



SECTION 14 45 00

VEHICLE LIFTS
DIAMOND 64 *ebright*

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Telescopic piston style in-ground lifts.

1.2 RELATED SECTIONS

- A. Section 03 30 00 - Concrete: Footings and foundations.
- B. Section 26 05 00 - Common Work Results for Electrical.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Submit drawings showing full layout of all lifts with dimensions and details shown for services and conduits between lifts and the control consoles.
- D. Operation and Maintenance Manual: Submit Owner's manual to include system operation, maintenance and troubleshooting, spare part numbers, drawings and schematics.

1.4 QUALITY ASSURANCE

- A. Manufacturer qualifications: The lift company selling the product shall possess ISO-9001 certification.
- B. Installer qualifications: For warranty validation, installation shall be performed by qualified factory authorized and trained personnel.
- C. Product requirements / design standards and certification: The lift shall be certified by a Nationally Recognized Testing Laboratory (NRTL) to the ANSI/ALI ALCTV (current edition) "Standard for Automotive Lifts: Safety Requirements for Construction, Testing, and Validation".

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having

jurisdiction.

1.6 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.7 WARRANTY

- A. Manufacturer's Warranty: Lift system shall be warranted for a minimum period of 2 years for parts and 1 year for labor.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable manufacturer: Stertil-Koni USA, Inc., which is located at: 200 Log Canoe Circle; Stevensville, MD 21666; Toll Free Tel: 800-336-6637; Tel: 410-643-9001; Email: lifts@stertil-koni.com; Web: www.stertil-koni.com
- B. Substitutions: Not permitted.

2.2 TELESCOPIC PISTON STYLE IN-GROUND LIFTS

- A. Telescopic piston style in-ground lifts Model DIAMOND 64 as manufactured by Stertil-Koni USA Inc.
 - 1. General Description:
 - a. The lift shall consist of two lifting units in line with the longitudinal axis of the vehicle, each lifting unit so equipped as to engage the axle, suspension, and/or frame as specified herein. One of the two lifting units shall be movable fore and aft to affect variable spacing between lifting mechanisms. The other lifting unit shall be fixed.
 - 2. Lifting Capacity:
 - a. Lift shall be capable of raising 64,000 lbs. (29,000 kg), 32,000 lbs. (14,500 kg) Fixed/ 32,000 lbs. (14,500 kg) Movable.
 - b. Unbalanced Loads, Movable to Fixed: Lift shall be capable of raising 32,000 lbs (14,500 kg) on one unit and 0 lbs (0 kg) on the other unit.
 - 3. Dimensions:
 - a. The lifting height shall be no less than 73 inches (1,854 mm) as measured from the point of adapter contact at full rise to the finished floor.
 - b. Lifting Rate: 90 seconds; 45 inches (1,140 mm) per minute, minimum.
 - c. Maximum depth below finished floor for any structural component shall be 72 inches (1830 mm) maximum.
 - d. Movable and fixed lifting unit synchronization: 2 inches (51 mm).
 - e. Travel range for the movable lifting unit shall be as follows, depending on selected model:
 - 1) DIAMOND 64-3.25: 39 inches (991 mm)
 - 2) DIAMOND 64-10: 120 inches (3,048 mm)
 - 3) DIAMOND 64-13: 156 inches (3,962 mm)
 - 4) DIAMOND 64-17: 204 inches (5,182 mm)
 - 4. Lifting units:
 - a. Lifting units shall be hydraulically powered, telescopic piston assemblies, complete with an independent mechanical locking system.
 - b. The telescopic piston shall be finished with a hard chrome plating for

- added surface strength, corrosion protection and to ensure a low coefficient of friction
- c. Lift unit shall utilize pistons with a primary stage diameter of 8.5 inches (216 mm) and a secondary stage diameter of 7.5 inches (190 mm).
5. Movable Lifting Unit:
- a. Movable lifting unit shall be mounted in a hot dipped galvanized steel floor frame. The galvanized steel floor frame will provide a rigid connection between the floor frame and the floor slab for maximum structural integrity.
 - b. Movable lifting unit floor frame shall be permanently attached to a steel containment box coated internally and externally with DiamondGuard coating.
 - c. DiamondGuard coating shall be an elastomeric polyurethane coating that provides corrosion protection with a dielectric strength of no less than 37,500 volts for protection against electrolysis. Coating shall be applied to a minimum thickness of 0.25 inches (6 mm) and shall provide an impermeable, seamless coating capable of withstanding vibration, expansion/contraction, flexing, abrasion or impact without damage.
 - d. Maximum depth below finished floor for the movable lifting unit floor frame and containment box shall be no more than 69 inches (1752 mm).
 - e. Movable lifting unit floor frame and steel containment box shall be structural and have the option to be installed suspended from a thickened slab (grade beam) or on a load bearing foundation slab.
 - f. Aluminum covers for the movable mechanism shall be anodized structural 6061 aluminum extrusions engineered to accept a 7,500 lb. (3,402 kg) point load on a contact area of 2 x 2 inches (50 x 50 mm) and shall be shaped to include a full-length interlocking hinge. Covers shall fit together tightly and uniformly to promote smooth travel so as to prevent jamming and twisting. The covers shall be able to accept a 13,500 lb. (6,123 kg.) drive over load on a 6 x 9 inch (152 x 228 mm) contact area.
 - g. Aluminum covers for the movable mechanism shall be attached to UHMW slider blocks for reduced friction and increased longevity. These slider blocks shall keep the covers properly centered at all times. Horizontal grooves in the UHMW sliders shall, together with half-moon shaped guide rails in the end section of the movable lifting unit floor frame, securely guide the covers as they travel in and out of the recess.
 - h. Transition plates shall be bolted to the movable lifting unit floor frame to provide for a flush and smooth transition from the shop floor to the aluminum covers. The transition plates also shall assist the cover travel by holding the covers down so they can't buckle during horizontal travel.
 - i. Aluminum covers for the movable lifting unit shall be flush with the finished floor within a tolerance of less than 1/8 inch. Covers that are lower than the finished floor shall not be acceptable.
 - j. Carriage for the movable lifting unit and the trench covers shall utilize a non-metallic slide assembly bearing on stainless steel for corrosion prevention.
 - k. Hydraulically powered carriage drive for the movable lifting unit shall utilize a rack and gear arrangement, on both the left and right side, for smooth and even fore-aft travel without binding.
 - l. Rack shall be inverted and positioned under the load channel of the floor frame for the movable lifting unit, where it is protected so as not to collect dirt, grease etc.

- m. All hydraulic and compressed air service lines shall be fed from the floor mounted control console to the movable containment box through one PVC chase way.
 - n. All low voltage, intrinsically safe electric service lines shall be fed from the floor mounted control console to the movable containment box through one ¾ inch rigid conduit installed to meet local requirements.
 - o. Steel containment box for the movable lifting unit shall be equipped with a pneumatic liquid detection device that shall inform the operator of accumulation of liquids in the containment box.
 - p. Movable containment box shall be equipped with a fixed suction tube to allow evacuation of liquids.
 - q. Movable containment box shall be internally sloped to allow liquids to accumulate at the low point. Low point shall be located underneath a stationary trench cover for ease of access.
6. Fixed Lifting Unit:
- a. Fixed lifting unit shall be mounted in a hot dipped galvanized steel floor frame. Galvanized steel floor frame will provide a rigid connection between the floor frame and the floor slab for maximum structural integrity.
 - b. Fixed lifting unit floor frame shall be permanently attached to a steel containment box coated internally and externally with DiamondGuard coating.
 - c. DiamondGuard coating shall be an elastomeric polyurethane coating that provides corrosion protection with a dielectric strength of no less than 37,500 volts for protection against electrolysis. Coating shall be applied to a minimum thickness of 0.25 inches (6 mm) and shall provide an impermeable, seamless coating capable of withstanding vibration, expansion/contraction, flexing, abrasion or impact without damage.
 - d. Maximum depth below finished floor for the fixed lifting unit floor frame and steel containment box shall be no more than 72 inches (1752 mm).
 - e. Fixed lifting unit floor frame and steel containment box shall be structural and have the option to be installed suspended from a thickened slab (grade beam) or on a load bearing foundation slab.
 - f. Steel containment box for the fixed lifting unit shall be equipped with a pneumatic liquid detection device that shall inform the operator of accumulation of liquids in the containment box.
 - g. Steel containment box for the fixed lifting unit shall be equipped with a fixed suction tube to allow evacuation of liquids.
7. Hydraulic System:
- a. System shall be comprised of two high pressure, low volume, telescopic pistons-one in each containment box.
 - b. High pressure seals shall be internal to the pistons where they are protected from salt, dirt, etc.
 - c. Each piston shall require 5 gallons (19 liters) of hydraulic fluid for lifting to full height.
 - d. Combined, the two pistons shall only require 10 gallons (38 Liters) of hydraulic fluid for lifting to full height.
 - e. Cylinders shall utilize Panolin bio-degradable, environmentally-friendly hydraulic fluid.
 - f. Hoses shall be of reinforced construction and utilize JIC fittings throughout.
 - g. Hoses feeding the movable piston carriage shall be supported and contained by a hose carrier to prevent the hoses from dragging or tangling.
 - h. Lift shall be driven by two individual power units, readily available as an

off-the-shelf component. Power units shall be located outside the steel containment box, in a floor mounted control console, for ease of maintenance and repair. Lift shall not require oil reservoirs below floor level.

8. Adapters:
 - a. The lift system shall include a variety of axle engaging accessory adapters designed to raise heavy vehicles by the axles or frame. Adapters shall be either axle or frame oriented. Spinning adapters shall not be acceptable due to risk of accidental rotation during vehicle spotting and setup.
 - b. The base adapter shall have at least a five-hole pattern that will allow every accessory adapter to be used in the reverse direction, allowing up to eight positions of the accessory adapter on the base adapter.
 - c. Sliding base adapters shall be restrained to prevent over extension.
 - d. Adapter Adjustment: Minimum 13.5 inches (337 mm); Maximum 54 inches (1,372 mm).
 - e. Bolster Width: 40 inches (1,016 mm) minimum.
 - f. Bolster and base adapters for the fixed piston shall recess below finished floor and be covered by cover doors when not in use. Cover doors shall be rated for similar loading (7,500 lbs. / 3,402 kg) point load on a contact area of 2 x 2 inches (50 x 50 mm). Cover doors shall be stored in a recessed storage area located beside the bolster, to reduce the risk of tripping.
 - g. Bolster for the movable piston shall recess in a dedicated park position so that the top of the bolster is flush to finished floor level. Covers rated for similar loading (7,500 lb. (3,402 kg) point load on a contact area of 2 x 2 (50 mm x 50 mm) shall be supplied with the lift. These covers shall be installed and removed by hand from a storage area located below the bolster, to reduce the risk of tripping.
9. Controls:
 - a. The control system shall conform to all current NEC, UL 201 and OSHA codes.
 - b. The control system shall be PCB operated and continuously monitor all operating functions and safety systems of the lifting units.
 - c. The control system shall utilize touchless ultrasonic sensors mounted on the oil reservoirs to constantly monitor the elevation of all lifting units to ensure synchronized operation.
 - d. The control system shall allow the user to adjust the sensitivity of the electronic synchronization without the use of special tools, within the absolute limits of ANSI/ALI ALCTV standard.
 - e. The control system shall have the ability to receive regular software updates/upgrades as control system advances become available. All updates/upgrades shall be possible through data transfer without the need for component replacement.
 - f. On the face of the control console, control elements shall include:
 - 1) "UP" button.
 - 2) "Down" button.
 - 3) "Lock release" button.
 - 4) "Confirm" button
 - 5) A high definition 7 inch (178 mm) LCD screen touch screen. The touch screen shall be specifically designed for a harsh workshop environment. The touch screen shall provide systems information, but operation of the lift shall be initiated by the primary operational buttons. The touch screen shall include a removable micro-SD memory card for storage of user configurable information. The touch screen shall be capable of

providing the following functions:

- a) "Lifting unit selection" indicator: displays to the operator which lifting units in the lift have been selected for operation. The display illustrates the ability to operate the lifting units singularly, or all lifting units as a synchronized group.
- b) "Lifting unit height" indicator: displays to the operator the height of each individual lifting unit. The height indicator shall also provide, on the touch screen, a clear indicator if the lifting unit has been set to stop at a restricted lifting height.
- c) "Lifting units fully lowered" indicator: displays to the operator that all lifting units are fully retracted into the ground to inform the operator that the bay is clear to allow entry and exit by the vehicle.
- d) "Error message" indicator: displays to the operator when a fault code has been registered by the control system, the touch screen shall inform the operator of any fault situations being present in the lift. The control system shall have the ability to display error messages including fault description on the screen.
- e) One-touch access to the **Guide screen**: This area of the touch screen provides to the operator:
 - i. Owner information
- f) One-touch access to the **Information screen**: This area of the touch screen provides to the all users:
 - i. Owner information
 - ii. Contact information for service provider
 - iii. Equipment time log including lifting unit run times
- g) One-touch access to the **Settings screen** which displays various options. The settings screen shall allow control of:
 - i. Settings screen option (1): authorized users shall have the ability to change the language (English, Spanish, French) displayed on the screen as well as the units of measure for height and weight (imperial or metric units).
 - ii. Settings screen option (2): authorized users shall have the ability to retract the mechanical locks during raising for reduced noise, as well as to set a restricted maximum lifting height.
 - iii. Access to the Shop and Assistance screens: from the Settings screen, authorized users shall have the ability to control the service settings.
- h) One-touch access to the **Shop configuration screen** options which is PIN protected. The shop configuration screen shall allow adjustment of:
 - i. Edit of owner's details: allows the ability to edit the information displayed on the Owner's field.
- i) One-touch access to the **Assistance configuration screen** which displays various options and is PIN protected. The maintenance configuration screen shall allow adjustment of:
Screen 1
 - i. Initiation of crush protection which guards against a crushing hazard during lowering when using the optional remote control. This safety system, when enabled, will interrupt lowering as the lift reaches 18 inches (457 mm) above finished floor. At that time, the operator needs to return to the control console and

continue the lowering cycle by utilizing the control buttons located on the face of the control console.

- ii. Ability to disable height difference monitoring to aid in trouble shooting. Once initiated, this control system option allows the maintainer to operate the lifting system outside normal safety limits. This system is only for use by the lift system maintainer during repair procedures. This system option will automatically be disabled and the control system returned to default operating parameters after 10 minutes.

Screen 2

- i. Ability to view lift system run time to properly plan for lift system maintenance.
- ii. Ability to view individual lifting unit motor run time to properly plan for lift system maintenance.

Screen 6

- i. This screen shall allow back up of the operating system

Screen 7

- i. This screen shall display operating system information

- g. The enclosure for electrical control components shall be IP 54 rated.
 - h. The control console shall be equipped with a main power disconnect switch which interrupts all incoming power. Main power disconnect shall be lock-out capable.
 - i. Control console access panels shall have key-hole slots and recessed handles for easy removal and installation.
 - j. The control system shall automatically prohibit horizontal movement of the movable lifting unit when raised above 12 inches (305 mm) above finished floor. This parameter shall be user programmable without the use of special tools.
 - k. The lift, when fitted with the proper electrical motors, shall operate at the following voltages: 208/230V (3 phase), 460V (3 phase), 575V (3 phase).
10. Safety Devices:
- a. Each lifting unit shall be equipped with an independent mechanical locking rod with the first lock position at no more than 8.25 inches (210 mm) of rise.
 - b. Number of Mechanical Lock Stops: 21, minimum.
 - c. Vertical height spacing between each lock stop: 3 inches (75 mm), maximum.
 - d. Mechanical locking rod shall be solid, high strength steel with a nitro-carburized finish for strength and corrosion protection.
 - e. Pneumatic mechanical locking release assembly shall incorporate a high strength steel latch. The locking assembly shall be easily accessible, to allow complete removal from floor level, for ease of maintenance.
 - f. All push buttons shall be of momentary contact, dead man type.
11. Optional: Automatic Wheel Base Positioning:
- a. Control system shall be equipped with an AWBP (automatic wheel base positioning) system that allows the operator to program an infinite number of wheelbase positions into the control system for reduced set up times. The AWBP system shall be controlled via the 7 inch (178 mm) color touch screen to allow the operator to select and program vehicle wheel bases. The AWBP system shall allow the operator to store wheel base positions by vehicle brand and year or license plate for ease of use and safety to avoid selection of the incorrect vehicle. Once a vehicle has been selected, the movable lifting unit shall travel

- to the pre-programmed position without interruptions or stops.
- b. AWBP shall include a HOME function which, upon activation, drives the movable lifting unit to its designated park position and automatically lowers the lifting bolster into the recess.
12. Optional: Two Speed Lowering
- a. Control system shall be equipped with a two speed lowering feature which allows the operator to temporarily reduce the lift's lowering speed as required for certain vehicle repair procedures.
13. Optional: Wired Remote Control:
- a. Lift shall be equipped with an ergonomic industrial remote control, rated for use in NEC Class 1, Div. 2, hazardous locations.
 - b. Remote control shall be connected to the control console through a multi-conductor cable with military-style DIN connector. Standard cable length shall be 35 feet. (10.6 m)
 - c. Remote control shall allow full function control of the lift, with the following:
 - 1) Push/Pull E-Stop Button
 - 2) Push buttons for Lift Raise, Lower and Unlock
 - 3) Selector button for synchronized (group) or single operation
 - 4) Push buttons for hydraulic movable carriage drive
 - d. Remote control shall be equipped with an emergency E-Stop button that de-energizes power to all outputs of the PCB. Re-activation of the control system requires resetting the E-Stop and re-energizing the control system.
 - e. The control box shall have a provision to disable operation of the remote control during lowering when the bolster is below 18 inches (457 mm) above finished floor.
14. Optional: HOME Beacon Stack Light:
- a. Lift shall be equipped with an external HOME beacon stack light. This beacon light shall turn green when all lifting units are fully retracted to inform the operator that the bay is clear to allow entry and exit by the vehicle. When one or more lifting units are not fully lowered the beacon light shall turn red to inform the operator that the bay is not clear and it is not safe to move the vehicle into or out of the bay. The beacon light shall have the option to be mounted in a remote location (e.g. by the bay door) for optimum visibility.
15. Optional: Sump Pump Kit:
- a. Lift shall be equipped with automatic sump pumps, one per lift containment, to automatically evacuate accumulated liquids from the lift containment.
 - b. Sump pumps shall be tied into the liquid detection sensors, so that upon detection of an accumulation of liquids in one or more lift containments, the appropriate sump pumps start automatically.
 - c. An adjustable time delay relay shall assist the control system in regulating the liquid evacuation process to ensure optimum removal of liquids.
 - d. Sump pumps shall be air-powered, reciprocating positive displacement double diaphragm pumps with two pumping chambers, providing a flow rate of no less than 10 gallons (38 liters) per minute when supplied with the proper air pressure.
 - e. Each sump pumps shall be equipped with a suction strainer and in-line check valve.
 - f. Lift containments shall be equipped with stainless steel discharge fittings to allow for proper tie-in of sump pump discharge into building oil/water separator.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify architect of any unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions. Test for proper operation, and re-test if necessary until satisfactory results are obtained.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before substantial completion.

END OF SECTION