

E-Z LIFT 2000TM
BMC/TMC
OPERATORS MANUAL

EZ90018-EZ90538
EZ90549-EZ90689

This page left intentionally blank.

President's Message

The *E-Z LIFT 2000* TM was designed and invented with many different applications in mind. Be it commercial, industrial, agricultural, or recreational use, there is a place for the *E-Z LIFT 2000* TM.

The *E-Z LIFT 2000*'s TM ease of operation, through its hand held remote control makes it simple to use. Within a few hours of purchasing the unit you will be enjoying the many benefits of the machine.

The *E-Z LIFT 2000*'s TM unique patented design offers the purchaser the strength and durability of a finely built machine. These qualities are assured through stringent quality controls and extensive field-testing. With a few maintenance duties to be performed as described in this manual, the *E-Z LIFT 2000* TM will be dependable and hardworking asset to any company or individual.

HIGHLINE Mfg. Inc. wishes to thank you for your purchase and is confident this unit will meet all your mini-crane needs for many years to come.



Raymond Bussiere
President

This page left intentionally blank.

Table of Contents

President's Message	i
Table of Contents	iii
1. Description	1
2. Specifications	3
Hydraulic Pump Thermal Performance Data	4
3. Safe Operating Practices	5
Safety Precautions	5
Load Handling	6
Operation	7
Signals	7
4. Operation	9
Operating Configuration & Conditions	9
Pre-operational Checks	9
E-Z Lift Setup	10
E-Z Lift Operation	11
E-Z Lift Tear-down	11
E-Z Lift Tear-down	12
5. Responsibilities	13
Installers	13
Owner	13
Operator	13
6. Truck Installation	14
Vehicle Specifications	15
Installation checklist	16

This page left intentionally blank.

1. Description

The E-Z Lift 2000 TM is a telescoping hydraulic boom crane that is available in two mounting versions: pickup mounted and trailer mounted. All crane functions are controlled from a hand-held remote control. The two section hydraulic telescoping boom is capable of 340-degrees of rotation and 4' (1.2 m) of hydraulic-powered extension, providing a maximum reach of 10' (3.0 m) with the standard boom extension and 17' (5.2 m) with the long boom extension. The main boom hydraulics and the optional E-Z Hoist provide a rated crane capacity for material handling of 15000 ft-lb. (20300 N-m).

Several options* are available for the E-Z Lift 2000 TM to tailor it to a particular application.

- E-Z Hoist (1000 lb./450 kg capacity, 12VDC)

- Man-basket (300 lb./140 kg capacity)

- Pallet Forks (2500 lb./1130 kg capacity)

* Consult your local Highline industrial dealer for information on additional options, which were not available at the time of publication of this manual.

This page left intentionally blank.

2. Specifications

E-Z LIFT 2000™

- Load ratings are only valid if the stabilizers are extended and set.
- The weight of any optional attachments must be deducted from the load rating.
- Ratings are for the crane only. Refer to the option for its ratings.
- All load ratings are based on structural limits.

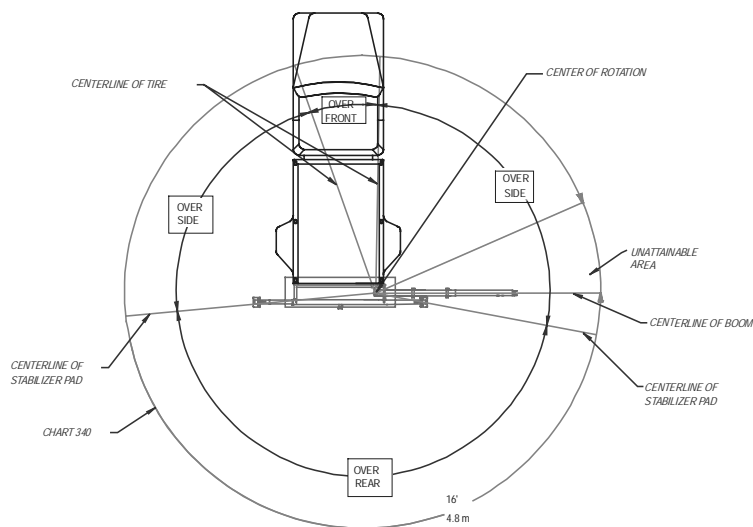
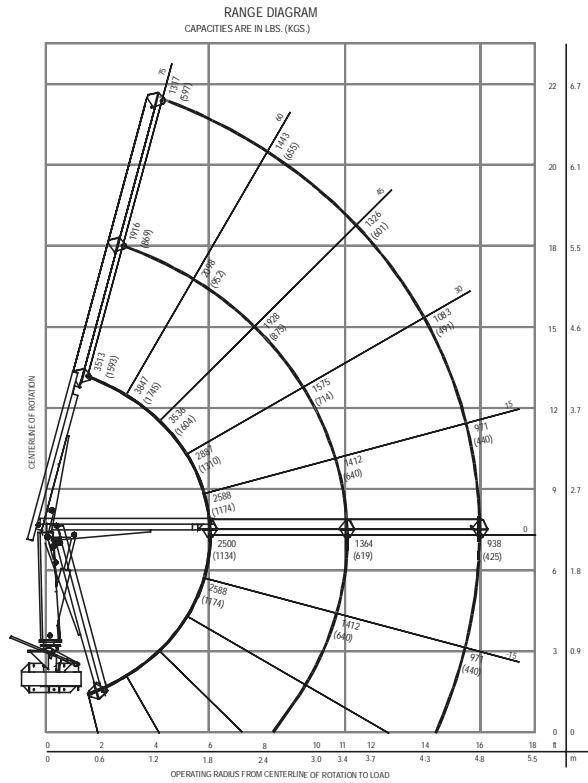


Figure 2.1 Load chart and work area chart.

Boom:

	Standard	Long
Max Reach	10'(3.0 m)	17'(5.2 m)
Max Height (above crane frame)	14'6"(4.4 m)	20'4"(6.2 m)
Elevation	-75° to +75°	
Rotation	340°	
Telescoping Action (Hydraulic-Powered)	4'(1.2 m)	

Hydraulic system:

Max Flow (under no load)	3.2 gpm (12 L/m)
Max Operating pressure	2500 psi (170 Mpa)
Relief valve settings	
Pump relief setting	2500 psi (170 Mpa)
Motor cross-over relief setting	2000 psi (140 Mpa)
System capacity	6.3 gal (US) (24 L)
Reservoir capacity	4.5 gal (US) (17 L)
Hydraulic Fluid ISO Grade	HVI 36
Filter	10 microns
Max Current (@ 2500 psi)	225amps

Outriggers:

Extended width	12' (3.7 m)
Retracted width	7'6" (2.3 m)
Max Load Bearing Pressure	145 psi (10 Mpa)

Collapsed dimensions:

Width	95" (2.41 m)
Depth	19" (.48 m)
Height	21" (.53 m)

Weight (with hydraulic fluid):

Superstructure	1370 lb. (621 kg)
Hydraulic power-pak	90 lb. (41 kg)
Standard extension	20 lb. (9 kg)
Long extension	100 lb. (45 kg)

HYDRAULIC PUMP THERMAL PERFORMANCE DATA

Hydraulic Pump				12 VDC Motor		
Pressure		Flow		Current	Run Time	Duty Cycle
(psi)	(MPa)	(gpm)	(lpm)	(amp)	(min)	(min / 10 min)
500	3.4	2.3	8.7	116	8.4	2.3
1000	6.9	1.8	6.8	144	6.4	2.1
1500	10.3	1.5	5.7	172	5.1	1.8
2000	13.8	1.3	4.9	200	4.0	1.5
2500	17.2	1.1	4.2	228	2.9	1.2

3. Safe Operating Practices

It is impossible to compile a list of safety precautions covering all situations. However there are basic safety precautions that must be followed during daily operation. Safety is the operator's prime responsibility, since any piece of equipment is only as safe as the person at the controls.

SAFETY PRECAUTIONS

- The operator must be fully trained and qualified for the operation being performed.
- Know the equipment; learn its strengths and limitations.
- Ensure that the equipment is in good working condition and that it will not endanger property or personnel.
- Do not place any part of your body or clothing near rotating or moving parts.
- Keep the work area clear of unauthorized personnel.
- Always provide adequate clearance around, above and over the vehicle when rotating the load to either side. If the load is swinging, damage may occur to the vehicle if proper clearance is not provided.
- Before using the equipment, the operator must familiarize themselves with the equipment and its proper care.
- Read and understand the operator's manual before operating the equipment.
- Follow the directions on all placards. Know what they mean and follow their instructions.
- Wear proper clothing and protective equipment for the job.
- Inspect the crane daily.
- Ensure routine maintenance and lubrication is being performed.
- Don't operate damaged or poorly maintained equipment.
- Familiarize yourself with the work site before operating the equipment.
- Use caution in the vicinity of overhanging banks or edges.
- Ensure that all guards and safety devices are in place.
- Never operate the equipment in darkness, fog, or adverse weather.
- Keep the equipment free of dirt, oil, grease, water and other substances.
- Ensure that a fire extinguisher is readily available.

LOAD HANDLING

- Do not exceed the equipment rating. Know the weight of the load being lifted. (Load weight includes the weight of the hook assembly and rigging.)
- Ensure no side load is applied to the boom or load.
- Attach the load to the hook by using slings or other devices of sufficient capacity.
- Locate the crane as close to the load as possible.
- Do not stand or walk beneath a suspended load.
- Do not lift, pull, or transport loads over people.
- Always lower any load before leaving the crane unattended.
- Ensure the load is well secured and balanced in the lifting device before it is lifted more than a few inches.
- Do not permit anyone to ride loads, slings, or hooks, for any reason.
- Check the lift and swing path for any obstructions before moving the load.
- Bring the hook over the load center of gravity to minimize swinging.
- Ensure there are no sudden starts and stops during operation.
- Ensure loads are properly landed before being unhooked.
- Do not drag loads along the ground; always lift the load.
- Always maintain adequate distance from power lines.

OPERATION

- Always test all of the functions at the start of operation to ensure proper operation.
- In cold weather (below -4° F(-20° C)), initial E-Z Lift 2000 TM operations and setup procedures must be without a load for 3 to 5 minutes to reach the optimum working temperature of the hydraulic fluid and components.
- Ensure the vehicle tires are in good condition and inflated to the vehicle manufacturers specification.
- Always engage the park brake of the vehicle and use wheel blocks
- Ensure the outriggers are fully extended and firmly positioned on solid surfaces.
- Ensure the crane is level.
- Measure the boom length before making lifts and stay within the approved load ratings. Check the load chart. The boom length can be determined by measuring along the boom from the boom foot pin to the load attachment point.
- The telescoping boom may not retract from the fully extended position under maximum rated load. If this situation occurs, raise or lower the boom until the load can be retracted.
- Always make sure the E-Z Lift 2000 TM is in transport position before traveling.

SIGNALS

When hoisting operations require signals (when the view of the load is obstructed or operation is occurring within a crane's boom length of the minimum safe distance from power lines), the person in charge is required to supply a qualified signalman. Operating signals must be discernable or audible at all times.

This page left intentionally blank.

4. Operation

OPERATING CONFIGURATION & CONDITIONS

- Crane frame level
- Outriggers fully extended and locked in working position
- Firm and level surface
- Block tires
- Winds less than 20 mph (32 kph)
- Operate within the cranes load ratings
- No side load applied to the boom or load

PRE - OPERATIONAL CHECKS

1. Check Slope Of Crane

- Ensure the crane is level. Use the outriggers to achieve this.

2. Check Wind Speed

- The wind speed during operation should not exceed 20 mph (32 kph). Excessive wind could cause a swaying of the load or boom drift.

3. Check Overhead

- The area must be checked for overhead wires. Stay clear of all wires. Electrical current can be conducted through the air if the voltage is high enough and the distance is small enough. Check with local power companies to find the minimum safe distance.

4. Check Ground Conditions

- Before operating the E-Z Lift 2000 TM ensure that the ground surface is adequate. Outriggers can sink into soft ground causing a potentially dangerous situation. On soft ground, support can be improved by placing large pads under the outriggers.
- The surface must be level. Uneven surfaces decrease the stability of the vehicle. Check for hollow spots which may indicate underground washouts, buried pipes or cables. The outriggers must be set on a firm and level base.

5. Check Load Weight

- The load weight must be verified prior to operation. Ensure that the load is within limit of the load chart posted on the E-Z Lift 2000 TM. This chart indicates the capacities of the E-Z Lift 2000 TM under ideal lifting conditions.

6. Check The Work Area

- The work area should be checked for being suitable to load or unload.
- Before beginning to work, it may be necessary to place barricades around the work area. This will help keep unauthorized persons out of the area. In a busy area, it may be necessary to place a signal person who can give hand signals to keep the area clear.
- It is the operator's responsibility to keep the area clear.

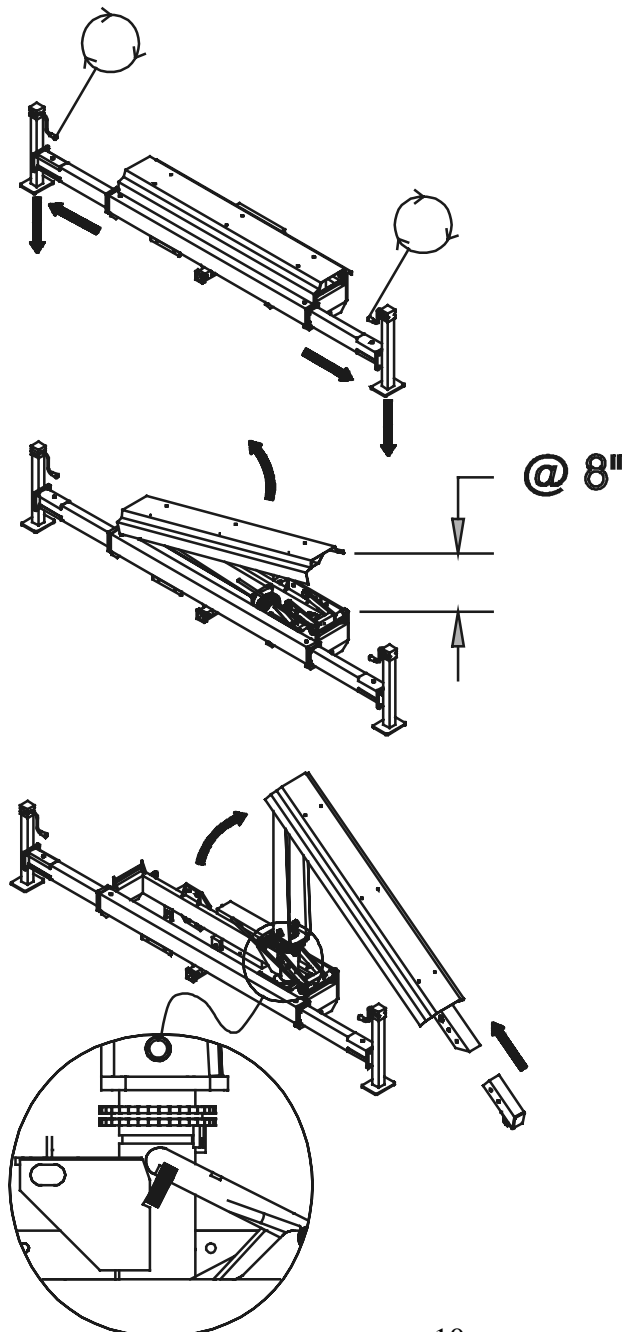
NOTE: IT IS VERY IMPORTANT THAT THESE ITEMS ARE CHECKED PRIOR TO OPERATION. FAILURE TO DO SO COULD CAUSE DAMAGE TO THE EQUIPMENT OR DANGER TO PERSONNEL.

E - Z L I F T S E T U P

After the pre-operational checks of the equipment and job site, the E-Z Lift 2000™ is ready for setup. The following steps outline the procedure for erecting the E-Z Lift 2000™.

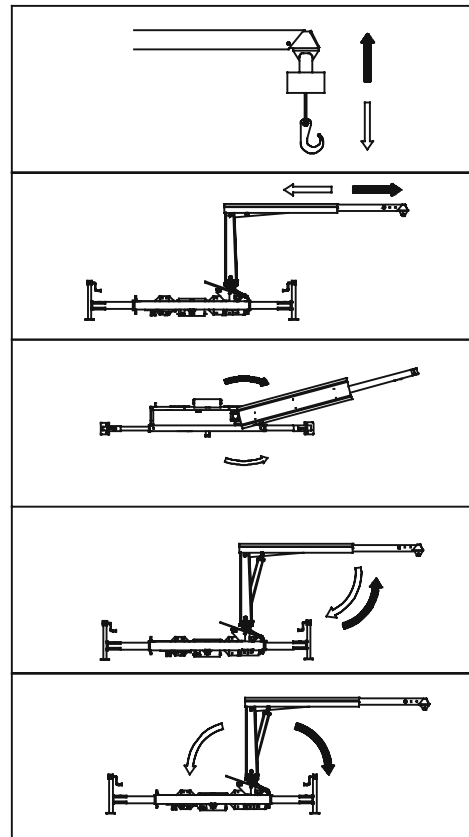
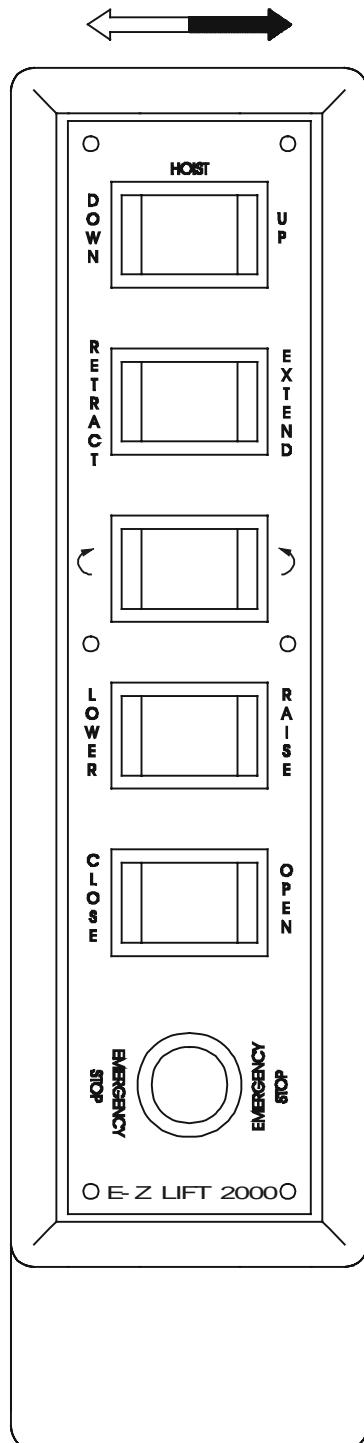
1. Engage the park brake and block the wheels.
2. Plug in the controller.
3. Fully extend the outriggers and lock in the working position.
4. Lower the outrigger drop leg as far as possible.
5. Level the crane front to back and side to side using the outriggers.
6. Press "**Raise**" until the end of the boom is raised approximately 8" (20 cm) from the frame.
7. Press "**Open**", to raise the mast and boom 8" (20 cm) out of the frame.
8. Press "**Raise**" to raise the end of the boom another 10" (25 cm).
9. Press "**Open**" to raise the mast until fully upright and locked into position as shown in the diagram.
10. Insert the pin to secure the mast lock.
11. Press "**Extend**" to extend the telescoping boom approximately 20" (50 cm).
12. Install the desired boom extension or option.
13. Adjust flow control valve for adequate rotation speed.

The E-Z Lift 2000™ is now ready for operation.



E - Z L I F T O P E R A T I O N

The E-Z-Lift 2000™ has several functions and options. It is best to familiarize yourself with all functions to ensure proper operation. Listed below are the functions of the remote control and operations of the E-Z Lift 2000™.

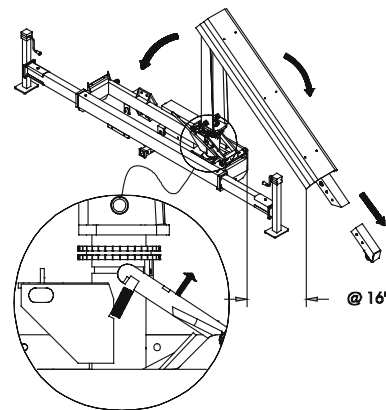


E - Z L I F T T E A R - D O W N

Preparing the E-Z Lift 2000 TM for transport is the exact reverse operation of the setup procedure described earlier. The closing procedure is as follows:

1. Remove the boom attachment.
2. Press “**Rotate**” to rotate the E-Z Lift 2000 TM boom toward the curbside of the vehicle until the boom axis is parallel to the vehicle axles.
3. Press “**Retract**” to fully retract the telescoping boom.
4. Lower the boom until the end is approximately 16” (40 cm) to 20” (50 cm) from the frame.
5. Remove the mast lock pin and lift the mast lock to release the mast.
6. Hold the lock handle up and press “**Close**” until the mast is 8” (20 cm) above the frame.
7. Press “**Lower**” to lower the end of the boom until it is 8” (20 cm) from the frame.
8. Press “**Close**” to completely fold the mast into the frame.
9. Press “**Lower**” to close the E-Z Lift 2000 TM.
10. Unplug the controller.
11. Fully raise the outriggers and drop legs. Lock the outriggers in the transport position.

The E-Z Lift 2000 TM is now ready for transport.



5. Responsibilities

INSTALLERS

- Verify the installation of the equipment prior to placing the unit in operation by performing the following tests:
 1. A functional test of the controls and safety devices;
 2. A stability test in accordance with ANSI/SAE J765;
 3. A load test under the units maximum load ratings;
 4. A visual inspection of the unit.
- Comply with all requirements of the applicable Canadian Motor Vehicle Safety Standard (CMVSS) or Federal Motor Vehicle Safety Standards (FMVSS) in effect at the time of installation.
- For equipment installed in the United States, be certified as a manufacturer of a motor vehicle under the FMVSS.
- Complete the information in Table 6.1 of this manual for the completed unit. Ensure the minimum vehicle specifications are adhered to and that the equipment is installed according to the installation instructions.

OWNER

- The owner must ensure they comply with all regulatory requirements in the region where the equipment is being operated.
- Ensure an equipment log is maintained which provides a complete history of the equipment. This log shall provide details of all inspection, testing and maintenance.
- Ensure equipment is operated only by personnel fully trained and qualified for the operation being performed.
- Ensure that no modifications or additions, which affect the stability, mechanical, hydraulic or electrical integrity, weight distribution, or safe operation of the equipment is made without the written approval of HIGHLINE Mfg Inc.
- The owner must supply a copy of the manual to the operator.

OPERATOR

- Ensure equipment is used only for the intended applications and that safety practices are observed.

6. Truck Installation

The E-Z Lift 2000 TM is shipped with the frame ninety percent assembled. The cover is not on for mounting purposes. The outriggers, boom extension, and hydraulic power pack are not assembled to the main unit.

1. Ensure the vehicle meets the minimum requirements listed in Table 6.1.
2. Each vehicle has its unique mounting difficulties. The truck mounts must be designed and certified to meet the following specifications:
 - Factor of safety of two under all rated crane loads
 - Material meets CSA G40.21 Grade W specifications;
 - All welds, welding procedures, and welding operator qualifications are in accordance with CSA W47.1 and W59 (Canada) or ANSI/AWS D14.3 and D1.1 (United States).
 - Crane frame level with vehicle frame.
 - Top of crane frame 24" (60 cm) to 26" (65 cm) above ground when the vehicle is level. The installer may have to adjust the vehicle's suspension to level the vehicle after the installation of the crane.

FAILURE TO HAVE ADEQUATE TRUCK MOUNTS CAN RESULT IN DAMAGE TO THE CRANE AND VEHICLE

3. Remove all components from the crate to ensure no damage has occurred during shipping.
4. Bolt the E-Z Lift 2000 TM to the truck mounts using the supplied hardware.
5. Install the wiring according to the electrical schematic on page 19 of the Parts and Maintenance manual.
6. Install the hydraulic reservoir and power pack in a secured location in the truck box or on the truck bed. Install hydraulics according to the schematic on page 16 of the Parts and Maintenance manual.
7. Install the lighting according to the diagram on page 21 of the Parts and Maintenance manual. Bolt red/amber clearance light assembly to the sides of the frame (red to rear of crane) and crimp wires. Splice the plug into the vehicle running lights.
8. Install the cover and outriggers. Store all optional equipment in a desirable location.
9. Follow the set up instruction on page 10. Test the E-Z Lift 2000 TM to ensure there are no interferences and it is working within the desired parameters.

VEHICLE SPECIFICATIONS

The following specifications are minimum values required to provide a stable and structurally sound vehicle for the E-Z Lift 2000 TM unit.

Table 6.1

Axle Rating:

GVWR	8500 lb. (3859 kg)
GAWR (Front)	4500 lb. (2043 kg)
GAWR (Rear)	6000 lb. (2724 kg)

Dimensional Values:

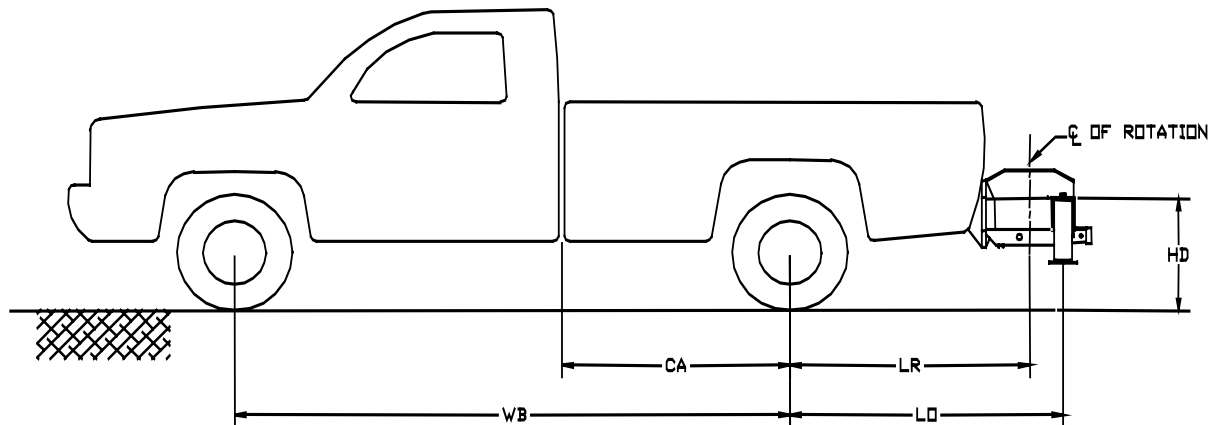
Wheel base (WB)	130" (3.3 m)
Cab to Rear Axle (CA)	55" (1.4 m)

Frame Specifications:

Frame Section Modulus	5.6 in ³ (91.8 cm ³)
Frame Resisting Bending Moment	200,000 in-lbs. (22600 J)
Frame Yield Strength	36000 psi (248 Mpa)

Weights:

Curb Weight for Stability	4800 lb. (2179 kg)
---------------------------	--------------------



WHEEL BASE	WB	
REAR AXLE TO BACK OF CAB	CA	
REAR AXLE TO CENTER OF ROTATION	LR	
REAR AXLE TO OUTRIGGERS	LO	
GROUND TO CRANE FRAME	HD	

	GWR	CURB
VEHICLE		
FRONT AXLE		
REAR AXLE		

INSTALLATION CHECKLIST

Customer	_____	Installation Date	_____

Installer	_____		

Vehicle Description	_____		
VIN	_____		
Crane S/N	_____		

The truck mounts were designed and certified to meet the specifications listed on page 14 of the Operators manual.

The vehicle meets the minimum requirements listed on page 15 of the Operator manual, and Table 6.1 was fully completed.

A functional test of the controls and safety devices was performed.

A stability test in accordance with ANSI/SAE J765 was performed.

A load test under the units maximum load ratings was performed.

A visual inspection of the unit was performed.

_____	_____	_____
Name of Installer	Signature	Date