 57.
6. Unplug the motor from the controller.
7. Remove the two mounting bolts, covered bracket, two washers, and two locknuts that secure the motor to the base frame (Detail "B" of FIGURE 9.6).
8. Repeat STEPS 1 - 7 for the other motor.

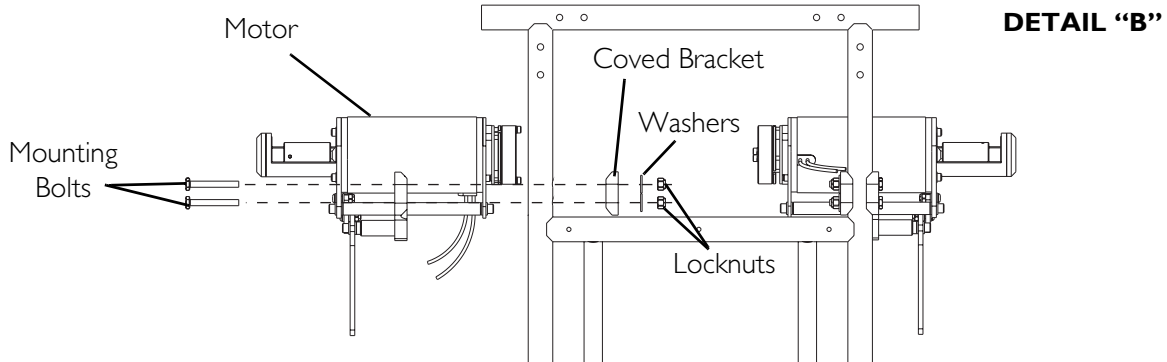
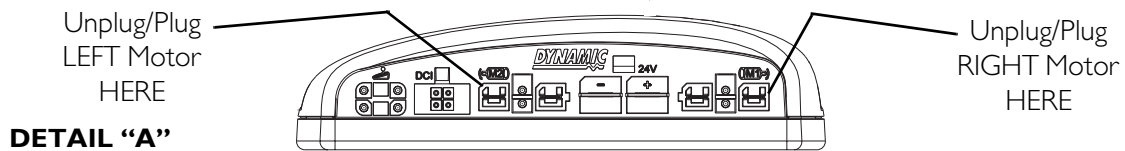


FIGURE 9.6 Removing/Installing the Motors

Installing

1. Secure the motor to base frame with the two mounting bolts, coved bracket, two washers, and two locknuts (Detail "B" of FIGURE 9.6).
2. Plug the motor into the controller.
3. Install the motor shroud. Refer to [Removing/Installing Motor Shroud](#) on page 57.
4. Install the battery pack/box. Refer to [Removing/Installing the Battery Pack on the At'm](#) on page 45 or [Removing/Installing the Battery Box on the At'm QT](#) on page 46.
5. Install the seat. Refer to [Removing/Installing the Seat](#) on page 31.
6. Connect the joystick. Refer to [Disconnecting/Connecting the Joystick](#) on page 40.

Replacing the Knurled Cylinder

NOTE: For this procedure, refer to FIGURE 9.7 on page 63.

NOTE: It is recommended that two people perform this procedure in order to properly secure the motor during roll-pin removal.

NOTE: The roll-pin must be replaced when performing this procedure.

1. Disconnect the joystick. Refer to [Disconnecting/Connecting the Joystick](#) on page 40.
2. Remove the seat. Refer to [Removing/Installing the Seat](#) on page 31.
3. Remove the battery pack/box. Refer to [Removing/Installing the Battery Pack on the At'm](#) on page 45 or [Removing/Installing the Battery Box on the At'm QT](#) on page 46.
4. Remove the motor shroud. Refer to [Removing/Installing Motor Shroud](#) on page 57.

5. Remove the motor from the base frame. Refer to [Removing/Installing the Motors](#) on page 60.
6. Remove the swing arm screw.
7. Remove the swing arm bracket screw.
8. Remove the two shroud screws securing the cylinder shroud.
9. Remove the cylinder shroud.
10. With a 1/8-inch punch and hammer, gently tap out the roll-pin that secures the knurled drive cylinder to the drive shaft.

CAUTION

DO NOT use excessive force handling the roll-pin, otherwise damage will occur.

11. Slide the knurled drive cylinder off the drive shaft.
12. Install a new knurled drive cylinder onto the drive shaft.
13. Align the holes in the knurled drive cylinder with the holes in the drive shaft.
14. Insert a new roll pin into the mounted knurled drive cylinder.
15. With a 1/8-inch punch and hammer, gently tap the roll-pin into place.

CAUTION

DO NOT use excessive force handling the roll-pin, otherwise damage will occur.

16. Install the cylinder shroud and align it with swing arm and swing arm bracket.
17. Secure the cylinder shroud with the two shroud screws.
18. Secure the swing arm bracket with the one swing arm bracket screw.
19. Secure the swing arm with the one swing arm screw.
20. Install the motor to the base frame. Refer to [Removing/Installing the Motors](#) on page 60.
21. Install the motor shroud. Refer to [Removing/Installing Motor Shroud](#) on page 57.
22. Install the battery pack/box. Refer to [Removing/Installing the Battery Pack on the At'm](#) on page 45 or [Removing/Installing the Battery Box on the At'm QT](#) on page 46.
23. Install the seat. Refer to [Removing/Installing the Seat](#) on page 31.
24. Reconnect the joystick. Refer to [Disconnecting/Connecting the Joystick](#) on page 40

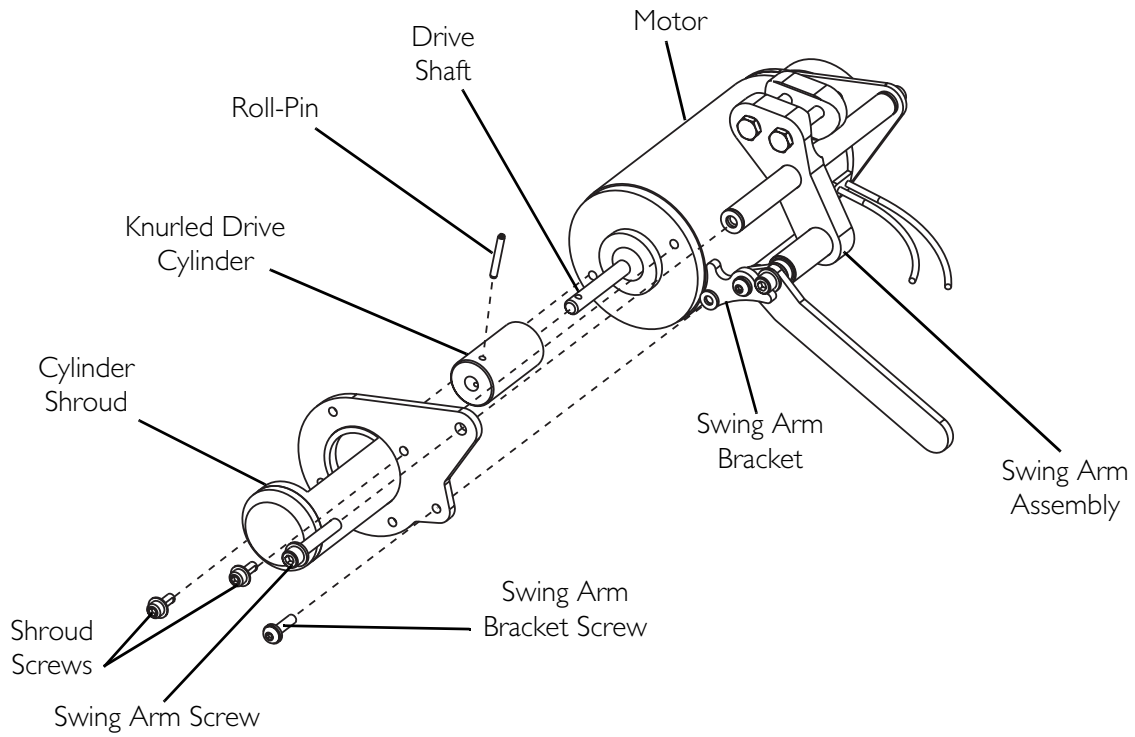


FIGURE 9.7 Replacing the Knurled Cylinder

SECTION 10—FRONT RIGGINGS

⚠ WARNING

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

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

NOTE: This sections applies to the At'm wheelchair only.

Installing/Removing the Front Rigging Support Brackets

NOTE: For this procedure, refer to FIGURE 10.1 on page 65.

NOTE: Perform the following steps one side at a time.

1. Remove the plug button from the seat frame tube.
 2. Note the orientation of the hardware that connects front seat support tube to the seat frame tube.
 3. Remove the mounting screw, coved washers, spacers, washers and locknut securing front seat support tube to the seat frame tube. DO NOT discard.
 4. Insert the proper (right or left) front rigging support bracket into the seat frame tube until two of the four mounting holes on the front rigging support bracket are aligned with the two mounting holes in the seat frame tube.
-

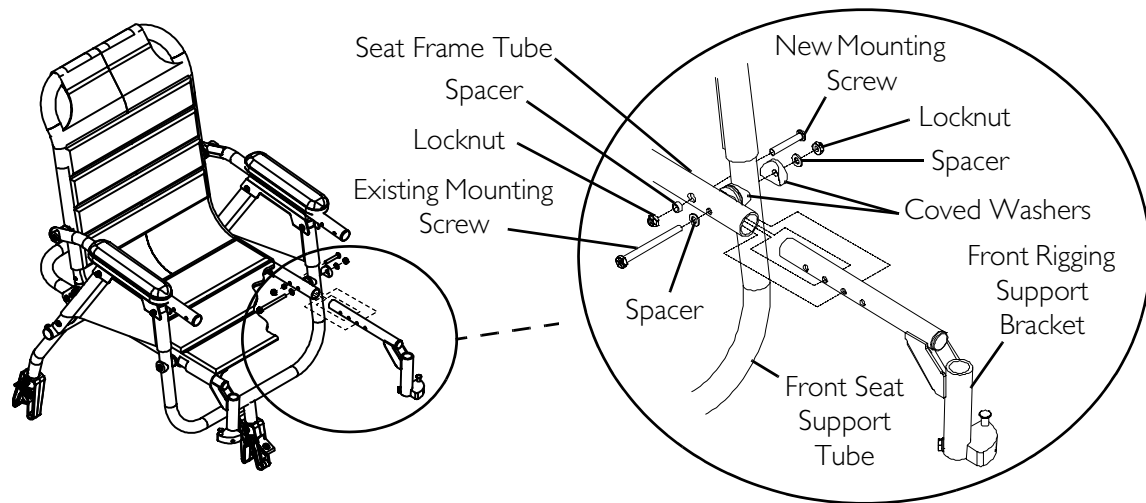
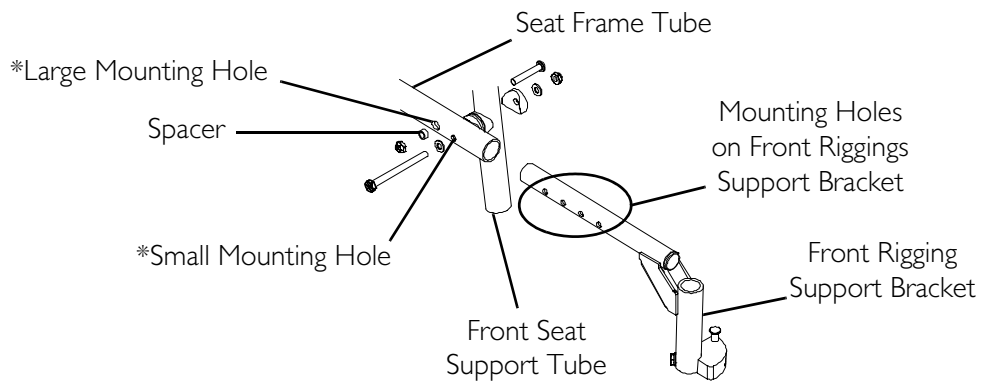
CAUTION

Two mounting screws are used to secure the front rigging support bracket to the seat frame tube for any mounting position used.

5. Install the existing mounting screw, coved washers, spacers, washers and locknut that secure front seat support tube to the seat frame tube in the orientation noted in STEP 2. DO NOT tighten locknut at this time.
6. Install the new mounting screw, spacer and locknut (hardware supplied) through the large mounting hole on the seat frame tube. Securely tighten.

NOTE: Make sure that the spacer is aligned with the large mounting hole in the seat frame tube and is properly seated against the front rigging support bracket during and after tightening. Refer to Detail "A" of FIGURE 10.1.

7. Tighten the locknut securing the front seat tube to the seat frame until it is snug and then turn an extra 1/8-turn. DO NOT over-tighten as this is a pivot joint when folding the seat.
 8. Repeat STEPS 1-7 to install the front rigging support bracket on the other side.
-

**DETAIL "A"**

**NOTE: Mounting hole arrangement on 16-inch wide seat shown. On the 18-inch wide seat, the mounting hole positions are reversed.*

FIGURE 10.1 Installing/Removing the Front Rigging Support Brackets

Installing/Removing the Front Rigging Assembly

NOTE: For this procedure, refer to FIGURE 10.2 on page 66.

Installing

1. Turn the front rigging assembly to the side (open footrest is perpendicular to the wheelchair).
2. Insert the mounting pin on the front rigging assembly into the front rigging support bracket.
3. Rotate the front rigging assembly towards the inside of the wheelchair until it locks into place.

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

4. Repeat STEPS 1-3 for the other front rigging assembly.
5. If necessary, adjust the footrest height. Refer to [Adjusting Footrest Height](#) on page 66.

Removing

1. Push the front rigging release lever inward while rotating the front rigging assembly outward.
2. Lift the front rigging assembly out of the front rigging support bracket.
3. Repeat STEPS 1-2 for the other front rigging assembly, if necessary.

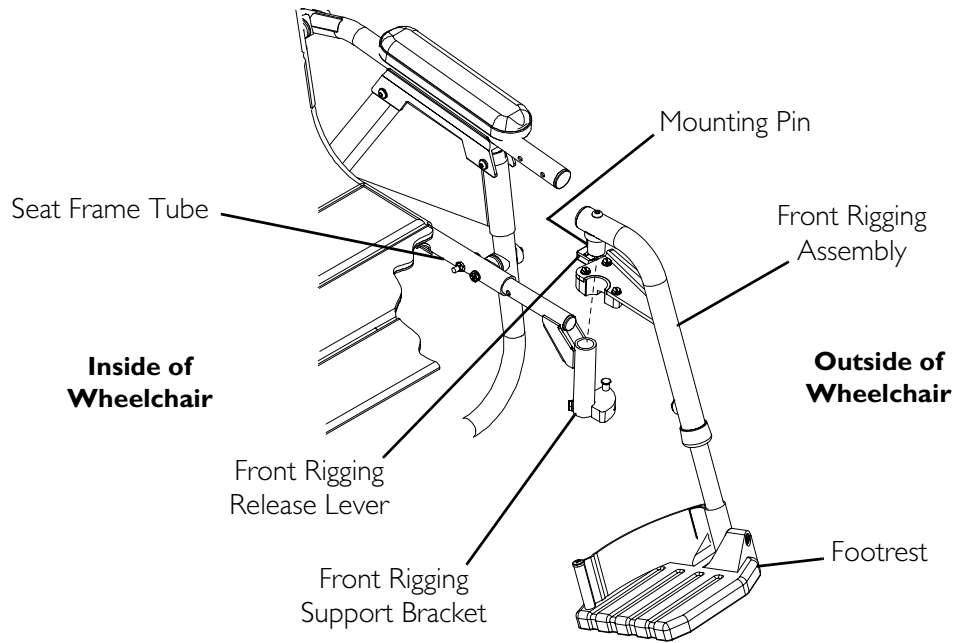


FIGURE 10.2 Installing/Removing the Front Rigging Assembly

Adjusting Footrest Height

NOTE: For this procedure, refer to FIGURE 10.3.

1. Remove the front rigging assembly. Refer to [Installing/Removing the Front Rigging Assembly](#) on page 65.
2. Remove the hex screw and covered spacer.
3. Move the footrest with slide tube up or down on its mounting tube until the desired footrest height is achieved.
4. Install the hex screw and covered spacer through the front rigging upper support and the slide tube. Securely tighten.
5. Install the front rigging assembly. Refer to [Installing/Removing the Front Rigging Assembly](#) on page 65.
6. Repeat STEPS 1-5 for the other side, if necessary.

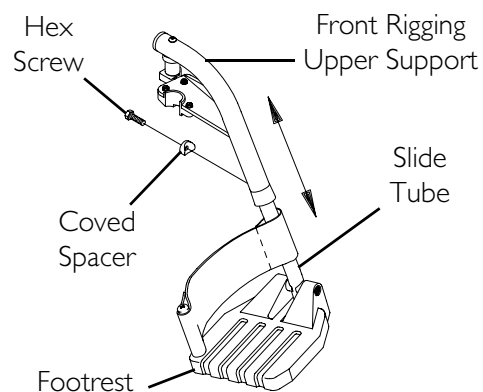


FIGURE 10.3 Adjusting Footrest Height

SECTION 11—WHEELS AND CASTERS

⚠ WARNING

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

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

DO NOT USE YOUR WHEELCHAIR UNLESS IT HAS THE PROPER TIRE PRESSURE (P.S.I.) - OTHERWISE THE WHEELCHAIR MAY NOT DRIVE CORRECTLY, STOP CORRECTLY OR MAY EXPERIENCE ERRATIC PERFORMANCE.

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

Keep fingers and clothing clear of drive wheels.

CAUTION

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

Replacing Front Casters

NOTE: For this procedure, refer to FIGURE 11.1.

1. Remove the mounting bolt, two spacers and locknut that secures the caster to the fork.
2. Remove the front caster and discard.
3. Secure new front caster to fork with the existing mounting bolt, two spacers and locknut. Securely tighten.
4. Repeat STEPS 1-3 for the other caster.

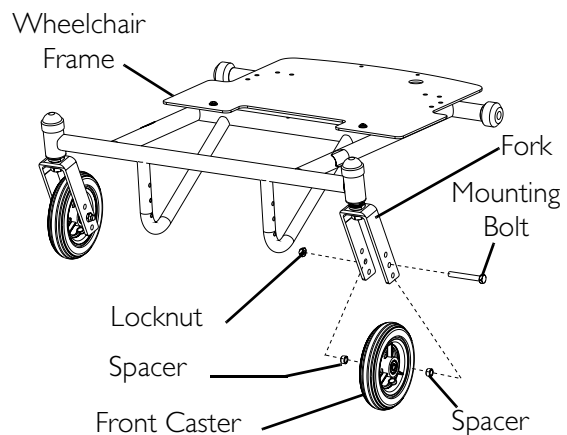


FIGURE 11.1 Replacing Front Casters

Replacing Forks

NOTE: For this procedure, refer to FIGURE 11.2 on page 69.

1. Remove the headtube caps from the caster headtubes.
2. Remove the locknut and washer that secure the fork to the caster head tube.
3. Remove the caster from the old fork and install on the new fork. Refer to Replacing Front Casters on page 67
4. Insert the new fork into the wheelchair frame and secure with one locknut and washer.
5. Adjust the forks. Refer to Adjusting Forks on page 68.
6. Replace the headtube caps on the caster headtube.

Adjusting Forks

NOTE: For this procedure, refer to FIGURE 11.2 on page 69.

1. Remove the headtube caps from the caster headtubes.
2. To properly tighten the caster journal system and guard against flutter, perform the following check:
 - A. Remove battery pack from wheelchair. Refer to Removing/Installing the Battery Pack on the At'm on page 45.
 - B. Tip back the wheelchair to floor.
 - C. Simultaneously, pivot both forks and casters to the top of their arc.
 - 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.
 - F. Bring wheelchair back to driving position.
 - G. Install the battery pack. Refer to Removing/Installing the Battery Pack on the At'm on page 45.
3. Test wheelchair for maneuverability.
4. Readjust locknuts if necessary, and repeat STEPS 1-3 until correct.
5. Snap headtube caps into the caster headtubes.

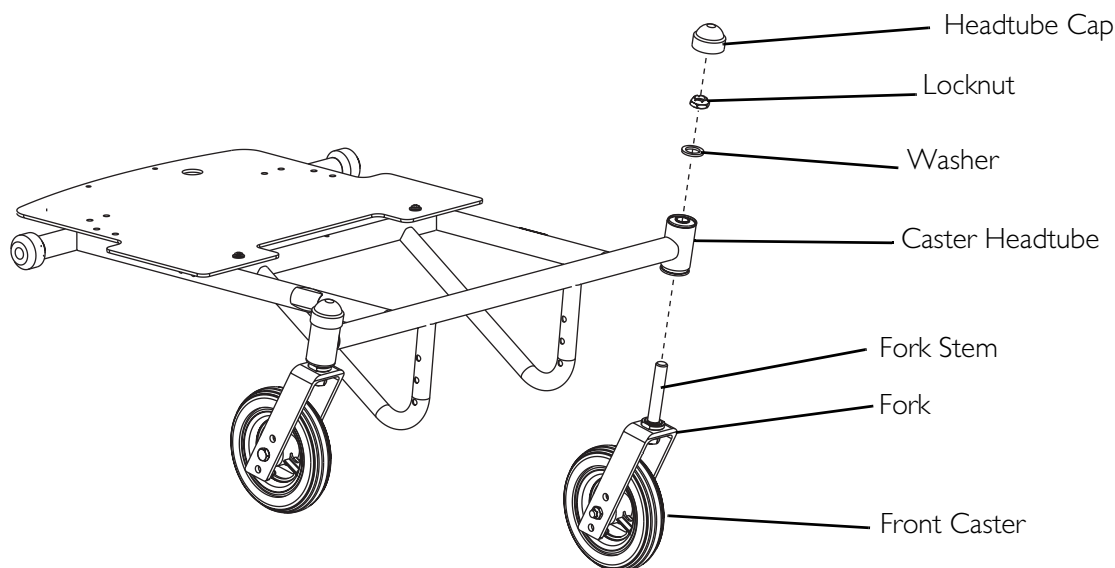


FIGURE 11.2 Replacing Forks - Adjusting Forks

Removing/Installing the Drive Wheels

⚠ WARNING

Maintain tire pressure at 30 p.s.i. Otherwise, the wheelchair may not drive correctly, stop correctly or may experience erratic performance.

NOTE: For this procedure, refer to FIGURE 11.3 on page 70.

Removing

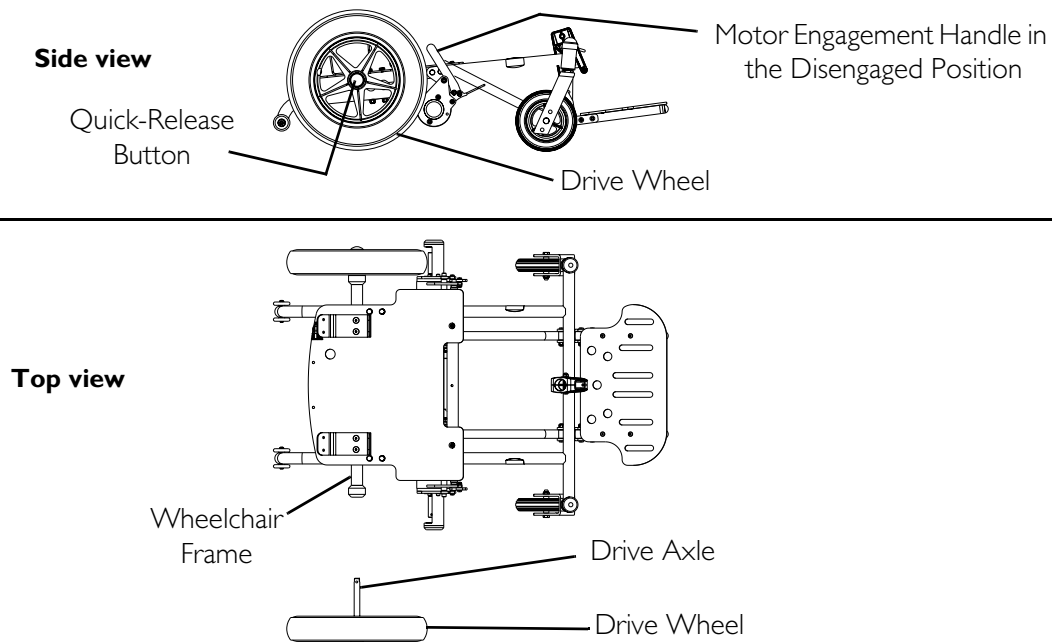
1. Disengage the motors. Refer to [Engaging/Disengaging the Motors](#) on page 56.
2. Push and hold the quick-release button on the drive axle and pull the drive wheel out of the wheelchair frame.
3. Repeat STEPS 1-2 for the other drive wheel.

Installing

1. Align drive axle with the wheelchair frame.
2. Push and hold the quick-release button on the drive wheel and push the drive wheel into the wheelchair frame.
3. Engage the motor. Refer to [Engaging/Disengaging the Motors](#) on page 56.
4. Repeat STEPS 1-3 for the other drive wheel.

⚠ WARNING

Pull the drive wheel to ensure that the drive wheel is locked in place before operating the wheelchair. Otherwise, serious injury or damage may occur.



NOTE: Removing/installing the drive wheel on the At'm shown. The drive wheel on the At'm QT installs/removes the same way.

FIGURE 11.3 Removing/Installing the Drive Wheels

Replacing Drive Wheels on the Drive Axle

⚠ WARNING

Maintain tire pressure at 30 p.s.i.

NOTE: For this procedure, refer to FIGURE 11.4.

1. Remove the drive wheel. Refer to [Removing/Installing the Drive Wheels](#) on page 69.
2. Depress the quick release button on the drive axle, and remove the axle from the tire.
3. Insert the drive axle into a new drive wheel.
4. Replace the drive wheel onto the chair. Refer to [Removing/Installing the Drive Wheels](#) on page 69.

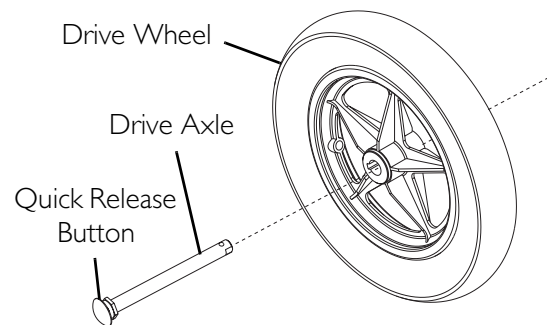


FIGURE 11.4 Replacing Drive Wheels on the Drive Axle

SECTION 12—ANTI-TIPPERS

⚠ 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.

Removing/Installing the Anti-Tippers

⚠ WARNING

Anti-tippers **MUST** be fully engaged 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 tip over. Extra caution must be observed when traversing such surfaces.

At'm

NOTE: For this procedure, refer to FIGURE 12.1 on page 72.

Removing

1. Disconnect the joystick. Refer to [Disconnecting/Connecting the Joystick](#) on page 40.
2. Remove the battery pack. Refer to [Removing/Installing the Battery Pack on the At'm](#) on page 45.
3. Remove the seat. Refer to [Removing/Installing the Seat](#) on page 31.
4. Remove the two mounting bolts, four washers, two locknuts, and four covered washers that secure the anti-tipper to the base frame (FIGURE 12.1).
5. Repeat STEP 4 for the other anti-tipper.

Installing

1. Install the anti-tippers to the base frame using the two mounting bolts, four washers, two locknuts, and four covered washers that secure the anti-tipper to the base frame (FIGURE 12.1).
 2. Repeat STEP 1 for the other anti-tipper.
 3. Install the battery pack. Refer to [Removing/Installing the Battery Pack on the At'm](#) on page 45.
 4. Connect the joystick. Refer to [Disconnecting/Connecting the Joystick](#) on page 40.
-

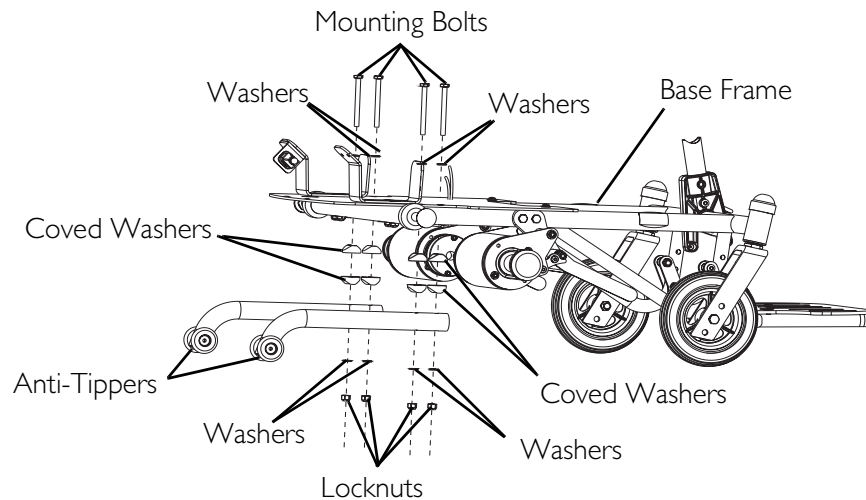


FIGURE 12.1 Removing/Installing the Anti-Tippers - At'm

At'm QT

NOTE: For this procedure, refer to FIGURE 12.2 on page 73.

Removing

1. Disconnect the joystick. Refer to Disconnecting/Connecting the Joystick on page 40.
2. Remove the battery box. Refer to Removing/Installing the Battery Box on the At'm QT on page 46.
3. Remove the seat. Refer to Removing/Installing the Seat on page 31.
4. Remove the four coved washers, two washers and two locknuts that secure the anti-tipper to the base frame.

NOTE: It is not necessary to remove the hex head screws from the wheelchair base to remove the anti-tipper.

5. Repeat STEP 4 for the other anti-tipper.

Installing

1. Install the anti-tippers to the base frame using the four coved washers, two washers and two locknuts.
2. Repeat STEP 1 for the other anti-tipper.
3. Install the battery box. Refer to Removing/Installing the Battery Box on the At'm QT on page 46.
4. Install the seat. Refer to Removing/Installing the Seat on page 31.
5. Connect the joystick. Refer to Disconnecting/Connecting the Joystick on page 40.

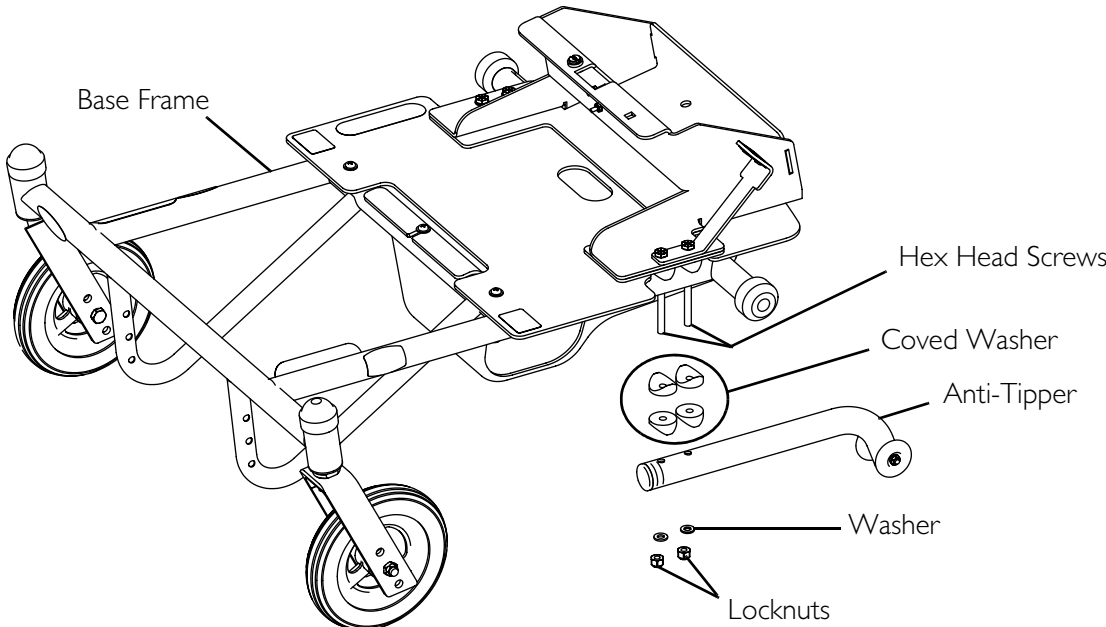


FIGURE 12.2 Removing/Installing the Anti-Tippers - At'm QT

SECTION 13—TRANSPORTING THE WHEELCHAIR

⚠ WARNING

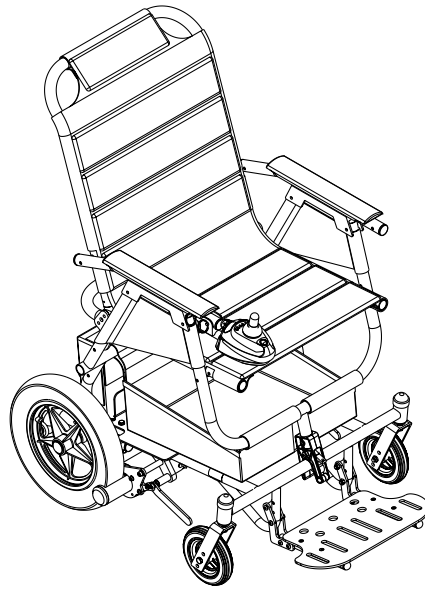
After any adjustments, repair or service and before use, make sure all attaching hardware is tightened securely - otherwise injury or damage may result.

ALWAYS transport the battery pack/box in an upright and secure manner. To prevent damage, do not transport the battery pack/box with other objects that could suddenly shift during transportation, unless they are secured or in a different vehicle area. **DO NOT** transport battery pack/box with gas cans or similar containers in the same vehicle area.

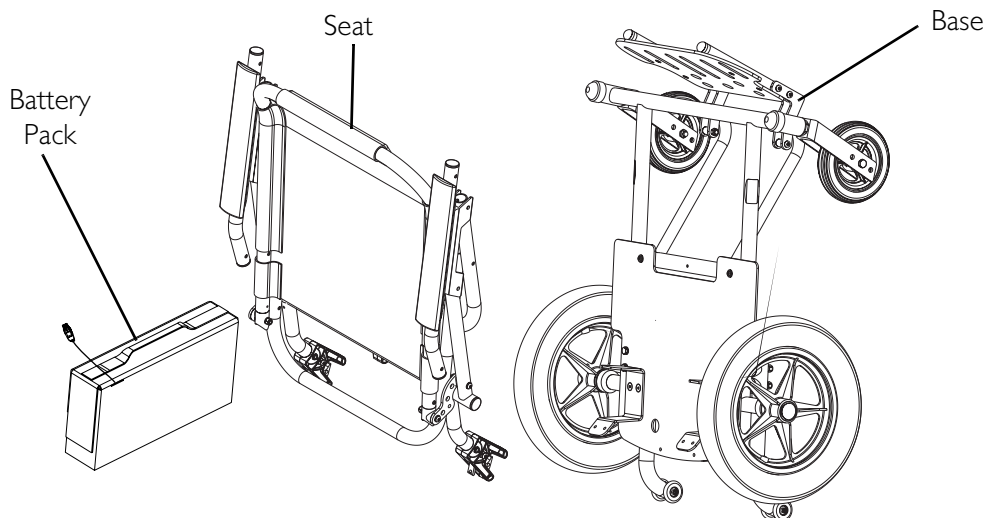
The weight of the wheelchair without the user and batteries is approximately 74 lbs. Use proper lifting techniques (lift with your legs) to avoid injury. Extreme caution is advised when it is necessary to move an unoccupied power wheelchair. Invacare recommends using two assistants and making thorough preparations. Make sure to use only secure, non-detachable parts for hand-hold supports.

NOTE: For this procedure, refer to FIGURE 13.1 on page 75.

1. Remove the occupant from the wheelchair.
2. Remove the battery pack or battery box. Refer to Removing/Installing the Battery Pack on the At'm on page 45 or Removing/Installing the Battery Box on the At'm QT on page 46.
3. Remove the seat. Refer to Removing/Installing the Seat on page 31.
4. Remove any accessories on the wheelchair.
5. Bend your knees and keep your back straight.
6. Using non-removable (nondetachable) parts, transfer the seat, battery pack or battery box, wheelchair base and any accessories to the desired location.
7. Reinstall any accessories that were removed in STEP 3.
8. Reinstall the seat. Refer to Removing/Installing the Seat on page 31.
9. Reinstall the battery pack or battery box. Refer to Removing/Installing the Battery Pack on the At'm on page 45 or Removing/Installing the Battery Box on the At'm QT on page 46.

Fully Assembled Chair

NOTE: At'm wheelchair shown. The At'm QT assembles the same way.

DETAIL "A" - READY FOR TRANSPORTATION

NOTE: At'm wheelchair shown. At'm QT transports the same way and has a battery box instead of a battery pack.

FIGURE 13.1 Transporting the Wheelchair

LIMITED WARRANTY

For warranty information, please refer to the original owner's manual which came with this product, or contact Invacare for more information.



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