

WIRELESS - 800 Series 18,000lb Capacity Mobile Column - **WIDE**

MP-7180-A-0870

**US Patent Numbers: 6,634,461 · 7,014,012 · 7,219,770 · 9,334,145 · 9,352,944 · RE41554 ·
9,593,000 · 9,656,843 · 9,679,421 · 10,059,576 · 10,065,842**

Canadian Patent Number 2,406,340

Additional patents pending

MOHAWK LIFTS

Section 1: General Requirements

This specification sheet details for the customer requirements for a Heavy-Duty “Wireless” Portable Lifting System with an adjustable carriage designed for military vehicles and other vehicles with large tires. This system must communicate via Wireless technology and not through the use of electric connection via power cords and cables to lift the vehicle. The complete system will be a wheel engaging apparatus that can be used in a set of two, four, six, or eight units with a per column capacity of 19,000 lbs. This lift system must be designed to comply with US Patent #6,634,461; #7,014,012; #7,219,770; #9,334,145; #9,352,944; #RE41554; #9,593,000; #9,656,843; #9,679,421; #10,059,576; #10,065,842 and Canadian Patent #2,406,340.

Section 2: Third Party Certification

The system shall be certified by a Nationally Recognized Testing Laboratory (NRTL) to meet ANSI/ALI ALCTV:2017.

Section 3: Testing Criteria

Each unit is 100% factory tested to full rated capacity through the full lift height, and each set is 100% synchronized tested to verify system functions before shipment.

Section 4: Facility Requirements

The only facility requirements needed to use the Wireless Portable Lifting System are an adequate 120-volt power supply for battery re-charges and a hard, level lift surface.

Section 5: Comprehensive Specification

- 5.1 Base Post** – The base post to be designed using a reinforced formed beam constructed of steel. Tire sidewall to post clearance shall be 10 inches. There shall be a minimum footprint of 705 square inches producing a ground pressure of less than 29.2 psi. Two nylon tread, 3 ½” diameter, spring-loaded casters shall be mounted to the front of the base post.

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5.1.1 The base post to be designed with a set of forklift pockets to allow the user easy portability and to assist in unloading of the systems after delivery.

5.2 **Adjustable Carriage Assembly** –The carriage assembly has adjustable arms designed with a positive grip no-skid pattern that prevents movement between the tire and the carriage arms while allowing for a minimum wheel diameter of 4” and a maximum tire diameter of 53”. Each carriage assembly to have 2 self-lubricated roller wheels made of nylatron GSM material and 2 slide pads made from self-lubricated UHMW polyethylene. The carriage assembly must be easily adjustable by means of a patented synchronized ACME threaded drive system. The adjustment can be made from either side (left or right) of the lifting carriage by utilizing a common ratchet/socket combination tool or wrench. The synchronized adjustment feature ensures the vehicle tire is centered in the lifting carriage. The carriage incorporates a series of 25 down stop positions at 2.5 inch intervals starting at 6 inches. The system includes a patent pending down stop status indicator light system that visibly informs the operator of the condition of each down stop.

5.3 **Handle Assembly** – Handle assembly is to consist of a pallet jack style handle. The handle is to lift the base hydraulically by pumping the handle. Handle operation to be performed via a three position lever (raise, neutral, and lower). Two non-metallic tread, eight-inch (8”) wheels made of polyurethane/aluminum core to be mounted on the handle to allow for easy portability. The wheels to include roller bearings for ease of movement.

5.4 **Hydraulic Power Source** – The hydraulic power unit must be UL listed and self-contained. 24-volt DC power to be used to operate the power unit. The power unit must have a proportional valve to regulate speed. The power unit is to include a system relief that prohibits overloading of the system. The relief valve must incorporate a tamper-evident design. If manual lowering is required, fluid must be allowed to by-pass the proportional valve with the operation of a needle valve. The power unit must be equipped with a 3.4 US gallon capacity reservoir with suction strainer.

5.4.1 **Holding Valve** – The holding valve is an integral component in the design of the hydraulic system. This device is mounted directly in the manifold on the hydraulic power unit. Design shall include a DC weatherproof coil to release fluid from the cylinder.

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This valve will hold pressure in the cylinder at any position. A manual override must be provided in the event of power loss.

5.4.2 **Pressure Transducer-** A pressure transducer shall be mounted to the manifold on the hydraulic power unit. This transducer must read the current pressure inside the lift cylinder at all times. This information is then transmitted to the control box to inform the user of the weight of the load being lifted.

5.5 **Hydraulic Cylinder** – The hydraulic cylinder shall be able to reach a maximum height of 69.0”. The cylinder shall be mounted to protect the rod. The integrity of the cylinder must be able to withstand a rated load of at least 19,000 pounds and be tested to system pressure of 2,600 psi. A purge port is to be provided to bleed air from the hydraulic circuit.

5.5.1 **Flow Limiter Valve-** A flow limiter valve must be mounted on the hydraulic cylinder. This valve will restrict the flow of oil through the hydraulic hoses in the event of a ruptured hose. This valve also allows the hydraulic cylinder to retract at a faster speed if no load is present on the lift carriage.

5.6 **Electrical Components** – The electric system is to consist of two circuits: a low current circuit and high current circuit. The low current circuit will provide a 7.5 amp fuse to protect the controls on the control box, proportional valve, holding valve and solenoid-activated down-stops. The high amperage circuit will provide a 200 amp fuse protecting the self-contained hydraulic power unit.

5.6.1 A Master ON/OFF Switch shall be required to enable disconnection of the battery.

5.7 **Mechanical Load Holding Device** – This secondary down-stop device must be solenoid activated with a pawl that returns to the stops naturally under only the force of gravity. There must be a series of stops on the back of the carriage assembly with each individual stop capable of supporting the full rated load. The minimum number of down-stop lugs must be at least 25 per column with a distance between each stop of no more than 2.5”. The down-stop lugs shall begin at a height of no more than 6”. The system includes a patent pending down stop status indicator light system that visibly informs the operator of the condition of each down stop. The solenoid is to be an intermittent duty component. The maximum amperage is to be 2.0 amps at 24 volts. The solenoid must be weatherproof to prevent contamination of the coil. A sealed limit switch is required to detect the down-stop pawl being retracted.

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5.8 **On-Board Charger** – A 120 volt dual bank smart charger must be included on each of the lifting units. The charger shall provide 10 amps of current per bank for dual 12-volt DC battery charging. The charger must have status indicator lights that are readily visible to the operator without opening any doors or removing any panels. This multi-stage charger must include a green light indicator when charged. The charger is to provide different charging stages including bulk stage, absorption stage, and maintenance stage. Maintenance stage must maintain the battery charge level without over charging. This charger shall be fuse protected. This charger shall be listed to the UL 1564 standard by ETL Intertek.

5.8.1 **Cord Reel**- A cord reel shall be made available that can be used to connect the on-board charger to 120V AC power. The cord reel must include a retractable input cord that is a minimum of 25 feet long. The input cord must be capable of being locked at any desired length. The input cord shall automatically retract into the body of the cord reel when unlocked.

5.9 **Battery** – The batteries must be 12-volt, deep cycle batteries. The batteries are to be contained within a steel cover and positioned on the back of each lift column. The batteries should be readily available and nationally distributed for ease of replacement.

5.10 **Control Boxes** – All control boxes must be identical in design and require no master control to operate. All external connections shall be splash proof to allow for operation in outdoor conditions and/or in a damp environment. The control box shall be constructed in such a way to be modular in design allowing a user to remove and replace the control box using only ordinary tools and with no special training. Operation requires 24-volt DC power. The control box shall include the following system features:

5.10.1 A 10.1” capacitive multi-touch screen shall provide the operator with real time messages on the status of all lifting units. During normal operation, the touch screen shall display the following information to the user: current height of the unit, battery status, and radio settings. The touch screen will utilize a multi-layered format of screens that allows frames of information to be shown on top of each screen. The touch screen on each lift shall use sliding information panels to display the following information for all lifts in the lifting system: battery voltage, weight being lifted, and radio signal strength. Additionally, the touch screen

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- shall show the total vehicle weight. The touch screen shall function as the main input device for all user interaction. The display must be backlit.
- 5.10.2 The 10.1" capacitive multi-touch screen shall be a patented mobile computing device employing a patented high end operating system. This operating system must be capable of incorporating all of the following features: wireless networking, GPS location, Bluetooth communication, internet browser, camera for photos and videos, firmware and software updates, and capability to use predefined libraries.
- 5.10.3 The 10.1" capacitive multi-touch screen shall be powered from the batteries on the lift unit.
- 5.10.4 An "Enable" button must be pushed prior to performing any operations that raise or lower the lifts. The button will change colors to indicate actuation. The button will remain active for a certain period of time before automatically returning to the inactive state.
- 5.10.5 A red Emergency Stop button that will allow the units to be stopped from any location shall be provided. The button is to be located just below the touch screen. The fault is to be restored by pushing the reset button on the unit to reset the system after pulling out the emergency stop button. The unit that initiated the fault is to be indicated on the touch screen along with a message that an emergency stop has been activated.
- 5.10.6 A button shall be provided that allows the user to lock out the system and disable all the controls. Upon locking the system the user shall be given the option to create a password that must be re-entered to unlock the system. The user must return to the same unit where the lock button was pushed to reset the system into its normal operating mode.
- 5.10.7 A "Park" button must be provided that allows the user to command the lifts to lower until the load is supported by the mechanical load holding device instead of the hydraulic cylinder. The control box must verify that all pressure has been relieved from the hydraulic cylinder prior to illuminating an indicator showing the lift is in the "Parked" state.
- 5.10.8 Upon startup, the control box shall display the current radio settings and allow the user to change the settings by sliding buttons on the screen, if desired. The radio settings shall default to the settings previously used unless the user chooses to change them. The user can select from any one of 12 separate frequencies and 20 separate channels within each frequency.

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- This allows multiple sets of units to operate simultaneously, but on different wireless frequencies and channels.
- 5.10.9 The control box shall provide a mode of operation where a single unit or a pair of units can be operated independent of the rest of the system. The distance the units can be raised or lowered while in this mode shall be limited. The user shall be required to select the position of each lift relative to the vehicle prior to operating the lifting system. This position selection must be used to allow only lifts on opposite ends of the same axle to be operated as a pair. Upon completion of operating in this special mode, the control box must provide a button that automatically returns the units that were operated independently to the same height as the rest of the units in the system.
 - 5.10.10 A slow lowering mode shall be automatically activated anytime the lift is lowered. The lift shall return to the normal lowering speed after a certain distance and remain at the normal speed for the remainder of time that the lift is lowered.
 - 5.10.11 An indicator on the screen shall be provided that informs the user when the lifts are in the fully lowered position.
 - 5.10.12 The user shall be able to select between multiple languages and Imperial or Metric units.
 - 5.10.13 The maximum lifting height shall be adjustable to allow the lifts to automatically stop at a user-defined maximum height.
 - 5.10.14 The control box's main function is to provide synchronous lifting and lowering of the units. The control boxes are programmed with common fault messages to inform the operator when they occur.
 - 5.10.15 The control box shall incorporate a circuit that automatically shuts off the control box and touch screen if the battery voltage on the lift becomes too low. This circuit shall automatically reset once the battery charger is plugged in and the battery voltage is above a specific threshold.
- 5.11 **Wireless Synchronized Communications** – A control system must consist of independent control boxes, employing wireless communication technology for the purpose of synchronizing multiple lifting mechanisms. Closed loop feedback will be used to ensure each lift is within 3.00” proximity of each other throughout the lifting range. The controls must operate on an FCC approved wireless frequency.

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- 5.12 **Synchronization Device** – A linear position transducer must be used. The transducer must be capable of retaining the height if turned off and then back on. The transducer is to be completely enclosed to prevent debris from contaminating the internal components. The follower cable must have a measurement range of at least 80” and be constructed of nylon coated stainless steel.
- 5.13 **Manual Lowering Override** – Each lifting system must be equipped with a manual lowering override system. Each lift shall include an override toggle switch. The function of the switch will be to utilize the override toggle switch and the needle valve on the hydraulic power unit together to manually control the lowering. This toggle switch shall be protected from inadvertent actuation.

Section 6: Lift Unit Specifications

Capacity per unit.....	19,000 lbs
Capacity per set of 2	38,000 lbs
Capacity per set of 4	76,000 lbs
Capacity per set of 6	114,000 lbs
Capacity per set of 8	152,000 lbs
Minimum wheel diameter	4”
Maximum wheel diameter	No max.
Maximum tire diameter.....	53”
Maximum lift height	69.0”
Lift Speed.....	60” per min (varies w/load)
Descent Speed.....	110” per min (varies w/load)
Weight per column.....	1,575 lbs.
Overall Height.....	88.5”
Overall Height (full lift).....	157-1/8”
Overall Width.....	49”
Overall Length	53-5/8”
Turning Radius.....	47”
Power source	24 volt DC elec/hyd
Charger Input Voltage Requirement.....	115 volts/60 Hz AC
Charger Input Amperage Requirement.....	5.0 amps

Section 7: Maintenance

The lift system components shall require minimal to no routine maintenance. Grease fittings shall be provided at all locations requiring periodic lubrication. The grease fittings for the down stop pin, and pallet jack handle collar should be greased once a month.

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Section 8: Warranty

8.1 Limited Lifetime Warranty

Subject to the terms, conditions and exclusions herein, Mohawk Lifts warrants to the original purchaser that the Mohawk Lifts product meets Mohawk Lifts's standard specifications for the product at the time of purchase, and will be free from defects in materials and workmanship for the normal useful life of the product.

8.2 Value Added Protection

Subject to the terms, conditions and exclusions herein, Mohawk Lifts products are warranted against excessive or abnormal wear and tear for a period of one (1) year from the date of purchase by the original purchaser. This limited warranty period stops at the end of the one year warranty period or upon the date the Mohawk Lifts product is no longer owned by the original purchaser, whichever shall first occur. Warranty claims to be made to the manufacturer of the product. All repair parts will be readily available and easily installed by the owner of the equipment.

Section 9: Supplemental Product Accessories

9.1 Heavy Duty High Rise Truck Transmission Jack – Model HTCJ-2000.

The jack incorporates a two-stage lift operation, first stage – 100% air and second stage – air/hydraulic. The jack is to have a capacity of 2,700 lbs and include the Truck Component Handling System kit (TCHS). The kit will allow for multiple components on a vehicle to be removed. A low height of 30" and high lift height of 72" is required. The head plate of the jack is to have 4 removable ratcheting brackets for ease of removal and installation of a variety of different components.

9.2 7-ton High Rise Stands – Model 7-THR Stands. Capacity of the stand shall be a minimum of 14,000 lbs and incorporate a gas spring assisted lift post. A 3" screw lift pad adjustment and 2-3/4" support pin increments allow for a start height of 53-1/8" and maximum support height of 72-1/8". Must be complete with wheels and handle.

9.3 9-ton High Rise Stands – Model 9-THR Stands. Capacity of the stand shall be a minimum of 18,000 lbs and incorporate a gas spring assisted lift post. A 5-1/2" screw lift pad adjustment and 2-3/4" support pin increments to allow for a start height of 48-3/4" and maximum support height of 84". Must be complete with wheels and handle.

9.4 10-ton High Rise Stands – Model 10-THR Stands. Capacity of the stand shall be a minimum of 20,000 lbs and incorporate a gas spring assisted lift post. A 2-3/4" screw lift pad adjustment and 2-3/4" support pin increments allow for a start height of 53-3/8" and maximum support height of 72-1/8". Must be complete with wheels and handle.

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- 9.5 **Air-Powered Fluid Handlers** – Models OH-15 and AH-15 with height adapter. The air powered fluid handlers allow for drainage of oil and antifreeze from the vehicles being repaired. The fluid handlers must have a capacity of 15 US gallons. A 13-psi regulator must be mounted on either unit, along with a 15 psi pop-off valve.

Section 10: Product Information and Service Literature

Purchase of a Wireless Portable Lift System must include one of each of the following items per unit:

- Owner's Manual
- ANSI/ALI ALOIM, American National Standard for Automotive Lifts-Safety Requirements for Operation, Installation, and Maintenance
- ANSI/ALI ALIS, American National Standard for Automotive Lifts-Safety Requirements for Installation and Service
- ALI/LP Guide, ALI sponsored Vehicle Lifting Points/Quick Reference Guide
- ALI/ST, ALI "Safety Tips" Card
- ALI/SM, ALI "Lifting It Right" Safety Manual

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