



Heavy-Duty Vehicle Lifts: A Resource Guide

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Introduction

What Is a Vehicle Lift?

A vehicle lift is a device that picks up vehicles to facilitate maintenance. It is designed to hold the vehicle in the air indefinitely and is intended to have a human underneath. Jacks and dollies are not vehicle lifts. They pick up vehicles, but are not built to hold them in the air indefinitely.

Vehicle lifts are labor-saving pieces of equipment designed to increase diesel or automotive technicians' output when delivering vehicle maintenance or repair. Use of a lift also helps users identify necessary maintenance. Lifts increase efficiency, productivity and profitability while enhancing worker safety and facilitating employee retention.

A well-made lift can provide enhanced productivity for years without costly downtime. On the other hand, a lift that cannot properly lift the vehicles being serviced, that hampers technician productivity or that is down for frequent repairs can cost a shop much more than its purchase price over its lifetime.

That's why it is important to look beyond purchase price and consider the total cost of ownership of a vehicle lift over its lifetime. A lift with a low total cost of ownership costs less to operate and has a proven history of providing consistent uptime with lower lifetime repair expenses.

There are a wide range of lift designs available to meet various vehicle service needs. For the commercial trucking industry, the main types of vehicle lift are: inground lifts, pit lifts, two-post surface lifts, four-post surface lifts, parallelogram lifts and mobile column lifts.

This white paper is intended to cover the many factors fleets, truck dealers and independent maintenance facilities should consider when

buying new vehicle lifts. It includes sections on facility planning, lift purchasing considerations, the importance of third-party lift certification, how to evaluate a manufacturer and supplier, and how to keep lifts functioning properly. A glossary of lift terms is included, as well.

A Brief History of Vehicle Lifts

Vehicle lifts allow technicians to work under a vehicle while standing up. This is a great ergonomic advance over lying under a vehicle on a creeper or working in a grease pit. The modern vehicle lift was invented in 1924 by Peter Lunati, a car mechanic in Memphis, Tenn. Lunati was inspired by a barber chair rising in the air. If you can lift a chair, he reasoned, why not an automobile? He built the world's first automotive hydraulic lift by employing the same physical principles used in the barber chair.



Inspired by a barber chair

In the 1920s, cars were often difficult to operate in reverse. Lunati's original lift — known as a Rotary Lift — was designed to rotate, so the car could be driven on and off without ever having to back up. Rotary Lift was also the name of the manufacturer Lunati founded to produce these lifts when his patent was granted in 1925.

This original lift was an inground, single-post model. Inground lifts continued to dominate the vehicle lift market for the next 50 years, with various improvements. In 1975, only about 10 percent of vehicle lifts sold in the U.S. were surface lifts, according to the Automotive Lift Institute (ALI). Over the next 20 years, environmental concerns over leaks of hydraulic fluid from inground lifts led an increasing number of shop owners to turn to surface lifts. Today, two-post surface lifts are the best-selling vehicle lifts in the world.

For heavy-duty applications, technicians have long preferred inground lifts because they provide better access to more of the vehicle. So, in 2002, Rotary Lift introduced the MOD30 inground lift. The MOD30 was

the first inground lift to virtually eliminate the environmental and safety worries that had prevented service managers from buying new inground lifts.

Why Use Vehicle Lifts?

The advantages of using vehicle lifts instead of relying on floor jacks, jack stands, creepers and pits are numerous. For a majority of truck maintenance and repair tasks, the use of a vehicle lift offers improvements in the following areas:

- Productivity
- Profitability
- ROI
- Ergonomics and Safety
- Worker's compensation costs
- Employee recruitment and retention

Productivity

According to Technology & Maintenance Council (TMC) Recommended Practice 804, labor accounts for about 60 percent of the amount spent by a fleet to repair and service its vehicles and equipment. This is often the fleet's second largest equipment and maintenance expense, surpassed only by fuel costs. "The size of this expenditure demands that labor be used to the best advantage. Productivity of garage labor is as important to the success of the maintenance department as the productivity of dockmen and drivers is to the success of the terminal. The productivity of a mechanic is the end result of skills, work environment, and supervision." – TMC RP 804.

In the shop, one of the last remaining upgrades

that can have a major impact on productivity and efficiency is the addition of a vehicle lift. The biggest factors affecting technician productivity are access and clearance. Technicians need room to work and access to all vehicle components. Vehicle lifts provide convenient, comfortable access to every serviceable part on the truck, enabling technicians to get more work done in less time.

Changes to heavy-duty truck designs also lead to the increasing need for lifts. Truck cabs are being designed to ride lower to the ground, making it difficult for technicians to get under them without a lift. New 2007-emission-compliant vehicles come with their own set of challenges. Some maintenance tasks, such as removing the diesel particulate filters for cleaning, are difficult to perform without a vehicle lift.

Profitability

Productivity studies conducted by fleets and truck maintenance providers have found that adding a single vehicle lift to the shop can add another \$100,000 or more to the bottom line in terms of annual profits or reduction in labor overhead. Here are three case studies:

Independent Service Provider

Atlantic Detroit Diesel-Allison is a wholly owned subsidiary of the Daimler Chrysler Corporation. It provides owner-operators and fleets with engine and transmission

service, maintenance, repair, replacement and rebuilding. It operates eight service locations in New Jersey, New York, Massachusetts, Vermont and Connecticut. The company added a set of mobile columns to its Lodi, New Jersey, service center, which also serves as the company headquarters. This center operates 24 hours per day, five days a week (plus weekends for emergencies). Three technicians work in the bay equipped with the lift per 24-hour period. The distributorship found that by using the lift, technicians saved 160 minutes per shift, for a daily savings of 480 minutes: eight full hours.

The hourly shop rate of \$118 includes \$50 profit per labor hour. So, the shop made an additional \$400 per day profit by using the lift in a single bay (8 hours x \$50/hour). This translates to an additional \$2,000 profit per week and an annual increase of profit on labor of \$104,000!

Being able to service more vehicles in the same amount of time also resulted in an increase in parts sales. The service facility generated an additional \$19,760 profit on parts sales from this bay. **Thus, the total annual increase in profit for a single bay equipped with a vehicle lift was \$123,760.**

Atlantic Detroit Diesel - Allison		
A	Labor Hours Saved per Day	8
B	Cost per Labor Hour	\$50
C	Additional Labor Profit per Day (A x B)	\$400
D	Additional Labor Profit per Week	\$2,000
E	Additional Labor Profit per Year (260 days)	\$104,000
F	Increase in Parts Sale Profits per Year	\$19,760
G	Total Annual Increase in Profits (E + F)	\$123,760
H	Cost of Lift	\$30,000
I	Days to Recover Cost of Lift ([H / G] x 260)	< 65 days

The lift cost \$30,000. It took the service location approximately 65 days to generate enough additional profit to pay for the lift. After that, the lift would generate an additional \$93,760 of revenue (return on investment) in its first year of service.

LTL Fleet

One of the 2006 top 25 for-hire fleets as ranked by *Transport Topics* added Rotary Lift four-post lifts to two of its locations, and then tracked the productivity gains that resulted.

In its Pennsylvania service location, the LTL trucking company's technicians performed six TMC preventive maintenance inspections (PMIs) per night before adding lifts. Each PMI required 3.5 hours to perform. At a labor rate of \$58 per hour, each PMI cost the fleet \$203.

By adding a vehicle lift, technicians were able to cut the time needed per PMI to just 2.5 hours, enabling them to perform eight PMIs per night. The cost per PMI was thus reduced to \$145. This represents an increase in output of 33 percent and a decrease in PMI cost of 29 percent. The labor savings on six nightly PMIs

LTL Fleet - Pennsylvania		
A	Cost per Labor Hour	\$58
B	Hours Required for PMI (without lift)	3.5
C	Hours Required for PMI (with lift)	2.5
D	Hours Saved per PMI (B - C)	1
E	PMI's Performed per Night	6
F	Hours Saved per Night (E x D)	6
G	Labor Cost Saved per Night (F x A)	\$348
H	Annual Labor Cost Savings (300 days)	\$104,400
I	Cost of Lift	\$30,000
J	Days to Recover Cost of Lift ([I / H] x 300)	86

was \$348, for an annual savings of \$104,400 with a vehicle lift (based on 300 working days per year).

The lift cost \$30,000. It took the service location approximately 86 days to recover the cost of the equipment based on decreased PMI labor costs. After that, the lift saved the facility another \$74,472 in the first year alone.

The fleet's Georgia location was already a little more efficient, with its technicians spending three hours each to perform 80 PMIs per month per bay. Based on a labor cost of \$58 per hour, each PMI cost the fleet \$174.

With the addition of two Rotary Lift four-post lifts, output increased 15 percent. Labor per PMI decreased to 2.5 hours, for a 17 percent decrease in labor cost. The labor savings per month was \$2,320. **This results in an annual savings per lift of \$27,840, for a total annual savings of \$55,680 (with two lifts).**

LTL Fleet - Georgia		
A	Cost per Labor Hour	\$58
B	Hours Required for PMI (without lift)	3
C	Hours Required for PMI (with lift)	2.5
D	Hours Saved per PMI (B - C)	.5
E	PMI's Performed per Month	80
F	Hours Saved per Month (E x D)	40
G	Labor Cost Saved per Month (F x A)	\$2320
H	Annual Labor Cost Savings per lift (G x 12)	\$27,840
I	Total Annual Labor Savings (2 lifts)	\$55,680

National Private Truck Council

By combining the real-world data captured by the LTL fleet above with data from the National Private Truck Council (NPTC) about the

average private fleet, it is possible to calculate an average labor cost savings provided by vehicle lifts.

According to the NPTC Private Fleet Benchmarking Survey (August 2006), the average fleet breaks down as follows:

- 154 power units
- 6.36-year trade cycle
- 757,710 trade mileage
- PMI cycle of 30,000 miles

The average power unit will receive 25 PMIs over its service life.

Using averages from the fleet case study:
 25 PMIs x 3.25 hours/PMI (without lifts) x \$58/ hour labor rate = \$4,712 per power unit over its service life.

Vehicle lifts provide an average reduction in labor costs of 25 percent, so:

25 PMIs x 2.4 hours/PMI (with lifts) x \$58/ hour labor rate = \$3,480 per power unit over its service life.

Thus, using a lift will provide a savings in labor costs of \$1,232 per power unit over its service life. In an average fleet of 154 power units, the fleet's total savings over one trade cycle is \$189,728. **The average fleet will save \$29,831 per year by using vehicle lifts when performing PMIs.**

Independent Maintenance Provider

Independent truck maintenance provider Inland Truck Parts has 12 repair facilities throughout the Midwest and Mountain states. It compared two months of data for 250 jobs, primarily transmission, differential and clutch replacements. Of these jobs, 200 were performed without vehicle lifts and 50 were performed using lifts.

The 200 jobs without a lift required 730 "book" hours to complete, based on the *Motor Truck and Van Labor Time Guide* Professional Service

Trade Edition, eighth edition. Inland technicians were able to complete these jobs in just 690 hours, for a 5.4 percent improvement over book time.

The 50 jobs performed using a vehicle lift required 390 “book” hours to complete. Using vehicle lifts, technicians were able to improve their speed and complete the jobs in just 331 hours, for a 15.1 percent improvement over book time.

Extrapolating these results, Inland technicians would be able to perform 250 repair jobs requiring 1120 “book” hours in 1060 actual hours (a 5.4 percent improvement) without a vehicle lift. At \$65 per labor hour, this would result in a billing variance of \$3,900. With a vehicle lift, Inland technicians would be able to perform 250 repair jobs with 1120 “book” hours in 951 actual hours (a 15.1 percent improvement). At \$65 per labor hour, this would result in a billing variance of \$10,985.

So, Inland could make over \$7,000 more on 250 jobs by using a vehicle lift than without one.

Inland Truck Parts		
A	Book Hours (250 jobs)	1120
B	Actual Labor Hours Required (250 jobs without lift)	1060
C	Actual Labor Hours Required (250 jobs with lift)	951
D	Cost per Labor Hour	\$65
E	Billing Variance 250 Jobs without Lift ([A - B] x D)	\$3,900
F	Billing Variance 250 Jobs with Lift ([A - C] x D)	\$10,985
G	Increased Profit 250 Jobs with Lift (F - E)	\$7,085

ROI

As the case studies demonstrate, using vehicle lifts instead of floor jacks can drastically reduce the time it takes to perform many service tasks. Using portable lifts outside or in other parts of the maintenance facility will often enable you to even add additional “bays” in an existing shop, increasing potential revenue.

Use the following ROI Payback Calculator to determine how quickly a vehicle lift will pay for itself in your operation and begin generating extra profit. Fill in your own numbers for A, E and H.

Return on Investment Payback Calculator		
A	Number of Technicians	5
B	Minutes Saved per Day per Technician with Lifts	30
C	Total Minutes Saved per Day (A x B)	150
D	Hours Saved per Day (C / 60)	2.5
E	Hourly Shop Rate	\$75
F	Additional Profit per Day (D x E)	\$187.50
G	Number of Working Days Annually	260
H	Cost of Lift	\$26,000
I	Days to Recover initial Investment (H / F)	139
J	Additional Revenue Generated per Year After Lift is Paid for (F x G)	\$48,750

Ergonomics and Safety

Vehicle lifts are designed to safely raise vehicles to a comfortable working height and keep them there. Ergonomic working heights and conveniently located tools and controls can result in less strain on technicians' bodies and fewer injuries as a result.

When used properly, vehicle lifts are a much better choice for lifting and holding heavy trucks than bottle jacks or makeshift solutions. They provide more access to the vehicles' undercarriage to enable technicians to use tools to safely remove and replace heavy components like engines or transmissions without manual lifting. Lighting is also improved. Technicians are less likely to get debris in their eyes and ears with a lift than they are when lying on a creeper under a truck.

Vehicle lifts incorporate mechanical locks that reduce the need for jack stands. Because these locks are designed into the lift, technicians don't have to take additional steps to secure the load.

Workers' Compensation Costs

The use of vehicle lifts frequently decreases the number of accidents and injuries suffered by workers. This results in healthier employees and fewer lost work hours. Over time, many facilities also see their workers' compensation premiums reduced.

Employee Recruitment and Retention

Fleets, dealers and independent truck maintenance facilities face an ongoing, unrelenting shortage of trained technicians, even as vehicles get more complex in order to meet tougher emission standards. The Truck Renting and Leasing Association (TRALA) Equipment and Technology Advisory Council has identified the technician shortage as "the most critical maintenance issue impacting the industry." The

shortage is expected to get even worse as baby boomers retire. According to the U.S. Bureau of Labor Statistics, annual demand for vehicle technicians is expected to rise to 101,184 annually by 2012, an increase of 12.4 percent.

"The growing shortage of technicians serving the trucking industry is not a problem that's going from bad to worse — it's a problem that's going from bad to right off the cliff," writes Sean Kilcarr, senior editor, in the March 2005 issue of *Fleet Owner* magazine. ("The Technician Shortage: How Bad Is It?")

"The growing shortage of technicians serving the trucking industry is not a problem that's going from bad to worse — it's a problem that's going from bad to right off the cliff,"

As demand for the limited number of qualified vehicle technicians increases, truck maintenance operations find themselves competing to fill their open positions.

Everyone is looking for an edge. Higher pay, better benefits and more vacation time are frequent lures. Another tactic is to offer better working conditions. The best vehicle technicians can have their pick of jobs. Many would prefer to work in automotive dealerships because they have an image as the most sophisticated repair facilities. According to an article in *USA Today*, the Bureau of Labor Statistics estimates that the auto industry alone will need 35,000 new technicians every year through 2010. That's on top of the current shortage of 37,000 automotive technicians according to Automotive Retailing Today, a coalition of car manufacturers and retailers. ("Auto Repair Programs Crank Up Recruitment," *USA Today*, Feb. 16, 2006.)

Car dealers and transit garages universally equip their service departments with vehicle lifts. Given the choice, most technicians would

prefer to work on a vehicle standing up with the vehicle raised to a comfortable position, rather than having to slide under the vehicle on a creeper. Installing vehicle lifts, especially those that are easy to use and feature the latest technology, helps truck maintenance facilities

compete with car dealers, transit garages and others to attract top-notch technicians. Plus, the investment in top-quality shop equipment demonstrates that you value your employees, contributing to good morale, lower absenteeism and a professional attitude.

Types of Heavy-Duty Vehicle Lifts

There are six main types of lifts used in truck maintenance facilities: inground lifts, pit lifts, two-post surface lifts, four-post surface lifts, parallelogram lifts and mobile column lifts.

Inground Lifts

Inground lifts have been the top choice of heavy-duty maintenance operations for more than 80 years. This design provides the best access to the various maintenance items on a vehicle and does so in the most ergonomic, space-efficient way. Available with two or three posts, they engage the vehicle by its axles. The lift can be operated by a control box, pendant or above-ground console, while the posts, power units and hydraulics are located in the ground. Lifting capacity is typically up to 90,000 lbs.

Typical Uses: Lifting large two-axle, three-axle and tandem-axle vehicles for most preventive maintenance and repair tasks.

Features & Benefits

- Dramatically speeds the performance of service and maintenance of components located on the vehicle's undercarriage.
- Provides unsurpassed, unobstructed access to all vehicle service areas, including sides.
- Provides more working room around and

under the vehicles.

- Lift retracts into ground when not in use, so the bay is free of obstructions.
- One of the columns can move forward or back to accommodate a wide range of vehicles.
- Occupies less space than surface lifts.
- Longest useful life: 30 years or more.
- Wheels are immediately free as soon as the vehicle is lifted.
- Shop has a clean appearance.
- Easy to move vehicles around.
- Most productive lift design.
- Modern designs eliminate environmental concerns.
- Some models feature fault codes, troubleshooting tips, training guides and preventive maintenance reminders to extend the life of the lift and increase reliability.

Drawbacks

- Higher installation cost than surface lifts.
- Location is fixed.
- Poor for steam-cleaning.
- Difficult to relocate.
- Posts may get in the way when attempting to remove axles.
- Older inground lifts may leak hydraulic oil into the ground.
- Older inground lifts can be harder to maintain and repair.



Product Profile: The Rotary Lift MOD30 inground lift

The MOD30 inground lift from Rotary is the next generation of inground vehicle lifts. It emulates all of the advanced technology associated with modern underground fuel storage tanks. The MOD30 virtually eliminates environmental concerns about leaking hydraulic fluid. It uses half the hydraulic oil of traditional inground lifts. Alternatively, soy-based hydraulic fluid may be used. Plus, the entire system is contained in a steel enclosure coated with Rotary's exclusive EnviroGuard™ protective polyurethane sealant. This enclosure also makes it possible to install a MOD30 in half the time of traditional inground lifts. The MOD30 features Rotary's patented LDS Liquid Detection System to alert technicians if more than five inches of liquid accumulates in the lift housing.

The lift is modular, so it can be configured for numerous vehicle applications. Technicians easily operate the control system with a single joystick that gives them infinite speed control when raising and lowering the lift. This precision control allows a mechanic to raise a vehicle just enough to get the tires off the floor, but not so high that the tires must be manually hoisted on and off the wheel hub.

Rotary's patent-pending *inbay*® technology monitors the system. *Inbay* allows the lift to “remember” wheelbase dimensions for up to 10 different vehicles. As a result, technicians don't have to crawl around on the floor watching the piston move until it is centered under the axle. *Inbay* performs this function automatically. Also, through *inbay*, technicians can immediately access and review service, diagnostic and maintenance information, operation and maintenance manuals, a troubleshooting guide and fault codes, a training guide, and preventive maintenance reminders.

Pit Lifts

Pit lifts are common in European service garages, but are new to North America. These axle-engaging lifts are added to existing service pits to expand the maintenance and repair tasks that can be performed there. Pit lifts allow fleet operators to get the same productivity from a pit as they do from a service bay equipped with a full lift. There are three pit lift models: floor-running, rail-mounted and suspended. Floor-running pit lifts have caster wheels so technicians can roll them anywhere in the pit. Rail-mounted lifts move along a rail system at the bottom of the pit when floors are cracked or uneven. Suspended pit lifts ride on rails installed at the top of the pit. Lifting capacity is up to 44,000 pounds.

Typical Uses: Raising vehicles above a service pit to perform maintenance and repair tasks that require the wheels to be free, such as lubrication, brake, wheel and transmission work. Vehicle manufacturers recommend that suspension components have no load on them when they are being greased. Pit lifts permit this “unloading” of the suspension so that preventive maintenance can be delivered in accordance to vehicle manufacturers’ specifications.

Features & Benefits

- Pit lifts are much less expensive than traditional surface or inground lifts.
- Adding a pit lift to an existing service pit turns it into a fully functional service bay.
- Productivity is enhanced because technicians don’t have to move vehicles from bay to bay when services include oil change and brake or suspension work.
- Floor-running and rail-mounted pit lifts are mobile, so a single lift can be used in a number of pits.

- Adapters enable technicians to use pit lifts as service or removal tools for transmissions, gas tanks and other vehicle components.
- Pit lifts are a safe replacement for work often done by jack stands, dollies or makeshift solutions.

Drawbacks

- Pit lifts can only be used in service pits.
- In narrow pits, the lifts make it difficult for technicians to walk the length of the vehicle.



Two-Post Frame-Contact Surface Lifts

Two-post surface lifts are the most widely used vehicle lift in the world. This design features two sets of lifting arms attached to two columns. The vehicle is driven between the columns, and the arms are manually positioned under the vehicle to lift it at designated pick-up points on the frame. Two-post lifts typically come in asymmetrical and symmetrical designs. True asymmetrical lifts have the columns rotated 30 degrees in order to place the vehicle's approximate center of gravity in line with the optimum load capability of the columns. The columns of true symmetrical lifts are not rotated. Symmetrical designs are preferred for use on large vehicles, because the load must be centered between the columns longitudinally. Lifting capacity is up to 18,000 lbs.

Typical Uses: Lifting light- or medium-duty trucks and vans.

Features & Benefits

- Lower initial costs, including installation.
- Versatile. Provides easy access to most of the vehicle undercarriage and drive-train. Wheels hang free, so wheel, brake, steering and suspension work is possible.
- Fast installation, with no digging.
- Adapters make it possible to lift a variety of vehicles.
- Positioning the vehicle is quick and easy using a spotting dish on the floor.
- Easy to maintain.
- Can easily be moved or relocated if necessary.
- Environmentally friendly. No fluid below ground.
- Available with a wide range of vehicle contact configurations for maximum flexibility.
- Can be equipped with fixed contact pads for faster spotting.
- Extended height models available to

maximize working height under tall vehicles.

- Low ceiling models available for shops with ceilings as low as 10 feet.
- Some models come with controls on each column, to save technicians steps and maximize productivity.

Drawbacks

- Can't be used to lift vehicles weighing more than 18,000 lbs.
- Columns can get in the way, affecting productivity.
- Columns can damage doors or restrict access to the vehicle passenger compartment.
- Overhead bar can limit lifting heights on tall vehicles.
- Less technician working room can reduce efficiency.
- Shorter life than inground lifts: 10 to 15 years.



Four-Post Drive-On Surface Lifts

With a four-post drive-on lift, the vehicle is driven onto runways which are then raised. Drive-on lifts are the fastest lifts to use because no set-up is required to raise the vehicle. The mechanic simply drives into the bay and 60 to 100 seconds later, the vehicle is at a comfortable working height to deliver repairs. The vehicle is supported on its wheels, although the lift can be fitted with rolling jacks to engage the vehicle at its axles and make it possible to lift the front, rear or all wheels off the runways. The lifts can also be equipped with alignment kits. Lifting capacity is up to 60,000 lbs.

Typical Uses: Fast-turn service (such as oil changes), long-wheelbase vehicles, center undercarriage and exhaust work, alignments, tasks requiring loaded suspensions.

Features & Benefits

- Four-post lifts are available in a variety of lengths and lifting capacities with adjustable runway track widths to accommodate most vehicles.
- With the addition of rolling jacks, four-post lifts are very versatile and can

be used to perform most repair and maintenance tasks, including brake, tire and suspension work.

- Can be equipped to perform alignments and front-end adjustments.
- Fast and easy to set up and use, for enhanced productivity.
- Can be configured as drive-through model to ease driving vehicles on and off lift.
- Lower initial costs.
- Fast installation, with no digging.
- Easy to maintain.
- Can be moved or relocated if necessary.
- Environmentally friendly. No fluid below ground.

Drawbacks

- Require a fairly large area in the shop.
- Can impede traffic flow because they require a greater approach area.
- Columns and runways limit technicians' walk-through space and access to the vehicle, reducing efficiency.
- Cross beams can hinder front-end work.
- Shorter life than inground lifts: 10 to 15 years.



Parallelogram Lifts

As their name implies, parallelogram lifts rise using a parallelogram motion. Like four-post lifts, the vehicle is driven onto runways which are then raised. This is also one of the fastest lift styles to use because no set-up is required. The mechanic simply drives into the bay and 60 to 100 seconds later, the vehicle is at a comfortable working height to deliver repairs. The vehicle is supported on its wheels, although the lift can be fitted with rolling jacks to engage the vehicle at its axles and make it possible to lift the front, rear or all wheels off the runways. There are three versions of parallelogram lifts: surface mount, surface with recessed mount and flush mount. Surface-mount lifts are anchored to the shop floor like a four-post lift. Surface-mount lifts can also be installed “in a pocket” with a recessed mount so that when the lift is down, the platforms are flush with the floor and the cavity in between the platforms can accommodate attached rolling jacks. The platforms of flush mount parallelogram lifts recess into individual shallow cavities in the floor when the lift is lowered, with no obstructions above ground. Lifting capacity is up to 130,000 lbs.

Typical Uses: Most preventive maintenance and repair tasks, wash bays, inspections, alignments.

Features & Benefits

- Convenient and fast to use.
- Can lift even the heaviest vehicles, so a single lift can service most trucks in a fleet, as well as most automobiles.
- Smaller space requirement than four-post models.
- Provides larger work area under the vehicle than a four-post.
- Provides maximum side access to vehicles.
- No columns or cross bars to get in technicians' way.
- Can lie close to the floor without the need for permanent columns, so the bay

is free of obstructions.

- Lights in the platforms make it easier to see while working under a vehicle.
- With the addition of rolling jacks, four-post lifts are very versatile and can be used to perform most repair and maintenance tasks, including brake, tire and suspension work.
- Can be equipped to perform alignments.
- Can be configured as drive-through model to ease driving vehicles on and off lift.
- Easy to maintain.
- Can be moved or relocated if necessary.
- Environmentally friendly. No fluid below ground.
- Options available for wash bay applications.

Drawbacks

- More expensive than four-post models.
- Platforms can get in the technicians' way.
- Some designs have a continuous base or torsion bars rather than a clear-floor design that has potential to trip technicians and reduce productivity.
- Require wheel dollies to remove tires.
- Require more space fore and aft to raise and lower.
- Take up more room than inground lifts.



Mobile Column Lifts

Mobile column lifts are the fastest-growing category of above-ground lift for the heavy-duty market. They consist of four or six portable columns linked by a common control circuit. The columns are wheeled to the vehicle, then connected together via control cables for synchronized lifting. The columns engage at the vehicle's wheels. On some models, wheel forks adjust to different wheel sizes. Lifting capacity ranges from 60,000 lbs. to more than 90,000 lbs.

Typical Uses: Most preventive maintenance and repair tasks indoors or out. Can turn empty space into a repair, inspection or wash area.

Features & Benefits

- Portable and extremely flexible. Can be moved between bays, outdoors or even away from the shop.

- Offer unobstructed access to the vehicle undercarriage.
- Once lifted, jack stands can be used to keep the vehicle up, then the lift can be moved to raise another vehicle.
- Can lift virtually any vehicle configuration.
- A clear floor under the vehicle provides easy tool access.
- No installation costs.
- Relatively inexpensive.
- Environmentally friendly. No fluid below ground.

Drawbacks

- Time-consuming to move and reposition columns for every vehicle.
- Electric cables stretch between columns on the floor.
- Cannot easily be used for wheel work.



How to Choose the Right Lift for Your Maintenance Facility

Vehicle lifts are probably used more than any other piece of shop equipment. A single lift may be raised and lowered dozens of times a day. Because of the central role lifts play in most maintenance and repair tasks, it is crucial to shop productivity that they are chosen with care. A lift that doesn't perform as it's needed or that is down for repair frequently will disrupt work flow, increase vehicle downtime and cost you money.

Before you can make an intelligent purchase decision, you need to assess your needs and develop a plan that encompasses your business today and into the future. Choose your lifts based on where you want your business to be down the road, not just on what you're doing today. The types of services your facility performs and will perform in the future will be the most important factor in choosing the most appropriate lift design. For guidance on designing a new maintenance facility, consult TMC Recommended Practice 590. It outlines four steps to planning a maintenance facility that will support your business needs, your customers' needs and corporate objectives:

1. Determine the status of your present business.
2. Decide where you want your business to be.
3. Formulate plans to achieve your objectives.
4. Monitor your performance.

Gather basic information about all the lifts under consideration to compare what is available. A lift is a major capital investment that should be purchased only after carefully evaluating the facility's needs and reviewing how available lifts address those needs. Pay attention to the types of service the facility performs, since this will have the greatest impact on what constitutes

the most appropriate design. The personal preferences of the facility owner, maintenance manager and technicians based on their previous experience should be considered. Also check with colleagues about lifts they have used.

For some facilities, a single model of lift is appropriate for all of the work they perform. However, most facilities will find that having a variety of lift styles enables the service manager to assign each job to the most appropriate bay. Not every lift is appropriate for every application.

Factors to consider when choosing vehicle lifts include:

- Facility layout (bay widths and ceiling heights).
- Types, sizes and weights of vehicles to be lifted.
- Services performed.
- Safety.
- Efficiency, versatility and productivity.
- Ergonomics
- Environmental concerns.
- Lift maintenance.
- Budget.
- Lift quality.
- Lift origin.

Facility Layout

"The efficiency of a maintenance operation is directly affected by the design of the maintenance shop. A well-designed shop can save in utility costs, vehicle downtime, employee absenteeism and injury. A poorly designed shop can lead to inefficiencies and lost productivity."
—TMC Recommended Practice 515

Vehicle lift selection and placement should be part of an overall shop planning process. Some lift manufacturers offer free facility planning assistance including recommendations on which lifts to install and where in order to maximize

technician productivity and efficiency. These design assets can help architects understand key workflow characteristics, such as approach angle and turning radius into a lift bay. This capability will have a big impact on designing a shop where lifts and vehicle drive lines complement one another. Space consumption is an increasingly important element in facility design.

Major facility considerations include space availability, traffic flow, concrete and soil quality, vehicle length and turning radius, and whether the property is leased or owned. The goal is to come up with the optimal shop design for the available space.

For the best return on investment, most facility planners will try to maximize the number of service bays. Each lift model has its own “footprint,” or recommended bay size. For a greater number of bays, choose lifts with smaller footprints. For example, most inground lifts have smaller footprints than surface lifts. Parallelograms have smaller footprints than four-post lifts.

Another option for some shops is to expand usable space by performing work outside. In this case, mobile column lifts are a good choice. To gain an appreciation for the importance of space efficiency, consider that the National Automobile Dealers Association (NADA) estimates the revenue potential of each service bay at \$210,000 per year. Creating additional service bays with space-saving lift designs adds a lot to a fleet's balance sheet.

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Optimizing traffic patterns into and out of the shop will keep work flowing smoothly. Consider the turning radius and length of vehicles being serviced in the facility to ensure that they can be driven into position onto or over each lift without a lot of time-wasting maneuvering.

Foot traffic is also an important consideration. Technicians make countless trips from their toolboxes to the vehicles they're working on each day. Lift columns, cords and other obstructions are not just inconvenient; they can add up to significant lost time. Lift designs that offer a “clear floor” may improve efficiency.

In some facilities, space restrictions will impact the choice of lift. Consider the amount of space needed around the lift for access to trucks' undercarriages and to remove axles and engines. A lift positioned too close to a side wall will not leave the technician enough room to pull an axle, for example. If there's not much space in front of the lift, it may not be possible to pull an engine in that bay. In addition to depth and width, overhead clearance is also a factor. Is there room to take vehicles to the lift's full rise without interfering with heating equipment, lighting, roof members, exhaust evacuation or other equipment? Parallelogram lifts need additional space fore and aft.

Water and soil conditions at some locations may be unsuitable for inground lifts, while others may not support heavy surface lifts. A qualified lift installer can evaluate the conditions at your site and recommend the appropriate lifts.

Finally, whether you lease or own the building may affect your decision. If you lease, a surface lift, which can be relocated, may be a better choice than an inground model, which is relatively permanent. Likewise, you generally have more choices and flexibility in new construction than during a renovation.

Type(s), sizes and weights of vehicles to be lifted

The types of vehicles you work on will impact the styles of lifts you consider, their lifting capacities and the accessories you may need. For example, parallelogram lifts can be used with the heaviest vehicles, while two-post lifts can only handle vehicles maxing out at 18,000 lbs. For tandem-axle vehicles, inground lifts are available with three posts. Remember to plan for any new vehicles that may be added to the fleet.

Services performed

The styles of lifts you choose can have a significant impact on the quality and speed of your work. While a certain lift may be able to “get the job done,” a different model may make it possible to work even faster. Ask yourself these questions regarding lift styles:

- What services do we perform most?
- What are our secondary areas of service? Would we like to expand these?
- Are we currently outsourcing some maintenance or repairs that we could do in-house with the right lifts?
- Can we use lifts to streamline non-service tasks like inspections, washing, estimating, etc.?
- Are there areas that would be more productive with a lift? (Existing service pits, for example, can be used for wheel-free work with the addition of pit lifts.)
- Is wheel-free design important in this particular bay? If it is, specify wheel-free lifts or drive-on lifts with built-in wheel-free jacks.

The accuracy and speed at which a vehicle can be properly positioned on the lift is an important factor. Bays where a lot of quick-turn services, such as oil changes, are performed would probably be well-served with a four-post or parallelogram surface lift because vehicles

can be moved on and off these lifts quickly and easily. They are also good choices for wash bays and alignments. For a full-service bay, the lift should be either frame-engaging or axle-engaging. Another option is to use a drive-on lift that is equipped with a wheel-freeing device like rolling jacks.

Efficiency/Versatility/Productivity

One of the most significant benefits of installing vehicle lifts is the resultant increase in technician productivity and efficiency. But just how much technicians’ productivity increases is dependent on the lifts chosen. There are two main areas of concern. First, the type of lift should be conducive to the tasks it will be used for. Second, the particular brand and model of lift should be evaluated for user-friendliness, speed and useful features. Some things to consider include:

- Does the lift have wheels-free capability? Since a majority of what a technician will work on in most shops is braking, suspension and steering, it is critical to be able to free the vehicles’ wheels.
- Is the lift easy to set up? How long does it take? Can the operator set up a vehicle on the lift while standing, or does he have to crawl underneath?
- How easy to use are the lift controls? Can the lift be moved precisely or only in broad increments? Precision control allows a technician to line up bolts and heavy components without a lot of manual pushing and shoving to get the holes lined up.
- How quickly is the vehicle lifted to full working height and brought back down? Slow lifts waste time.
- On a two-post lift, are dual controls available? Having controls on both columns increases technician efficiency.

Look for these productivity-enhancing features:

- Integrated air and electric outlets.
- Automatic wheel chocks.
- Safety strips.
- Built-in lights.
- PLC power units.
- Rolling jacks.
- Rolling drain pans.
- Alignment kits.
- Drive-through ramps.
- Single-point locking release systems.
- Adapter racks.
- Tool storage racks.
- Adapters.
- Wheel spotting dishes.
- Easy-to-adjust arm restraints.
- Electronic locks.
- Joystick controls.
- Infinite speed adjustment.
- Memorized wheelbase settings.
- Onboard troubleshooting, operation and maintenance information.
- Built-in software providing training guides and preventive maintenance reminders.
- Universal saddle adapters.
- Automatic spotting systems.
- Pendant controls.
- Ergonomically placed controls.
- Adjustable wheel forks.

Safety

The most important safety consideration is whether the lift is certified to meet ANSI/ALI ALCTV-1998 safety standards. Look for the gold “ALI Certified/Validated by ETL” label. Only lifts that have passed independent safety testing can use this label. Without third-party certification, buyers have no guarantee that a lift meets accepted industry safety standards. (See page 21 for more information on certification.)

Compare safety features and systems on the

models under consideration. Safety systems should be user-friendly, or technicians will be tempted to ignore or override them. Look for the following features as appropriate:

- Mechanical locks
- Air locks
- Automatic wheel chocks
- Shatter-proof light shields
- Safety strips
- Automatic synchronization
- Emergency stop buttons
- Non-skid ramp surfaces and runways
- Lockable disconnect switches
- Arm restraints
- Multi-position locking systems
- Wheel spotting dishes
- Shutter plates that keep floor openings covered and automatically move with the lift
- Work steps

Ergonomics

Most technicians would prefer to stand up to work rather than lie on a creeper under a truck. It's more in keeping with how our bodies are designed. Plus, vehicles are getting lower to the ground. Bridgestone recently started recommending a single tire at the end of trailers instead of two. This tire is seven inches lower in profile than standard tires. With the high price of fuel, manufacturers are also trying to make trucks more efficient in part by adding ground effects on the front. These developments can prevent all but the skinniest technicians from sliding underneath the vehicle without a lift.

Some lifts do more to maximize operator comfort (and productivity) than others. Consider the following:

- Are the lift controls operated standing at a console or crouching on the floor?
- Does the technician have to crawl under the vehicle at any time to set up the lift?
- Which lift offers the greatest amount of

clear work space under the vehicle, front to back and side to side?

- Does the lift include lighting? Air tool connections? Rolling jacks? Automatic shutter plates? Joystick or push button controls? Single-point release air locks? Tool storage rack?
- Does the lift offer fine height adjustment?

Environmental Concerns

There is a growing movement in North America and abroad toward “green” buildings. These buildings are constructed or remodeled using environmentally friendly strategies encompassing resource conservation, use of recycled materials, sustainable site development, energy efficiency and indoor environmental quality. In the United States, the nationally accepted benchmark for the design, construction and operation of green buildings are the LEED (Leadership in Energy and Environmental Design) standards administered by the U.S. Green Building Council (USGBC). (Learn more at www.usgbc.org.)

Some fleets, independent maintenance providers and others in the trucking industry are working with architects to design new green facilities. Others may not have certification as a goal, but want to purchase environmentally friendly shop equipment whenever possible.

Consider what precautions are designed into a lift to prevent hydraulic fluid leaks, electrolysis, water contamination and other environmental concerns. For an inground lift, does it signal the operator if moisture develops in the housing? How much of the lift is constructed out of recycled materials? Can bio-fluid (soy-based hydraulic fluid) be used in place of petroleum-based fluid? How much energy does the lift’s motor use?

Lift Maintenance

The best lifts will require minimal maintenance while offering years of safe, reliable service. Compare maintenance schedules for lifts under consideration. Any time a lift is down for repair, it reduces technician productivity, increases vehicle downtime and costs you money.

Consider the following:

- Who is going to take care of the lift once it’s installed?
- Does the lift alert operators when maintenance is needed?
- For inground lifts, can basic maintenance be performed without breaking concrete?
- Lift warranty. Ask for a copy in writing. Ask how warranty parts are sent out and how warranty work is performed.
- Service availability. Is there an authorized service provider in your area?
- Where the lift is manufactured. If it’s built outside of North America, are OE replacement parts readily available?

Budget

Obviously, budgetary considerations will affect the choice of lift. In general, the lowest-priced heavy-duty vehicle lift is the mobile column lift. Inground lifts generally have the highest upfront cost, although their long life makes them the most cost-effective over time.

Once the type of lift is selected, you will inevitably compare the offerings of various manufacturers, including price. Be sure to shop for the lowest overall total cost of ownership, not just a low purchase price. The costs of repairs and downtime from a cheap lift can more than outweigh any upfront price savings. And remember, the safety of your technicians depends on the lifts they work under every day.

Do you want them standing under the lowest-priced lifts you can find?

When comparing the purchase price of lifts from different suppliers, be sure to ask what is included in the quoted price. Are accessories like rolling jacks, alignment kits and pit covers included or are they available for an additional cost? Is shipping included? Professional installation? Be sure to compare these costs for all lifts you are considering, as they can vary greatly between brands and suppliers.

Lift Quality

All lifts are not built to the same levels of quality. One sure sign of quality is ALI certification. If the lift is certified, you know that it has been independently tested and verified to meet ANSI performance and safety standards. If a lift you're considering isn't certified, find out why. (See section V for more information on certification.)

Ask your lift supplier what design elements make a particular lift reliable. What is better about one model than another? Is the brand you're considering known for innovation and continuous improvement? What experience does the manufacturer have designing, engineering and building vehicle lifts?

Ask your technicians and colleagues about their experience with various lifts. Which brands

do they recommend? Talk to them about the productivity of lifts they have used, how often their lifts are down for repair, how easy they are to maintain, how user-friendly the owner's manual is and how installation went. Ask your lift supplier for maintenance facilities in your area that use lifts you're considering so you can physically examine them yourself.

Remember that another measure of product quality is after-sale support. Make sure that factory-trained installers and technicians are available locally to handle all of your lift installation, inspection and maintenance needs.

Lift Origin

Vehicle lifts and their components are manufactured around the world. The Automotive Aftermarket Industry Association (AAIA) 2006/2007 Equipment Purchasing Trends report found that nearly three quarters of repair shop owners and employees (70.7 percent) prefer to buy equipment that is "Made in USA."

No matter where a lift or its components are manufactured, find out if it is engineered and tested in North America to meet domestic engineering and safety standards. If components are made globally, does the manufacturer have quality-control personnel physically located at each production site to ensure that rigorous quality and testing standards are met?

What is the Automotive Lift Institute?

The Automotive Lift Institute (ALI) is an industry trade association founded in North America by vehicle lift manufacturers in 1945. ALI promotes the safe design, construction, installation, operation and maintenance of vehicle lifts, including those used to service commercial trucks.

In 1947, ALI developed the first Commercial Standard covering vehicle lifts published by the National Bureau of Standards. The current standard governing lift design and construction is ANSI/ALI ALCTV-1998. An updated standard, ANSI/ALI ALCTV-2006, takes effect on Nov. 4, 2007.

ALI has also developed two other standards. One, ANSI/ALI ALOIM-2000 covers the lift owner's responsibilities regarding operation, inspection and maintenance. The other, ANSI/ALI ALIS-2001, covers the installation and service of vehicle lifts.

ALI/ETL Certification

ALI sponsors a certification program for vehicle lifts. Intertek Testing Services (ETL), an independent, worldwide testing organization, manages the program and conducts third-



party tests of vehicle lifts to determine whether they meet the ANSI/ALI ALCTV-1998 safety and performance standards.

This testing includes verification of the structural integrity of all the lift's systems and components, proper function of its controls and load-holding devices, proper lowering speeds, and overload protection. Part of the testing process involves loading the lift to 150 percent of its rated load capacity (15,000 lbs. for a lift rated to 10,000 lbs., for example) and ensuring that no visual deformation of any of the lift's structural elements or components occurs. Instructional materials must also meet requirements outlined in the standard.

In order for a lift to be certified, the manufacturer's production facility has to meet quality control requirements. ETL personnel conduct frequent plant inspections to ensure compliance.

Testing and certification is voluntary. It is legal to sell lifts that do not meet the ANSI standard in North America. However, 45 (as of June 2007) states and Washington, D.C., require that installed lifts be certified as part of the state building code. These states have adopted the International Building Code (IBC) which specifically requires that all lifts be certified to the ANSI/ALI ALCTV standards (IBC Chapter 30, Section 3001.2). Additionally, many Canadian provinces and local governments throughout the U.S. and Canada have also adopted the IBC.

The following states have adopted IBC with its requirement that all installed vehicle lifts be certified to ANSI standards:

Alabama	Maine	Oklahoma
Alaska	Maryland	Oregon
Arizona	Massachusetts	Pennsylvania
Arkansas	Michigan	Rhode Island
California (Effective Jan. 2008)	Minnesota	South Carolina
Connecticut	Missouri	South Dakota
District of Columbia	Montana	Texas
Florida	Nebraska	Utah
Georgia	Nevada	Vermont
Hawaii	New Hampshire	Virginia
Idaho	New Jersey	Washington
Indiana	New Mexico	West Virginia
Iowa	New York	Wisconsin
Kansas	North Carolina	Wyoming
Kentucky	North Dakota	
Louisiana	Ohio	

Local governments in Colorado, Delaware, Illinois, Mississippi and Tennessee have also adopted IBC.

More information on IBC adoption and requirements can be found on the International Code Council (ICC) Web site at: <http://www.iccsafe.org/government/adoption.html>.

A fleet manager or maintenance facility owner may buy a non-certified lift, but in many jurisdictions, he or she could not legally install it.

Membership in ALI is not required to participate in the testing program. Lifts can be tested and certified regardless of where they are manufactured.

Lifts that are tested and found to meet all of the requirements outlined in the ANSI standards receive a gold "ALI Certified/Validated by ETL" label. Only lifts that have passed testing by an independent, nationally recognized testing laboratory can use this label. This label is the

only industry-recognized documentation that the lift has been tested to meet performance and safety standards. Without ALI certification, buyers have **no guarantee** that a lift meets accepted industry safety standards. Note that certification is for an individual model of lift, not the lift manufacturer. If a manufacturer has one ALI-certified lift that does not mean that all of its lifts are certified.

ALI has identified several misleading claims regarding certification:

- "Meets or Exceeds Standard ANSI/ALI B-153.1" This standard no longer exists.
- "Meets all ANSI Standards." The only ANSI standards that apply to lift construction are ANSI/ALI ALCTV-1998 and ANSI/ALI ALCTV-2006 (effective Nov. 4, 2007). Lifts meeting these standards will display the gold label.
- "ALA Certified." The ALA (Automotive Lift Association) has been purported to be an organization of lift manufacturers,

but no evidence of its existence has been found by ALI.

- “Lift is CE Approved.” The CE lift standard, EN 1493, is used in the European Union. It differs from the North American standard in several areas, including electrical. American and Canadian inspectors do not accept CE testing.
- “Lift is CSA or UL approved.” CSA (Canadian Standards Association) and UL (Underwriters Laboratories) approval generally applies to the electrical components of the lift, not the entire machine.

Significance of ALI Membership

Vehicle lift manufacturers who belong to ALI demonstrate a commitment to the lift industry and the safety of lift operators. Members pledge that their lifts will conform to ANSI/ALI ALCTV-1998 standards. ALI Membership By-Laws require ALI members to have at least 70 percent of all their lifts ALI certified.

Manufacturers not based in North America may join ALI. To qualify, an organization must have a presence in North America as a wholly owned and fully staffed subsidiary of a foreign vehicle lift manufacturer. ALI believes that establishing such a presence shows a commitment to the North American market that other offshore manufacturers lack.

Resources Available from ALI

Visit the ALI Web site, www.autolift.org for a complete list of members. For a searchable list of lift manufacturers and their third-party certified models, visit www.ali-directory.org.

ALI also offers a range of safety materials. Many of these items are available through ALI-

member manufacturers or their distributors, as well as directly from ALI online at www.autolift.org. These materials include:

- *Lifting It Right* safety manual. A generic safety manual covering appropriate safety practices and considerations when operating vehicle lifts.
- *Lifting It Right* safety kit. A short DVD presentation, hosted by Richard and Kyle Petty, covering appropriate safety practices when operating vehicle lifts. A copy of the Manual is included, along with a safety tips card, written test and answer key.
- Safety Tips card. A laminated placard offering safety tips for using vehicle lifts that is suitable for posting on or near each lift.
- *American National Standard for Automotive Lifts—Safety Requirements for Operation, Inspection and Maintenance*. A brochure outlining the duties and responsibilities of vehicle lift owners as outlined in ANSI/ALI ALOIM-2000.
- *American National Standard for Automotive Lifts—Safety Requirements for Construction, Testing and Validation*. A brochure describing the requirements of lift manufacturers as outlined in ANSI/ALI ALCTV-1998. There is also a brochure outlining the requirements of ANSI/ALI ALCTV-2006.
- *American National Standard for Automotive Lifts—Safety Requirements for Installation and Service*. A brochure describing the responsibilities of lift installers and repair technicians as outlined in ANSI/ALI ALIS-2001.

How to Evaluate a Lift Manufacturer

When choosing new vehicle lifts, it is almost as important to evaluate the lift manufacturer/brand as the lifts themselves. A good lift manufacturer will provide you with the vehicle lifts and the support you need to build and maintain a strong business. With so much riding on your lifts, buying from an unknown manufacturer can be an expensive risk.

Consider the following factors when evaluating a lift manufacturer:

- **Company reputation.** So many elements go into making a company's reputation that this is probably the best measure of any manufacturer. Ask the manufacturer's representative for a list of references from businesses similar to yours. Talk to your colleagues about lift manufacturers they have bought from in the past to find out which companies take care of their customers and build products that last.
- **Company history.** The history of a company can give you an idea of what to expect in the future. How long has the company been in the lift business? Does it have a history of developing innovative new products to better serve its customers?
- **Financial stability.** You want to buy from a lift manufacturer that will be in business for the life of your lift. Ask colleagues if they have seen any signs of trouble with the manufacturers they have purchased from. Company history is also a good indication of future stability.
- **Company focus.** Are lifts the company's core business? A company that builds lifts as a sideline will likely devote fewer resources to them than a manufacturer focused solely on vehicle lifts.
- **Depth of product line.** Does the

manufacturer build a variety of lift styles to suit the many sizes and configurations of commercial vehicles on the road today? If you need more than one lift style for your operation, it will be much easier to be able to buy them all from a single manufacturer.

- **Commitment to quality.** Does the manufacturer belong to the Automotive Lift Institute (ALI)? Are the products it offers certified to the ANSI/ALI ALCTV-1998 safety standard? Have the company's manufacturing processes been validated to meet the highest international quality standards as indicated by ISO 9001 certification? Research shows that firms making the commitment to meet this quality certification standard significantly outperform other manufacturers.
- **Engineering and design.** Does the company do all of its product design and engineering in-house or is some of it outsourced? How much experience do the designers and engineers have with vehicle lift components and systems? Does the manufacturer own the design or is it purchasing and reselling an "off-the-shelf" lift without an intimate knowledge of the product's integrity? Does the company life-cycle test its lifts for durability and robustness?
- **Local service and support.** Does the company offer its products through an extensive network of factory-trained and certified service providers who are fully equipped to provide installation, service and repair? Does the manufacturer offer a formal training program for its distributors and installers? Is there a qualified support team located near your location that can respond to issues within 24 hours? The best manufacturers attract the biggest distributors and most-talented installers. Local, factory-trained support is crucial to faster installation

and expert service after the sale. It may also be a code requirement in your community.

- **Factory Support.** Has the company made an investment in building a large team of professional engineers and trained lift specialists? Is the team easily accessible when customers have questions? Does the manufacturer offer technical support for its products through a toll-free phone number and Web site?
- **Parts availability.** Are genuine OE replacement parts available right away from a local distributor or do you have to wait for them to be shipped to you? Does the manufacturer use a computerized parts system to constantly maintain an appropriate inventory of parts? Does it set high customer service standards, like shipping parts within 24 hours? Does it have an engineering staff dedicated to improving the quality and durability of its replacement parts? Is the manufacturer concerned about the proliferation of counterfeit parts that can alter your lift's productivity and safety, as well as risking its ALI certification?
- **Warranty.** Ask for a written copy of the warranty. It should clearly state which components are covered and under what conditions. The warranty document should also spell out how it is administered, whether labor is covered for work performed under warranty, and whether there is someone in your area authorized to do warranty work. Does the manufacturer offer the opportunity to purchase an extended warranty?
- **Liability insurance.** A solid company will have the financial resources to back its products. The best companies cover their authorized installers under an umbrella policy, as well.
- **Training materials.** A reputable lift manufacturer will offer a variety of training materials to help train your technicians on the proper and safe use of vehicle lifts.
- **Green awareness.** What steps has the manufacturer taken to reduce its impact on the environment? What percentage of the materials (steel, plastic, etc.) used to make its lifts is recycled? Have any of its products been third-party certified to meet independent environmental standards?
- **Specification assistance.** Many specialized lifting applications for heavy-duty vehicles require precise and customized specification information. Can you call the lift manufacturer to obtain the information you need to get the right lifts for your applications and to write a bid specification?
- **Facility planning assistance.** Will the manufacturer help you and your architect choose and arrange the best lifts to maximize efficiency for your facility? Does the company provide custom facility layouts, CAD blocks and written specifications? In other words, is the manufacturer simply looking to sell you a lift, or is it committed to helping you improve your shop productivity even years after you buy the lift?

How to Evaluate a Lift Supplier/Installer

A lift distributor/installer is your local connection to the manufacturer. This is your one-stop-shop for new lifts, accessories, installation, service, parts and accessories. A local distributor is also a knowledgeable resource for recommending the appropriate vehicle lifts for your business and answering operator questions about the lifts.

When you are in the market for vehicle lifts, contact your local distributor first. A distributor representative can evaluate your existing maintenance facility for compatibility with the lift styles available and recommend the right lifts for you. He or she will consider your ceiling height, concrete floor thickness, the turning radius of the vehicles you service and the space needed to position the vehicles on the lifts. The distributor can work with the manufacturer's facility planning service to position the lifts and arrange your shop floor plan for smooth traffic flow and maximum productivity.

Most lifts used in commercial truck maintenance facilities must be professionally installed. An expert installer will keep shop disruptions to a minimum and have your new lifts up and running as quickly as possible. Using a factory-authorized installer will also ensure that the lifts are installed properly for years of trouble-free service.

When evaluating a lift distributor/installer, consider the following:

- History, experience and reputation. How long has the distributor been in the lift business? How many heavy-duty lifts has the installer set up? Does the company have a reputation for

prompt service, expert advice and strong customer support?

- Factory training. Ask if the distributor employees, including the installers, have been trained on proper lift installation, operation and maintenance by the lift manufacturer.
- Knowledge of local building and construction codes. Be sure you can rely on the distributor/installer to comply with local codes and regulations, know what permits are needed, and properly dispose of any old lifts and used hydraulic oil.
- Insurance. The distributor should have adequate liability insurance, as well as workman's compensation coverage.
- Scheduling flexibility. Is the installer willing to schedule installation for times that work best for your operation?
- Guarantee. All installations should be guaranteed for at least a year.
- Parts availability. Does the company maintain an adequate inventory of OE replacement parts on-site to get lifts back up and running as quickly as possible?

Even the best lifts need maintenance and occasional repair. Your local distributor can provide the fast service you need to put the lift back in service quickly. In many cases, it can be back online the same day you call. For emergencies, nothing beats having a local resource to call for assistance in a hurry.

When you call your distributor for service, you can relax knowing that the maintenance personnel are factory-trained to quickly diagnose the problem and fix it right the first time, using genuine factory replacement parts. Plus, the distributor should have the special tools required to perform any maintenance or repairs your lifts may need.

Keeping Your Vehicle Lifts Functioning Properly

Inspectors from OSHA and various state and local agencies around the United States and Canada now inspect vehicle lifts to make sure they are properly certified, installed and maintained. According to the Consumer Product Safety Commission, 15,000 people are treated at hospitals annually for injuries resulting from the use of vehicle lifts, jacks and jack stands. ALI reports that most accidents involving vehicle lifts are caused by improper vehicle spotting, a lack of lift inspection and maintenance, and poor operator training.

There is also a bottom-line benefit to keeping your lifts in top form. When properly maintained, vehicle lifts are a long-term investment in your shop's productivity and profitability. Vehicle lift manufacturer Rotary estimates that the average age of the lifts currently in use in the United States is 13 to 15 years.

To keep your lifts functioning properly for a long lifetime of service, follow the specific maintenance, adjustment and lubrication recommendations provided for each one by the manufacturer. Maintenance intervals and routines do vary by lift, so it's important to adjust your maintenance procedures if necessary when you buy new lifts.

General maintenance and inspection guidelines are available from ALI. The *Lifting It Right* manual outlines generic information about types of vehicle lifts, sound safety practices and basic maintenance. This manual is also available with a training DVD and safety quiz. The package is intended for use as a training aid to teach operators the correct way to lift vehicles. The *American National Standard for Automotive Lifts—Safety Requirements for Operation, Inspection and Maintenance* outlines the duties

and responsibilities of vehicle lift owners. It includes lift inspection requirements and inspection checklists, as well as some general maintenance recommendations.

While most routine maintenance and inspections can be performed by lift operators, annual inspections, repairs and certain maintenance tasks, such as seal replacement or pressure testing, should only be undertaken by qualified lift service personnel.

Lift Lubrication

Proper lubrication is crucial to maintaining optimal vehicle lift performance and longevity. Remove dirt and debris from connectors and linkages, and spray cables and chains with high-quality penetrating oil monthly. This is especially important for lifts that are driven by the cable or chain, such as four-post lift models. Be sure to use penetrating oil designed for this type of application, rather than one intended for light household use. The penetrating oil will work its way inside the cable fibers, lubricating them to prevent seizing and rusting, without leaving a slick surface.

Never use grease on lift cables or chains. Grease coats the exterior of the cable or chain, causing it to glide across the sheave or pulley surface, instead of allowing them to rotate as designed. Your lift's performance may suffer as a result.

The lift's sheave/pulley axle pins themselves should be lubricated with penetrating oil, as well. Also use the penetrating oil to lubricate the locking latch system assemblies' pivot points.

Consult your lift owner's manual for specific lubrication guidelines, as they vary by



manufacturer and lift style. For example, never lubricate inside the columns of two-post surface lifts that are built with self-lubricating slider blocks. The slider blocks inside the columns provide their own lubrication, and adding any outside lubricants will only attract dirt, potentially increasing wear.

Annual Lift Inspections

Lifts should be inspected frequently to make sure they are operating properly. Instruct technicians to perform a quick, daily inspection of the lifts they use at the start of every shift. They should immediately report any lift issues to a supervisor, who should resolve the issue before the lift is used again.

In addition to the inspections your own personnel conduct on a regular basis, have all of your lifts inspected annually by a qualified service company. In an annual lift inspection, factory-trained technicians carefully examine each lift. Some specifics will vary between lift styles, but in general, each lift should be checked at least for the following:

- Accessibility of operating manuals, safety warning labels and rated load capacity decal.
- Adequate clearance around the lift.
- Leaks.
- All accessible structural components (including welds) checked for any signs of fatigue, overloading, excessive wear, misuse or abuse.
- All components are set to the proper tolerances.
- All safety systems are present and working properly.
- Anchor bolts are tight, no cracks in concrete floor.
- Power unit fluid is not contaminated (replace fluid if needed).
- Arms and adapters move freely and operate smoothly (if applicable).

The inspector should also lubricate lift components and add any necessary fluids per manufacturer's guidelines.

Replacement Parts

Over the life of your lifts, you will likely need to replace some wear items. ALI recommends using only original equipment replacement parts to ensure proper fit and function. OE parts are designed with the exact tolerances and material strength required for a specific lift. Because they come from the lift manufacturer, they also incorporate the latest design updates and improvements.

Aftermarket parts are "reverse engineered" and may not use the same materials as the originals they are copying. This means they may not last as long, resulting in increased downtime. The tolerances may also be different from the originals. This can have a serious effect on lift performance and reliability over time. Consistency also can be an issue.

Using aftermarket parts on a certified lift can void the lift's certification. Lifts are certified to ensure that they meet industry-approved safety and performance standards. That means the lift and all of its components must meet all standards for material strength and design tolerances. One imitation replacement part can compromise on those standards. One part from a source other than the lift manufacturer can justify de-certification of the lift.

Contact your local lift distributor for all your OE lift replacement parts. Your local distributor should have most wear parts in stock or be able to get them for you in 24 hours. With parts counterfeiting on the rise, buying from a factory-authorized representative also reassures you that you're getting genuine OE parts.

If you settle for imitation parts, you're risking the performance, safety and certification of your

lifts. You're also putting your bottom line at risk. Don't take the chance. Insist on original equipment replacement parts for any brand of vehicle lift.

Operator Training

Once vehicle lifts are installed, it is crucial that the technicians operating them know how use them correctly. No one should operate a vehicle lift without being trained. Ask your lift manufacturer's representative for training and maintenance materials. You should receive an owner's manual outlining operating instructions for each lift that you purchase. All lifts from ALI member manufacturers also will come with a safety tips placard and warning labels. These materials should be posted where they are easily seen by lift operators every day. Your local lift distributor may also offer operator training.

Be sure to document your facility's operator training, lift inspections and lift maintenance. Inspectors may ask to see these logs.

General Safety Tips

- Never guess how to properly position and lift a vehicle. Follow the vehicle and lift manufacturers' recommendations.
- Never overload a lift. Refer to the lift nameplate to determine its maximum rated capacity.
- Always remain at the controls while the lift is moving. Do not block open or override the controls.
- Before moving a vehicle onto or off of a lift, make sure the area is clear of any obstructions, including lift arms, tools, equipment, cords and hoses.
- Never raise a vehicle with anyone in it.
- Inspect the vehicle lift daily before use. Do not use if it has damaged parts or is not working properly.
- Do not make any modifications to the lift.

Glossary of Lift Terms

ALI: Automotive Lift Institute. An industry trade association consisting of vehicle lift manufacturers in the United States and Canada. ALI promotes the safe design, construction, installation, operation and maintenance of vehicle lifts, including those used to service commercial trucks.

ALI-Certified/ETL-Certified: A lift bearing the gold "ALI Certified/Validated by ETL" label has been tested and certified to meet the safety and performance standards outlined in ANSI/ALI ALCTV-1998 or ANSI/ALI ALCTV-2006.

ANSI/ALI ALCTV-1998: A set of voluntary lift performance and safety standards governing

lift design and construction. Will be replaced by ANSI/ALI ALCTV-2006 on Nov. 4, 2007.

Adapters: Movable or stationary supports that are attached to a lift superstructure (such as the arms) and allow a lift to accommodate a vehicle without affecting its rated load capacity. They provide additional height to help the lift clear frame obstructions.

Arms: The horizontal bars that extend from the lift column or superstructure under the vehicle.

Arm Restraint: A device to restrain pivotal movement of an unloaded arm on a swing arm, frame-engaging lift, such as a two-post surface lift.

Automatic Ramp Chocks: On a drive-on lift, such as a four-post surface lift, the ramps pivot as the lift rises, creating a chock at the end of the runways to keep the vehicle from rolling. They lower automatically when the lift lowers.

Axle-Engaging: A type of lift that connects with the vehicle at its axles.

Base Plate: The flat piece of steel at the bottom of surface lift columns that is used to attach the lift to the shop floor.

Capacity: The rated weight that a lift can safely raise. This is listed on a nameplate attached to the lift.

Drive-Through Lift: A lift and shop arrangement that allows the vehicle to be driven on, serviced and then driven off, all in the same direction. Used in many heavy-duty shops and for fast-turn operations like oil changes.

Equalizer Controls: Controls that maintain an equal lifting height between columns to ensure that the vehicle stays level while being raised and lowered.

Frame-Engaging: A type of lift that connects with a vehicle at manufacturer-designated pick-up points on the frame.

ISO 9001: An internationally recognized standard of quality management focused on enhancing customer satisfaction.

Jack Stands: Adjustable tripod stands (or similar) used to hold up a vehicle after it has been raised by a lift. Frequently used with portable lifts, which can then be removed and used to lift another vehicle.

Rise Time: The time it takes to lift a vehicle from the floor to full height. Faster rise times can offer greater productivity, because less time is spent waiting for the vehicle to get to the proper height.

Rolling Jacks: Optional devices mounted in the center of drive-on lifts that are used to engage a vehicle's axle and raise the wheels off the runways.

Single-Point Release: On lifts with locks on more than one column, this control enables the operator to lower the lift without manually unlocking each individual lock.

Spotting Dish: A floor-mounted reference marker used to help properly position the vehicle prior to lifting.

About Rotary Lift

With an uncompromising commitment to product quality, testing and safety, Rotary Lift is the world's most trusted lift.

Rotary Lift is a leading manufacturer of vehicle lifts and equipment designed to increase technician productivity. It offers the broadest line of lifts for use in professional automotive service, commercial truck and transit, and enthusiast/residential customer segments. Rotary Lift makes the vehicle lifts any truck fleet maintenance facility needs to maximize technician productivity and business profitability. Its commercial truck and transit product line includes:

- Inground lifts.
- Parallelogram lifts.
- Portable lifts.
- Four-post surface lifts.
- Pit lifts.
- Two-post surface lifts.

Rotary Lift was founded in 1925 by the inventor of the first automotive hydraulic lift. The company's global operations extend from the world headquarters in Madison, Ind., through offices in Canada, Germany, England, South

America and Asia. There are more Rotary Lift vehicle lifts used in vehicle repair facilities around the world than any other brand.

More than 80 years of experience, product testing and listening to customers have helped Rotary Lift engineers develop lifts that are durable, powerful, productive and environmentally friendly. As a result, Rotary Lift customers get lifts that are more efficient, require less maintenance and produce more profits for their operations. In short, Rotary Lift products offer the lowest total cost of ownership.

An extensive network of Rotary Authorized Installers and distributors ensures that factory-trained service support and Genuine Rotary Parts are always close at hand. Rotary also provides value-added services such as assistPRO™ professional planning assistance.

A founding member of the Automotive Lift Institute (ALI), Rotary is the only North American lift manufacturer certified to ISO 9001 quality standards. Rotary Lift products also meet other national and international standards, including TÜV and CE.

Rotary Lift is a Dover Company (NYSE: DOV).

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