



**Automotive Vehicle Lifts:
A Resource Guide
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Introduction

A vehicle lift is the centerpiece of most service and repair bays. As an integral part of vehicle maintenance and repair tasks, it is used more times every day than just about any other piece of shop equipment. In fact, the Automotive Aftermarket Industry Association (AAIA) reports that just over half (50.4 percent) of repair shop owners, service managers and technicians surveyed purchased lifting and hydraulics equipment in 2006. Additionally, one-third of this group plan to buy lifting and hydraulics equipment in the next 12 months (*2006/2007 Equipment Purchasing Trends*, AAIA). Perhaps because of this universality, there is a general perception that all lifts are pretty much the same, differentiated only by price.

But the lift-buying process is about much more than buying steel. A lift that is properly matched to its application can enhance technician productivity for an increase in profitability. A well-made lift can provide this 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.

This white paper is intended to cover the many factors dealers and independent repair shop owners should consider when buying new vehicle lifts. It includes sections on facility planning, lift purchasing considerations, the importance of certification, how to evaluate a

manufacturer and supplier, and how to keep a lift 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 hydraulic fluid leaks in inground lifts led an increasing number of shop owners to turn to surface lifts. Today,



Old rotary-style lift

two-post surface lifts are the best-selling vehicle lifts in the world.

However, inground lifts have several advantages over surface lifts, including longevity and better access to more of the vehicle. So in 1995, Rotary Lift introduced a new concept in inground lifts. Called the SmartLift®, this new high-pressure inground lift uses just less than five gallons of hydraulic oil, compared to an average of 62 gallons of oil for the old low-pressure inground lifts. SmartLift also houses all of its underground components in a polymer composite cassette. Several maintenance

features in the SmartLift design also make it possible to reduce service call times by 75 percent.

With the introduction of SmartLift, shop owners and dealers are once again installing inground lifts in new vehicle service facilities. More than 30,000 SmartLift inground vehicle lifts have been sold over the last 10 years.

For a review of the different types of vehicle service lifts available in North America, and the advantages and disadvantages of each design, see page 6.

The Impact of Lift Choice on the Bottom Line

As the center of the service bay, your vehicle lifts have a major impact on your business. The right lift can have a positive effect on:

- Productivity
- Profitability
- Ergonomics, safety and worker's compensation costs
- Employee recruitment and retention

Productivity and Profitability

A vehicle lift provides ergonomic, convenient access to all of a vehicle's systems, enabling technicians to work as efficiently as possible for maximum productivity. Productivity is the key to shop profitability — the more jobs technicians complete in a timely manner, the higher the revenue.

Consider how much productivity decreases if a lift is out of commission. Bay productivity can be cut in half when a lift is unavailable. If it takes technicians four hours to complete a two-

hour job, lost revenue adds up fast.

The National Automobile Dealers Association (NADA) reports that the average light-duty service bay generates \$210,000 annually. That's more than \$800 per day (based on a five-day workweek). So if a lift is down for repair or replacement, it's costing you at least \$400 a day while you wait. Long, expensive delays are possible with some older lift models that may no longer be supported with parts or with imported lifts where parts have to be shipped from overseas. A single out-of-warranty repair may cost 30 percent of what you would pay for a new lift. If customers' jobs have to be delayed as a result of the lift problem, you can also lose future business.

That's why it's important to look at the total cost of ownership when shopping for a new lift, rather than just the purchase price. The high costs of downtime from a cheap lift can more than outweigh any initial price savings.

Having the right vehicle lifts installed can also enable a shop to increase its service capacity,

More Lifts in Useable Shop Space		
Type of Lifts:	Surface	Inground
A. Length/Size of Shop: (B x Bay Width)	132 feet	132 feet
B. Number of Bays/Lifts:	11 (12' wide bay)	12 (11' wide bay)
C. Price Per Lift:	\$4,000 USD	\$8,200 USD
D. Total Installed Cost: (B x C)	\$44,000 USD	\$98,400 USD
E. Difference in Initial Cost: (D Inground - D Surface)	\$54,400 USD	
F. Annual Revenue/Bay:	\$210,000 USD	\$210,000 USD
G. Annual Revenue/Shop: (B x F)	\$2,310,000 USD	\$2,520,000 USD
H. Additional Revenue w/Inground: (G Inground - G Surface)	\$210,000 USD	
I. Estimated Additional Gross Profit: 46% x H	\$96,600 USD	
J. Payback: (E / I)	7 months	

It is possible to install 12 inground lifts in the same amount of space as 11 surface lifts.

often without adding technicians or space. For example, 12 inground lifts can be installed in the same area as 11 two-post surface lifts. That means you get an entire additional bay — and \$210,000 in revenue annually — without adding any square footage. A lift added to a flat bay increases technician productivity enough to double the revenue produced in that bay. (See chart)

The right lift mix also enables repair shops to compete effectively for a wide range of service

business on all vehicles, from unibody imports to heavier SUVs.

In Canada, 2000 through 2003 were peak vehicle selling years. Likewise, in the U.S., a large number of new vehicles entered the market from 2001 to 2005. Now that these cars are coming off warranty, independent shops will service more of them. In order to work on these vehicles efficiently and safely, the shops must have lifts installed that can properly reach all the pick-up points on the vehicles.

Independent vs. Dealership

There are more than 237 million vehicles in the United States. The Automotive Aftermarket Industry Association (AAIA) has found that cars between six and 10 years old are most likely to be serviced at independent repair shops. The average age of passenger cars in use in the U.S. is 9.4 years. The Automotive Service Association (ASA) reports that in 2006, 70 percent (167 million) of out-of-warranty vehicles had maintenance and repair performed by independent repair shops. However, auto dealerships are still the leading service provider in the U.S., due in part to their dominance in vehicle maintenance visits. Consumer and retail information company The NPD Group reports that consumers choose to take their vehicles to the dealer for 22 percent of service occasions. ("NPD Group's Car Care Trac Shows Dealerships as Leading Service Outlet Channel in U.S.," aftermarketNews, Nov. 30, 2006.)

In Canada, there are 12 million vehicles on the road that are between two and 12 years old. Research shows that once a car is seven or more years old in Canada, its owners choose to have it serviced predominantly by aftermarket facilities.

Some lifts make this easier than others. For example, inground lifts equipped with three-stage arms offer a greater range of extension and retraction than traditional lift arms, providing the technician with maximum access and flexibility. Using these lifts, the technician can quickly move from working on one type of vehicle to another, without making a lot of adjustments or having to stop and re-spot the vehicle. This reduces the time he or she needs to set up vehicles, and maximizes productivity.

Independent shops that work on a variety of vehicles daily find lifts with three-stage arms a good fit. These independents may discover that they can service vehicles using lifts equipped with three-stage arms that they couldn't pick up in the past. The increase in workload and productivity offers a clear return on investment. Inground lifts with three-stage arms are also a good choice for car dealerships with a broad product line, like BMW, Mercedes or Cadillac, where techs may have



to move between the extremes in vehicle size on a regular basis. In fact, Rotary Lift surface and inground lifts with three-stage arms are endorsed by a number of vehicle manufacturers, including General Motors, Honda, Mercedes-Benz and Volkswagen/Audi.

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 lead to less strain on technicians' bodies, as well as fewer injuries and accidents. 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

Independent repair shops, specialty service facilities and auto dealers alike face an ongoing shortage of trained technicians. 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 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.) As demand for the limited number of qualified vehicle technicians increases, shop owners find themselves competing to fill their open positions. Everyone is looking for an edge. Higher pay, better benefits, additional training and more vacation time are frequent lures. Another tactic is to offer better working conditions.

The Bureau of Labor Statistics estimates that the auto industry alone will need 35,000 new technicians every year through 2010.

Given the choice, most technicians would prefer to work on a vehicle standing up with easy access to tools and other equipment. Installing vehicle lifts, especially those that are easy to use and feature the latest technology, helps 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 Vehicle Lifts

There are five main types of lifts used in professional automotive service facilities: inground lifts, two-post surface lifts, four-post surface lifts, scissor lifts and low/mid-rise lifts.

Inground Lifts

Inground lifts are the top choice of car dealers and independent service facilities that want to maximize their space. This design provides the best access to the various maintenance items on a vehicle and does so in the most ergonomic, space-efficient way. They come with one or two posts, and are available with a wide range of vehicle contact configurations, including three-stage arms and pad adapters. The lift can be operated by a control box mounted on a wall or pedestal stand, while the posts, power units and hydraulics are located in the ground. Lifting capacity of light-duty inground lifts is usually 9,000 lbs. to 12,000 lbs.



Typical Uses: Most preventative maintenance and repair tasks. Usually an option for new construction or expansions.

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.
- Occupies 15 percent 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 an open, clean, streamlined appearance that conveys a "first class" impression on customers.
- Easy to move vehicles around.
- Most productive lift design.
- Modern designs eliminate environmental concerns.
- Available with a wide range of vehicle contact configurations for maximum flexibility.
- Can be equipped as a drive-on lift for quick vehicle positioning.
- Can be equipped with alignment equipment.

- Single-post model provides maximum space around wheel wells and vehicle sides.

Drawbacks

- Higher installation cost than surface lifts.
- Location is fixed.
- Difficult to relocate.
- Single-post models block access to some underbody components.
- Older inground lifts may leak hydraulic oil into the ground.
- Some traditional models can be harder to maintain and repair.



Product Profile: SmartLift® Inground Lift

Rotary Lift introduced the SmartLift environmentally friendly inground lift in 1995 and has more than 30,000 units in operation around the world. The SmartLift eliminates old environmental concerns about oil leakage in several ways. First, SmartLift uses less than 5 gallons of hydraulic oil — that's 95 percent less than old low-pressure inground lifts. Alternatively, soy-based hydraulic fluid may be used. The unit is fully contained in a polymer composite cassette to keep moisture out and oil in. This housing is manufactured from recycled materials. On SmartLifts equipped with *inbay*®, the patented LDS™ liquid detection system signals the operator if moisture develops within the cassette. A liquid removal system is also available.

The SmartLift cassette is anchored in concrete at the top, not supported by the earth around it. Technicians can grease every fitting, change every hose and conduct any necessary maintenance on the SmartLift at floor level, without removing it from the ground. Additionally, the patented EasyAccess™ cylinder does not require bleeding and can be removed for servicing without disturbing other components. As a result, service call times are reduced by 75 percent.

There is a SmartLift for virtually any light-duty vehicle maintenance and repair application. SmartLifts are available with two-stage arms, three-stage arms, three-position flip-up adapters, polymer screw-up adapters, pad adapters, stackable adapters, and drive-on runways.

Two-Post Frame-Contact Surface Lifts

Two-post surface lifts are the most widely used vehicle lift style 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. Lifting capacity ranges from 7,000 lbs. to 18,000 lbs.

Typical Uses: Most preventative maintenance and repair tasks.

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.



Symmetrical, Asymmetrical and Two-in-One

Two-post lifts typically come in asymmetrical and symmetrical designs. Some manufacturers also offer designs that combine the two. True asymmetrical lifts have the columns rotated 30 degrees. This places the vehicle's approximate center of gravity in line with the optimum load capability of the columns, reducing unnecessary wear and tear on the lift column, carriage and bearings. It also allows maximum door opening on passenger cars for improved access to the vehicle's interior and under the dash. The columns of true symmetrical lifts are not rotated. They center the vehicle load between the columns to maximize lifting capacity. Symmetrical lifts are preferred for use on large vehicles.

"Two-in-one" or Versymmetric® (a registered trademark of Challenger Lifts, Inc.) lifts have short arms on the front and long arms in the rear. When these lifts are loaded, long vehicles that should be loaded symmetrically extend too far forward, leaving little or no room for work benches or walk-through space. Asymmetrical lifting positions the vehicle too far back, so it may intrude into the shop drive-through area or even an exterior bay door. As a result, larger bays may be required to house these lifts. Two-in-one lifts place the vehicle's approximate center of gravity either in front of or behind the optimum load capability of the columns, increasing wear and tear on the columns, carriage and bearings. The front arms of the lifts are offset five inches, which means that vehicles with short wheelbases must be pulled further forward in order to clear the front tires. This reduces the clearance available to open the vehicle's doors.

- 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

- 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.

Lift More Vehicles with Three-Stage Arms

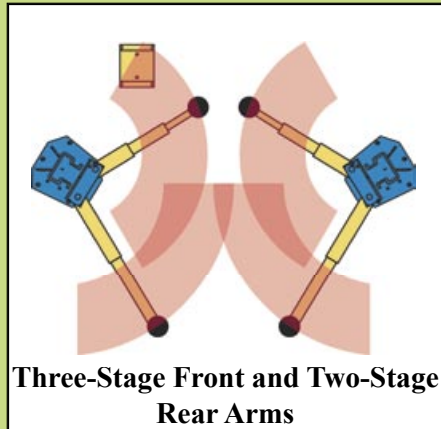
In order to properly raise a vehicle using a two-post surface or inground lift, it is critical that the adapters on the lift arms make contact with the vehicle's designated lift points. Failure to do so can damage the vehicle and put the technician at risk. On some vehicles, especially those with shorter wheelbases, wide vehicle track widths and/or low profiles, the recommended lift points can be difficult or impossible to reach with standard two-stage lift arms.

Recognizing this need, Rotary Lift developed three-stage lift arms. Three-stage arms have three telescoping sections, providing a greater range of extension and retraction.

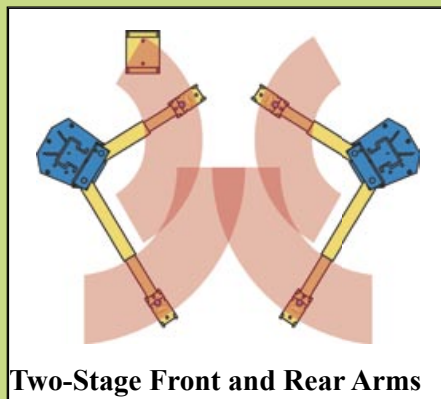
As a result, they offer an increased arm sweep and can reach a broader range of vehicle pick-up points.

Lifts with three-stage arms can improve technician flexibility by enabling them to move from one type of vehicle to another, such as from an SUV to a compact car, without making a lot of adjustments or having to stop and re-spot the vehicle.

Rotary Lift Three-Stage Arms were selected by the staff of *Motor Magazine* as one of the Top 20 Tools for 2005. This annual contest “recognizes those tool and equipment manufacturers who, through innovative features on new products, help technicians diagnose and repair vehicles correctly—the first time.”



Three-Stage Front and Two-Stage Rear Arms



Two-Stage Front and Rear Arms

Vehicle lifts equipped with three-stage arms (top) have a greater range of extension and retraction than those with two-stage arms (bottom). The red areas in these illustrations represent the arms' “sweep” — the area that can be reached by each lift arm.

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 technician simply drives into the bay and 60 to 100 seconds later, the vehicle is at a comfortable working height for maintenance and 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 for light-duty four-post lifts is typically 12,000 lbs. to 14,000 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 or swing air 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.
- Available with open front to allow easier access to under-vehicle components.
- 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 (on closed-front models) can hinder front-end work.
- Shorter life than inground lifts: 10 to 15 years.
- Higher upfront costs than two-post surface lifts.



Scissor Lifts

Scissor lifts use a scissor design to lift the vehicle without the need for permanent columns. They are available as pad-contact models for quick-lifting operations or with wheel-engaging runways for easy drive-on lifting. Alignment models are available.

Typical Uses: Fast-turn service (such as oil changes), center undercarriage, brake and exhaust work, tire mounting and rotation.

Features & Benefits

- No permanent columns: lay close to the floor when lowered for a clean appearance.
- Offer many of the benefits of a four-post lift in a smaller footprint.
- Can be portable for added versatility.
- Provide good access to the center of the vehicle's undercarriage, as well as the outside of the vehicle.
- Can accommodate short or long wheelbases.

- Can be equipped to perform alignments and front-end adjustments.
- Accepts rolling jacks and swing air jacks for wheel service.
- Fast and easy to set-up and use, for enhanced productivity.
- Open front and rear.
- 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

- Can impede traffic flow because they require a greater approach area.
- Scissors apparatus and base limit technicians' working space and access to the vehicle, reducing efficiency.



Low-Rise and Mid-Rise Lifts

Low-rise and mid-rise lifts are designed to raise vehicles two to four feet off the ground. Pad contact configurations are used for quick-lifting operations. Runways and frame-contact lifting arm configurations are also available. They are often portable, so they can be rolled around the shop or even outside for use as needed. Lifting capacity is from 6,000 lbs. to 10,000 lbs.

Typical Uses: Wheel, tire, brake and body work, new car prep, detailing, inspections, and estimating.

Features & Benefits:

- Can be used in facilities with low ceilings.
- Can be used outside to increase available working space.

- Provide ergonomically correct positioning for work around the outside of the vehicle and limited undercar work.
- Low profile when lowered.
- Portability adds flexibility.
- Inexpensive.
- Provide increased productivity vs. jacks.

Disadvantages:

- Not a full-service lift: cannot be used for most undercar maintenance and repair activities.



Facility Planning

When designing a new or remodeled shop, working with an experienced architect or facility planner can make a big difference in how productive the final layout is. If your architect doesn't have much experience designing service facilities or working with the OE vehicle manufacturers, you may want to consider obtaining supplemental input. Some lift manufacturers offer free facility planning assistance, including recommendations on which lifts to install and where to position them to maximize technician productivity. This information helps architects understand key workflow characteristics, such as approach angle and turning radius into a lift bay.

It is important that your planner have experience and relationships with the OE vehicle manufacturers. He or she should be familiar with the manufacturers' plans for future vehicles to ensure that those vehicles' lifting needs will be considered when planning the size of your bays and the lifts installed.

Some of the factors facility planners will evaluate include space availability, traffic flow, concrete and soil quality, vehicle length and turning radius, and whether the property is leased or owned.

Space Availability

The goal of facility planning is to come up with the optimal shop design for the available space.

In recent years, bay size has been increasing to provide more work space around the vehicle. While some older service facilities make do with bays that are only 10 feet wide, modern service departments may construct 14-foot-wide bays. For maximum efficiency, technicians need plenty of room to position a vehicle on the lift, work around it and access tools and equipment.

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.

A two-post inground lift can be installed in a bay that is 11 feet wide, whereas a two-post surface lift should not be installed in a bay narrower than 12 feet. As a result, it is possible to fit 12 inground lifts in the same amount of space as just 11 surface lifts. So you get an additional bay without adding any square footage to the facility. Alternatively, for a new facility with limited space, it is possible to reduce your square footage by 9 percent using 11 inground lifts instead of 11 two-post surface lifts. *(See Chart on page 14)*

Inground lifts also provide more working space between bays. Inground lifts installed in 11-foot bays offer three feet of clearance when the lifts are raised, and no obstructions between bays when they are lowered. Two-post surface lifts, on the other hand, give technicians only **seven inches** of clearance between base plates when they are installed next to each other in 12-foot bays. That's not enough room for technicians to walk from the front to the back of a vehicle when it's not in the air. When lifts are too close to each other, there is also an increased risk of vehicle doors hitting each other.

Four-post lifts, especially alignment models, require considerably more space than two-post lifts. These may be installed in a special area of the shop, often with a separate door to make it easier for technicians to drive vehicles on and off the lifts.

Since the majority of repair work takes place from the steering wheel forward, the amount of work space technicians have in front of the vehicle is also a crucial decision. Depending

Saving Shop Space Equals Facility Savings			
A.	Service Shop Width	70 feet	
B.	Cost/Sq. Foot	\$110.00 USD	
C.	Number of Lifts in Shop	20	
D.	Lifts on One Side of Shop	10	
E.		Surface	Inground
F.	Min. Recommended Bay Width	12 feet	11 feet
G.	Min. Recommended Shop Length	120 feet	110 feet
H.	Shop Size (sq. feet) (A x G)	8,400 feet	7,700 feet
I.	Delta (sq. feet)	700 feet	
J.	Facility Savings (I x B)	\$77,000.00 USD	

It is possible to reduce a new service facility's square footage by installing 11 inground lifts instead of 11 surface lifts.

on how much facility space is available and the length of the vehicles serviced, technicians are generally allotted three to seven feet in front of the vehicles.

Overhead clearance is also a factor. Planners must consider whether there is room to take vehicles to the lift's full rise without interfering with heating equipment, lighting, roof members, exhaust evacuation equipment, etc.

Traffic Flow

Optimizing traffic patterns into and out of the shop will keep work flowing smoothly. Planners will 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 between their workbenches and the vehicles

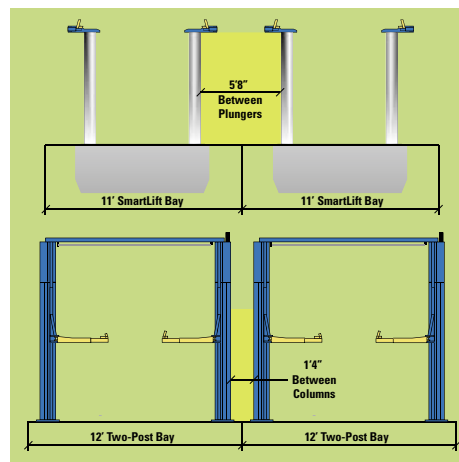
they're working on every day. Lift columns, cords and other obstructions are not just inconvenient; they can add up to significant lost time. Lift designs that retract into the floor can improve efficiency.

Water and Soil Conditions

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

Property Ownership

Whether you lease or own the building and land may affect your lift choice. 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 remodel.



Inground lifts offer greater space between the lifts for more working room

Purchasing Considerations

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, decrease service volume and cost you money.

Before you can make an informed decision on which lifts to buy, you need to assess your needs now and in 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 shop currently performs and will perform in the future will be a deciding factor in selecting the most appropriate lifts.

Gather 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 your shop's needs and reviewing how various lifts address those needs.

For some repair facilities, a single model of lift is appropriate for all of the work technicians perform. However, most shops will find that having a variety of lift styles installed allows service managers to assign each job to the most appropriate bay. Not every lift is a good fit for every repair order, as different lift styles provide better access to certain parts of the vehicle than others.

Factors to consider when choosing vehicle lifts to maximize technician productivity include:

- Lift quality.
- Vehicles serviced.
- Services performed.
- Safety.
- Efficiency, versatility and productivity.
- Ergonomics
- Environmental concerns.
- Lift maintenance.

- Budget.
- Lift origin.

Lift Quality

According to the AAIA 2006/2007 *Equipment Purchasing Trends* report, brand name and equipment quality are the most important factors influencing shop equipment purchasing decisions. In 2006, 76.9 percent of shop owners and employees surveyed reported that they either only buy brand name equipment or prefer to buy brand name equipment. Buying a well-known brand of lift provides some peace of mind in terms of lift quality, durability and reliability.

As is discussed elsewhere in this report, all lifts are not built to the same levels of quality. One sure sign of quality is third-party certification. (See page 19 for more information on certification.) If the lift is certified, you know that it has been independently tested and verified to meet ANSI performance and quality standards. If a lift you're considering isn't certified, find out why.

Ask your lift supplier what design elements make a particular lift reliable. What is better about one model over 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 and which brands they recommend. Talk to them about the productivity of lifts they have used, how often they 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 shops 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. Indeed, the AAIA survey found that service is the second-most important factor in choosing new equipment. Make sure that factory-trained installers and technicians are available locally to handle all of your lift installation, inspection and maintenance needs.

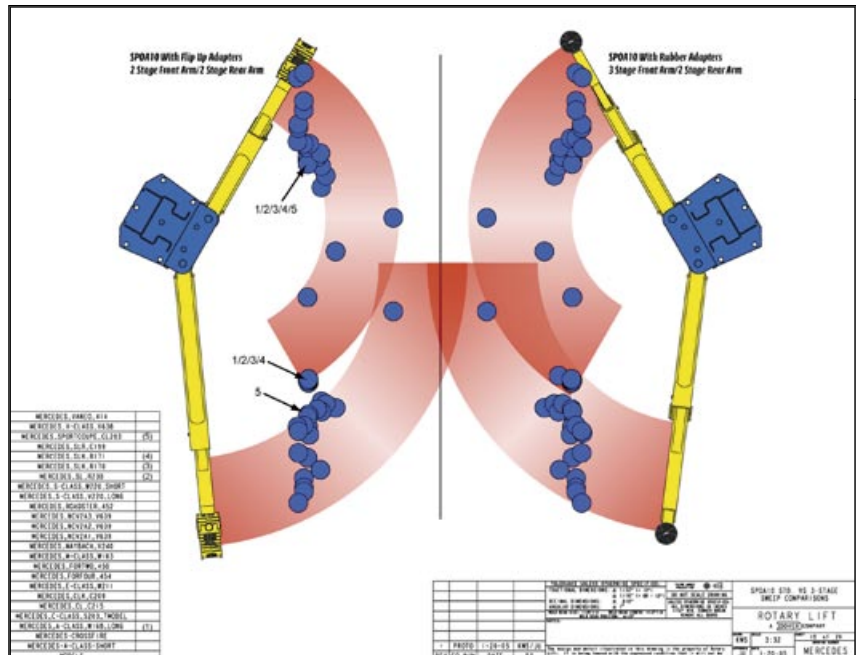
Vehicles Serviced

The types of vehicles you typically service will impact the styles of lifts you need, their lifting capacities, arm configurations and adapters or other accessories you may require. Consider not just the vehicles you handle today, but any new models in the pipeline that may have significantly different dimensions, such as being much heavier, wider, lower, etc. The lifts you select must be able to properly pick up and raise all of these vehicles.

For two-post lifts (surface or inground), ask your lift supplier to show you arm sweep diagrams illustrating the pick-up point coverage of the vehicles you service for each of the lift and arm types under consideration. (*See illustration for an example*) This is particularly important for import specialists and others that service a lot of vehicles with low profiles, short wheelbases or wide track widths. These vehicles often have pick-up points that cannot be properly accessed by all lifts.

Load capacity is another important factor if you lift a lot of heavy SUVs or pick-up trucks. Make sure that the lifts you're considering can support the weight of the heaviest vehicles you service.

For dealers, many of the vehicle manufacturers recommend specific lifts, adapters or arm



The blue dots in these arm sweep diagrams represent the manufacturer's recommended pick-up points of various Mercedes-Benz vehicles. The red curves show the areas accessible to a Rotary Lift two-post lift with standard two-stage arms (left) and one with three-stage front arms (right). The lift on the right can reach all of the pick-points, while there are several that the lift with only two-stage arms cannot access.

configurations for lifting their vehicles. Others recommend lift types, capacities and bay sizes.

Services Performed

The lifts you choose can have a significant impact on the quality and speed of technicians' work. While a certain lift may be able to "get the job done," a different model may make it possible to work more efficiently.

Ask yourself these questions:

- What services do we perform most?
- What are our secondary areas of service? Would we like to expand these?
- Are there additional areas of service we would like to add? (Such as tire work, express lube or transmission repair.)
- Can we use lifts to streamline non-service tasks like inspections, vehicle

- prep, estimating, etc.?
- Are there areas that would be more productive if we added a lift, like the body shop?

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 are well-served by drive-on lifts with minimal set-up. A four-post lift, inground lift with drive-on runways or pad adapters, or a two-post surface lift with fixed pads are all appropriate for quick service applications.

The application also determines lifting height. While you may think of lifts as raising a vehicle high enough for a technician to stand underneath, some tasks require the vehicle to be only a couple of feet off the ground. For example, tire and brake work can be handled efficiently with a low-rise lift equipped with pad adapters.

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 swing air jacks.

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 ALI certification, buyers have no guarantee that a lift meets accepted industry safety standards. (See page 19 for more information on certification.)

Compare safety features and systems on the lift 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
- Emergency stop buttons
- Non-skid ramp surfaces and runways
- Lockable disconnect switches
- Arm restraints
- Multi-position locking systems
- Wheel spotting dishes
- Work steps
- Slack cable guide arms

Efficiency/Versatility/Productivity Features

Evaluate each lift under consideration for user-friendliness, speed and productivity-enhancing features. Some things to consider include:

- Does the lift have wheels-free capability? Since a majority of what a technician will work on in a general repair shop 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?
- How easy to use are the lift controls?
- How quickly is the vehicle lifted to full working height and brought back down? Slow lifts waste valuable time.
- On a two-post lift, are dual controls available? Having controls on both columns increases technician efficiency.
- Does the lift offer an adjustable height option for added flexibility?
- Will you need additional adapters for the vehicles you service?
- On a two-post surface lift, is there an overhead padded switch bar to prevent the lift from being raised too high?
- For a four-post lift, consider an open front. This design makes it easier for technicians to access under-vehicle components.
- Are three-stage arms available?
- Is the power unit located out of the way?

Look for these productivity-enhancing features:

- *Integrated air and electric outlets.*
- *Adapter racks.*
- *Tool storage racks.*
- *Multi-stage adapters.*
- *Single-point locking release systems.*
- *Wheel spotting dishes.*
- *Easy-to-adjust arm restraints.*
- *Electronic locks.*

Ergonomics

Most technicians prefer to stand up to work rather than lie under a vehicle or crouch next to it. It's more in keeping with how our bodies are designed. Working in an uncomfortable position can make a long workday seem even longer. Some lifts do more to maximize operator comfort (and productivity) than others. Consider how the lift is operated, how high it can raise the vehicles you service, what an operator has to do to position a vehicle on the lift and the amount of clearance/work space provided.

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 dealers, shop owners and others in the automotive industry (the headquarters for CarMax is LEED certified, for example) 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 cassette? 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 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.

Ask your lift provider about design features, like self-lubricating slider blocks, that may minimize maintenance needs or the time it takes to perform maintenance procedures.

Consider the following:

- Who is going to take care of the lift once it's installed?
- For inground lifts, can basic maintenance be performed without breaking concrete or pulling the lift out of the ground?
- 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. Be sure to shop for the lowest overall total cost of ownership, not just low purchase price. The costs of repairs and downtime from a cheap lift can more than outweigh any upfront price savings. You want a lift that has a proven track record for consistent uptime with lower lifetime repair costs. 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 adapters included or are they available for an additional

cost? Is shipping included? Professional installation? Compare these costs for all lifts you are considering. Costs can vary greatly between brands and suppliers.

Lift Origin

Vehicle lifts and their components are manufactured around the world. The 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?

The Story Behind the Gold Label

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

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 will take 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 below 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 shop 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 like ETL can use this label. The 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, the 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 ALI-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 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 and offer arm, adaptor and capacity options to accommodate the many sizes of passenger vehicles on the road today? If you need more than one lift style for your service facility, it is much easier to be able to buy them all from a single manufacturer.
- **Upstream engineering.** You don't want to install a lift (or several) only to find out a year or two later that it can't properly lift certain new vehicles. Make sure the manufacturer you're considering buying from has good working relationships with the vehicle OEMs. Lift companies that participate in "upstream engineering" work with the car makers during the design process to ensure that lifts can raise new vehicles as soon as they're released.
- **Commitment to quality.** Does the manufacturer belong to the Automotive Lift Institute (ALI)? Are its products 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. What controls does the company have in place to ensure manufacturing consistency and quality?
- **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.** Is there an actual factory behind the lift or just a Web site and warehouse? 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?
- **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

When you're in the market for a new vehicle lift, your first call should be to your local lift distributor. A good distributor has factory-trained staff who can come to your facility to help you determine the appropriate lifts to maximize productivity and profitability.

Even car dealers who plan to buy their lifts through one of the OEM's equipment programs should start the lift-buying process with a call to their lift distributors. Don't buy a lift just based on a picture and a paragraph of text. Get an expert to make sure the lifts you choose will meet your needs now and in the future.

A relationship with a distributor should last well past your initial purchase. The distributor is your one-stop-shop for new lifts, accessories, professional installation, service, and OE replacement parts. A local distributor is also a knowledgeable resource for answering operator questions about the lifts. For this reason, it's important to evaluate your potential lift suppliers upfront, to make sure they can meet your long-term needs.

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 lifts has the installer set up? Does the company have a reputation for prompt service, expert advice and strong customer support?

- Factory authorization. Is the company authorized by the manufacturer to sell, install and service its lifts? Factory-authorized representatives have access to the most current product, installation and service information available. Using a factory-authorized installer also can often mean enhanced warranty protection and installation guarantees for your new lifts. Lift manufacturers may only allow their authorized companies to install certain products, to make sure installation meets their high standards.
- Factory training. Ask if the distributor employees 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? How are emergency service calls handled?
- 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?

Keeping Your 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 automotive 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. The two-post surface lift average age is 10 to 12 years.

To keep your lifts functioning properly for a long lifetime of service, follow the specific maintenance, adjustment and lubrication recommendations provided for each lift 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. If repairs are needed, 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.

Lift Lubrication

Proper lubrication is crucial to maintaining optimal vehicle lift performance and longevity. All lift cables and chains should be sprayed with high-quality penetrating oil monthly as part of a routine lift inspection. 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.

High-pressure inground lifts have their own lubrication needs. The guide barrel/plunger must receive lubrication around the entire circumference of the bearing. Using regular automotive grease in these lifts is not effective. It simply does not have the viscosity and water resistance needed to stay in place and properly lubricate the guide barrel. Choose grease designed specifically for vehicle lifts instead.

There are several lubrication points to keep the arms on two-post surface lifts and inground lifts moving easily. Monthly, clean the arm pins and lubricate them with lithium grease. Remove the arm stop bolt on each arm; then clean and lubricate the inner arms so that they slide readily. (Remember to replace the arm stops.) Lubricate the arm restraint actuator assembly with penetrating oil.

The latch hinge points, swivel pins and hinge pins of low-rise and mid-rise lifts should be lubricated regularly. Low-pressure (traditional) inground lifts require that the tongue, groove, pivot pin, arm pins and swivel pins on the yoke

and arms be lubricated for easy adjustment. The latch assembly on the locking leg/equalizer frame should also be inspected and lubricated.

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.

For two-post surface lifts, the inspector should also:

- Check cables for debris, corrosion, wear, stretching or damage.
- Check cable tension and determine if adjustment is needed.
- Check sheaves for debris, cracks or looseness.
- Make sure the sheaves turn freely.
- Confirm that sheave shields are in place and are tight.
- Check arm pin holes in carriage for excessive wear.
- Confirm that the stop bolt is installed on the arm.
- Check for debris and damage to the arm restraint pawl or gear.
- Torque the restraint gear bolts per manufacturer recommendations.
- Check the locking latch system.
- Confirm that both columns are plumb.
- Make sure the spotting dish is installed in the correct location.

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. If in doubt on the location of pick-up points for a particular vehicle, check the ALI's quick reference guide, *Vehicle Lifting Points for Frame Engaging Lifts*.
- 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.

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 November 4, 2007.

Adapters: Movable or stationary supports that are attached to a lift superstructure (such as the arms) and allow the 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.

Arm Sweep: The area that vehicle lift arms can access under a vehicle as limited by the reach of the arms when fully extended and retracted. Arm sweep diagrams illustrate this area, with specific vehicle pick-up points identified to show if the lift can access them.

Asymmetrical Lift: A two-post surface lift with columns placed forward of the vehicle's center of gravity. This enables maximum door opening of passenger cars.

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.

Carriage: The part of a surface lift that slides up and down on the column. Arms attach to the carriage.

Cassette: A polymer composite housing that completely encloses the lift. It is used in the latest generation of in-ground lifts to protect the lift from the environment and protect the environment from the lift.

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

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

Ergonomics: The science of designing equipment to maximize productivity by reducing operator fatigue and discomfort.

ETL: Intertek Testing Services, an independent, worldwide testing organization that manages ALI's vehicle lift certification program and conducts third-party tests of vehicle lifts for certification.

Extended Height: An optional feature on some two-post lifts that makes it possible to raise tall vehicles, like vans, to full height.

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.

Lock Release: The mechanism that releases the lift's safety lock so a vehicle can be lowered. Releases are either manual or air-powered.

Overhead Switch Bar: A mechanism at the top of a two-post surface lift that automatically shuts off the lift when the vehicle has reached full height.

Pads: Rubber padded lifting surfaces that contact the underside of the vehicle. Most commonly used for fast-turn services because vehicles can be positioned on the pads quickly.

Pick-Up/Vehicle Lifting Points: Areas on a vehicle frame identified by the manufacturer as the correct spots for lift adapters to connect to the vehicle in order to lift it properly. ALI publishes a quick reference guide to 10 years worth of pick-up points on CD-ROM: *Vehicle Lifting Points for Frame Engaging Lifts*. It is available from ALI members.

Rated Load Capacity: The maximum rated weight that a lift is designed to raise. This is listed on a nameplate attached to the lift.

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.

Runways: The members of the superstructure of a drive-on lift that support the vehicle.

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

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

Symmetrical Lift: A two-post surface lift where the vehicle's center of gravity is placed directly between the columns to maximize lifting capacity. Symmetrical lifts are preferred for raising large vehicles like SUVs or light trucks.

Three-Stage Arms: Lift arms with three telescoping sections that can extend and retract farther than standard two-stage arms. This provides an increased arm sweep that makes it possible to reach a greater range of vehicle pick-up points.

Total Cost of Ownership: A measure of how much a piece of equipment costs over its lifetime. It includes purchase price, plus the cost of maintenance, repairs, replacement parts and downtime.

Upstream Engineering: The process of working with the vehicle manufacturers during the new car design process to make sure vehicle lifts can properly raise these vehicles once they are released.

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. From a seven-bay independent repair shop to an 18-bay car dealership, Rotary Lift makes the vehicle lifts you need to maximize technician productivity and business profitability. Its professional automotive product line includes:

- Two-post surface lifts, both true asymmetrical and true symmetrical.
- Four-post surface lifts.
- Environmentally friendly inground lifts.
- Low-rise, high-capacity 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 professional vehicle lifts used in repair shops around the world than any other brand.

Rotary Lift is a key supplier to all of the world's leading automobile manufacturers. Rotary Lift representatives work closely with car designers to establish pick-up points for future products. This "upstream engineering" ensures that Rotary Lift lifts are able to safely and efficiently pick up any new vehicle when it debuts.

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 lifts 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 Lift is the only U.S. 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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