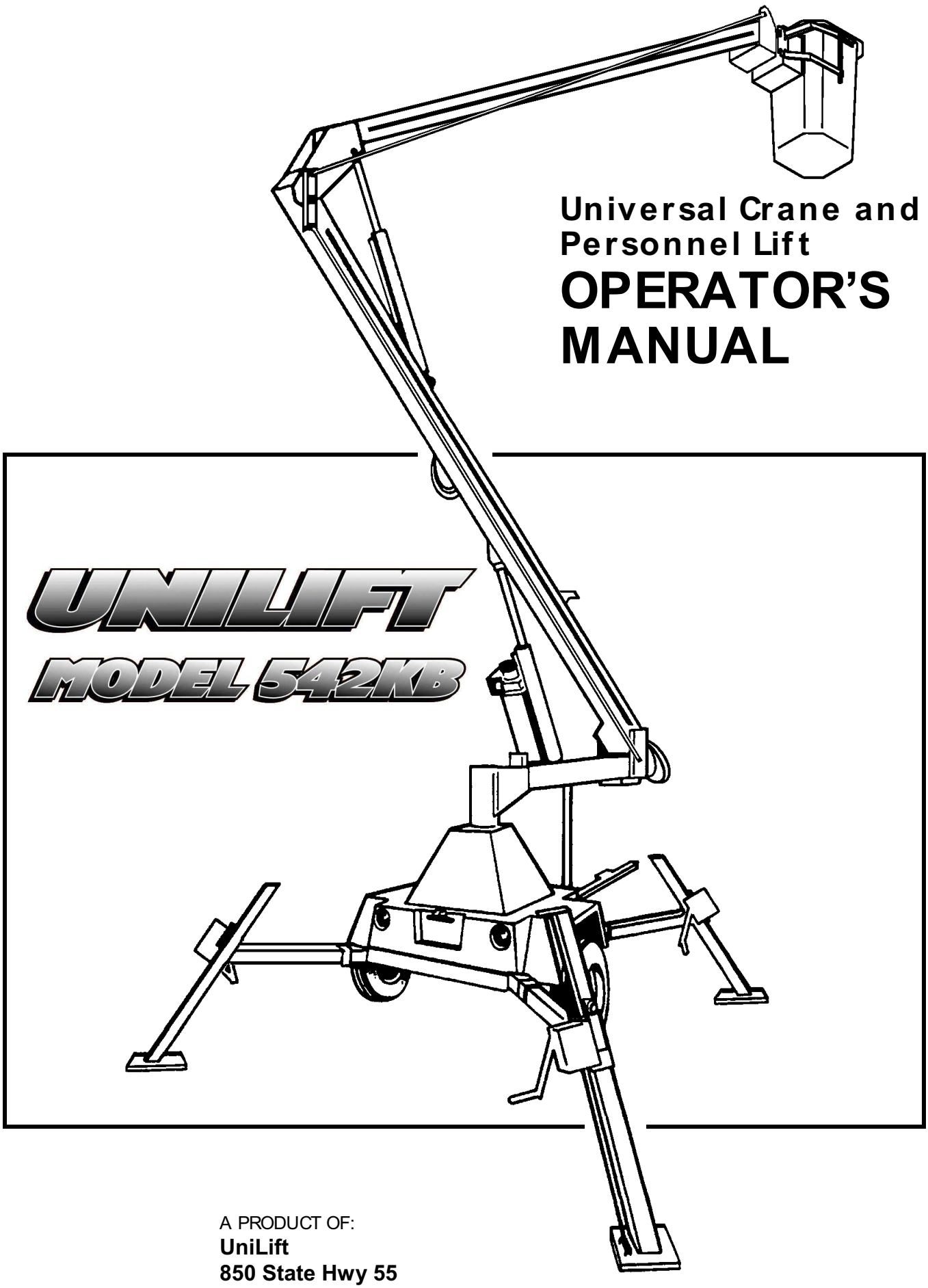

Universal Crane and Personnel Lift

OPERATOR'S MANUAL

UNILIFT

MODEL 542KB

A PRODUCT OF:
UniLift
850 State Hwy 55
Brooten MN 56316
www.ChampUniLift.com

Publication No. 4520362-1/0606

EQUIPMENT USE AND SAFETY

Safe Setup And Use Of The 542KB UniLift

Please review the following setup and use instructions before operating the 542KB UniLift.

1. Make sure the 542KB UniLift has been safely set up away from power lines ***(maintain at least 10 feet of clearance)***.

2. Disconnect the 542KB UniLift from the transporting vehicle before setup. If the unit is parked on a slope, chock the wheels or set the outriggers first, to prevent rolling.

3. Extend and set up the outriggers (setup instructions are located at each outrigger). Make sure the outriggers are set on solid footing. The green light on the lower control panel indicates that the outriggers are properly set. ***NOTE: If the green indicator light is lit before all four outriggers are set, the unit is not safe to operate.***

4. If the 542KB UniLift is set on a slope (5° maximum), the outriggers **MUST** be used for leveling.

5. Make sure all electrical power cords are safely stored to prevent tangling or crushing.

6. Always wear the proper body harness, and keep the harness secured to the lanyard ring whenever operating the 542KB UniLift from the bucket.

7. **DO NOT** exceed the manufacturer's rated lifting capacities.

8. The lower controls are for **emergency use only**, when a worker is present in the bucket.

9. It is **PROHIBITED** and **DANGEROUS** to use railings, planks, ladders, or other devices in the bucket to achieve additional working height or reach.

10. Watch for overhead obstructions when booming up.

11. Keep observers and other workers out of the work area.

12. **DO NOT** lift materials with the lanyard ring while operating the 542KB UniLift from the bucket.

13. When using the 542KB UniLift as a crane, **DO NOT** stand under the load.

14. Make sure the boom and outriggers are properly stowed, and the bucket is securely locked in place before transporting the 542KB UniLift.

15. **DO NOT** operate the 542KB UniLift if it is in need of repairs.

16. Be sure to read and thoroughly understand the **Operation Section** in the **Operators Manual**.

OPERATOR SAFETY

Training Checklist For The 542KB UniLift

Please review the Checklist items. Initial each item then sign and date this Checklist below.

_____ The **ONLY** person permitted to operate the 542KB UniLift shall be the person who has received instructions prior to rental.

_____ I have received instructions and understand the operation and proper use of the 542KB UniLift controls. I agree to use the 542KB UniLift in a manner consistent with its intended application.

_____ I have received instructions and understand the use of the outriggers to set up and level the 542KB UniLift.

_____ I understand that the maximum bucket capacity of the 542KB UniLift is 300 lbs.

_____ I have received instructions and understand the use of the Emergency Manual Lowering Valve and other emergency procedures.

_____ I will not attempt to alter or disable any safety devices, guards, or interlocks.

_____ I have been shown the location of the Operators Manual, and was instructed to read the manual prior to operation.

_____ I understand that the 542KB UniLift is **NOT INSULATED** and shall not be used within 10 feet of any power lines.

_____ I will wear the body harness, with the 4 ft. lanyard attached, at all times when operating the 542KB UniLift from the bucket.

_____ I have received instructions and understand the procedures for stowing the boom and outriggers, and locking the bucket in place before transporting the 542KB UniLift.

_____ Before transporting the 542KB UniLift, I will verify that the tongue is securely attached and locked to a 2-inch hitch ball, safety chains are in place, and the trailer lights are operable.

Signed: _____ Date: _____

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DESCRIPTION

The UniLift Model 542 KB Universal Crane and Personnel Lift functions as both a personnel carrier and crane, in one unit. A single operator can use the UniLift as a personnel carrier or a universal crane with minimal conversion time. The unit is also light enough to be rolled by one person.

The UniLift Model 542 KB consists of the following basic components:

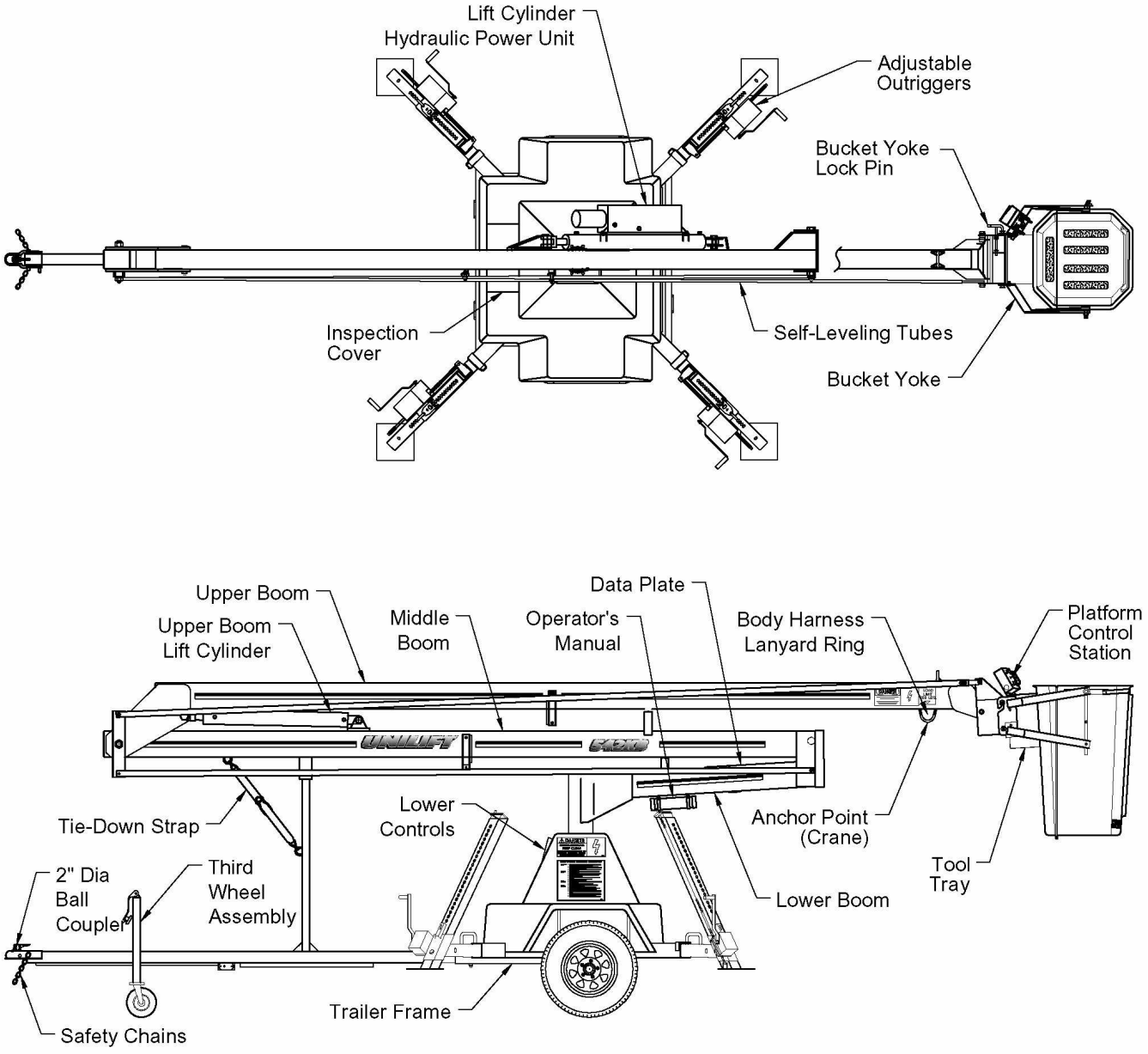


Figure i-1.
Self-Leveling UniLift With Personnel Bucket Attached

ADJUSTABLE OUTRIGGERS

Outriggers are used for absorption of tipping load during use, and are manually set. Adjustable up to three feet, the outriggers assure that the unit can be leveled and rests firmly on solid footing. Electrical interlocks prevent lift/crane operation until all four outriggers are fully extended and resting firmly on the ground. A green light is located on the base control station, and indicates that all outriggers are set up on solid footing.

SINGLE AXLE TRAILER FRAME WITH 2" (50.8 mm) BALL COUPLER WITH SURGE BRAKES, AND THIRD WHEEL

A torsion bar type of axle, rated at 3500 pounds (1589 kg), is used for road stability while towing. The 2" (50.8 mm) diameter ball coupler with surge brakes, and third wheel assembly are provided as standard equipment, allowing the unit to be transported to a job site and unhitched. **WARNING: DO NOT ATTEMPT TO TOW THIS LIFT WITH A MULTI-PIECE HITCH BALL OR A HITCH BALL OTHER THAN 2" (50.8 mm).** Safety chains are also provided and shall always be attached when the unit is to be transported. Tire size is P205/75R14 with a max load rating of 1532 Lbs. (696 kg) at 35 psi (241 kPa).

PLATFORM AND LOWER CONTROLS

Full controls are provided at both the bucket and the base. The DOWN OVERRIDE-OFF-ENABLE switch (Platform Control Station), and the PLATFORM CONTROL/LOWER CONTROL switch (Lower Control Station) are used to enable each station. A key switch is provided at the Lower Control Station for security. Emergency lowering controls are also provided at the end of the upper boom, and inside the base assembly.

POWER REQUIREMENTS AND CHARGING CAPABILITIES

The unit is powered by two, 6-VDC deep-cycle batteries connected in series, yielding 12 VDC for approximately eight hours of operation under typical use. A built-in 12-VDC, 30-amp battery charger is provided to restore charge to the batteries, and is equipped with automatic cutoff when full charge is reached. The battery cutout relay also permits operation while the unit is plugged in and the batteries are recharging. (See the section on Inspection and Maintenance for more details on battery system.)

HYDRAULIC LIFT CYLINDERS

Aerial lift is provided by two 3-1/2 inch (88.9 mm), double-acting cylinders: the lower lift cylinder is attached to the lower and middle booms. The upper lift cylinder is attached to the upper and middle booms. Hydraulic power is provided by a 12-VDC hydraulic system, connected to the lower lift cylinder.

SURGE BRAKES

Hydraulic brakes are standard equipment. They are surge activated and use a standard 2-inch (50.8 mm) diameter ball coupler. Breakaway chains are provided for emergency stopping.

OVER-CENTER SAFETY SWITCH

An over-center safety switch is mounted to the upper boom. This switch continuously monitors the angle of the upper boom, and prevents it from going into an over-center position.

PERSONNEL BUCKET

The fiberglass personnel bucket is self-leveled by the linkage which is connected to the boom structure. Older models were gravity leveled and hydraulically dampened with a positive work-position locking handle. The bucket is made removable for crane operation if required. Travel limits prevent continuous rotation of the booms and bucket. A body harness is provided with each unit and shall be worn at all times when operating unit from the bucket.

LEVELING SAFETY SWITCH (OPTION)

The leveling safety switch continuously monitors the trailer for an unsafe tilt condition (exceeding 5°) during set-up and operation. The green Trailer Level Indicator Light is lit when the trailer tilt is within the 5° range. If the tilt exceeds the limit during set-up, the controls will not operate. If an unsafe condition occurs during operation, only the boom DOWN functions will work.

110-VAC ACCESSORY POWER OUTLET (OPTION)

A 110-VAC outlet, 15 amps maximum capacity, is available at the bucket to power accessory tools.

UNIVERSAL CRANE

An anchor point is provided on the upper boom for lifting loads up to 300 pounds (136 kg) with the personnel bucket removed. (See Figure i-2)

WARNING: NEVER LIFT OVER SPECIFIED WEIGHT OR TIPPING CAN OCCUR, CAUSING SERIOUS INJURY OR DEATH TO OPERATOR.

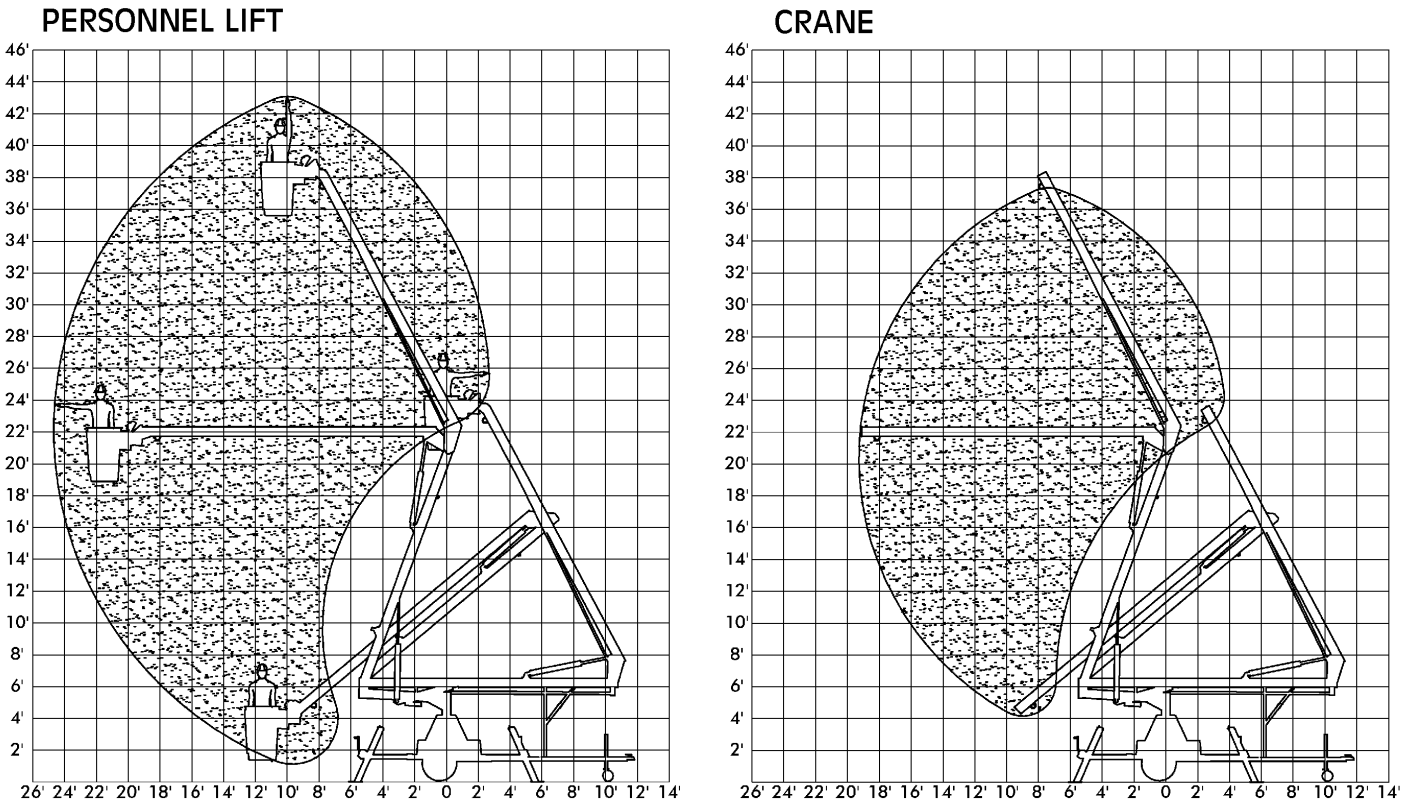


Figure i-2
Personnel Lift/Crane Work Area

DANGER
ELECTROCUTION HAZARD, STAY AT LEAST 10 FEET (3 m) FROM POWER LINES. THIS UNIT IS NOT INSULATED FROM ELECTRIC SHOCK. DEATH OR SERIOUS INJURY TO OPERATORS AND/OR BYSTANDERS CAN RESULT FROM CONTACT WITH ELECTRICAL WIRES.

SPECIFICATIONS

GENERAL	Personnel Bucket	Crane
Working Height	42'-0" (12.80 m)	36'-0" (11.00 m) *
Platform Height	36'-0" (11.00 m)	------
Platform Reach from Center of Rotation	22.6' (6.8 m)	18' (5.5 m)
Stowed Travel Height	7'-10" (2.39 m)	7'-10" (2.39 m)
Stowed Travel Width	7'-6" (2.29 m)	7'-6" (2.29 m)
7'-3" (2.22 m)†	7'-3" (2.22 m) †	
Stowed Travel Length	25'-6" (7.8 m)	25'-6" (7.8 m)
Rated Load Capacity	300 lbs. (136 kg)	300 lbs. (136 kg)
Shipping Weight	2900 lbs. (1315 kg)	2900 lbs. (1315 kg)
Tongue Weight	210 lbs. (95 kg)	210 lbs. (95 kg)
System Operating Voltage	12 VDC	12 VDC
Minimum Temperature for Operation	0° F (-18° C)	0°F (-18° C)
Leveling Capability	10°	10°

HYDRAULIC SYSTEM

Hydraulic Fluid	Dexron III
Hydraulic System Capacity	16 qt.
Hydraulic Tank Capacity	12 qt.
Hydraulic System Rated Pressure	2500 PSI (17.23 MPa)
Normal Operation Pressure	700 PSI (4.83 MPa)
Maximum Operating Pressure	1450 PSI (10.0 MPa)

* At point where boom hook is 8 feet from center of rotation.

† Unit with Jack-Type outriggers

MINIMUM VEHICLE TIPPING LOAD, HORIZONTALLY EXTENDED

On level ground (1-1/2 x rated load)	450 lbs. (204 kg)
On 5° slope (1-1/3 x rated load)	400 lbs.(182 kg)

BUCKET TRAVEL

Middle Boom Travel 0° to + 80° (Hydraulically Operated/Electrical Limit Switch)

Upper Boom Travel 0° to + 60° (Hydraulically Operated/Electrical Limit Switch)

Rotation 350° non-continuous with Electrical Limit Switches

NOTE: UniLift Model 542 KB Lift/Cranes are designed to comply with ANSI Standard A92.2. Dealers, owners, users, operators, renters, lessors and lessees shall comply with the appropriate section(s) of ANSI Standard A92.2. Use of products must conform to safe practice and applicable statutes, codes and ordinances. Drawings are illustrative only and do not necessarily depict exact configuration of products offered at a particular time. Specifications contained herein are subject to change without notice.

OPERATION

DANGER

UNDER NO CIRCUMSTANCES SHOULD THE AERIAL LIFT BE USED UNLESS THE OPERATOR IS FULLY TRAINED IN THE SAFE OPERATION OF THE MACHINE.

OPERATION INSTRUCTIONS, WARNINGS AND SAFETY INSTRUCTIONS ARE PROVIDED IN CONSPICUOUS LOCATIONS ON THE EQUIPMENT.

DEFACED OR UNREADABLE DECALS AND SIGNS SHOULD BE REPLACED IMMEDIATELY. REFER TO THE PARTS MANUAL FOR THE PART NUMBERS OF DECALS AND INSTRUCTIONS.

TRANSPORTING

The UniLift must only be transported by a vehicle weighing at least 3000 lbs. Always connect the lights and safety chains, and use safe towing practices. For maximum safety, limit the towing speed to 45 mph (72 km/h) or less.

The booms must be stored in the boom cradles when the trailer is in motion. A tie down strap is provided for travel and will prevent excessive wear due to vibration and oscillation. Also, the bucket should be hinged up, pinned, and locked into position.

CAUTION: DO NOT MOVE THE TRAILER UNLESS THE BOOMS AND BUCKET ARE IN THEIR STORAGE POSITION AND PROPERLY SECURED.

PARKING

Park the trailer on firm, level ground.

CAUTION: NEVER OPERATE THE LIFT ON A STEEP SLOPE.

Operating the lift on a steep slope can cause the trailer to become unstable and tip over. Additionally, excessive loads are induced in the rotation system. If it is necessary to work on a slight incline, it is recommended that the outriggers be set to position the trailer in a level position. **DO NOT OPERATE THE LIFT ON A SLOPE EXCEEDING 5°**.

Leveling Safety Switch Option - An optional leveling safety switch monitors the tilt of the trailer. When the green "Trailer Level" lamp is lit, the unit is within the 5° range. If the tilt of the unit exceeds 5°, the green lamp goes off and allows operation of the "lower" controls only.

CAUTION: NEVER OPERATE LIFT UNLESS ALL FOUR OUTRIGGERS ARE EXTENDED AND LOCKED. THE GROUND AROUND OUTRIGGER SUPPORT PADS MUST BE SOLID. IF GROUND IS NOT SOLID, REPOSITION THE LIFT OR PROVIDE SOLID GROUND SUPPORT.

SETTING THE OUTRIGGERS

Jack Type

1. Disengage pin A and pull the outrigger assembly out until pin A re-engages at the furthest outward outrigger position. Refer to Figure 1-1.

2. Grasp the top of the outrigger tube firmly. Disengage pin B and carefully slide the outrigger foot down. **CAUTION - WATCH YOUR FEET, OUTRIGGERS SLIDE DOWN RAPIDLY!** Refer to Figure 1-2. Extend all 4 outriggers and lower all 4 outrigger feet to solid footing before proceeding.

3. Insert the jacking bar, through the jack hole, into a hole in the outrigger tube. Disengage, and hold, pin B and pull or push up on the jacking bar to lower the outrigger. Release pin B to hold the outrigger in place. Refer to Figure 1-2.

4. Jack all 4 outriggers evenly. Raise the unit 2-3 holes on one outrigger, then proceed to the next outrigger. **DO NOT OVER-EXTEND ANY ONE OUTRIGGER. OUTRIGGERS MUST BE LOWERED EVENLY, AND IN SEQUENCE.** The unit must be level with the weight of the unit supported by all 4 outriggers. *Note: When outriggers are set on a slope (5° maximum), the outriggers on the downhill side will be extended further than those on the uphill side in order to level the lift.*

5. Continue the jacking sequence until both wheels are a minimum of 1/2" above the surface. The green lamp on the lower control panel will light when all four outriggers are properly set. This green lamp indicates a ready operational condition. **CAUTION - BE SURE PIN A AND PIN B ARE FULLY RE-ENGAGED ON ALL 4 OUTRIGGERS BEFORE OPERATING THE UNIT.**

6. Store the outriggers using the reverse sequence. **CAUTION - MAKE SURE THE BOOM IS IN THE RETRACTED TRAVELING POSITION BEFORE STORING THE OUTRIGGERS.**

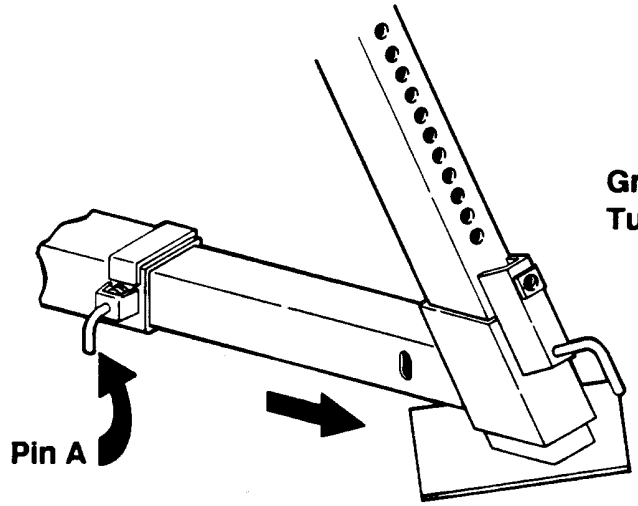


Figure 1-1
Extending Outriggers

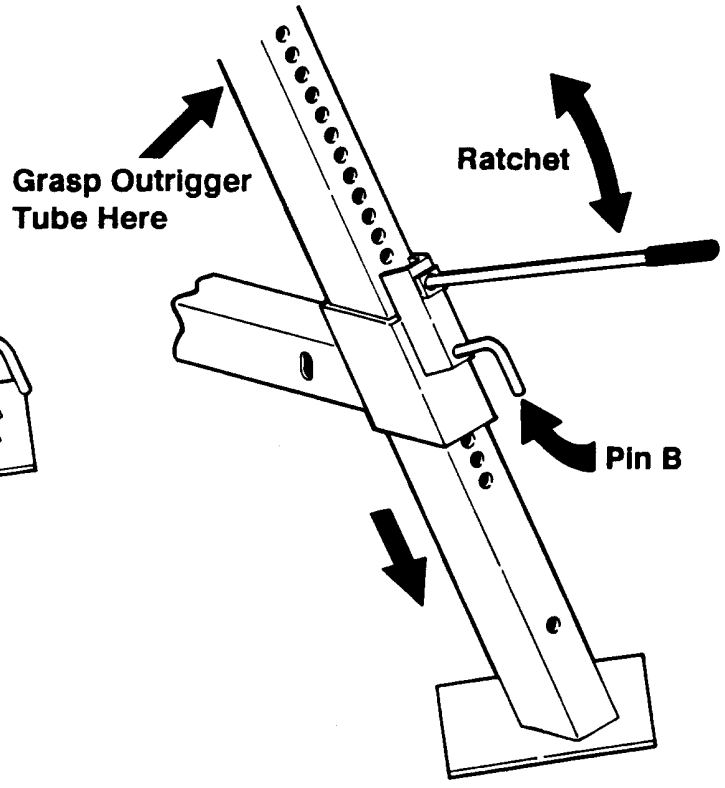
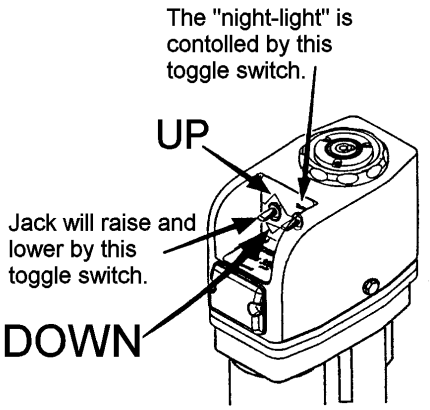


Figure 1-2
Jack-Type Outriggers

SETTING THE OUTRIGGERS WITH THE POWER JACK OPTION

1. Trailer the UniLift to the work area and position for operation. If on a slope, block the wheels as needed. Disconnect the tongue trailer wires, the safety chains and release the ball coupler. Place the third wheel in the horizontal, stowed position while setting the outriggers.



2. Turn the key switch on the lower control panel to SET UP (Refer to Figure 1-3A). Press the toggle switch on the power jack UP to raise the tongue above the hitch ball. Remove the towing vehicle from the work area. Press DOWN on the power jack switch to lower the tongue to the ground.

3. On the rear outriggers, disengage pin A and slide the horizontal outrigger out until it locks. Refer to Figure 1-1. Grasp the rear vertical outriggers, disengage pin B and lower to the ground.

CAUTION - WATCH YOUR FEET, OUTRIGGERS SLIDE DOWN RAPIDLY!

Refer to Figure 1-2. Disengage pin B, lift up the horizontal outrigger until there are 8 holes showing at the bottom of the vertical leg. Check pins A and B on the rear outriggers to be sure that they are fully re-engaged.

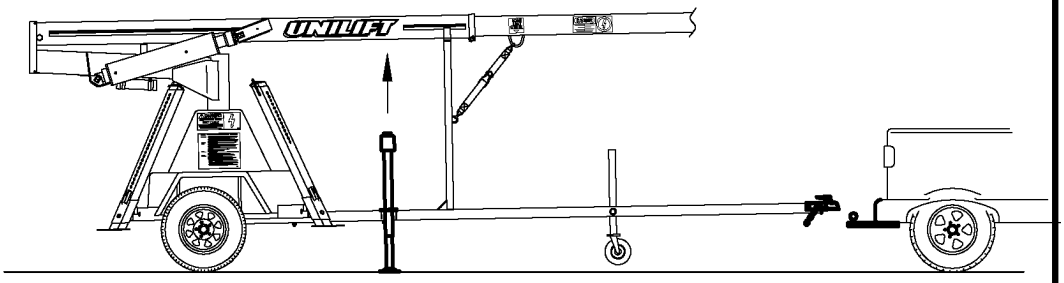
4. Press the power jack switch UP until the front of the UniLift is above level. This can be determined by watching the position of the tongue. On the front outriggers, disengage pin A and slide the horizontal outrigger out until it locks. Grasp the front vertical outriggers, disengage pin B and lower to the ground. Disengage pin B, lift up the horizontal outrigger until there are 8 holes showing at the bottom of the vertical leg. Check pins A and B on the front outriggers to be sure that they are fully re-engaged. Press the power jack switch DOWN until the power jack foot is off the ground. Turn the key switch on the lower control from SETUP to ON. The green OUTRIGGER INDICATOR LIGHT will show that the unit is ready for operation.

CAUTION - BE SURE PIN A AND PIN B ARE FULLY RE-ENGAGED ON ALL FOUR OUTRIGGERS BEFORE OPERATING THE UNILIFT.

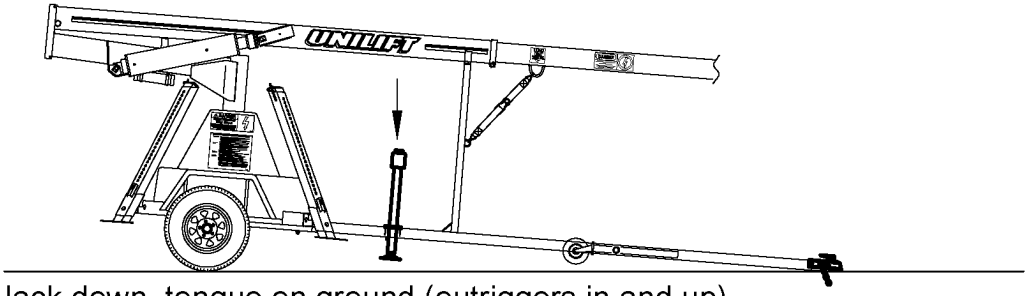
NOTE:
Eight holes showing on the lower part of each leg will accomplish a set up on level surfaces. For set up on a slope, the outrigger height setting will vary as needed to level the UniLift. Use the level indicator on the power jack to determine if the machine set up is level.

To prepare the UniLift for towing, stow the boom and reverse the above procedure, being sure that the power jack is in the fully raised position for towing.

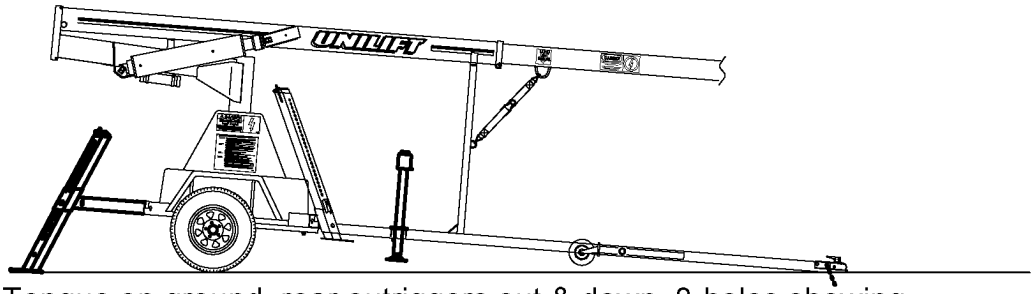
Power Jack SET UP



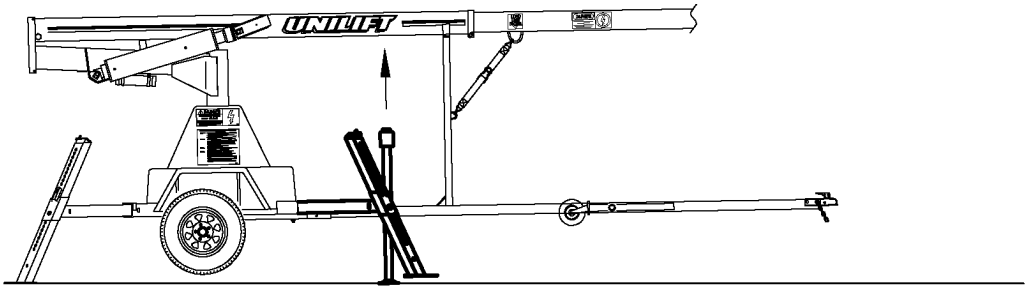
Jack up to raise tongue above hitch (outriggers in and up).



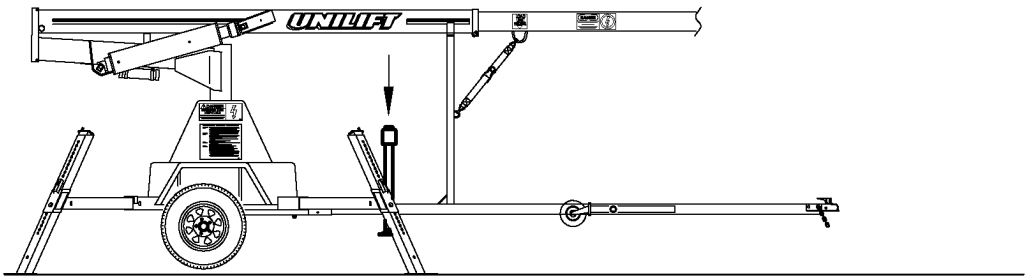
Jack down, tongue on ground (outriggers in and up).



Tongue on ground, rear outriggers out & down, 8-holes showing.



Jack up above level, front outriggers out & down, 8-holes showing.



Jack down and off ground, machine level and set.

590777

Crank Type

1. Disengage pin A and pull the outrigger assembly out until pin A re-engages at the furthest outward outrigger position. Refer to Figure 1-3.

2. Attach the winch handle securely to the high-speed drive shaft (make sure handle clip securely engages the groove in the high-speed shaft). Refer to Figure 1-3.

3. Disengage (and hold) pin B and crank the winch handle counter-clockwise to lower the outrigger foot. Refer to Figure 1-3. Extend all 4 outriggers and lower all 4 outrigger feet to solid footing before proceeding.

4. Remove the winch handle and re-attach it securely to the low-speed drive shaft (make sure handle clip securely engages the groove in the low-speed shaft). Refer to Figure 1-3.

5. Disengage (and hold) pin B and crank the winch handle clockwise to set the outrigger foot. Crank all 4 outriggers evenly. Raise the unit 2-3 holes on one outrigger, then proceed to the next outrigger. **DO NOT OVER-EXTEND ANY ONE OUTRIGGER. OUTRIGGERS MUST BE LOWERED EVENLY, AND IN SEQUENCE.** The unit must be level with the weight of the unit supported by all 4 outriggers. *Note: When outriggers are set on a slope (5° maximum), the outriggers on the downhill side will be extended further than those on the uphill side in order to level the lift.*

6. Continue the cranking sequence until both wheels are a minimum of 1/2" above the surface. The green lamp on the lower control panel will light when all four outriggers are properly set. This green lamp indicates a ready operational condition. **CAUTION - BE SURE PIN A AND PIN B ARE FULLY RE-ENGAGED ON ALL 4 OUTRIGGERS BEFORE OPERATING THE UNIT.**

7. Store the outriggers using the reverse sequence. **CAUTION - MAKE SURE THE BOOM IS IN THE RETRACTED TRAVELING POSITION BEFORE STORING THE OUTRIGGERS.**

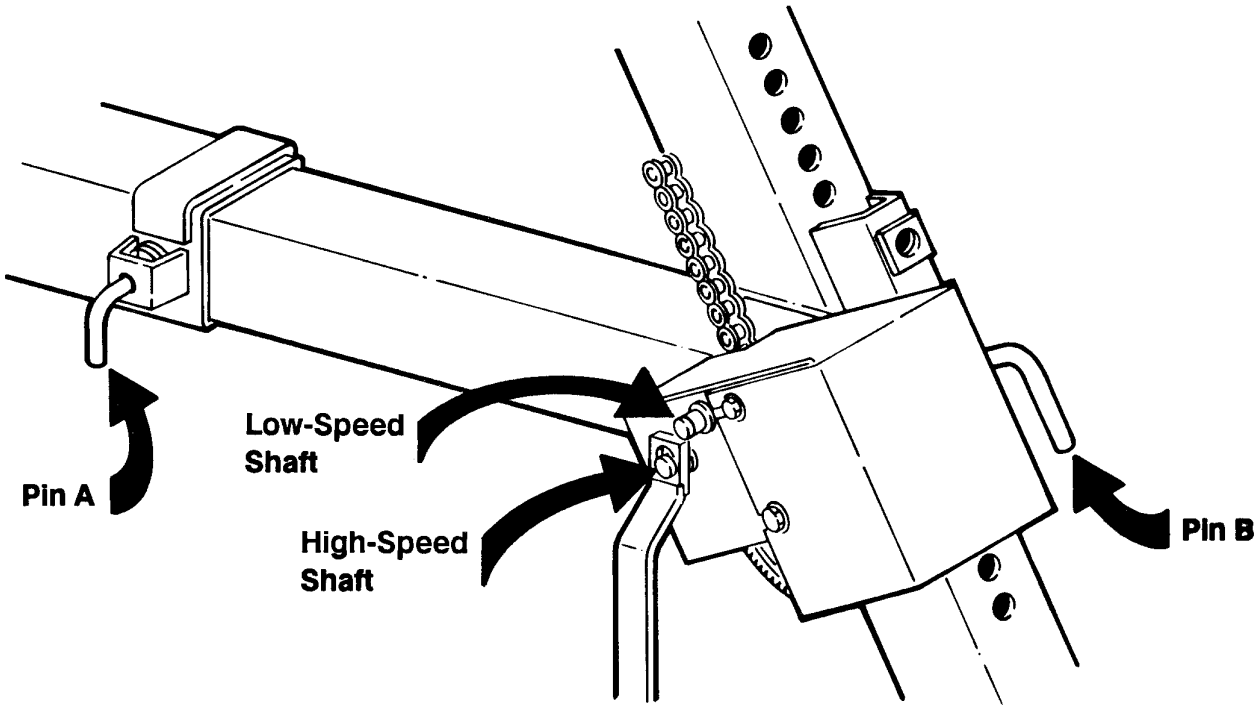


Figure 1-3
Crank-Type Outriggers

CONTROLS (THRU S/N: 42059)

Movement of the lift may be controlled from the Platform Control Station (bucket) or the Lower Control Station (base).

Platform Control Station

The Platform Control Station is attached to the bucket and has four control toggle switches (see Figure 1-4). The Platform Control Station is used to control movement of the machine from the bucket.

IMPORTANT: The 542 KB is equipped with a control system timer. Anytime the key switch is activated to the "ON" position, the unit will require a 5-second time-out before the controls are operable.

There are four control toggle switches on the Platform Control Station: a DOWN OVERRIDE-OFF-ON switch, and three directional switches. The DOWN OVERRIDE-OFF-ON switch applies or removes power to the directional switches. The three directional switches are oriented so that a movement of a switch results in a corresponding movement of the bucket. They are spring loaded to the neutral position.

To operate the machine from the Platform Control Station:

- Hold the DOWN OVERRIDE-OFF-ON switch to the "ON" position.
- Activate a control switch in the direction of an arrow to move the platform in the corresponding direction.
- When the control switch is released, it springs back to the neutral position, and movement stops.
- Movement will also stop when the DOWN OVERRIDE-OFF-ON switch is released.

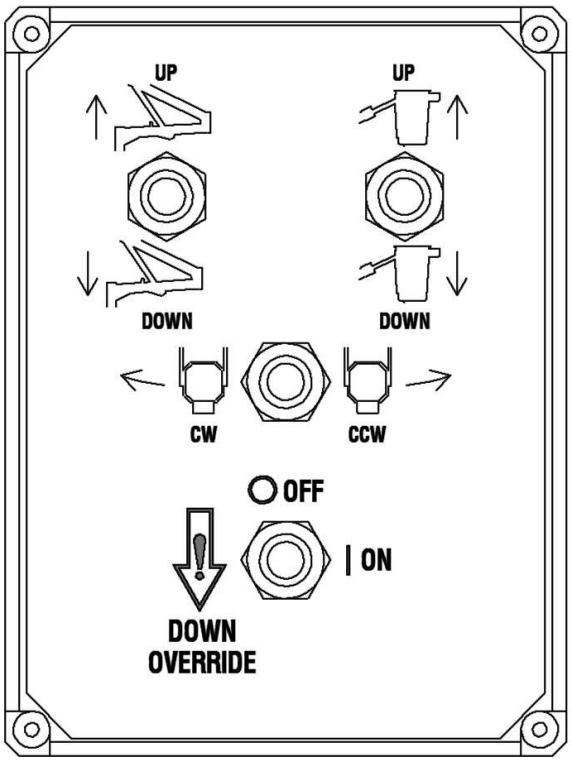


Figure 1-4
Platform Control Station

The DOWN OVERRIDE position serves as a means of lowering the booms in an emergency situation due to an electrical system malfunction or interlock concern. Activating the switch to the DOWN OVERRIDE position allows operation of the DOWN functions only.

Lower Control Station

The lift may also be operated from the base (see Figure 1-5). The Lower Control Station contains four control switches and a key switch.

IMPORTANT: The 542 KB is equipped with a control system timer. Anytime the key switch is activated to the "ON" position, the unit will require a 5-second time-out before the controls are operable.

The UPPER CONTROL-LOWER CONTROL switch must be held in the LOWER CONTROL position before the directional control switches at the base will operate. This prevents accidental activation of the Lower Control Station.

IMPORTANT: The Lower Control Station is intended for crane operation and stowing of the booms. When a worker is present in the bucket, the lower controls may be used for an emergency only!

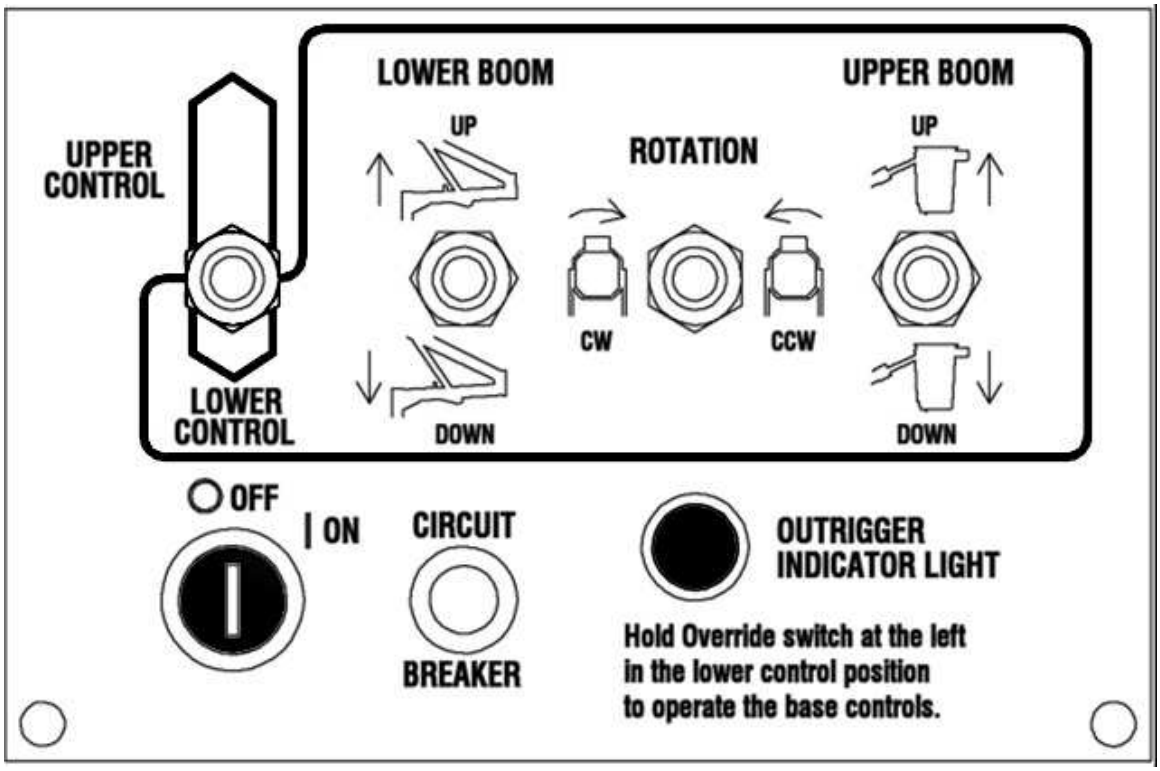


Figure 1-5
Lower Control Station

The directional control switches are marked LOWER BOOM, ROTATION, and UPPER BOOM. These switches control movement of the booms and rotation system. The LOWER BOOM switch controls up and down movement of the lower boom. Since the UniLift Model 542 KB is an articulated lift, its important to understand that in certain instances, raising the lower boom will actually bring the bucket down. The UPPER BOOM switch controls up and down movement of the upper boom. The ROTATION switch controls clockwise and counter-clockwise rotation of the booms.

The rotation system is equipped with two limit switches that prevent more then 350°of rotation. When the boom is rotated, and a limit switch is reached, rotation will stop. Simply reverse the control and rotate in the opposite direction to reposition the bucket.

Both upper and lower booms have interlocks that limit travel. When a stop is reached, release the control switch to prevent overheating of the hydraulic oil and damage to the pump. Actuation of a control switch automatically starts the DC motor so the motor runs only when required, conserving battery life.

Generally, only one function should be operated at a time. Rotation (which is a DC motor function) may be operated in conjunction with a boom function.

To operate the machine from the Lower Control Station:

- Hold the UPPER CONTROL-LOWER CONTROL switch in the “LOWER CONTROL” position.
- Activate a control switch in the direction of an arrow to move the bucket/boom in the corresponding direction.
- When the control switch is released, it springs back to the neutral position, and movement stops.
- Movement will also stop when the UPPER CONTROL-LOWER CONTROL switch is released.

CONTROLS (S/N: 42060 & Above)

Movement of the lift may be controlled from the Platform Control Station (bucket) or the Lower Control Station (base).

Platform Control Station

The Platform Control Station is attached to the bucket (see Figure 1-4A) and contains five toggle switches and a power indicator lamp. The Platform Control Station is used to control movement of the machine from the bucket.

IMPORTANT: The 542 KB is equipped with a control system timer. Anytime the key switch is activated to the "ON" position, the unit will require a 5-second time-out before the controls are operable.

The Platform Control Station has five control toggle switches: an EMERGENCY STOP switch, a DOWN OVERRIDE-OFF-ENABLE switch, and three directional switches. The EMERGENCY STOP switch applies or removes power to the Platform Control Station, and must be in the ENABLE position to operate the machine from the bucket. The DOWN OVERRIDE-OFF-ENABLE switch applies or removes power to the directional switches. Activating a switch in a certain direction results in a corresponding movement of the bucket. The switch actuators are spring loaded to the neutral position.

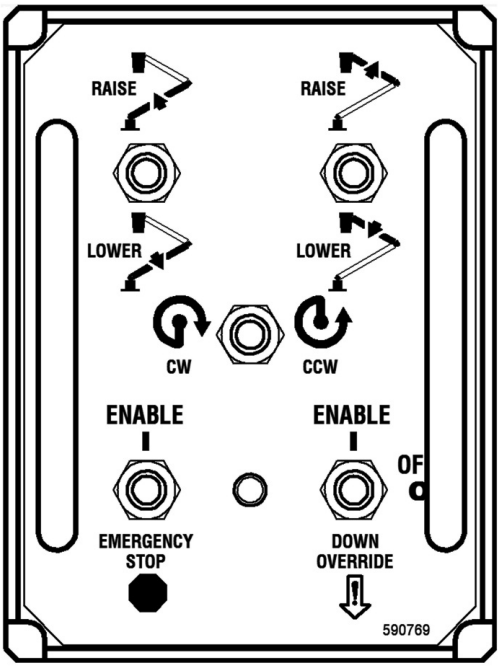


Figure 1-4A
Platform Control Station

To operate the machine from the Platform Control Station:

- Set the EMERGENCY STOP switch to the "ENABLE" position. The power indicator lamp will light.
- Hold the DOWN OVERRIDE-OFF-ENABLE switch to the "ENABLE" position.
- Activate a control switch in the chosen direction to move the bucket/boom in the corresponding direction.
- When the control switch is released, the actuator returns to the neutral position, and movement stops.
- Movement will also stop when the DOWN OVERRIDE-OFF-ENABLE switch is released.

The DOWN OVERRIDE position serves as a means of lowering the bucket in an emergency situation due to an electrical system malfunction or interlock concern. Activating the switch to the DOWN OVERRIDE position allows operation of the LOWER functions only.

Lower Control Station

The lift may also be operated from the base (see Figure 1-5A). The Lower Control Station contains four toggle switches, a key switch, and an EMERGENCY STOP button.

IMPORTANT: The 542 KB is equipped with a control system timer. Anytime the key switch is activated to the "ON" position, the unit will require a 5-second time-out before the controls are operable.

The EMERGENCY STOP button must be disengaged and the PLATFORM CONTROL-LOWER CONTROL switch must be held in the LOWER CONTROL position before the control switches at the base will operate. This prevents accidental activation of the Lower Control Station.

IMPORTANT: The Lower Control Station is intended for crane operation and stowing of the booms. When a worker is present in the bucket, the lower controls may be used for an emergency only!

The toggle switches control movement of the booms and rotation system. Activating a switch in a certain direction results in a corresponding movement of the bucket. The switch actuators are spring loaded to the neutral position.

(Lower Control Station - cont'd)

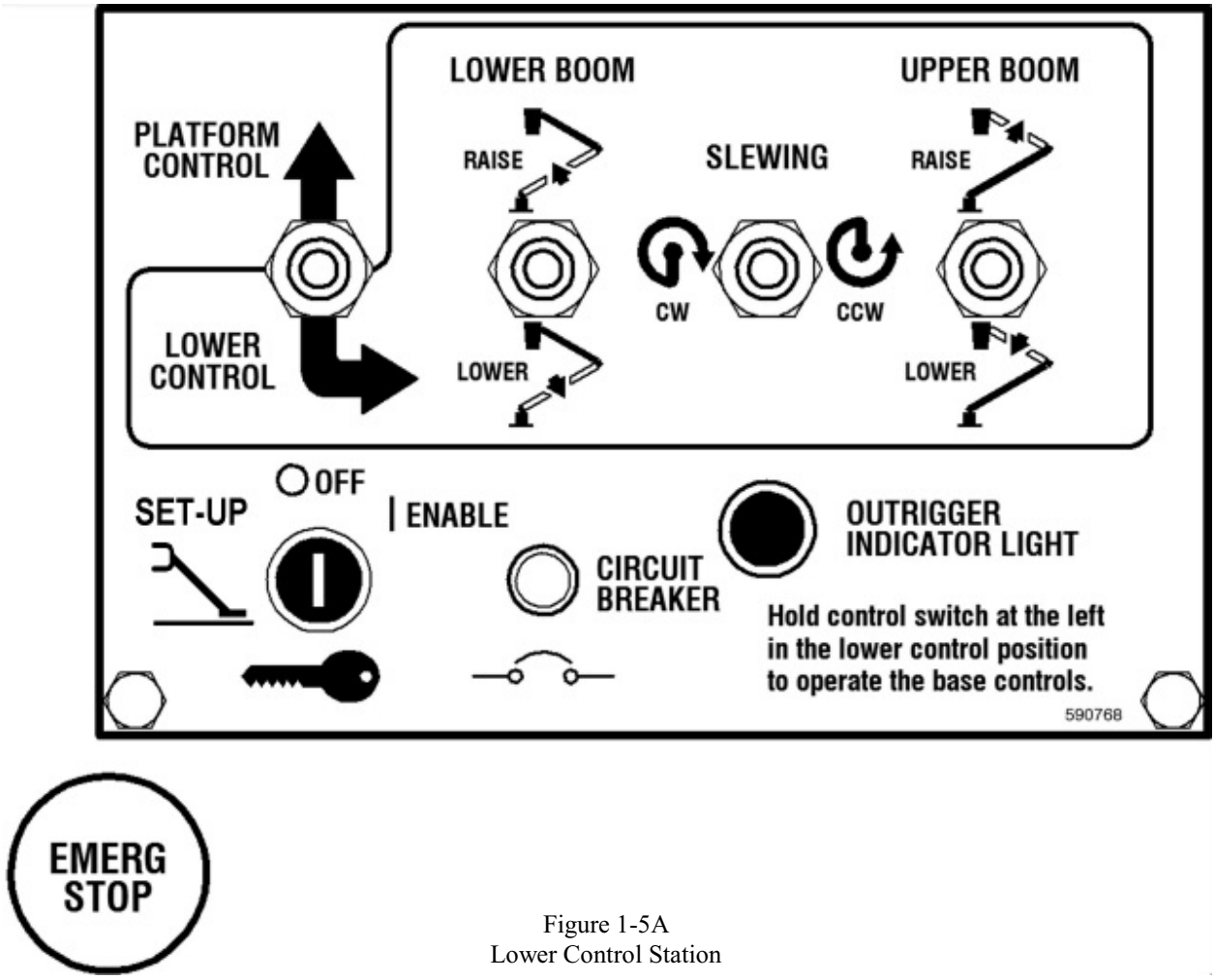


Figure 1-5A
Lower Control Station

The rotation system is equipped with two limit switches that prevent more then 350° of rotation. When the booms are rotated, and a limit switch is reached, rotation will stop. Simply reverse the control and rotate in the opposite direction to reposition the bucket.

Both booms have interlocks that limit travel. When a stop is reached, release the control switch to prevent overheating of the hydraulic oil and damage to the pump. Actuation of a control switch automatically starts the DC motor so the motor runs only when required, conserving battery life.

Generally, only one pump function should be operated at a time. Rotation (which is a DC motor function) may be operated in conjunction with any boom function.

To operate the machine from the Lower Control Station:

- Make sure the EMERGENCY STOP button is disengaged. Twist the EMERGENCY STOP button to reset.
- Hold the PLATFORM CONTROL-LOWER CONTROL switch in the "LOWER CONTROL" position.
- Activate a control switch in the chosen direction to move the bucket/boom in the corresponding direction.
- When the control switch is released, the actuator returns to the neutral position and movement stops.
- Movement will also stop when the PLATFORM CONTROL-LOWER CONTROL switch is released.

PRE-START INSPECTION

Prior to each days operation, the operator shall check for defects using the Pre-Start Inspection list.

GRAVITY LEVELED BUCKET LOCK

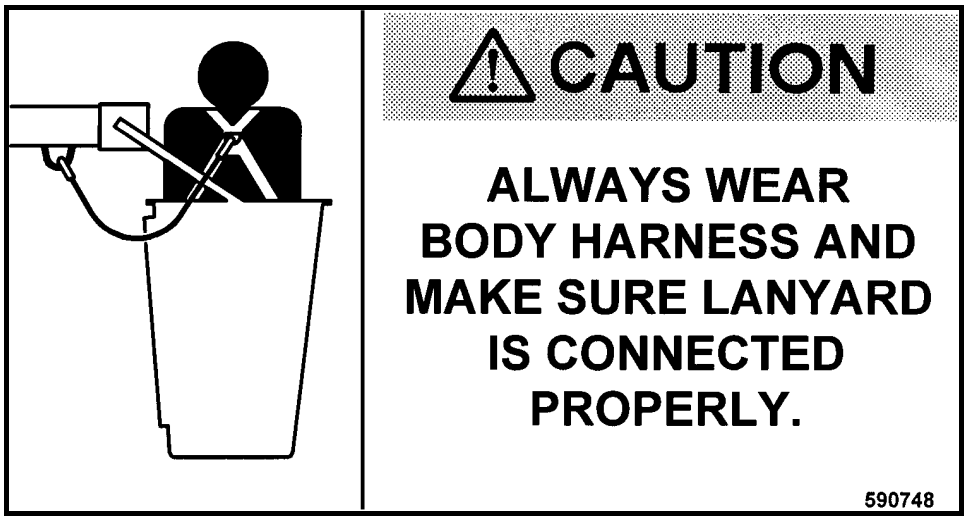
The bucket is gravity leveled and hydraulically dampened, with a positive bucket-locking knob that prevents swinging of the bucket after it has been placed in a working position. This locking mechanism is located inside the bucket to the operator's right when facing the platform control station. To lock the bucket, turn the locking knob CW until tight. To release the bucket lock, rotate knob CCW.

BUCKET OPERATION

After the trailer has been properly parked and outriggers properly extended and set, disconnect the boom tie-down strap and turn the key switch to “ENABLE” *(remember the 5-second timeout on startup).* The green light on the Lower Control Station will be lit. Using the Lower Control Station, raise the lower boom (raising the lower boom will bring the bucket down) until the bucket is about a foot off the ground. Check to make sure that the bucket is properly installed. Check both bucket-yoke lock pins to insure they are positioned in the holes, and the bucket yoke is securely locked to the boom.

IMPORTANT: A body harness with a 6 ft. lanyard (p/n: 532053) is furnished with each machine. DO NOT use a body harness unless it is designed to meet the appropriate standards and has a 6 ft. lanyard - NO EXCEPTIONS!

Put on the body harness and enter the bucket. Attach the hook to the "D" ring on the underside of the boom.



WARNING: NEVER OPERATE ANY AERIAL EQUIPMENT WITHOUT WEARING AN APPROVED BODY HARNESS. ATTACH THE HARNESS LANYARD TO THE "D" RING ON THE BOTTOM OF THE UPPER BOOM. DO NOT OVERLOAD BUCKET.

Use the Platform Control Station to elevate, and rotate the bucket as necessary to get to the working position. When the working position is reached on a gravity leveled bucket, engage the bucket lock.

DANGER
ELECTROCUTION HAZARD, STAY AT LEAST 10 FEET (3.0 m) FROM POWER LINES.
THIS UNIT IS NOT INSULATED FROM ELECTRIC SHOCK.
DEATH OR SERIOUS INJURY TO OPERATORS AND/OR BYSTANDERS CAN RESULT FROM CONTACT WITH ELECTRICAL WIRES.

To return to the stowed position on a gravity leveled bucket, unlock the bucket lock, and rotate the bucket to a position that provides a clear line of descent. Using the Platform Control Station, operate the controls as necessary to lower the bucket to the ground. Exit the bucket. Use the lower controls to fully lower the booms and move them into the stored position in the boom rest.

CRANE OPERATION

After the trailer has been properly parked, and all four outriggers are properly extended and set, the bucket must be removed. To remove the bucket, use the Lower Control Station and raise the lower boom until the bucket reaches the ground. When the bucket is resting on the ground, pull the bucket-yoke lock pin(s) and rotate away from the holes. Gravity leveled bucket yoke collar will slide from the boom. Self leveled bucket yoke arm plates can be lifted from the pivot box. Remove the bucket from the boom and move it clear of the work area. **NOTE: The green light on the Lower Control Station will be "ON" if the unit is set-up properly. Loads of 300 pounds maximum can be lifted using the lanyard ring on the end of the boom. Do not exceed the 300 lbs. load rating** Loads of 300 pounds maximum can be lifted to approximately 36 feet with a side reach of approximately 8 feet by using the lanyard ring (See Figure i-2).

Proper sequence of operation to lift objects from ground to desired height is:

1. Secure the load to the lanyard ring using safe rigging practices.

2. Using the Lower Control Station, lift the load off the ground, then rotate to desired direction. Use the RAISE controls to raise the booms, and lift the crane load to the desired position.

3. Use the boom LOWER controls to set the crane load down.

Reverse the sequence to bring objects down from a height, i.e.:

1. Use the upper boom RAISE control to lift the load. Rotate the load to a position that allows a clear line of descent.

2. Lower the load, using the boom LOWER functions.

SHUTDOWN

Make sure that the bucket is properly attached to the upper boom and the bucket-yoke lock pin(s) are securely locked. On a gravity leveled bucket, swing the bucket up and insert the lock clip. Use the bucket lock and secure the bucket in the stowed position. Store the booms in the boom rest, and secure the tie-down strap. Lower the third wheel assembly. Retract and lock outriggers in stored position. Turn the key switch to OFF.

CAUTION: DO NOT RAISE THE OUTRIGGERS OR MOVE THE TRAILER UNLESS THE BOOMS ARE STORED AND SECURED!

SYSTEM RECHARGING

After each day's use, plug in 120 volt power to recharge batteries with built-in battery charger. The battery charger will automatically shut off when full charge has been reached.

EMERGENCY CONTROLS

A description of the Emergency Controls Follows:

Power "ENABLE" Switches

Power ENABLE switches are provided at both the Platform Control Station and Lower Control Station (See Figures 1-4, 1-5, 1-4A, & 1-5A). To prevent uncontrolled movement of the boom in the event of a switch malfunction, either ENABLE switch may be switched OFF. The Platform Control Station has a DOWN OVERRIDE-OFF-ENABLE toggle switch that remains in the OFF position unless activated. When released, this switch returns to the OFF position, removing power from the switches and stopping boom movement. The Lower Control Station has a key switch. Switching the key to the OFF position cuts all power to the system. The OFF-ENABLE key switch also provides for security during transportation and storage.

Station Override Switch

A station override switch is located on the left side of the Lower Control Station. This switch has two (2) positions, PLATFORM CONTROL and LOWER CONTROL. For normal operation of the lift from either control station, the switch is spring loaded to the PLATFORM CONTROL position. In the event a bucket operator becomes disabled, or the Emergency Stop switch on the Platform Control Station controls is activated, depress the override switch to LOWER CONTROL. This will give the lower control station priority over the system.

Emergency Stop Switches

Emergency Stop switches are located at both the Platform Control Station and the Lower Control Station (See Figures 1-4, 1-5, 1-4A, & 1-5A). To shut off power to the system, either Emergency Stop switch may be activated. The Platform Control Station has an Emergency Stop toggle switch. To shut off power, activate the toggle switch to the Emergency Stop position. To resume operation, place the toggle switch in the Enable position. The Lower Control Station has a red Emergency Stop pushbutton, located below the main control switches. To shut off power, depress the red pushbutton. To resume operation, twist the red Emergency Stop pushbutton clockwise to disengage.

IMPORTANT: ACTIVATING THE EMERGENCY STOP SWITCH AT THE LOWER CONTROL STATION, COMPLETELY SHUTS OFF POWER TO THE ENTIRE SYSTEM. ALL SYSTEM CONTROLS ARE DISABLED WHEN THE LOWER EMERGENCY STOP PUSHBUTTON IS ACTIVATED.

(Emergency Controls cont'd.)

Emergency Down Controls

The Emergency Down Controls (See Figure 1-6) are located at the end of the upper boom (accessible from the platform), and inside the base assembly (behind the inspection cover) and are intended to be used as an emergency "down" in the event of power failure, or down solenoid valve failure. The emergency down switch lowers the upper boom by activating an electrical solenoid valve. The emergency down system is battery powered and operates independently of normal system power. To lower the upper boom, activate the switch in the direction of the arrow. When the problem is corrected, fully stroke the upper boom cylinder in both the up and down directions to purge any air from the system.

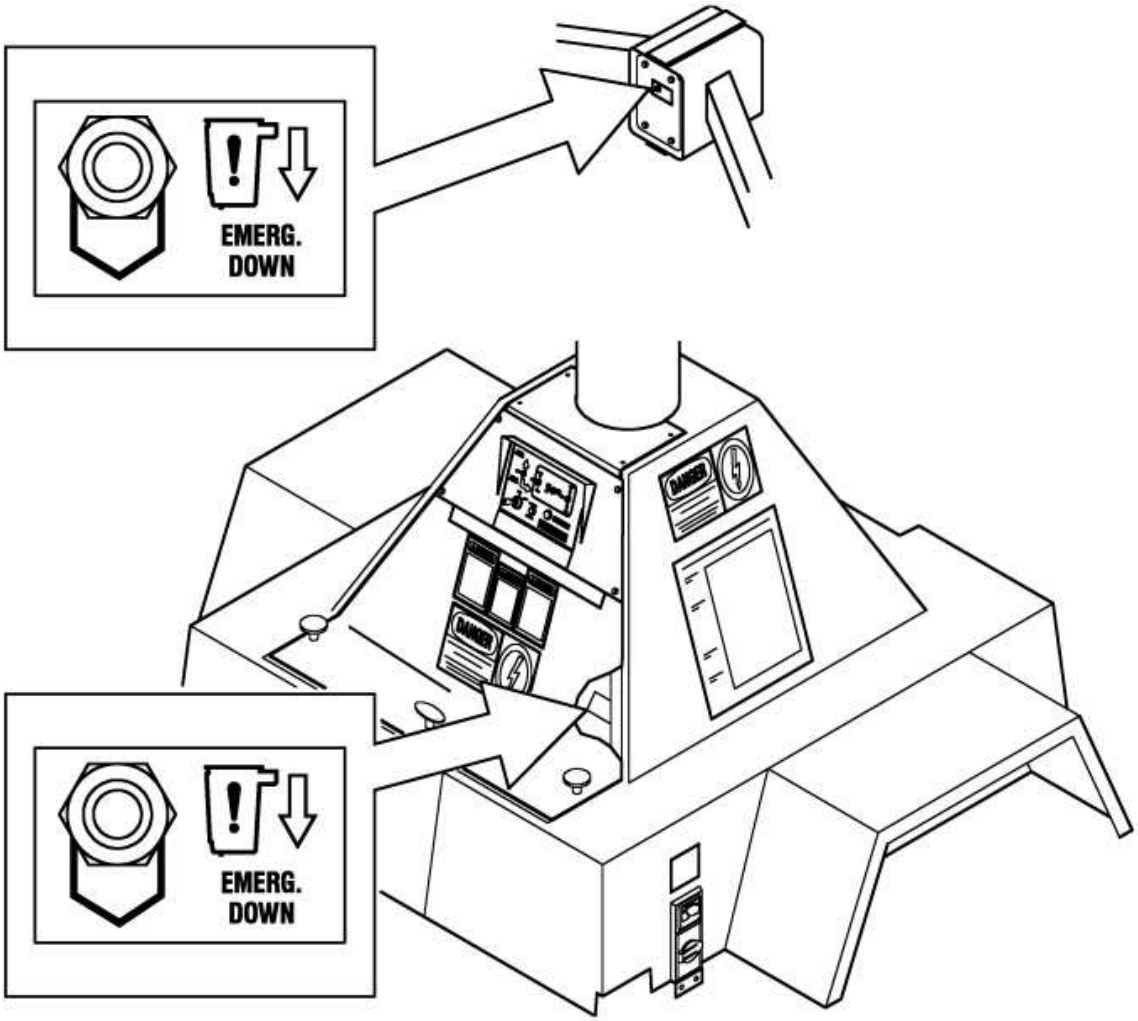


Figure 1-6
Emergency Down Controls

EMERGENCY PROCEDURES

In the event the unit is damaged while a man is in the air, or an emergency arises after he has gone aloft, immediately rotate the bucket away from any dangerous obstruction into a clear line of descent when the booms are lowered. **The machine should be operated through the shortest cycle possible to get the bucket on the ground,** then operated from the lower controls to finish storing the booms. Possible conditions and suggested procedures:

PLATFORM CONTROL STATION SWITCH FAILURE

Should any control movement not stop when the control switch is released, immediately release the DOWN OVERRIDE-OFF-ENABLE switch. Activate the control switch to the opposite position and turn the power back ON to test the switch for proper function.

The DOWN OVERRIDE switch at the Platform Control Station allows the operator to use the DOWN functions in the event of an electrical system malfunction. Hold the switch to the DOWN OVERRIDE position and activate the down controls to lower the booms.

LOWER CONTROL STATION SWITCH FAILURE

Should any control movement not stop when the control switch is released, immediately release the LOWER CONTROL station override switch. Hold the control switch to the opposite position and activate the station override to test the switch for proper function.

EMERGENCY STOP SWITCHES (S/N: 42060 & Above)

Emergency Stop switches are located at both the Platform Control Station and the Lower Control Station (See Figures 1-4A & 1-5A). To shut off power to the system, either Emergency Stop switch may be activated. The Platform Control Station has an Emergency Stop toggle switch. To shut off power, activate the toggle switch to the Emergency Stop position. To resume operation, place the toggle switch in the Enable position. The Lower Control Station has a red Emergency Stop pushbutton, located below the main control switches. To shut off power, depress the red pushbutton. To resume operation, twist the red Emergency Stop pushbutton clockwise to disengage.

IMPORTANT: ACTIVATING THE EMERGENCY STOP SWITCH AT THE LOWER CONTROL STATION, COMPLETELY SHUTS OFF POWER TO THE ENTIRE SYSTEM. ALL SYSTEM CONTROLS ARE DISABLED WHEN THE LOWER EMERGENCY STOP PUSHBUTTON IS ACTIVATED.

HYDRAULIC LINE FAILURE

The hydraulic system on the 542 KB has a holding valve that prevents the upper cylinder from collapsing in the event of a hydraulic line failure. If a partial line failure is experienced (split, cracked, or badly leaking hose), where the holding valve does not lock, use the controls in short intervals to store booms. Should a complete line failure occur, the holding valve will lock and can only be released by repair of the line failure. In an emergency, the Emergency Down controls (see Figure 1-6) may also be used to bring the upper boom down.

BUCKET OPERATOR DISABLED

Hold the station override switch at the Lower Control Station to the LOWER CONTROL position. Using the controls at the base, rotate the booms clear of any obstructions, and lower the upper boom to the ground. Operate the machine through the shortest cycle possible to get the bucket on the ground.

POWER FAILURE

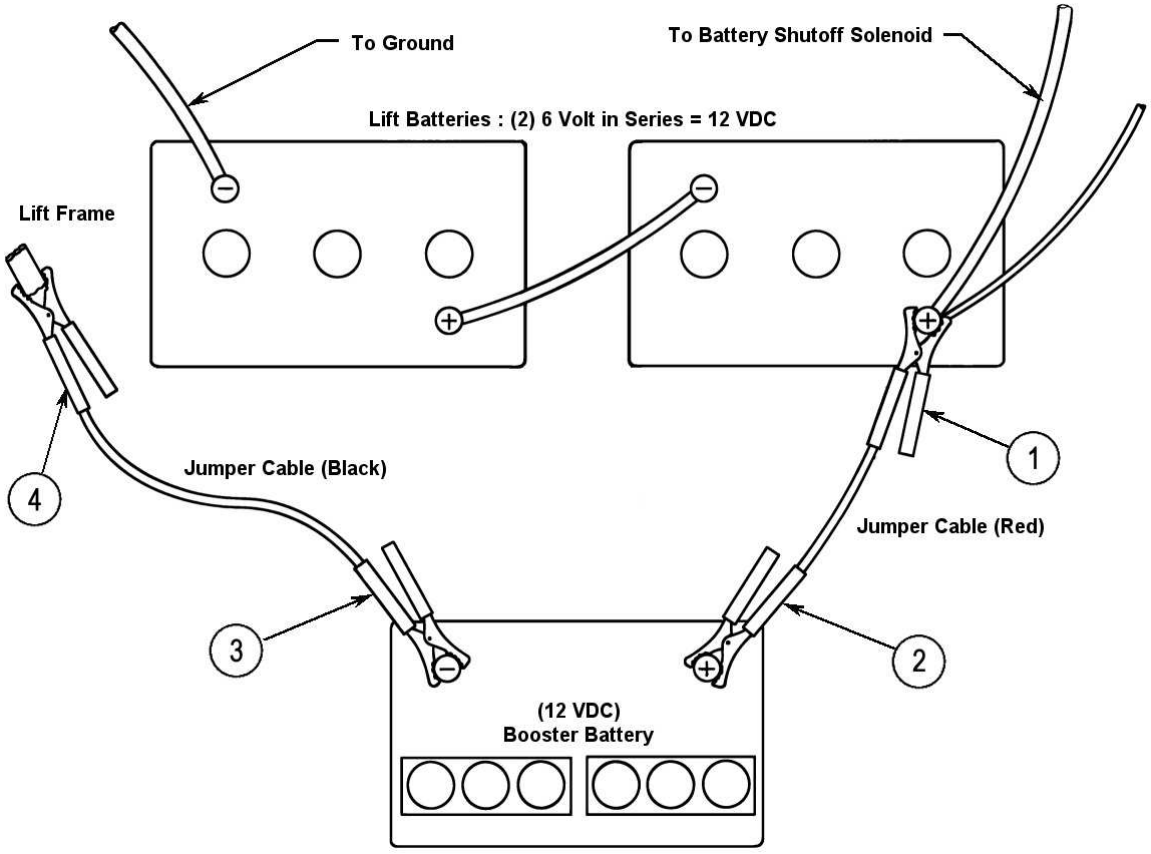
In the event of a system battery failure, standby power can be easily obtained from a car or truck system by using jumper cables (See Figure 2-1). If a defect occurs beyond batteries which require manual operation, the following procedure can be used:

1. The upper boom can be lowered by releasing the upper-cylinder fluid through one of the Emergency Down switches (See Figure 1-6).
2. Booms can be rotated manually as follows: Remove the rotation drive motor belt, then rotate drive pulley, item 18 in Figure 8-4, until the boom is above the stored position.

(Power Failure cont'd.)

3. The lower boom can only be lowered by draining the fluid from the lower cylinder. To drain, use an appropriate container for the fluid and loosen the hydraulic fitting located at the base of the lower cylinder. **DO NOT completely remove the fitting**. Loosen the fitting only slightly to begin a slow, controlled rate of descent. Tightening the fitting will stop the movement of the boom.

DANGER: SEE SAFETY PRECAUTIONS ON PAGE 4-8 BEFORE USING JUMPER CABLES



NOTE: Make certain vehicles do not touch

Figure 2-1
Booster Cable Instructions

1. Connect positive (+) cable to positive post of discharged batteries.
2. Connect other end of booster cable to positive (+) post of booster battery.
3. Connect second cable to negative (-) post on booster battery.
4. Make final connection on unit frame away from battery to prevent sparking.
5. Remove cables in reverse order of installation.