Standard Operating Procedure Therma Self-Propelled Aerial Lift

Policy Section No.: 44 Effective: 06-99
Revision Date:

Revision No.: Page No.: 1 of 17

THERMA SELF-PROPELLED AERIAL LIFT



OUR PRIORITIES:

- 1. SAFETY
- 2. QUALITY
- 3. SCHEDULE

"No job is so important that it may be performed without regard for safety, health and the environment."

As with all job functions at THERMA, equipment operation is an important part of the service we provide to our customers. Because the operation of self propelled

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION OF THERMA LLC. ALL INFORMATION SHALL (A) BE RETAINED IN CONFIDENCE; (B) NOT BE REPRODUCED IN WHOLE OR IN PART; AND (C) NOT BE USED OR INCORPORATED IN ANY PRODUCT EXCEPT UNDER EXPRESSED WRITTEN AGREEMENT WITH THERMA LLC.

Revision No.	Policy Section No.	Page
	44	2 of 17

aerial lift equipment is inherently dangerous, it's important to be sure that safety is first and foremost in our minds any time we climb onto a piece of machinery.

DANGEROUS AT ANY SPEED:

Operating equipment in an unsafe manner is one of the major causes of injury and death in the construction industry. Aerial lift machines account for a large number of these accidents.

1. SAFETY, 2. QUALITY, 3. SCHEDULE:

In our business our customers expect, and should receive, only the *best, most professional* work available. The safest possible methods and professionalism go hand in hand. A professional that knows how to operate an aerial lift safely also knows that the **safe** operation of any piece of equipment is also the **fastest**, most professional way to work. Unsafe operations and short cuts are a sure way to increase accidents, injuries, and costs on a job. A remarkable thing occurs when safety is thought of **first**. The job is always of the best quality and is completed in the fastest, most economical way!

SAFETY IS JOB #1:

The long-standing commitment of THERMA to safety extends to certification of operators of aerial lift equipment. THERMA personnel must realize that as leaders in our industry, it's imperative that we continue to lead in the field of safety.

PERSONAL COMMITMENT:

The commitment of THERMA to safety is meaningless unless each individual is at least equal in his or her commitment. As an equipment operator you are one of the most highly visible people on any job site. Others on the job will look to you as an example of how safe or unsafe a company is. When others see you operating safely they will know that you are a professional, working for a professional company.

Revision No.	Policy Section No.	Page
	44	3 of 17

CONTENTS

SUBJECT	SECTION
Responsibilities	1
Types of Machines	2
Lifting Capacities	3
Inspections	4
Operation	5
Fueling/Charging	6

Revision No.	Policy Section No.	Page
	44	4 of 17

1. RESPONSIBILITIES:

Responsibilities for the safe operation of these machines lie in three categories:

- Manufacturer.
- Employer.
- Operator.
- **1.1 Manufacturer:** The manufacturer is required to produce a machine that meets all safety rules and regulations. The **dealer** provides a machine that is safe to operate and meets all laws, rules and regulations.
- **1.2 Employer:** The employer provides the safest possible work site, enforces the rules and regulations covering the site and the type of work done, and makes sure that all personnel are trained for the type of work they are performing, including the operation of equipment.
- **1.3 Operator:** The operator is responsible for the operating condition of the equipment, and insures that the operation of the equipment will not endanger personnel on and around the equipment. Before the operator uses an unfamiliar machine for the first time, he/she will read and understand the operator's manual. The operator is responsible for a pre-operation inspection of his/her equipment and the work site. When confronted with an unsafe condition or the unsafe actions of personnel on or around the equipment, the operator is to cease operations at once, and only resume when the unsafe conditions or actions are corrected.

It is a violation of company policy for any employee to operate equipment they are not certified for!

Revision No.	Policy Section No.	Page
	44	5 of 17

- 2. TYPES OF MACHINES: There are several different types of self propelled platform lifts designed to lift personnel and materials to different work heights. These are:
- SCISSORLIFT.
- BOOM SUPPORTED VERTICLE LIFT.
- BOOM TRUCK.
- ARTICULATED BOOM TRUCK.
- **2.1 SCISSORLIFT/BOOM SUPPORTED VERTICLE LIFT.** While they use different lifting mechanisms, these lifts have several similar characteristics:
- Platform with guardrails.
- The platform raises vertically to operating height.
- The platform remains stationed over the lower chassis at all heights.
- Designed to operate on smooth, level surface.
- **2.2 BOOM TRUCK.** This machine differs from the previous machines in that:
- The Boom that supports the lift allows the working platform to extend beyond the support chassis.
- The work platform will reach over obstructions on the working surface.
- This type of truck will reach overhead areas a regular platform lift will not.
- **2.3ARTICULATED BOOM TRUCK.** This machine is very similar to a Boom Truck with these additional features:
- Because the support boom is hinged in several sections, it is able to reach over obstacles that even the BOOM TRUCK won't reach.
- It is also referred to as a KNUCKLE BOOM TRUCK.
- **2.4 SIMILARITIES.** Because the basic safe operating characteristics of these machine are the same, they will be combined for the purposes of this training:
- SCISSORLIFT and BOOM SUPPORTED VERTICLE LIFT type machines will be referred to, as PLATFORM LIFTS.
- BOOM TRUCKS and ARTICULATED BOOM TRUCKS will be referred to as BOOM TRUCKS.
- Unless the selection specifies, the safe operation rules will apply to both groups of machines.
- 3. LIFTING CAPACITIES. These vehicles are designed to lift three things:

Revision No.	Policy Section No.	Page
	44	6 of 17

- WORKERS (primarily).
- TOOLS.
- MATERIALS.
- **3.1 WORKERS.** Any combination of workers may be lifted as long as:
- **3.1 (a)** Their combined weight is evenly distributed over the platform.
- **3.1 (b)** Their combined weight added to the weight of materials and tools also being lifted does not exceed the rated capacity of the machine.
- **3.1 (c)** At least one of the workers is an operator certified for the machine he/she is on.
- 3.1 (d) The rated capacity may be found in the operator's manual and the load capacity plate. If either of these are missing, the machine may not be operated.

3.2 MATERIALS.

- **3.2 (a) Materials** that do not overload the machine when combined with **personnel** and **tools** may be lifted.
- **3.2 (b) Materials** that interfere with the safe operation of the machine may not be lifted.
- **3.2 (c) Materials** must be secured from tipping, spilling, or falling.
- **3.2 (d)** Avoid lifting **materials** on the railings.
- **3.2 (e)** Never exceed the **rated capacity** of the railings.
- **3.2 (f)** Remember that load capacities may be found in the **operator's manual** and on the **load capacity plate**.
- **3.2 (g) "High-Jacks"** or other equipment designed to lift material should be used for lifting **materials**.
- **3.2 (h)** Only manufacturer approved **attachments** may be used on a machine.

Revision No.	Policy Section No.	Page
	44	7 of 17

3.3 TOOLS.

- **3.3 (a) Tools** that do not overload the machine when combined with **materials** and **personnel** may be lifted.
- **3.3 (b) Tools** that interfere with the safe operation of the lift may not be lifted.
- **3.3 (c)** Never **throw** tools or materials up to or down from a lift.
- **3.3 (d)** Potentially **hazardous equipment** (such as gas bottles on welding rigs) must be secured prior to the operation of the machine.
- **3.3 (e)** When using **extension cords** and/or **gas hoses**, such as those used on cutting and wielding rigs, exercise extreme caution to prevent them from becoming entangled in the moving and pinching parts of the machine.
- **3.3 (f)** When using tools that throw or drop **sparks** or **hot material**, protect the lower portions of the machine that could be damaged such as batteries, hydraulic hoses, etc. *Note: Batteries produce hydrogen gas.* (fire blankets can be used for shielding)
- 3.3 (g) When using tools that throw or drop sparks or hot material that could possibly cause a fire, always use a "fire watch" person down below.

 Note: The fire watch must extend ½ hour past the last "spark" or hot work point.
- **3.3 (h)** Always check with your Foreman about "Hot Work Permits" on your job site.

Revision No.	Policy Section No.	Page
	44	8 of 17

- **4. INSPECTIONS.** Prior to operating one of these machines **2 inspections** must first be conducted:
- JOB SITE.
- EQUIPMENT.
- **4.1 JOB SITE.** This inspection should take place at the **beginning of each shift**, or more often if conditions change during a shift. Operators should look for any object or condition, which will inhibit the **safe operation** of his/her machine. These include:
- **4.1 (a) Housekeeping.** The job site shall be reasonably clear of **trash** and **debris**.
- **4.1 (b) Holes/Trenches.** Any **openings** in the floor should be covered with bridge material capable of supporting 4 times the anticipated weight that may pass over it. When openings are not covered, the operator may not approach closer than 18" to the edge of the opening.
- **4.1 (c) Floors.** Inspect for bumps, obstructions, and uneven conditions that **could effect** the machine.
- 4.1 (d) Lighting. The operator should be able to see well enough to safely operate his machine. OSHA Regulations State that the minimum general lighting acceptable on construction sites is 5 foot candles. This is not much light to operate by, therefore extreme caution is needed under these conditions. "Task", or work lighting is provided by THERMA and will be sufficient for the type of work performed.
- **4.1 (e) Weather.** Wet floors, high wind and other weather related conditions can be very **hazardous**. Always check for these conditions before operating a lift.
- **4.1 (f) Overhead obstructions.** Never move a lift when there is danger of striking an **overhead obstruction**. This will cause the machine to turn over. Overhead obstructions can also crush workers. One of the most common injuries is smashed fingers from holding onto the side rails while rising.
- **4.1 (g) High voltage lines.** The minimum clearance for high voltage lines of 50 kilovolts is 10'. Make sure you have **clearance** around all electrical lines while operating.

Revision No.	Policy Section No.	Page
	44	9 of 17

4.1 (h) Foot traffic. Watch for people at all times. On some machines the driver can't see people if they are very close. Shouted warnings such as, "Coming down!" will help make the job safer.

Note: Remember that the operator is ultimately responsible for the safe operation of their machines.

- **4.1 (i) Any other condition** of the work site that might **adversely impact** the safe operation of a lift will also cause the immediate halt of operations until the unsafe conditions can be eliminated or controlled.
- **4.2 Machine inspection.** This inspection shall be conducted prior to the **start** of the shift. Any problems or malfunctions that could affect the safe operation of the lift will be corrected prior to the operation of the lift. The pre-shift inspection shall include:
- **4.2 (a) Automatic brake:** The brake must be able to **hold** the machine still on any surface the machine is capable of climbing.

4.2 (b) Hydraulics/Batteries/Fuel:

- Leaks. Fluid levels. Note: Control and clean up any leaks.
- Corrosion. Note: Acid is corrosive and precautions must be taken.
- Cracked/split/frayed hoses.

4.2 (c) Operating and Emergency controls:

- Upper controls up, down, extend, rotate, forward, backward, turns, emergency stop.
- Upper controls must be designed or guarded so that they may not be inadvertently operated. CAL-OSHA says toggle type switches must have side guards on each toggle switch.
- Lower emergency controls may only be used with **consent of the operator**, in an **emergency**, or for routine maintenance and **inspections**.

4.2 (d) Chassis/lower frame:

- · Cracks.
- Loose parts.
- Suspension.
- Tires and wheels.

NOTE: Tires on an axle must be of the same size and tread design, and are foam filled.

Outriggers/Stabilizers/Extendible axles.

Revision No.	Policy Section No.	Page
	44	10 of 17

4.2 (e) Lift mechanism/Boom:

- Leaks. Note: Control and clean up any leaks.
- Loose/worn parts.
- Smooth operation.

4.2 (f) Work platform/Bucket.

- Guardrail/ Toeboard.
- Gate/Chain.
- Fall Protection.
- Platform extension.

4.2 (g) Cables/Wiring harness.

- Loose cables.
- Frayed cables.
- Cracked harness.
- Exposed wiring.

4.2 (h) Labels/Operating Manuals:

- Placards.
- Pinch points.
- Warnings.
- Manuals.
- Load capacity plate.
- Control markings.
- <u>5. OPERATION.</u> The operation of the machine will be addressed in five sections:
- GENERAL SAFETY RULES.
- MOVING.
- RAISING/LOWERING.
- BOOM TRUCKS.
- FUELING.
- **5.1 General Safety Rules.** These rules will apply during **all** operations of powered Aerial Platform Vehicles:
- **5.1 (a)** No alteration, disabling, or otherwise rendering **inoperable** of safety devices or interlocks is permitted. Operating a machine with disabled safety interlocks will be cause for immediate termination.

Revision No.	Policy Section No.	Page
	44	11 of 17

- **5.1 (b)** Never **alter** or **modify** an aerial lift without permission from the manufacturer.
- **5.1 (c)** Never operate a lift from a truck, trailer, railway car, floating vessel, scaffold, or other similar construction without **written permission** of the manufacturer.
- **5.1 (d)** No devices of any kind may be used to add to the **height** of the platform. The maximum operating height of a lift is the fully raised height of the platform plus 6 feet.
- **5.1 (e)** All gates, chains, or other safety enclosure devices must be properly **fastened** prior to the operation of any equipment, regardless of planned operational height.
- **5.1 (f)** Never **exceed** the weight capacity of the equipment.
- **5.1 (g)** When operating around **high voltage** lines maintain the following clearances:
- 0 to 300V -----avoid contact.
- 300V to 50KV -----10'
- 50KV to 200KV -----15'
- 200KV to 350KV -----20'
- 350KV to 500KV -----25'
- 500KV to 750KV -----35'
- 750KV to 1000KV -----45'
- **5.1 (h)** The **lower controls** on a machine may only be used:
- In emergencies.
- For inspections and/or servicing.
- With the operator's **permission**.
- **5.1 (i)** When doing **hot-work** on a lift, be sure the batteries, hydraulic systems, and wiring cables are protected from sparks, heat, and flame. Always use a **fire watch** when performing hot-work on a lift.
- **5.1 (j)** The operator shall always be aware of **changing conditions** of the job site. These can be weather related, or may be specific to the site. When changes occur operation may need to be altered as needed to maintain safe operation. If an unsafe condition exists that can't be corrected, the operator

Revision No.	Policy Section No.	Page
	44	12 of 17

will cease operation of the machine until the unsafe condition can be rendered safe.

Remember, The operator is responsible for the safe operation of his/her machine.

- **5.1 (k)** If personnel working around a machine endanger themselves by unsafe actions, the operator shall **warn** them of the potential results of their actions. If the unsafe practices persist the operator will immediately cease operation of the machine and inform his/her supervisor of the circumstances.
- **5.1 (I)** Watch for other equipment. Never allow the operation of your machine to **endanger** the safe operation of another machine.
- **5.1 (m)** Once a machine is positioned and raised to it's working height, engage the **emergency stop** switch. This will prevent the inadvertent operation of the machine should the controls get bumped.
- **5.2 Moving.** Whenever a machine is **moved** the operator will follow these safety rules:
- **5.2 (a)** Make sure the machine can be moved without striking or endangering any objects or people around the machine. This means if vision is limited, the operator needs to walk to the back of the platform to check **clearance** prior to movement.
- **5.2 (b)** If the machine is operating around a dock, trench, or other **opening** in the floor that could cause it to turn over, the machine may not come closer than 18":
- **5.2 (c)** Ground speed will be **limited** to conditions of the travel surface.
- **5.2 (d)** The floor will be **free** of debris, objects, bumps, or openings in the floor that will cause the machine to tip over.
- **5.2 (e)** Check for overhead **clearance** prior to movement.
- 5.2 (f) Bridge plates, dock plates, floor opening covers, ramps, or any other device the machine will pass over must be able to safely support the full weight of the machine and it's contents. Dismount all personnel except the driver when crossing these areas.

Revision No.	Policy Section No.	Page			
	44	13 of 17			

- **5.2 (g)** All personnel on the lift must maintain firm **footing** on the work platform at all times.
- **5.2 (h)** The machine must be at its **lowest** height while moving. These machines may only be moved while raised for the purpose of final positioning.
- **5.2 (i)** Never **pass** another machine traveling in the same direction until given the go-ahead signal from the other driver.
- **5.2 (j)** Never turn a machine around on a **grade** or **slope.** Drive the machine to level ground and turn around there.
- **5.2 (k)** Avoid wrapping **fingers** or **hands** around railings while traveling.
- **5.2 (I)** When **visibility** is a problem, a ground guide shall be used to insure safe movement.
- **5.3 RAISING/LOWERING.** When **raising** or **lowering** the platform of a machine, the operator must follow these safety rules:
- **5.3 (a)** Be sure all safety chains and gates are **closed** and locked prior to operation.
- **5.3 (b)** Never wrap fingers or hands around **railings** while the machine is in operation.
- **5.3 (c)** Keep all parts of the body **inside** the railings while the machine is in operation.
- **5.3 (d)** All materials and tools must be placed so they will **not impede** the safe operation of the machine or obstruct the controls in any way.
- **5.3 (e)** Never move the machine with the platform raised except for **final** positioning
- 5.3 (f) When at raised levels, the work you do may endanger those on the ground or around you. Always set up exclusion zones when this condition exists.

Revision No.	Policy Section No.	Page
	44	14 of 17

- **5.3 (g)** These machines are designed to operate on flat, level ground. Never operate a machine on a grade or slope that **exceeds** the manufacturer's specifications. Grade and slope are defined as the following:
- **Grade** A fore and aft surface condition causing one **end** of a machine to be lower or higher than the other .
- **Slope** A side to side surface condition causing one **side** of a machine to be lower or higher than the other.
 - Consult the manufacturer's **manual** on the machine for slope and grade limitations.
- **5.3 (h)** Make sure all devices designed to **stabilize** the machine are engaged and operable prior to raising the platform. These devices include:
- Automatic stabilizers.
- Outriggers.
- Extendible axles.
- **5.3** (i) Some machines may have **reduced** lifting capacities when stabilizing devices can't be used. Consult the manufacturer's manual prior to operation.
- **5.3** (j) Prior to lifting or lowering, the operator is to check for overhead, underneath and side to side clearance. The machine must be able to rise or lower **unobstructed**.
- 5.3 (k) If any part of the machine becomes snagged, entangled, jammed, or otherwise is unable to move due to obstruction of any kind, the operator will stop the machine, instruct the occupants to cease movement, and call for help. The platform must be evacuated of all personnel prior to attempts to free the machine using the lower controls. NOTE: This is an extremely dangerous situation and must never be underestimated!
- **5.3 (I)** Some machines have platform **extensions** to extend the reach of the working surface. Never exceed the weight capacities of these extensions. Consult the manufacturer's manual prior to operation.
- **5.3 (m)** Occupants of the platform must maintain firm **footing** on the platform at all times.
- **5.3 (n)** No **height** adding devices or materials are to be used on lifts at any time.

Revision No.	Policy Section No.	Page			
	44	15 of 17			

- 5.3 (o) In the event personnel must climb out of the platform for any reason, and if the platform is higher than 6' off the ground, they must first be properly tied off with a full body harness and appropriate lanyard(s). Always tie-off 100%!
- **5.3 (p)** Once the platform is at working height, engage the **emergency** stop. This will insure the controls will not be inadvertently engaged while work is taking place.
- **5.4 BOOM TRUCK.** Boom trucks have their own unique operating **characteristics.** In addition to the rules already mentioned, Boom truck operators must also follow these rules:
- **5.4 (a) Speed Control.** Most machines have a dial on them to adjust the speed of the machine's reaction to control input. By adjusting this control to a lower number, the machine will move slowly and safely. Consult the manufacturer's manual for information prior to operating a Boom truck.
- **5.4 (b) Capacities.** Weight capacities are extremely important in these machines. Never exceed the rated weight capacity for the vehicle.
- **5.4 (c) Obstructions:** it's very easy to "jack" the wheels off the ground with one of these machines. When swinging a boom in close to obstructions, reduce the approach speed and use extreme caution.
- **5.4 (d)** Never place any part of a Boom truck **against** another object to "steady it".
- **5.4 (e)** Never use a Boom truck as a **crane**.
- **5.4 (f)** Boom trucks, even when fully lowered, can "oscillate" while traveling over uneven ground, causing the operator to be thrown from the machine. Drive slow and use caution when driving Boom trucks over **uneven ground**.
- **5.4 (g)** When operating a Boom or Knuckle Boom truck the operator and anyone in the bucket must be wearing a **harness and lanyard**, and must be properly **tied off** while in the bucket.
- **5.4 (h)** Boom truck directional controls will operate in **reverse** when the boom is positioned at the other end the machine.

Revision No.	Policy Section No.	Page			
	44	16 of 17			

- **5.4 (i)** When fully retracted, the bucket portion of a Boom truck extends well to the rear of the axle. This will cause the bucket to **swing** in the opposite direction when the truck is turned sharply. Maintain adequate clearance for this effect.
- **6. FUELING.** The rules for fueling are as follows:
- **6.1** Fuel machines in **designated** areas.
- **6.2** Make sure your using the **proper** fuel for your machine.
- **6.3** Never fuel a machine with the engine running.
- **6.4** Never smoke or allow open **flame** around a machine that's being refueled.
- **6.5** If acid or fuel gets into eyes, **rinse** thoroughly and obtain medical attention.
- **6.6** Gas and Diesel:
- **6.6 (a)** Be sure the machine is properly grounded, and no static electricity exists between the fuel filler and the tank.
- **6.6 (a) Ground** the nozzle to the fuel tank filler neck.
- **6.6 (b)** Avoid **sparks**.
- **6.6 (c)** Don't **overfill** the tank. Clean up any spills immediately.
- **6.7** Be sure the tank you're filling is the **fuel tank!** Many times the hydraulic tank is mistaken for the fuel tank. **If this occurs, do not operate the machine.**
- **6.8** Propane:
- **6.8 (a)** If a machine will not be used an hour or more, **shut off** the propane tank valve.
- **6.8 (b)** Propane is **explosive!** Use extreme caution.
- **6.8 (c)** Propane can cause **frostbite.** Use proper protective equipment.
- **6.8 (d)** Propane gas is heavier than air and can **accumulate** in low areas.

Revision No.	Policy Section No.	Page			
	44	17 of 17			

- **6.8 (e)** Only trained and **authorized** personnel are allowed to refill propane tanks.
- **6.8 (f)** Tanks are under extreme **pressure.** A ruptured tank becomes a lethal rocket! Secure tanks when transporting them.
- 6.9 Battery power:
- **6.9 (a)** If your machine is battery powered, charge the batteries in a well **ventilated** area.
- **6.9 (b)** Remember that charging batteries produces **explosive** gases.
- **6.9 (c)** If battery acid or fuel gets on your skin or clothes, **rinse** off thoroughly at once.

Congratulation! By completing this training session you are well on your way to becoming a safe equipment operator. By applying what you have learned you will be doing your part to control one of the main causes of accident and death on construction sites.

These rules and regulations are a compilation of federal, state, and local, rules and regulations. They are considered THERMA Company policy. They are intended to insure the safest possible operation of aerial lift machines.

Failure to follow these policies will be cause for disciplinary action up to and including termination.

SCISSOR/BOOM LIFT DAILY INSPECTION CHECKLIST

Monday

Make:



Sunday

Saturday

Unit#:

Friday

To be completed **DAILY** by the operator or authorized person **BEFORE** each use.

Wednesday

Thursday

Model:

Tuesday

Date:												
Hour Meter Reading:												
Operator/Inspector:												
For each "Inspection Item," indicate one of the following: P=Pass F=Fail N/A=Not Applicable												
INSPECTION ITEM			М	Т	W	Th	F	S	Su	Comments Explain 'F'		
Labels/Operator Manual												
Chassis/Mast: Cracks, Welds, Deformation												
Seatbelt Function												
Wheels/Tires: Pressure, Cracks, Splits, Missing Lugs		g Lugs										
Fluid Levels/Leaks: Oil, Fu	uel, Water, Battery(s), Hoses										
Lights, Alarms, Horn, Backup Bell, Warning Lights		ights										
Mirrors, Gauges												
Brakes: Operational, Park	ing											
Steering, Lift Controls												
Site: Holes/Drop-offs, Slopes, Grades, Uneven Surfaces		n										
Site: Electrical, Water, Sprinkler, Chemical Lines												
Site: Overhead Obstructions												
Equipment and site are safe for operation												
Railings/Safety Chains/ Extensions												
Stabilizers/Outriggers												
Operating/Emergency Controls: Upper, Lower, Guards												

Note: Any item not checked requires the unit be taken out of service until the problem is corrected.

REPORT ALL DEFECTS TO YOUR SUPERVISOR/FOREMAN IMMEDIATLEY

General Comments: