



Line Powered Mobile Column Lift Systems

LP-10-6-AJ models

1. DESCRIPTION:

This description is for a heavy-duty mobile lifting system, consisting of 6 columns, which are capable of lifting 18,000 lbs. per column or up to 108,000 lbs. per set. Each lifting column shall be mobile and easily positioned to the tires/wheels of the vehicle for lifting. The heavy-duty mobile lifting system is described in such detail as to procure an item that is ready for installation and use.

- (a) The lifting system must be Manufactured in the United States of America.
- (b) The lifting system shall have the capacity to lift heavy-duty vehicles with weights up to 108,000 lbs. with a 6-column Mobile Lifting System.
- (c) The Mobile Lifting System needed shall be "ALI/ETL" CERTIFIED.
- (d) Each column shall weigh no more than 1,033 lbs. permitting ease of movement during placement and storage of the lifts when not in use.
- (e) The lifting height shall be a minimum of 69 inches.
- (f) The same 6-column mobile lifting system must have the capacity and attachments to engage small sized tires as well. Using any 2-columns and the front and rear light truck adapter accessories, this system must be able to raise smaller type vehicles and trailers from frame engaging points front and rear. This will leave wheels and tires free for maintenance.
- (g) This system shall have an Explosion Proof Rating of Class I, Division II.
- (h) The lifting system specified shall provide a factory-direct or a company certified service technician to setup the equipment and maintain the equipment.
- (i) Repair parts availability within 48 hours.

2. REQUIREMENTS:

The mobile lifting system will be the standard product of the manufacturer and will be of heavy-duty quality, intended for continuous use. It is intended that the subject equipment, all components and accessories shall be a commercially available product of the manufacturer or his suppliers. It shall be of the manufacturer's current design and carried in stock or can be produced in a reasonable period of time. All parts shall be new and unused. It shall also be deployable without dismantling.

- All lifting columns must be "backward compatible" with earlier versions of like design.

2.1 CONSTRUCTION:

In accordance with the new American National Standards Institute (ANSI) requirements "Safety Standard for Automotive Lift Construction, Testing and Validation", ANSI/ALI ALCTV-2017, where applicable. Each post shall be tested, witnessed and verified by a Nationally Recognized Testing Laboratory (NRTL) for operational and physical conformance to the ANSI/ALI ALCTV-2017, UL-201 Standard for Safety of Garage Equipment and CAN/CSA C22.2 No.0, 14, 68 and 100 Canadian Standard. The certified posts shall be NRTL listed, both electrically and structurally, and bear the ALI/MET label of compliance.

3. MOBILE COLUMN LIFT:

3.0 SUPPORT COLUMN:

- The support column shall be a single, heavy-duty wide flange H-Beam, with a section module not less than 7 inches wide.
- The H-Beam should be a solid, one piece, hot-rolled steel column.
- The flanges of the beam shall be precision-machined to allow smooth operation of the lift carriage rollers.
- Three quarter inch (3/4") diameter counter-bores on two-inch (2") centers shall be machined vertically into the web of the H-Beam, to provide an indent for operation of the mechanical safety lock.

3.1 LIFT CARRIAGE:

- The lift carriage assembly shall form a box-like structure around the support column and be guided with four (4) flanged rollers.
- The bearings shall be self-lubricating type, requiring no lubrication.
- The bearing shafts shall insert from the outside and provide for easy removal for inspection or replacement of rollers.
- Each carriage shall have a removable access panel on the front and rear for easy entry to all safety solenoids and switches.

3.2 SUPPORT BASE:

- The support base shall be mobile; complete with casters both rigid and swivel caster shall be provided.
- A hydraulic jack shall be mounted on the steering end and shall be capable of raising the base above the floor one and three quarter inches (1.75") to provide adequate clearance when moving lifting post over uneven surfaces.
- A handle shall be attached to the steering mechanism and be spring-loaded to the vertical position.

3.3 MOTOR, BRAKE AND DRIVE:

- The motor shall be totally enclosed, 208/230 or 440 volts, 3 phase, 60 hertz synchronous motor.
- Each motor shall be a minimum of 2 hp.
- The motor shall be equipped with a spring-loaded brake which engages automatically at ANY height, eliminating the need to manually engage a mechanical safety locking mechanism in order to safely work on the vehicle.
- The brake shall have a means for attaching a handle, which allows manual release of the brake for lowering of lift should an electrical power failure occur without disassembly of the motor or enclosures to perform intended function.
- The motor shall be sealed and self-lubricating.
- A reduction gearbox shall be provided for connecting the motor to the ball screw drive assembly.

3.4 BALL SCREW AND NUT DRIVE:

- The Mechanical lifting drive shall be a re-circulating ball bearing screw shaft and nut.
 - o Brass or bronze type nuts or "acme" threaded nuts are not acceptable due to:
 - Parasitic nature of design causes additional maintenance costs
 - Additional maintenance of cleaning spindle
 - o Hydraulic lifting cylinders are not acceptable due to:
 - Inherent leaking of hydraulic fluid
 - Additional weight of columns reduces mobility of lifts
 - Difficulty to synchronize the lifting posts
 - Additional maintenance of fluid replacement
 - Inconsistent operation in cooler temperatures
 - Manual secondary locking mechanism is required during use
- The ball screw shall be the ball bearing type and shall be completely self-contained within the nut.
- There shall be no separate or external races on the nut for re-circulating the ball bearings.
- Lubrication of the ball screw shaft and nut shall not be more than twice a year.
- A Zerk type fitting shall be provided at the top of the nut to perform necessary lubrication.

3.5 MECHANICAL SAFETY DEVICE:

- A redundant mechanical wedge-type safety device, independent of the ball screw shaft and nut, shall be provided.

- The safety device shall automatically wedge between the lifting carriage and the H-Beam creating a redundant measure of safety.
- A proximity switch shall be provided which automatically stops operation of all lifting posts when mechanical safety lock engages or if an obstacle comes in contact with the lifting carriage during descent

3.6 ELECTRICAL CONTROLS:

The following electrical controls shall be provided (all electrical components shall be watertight):

- The lift shall be furnished with a Main Control/Power Box that is easily removed
- The removable power box shall also be capable of mounting to one lift or a series of lifts as desired by the user.
- The control box shall be mounted onto a column by means of two (2) mounting rails, thereby enabling the power box to be easily removed and relocated onto any other system column without reconfiguring the wiring system of the other posts and/or relocation of slave boxes.
- No tools shall be required to move the power box.
- All wiring shall be labeled with numbers corresponding to it on electrical/schematic to assist in troubleshooting.
- All switches will be watertight to prevent the entry of moisture.
- A built-in transformer shall be provided in the power box in order to accept 3-phase current.
- Each lift system shall be furnished with one main control box.

PFR Phase Control – Electrical sensing device shall be provided in the removable power box and shall perform the following functions:

- Automatically select proper phase rotation.
- Prevent unit from operating if any phase is inoperative.
- Detect low voltage and shutdown system.
- Power On Switch – Will reset electronics in the event of a fault shutdown.
- Two (2) 208/440 – power relays for rotation sequencing.

LIFTING COLUMN CONTROLS

- Shall be mounted into an anodized aluminum extruded enclosure.
- All circuitry shall be on a printed circuit board (PCB) interfacing with all control wiring, motion detection and speed control.
- Each PCB will have self-diagnostic lights, indicating operation mode.
- The PCB shall be furnished with moisture protection.
- The Column Controls shall enable user defined operation between three (3) different modes of operation
 - Automatic Mode “A”
 - In automatic mode, all columns operated simultaneously, the LED display shall show an “A”
 - Single Mode “S”

- LED Display shows an “S” when selector switch is in single column position allowing the use of a single, user defined, column.
- Group Mode “G”
 - In group mode the user defines which lifting columns of the system are used during operation, the LED display shall show a “G”
- When a safety device has been activated the LED Display shall be capable of showing the user a specific Error Code to assist the user in determining cause of shutdown.
- All up and down switches must be dead-man type, requiring constant pressure by an operator to raise or lower.
- A red mushroom palm operated switch labeled EMERGENCY STOP SWITCH must be provided which completely stops operation of all lifting posts when actuated.
- UPPER POSITION & SYNCHRONIZATION PROXIMITY SWITCH
 - One no-contact proximity switch per column shall ensure stopping of unit when carriages have reached their top position.
 - The same switch shall ensure synchronization between all columns in lifting system.
- LOWER POSITION PROXIMITY SWITCH
 - No-contact proximity switch stops the operation of unit when lift assembly has reached the fully lowered position.
- MECHANICAL SAFETY LOCK SWITCH
 - Switch shall be a no-contact proximity switch and is actuated by the ball screw nut when the mechanical safety lock engages.
 - If an obstruction blocks the lifting carriage from lowering, the proximity switch will shut the entire system off.
 - All switches shall be water-resistant type.

3.6.1 LIFT CARRIAGE MOVEMENT DETECTOR:

A no-contact proximity switch shall be provided that detects the up and down movement of the lift carriage and if any of the following occurs, stops operation of all lifting posts:

- Lifting carriage does not move up or down.
- Lifting carriage moves up or down faster or slower than other lifting posts by preset limit, this proximity switch shall momentarily stop the applicable column(s) and synchronize the columns during operation.
- When lifting carriage is lowering, if carriage exceeds preset lowering speed, system will shutdown and safety lock will automatically engage.

3.6.2 ELECTRICAL CABLES:

- A (30') long power cable shall be connected to the main control/power box
- The interconnecting cables shall be a single, multi-conductor cable foot (30') long.

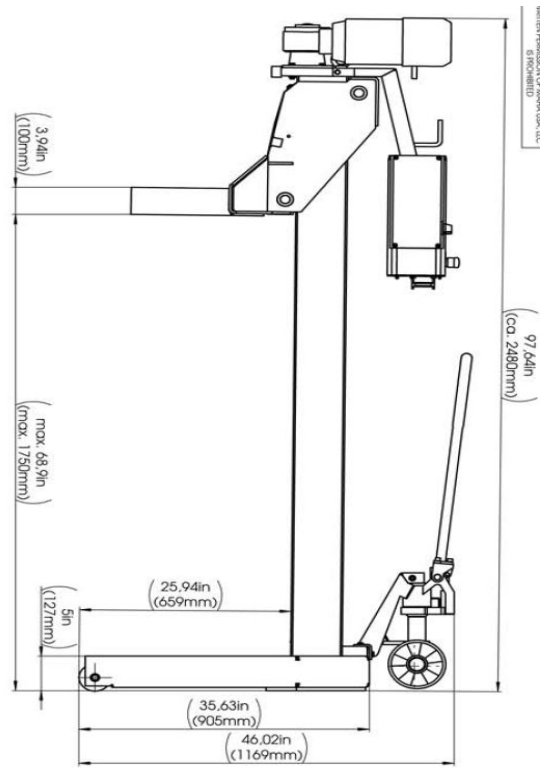
- The outer sheath of all cables shall be of a material that will provide maximum resistance to wear and damage and be impervious to fuels, oils or other fluids common in a vehicle repair facility.
- The interconnecting cables on each end shall have a quick disconnect plug.

3.6.3 FINAL/TERMINATING PLUG:

Shall be installed in the last post in series and allows for use of two posts without having all four (4) posts hooked-up. Additionally, the termination plug serves as an operator lockout, for user restriction or as a diagnostic plug for system diagnostics.

3.7 SPECIFIC SIZES AND CAPACITY

Load Capacity per column:	18000 lbs.
Load per set of 6:	108,000 lbs.
Lifting / Lowering Speed:	117 sec
Max. Height of Column:	97.6" (2480mm)
Max. Raised Height:	69" (1752mm)
Length of column:	46" (1169mm)
Width of column:	45.27" (1150mm)
Length of Lifting Fork:	12.5" (310mm)
Width of Lifting Fork:	31.5" (800mm)
Max. Tire Size: with standard carriage with reduction sleeves	12R-24.00 to 10.00-20.00 down to 13
Turning Circle:	43.3" (1100mm)
Supply Voltage:	208/230V or 440/480V - 3Ph - 60Hz
Control Voltage:	24Volts
Fuse Protection:	30A, set of 4 Columns 50A, set of 6 Columns
Motor Power:	2 hp (1.5KW)
Weight per column:	1033 lbs. (444.5 kg)



Model	Capacity Per Post	Carriage Width	Fork Length
LP-6-XXW	12,000 lbs.	48.23 in. (1,225mm)	20 in.
LP-8-20	15,000 lbs.	31.5 in. (800mm)	
LP-8-20W	15,000 lbs.	35.43 in. (900mm)	
LP-9-XW	16,000 lbs.	36.61 in. (930mm)	16 in.

3.8 ACCESSORIES – Must be ALI Certified

The following accessories are optional with the Mobile Vehicle Lifting System:

- **WIDE BODY CARRIAGE:** E.g. for lifting HEMMT and HET vehicles with 1600R-20-inch military flotation type tires, a special wide carriage may be needed.
 - This carriage needs to have a minimum width of 27 inches and outside width of 35 inches.
 - This wide-body carriage will be able to engage the tire on the vehicle while it sits on the deck, eliminating the time required to elevate the tire to engage with a standard carriage.
- **MOBILE SUPPORT STANDS:**
 - The support stands shall have a capacity of 18,000 pounds with a cradle support pad.
 - The stand shall be made of a five-sixteenth inch (5/16") steel plate with head allowing the mounting pad to make direct contact with the vehicle frame.
 - The support stands shall be approximately 51-78" height which is adjustable in stepped increments of 2 inches per step.
 - A ¾" steel quick release pin shall be furnished.
 - Each stand shall be equipped with a spring for assisting in the height adjustments and shall have two (2) wheels and a handle for easy maneuvering and placement of stand(s).
- **SMALL WHEEL ADAPTERS:** Each adapter shall be made to slide over the current lifting fork of the lift system providing a reduction in the opening between the lifting forks on individual columns. This reduction allows for vehicles with smaller tire / wheel diameters to be raised.
- **CHASSIS CROSSBEAM:** The crossbeam shall be made easy to locate into position using four heavy duty casters. Each end of the crossbeam shall have provisions to saddle on to the forks of two adjacent columns. Each crossbeam shall come with two adjustable adapters that will slide along the top of the crossbeam section. Each of the crossbeams will have a capacity of 36,000 lbs.
- **LIGHT VEHICLE ADAPTER (Optional with Cart):** A pair of Light Vehicle Adapters shall be provided with each Lifting System. Each Light Vehicle Adapter shall be constructed using heavy-duty plate and two (2) pieces rectangular tubing as the support structure per single Light Vehicle Adapter. Each support pad shall have a threaded piece for fine adjustment to allow the operator easy and accurate adjustment of each individual support point. Each support pad shall allow the usage of different height adapters in 2in increments. The support pad structure shall allow the usage of differently shaped support pads, such as a fork pad or a round adapter pad.

3.9 TECHNICAL MANUALS: Complete technical manuals including the following shall be provided.

- Operator manual

- Maintenance manual
- Installation drawing
- Wiring schematic
- Spare parts list

3.10 TRAINING OF PERSONNEL: Supplier or manufacturer of equipment shall provide operator and maintenance training upon installation of equipment.

4. QUALITY ASSURANCE PROVISIONS

4.1 INSPECTION: The buyer reserves the right to perform such inspections as deemed necessary to assure material and pieces conform to the prescribed requirements. Upon receipt, this equipment shall be inspected by Quality Assurance to assure that the equipment is of quality design and construction and that it fully conforms to this specification.

5. SAFETY REQUIREMENTS:

Equipment shall comply with Title 29 of Federal Regulations, Part 1910 and National Safety Standards. The equipment shall comply with all applicable OSHA Standards and shall have safety devices wherever parts, components are hazardous to the operator and environment.



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