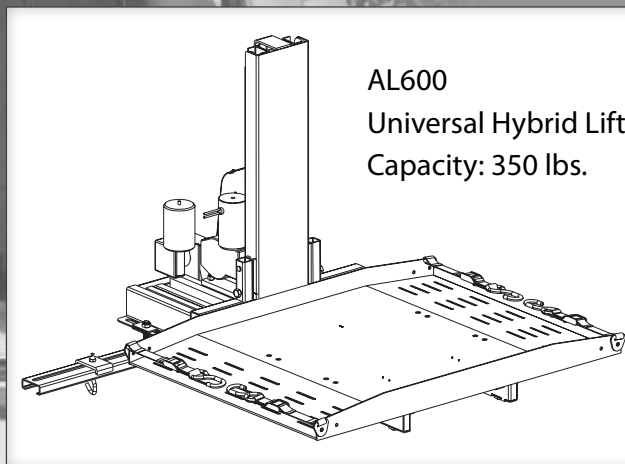


Hybrid Lifts

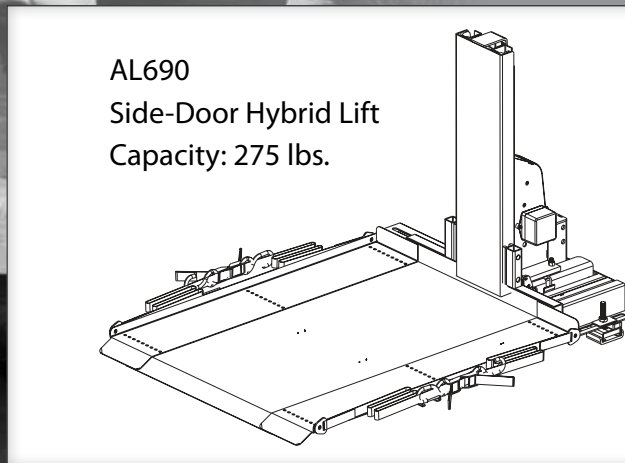
Installation and Owner's Manual



www.harmar.com | 800-833-0478



AL600
Universal Hybrid Lift
Capacity: 350 lbs.



AL690
Side-Door Hybrid Lift
Capacity: 275 lbs.

Read and understand this manual thoroughly before attempting to install or operate the lift. If you have any questions, please contact your Authorized Harmar Dealer or Harmar's Technical Service Department.

P 800-833-0478 | F 866-234-5680 | tech@harmar.com

Dealer Name & Contact Information:

Serial # of Your Lift: _____

Install Date: _____

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Read & Understand this Manual Prior to Installation or Operation. Please read, follow, and fully understand the installation section of this manual before beginning. Knowing the lift's adjustments and the tips on proper installation and operation techniques will save time, energy and avoid possible injury. If you do not understand any portion of installation or operation, please consult our technical service department or authorized mobility dealer.

NOTE: The following symbols indicate areas where you should take special care to avoid danger to individuals or property.



WARNING

Hazardous situation. If not avoided, could result in serious injury to installer or user.



CAUTION

Hazardous situation. If not avoided, could result in serious damage to property.

LOADING & SECURING YOUR CHAIR

Lower the Lift Platform. Using your remote control, lower the lift platform until it reaches the ground and becomes level.

1. Drive Chair/Scooter onto Platform. Determine heaviest portion of the power chair or scooter. This is usually under the drive wheels, motor(s), and batteries. Always drive onto platform with the heaviest portion closest to the lifting tower. If loading a scooter and the platform has the AL617 Extension Plate, drive onto the platform so that the scooter's front wheels are resting on the extension plate, and rear wheels are on the main platform. This allows the heaviest portion of the scooter to be closest to the lifting tower. Set your chair or scooter's speed control to slow speed to maneuver easily onto the platform. *[Figure 3-1]* You can drive onto the platform from either side.

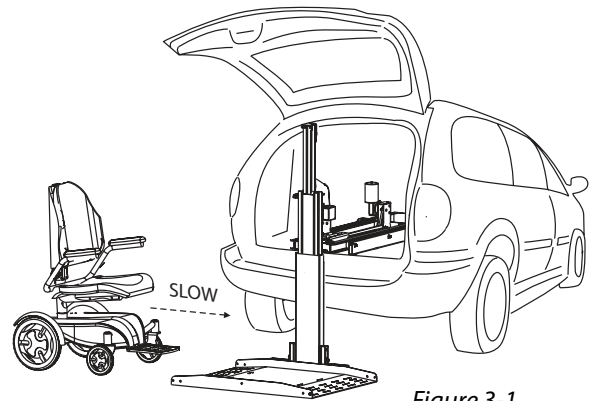


Figure 3-1

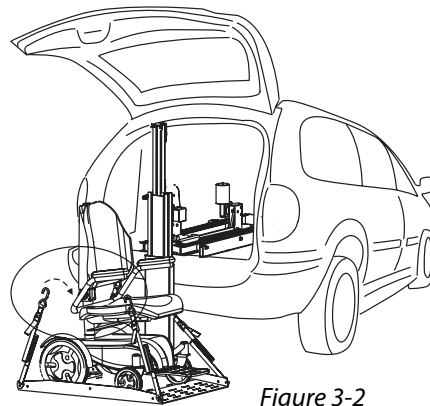


Figure 3-2

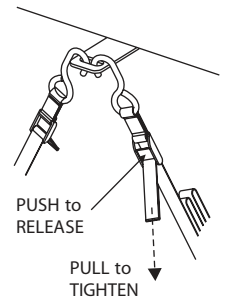


Figure 3-3

2. Secure the Chair. Each corner of the AL600 platform has a restraint attached, with a hook on the end. Place each hook in either the anchor plate slot or in each U-bolt. *[Figure 3-2]* Pull the loose end of each restraint tight. To release, simply press the release tab and remove the hooks. *[Figure 3-3]*

3. Fold Seat Backs. If your chair has a folding seat back, you may want to place it in the down position for easier clearance when loading the chair into the vehicle. Depending on the size of your chair, you may need to remove the headrest as well.

4. Raise the Chair. Double-check that the chair is secured properly on the platform. While holding the hand control, stand to the side and away from the lift. Press the "UP" button. *[Figure 3-4]*

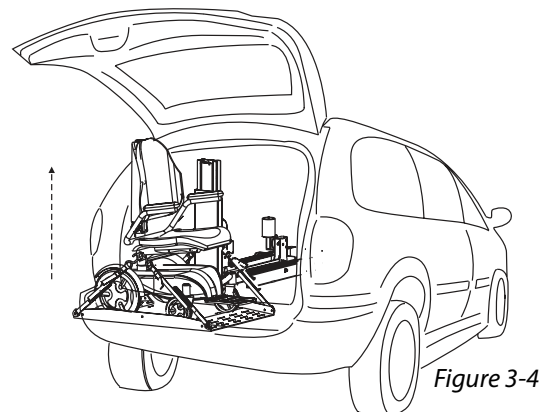


Figure 3-4

The platform will rise and retract into the vehicle. When the platform stops retracting release the button. The platform will automatically lock itself into travel position. Close the

door slowly, making sure that no part of the chair or other objects in the cargo area contact the door.

LOADING & SECURING YOUR CHAIR

- 1. Lower the Lift Platform.** Using your remote control, lower the lift platform until it reaches the ground and becomes level.
- 2. Drive Chair/Scooter onto Platform.** Drive the chair or scooter onto the platform so that the heaviest portion is closest to the lifting tower (this is usually under the drive wheels, motor(s) and battery locations). Most often this method requires the chair or scooter to be loaded in reverse, and unloaded driving forward. Set your chair or scooter's speed control to slow speed to maneuver easily onto the platform. [Figure 4-1]
- 3. Secure the Chair.** Each corner of the AL690 platform has a restraint attached, with a hook on the end. Place each hook in either the anchor plate slot or in each U-bolt. [Figure 4-2]

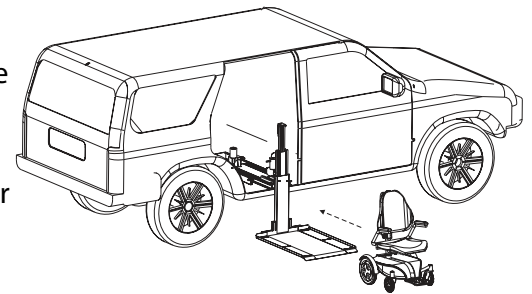


Figure 4-1

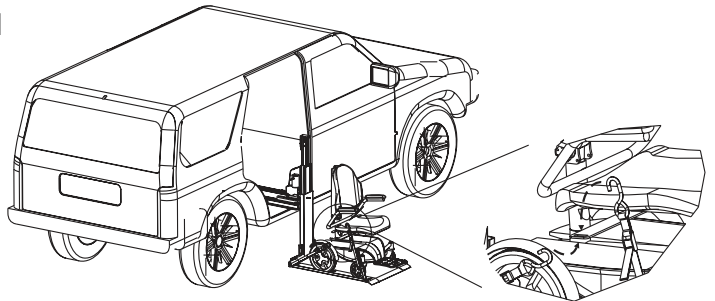


Figure 4-2

Pull the loose end of each restraint tight. To release, simply press the release tab and remove the hooks. [Figure 4-3]

- 4. Fold Seat Backs.** If your chair has a folding seat back, you may want to place it in the down position for easier clearance when loading the chair into the vehicle. Depending on the size of your chair, you may need to remove the headrest as well.

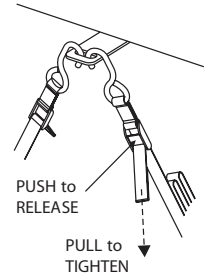


Figure 4-3

- 5. Raise the Chair.** Double-check that the chair is secured properly on the platform. While holding the hand control, stand to the side and away from the lift. Press the "UP" button. [Figure 4-4]

The platform will rise and retract into the vehicle. When the platform stops retracting, release the button. The platform will automatically lock itself into travel position. Close the door slowly, making sure that no part of the chair or other objects in the cargo area contact the door.

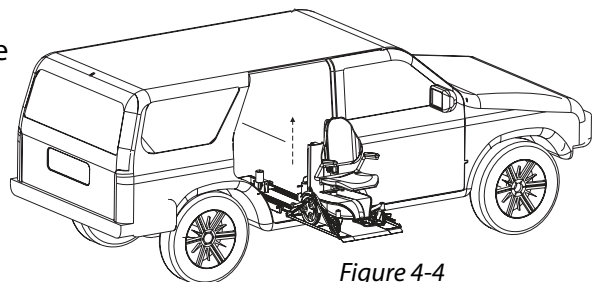
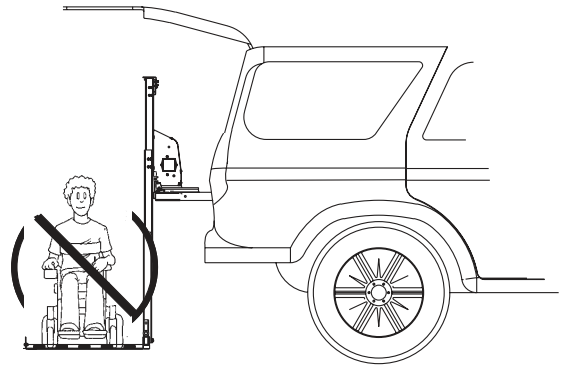


Figure 4-4

**WARNING**

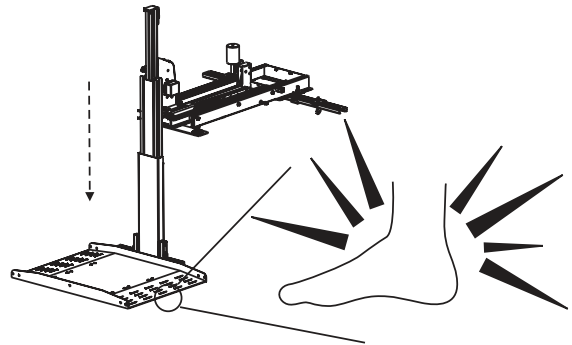
This lift is NOT meant for human transport. The chair or scooter **MUST** be unoccupied before operating the lift. Each lift is designed to transport a specific chair only. **DO NOT** attempt to move any mobility devices, objects, people, or materials other than those for which the lift was intended.

**CAUTION**

Do not allow anyone to use this lift unless they are properly instructed on operational and safety procedures.

**WARNING**

When using the lift, keep your hands and feet from under the platform.

**IMPORTANT**

Your Hybrid Lift has been engineered for years of trouble-free use, but as with any mechanical system, daily use may result in some parts becoming loose or worn.

Check regularly for any worn, loose, or damaged parts of your lift. If you note any issues, do NOT use the lift. Contact your dealer or installer of the lift for repairs. Failure to act may cause severe injury or damage to property.

Use your Hybrid Lift only for loading and unloading the scooters and power chairs for which it is intended. If your combination of vehicle and scooter/chair changes, for example if you buy a different vehicle or upgrade your mobility device, please consult your installer or dealer. The original equipment may not configure the same. Do not add to or modify any part of the lift system without first consulting the lift manufacturer. Any modifications may void warranties, as well as, hinder the structural integrity of the lift.

MAINTENANCE

This Hybrid Lift is designed to be as trouble-free as possible, but as with any mechanical device, regular maintenance will help ensure that it continues to offer reliable and safe use for years to come.

Schedule a maintenance inspection.

We recommend that you schedule a preventative maintenance inspection with your dealer at least once a year on motors, lift frame, wiring harnesses, and all moving parts of the lift.

Check for paint chips and touch up bare metal.

Use a good gloss black enamel or lacquer to inhibit rust. You may need to do this more frequently if your lift is subject to salt air or road salt.

PROFESSIONAL INSTALLATION RECOMMENDED

NOTE: The following section is designed for the professional installer. We strongly recommend that a certified dealer install the lift and instruct the user on correct operation and establish a safety and maintenance schedule.

If you do not understand any portion of installation or operation, please consult our technical service department or authorized mobility dealer. Do not attempt to install or use this lift with any hesitation or question. Serious injury or damage can result if proper procedures are not followed.

READ & UNDERSTAND THIS MANUAL

Prior to Installation or Operation. Having an overall understanding of the lift and proper installation techniques will help you save time, energy, and avoid possible injury.

If you have any questions, concerns or comments, please contact our Technical Service Department at 800-378-6648 or tech@harmar.com.

TOOLS REQUIRED

Installations may vary to some degree, but below are the basic tools to have on hand for an Hybrid Lift installation.



SOCKET SET
Specifically
9/16"
7/16"
3/4"
3/8"



WRENCH SET
Specifically
9/16"
7/16"
3/4"



ALLEN WRENCH SET
Specifically
1/8"
3/16"
5/16"



WIRE CUTTERS



NEEDLE NOSE PLIERS

#2 FLAT HEAD SCREWDRIVER



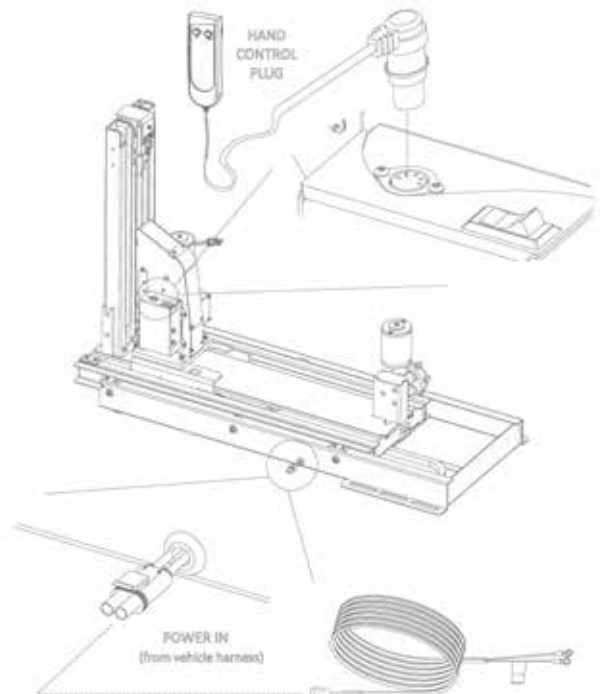
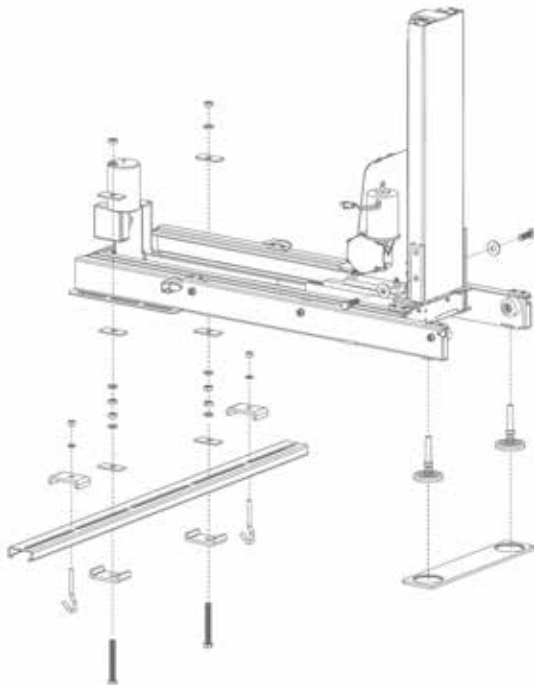
#2 PHILLIPS HEAD SCREWDRIVER



MARKING IMPLEMENT



TAPE MEASURE



Check the box contents. Review each part against the packaging checklist to ensure that all parts have been included. If any parts are missing or damaged, immediately contact the dealer who sold the lift.

[illegible]



WARNING

Never attempt to pick up the lift from the box, ground or on/off a vehicle alone. Two people should work together to place this lift inside a vehicle.

If only one person is available, please follow the short disassembly procedure on next page.



Overview – Installation Procedure

1. Install Wiring Harness. See page 12. Installing the wiring harness first will ensure you have power to the lift during installation. This allows access to platform assembly outside the vehicle and at waist level. (If you skip this step, use a 12V shop battery.)

2. Remove Seating & Determine Lift Placement.

Remove seating. For AL600 (page 14) this is usually the third row; for AL690, (page 22), second row. Determine mounting range by climbing inside cargo area and closing access door. Measure from inside the door threshold to determine the lift's fully-stowed placement. For the AL600, measure to 43"; for AL690, measure to 55." [Figure 10-1]

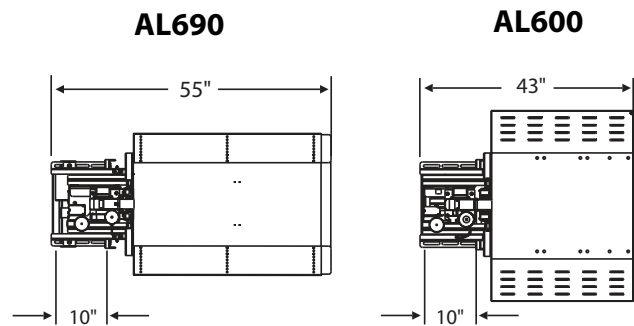


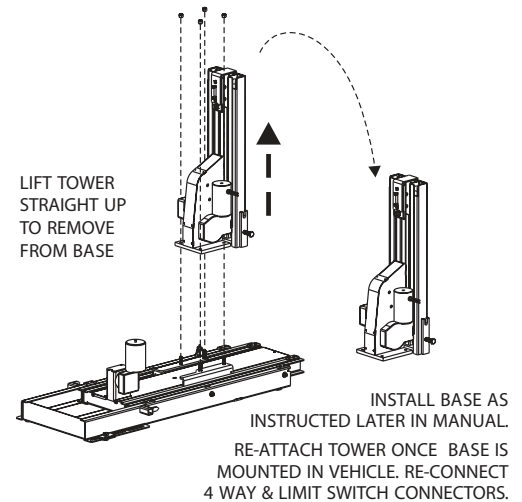
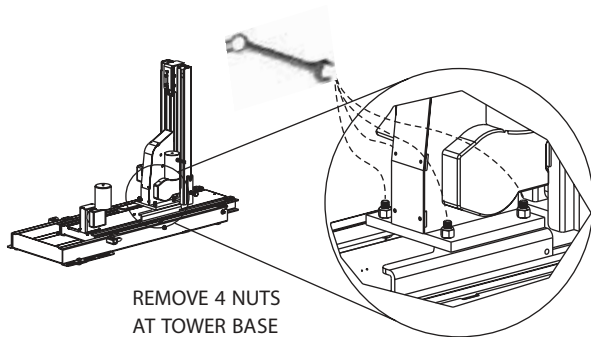
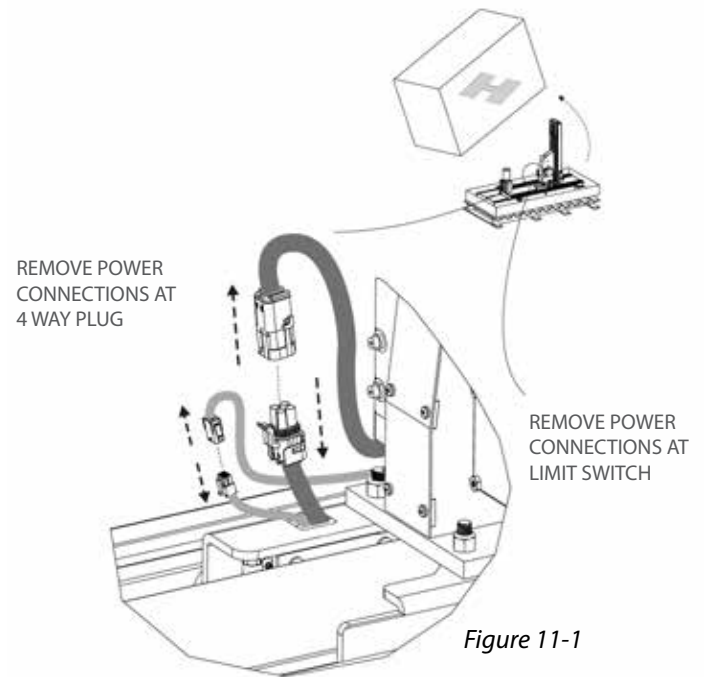
Figure 10-1

Look at the floor in the mounting area. If seat removal reveals seat attachment points, or "dog bones," you will not need to drill.

If no attachment points exist in the area, you will need to drill two 3/8" holes approximately 1" to 10" from your measurement point. (See installation section for details.)

Single Person Installation Option

- We recommend two people install the lift together. If only one person is available, a few extra steps make the lift lighter and more manageable to permit installation.
- Remove connections at limit switch and remove power connections at 4-way plug. *[Figure 11-1]*
- Remove 4 nuts at tower base . *[Figure 11-2]*
- Lift tower straight up to remove from base. *[Figure 11-3]*
- Install base as instructed later in manual.
- Re-attach tower once the base is mounted in the vehicle. Re-connect 4-way and limit switches connectors.



Improper Wiring is the #1 Cause of Problems in the Operation of a Vehicle Lift. Follow the Wiring Instructions Carefully

The vehicle wiring harness is located in the hardware pack. The harness is manufactured to comply with SAE J1128 requirements. It is approximately 19 feet long and will accommodate most vehicles.

Instructions

1. **Unwind the wiring harness and lay it flat.** One end of the harness has 2 covered pins. This is the lift end and goes to the rear cargo area where the lift will mount.

The wiring harness is unassembled for easier installation. The end connector is included separately from the harness to enable the installer to run the wire under and through the vehicle with the smallest clearance possible.

2. **Route the wire harness beginning at the battery.** Attach the black wire to the negative terminal on the battery. [Figure 12-1]
Do NOT connect the red wire to the battery until the very end.
3. **Run the vehicle harness under and, when possible, through the vehicle back to the rear cargo area/trunk,** gaining entry into the vehicle through the firewall. [Figure 12-2]
If you want to run the harness under the vehicle, you will most likely need to drill a hole to get the wire into the rear cargo area/trunk. Use the supplied 3/8 grommet in the hole to protect the wire.

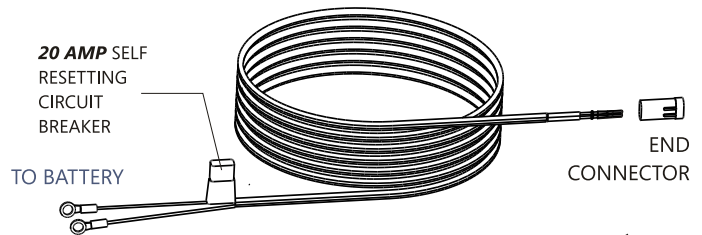
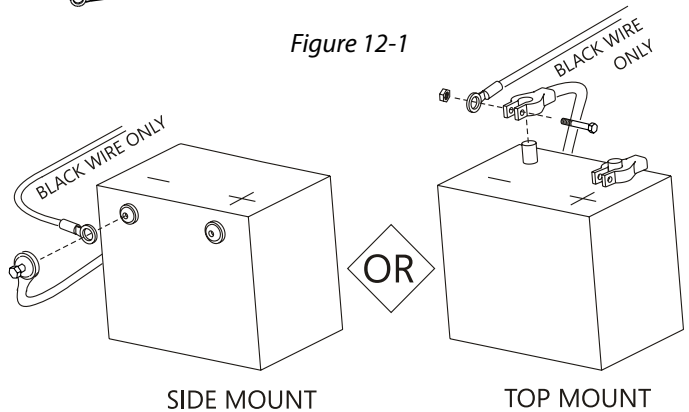


Figure 12-1



CAUTION

Never attempt to connect the harness to a secondary power source. Always connect both leads directly to the battery.

IMPORTANT

If the installation requires the wiring harness to run on the underside of the vehicle, route it away from exhaust system, brake lines, fuel lines, gas tank and any moving parts. Avoid pinch points and sharp edges. Avoid locating the harness where it can be snagged by road debris.

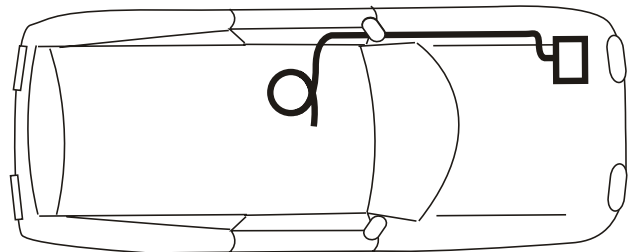


Figure 12-2



CAUTION

Do NOT run wiring where it can be snagged by road debris.

Do NOT run wiring near the gas tank.

**CAUTION**

If the harness is too long for the vehicle, coil the excess wire and secure it to the vehicle frame with the supplied tie wraps.

Do NOT cut or shorten the harness

4. **When harness is through the vehicle**, remove the pin's protective tubing. *[Figure 13-1]*

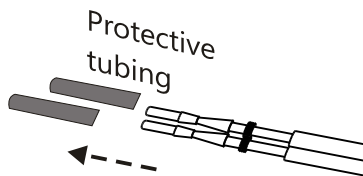
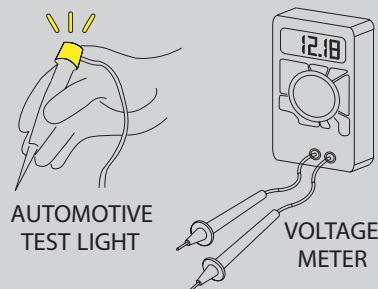


Figure 13-1

NOTE: Troubleshooting with a test light or voltage meter may give a false indication.

When you probe for 12 volts, the reading may indicate a connection, even if the connection is not necessarily sufficient. The lift's motor can draw up to 20 Amps at some points, requiring all of the available wire to flow proper current. Poor connections are the #1 problem associated with a slow, intermittent, warm, poorly performing motor which will also deteriorate prematurely.

If a single strand of a multi-strand wire is making contact, 12V will appear on a meter or test light, but it will not allow the motor to operate. It is always best to test both current and voltage, or run the motor with known good shop battery or power source when troubleshooting.



5. **Inspect the pin's retaining flanges.** The flanges may have been deformed while being run through the vehicle. These are critical to secure the pins inside the connector. Adjust as needed. *[Figure 13-2]*
6. Flip open end connector's hinged retainer.
- Insert pins as shown. *[Figure 13-3]*
 - Verify the wires cannot be pulled out by moderately pulling on the wires. Be sure rubber seals are inside the back of the connector.
 - Close the hinged retainer.
 - Plug connector into lift.
7. Last, attach red wire to the positive terminal on the battery. *[Figure 13-4]*

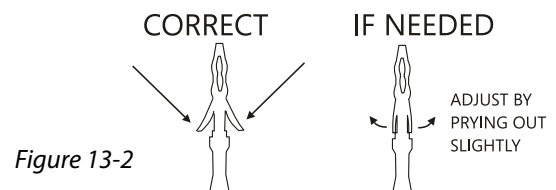


Figure 13-2

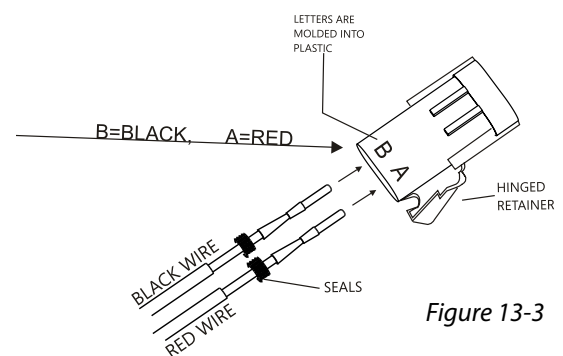


Figure 13-3

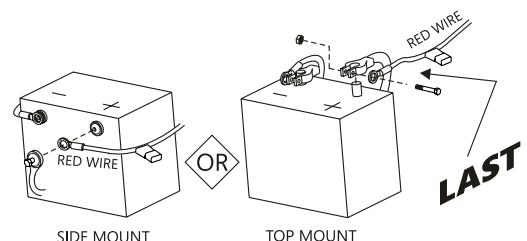


Figure 13-4

1. Remove 3rd Row Seating. [Figure 14-1]

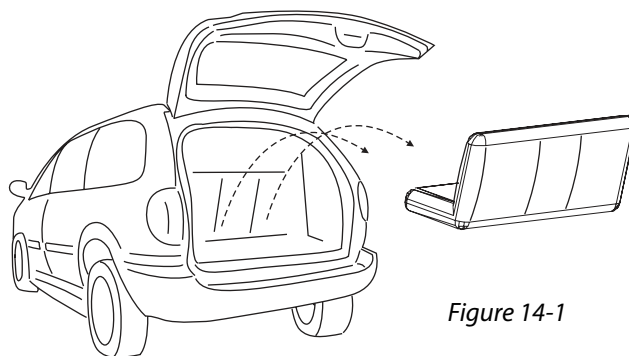


Figure 14-1

2. The AL600 Leg must be mounted between 32" and 42" from the internal surface of the closed back door of the vehicle. [Figure 14-2]

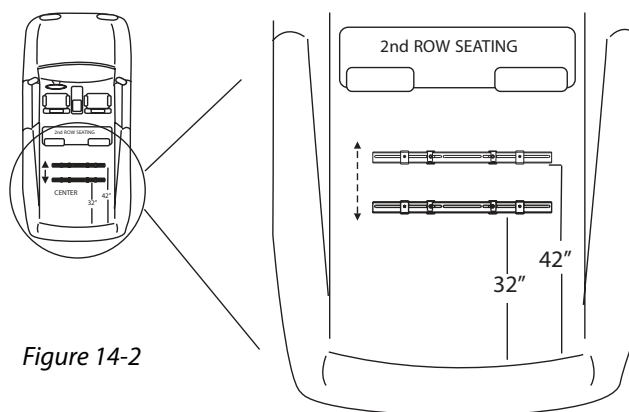


Figure 14-2

3. Examine the Floor for Additional Seat Attachment Points. These must be recessed into the floor. [Figure 14-3]

IMPORTANT:

Attachment Points **MUST** be **FLUSH** or **LOWER** than the floor.

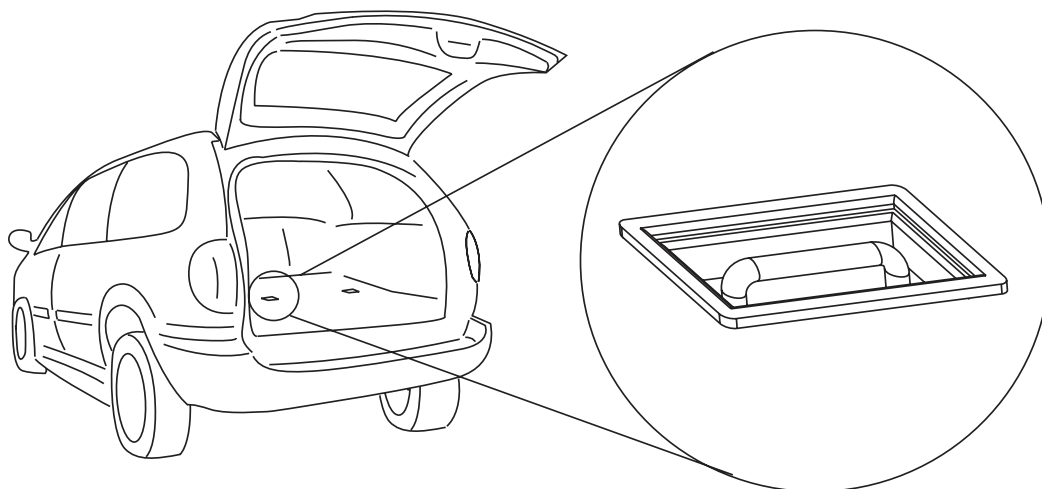


Figure 14-3

4 A. If Seat Attachment Points ARE

Available: See Figure 15-1 for mounting diagram.

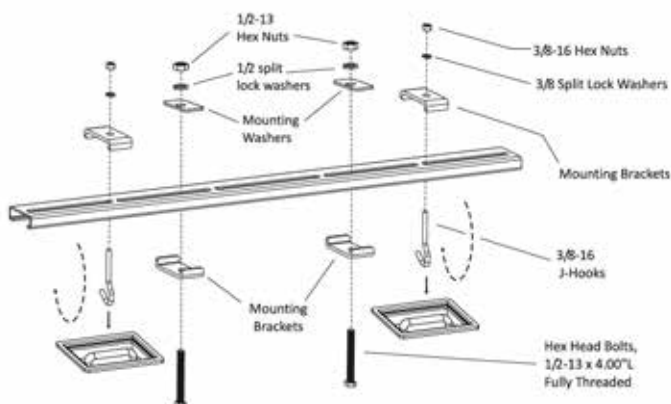


Figure 15-1

4 B. If Seat Attachment Points are NOT

Available: Look under vehicle in approximate area where Leg will need to be mounted. See Figure 15-2 for mounting diagram.

Drill a pilot hole first, up from under the vehicle to ensure nothing will be damaged.

Find hole from inside vehicle and drill 3/8\" hole down through vehicle's floor.

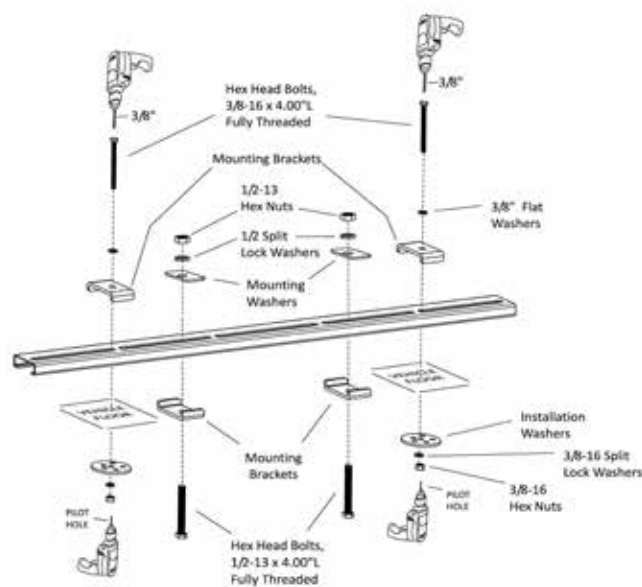
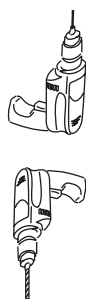


Figure 15-2



CAUTION

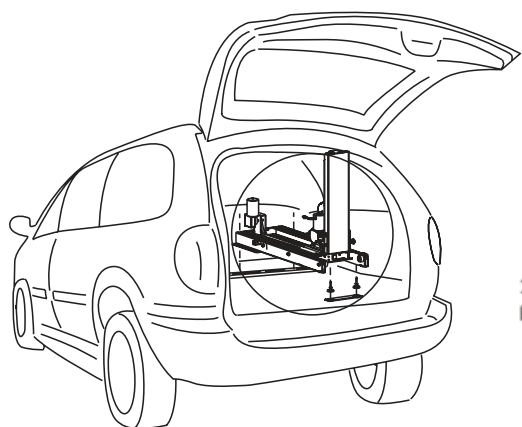
USE EXTREME CAUTION

Avoid Gas Tank, Fuel / Brake / Electrical Lines

Installation - AL600

With Removable 3rd Row Seating

SECTION 2 : INSTALLER



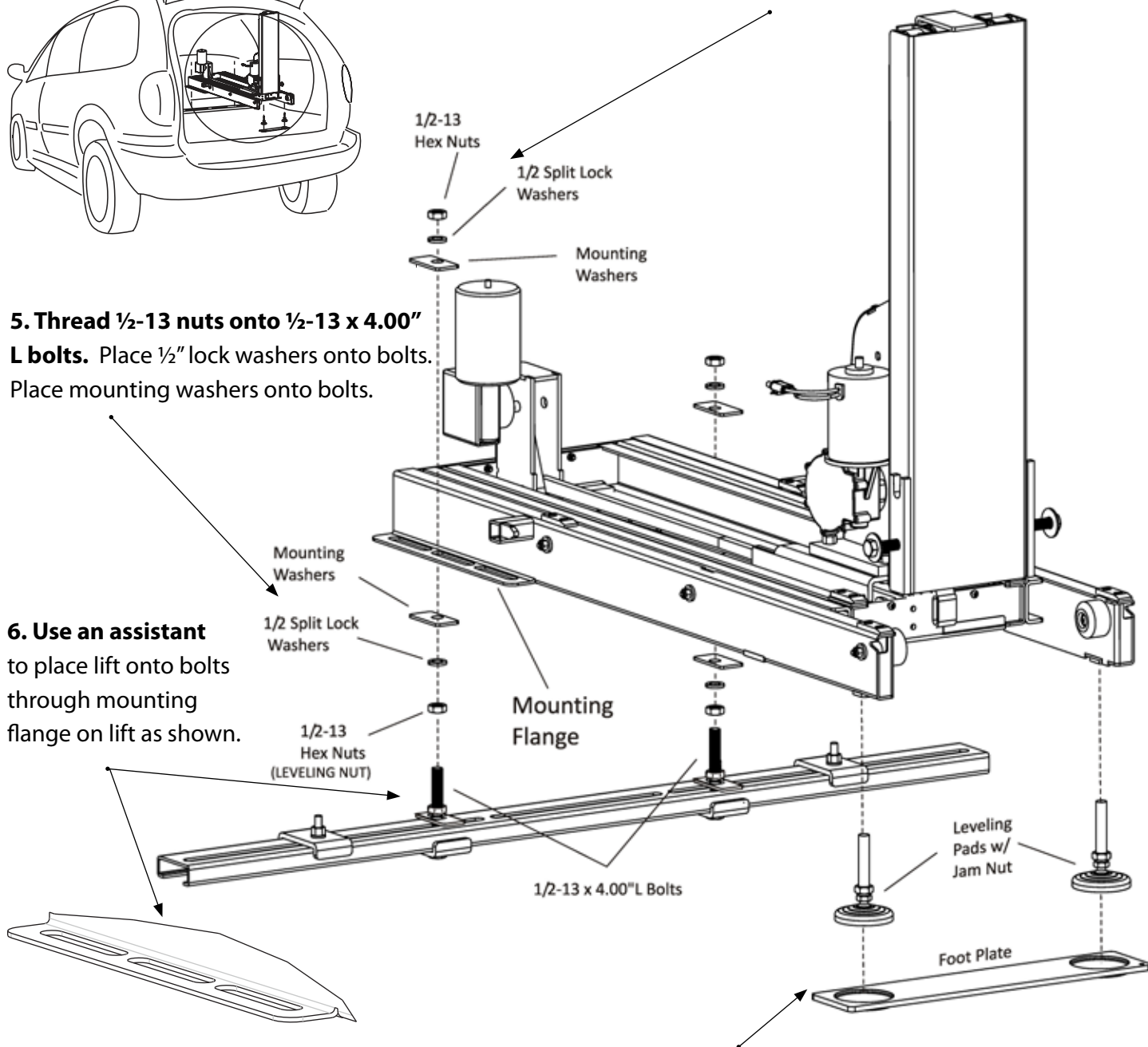
5. Thread 1/2-13 nuts onto 1/2-13 x 4.00" L bolts. Place 1/2" lock washers onto bolts. Place mounting washers onto bolts.

6. Use an assistant to place lift onto bolts through mounting flange on lift as shown.



If no assistant is available, follow instructions on page 11 to avoid injury.

7. Place mounting washers on bolts, on top of mounting flange on lift. Place 1/2" lock washers onto bolts. Thread 1/2-13 nuts onto bolts.



8. Lift front end of lift and install leveling pads as shown. Place foot plate under leveling pads. Lower lift and check with a level. Adjust by threading nut on leveling pads and threading bottom nut under mounting flange.

8. Plug hand controller into lift. [Figure 17-1]

Connect to vehicle harness. [Figure 17-2]

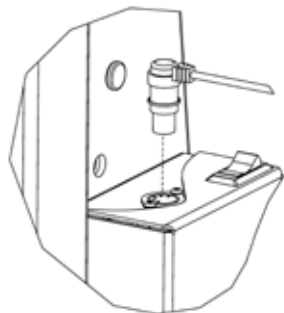
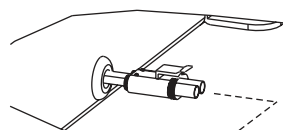
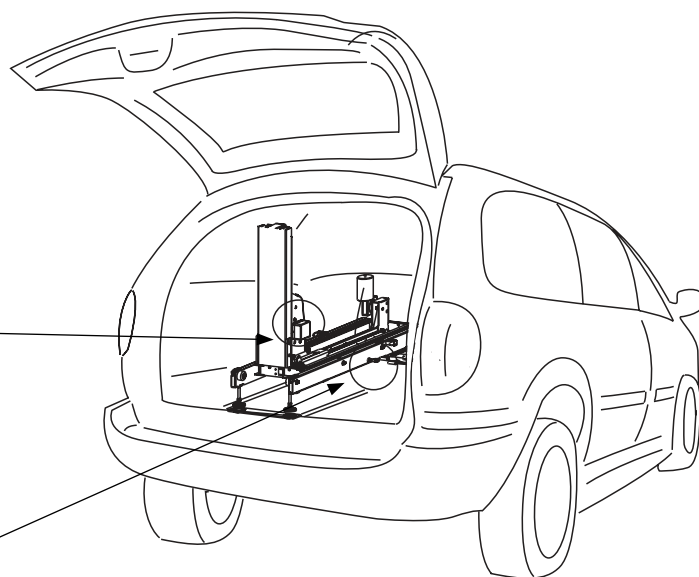


Figure 17-1



From vehicle harness
(installed on page 12)

10. Attach platform by placing platform's upright pins into u-shaped bracket on tower. [Figure 17-4]



Figure 17-2

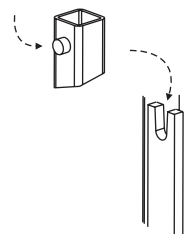


Figure 17-4

9. Press the DOWN button until the lift's tower has moved out of the vehicle. [Figure 17-3]

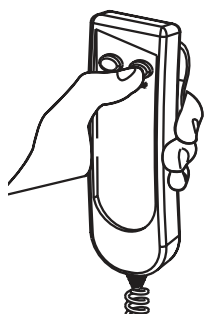


Figure 17-3

11. Thread ½-13 x 1-3/4" L Hex head Bolts and ½" washers into threaded holes as shown. [Figure 17-5] Test full motion of lift into and out of the vehicle. Be sure lift is level and no obstructions interfere with platform travel.

Tighten all fasteners from all steps at this time.

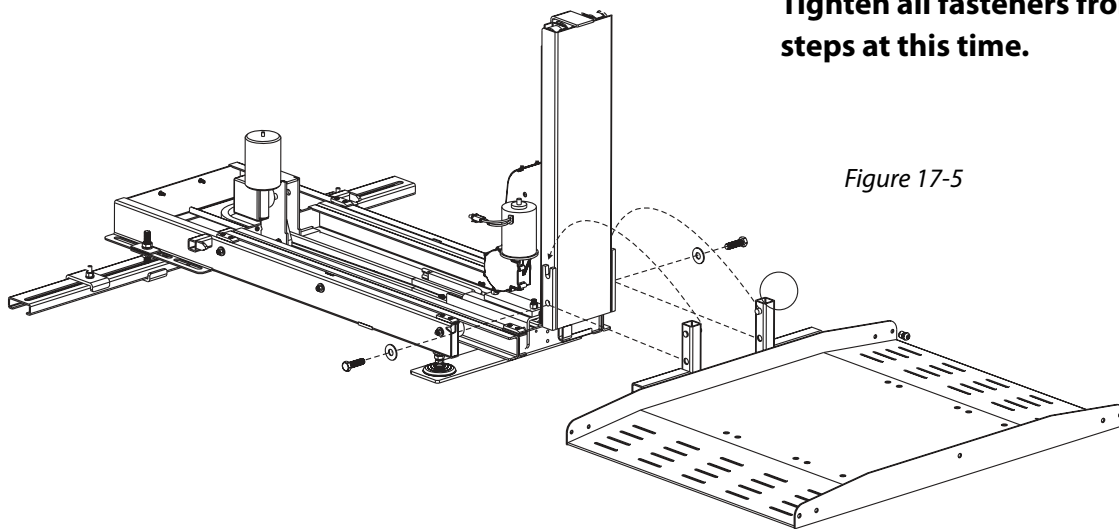


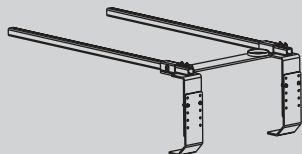
Figure 17-5

Installation - AL600

With Folding 3rd Row Seating

SECTION 2 : INSTALLER

NOTE: A BA-02 Kit is needed for this installation. More detailed instructions on BA-02 installation will be provided with the BA-02 Kit.



1. Fold 3rd Row seating up, exposing the storage well. [Figure 18-1]

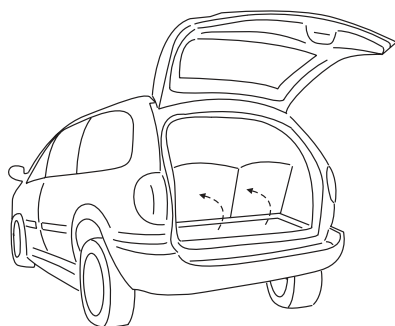


Figure 18-1

2. Measure the height of the well. [Figure 18-2]

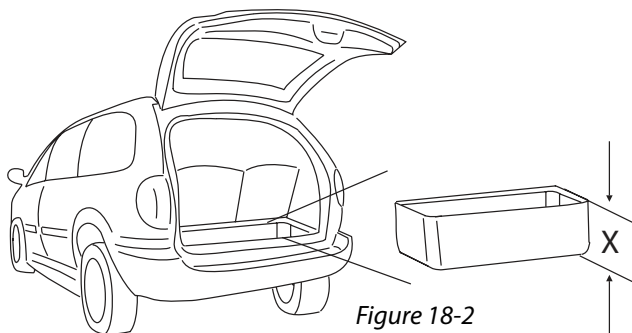


Figure 18-2

3. Position brackets as shown. Slide up or down until you achieve the measured well height. (Holes are arranged for 1/4" increments) [Figure 18-3]

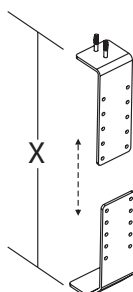


Figure 18-3

4. Attach brackets together and fasten using supplied hardware. [Figure 18-4]

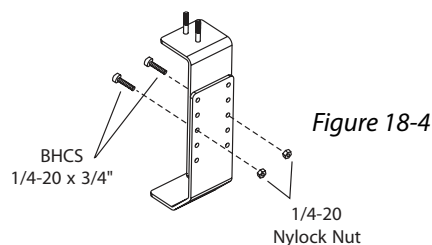


Figure 18-4

5. Position assembled parts around third row seat(s) then fold into well. [Figure 18-5]

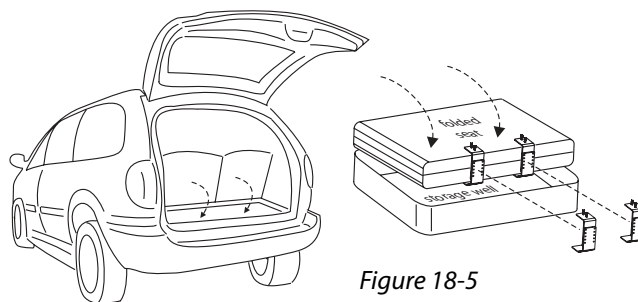


Figure 18-5

6. Install set screws (leave loose) as shown. Slide foot plate assembly onto legs. [Figure 18-6]

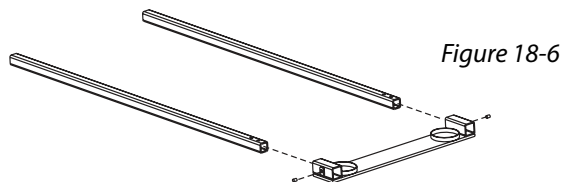


Figure 18-6

7. Attach rails to brackets. [Figure 18-7]

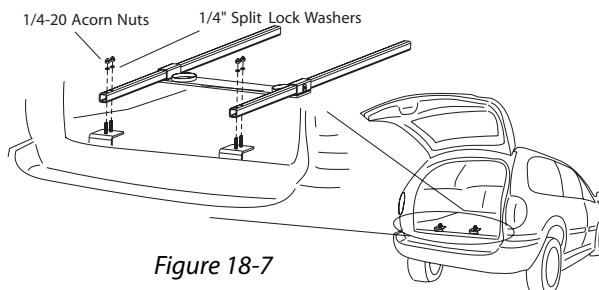


Figure 18-7

8. With BA-02 installed in rear cargo area, examine floor for area to install leg assembly. [Figure 19-1]

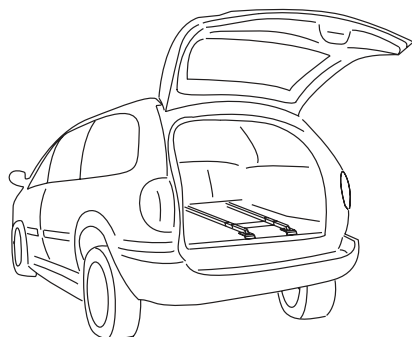


Figure 19-1

9. The AL600's leg will need to be mounted between 32" and 42" from the internal surface of the closed back door of the vehicle.

Examine the floor for additional seat attachment points recessed into the floor. [Figure 19-2]

IMPORTANT:

Attachment Points MUST be FLUSH or LOWER than the floor.

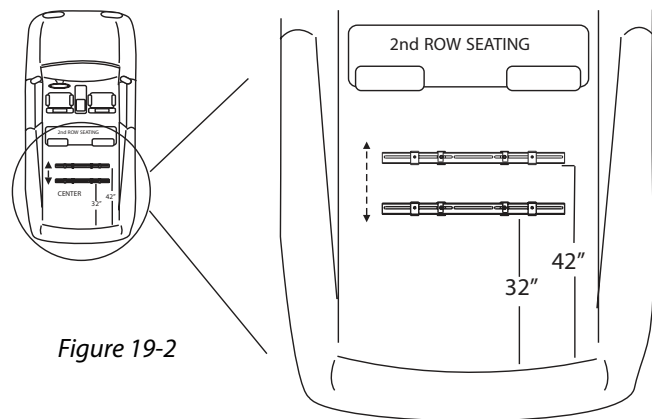


Figure 19-2



USE EXTREME CAUTION

Avoid Gas Tank, Fuel / Brake / Electrical Lines

10 A. If Seat Attachment Points ARE Available: See Figure 19-3 for mounting diagram.

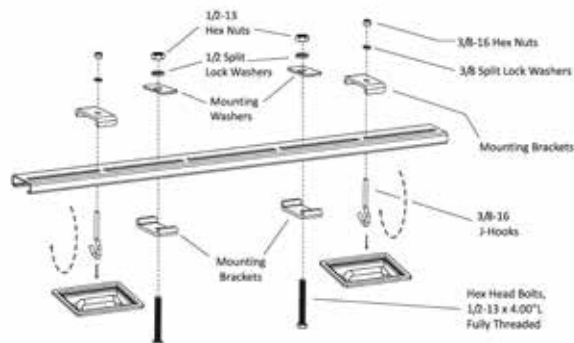


Figure 19-3

10 B. If Seat Attachment Points are NOT Available: Look under vehicle in approximate area where Leg will need to be mounted.

Drill a pilot hole first, up from under the vehicle to ensure nothing will be damaged. [Figure 19-3]

Find hole from inside vehicle and drill 3/8" hole down through vehicle's floor. [Figure 19-4]

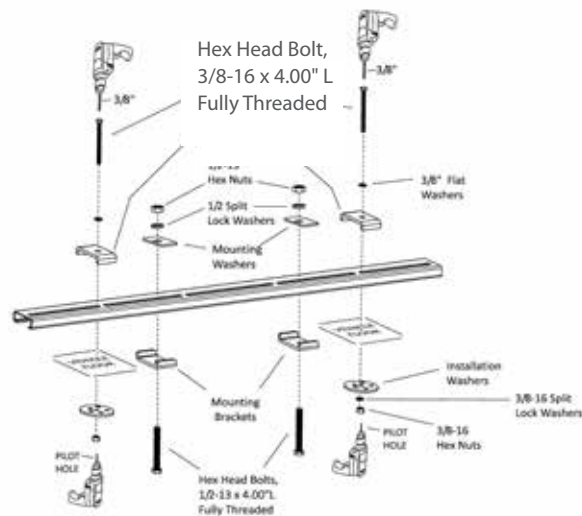
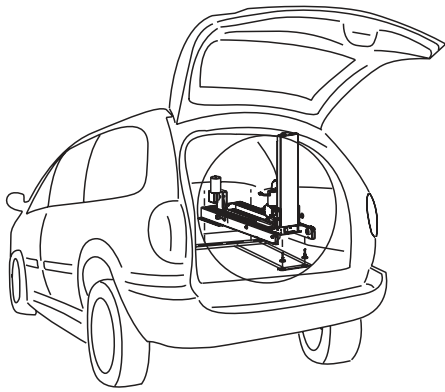


Figure 19-4

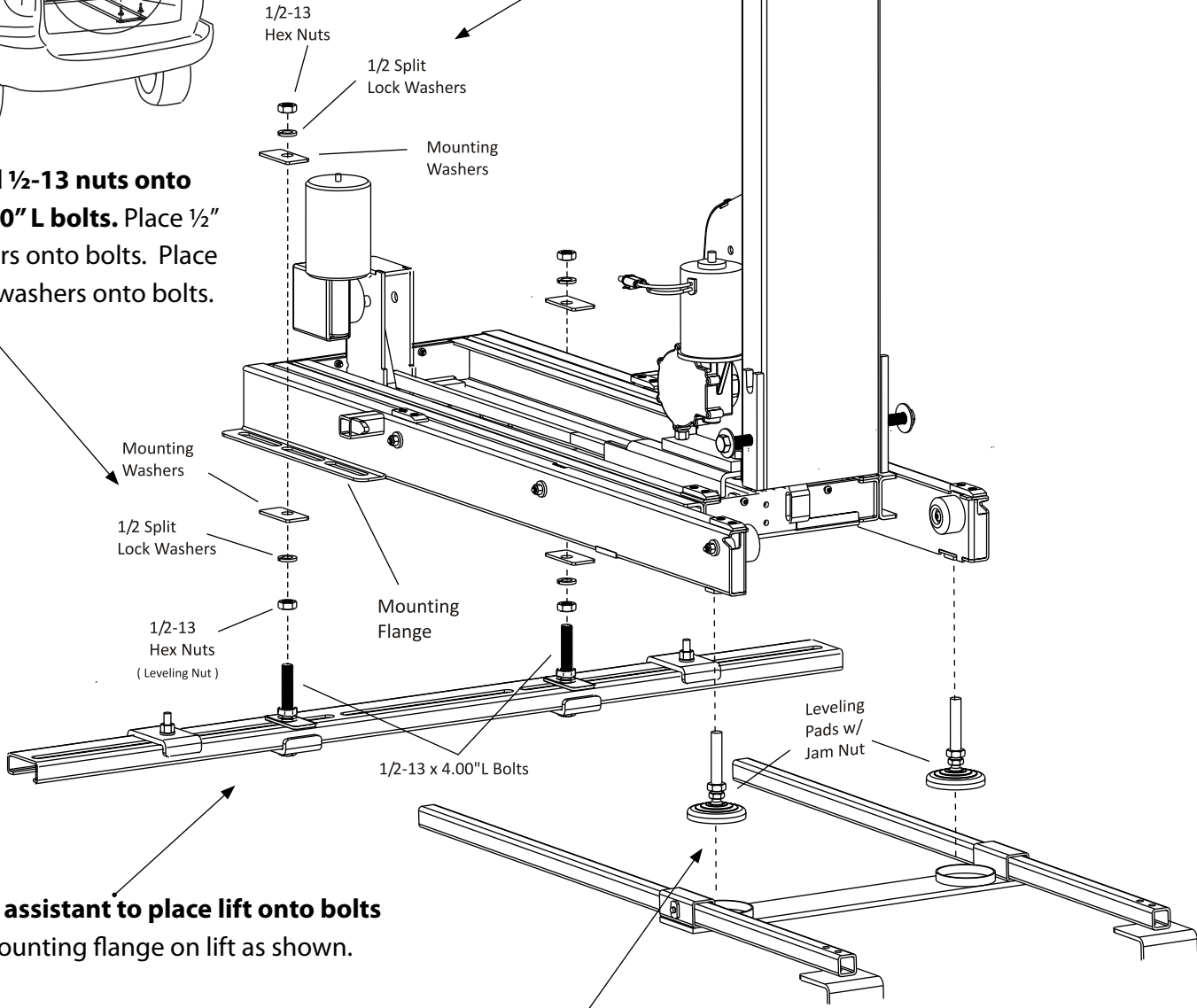
Installation - AL600

With Folding 3rd Row Seating

SECTION 2 : INSTALLER



11. Thread ½-13 nuts onto ½-13 x 4.00" L bolts. Place ½" lock washers onto bolts. Place mounting washers onto bolts.



12. Use an assistant to place lift onto bolts through mounting flange on lift as shown.

13. Place mounting washers on bolts, on top of mounting flange on lift. Place ½" lock washers onto bolts. Thread ½-13 nuts onto bolts.

14. Lift front end of lift and install leveling pads as shown. Place pads into circular cups of BA-02 as shown. Lower lift and check with a level.

Adjust by threading nuts on leveling pads and threading bottom nut under mounting flange.



WARNING

If no assistant is available, follow instructions on page 11 to avoid injury.

15. Plug hand controller into lift. [Figure 21-1]

Connect to vehicle harness. [Figure 21-2]



Figure 21-1

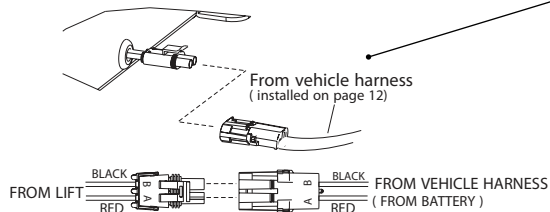
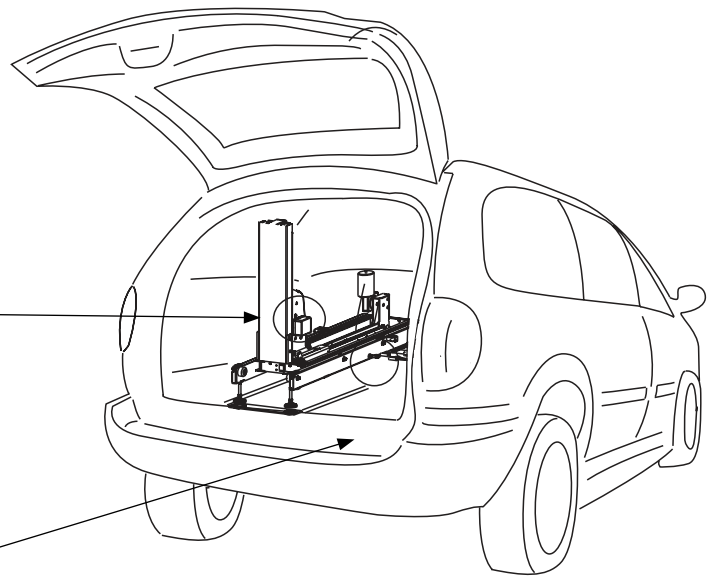


Figure 21-2

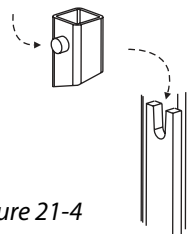
17. Attach platform by placing platform's upright pins into u-shaped bracket on tower. [Figure 21-4]

Figure 21-4

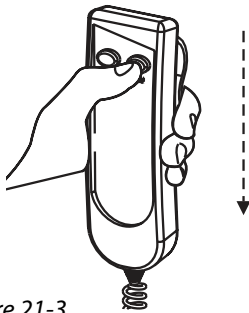
16. Press the DOWN button until the lift's tower has moved out of the vehicle. [Figure 21-3]

Figure 21-3

18. Thread ½-13 x 1-3/4" L Hex head Bolts and ½" washers into threaded holes as shown.

[Figure 21-5] Test full motion of lift into and out of the vehicle. Be sure lift is level and no obstructions interfere with platform travel.

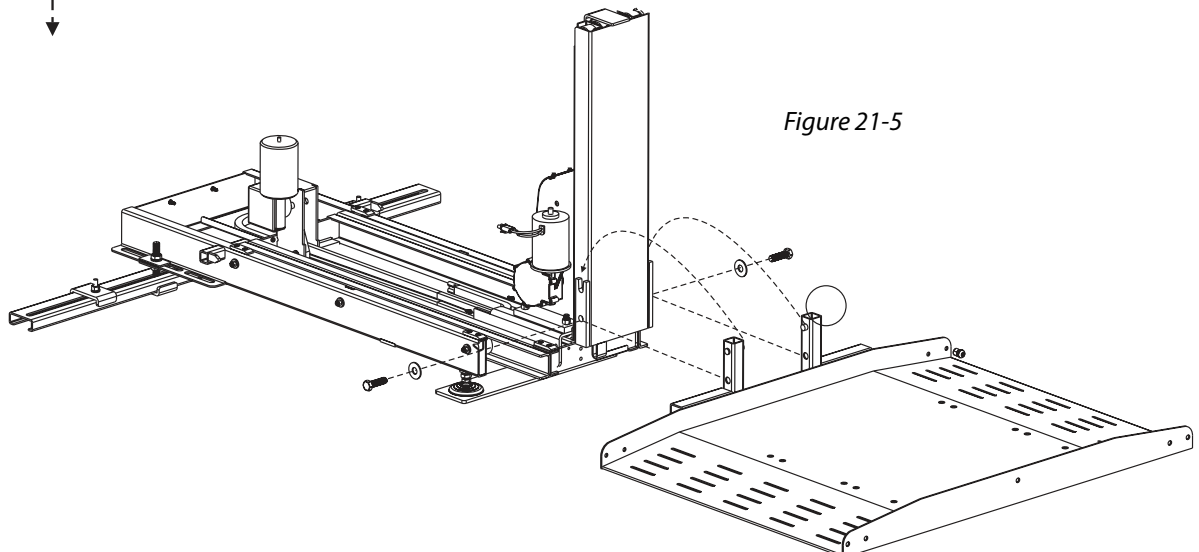
Tighten all fasteners from ALL steps at this time.

Figure 21-5

1. Remove 2nd Row Seating. [Figure 22-1]



Figure 22-1

2. Installing the Front Leg. The AL690's front leg must be mounted between 42" and 52" from the internal surface of the closed side door of the vehicle.



Examine floor area for remaining seat attachment points that are recessed into the floor. [Figure 22-2]

IMPORTANT:

Attachment Points MUST be FLUSH or LOWER than the floor.

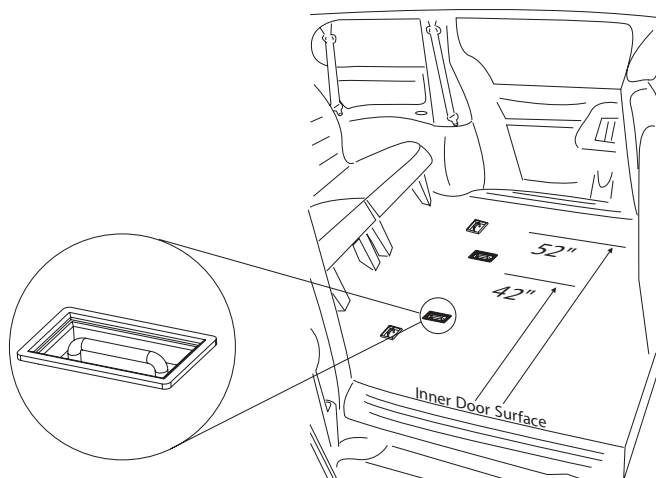


Figure 22-2

3. Front Leg Attachment

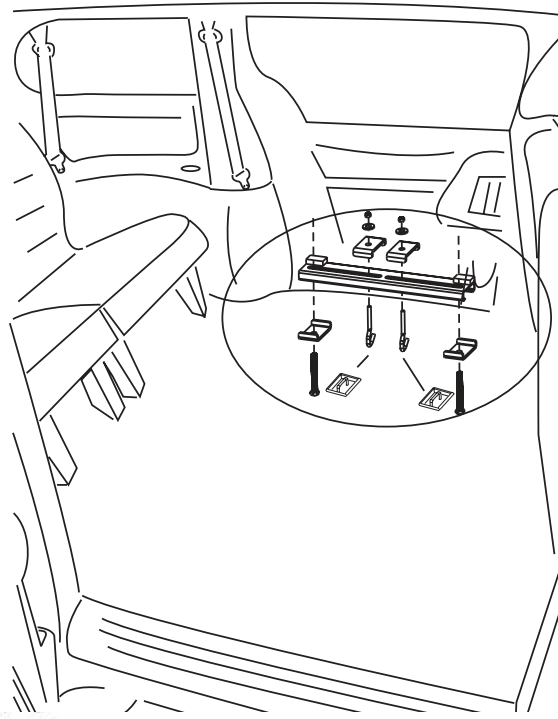
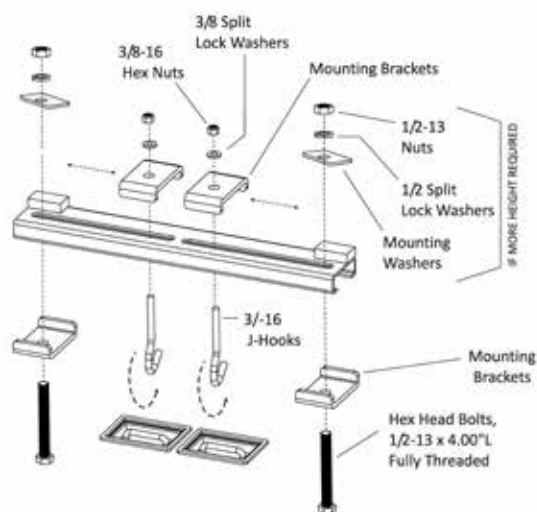


Figure 22-3

3A. If Seat Attachment Points ARE Available: See Figure 22-3 for mounting diagram.



3B. If Seat Attachment Points are NOT Available:

Look under vehicle in approximate area where Leg will need to be mounted. [Figure 23-1]

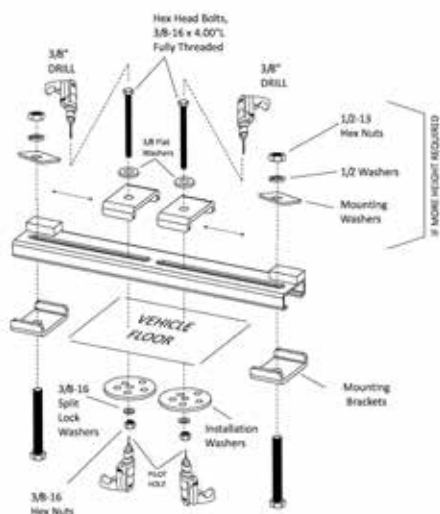


Figure 23-1

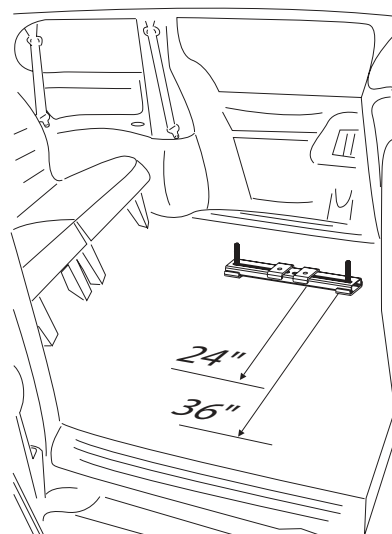


Figure 23-2

4. Installing the Rear Leg. The AL690's rear leg will be installed approximately 24" to 36" from the front leg. [Figure 23-2]

The uprights on both legs must be in line and square. Verify by measuring corner to corner. Distance should be identical. [Figure 23-3]

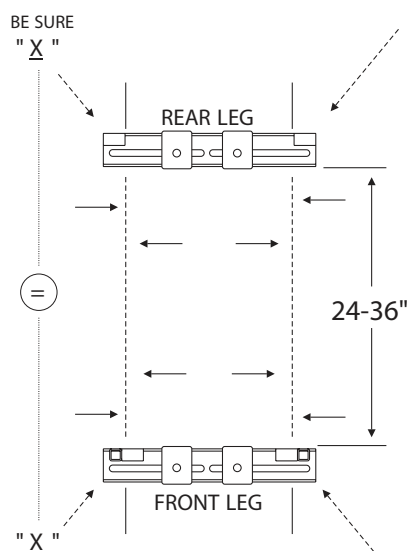
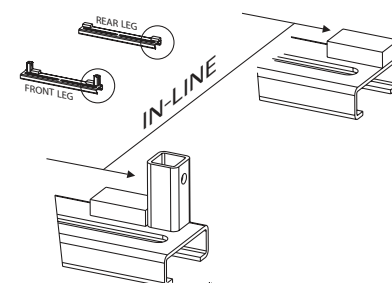


Figure 23-3

Look under vehicle in approximate area where leg will need to be mounted.

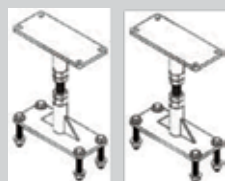
Drill a pilot hole first, up from under the vehicle to ensure nothing will be damaged.



Find hole from inside vehicle and drill 3/8" hole down through vehicle's floor.

**USE EXTREME CAUTION**

Avoid Gas Tank, Fuel / Brake / Electrical Lines



False floor support available when applicable for vehicles with Stow & Go seating. (2nd row seats must be removed)

Rear Leg Attachment (con't)

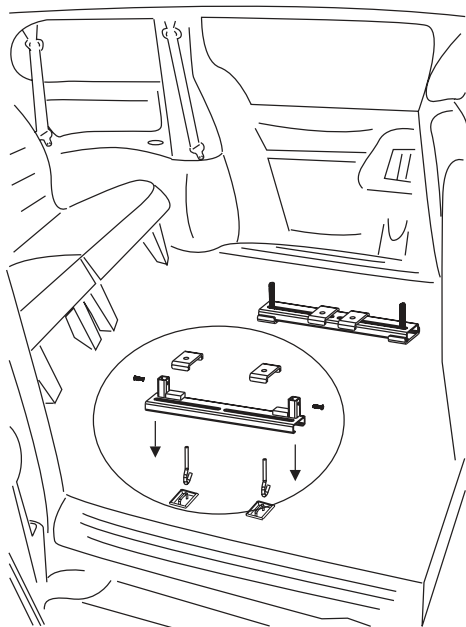
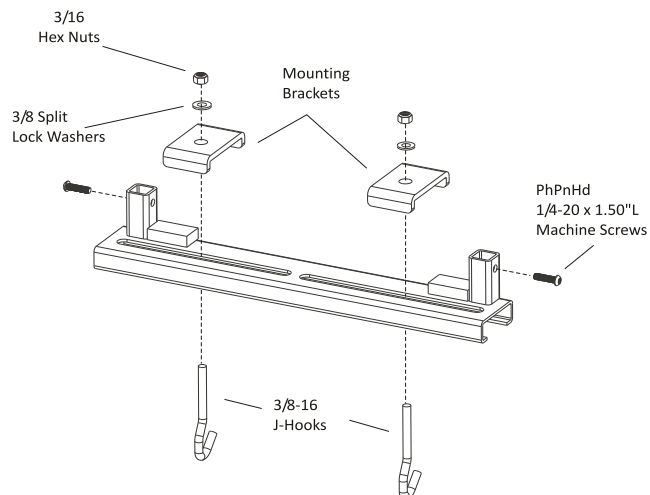


Figure 24-1

4A. If Seat Attachment Points ARE Available: See Figure 24-1 for mounting diagram.



4B. If Seat Attachment Points are NOT Available: Look under vehicle in approximate area where leg will need to be mounted. [Figure 24-2]

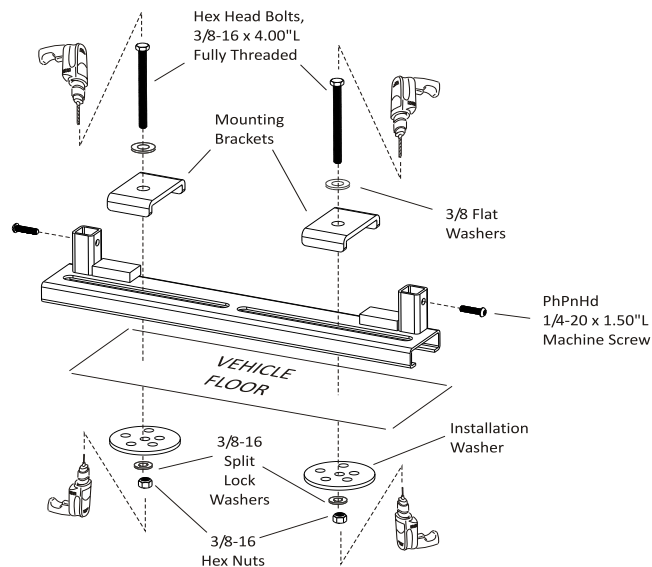


Figure 24-2

Drill a pilot hole first, up from under the vehicle to ensure nothing will be damaged.

Find hole from inside vehicle and drill 3/8" hole down through vehicle's floor.



CAUTION

USE EXTREME CAUTION

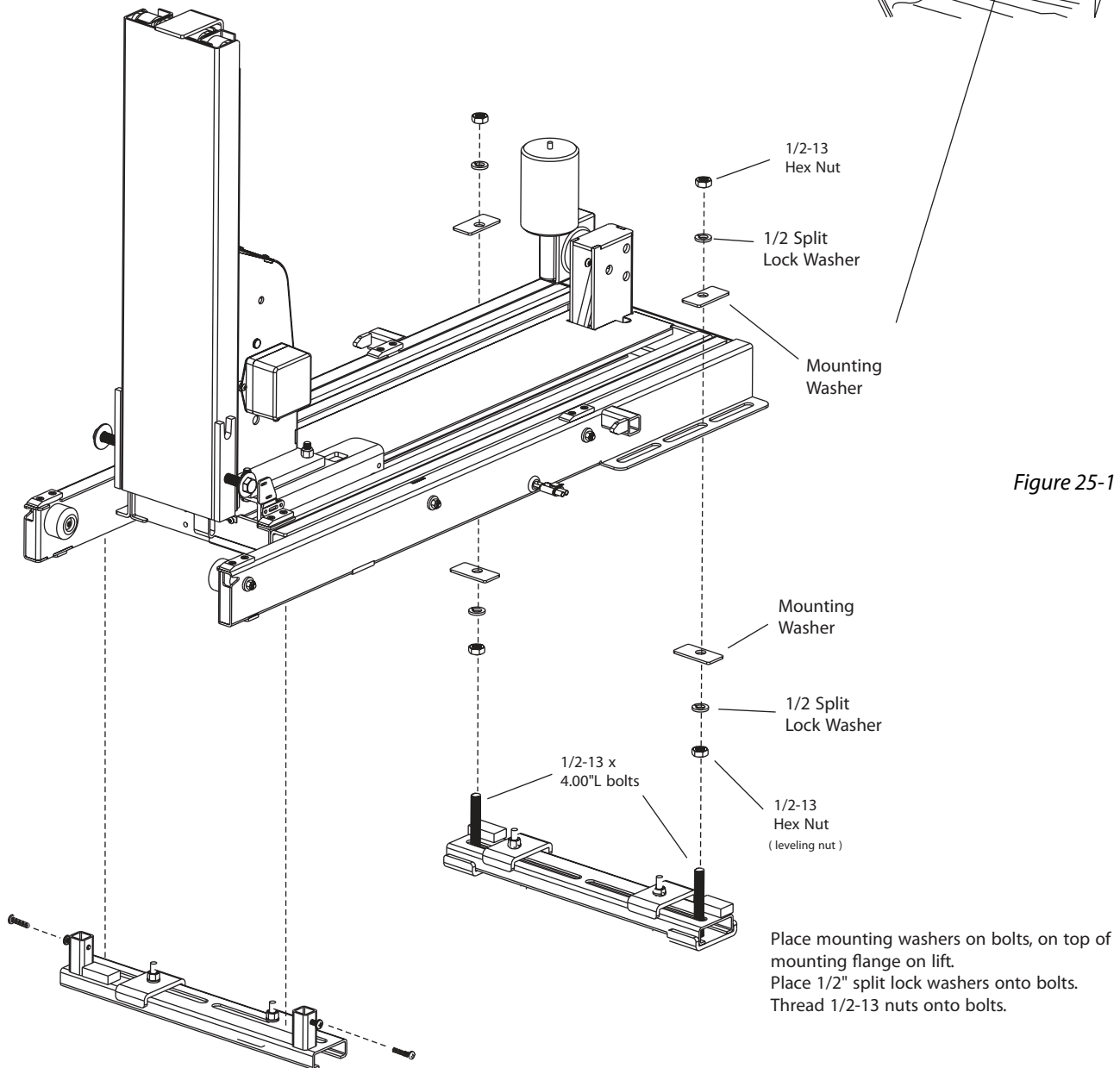
Avoid Gas Tank, Fuel / Brake / Electrical Lines

5. Thread 1/2-13 nuts onto 1/2-13 4.00"L bolts installed previously.

Place 1/2" lock washer onto bolts.

Place mounting washers onto bolts

Using an assistant, place lift onto bolts through mounting flange on lift as shown. [Figure 25-1]



WARNING

If no assistant is available, follow instructions on page 11 to avoid injury.

6. Plug Hand Controller into lift.

[Figure 26-1]



Figure 26-1

7. Connect to vehicle harness.

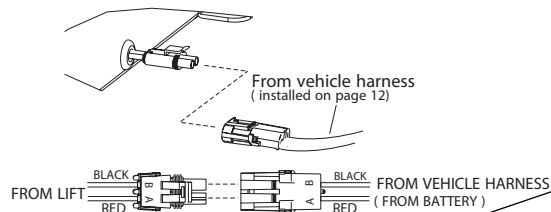


Figure 26-2

8. Press the DOWN button until the lift's tower has moved out of the vehicle.

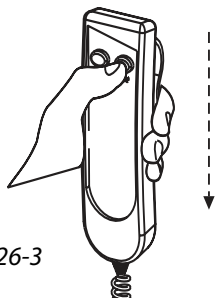


Figure 26-3

The platform components may be re-assembled to match the opening of the vehicle's side door. [Figure 26-4]

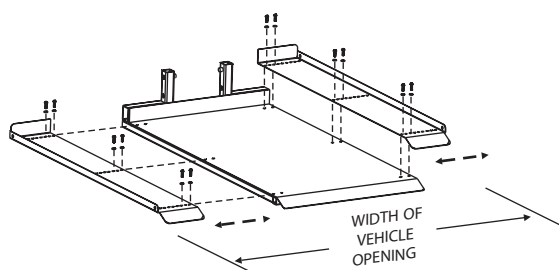


Figure 26-4

9. Attach platform by placing platform's upright pins into u-shaped bracket on tower.

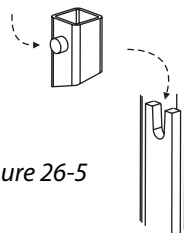


Figure 26-5

10. Install 1/2-13 x 1-3/4" Hex head Bolts and 1/2" flat washers into threaded holes as shown.

Test full motion of lift into and out of the vehicle. Be sure lift is level and that no obstructions interfere with the travel of the platform.

Tighten ALL fasteners from ALL steps.

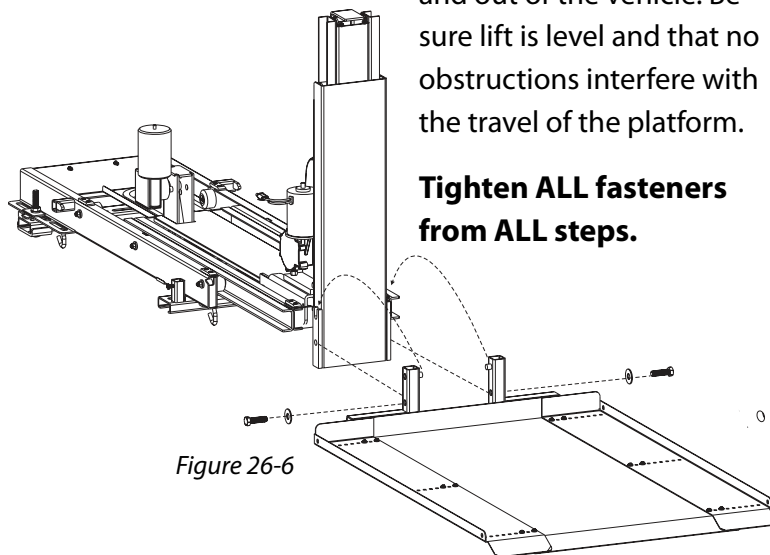


Figure 26-6

The strap hooks included with your chair can be attached by means of an Anchor Plate (for chairs or scooters with a center seat post) or Anchor U-Bolts (for those without a center seat post.)

ANCHOR PLATE INSTALLATION

Use Anchor Plate for chairs or scooters with a center seat post.

The Anchor Plate is a flat plate with a slot in each end. This plate attaches to the bottom of the seat and works with any chair or scooter that has a center seat post. [Figure 27-1]

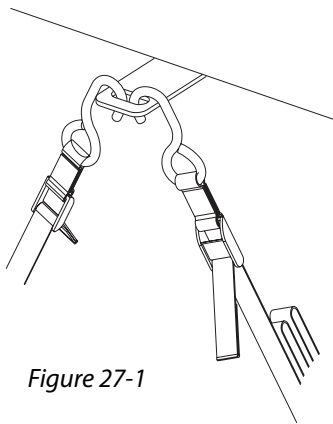


Figure 27-1

1. Remove the chair seat.

2. Loosen the screws that attach the plate to the seat. Allow enough room to slide the anchor plate between the seat and the seat plate. [Figure 27-2]

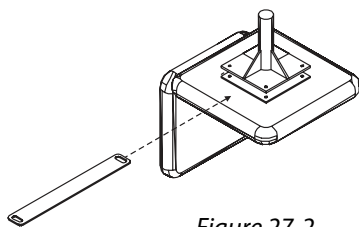


Figure 27-2

3. Make sure the anchor plate will extend about 1-1/2" on each side of the cushion. This provides space for the user to secure the strap hooks to the chair.

4. Attach the Anchor Plate in the center of the seat plate evenly, with the holes on each end. [Figure 27-3]

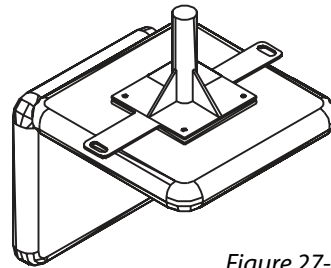


Figure 27-3

5. Re-tighten the screws that hold the seat plate to the bottom of the seat.

6. Replace the seat on the chair. [Figure 27-4]

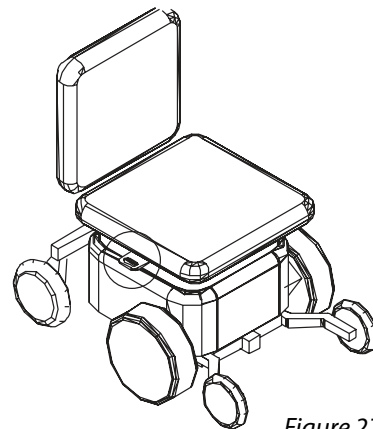


Figure 27-4

ANCHOR U-BOLTS

Use U-Bolts with Power Chairs or Scooter that do not have a center seat post.

For power chairs or scooters without a center seat post, the seat is normally attached to a tubular frame. Install the U-bolts, two on each side, to the frame as shown. [Figure 28-1]

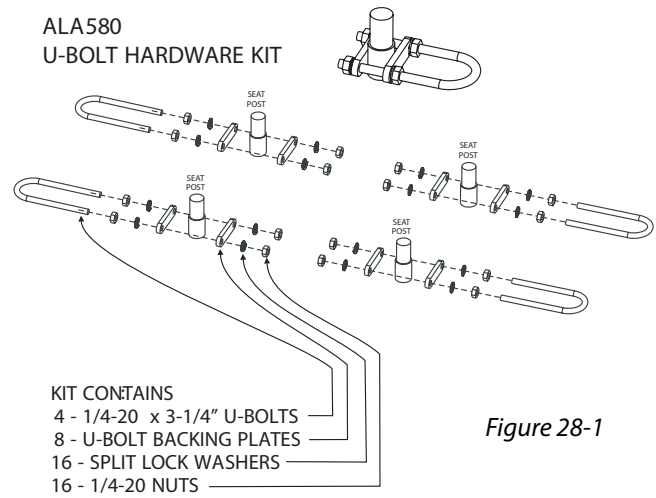


Figure 28-1

Ensure that the loop extends to the outside of the chair so the user can attach the strap hooks. [Figure 28-2]

U-bolt placement will differ among models and manufacturers. Place the U-bolts towards the center of the seat if possible. Due to different seat types, you may be forced to install the U-bolts more towards the front or rear of the seat, but we recommend attaching as close as possible to the center of the seat.

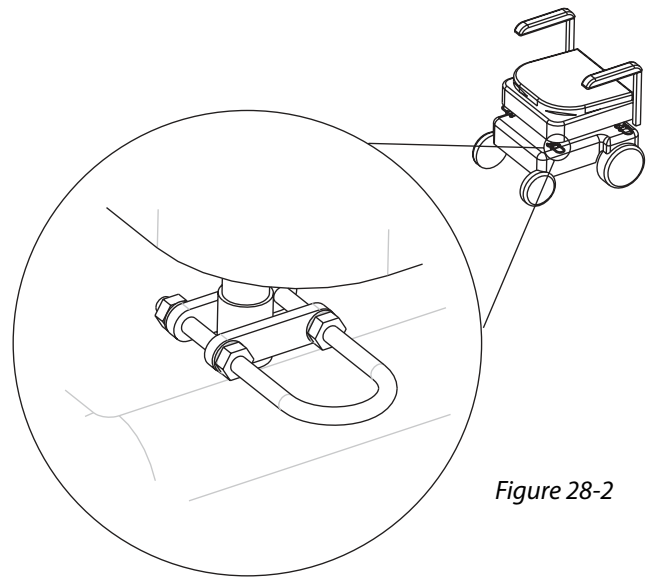


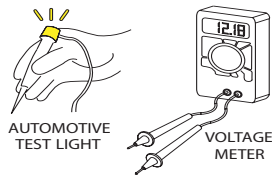
Figure 28-2

DEALER/INSTALLER ONLY SECTION

The following procedures are reserved for the approved installer/dealer. They should not be attempted by anyone without proper knowledge of automotive electrical circuitry.

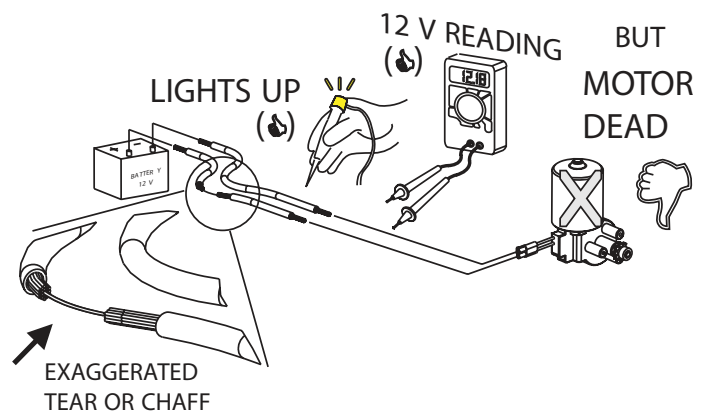
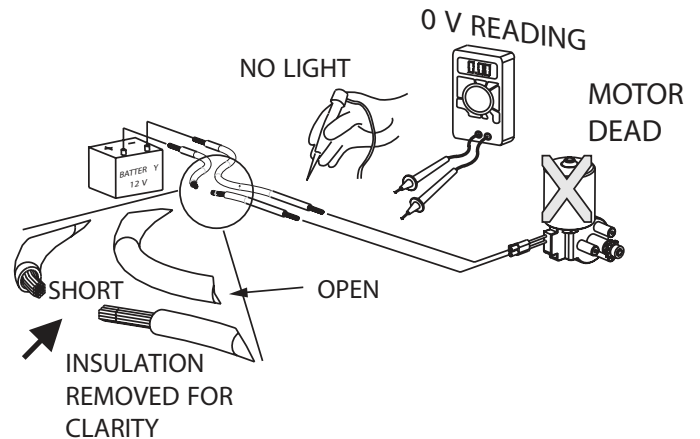
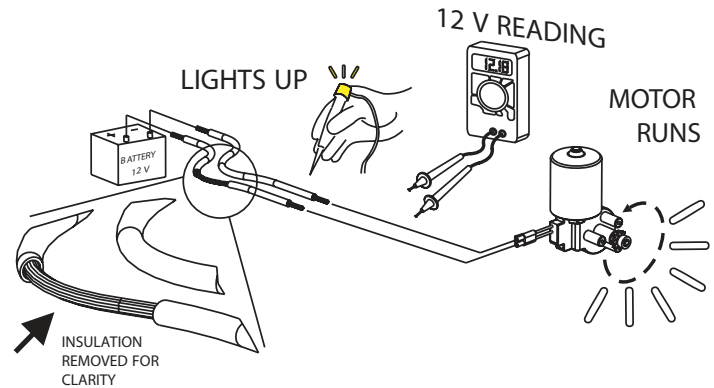
**CAUTION**

Be careful when troubleshooting with a test light or voltage meter. They may give false indications.



The instruments will detect voltage, but may not indicate a tear or poor connection in the wiring.

It is strongly recommended that you examine both voltage and current, or isolate sections of the lift wiring using process of elimination with a known good/fully charged 12V automotive battery or known good/fully charged power chair/scooter battery.



PROBLEM

Lift does not operate or lift operates slowly or intermittently

CAUSE

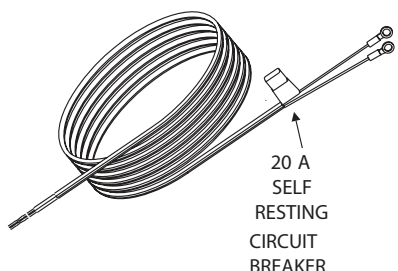
Bad electrical connection(s) / Circuit breaker

SOLUTION

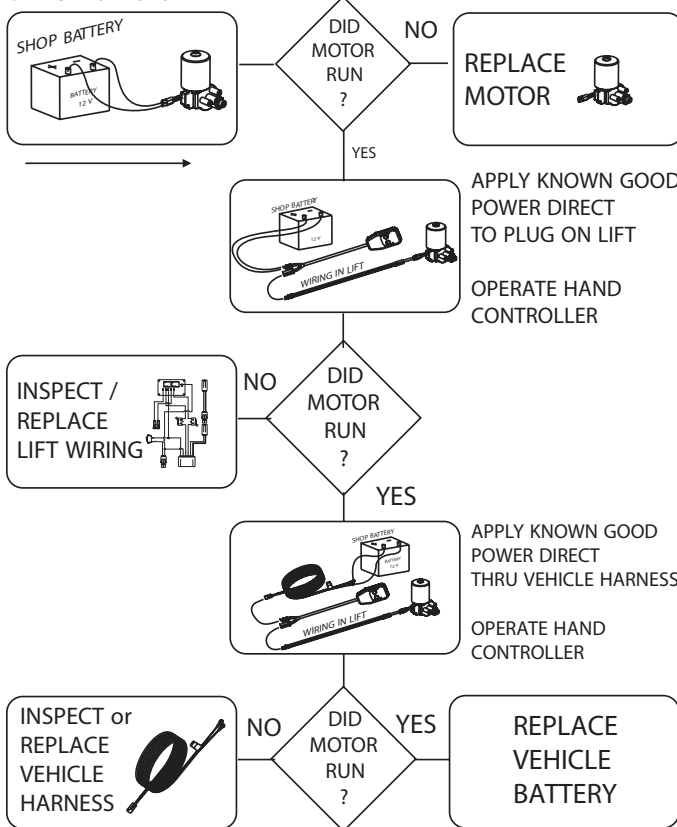
Check / clean all connections that might be loose or dirty. This is the #1 cause of a poorly performing lift. The lifting motor requires quality electrical connections to operate at full capacity; any break in the wiring will slow down the motor and it will deteriorate prematurely.

Inspect the full length of the wire harness to ensure the insulation is not torn. The lift's vehicle power harness running through or under the vehicle is subject to road debris and rubbing against the vehicle's frame which can cause a short.

Verify the circuit breaker. The circuit breaker is located about 6" from the connections to the vehicle's battery. The breaker will self-reset if overloaded; however, verify (with Ohm meter or test light) that the breaker is functioning. Or replace it with a new/known-good circuit breaker and perform the following tests.



APPLY KNOWN GOOD POWER
DIRECT TO MOTOR



PROBLEM

Scooter/ chair tips to the front or back while being lifted.

CAUSE

Platform is leaning to one side more than the other.

SOLUTION

Adjust position of chair or scooter on platform. In some cases, a scooter plate can be added to the platform to allow more offset.

PROBLEM

Lift rattles while driving.

CAUSE

Platform is not 'docked.'

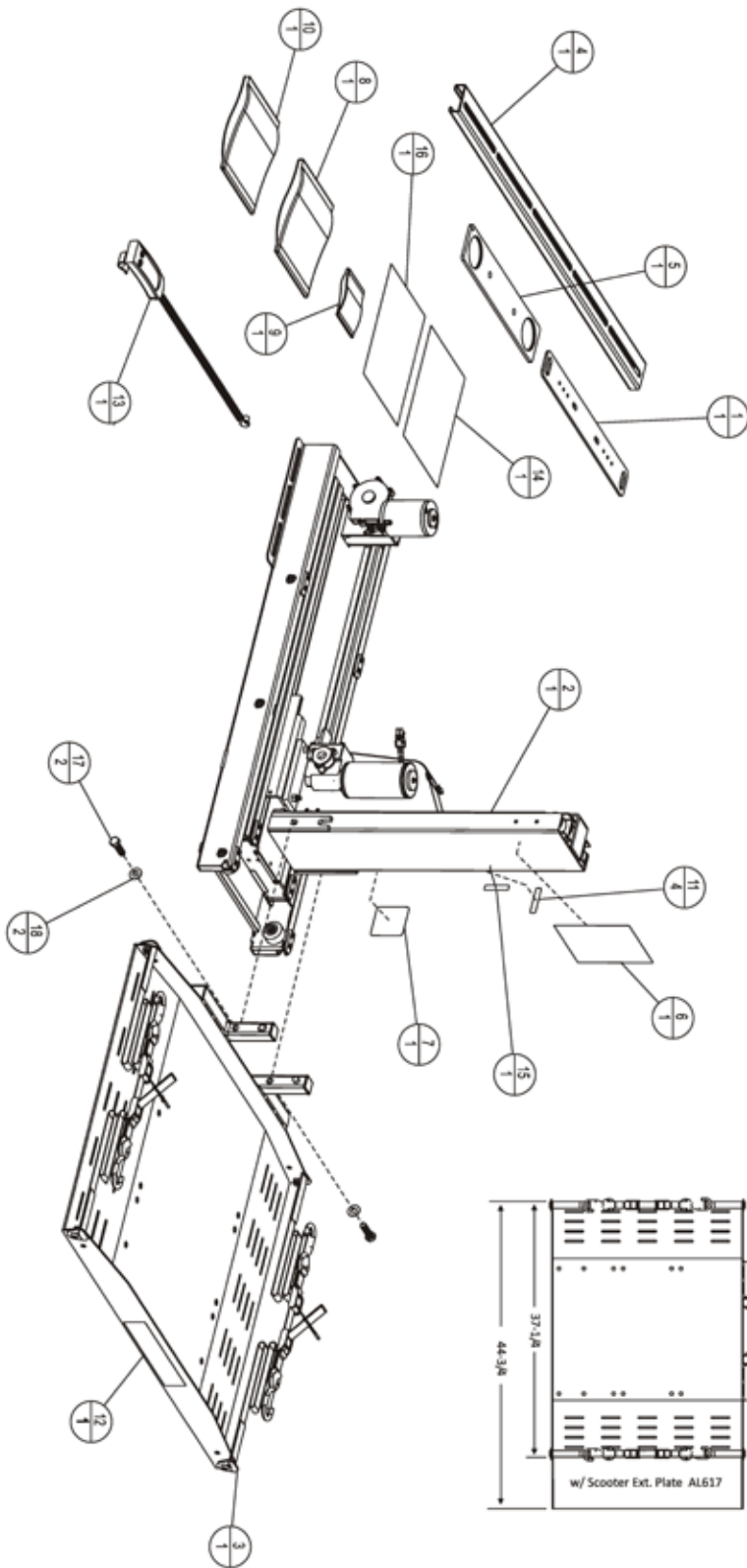
SOLUTION

Be sure to press 'IN' button until platform is fully engaged in its locking mechanism.

AL600**PARTS LIST**

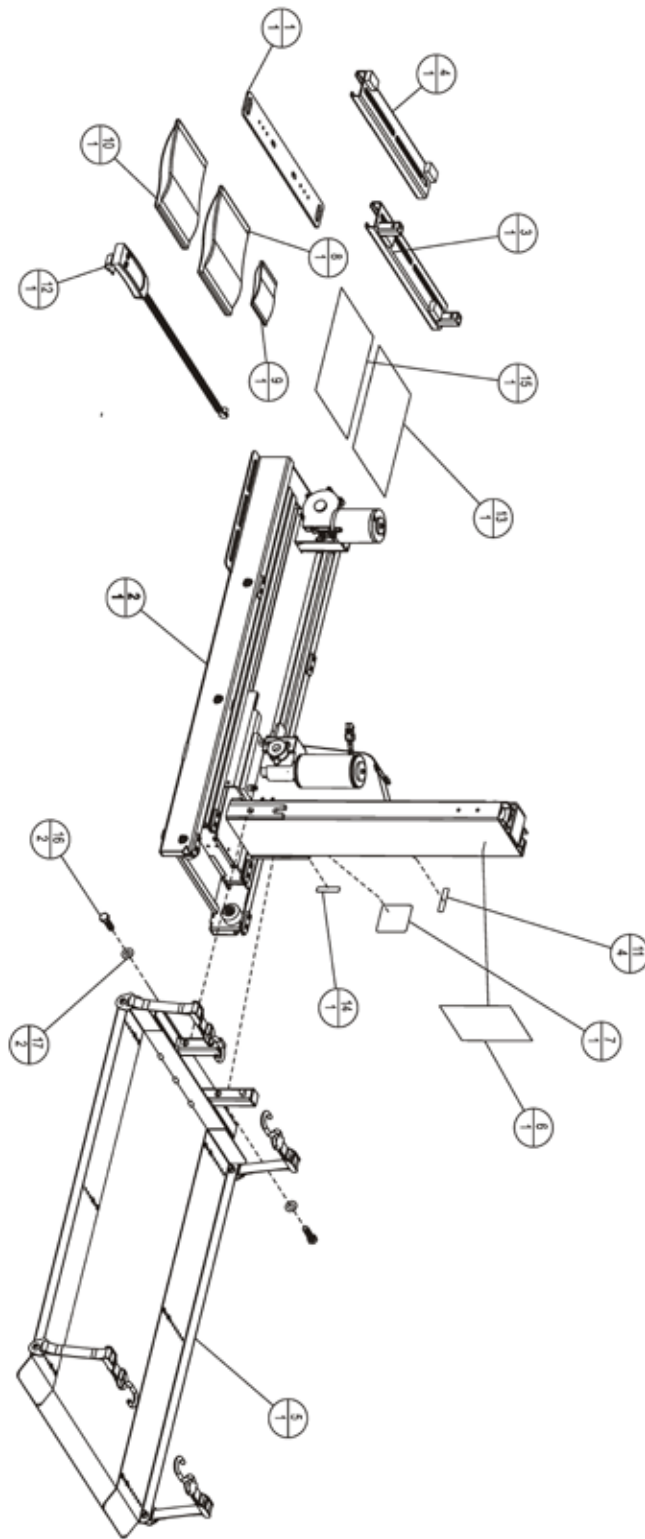
ASSEMBLY PARTS			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	100-2P03-CA	20" ANCHOR PLATE
2	1	260-3C01-AA	HYBRID TOWER AND BASE ASSY
3	1	270-ZC01-AA	PLATFORM ASSY- REAR DOOR APP
4	1	543-ZC01-CA	LEG - REAR DOOR APP
5	1	562-ZC01-C	FOOTPLATE
6	1	903-2C13-AA	HARMAR STAGE STICKER
7	1	ALA21094	STICKER, CAUTION
8	1	ALA284	HYBRID MOUNTING KIT - REAR DOOR PLATFORM LIFT
9	1	ALA580	HARDWARE PACK - U-BOLT KIT
10	1	ALA680	HARDWARE PACK
11	4	ALA99995	STICKER, SERIAL NUMBER
12	1	H10096	PLATFORM STICKER, HARMAR
13	1	H21000	HAND CONTROL- 2 BUTTON
14	1	H600102	INSTRUCTION SHEET - MANUAL OVERRIDE
15	1	H600411	PATENT STICKER
16	1	H60066	CAUTION SHEET - PLATFORM CENTERING
17	2	HHCS-0_50-13-1_75-Z	HEX HEAD 1/2-13 x 1.75
18	2	WASH-0_50-1_06-0_08-RH-Z	WASHER, 0.53 ID, 1.06 OD, 0.075 THK, ZINC

AL600 ASSEMBLY



ASSEMBLY PARTS		
ITEM	QTY	PART NO. DESCRIPTION
1	1	100-2P03-CA 20" ANCHOR PLATE
2	1	260-3C01-AA HYBRID TOWER AND BASE ASSY
3	1	266-ZC02-CA FRONT LEG - SIDE DOOR APP
4	1	267-ZC02-CA REAR LEG - SIDE DOOR APP
5	1	270-ZC02-AA PLATFORM ASSEMBLY - SIDE DOOR APP
6	1	903-2C13-AA HARMAR STAGE STICKER
7	1	ALA21094 STICKER, CAUTION
8	1	ALA286 HYBRID MOUNTING KIT - SIDE DOOR PLATFORM LIFT
9	1	ALA580 HARDWARE PACK - U-BOLT KIT
10	1	ALA680 HARDWARE PACK
11	4	ALA99995 STICKER, SERIAL NUMBER
12	1	H21000 HAND CONTROL- 2 BUTTON
13	1	H600102 INSTRUCTION SHEET - MANUAL OVERRIDE
14	1	H600411 PATENT STICKER
15	1	H60066 CAUTION SHEET - PLATFORM CENTERING
16	2	HHCS-0_50-13-1_75-Z HEX HEAD 1/2-13 x 1.75
17	2	WASH-0_50-1_06-0_08-RH-Z WASHER, 0.53 ID, 1.06 OD, 0.075 THK, ZINC

AL690 ASSEMBLY

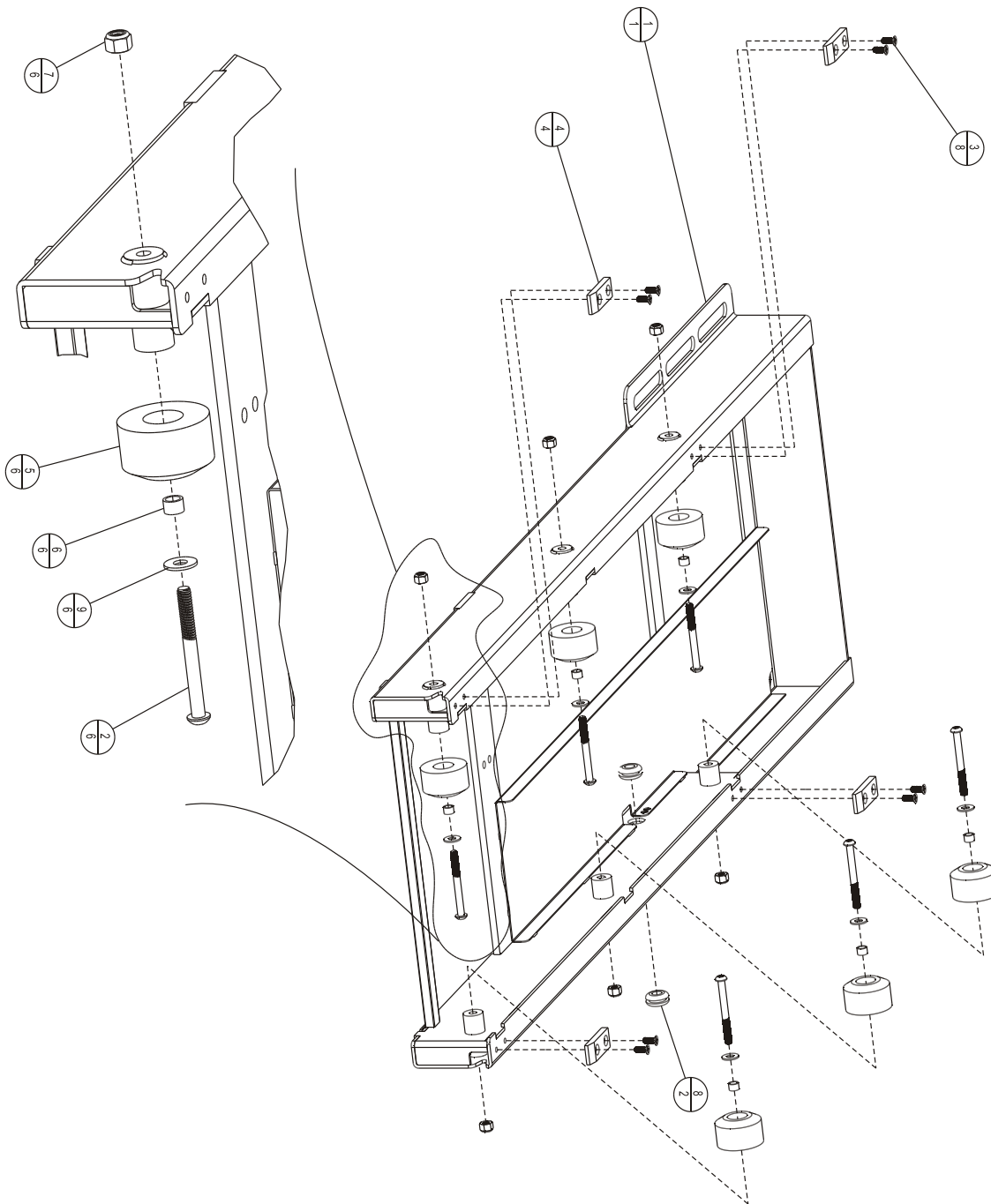


AL600/AL690**BASE STAGE ASSEMBLY PARTS LIST**

ASSEMBLY PARTS			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	211-ZC01-CA	PC HPL BASE WELDMENT
2	6	BHCS-0_25-20-2_50-SS	BUTTON HEAD 0.25-20 x 2.50
3	8	FHMS-10-24-0_50-NP-Z	FLAT HEAD 10-24 x 0.50 w/ PATCH
4	4	H600132	AL600 PLASTIC SHIM
5	6	H600141	AL600 BASE WHEEL
6	6	H600151	BASE WHEEL SPACER TUBE
7	6	NUT-0_25-20-NYLOCK-Z	NYLOCK NUT 1/4-20
8	2	RG-0_375-0_875-0_125	RUBBER GROMMET 0.375 ID,0.875 OD
9	6	WASH-0_25-0_62-0_04-RH-SS	WASHER 1/4 x 0.62 x 0.04

AL600/AL690

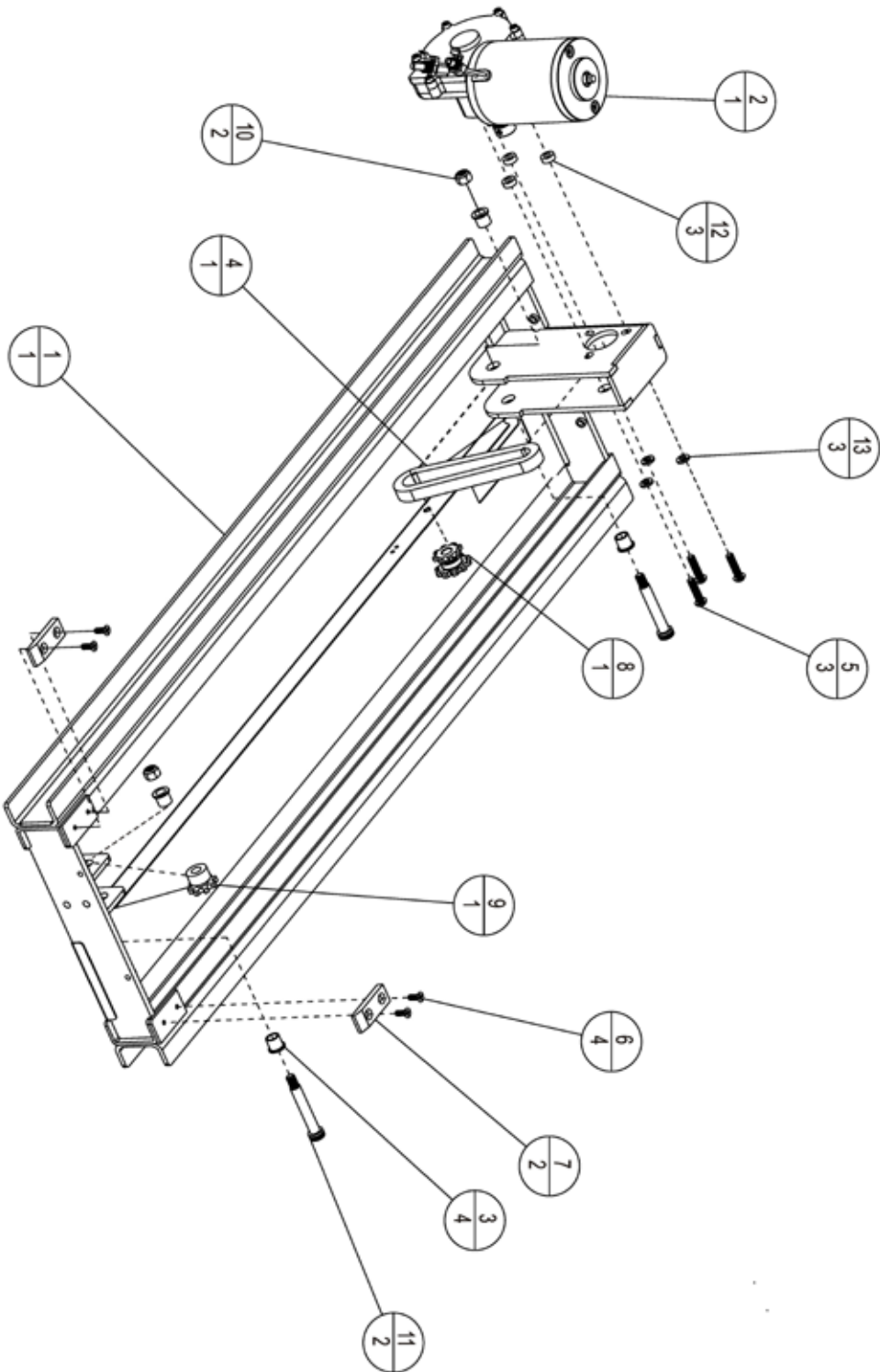
BASE STAGE ASSEMBLY



AL600/AL690

ASSEMBLY PARTS			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	221-ZC01-CA	HPL MIDDLE STAGE
2	1	700-3803-AC	MOTOR, 12VDC, MD ROTATIONAL
3	4	ALA21411	FLANGE BUSHING BRZ 3/8 x 1/2 x 1/2
4	1	ALA60022	H600802 VERTICAL CHAIN
5	3	BHCS-0_25-28-1_00-SS	BHCS-1/4-28 x 1.00 -18-8SS
6	4	FHMS-10-24-0_50-NP-Z	FLAT HEAD 10-24 x 0.50 w/ PATCH
7	2	H600132	AL600 PLASTIC SHIM
8	1	H600135	DOUBLE SPROCKET, 10-35 & 8-35
9	1	H600150	SPROCKET 35B8
10	2	NUT-0_31-18-NYLOCK-Z	NYLOCK NUT: 5/16-18
11	2	SHS8-0_37-2_00-Z	SHOULDER BOLT: 3/8 X 2.00
12	3	SPCR-0_25-0_50-0_18-N	SPACER: ID=.25, OD=.50, L=.188
13	3	WASH-0_25-0_50-0_06-SL-Z	SPLIT LOCK WASHER 1/4

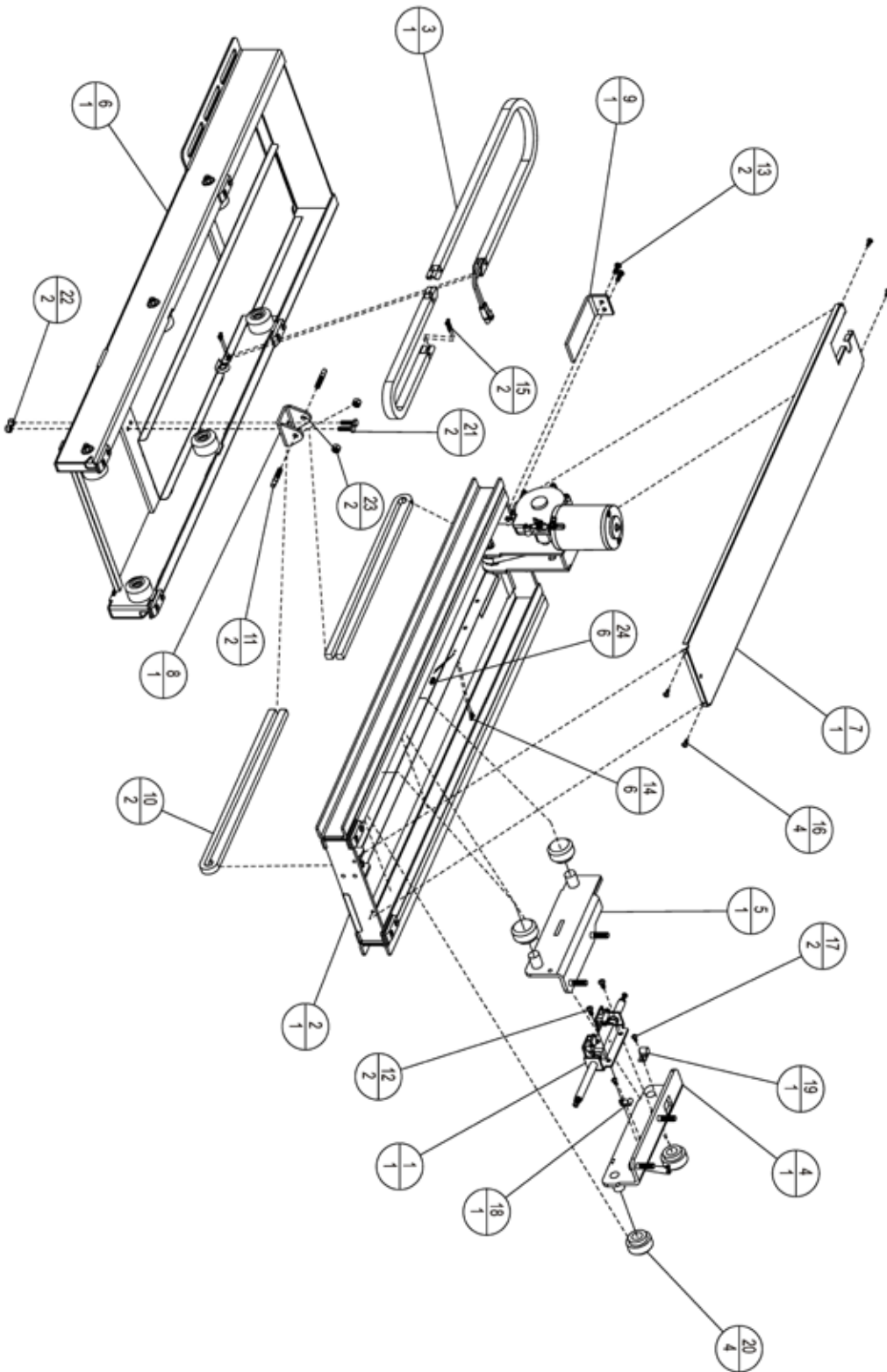
AL600/AL690 MIDDLE STAGE ASSEMBLY



AL600/AL690**HORIZONTAL ASSEMBLY PARTS LIST**

			ASSEMBLY PARTS	
ITEM	QTY	PART NO.	DESCRIPTION	
1	1	218-3C01-AA	HYBRID STOP ROD AND MICRO SWITCH ASSEMBLY	
2	1	220-ZC01-AB	MIDDLE STAGE ASSEMBLY	
3	1	390-00032	WIRE HARNESS KIT, HYBRID, UMB	
4	1	201-3C01-CA	PASSENGERSIDE WHEELS	
5	1	202-ZC01-CA	DRIVERSIDE WHEELS	
6	1	210-ZC01-AA	BASE STAGE ASSEMBLY	
7	1	531-ZC01-CA	COVER MID STAGE	
8	1	542-ZC01-CA	BASE CHAIN BRACKET	
9	1	563-ZC01-CA	MIDDLE STAGE LIMITING BRACKET	
10	2	ALA60020	HORIZONTAL CHAIN	
11	2	ALA62099	CHAIN TENSIONER BOLT	
12	2	BHCS-0_25-20-0_50	BUTTON HEAD 1/4-20 x 0.50	
13	2	BHCS-0_25-20-0_75-SS	BUTTON HEAD 1/4-20 x 0.75	
14	6	BHCS-4-40-0_31-SS	BUTTON HEAD 4-40 x 0.3125	
15	2	BHCS-4-40-0_75-SS	BUTTON HEAD CAP SCREW, 4-40 x 3/4", ZP	
16	4	BHCS-10-24-0_50-SS	BUTTON HEAD 10-24 x 0.50	
17	2	BHCS-10-32-0_37	BHCS 10-32 x 0.375	
18	1	C36001835	CLIP, "P" 1/4", (RICHCO , INC E4-AM OR EQ.)	
19	1	C36010423	CLIP, "P" 7/16" (HEYCO 3377 OR EQ.)	
20	4	H800158	REAR ROLLER	
21	2	HHCS-0_25-20-0_75-NP-Z	HEX HEAD CAP SCREW, 1/4-20 x 0.75", NYLOC PATCH, ZINC	
22	2	NUT-0_25-20-NYLOCK-Z	NYLOCK NUT 1/4-20	
23	2	NUT-0_31-18-NYLOCK-Z	NYLOCK NUT: 5/16-18	
24	6	NUT-4-40-KEPS-Z	4-40 NUT WITH EXTRUDED FINGER WASHER	

AL600/AL690 HORIZONTAL ASSEMBLY

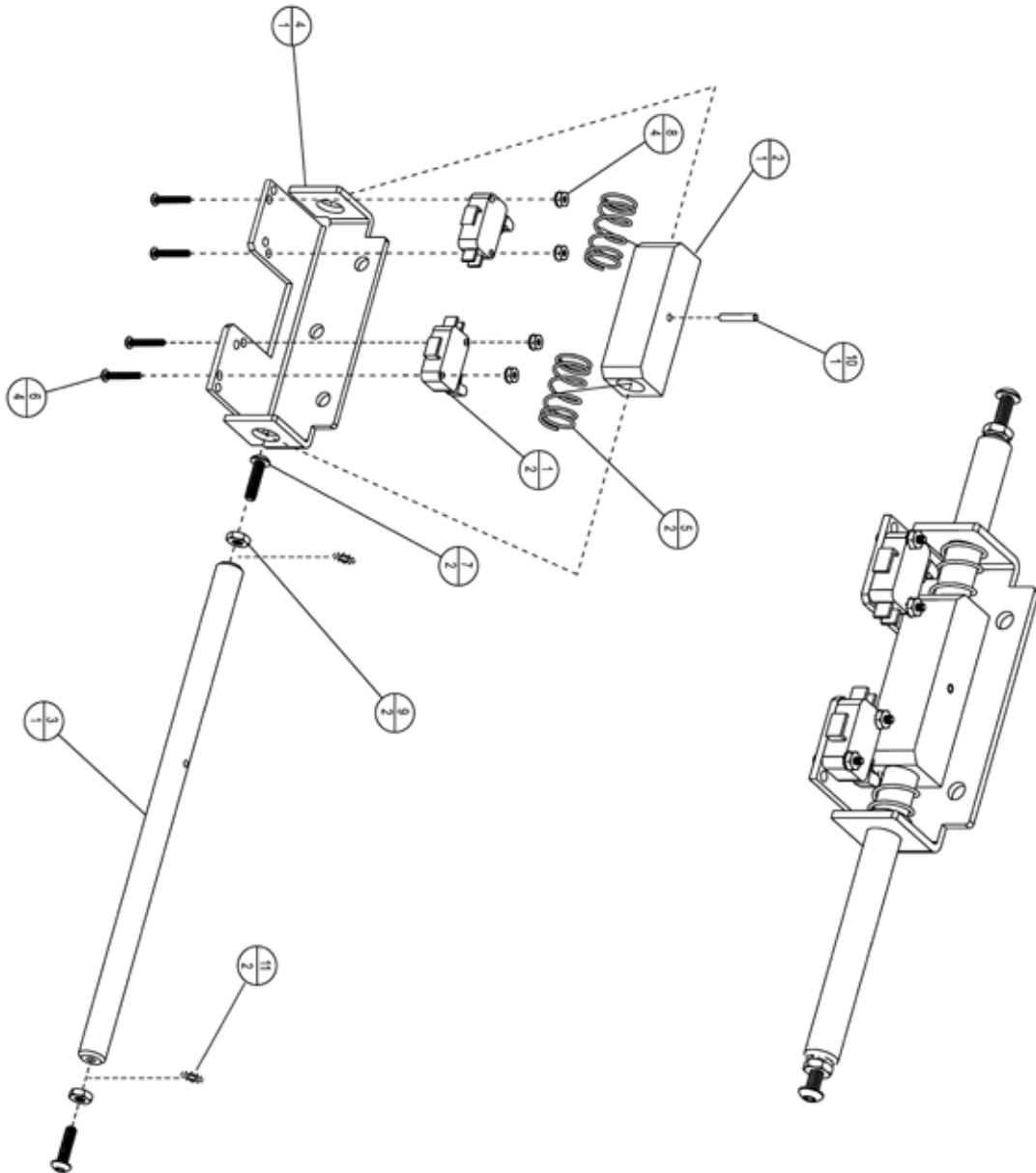


AL600/AL690**STOP ROD AND MICRO SWITCH ASSEMBLY PARTS LIST**

ITEM	QTY	PART NO.	ASSEMBLY PARTS	
			DESCRIPTION	
1	2	303-ZC04-AC	LIMIT SWITCH	
2	1	406-ZC04-AG	MICRO SWITCH - ACTIVATION BLOCK	
3	1	407-3C01-AA	HYBRID MICRO SWITCH STOP ROD	
4	1	535-ZC04-PG	MICRO SWITCH ROD SUPPORT - REAR	
5	2	536-ZC04-AB	SPRING 1.25" X .66" OD	
6	4	BHCS-4-40-0_75-SS	4-40 X .75" BUTTON HEAD CAP SCREW	
7	2	BHCS-10-24-0_75-SS	BUTTON HEAD CAP SCREW, 10-24 X 3/4", 18-8SS	
8	4	NUT-4-40-KEPS-Z	4-40 NUT WITH EXTRUDED FINGER WASHER	
9	2	NUT-10-24-HEX-SS	HEX THIN NUT, 10-24, 18-8SS	
10	1	PIN-0_12-1_00-RP-Z	ROLL PIN DIA 0.125 X 1.00 STEEL, ZINC PLATE	
11	2	WASH-10-ETLOCK-Z	WASHER, EXTERNAL TOOTH, #10, Z	

AL600/AL690

STOP ROD AND MICRO SWITCH ASSEMBLY

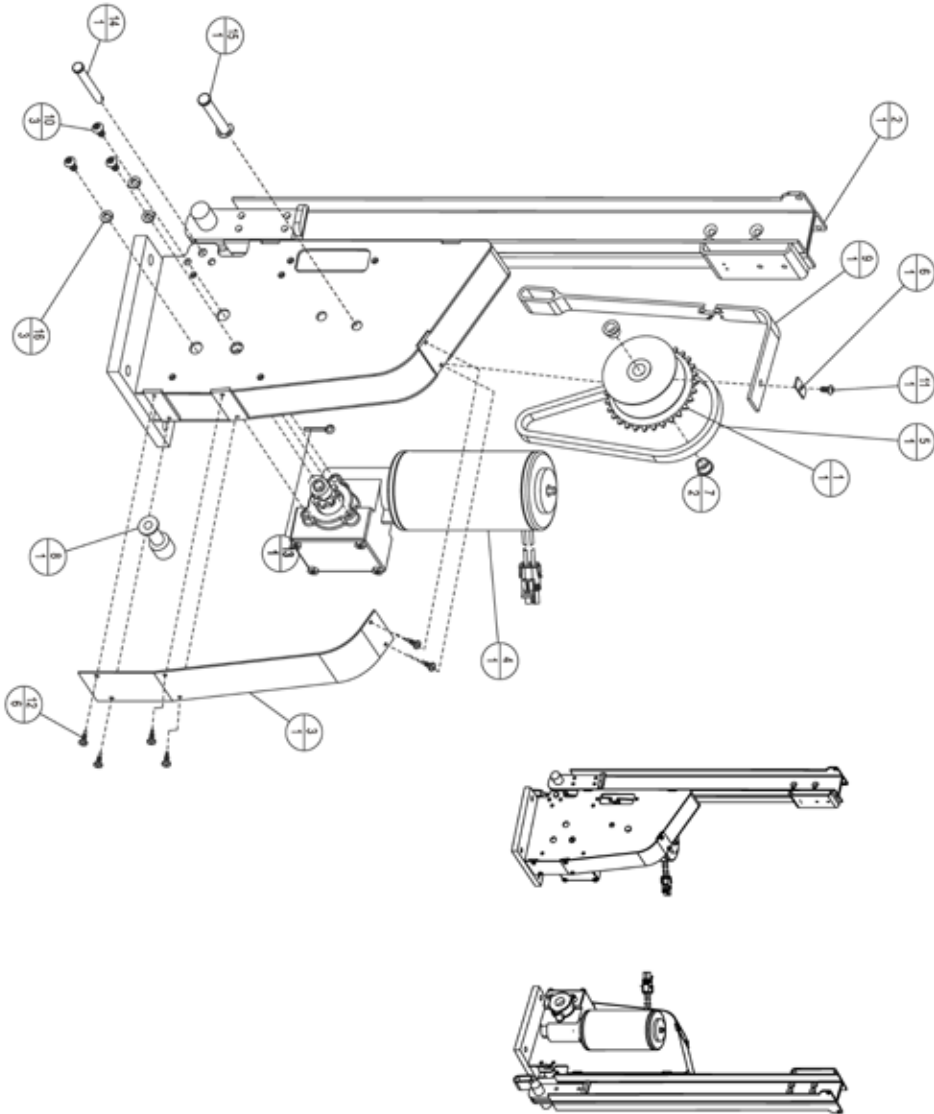


AL600/AL690**DRIVE TOWER ASSEMBLY PARTS LIST**

ITEM	QTY	PART NO.	ASSEMBLY PARTS	
			DESCRIPTION	
1	1	214-3C01-PA	SPOOL, LIFTING, HYBRID, 30 TOOTH	
2	1	241-3C01-CE	HPL UPPER CAR ASSEMBLY, POWDER COATED	
3	1	541-ZC01-CA	HYBRID CHAIN COVER	
4	1	700-3C01-AA	HYBRID LIFTING MOTOR, EUCLID	
5	1	ALA21020	SPOOL CHAIN	
6	1	ALA21055	STRAP TAB	
7	2	ALA21410	FLANGE BUSHING BRZ 3/8 x 1/2 x 3/8	
8	1	ALA6701	STRAP ROLLER	
9	1	ALA67999	LIFTING STRAP	
10	3	BHCS-0_25-28-0_50-SS	BUTTON HEAD 1/4-28 x 0.50	
11	1	BHCS-10-32-0_37	BHCS 10-32 x 0.375	
12	6	PHTS-8-0_50-Z	PAN HEAD TAP #8 x 0.50	
13	1	PIN-0_12-1_50-CO-SS	COTTER PIN	
14	1	PIN-0_31-2_50-CL-Z	CLEVIS PIN: 5/16 X 2.50 [2.28 USABLE]	
15	1	PIN-0_37-2_50-CL-Z	CLEVIS PIN: 3/8 x 2.50 [2.34 USABLE]	
16	3	WASH-0_25-0_50-0_06-SL-Z	SPLIT LOCK WASHER 1/4	

AL600/AL690

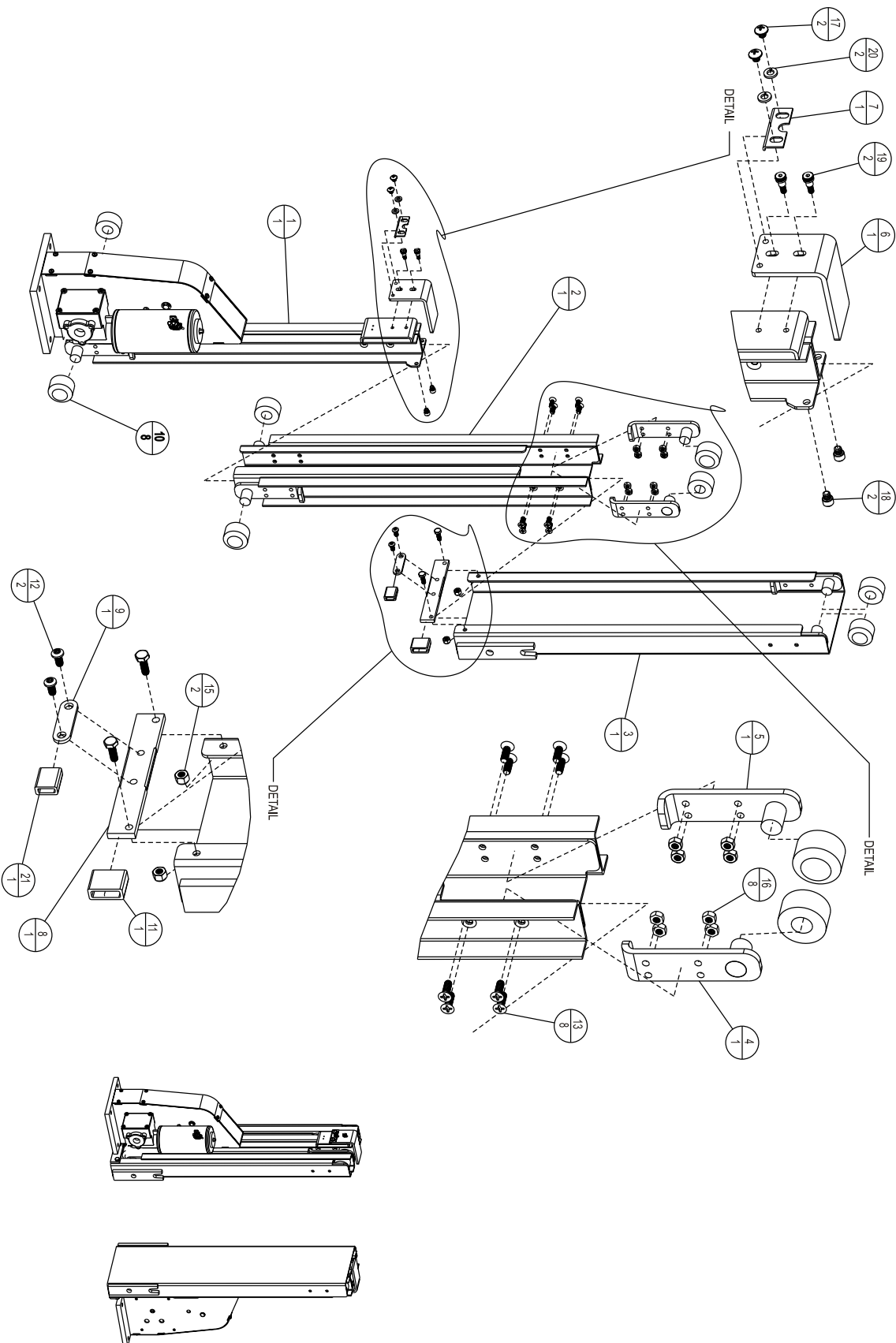
DRIVE TOWER ASSEMBLY



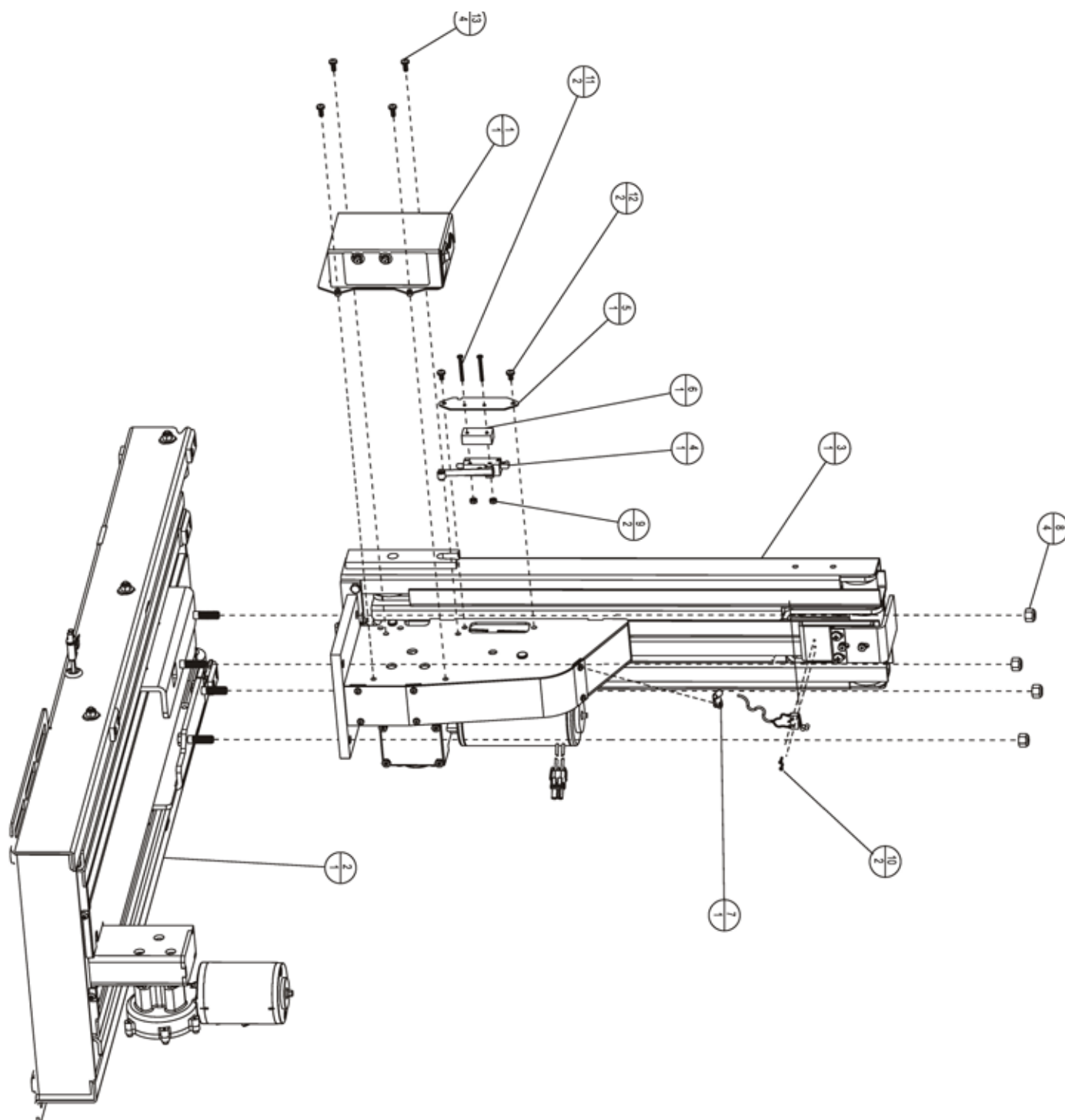
AL600/AL690**TOWER ASSEMBLY PARTS LIST**

			ASSEMBLY PARTS
ITEM	QTY	PART NO.	DESCRIPTION
1	1	240-3C01-AA	HYBRID INNER TOWER VERTICAL ASSEMBLY
2	1	251-ZC01-CA	HPL MIDDLE CAR ASSEMBLY
3	1	253-ZC01-CA	LOWER CAR ASSEMBLY
4	1	256-ZC01-CA	HYBRID AXLE ASSY LEFT
5	1	257-ZC01-CA	HYBRID AXLE ASSY RIGHT
6	1	502-ZC01-CA	HYBRID TOP LIMIT PLATE
7	1	503-ZC01-CA	HYBRID TOP LIMIT ADJUSTMENT
8	1	579-ZC01-CA	HYBRID STRAP MOUNTING PLATE
9	1	ALA50006C	U-BOLT BACKING PLATE
10	8	ALA60061	ROLLER
11	1	ALA6789	BACKING PLATE RUBBER, 1" BLACK, ADHESIVE
12	2	BHCS-0_25-20--0_50	BUTTON HEAD 1/4-20 x 0.50
13	8	FHMS-0_25-20--0_75-NP-Z	FLAT HEAD w/PATCH 1/4-20 X 0.75
14	2	HHCS-0_25-20-0_75-Z	HEX HEAD 1/4-20 x 0.75
15	2	NUT-0_25-20-NYLOCK-Z	NYLOCK NUT 1/4-20
16	8	NUT-025-20-HEX-Z	NUT, HEX, 1/4-20, ZINC PLATE
17	2	RHMS-0_25-20--0_25-Z	ROUND HEAD 1/4-20 X 0.25
18	2	SHCS-0_25-20--0_25-Z	SOCKET HEAD 1/4-20 x 0.25
19	2	SHSB-0_25--0_25-SS	SHOULDER BOLT 1/4 SHAFT X 0.25
20	2	WASH-0_25-0_50--0_06-SL-Z	SPLIT LOCK WASHER 1/4

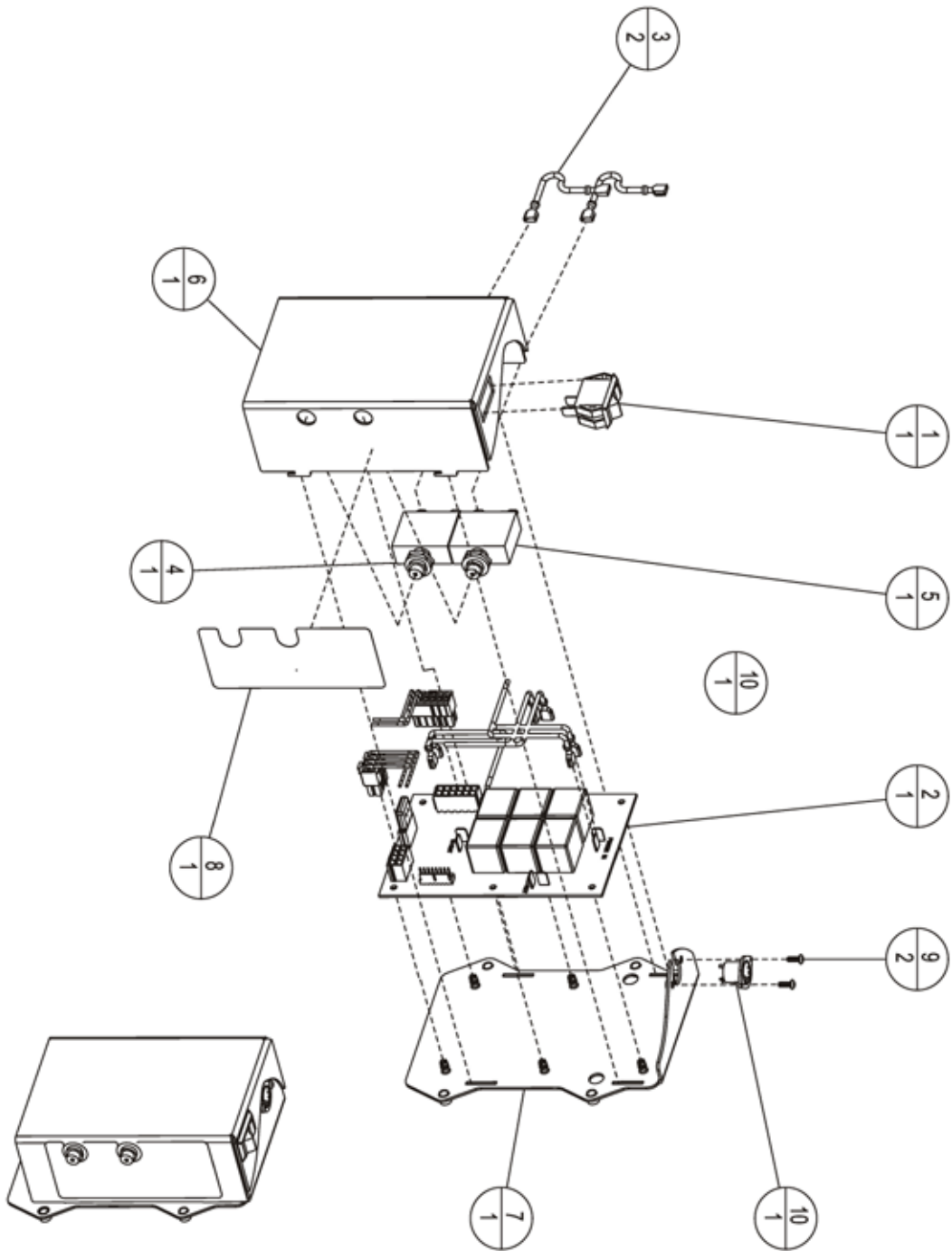
AL600/AL690 TOWER ASSEMBLY



ASSEMBLY PARTS			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	130-00502	HYBRID POWER CONTROL ASSEMBLY
2	1	230-3C01-AA	HYBRID HORIZONTAL DRIVETRAIN ASSEMBLY
3	1	250-3C01-AA	HYBRID TOWER ASSEMBLY
4	1	370-00032	STRAP SLACK SWITCH - AL600/690
5	1	530-00612C	SLACK SWITCH COVER, POWDER COATED
6	1	560-00046	AL600 SLACK SWITCH SPACER
7	1	C36001835	CLIP, "P" 1/4", (RICHCO , INC E4-AM OR EQ.)
8	4	NUT-0_37-16-NYL0CK-Z	NYLOCK 3/8-16
9	2	NUT-6-32-KEPS-SS	NUT, 6-32 EXT TOOTH WASHER
10	2	PHMS-2-56-0_43-Z	PHILLIPS PAN MACHINE SCREW, 2-56 x 7/16"L, ZINC PLATE
11	2	PHMS-6-32-1_38-SS	PHMS, 6-32 x 1.375, 18-8 SS SS
12	2	PHMS-10-24-0_38_EXT-Z	PHMS-10-24 x 3/8" w/ EXT TOOTH WASH- ZINC
13	4	PHMS-10-24-0_50-EXT-Z	PHMS-10-24 x 0.50 w/EXT TOOTH WASH-Z



ASSEMBLY PARTS			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	312-ZC04-AA	ON/OFF SWITCH
2	1	390-00010	UNIVERSAL MOBILITY BOARD
3	2	390-00076	JUMPER WIRE, 12 GA, RED, GPT 2X FEMALE QC
4	1	390-00083	CIRCUIT BREAKER, 10 AMP, TYPE III, MANUAL RESET
5	1	390-00084	CIRCUIT BREAKER, 15 AMP, TYPE III, MANUAL RESET
6	1	530-00331C	LID, ENCLOSURE, HYBRID UMB, POWDER COATED
7	1	530-00615C	ENCLOSURE BACK, HYBRID UMB, POWDER COATED
8	1	620-00063	STICKER, CIRCUIT BREAKER, AL600-690
9	2	BHCS-4-40-0_31-SS	BUTTON HEAD 4-40 x 0.3125
10	1	390-00032	PART OF WIRING HARNESS 390-00032

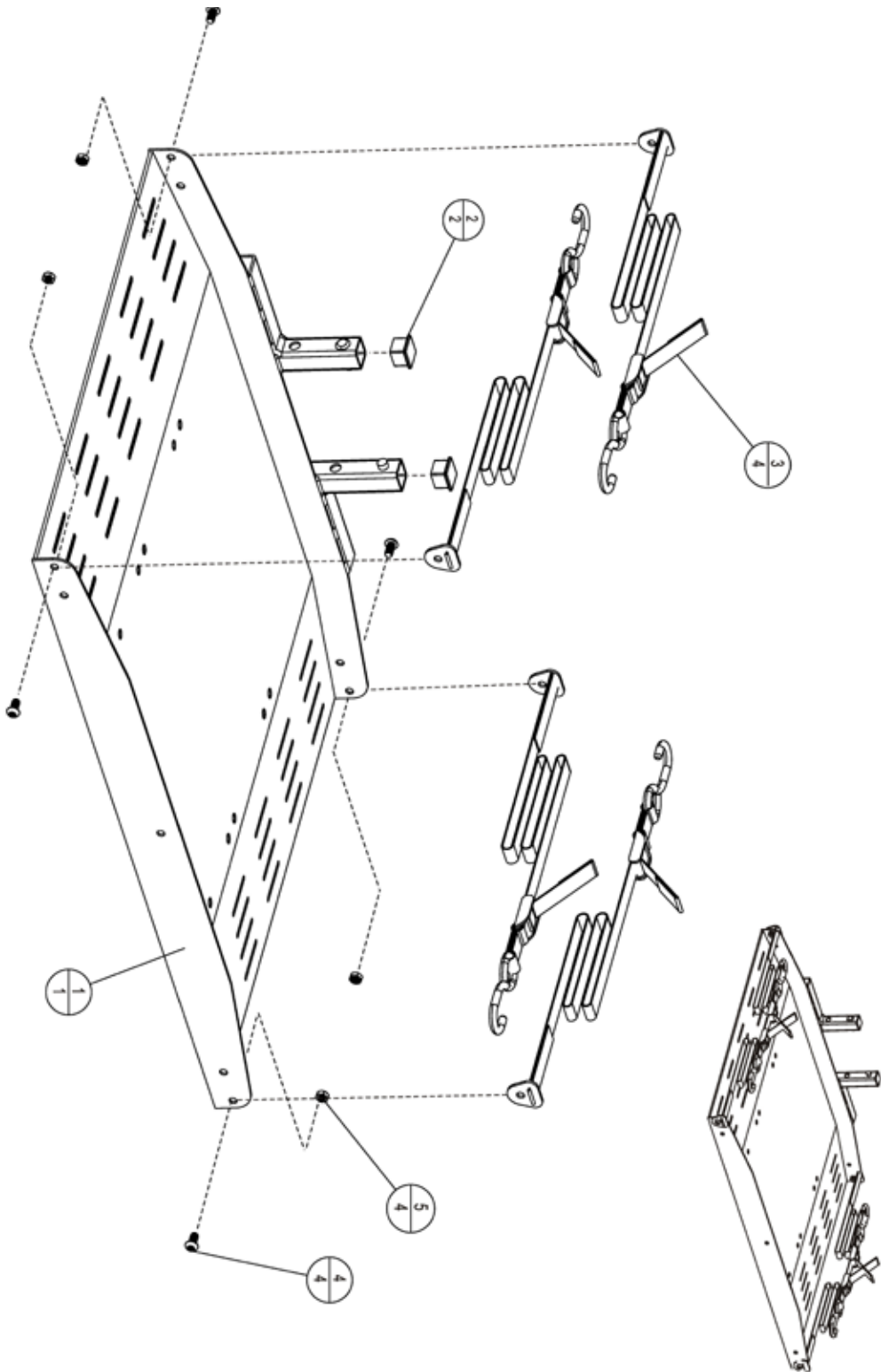


AL600**PLATFORM ASSEMBLY PARTS LIST**

ASSEMBLY PARTS			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	271-ZC01-CA	HPL PLATFORM
2	2	400-ZC01-AA	INSERT, SQUARE, 1.25, BLACK PLASTIC
3	4	ALA69073	PIONEER STRAP ASSEMBLY
4	4	BHCS-0_37-16-0_75-SS	BUTTON HEAD 3/8-16 x 0.75
5	4	NUT-0_37-16-NYLOCK-Z	NYLOCK 3/8-16

AL600

PLATFORM ASSEMBLY

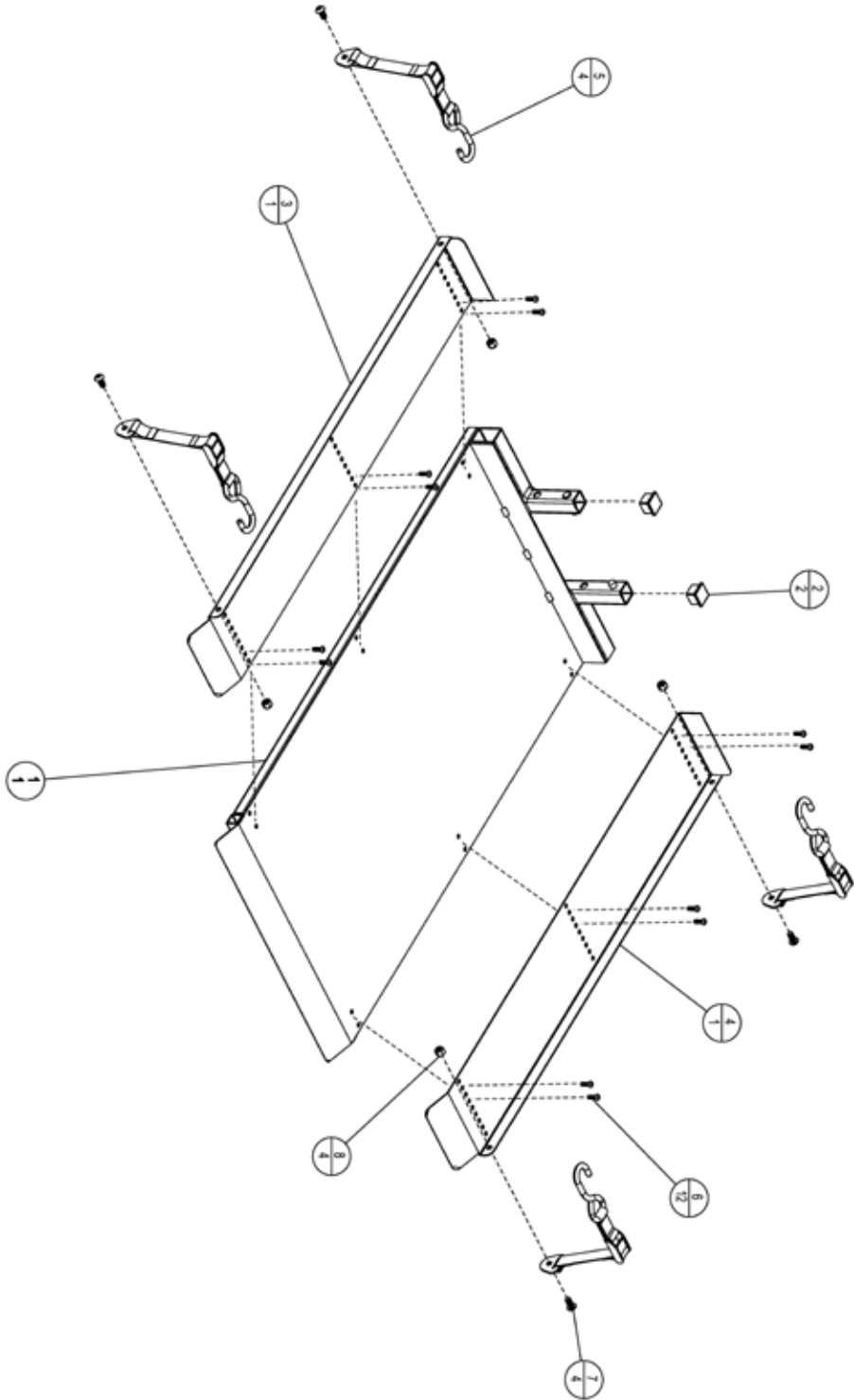


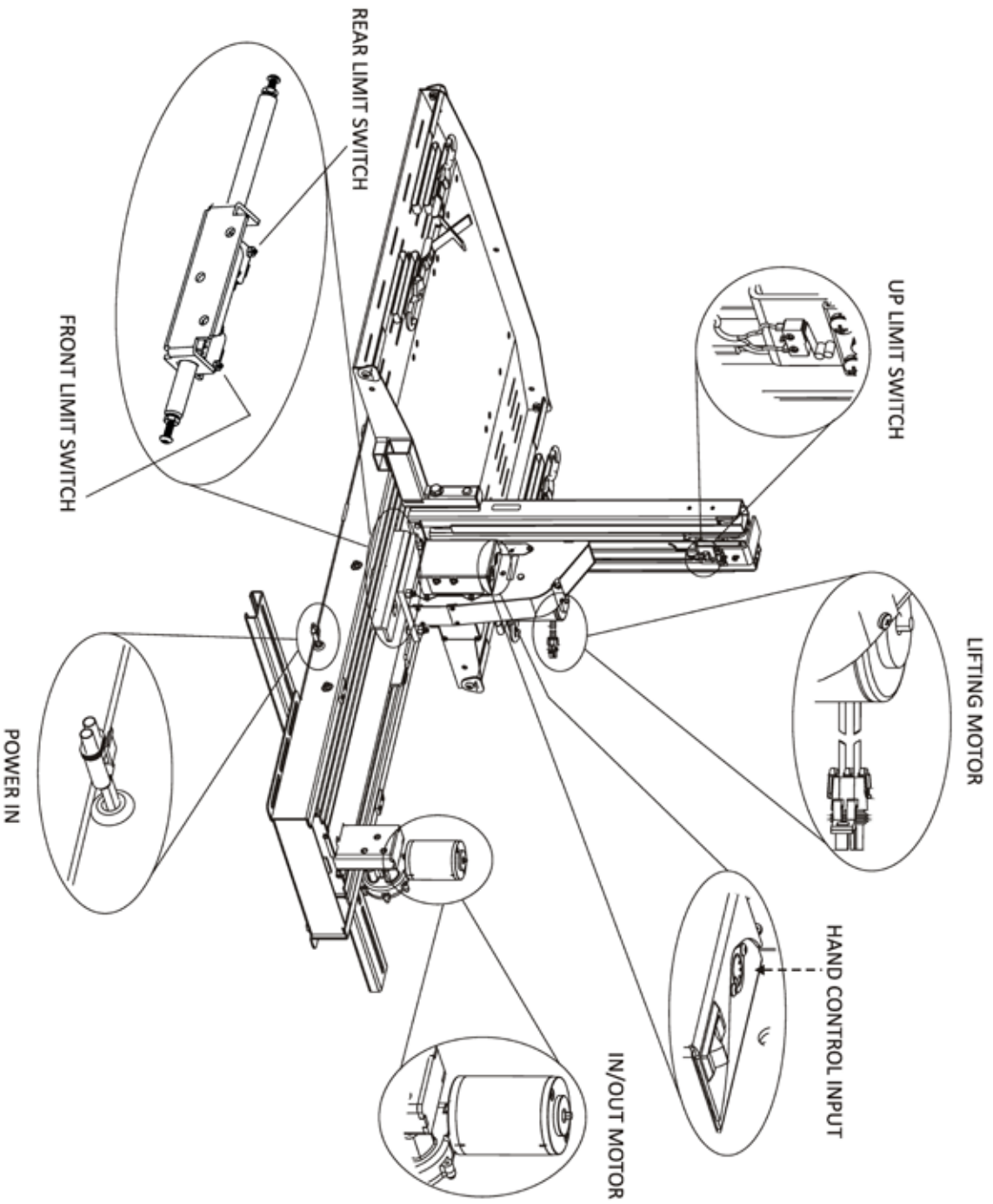
AL690

ASSEMBLY PARTS			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	279-ZC02-CA	PC INNER PLATFORM HYBRID SIDE DOOR
2	2	400-ZC01-AA	INSERT, SQUARE, 1.25, BLACK PLASTIC
3	1	578-ZC02-CA	SIDE DOOR ADJ PLATFORM END LEFT
4	1	579-ZC02-CA	SIDE DOOR ADJ PLATFORM END RIGHT
5	4	ALA69073_	PIONEER STRAP ASSEMBLY
6	12	BHCS0_25-20-0_75-SS	BUTTON HEAD 1/4-20 x 0.75
7	4	BHCS0_37-16-0_75-SS	BUTTON HEAD 3/8-16 x 0.75
8	4	NUT-0_37-16-NYLOCK-Z	NUT, NYLOCK, 3/8-16, ZP

AL690

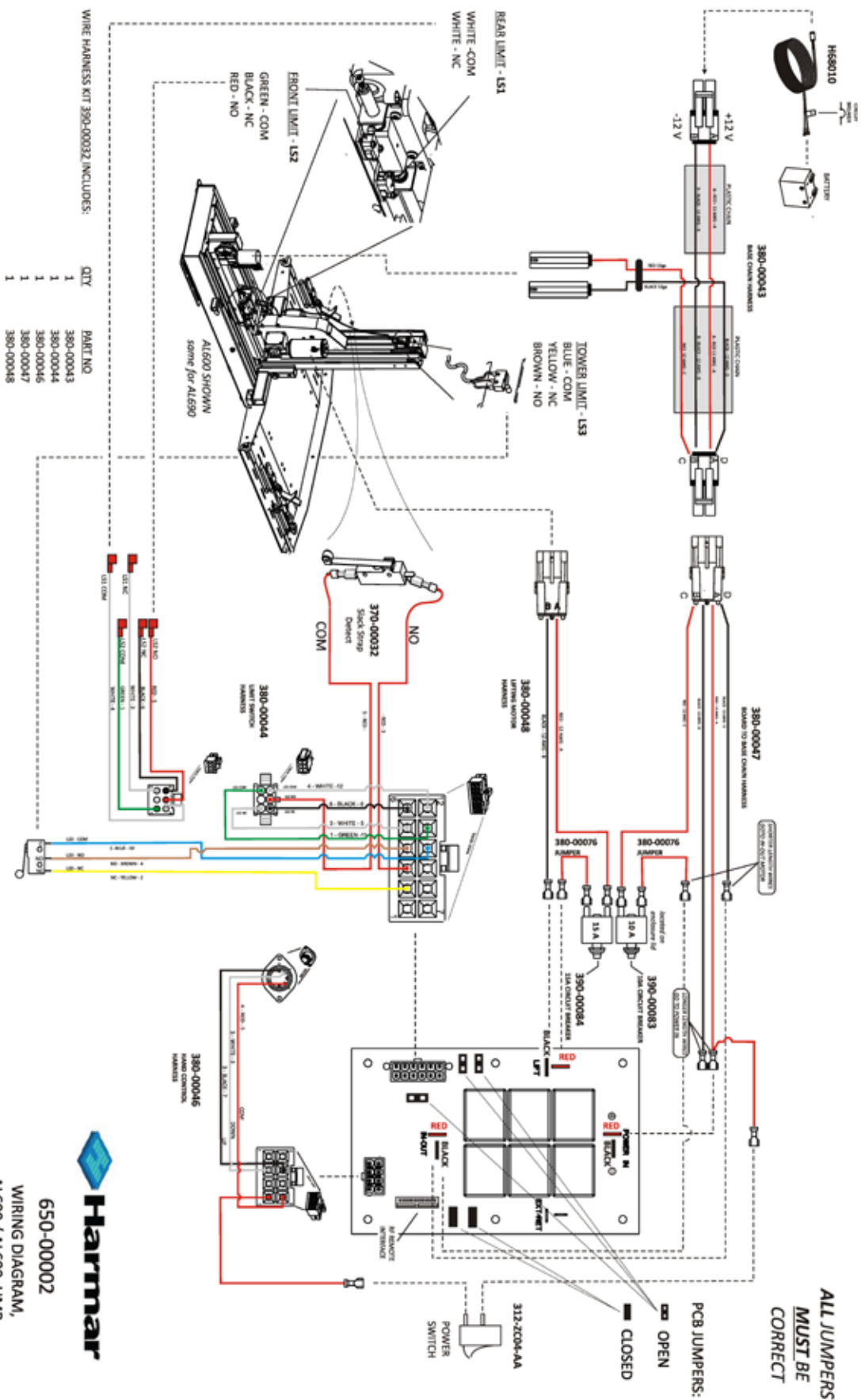
PLATFORM ASSEMBLY





Wiring Diagram

SECTION 2: INSTALLER



Service Description:

Service Date:

Performed By:

Service Description:

Service Date:

Performed By:

Service Description:

Service Date:

Performed By:



VEHICLE LIFT THREE YEAR TRANSFERABLE WARRANTY

LIMITED WARRANTY CERTIFICATE

Harmar warrants to the owner of the Vehicle Lift manufactured by us to be free from defects in material, mechanical and electrical components (parts) for a period of three (3) years, provided that the products have been installed, maintained and operated properly by an Authorized Harmar Distributor or Certified Harmar Installer.

This warranty starts on the date of initial product installation (not to exceed 180 days from the date of manufacture), provided the warranty certificate is completely filled out and returned to Harmar within ten (10) days of installation. Harmar warrants its lift product against defects in material, mechanical and electrical components (parts), excluding labor cost, batteries, paint, rust and covers, for a period of three (3) years from date of retail purchase, provided that the products have been installed, maintained and operated properly. Harmar and its dealers shall not be liable for any consequential, special or incidental damages arising out of the purchase or use of the unit or resulting from the breach of this Limited Warranty, or any implied warranty. This warranty is transferable as long as the application is approved by Harmar's Compatability Calculator.

This warranty does not cover defects in vehicles on which Harmar products are installed or malfunctions in Harmar products caused by defects in any part of the vehicle upon which the product is installed. This warranty does not cover maintenance or adjustments. The limit of liability of Harmar and its dealer hereunder shall be the unit's purchase price. Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, or legal remedies, so these above limitations may not apply. All warranty claims must be reported to the dealer from whom the lift was purchased as they have responsibility for handling warranty claims. Applications involving vehicles or mobility devices not approved by Harmar's Compatability Calculator will void the warranty.

The dealer is to contact the Technical Services Department of Harmar and provide the serial number of the product along with a description and evidence of the defect(s) supporting a warranty claim. Dealers may charge for labor, service, travel, or other associated costs to make repairs, and such charges are not covered by this Limited Warranty. It is permissible to have any repairs or replacement work done as a result of any defects in material and workmanship by someone other than the Dealer under this Limited Warranty.

However, the Limited Warranty does not cover any charges or expenses assessed by any such other person or company performing such repairs or replacement work. All parts used to replace defective materials must be genuine Harmar parts to be covered by this Limited Warranty. This Limited Warranty grants specific legal rights, other rights vary from state to state. Harmar will not be charged for labor, consequential damage or repair expenses. Harmar will not, under any circumstances, be liable for the loss of the use of its products or loss of time. Defective parts must be returned, if requested, prepaid, to Harmar for inspection prior to credit or replacement. At Harmar's discretion, any part found to have been modified, over-stressed, damaged by accident, or misused is not covered by this warranty.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES OR CONDITIONS, INCLUDING ALL IMPLIED WARRANTIES OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION OF THE LIMITED WARRANTY DESCRIBED HEREIN.

Hybrid Lifts

AL600 / AL690

Installation & Owner's Manual



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