

Choosing the Right Dock Leveler.

Your Guide
to Evaluating
Your Leveler
Needs.

SIX STEPS to choosing the right leveler.

Today, selecting the right dock leveler for your facility can be more complicated than ever. New models are being introduced. Truck designs are changing. Productivity is critical. And safety is becoming an even bigger issue at docks across the country.

There are now three basic types of levelers: hydraulic, mechanical, and power-assisted mechanical units. Each design has its place, depending upon the application, but there are distinct differences between each type. So before you select a leveler for your facility, follow this simple six-step procedure for evaluating your needs. By analyzing these key areas, you'll be able to choose the best equipment for your operation. Here's a brief look at the topics we'll cover in this guide:

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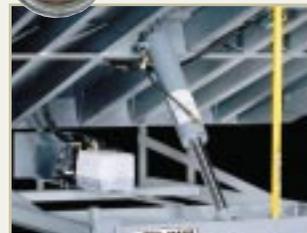
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- Vacant dock drop-off protection
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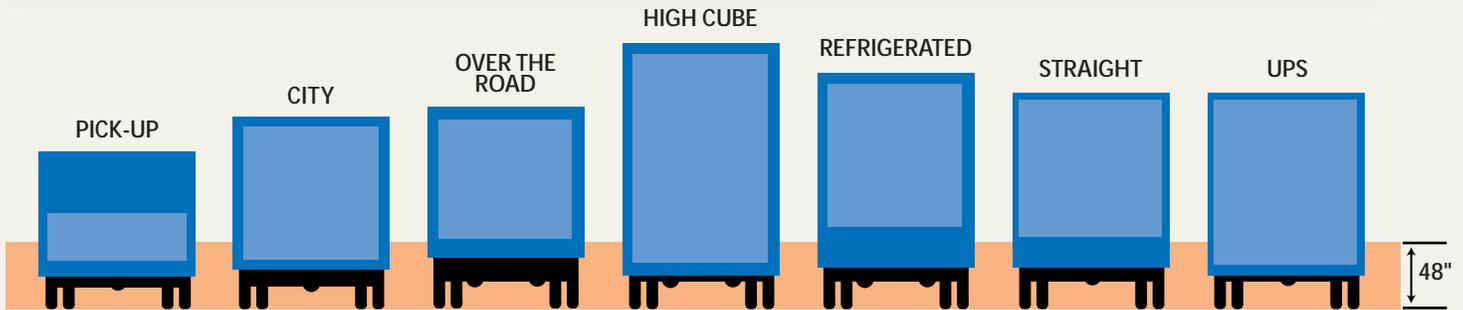
- Company reputation
- Local service and support
- Customer training
- Written manufacturer warranties

STEP

1

Consider your specific needs.

Different operations place different demands on a dock leveler. Make sure that the leveler you choose matches your individual requirements. Consider the types of vehicles that will use your dock, trailer dimensions, frequency of use and load capacities. All of these factors will help determine the leveler that's best designed for your operation.



Typical trailer types: Truck beds can vary from 20" to 62" high. Longer levelers provide greater flexibility to safely service a wider range of vehicles.

Selecting leveler length

Consider the type of traffic and activity at your dock when selecting a leveler length. It's important to establish a safe, smooth path for forklifts to travel between the dock and the trailer, and truck bed heights can vary dramatically.

As a rule of thumb, the greater the distance between dock height and trailer bed height, the longer your levelers should be.

Several trends are leading to lower bed heights, increasing the need for longer levelers.

Today's trend toward wider, lower, higher-capacity trailers has led to the need for longer levelers. Years ago, 6' leveler lengths were standard. Now, 8' and 10' lengths are common. These levelers can more safely and efficiently serve the newer trailers.

Low-profile tires. Trucks using low-profile tires are becoming increasingly common today. The old standard 24" wheel has been replaced by the 22.5" wheel. And tomorrow's standard could be 19.5". This trend means lower trailer bed heights — as much as 5" to 8" lower.

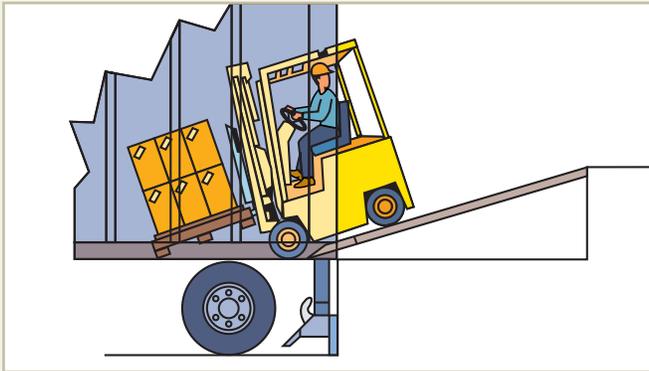


High capacity—or high cube—trailers. New trailers are designed to carry more cargo and have 6"-18" lower bed heights than standard trailers.

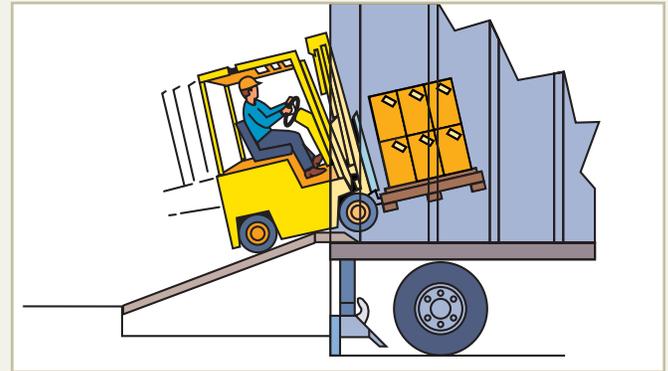


Air-ride suspensions. More and more air-ride trailers are being used today. They improve driver comfort and help protect cargo. But unless specially equipped, the air must be released when the truck is parked at the dock to help prevent "trailer walk" and ensure safe loading and unloading. The release of air can lower the bed height as much as 8", meaning you'll need a longer leveler to safely service these trailers.

NOTE: Even if your facility is not handling low-profile or air-ride trailers now, there's a strong chance that you will be handling these vehicles in the near future.



Steep slope can create numerous material handling problems.



Forklift hang-ups can occur when the leveler grade is too steep.

Short levelers can limit your capabilities. If your leveler is too short, a steep incline or decline can be created. In addition to being unsafe for the forklift driver, this can cause several material handling problems, including: an inadequate amount of lip on the trailer bed; more wear and tear on forklifts and leveler; slower operations; and equipment that can hang-up on the crown—that point where the leveler deck and lip come together.

Forklift grade limitations. Different types of material handling equipment have different grade capabilities. Electric pallet trucks have a 7% maximum grade capability. Electric forklifts are limited to 10% grade and gas-powered forklifts can accommodate up to a 15% grade. Longer levelers let you minimize the slope of the ramp and increase your choice of forklifts.

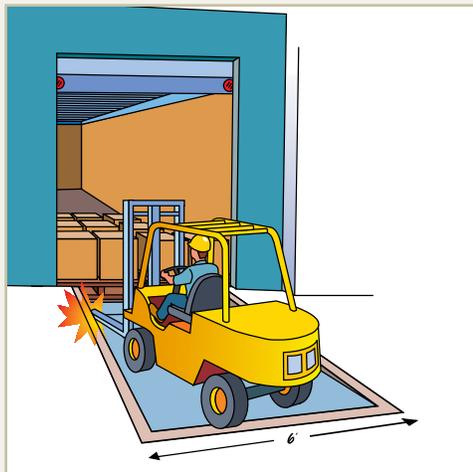
Note: Leveler lip length is also a consideration when determining leveler length. Once standard 16" lips are now giving way to 18" and 20" lips on new levelers. A longer lip can also be retrofitted to an existing installation to effectively increase the overall length of a leveler.

Selecting leveler width

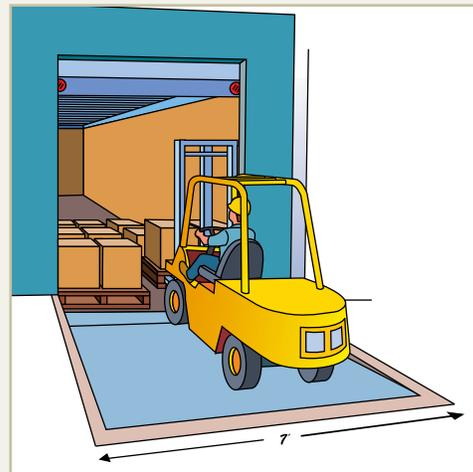
Choose a leveler width that matches the specific needs of your loading dock. In the past, the most common leveler width was 6'. But with the increased demand for maximum capacity, today's trailers average 8'6" wide, and are fully loaded to the end. That's why a wider leveler is usually a better choice. Wider levelers provide better

accessibility to end loads and below-dock loads, while allowing more maneuvering room for lift trucks. And wider levelers provide greater flexibility to meet future needs as your operation changes.

Three standard dock leveler widths are available—6'0", 6'6" and 7'0". In most cases, the widest leveler gives you more flexibility for nominal extra cost.



A leveler that is too narrow can create interference for forklifts, especially below dock.



Wider levelers offer greater access for below-dock operations, with minimal pit wall interference.

Choosing leveler capacity

Make sure that the leveler you select has the structural strength to handle the gross weight, speed and frequency-of-use of your material handling equipment. Choosing the right capacity will help you get more productive years from your dock leveler investment.

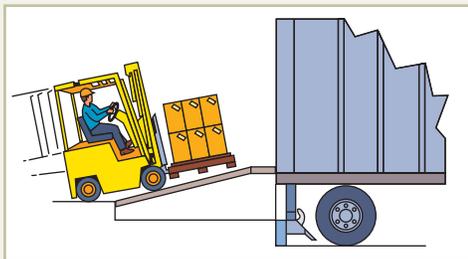
Evaluate these factors to help determine proper leveler capacity:

Frequency of use. Determine how many trucks will be serviced at that dock opening per day, and how many loads per truck. This can greatly affect the life expectancy of your leveler.

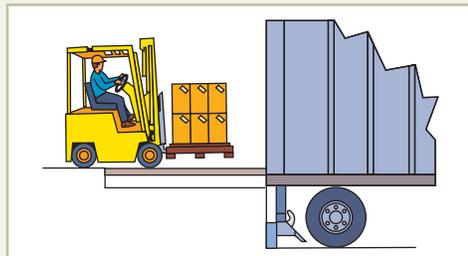
Gross load weight. Combine the weight of your heaviest capacity lift truck, including attachments, plus the weight of the heaviest load to determine gross weight.

FORKLIFT CAPACITY (LBS.)	FORKLIFT WEIGHT (EMPTY)	
	GAS/LP	ELECTRIC WITH BATTERY
3,000-3,500	5,500-7,400	6,500-9,700
4,000-4,500	7,400-8,500	9,000-10,500
5,000	8,500-9,500	10,000-12,000
6,000	10,000-11,500	11,000-14,000
7,000	12,500-13,500	12,500-14,500
8,000	13,000-14,000	14,000-15,500
9,000	14,000-16,000	NA
10,000	15,000-17,000	16,500-18,500
12,000	16,000-19,500	18,000-21,000
15,000	18,500-22,000	NA

Angle of leveler ramp. Consider the typical ramp angle for most of your operations. The greater the angle, the more impact force the leveler must absorb.



High speed, steep incline, high impact on leveler.



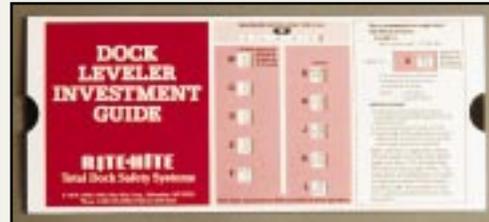
Low speed, minimal incline, low impact on leveler.

Forklift speed. How fast do your lift trucks usually travel? The faster they travel, the more punishment your levelers take.

Required life expectancy. How long do you plan to keep this leveler in operation? Five years? Ten years? Twenty years? Higher capacity levelers have longer life expectancies.

Then ask a loading dock specialist about capacity.

Different manufacturers have different systems for rating leveler capacities. ANSI ratings attempt to provide a uniform capacity comparison for the industry. However, these laboratory testing procedures are not necessarily the same as real-world conditions, and may not be the best gauge of product performance. That's why performance-based ratings are the most reliable. Once you've determined the specific information about your application, make sure you talk to an experienced loading dock specialist to help you select the right capacity leveler for you. And make sure the leveler is warranted for its full life-expectancy, based on the load and use requirements you specify.



The selection of proper leveler capacity should be based on the specific requirements of your application.



Inadequate capacity can cause structural failure. This photo shows how a leveler can bow, or "dish," when its capacity cannot handle the weight of the loads it must support.

NOTE: Free-float interference caused by mechanical support legs can also lead to premature structure failure. See "Full-Range Leveler Float" on page 9 for more details.

STEP Put employee safety first.

Safety is one of the most critical considerations when selecting any loading dock equipment. The leveler covers the “danger zone” — that gap between the dock and trailer that is crossed by forklifts up to 100,000 times per year.

Make sure the levelers you choose are built for maximum safety in four key areas: (1) vacant dock drop-off protection; (2) free-fall protection; (3) protecting cross-traffic against voids in the floor; and (4) protecting personnel during leveler maintenance. Let's take a look at each of these areas:

Vacant dock drop-off protection

When no trailer is in place at the dock face, there's a danger that forklifts could accidentally fall from the edge of the dock to the driveway below. This can happen if conditions are slippery; if brakes or other equipment malfunctions; if operators are inattentive when backing up; or if drivers are impaired in any way. That's why you should consider a leveler with barrier protection. You can choose manual or automatic safety gate barriers or levelers with automatic barriers built onto the lip. For convenience, reliability and safety, the automatic models are the most popular choice. When choosing an automatic safety barrier leveler, look for these features:

- **Solid construction**—an integral steel barrier that can handle the impact of heavy forklifts.
- **Adequate height**—at least 79 tall to prevent overriding by the forklift tires.



This leveler features a 7" high steel barrier that automatically rises into position to help prevent dangerous drop-off accidents.



- **Ability to handle end loads**—make sure the barrier can be moved out of the way, allowing you to handle end loads, at dock level and below. Some levelers will not allow unobstructed end loading, making it impossible to safely reach end load pallets.

Cross-traffic safety

Automatic recycle provides cross-traffic protection against voids in the floor. If a leveler stays in a below-dock position after servicing trailers below dock height, a dangerous dip is created in the floor, which can be hazardous to forklift cross-traffic. To minimize this risk, choose a leveler with an automatic recycle feature. This feature returns the leveler to a safe cross-traffic position in case the truck departs while the leveler lip is resting on the trailer floor. Most hydraulic and some mechanical levelers offer an automatic recycle feature. However, make sure the operation is fully automatic for maximum safety. Some



A dangerous void in the floor is created when the leveler does not automatically return to dock height.

hydraulic levelers incorporate a mechanical selector switch which must be manually set for below-dock operation. This increases the chance of human error. If the attendant forgets to reset the leveler after below-dock operations, the dangerous void in the floor remains. Also, these levelers can run the risk of inadvertently recycling during loading operations.



Automatic recycle protects personnel and equipment by creating safe cross-traffic conditions.

Free-fall protection

If a trailer pulls away from your dock while the leveler is in use with a heavy load on the platform, the leveler may drop quickly, endangering personnel, cargo and equipment. That's why you need a leveler with dependable free-fall protection. The safest form of this protection is a **velocity fuse safety system** found on hydraulic levelers. A second choice would be the support legs found on mechanical models and some power-assisted mechanical levelers.

- **Hydraulic velocity fuse safety stop**—This feature limits platform drop to 3" or less from any leveler position. With a heavy load on the platform, the system stops rapid ramp descent, protecting your personnel and property. For maximum safety, the fuse should be non-adjustable.



Hydraulic velocity fuse free-fall protection.



Three-position mechanical safety stops rated at 60,000 lbs.

- **Retractable support legs**—This system, found on mechanical levelers and some push-button models, provides some free-fall protection when trailers are above dock height. However, the platform can still drop rapidly as much as 12" before the legs stop the fall. Be sure to check the rated capacity of the support legs on these levelers. "Cross-traffic legs" are not necessarily the same as safety legs.

- **Vehicle restraints**—Many accidents are caused when a trailer makes an unexpected departure from the dock. Even the best leveler free-fall protection is ineffective in helping to prevent



trailer separation. The best way to help prevent these incidents is to use a strong, dependable vehicle restraint. Though the vehicle restraint should not be considered a replacement for a built-in leveler free-fall safety system, it can provide an important

level of protection for your personnel and property, helping prevent trailer creep, landing gear collapse and trailer tipover, in addition to unexpected departure. Equipment can often be installed more economically when a leveler is combined with a vehicle restraint system.

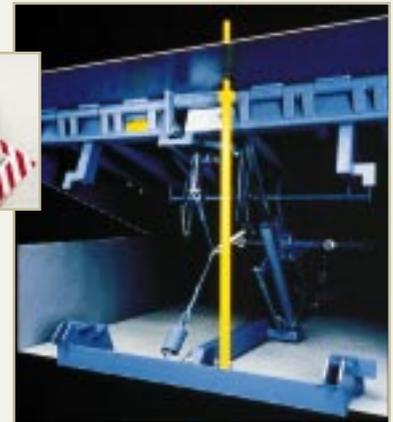
Protection during leveler maintenance

Make sure your personnel are protected during leveler maintenance. Choose a leveler with a strong, reliable maintenance strut for supporting the platform in an upright position. Here's a list of features to look for:

- **Supports both leveler and lip** for maximum protection.
- **High-impact design** to maintain support if the leveler is hit by a moving forklift.
- **Lockout capability** to help comply with OSHA regulations, such as 29 CFR 1910.147.



Make sure your maintenance strut supports both the leveler ramp and lip, and provides lockout capability.



WARNING: Don't use an emergency stop button in place of a solid support strut to hold the leveler up during maintenance. This system is not designed to support extreme weights, such as a forklift turning onto the leveler. Plus, if power is lost for any reason, the leveler can drop.

STEP

3

Look for easy operation.

Convenience is a key consideration in choosing your leveler. For optimum productivity, you want a system that's easy to learn, easy to operate and easy on your personnel. Let's look at the convenience of three types of levelers—hydraulic, mechanical, and power-assisted mechanical.

Activation and leveler positioning

Hydraulic levelers provide fully automatic operation.

Simple push-button controls raise the leveler and extend the lip. When the buttons are released, the platform floats down to the trailer floor. The leveler typically operates in a range from about 129 above to 129 below dock level. Normal below-dock operation does not require the operator to pull a chain. When the loading operation is complete, the push-button (or the automatic return-to-dock-level function) returns the leveler to its stored position. This ergonomically efficient system is easy on your employees. It requires no bending or chain pulling, so there's less chance of injury.



Hydraulic Levelers

- Simple push-button activation
- Leveler floats to trailer floor
- Push-button control handles normal above- or below-dock operations with no chain pulling
- Efficient ergonomics

Mechanical (spring-powered) levelers require manual activation. These levelers are positioned onto trailers by first pulling a chain at the rear of the leveler, which releases the “hold down” system, allowing the platform to rise and the lip to extend. The operator then walks onto the platform, using bodyweight to lower the leveler onto the trailer bed. If the trailer is below dock height, the operator must also pull a second chain near the front of the leveler to retract a set of support legs, so the platform can travel below dock.

Mechanical Levelers

- Activated with pull chain
- Lip extends
- Operator walks leveler down into position
- Second chain for below-dock positioning
- Less efficient ergonomics



Power-assisted mechanical levelers offer limited

convenience. If the trailer is at or above dock height, these models are positioned by pushing and holding a control button until the leveler reaches its highest position and the lip extends. The leveler then lowers by gravity to the trailer bed. If the trailer bed is below dock height, the operator must raise the leveler with the control button and then walk onto the leveler and pull a chain to retract the support legs. Some manufacturers warn against this potentially unsafe practice in their owner's manual, although the procedure is necessary for below-dock operations.

Power-assisted Levelers

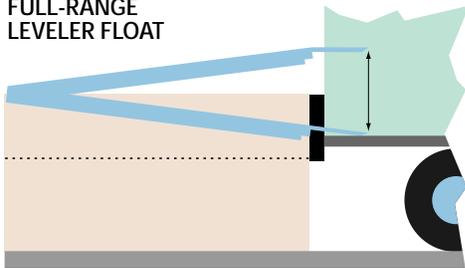
- Positioned with push-button when leveler is used at or above dock height
- For below-dock use, operator walks on leveler and pulls chain to retract support legs
- Semi-efficient ergonomics



Full-range leveler float

During normal loading and unloading, bed height changes as the forklift enters and leaves the trailer, and the weight of the cargo in the trailer increases or decreases. For maximum safety and efficiency, levelers should be able to freely float up and down, maintaining contact with the bed. And free-float is even more important when loading or unloading trucks with air-ride suspensions, where bed heights can fluctuate even more if the air system has not been purged.

FULL-RANGE
LEVELER FLOAT

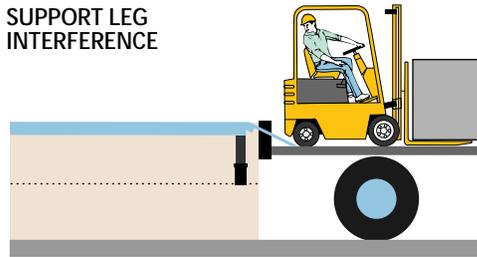


Hydraulic levelers provide full-range free-float.

- Platform adjusts to changing bed heights
- No support legs interfere with movement
- Helps maintain safe path for forklifts
- Important for trailers close to dock height
- Critical for serving trailers with air-ride suspensions

Full-range unobstructed float is critical when servicing trailers that are close to dock height. Mechanical and power-assisted levelers can float slightly above dock level, or below dock if the support legs have been retracted. When servicing trailers close to dock height, however, the unretracted legs will stop the platform's downward movement. Hydraulic levelers—which do not need support legs for free-fall protection—allow free-float throughout the full service range of the leveler. To choose which leveler design is best for your operation, consider these points:

SUPPORT LEG
INTERFERENCE



Mechanical and power-assisted mechanical levelers provide limited float.

- Can float freely above dock level
- Can float below dock level if support legs are manually retracted by pulling a chain
- Problems occur when trailer bed is close to dock height
- If support legs are not retracted, support leg interference or “stump out” can cause a steep lip slope for the forklift and can damage the leveler

Important: Mechanical safety legs should not be disengaged to eliminate stump out. If they are, all free-fall protection is lost.

Lip extension/retraction differences

Consider lip extension and retraction capabilities when choosing your leveler. Your best choice is a lip that can be retracted at any time during the leveler cycle, to avoid damage to cargo or equipment. The easier and more versatile lip retraction is, the more efficiency and productivity you'll realize from your equipment.

Lip yieldability is also important. Most hydraulic and mechanical levelers have yieldable lips—that is, lips that will retract when pressure is applied. However, some levelers have a lip extension latch which is engaged as the leveler descends. With this latch in place, the lip is not yieldable. And the lip may remain extended at dock level when no truck is present. If an unyieldable lip is inadvertently left in an extended position, the leveler

can be severely damaged the next time a truck backs into the dock.



Inability to retract lip can cause damage to cargo or equipment.

STEP

4

Consider maintenance costs.

Initial cost is just part of the picture when evaluating your leveler purchase. Anticipated maintenance and repair costs are also vital factors. Consider the accessibility of components for servicing. Look for simplicity of design. Check the overall quality of construction. And consider the frequency of required maintenance. Levelers can vary widely on these points, which all contribute to the overall lifetime ownership cost of the unit.

Hydraulic levelers offer maintenance advantages

Like any major piece of production equipment, a dock leveler requires periodic inspection and some degree of maintenance.

Hydraulic levelers typically require less maintenance than other leveler types, due to overall design characteristics. Usually, periodic lubrication is all that is

needed to keep hydraulic levelers operating properly for years. While these levelers can be more expensive at the outset, they often provide the lowest lifetime ownership costs.

Mechanical levelers require regular adjustments to the hold-down system, and are more prone to failure if components are not properly maintained.

Power-assisted levelers vary in the amount of maintenance required, depending upon the model.

Look for these maintenance features when selecting either hydraulic or mechanical levelers:

These features may be found as standard equipment on some levelers; optional on others; or not available on others.

Easy-to-Clean Pit



Ease of pit cleanout is an important consideration. Some leveler designs offer easier access for cleaning.



Easy Maintenance Support



Strong, easy-to-position maintenance strut increases safety.

Energy Savings



Weatherseal material cuts energy costs.

Ease-of-Lubrication



Convenient grease fittings simplify lubrication.

NOTE: In addition to choosing the right equipment, it's important to keep it in good working order with a planned maintenance program. This helps prevent potentially dangerous equipment failure and extends service life.

STEP

5

Look for reliability and durability.

To get maximum reliability from your dock leveler, consider your specific application and make sure the equipment can meet the challenge. Structural differences between competitive models may not be obvious at first glance. So when evaluating equipment, look closely for dependable design, quality construction, strength and stability. These factors should give you more dependable performance, longer leveler life and lower ownership costs.

Track record

Consider the track record of the type of leveler you're buying. Make sure you are choosing a design that has proven its performance over the long haul. Not all levelers have established consistent track records. Ask to see a manufacturer's list of satisfied repeat buyers who have had the equipment in operation for several years.

Hydraulic levelers are known for long-term reliable performance. Among the different leveler types, hydraulic levelers have the greatest reputation for reliability. Features such as lower pressure hydraulic systems and inverted cylinder design increase durability and reduce lifetime ownership costs.

INVERTED CYLINDER

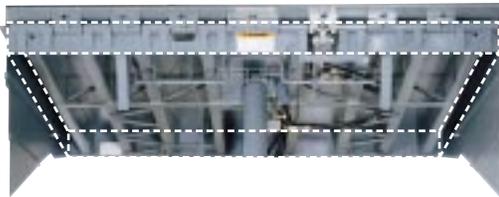


CONVENTIONAL CYLINDER



Inverted cylinder design helps protect hydraulics from dirt and debris, increasing leveler life.

Whatever leveler you choose, look for quality construction and design.



Rugged four-sided box construction with strong welds for structural integrity.



Bridged front header cutout for added strength.



Structural steel toe-guards for added strength and safety.



Gusseted headers provide extra reinforcement.

These features should help your leveler stand up to tough, heavy-duty usage—day after day, year after year. And just to make sure, choose a manufacturer that backs the leveler with a long, guaranteed life expectancy—up to 20 years.

STEP



Check manufacturer and representative support.

When you choose a dock leveler, you're making a long-term investment. You're choosing an important product. And you're also choosing a company. Make sure you select a manufacturer and local dealer who stand behind the equipment and provide complete service and support. Ask about the company's track record with existing customers. Ask for a product demonstration, and visit a field site where the equipment has been installed for some time. Check on the availability of service specialists. Ask about guaranteed life expectancy of the leveler and make sure you get written warranties.



Choose a manufacturer and dealer who will provide the support you need.

Warranties. Does the manufacturer offer a money-back satisfaction guarantee? A no-risk trial installation? How about guaranteed life expectancies of the equipment? A quality manufacturer will offer you a structural and power system warranty ranging from 10 to 20 years, based upon your specific application. And make sure warranties are provided on written forms, published by the manufacturer. Read warranties carefully. Look for performance-based coverage, not "workmanship and materials." Ask questions if necessary. Make sure the manufacturer stands behind the leveler for the full life of the product.

Local support. Does the manufacturer back the equipment with solid local support? What about emergency service? Operator and maintenance training? Leveler inspections and evaluations at no charge? Planned maintenance programs? These are all services you should expect from a qualified dock leveler supplier. So get all the facts before you make your decision.



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