Specifications for Heavy Duty Wireless Mobile Column Vehicle Lift

TO FURNISH, DELIVER AND GIVE INSTRUCTION TIME FOR A WIRELESS FOUR COLUMN VEHICLE LIFT MANUFACTURED IN THE USA

AS SPECIFIED

It is the intent of this specification is to establish the minimum standards of quality and performance for portable mobile column lifts which will be used to lift a variety of vehicles including Trucks, Buses, Passenger Vehicles, Fork Lifts and other general service vehicles.

This specification shall describe a mobile column surface mounted, wheel engaging lifting system designed to elevate vehicles for the purpose of inspection and maintenance. One lifting system shall consist of four electric-hydraulic mobile columns sustaining 72,000 lb capacities (18,000 lbs per mobile column). Mobile columns may be added, (not exceeding 8 columns), removed or changed out. All mobile columns shall operate synchronously from any one of the lifting units by means of a control interface. The control system shall have replaceable printed circuit boards equipped with quick connect electrical couplers. The mobile columns shall be battery operated with a DC charging system built into each column for easy recharge and communication cable cord reel for cable management.

The specifications shall meet or exceed the following:

- 4 Mobile Columns: Capacity 72,000 lbs; 18,000 lbs per column.
- Lifting Fork Length: 14 inch forks accommodate rim sizes 9 inches (minimum) to 24 ½ inches (maximum).
- Motor: 3 kw, 24 volt minimum
- Control Voltage: 24 Volts DC. Rechargeable by 100 Volt Automatic Weather Tight Marine Charger.
- Battery Charge Cycle: (New Battery) 15-20 cycles per charge at rated load of lift.

FABRICATION

Column Assemblies:

- Columns shall be constructed of formed channel fabrication from a single steel plate and shall not require welded seams to form the column structure.
- Columns shall be further reinforced externally along their back face with structural steel angle for additional rigidity and extended service life. Rigid column design shall be protected from corrosion via sand blasted enamel painting of metal surfaces.
Each column shall be fabricated to a set of legs that will sit directly on the floor and provide a stable platform when lifting a load. When unloaded the mobile columns ride on a set of wheels to allow the units to be moved. When a vehicle is lifted, the wheels shall automatically retract and the lift shall sit down flat on its steel base and no lifted weight shall remain on the casters.

- Legs have an extended fork configuration that allows for extensions to be added at any time. Such extensions will permit the addition of longer forks to lift dual wheel assemblies or optional assemblies for lifting vehicles further away from the column assembly.

- Each of the lifting units shall contain a mechanical locking latch mechanism completely separate from the drive of the lifting system. This lock shall be gravity actuated with a spring loaded assist to ensure engagement at any position. Spacing between locking positions shall be a maximum of 3 inches in accordance with ALCTV-2006.

- The column structures shall be easily moveable on three wheels consisting of two fixed heavy duty steel wheels and a dual rubber steering wheel mounted at the rear of the column. Columns shall come equipped with a hoisting hook for lifting by overhead crane and a fork lift pocket lifting points on each column for ease of relocation by standard fork lift.

**Carriage Assemblies:**

- Each column assembly shall include a carriage assembly which consists of four (4) ultra-high Molecular Weight (UHMW) roller bearings. These bearings shall be oil impregnated and shall not require any greasing or maintenance of any kind.

- Each carriage assembly shall include a full enclosure for the lifting cylinder chrome rod. No part of the chrome lifting cylinder shall be exposed to impact at any time during the lifting stroke.

- Forks shall provide a minimum of 12 inches of sufficient safety
clearance between the column and the body of vehicle.

- Carriage assemblies shall come equipped with adjustable lifting forks to allow for adjustment of lifting forks for small tire applications to standard large tire applications without the need for adapter sleeves.
- Forks shall include handles to facilitate the lateral adjustment of forks for narrower spring loaded lock on the top of the fork. When adjustment of the forks is complete, locks shall automatically re-engage to secure forks from further movement.

**Hydraulic System:**

- Each lifting unit shall be equipped with an electric hydraulic power unit, consisting of a DC motor, gear pump, reservoir, check valve, pressure relief valve, and two control valves.
  - Entire power unit shall be totally enclosed to protect from dirt and water.
  - The direct drive lifting cylinder shall be installed in such a manner as to push the carriage up, using no chains or cables.
  - The extension of the cylinder shall occur inside of the carriage as to keep the plunger of the cylinder protected from dirt, sand, or any possible mechanical damage.
  - Hydraulic check valve shall hold load at any position of the cylinder.
  - Redundant mechanical safety lock shall be continuously engaged except while lift is being lowered.

- Pressure relief valve shall prevent overloading of the lifting unit.

- Unit shall be equipped with two control valves that shall be used to maintain synchronous operation when a lifting system of more than one column is being commanded to raise or lower.

- Hydraulic system shall be self-lubricating and shall require minimal maintenance.

**Control System: Premium, Wireless System:**

- All mobile columns shall have identical control panels and shall be designed to be interchangeable without regard to master/slave relationships.
- All mobile control panels are waterproof NEMA Type 4.
- All control circuits and motor power supply circuits shall be 24 volts.
- Circuit boards shall be upgradeable. Upgrades in software or control programming shall be available by swapping a memory stick only and board replacement or reprogramming by the County shall not be necessary.
- All mobile columns shall have a manual lowering override due to loss of power to the unit.
- Indication lights on each control panel shall show mobile column configurations for an individual mobile column, paired mobile columns, grouped mobile columns, or all mobile columns.
- “Up” and “Down” buttons shall have momentary function “Dead Man” type switches while depressed and operate from only one control panel at a time.
- “Select” button shall permit operation of an individual mobile column, paired mobile columns, grouped mobile columns, or all mobile columns.
- “Emergency Stop Button” on each panel will shut down all connected mobile columns.
- All control panels shall have automatic synchronization through the full stroke of the hydraulic cylinder with a maximum tolerance of 1 inch.
- Control system will actively control hydraulic correction to maintain level synchronization, unless a column deviates more than 3.5 inches from any other column, at which point all motion halts and an error alert is generated.
- Error codes and other diagnostic information shall be automatically provided when a fault is detected via alpha-numeric display.
- Programmable height limit settings with no external limit switches.
- Lift shall come equipped with a slow lowering function.
- Each column shall have its own 110 volt waterproof marine, twenty (20) amps, 2–bank battery smart-charger. The battery charger shall have
two independent 12 VDC output leads and incorporate automatic 3-stage charging to minimize charge time and maximize battery life. Total recovery time for a completely discharged system shall be less than 12 hours. All battery chargers in a system can be connected together into a single 110V receptacle.

- The lift control interfaces shall include visual representations showing the relationships between the lift columns and a vehicle, such as lift column icons positioned around a vehicle icon.
  - Lift shall come equipped with a three color battery charge indicator.
  - The charger shall also indicate the status of the battery.

**Steering:**
- The steering assembly shall consist of a fully automatic, spring-loaded steering handle. The steering handle shall lock the movement of the rear wheel when it is in the vertical position.
  - The steering assembly shall allow the lift to be moved around the shop floor without the need to pump up a hydraulic jack or pallet jack mechanism.
  - The rear wheel shall be spring loaded as to retract when weight is applied to the column. All other wheels will automatically retract when the lift is loaded with the weight of a vehicle. All wheels shall be equipped with sealed ball bearings.

**Certification:**
- Lift shall be 3rd party certified by ETL testing laboratory and labeled with the ETL/Automotive Lift Institute (ALI) label that affirms the lifts meet conformance to all applicable provisions of American National Standard ANSI/ALI ALCTV-2006 and in compliance with IBC 2003, IBC 2006 chapter 30 section 3001.2.