

Innovative designs

# New Dock Levelers: Lower-Cost Alternatives

It used to be that a *powered* dock leveler meant *hydraulic*. Today there are a number of approaches to powering a dock leveler — some represent a breakthrough in design. Three more were introduced in February at ProMat.

by Gene F. Schwind, executive editor

We're learning that automatic and complex need not mean the same thing. Automatic dock levelers have been around for a long time. They started out as spring-counterbalanced, mechanical dock levelers.

To use a mechanical leveler, the dock worker pulled a release of some sort and the springs lifted the board and extended the lip. Then the worker walked the leveler down into place on the truck bed. There might have been some effort in pulling the release to raise the board, because it was usually recessed into the surface of the board. Still it was a lot easier than wrestling a dock plate into position.

Then came hydraulic dock levelers with a power unit combining a pump, mo-

## Standards for Dock Leveling Devices

We can't even say new, because specifications for testing and certifying dock levelers were accepted by ANSI in 1993.

The Loading Dock Equipment Manufacturers (LODEM), Product Section of the Material Handling Institute, is comprised of most manufacturers of dock levelers. The LODEM member companies, which manufacture the majority of the dock equipment made in the U.S., recognized the value of standardized safety, performance and testing criteria to ensure that dock equipment was designed and used correctly. They worked for more than two years on the standard.

The resulting MH30.1 committee created a standard using American National Standards Institute procedures. It was further submitted to other organizations for review and comment, including users, trucking and trailer associations, and consulting organizations.

The resulting ANSI MH30.1 1993 Standard for Safety, Performance and Testing of Dock Leveling Devices was approved by ANSI.

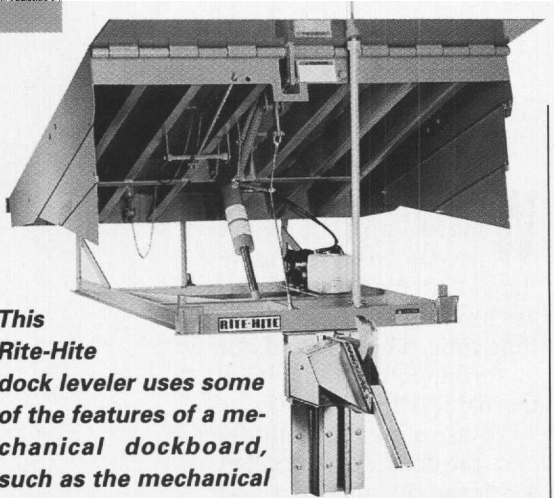
While approved in December 1993, little has been

said or written about the standard. In fact, few dock levelers have been built and tested according to its guidelines. Although General Motors and General Electric were two of the original reviewers of the standard, it is not part of their specifications.

It must be noted that the Use of American National Standards is completely voluntary [except where they have been made part of the law as in the case of the OSHA regulations] and their existence does not in any respect preclude anyone, whether he has approved the standards or not, from manufacturing, marketing, purchasing or using products, processes or procedures not conforming to the standards.

The standard is complete in that it contains 10 paragraphs on the dock leveler owner's responsibilities that include restraining vehicles at the dock. These instructive and cautionary paragraphs should be made a part of both lift truck operator training and dock supervisor or dock leveler operator training.

You can order a copy of the ANSI MH30.1 1993 standard from the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.



**This Rite-Hite dock leveler uses some of the features of a mechanical dockboard, such as the mechanical lip actuation, but uses a hydraulic cylinder for actuation and safety in the event the truck suddenly leaves the dock. The Doc-Loc truck restraint shown is not part of the dockboard.**

tor and reservoir plus hydraulic cylinder(s) that lifted the leveler, extended the lip and then lowered it onto the truck bed.

The hydraulic leveler

then floats up and down as the vehicle is loaded or unloaded, and the bed height changes with the weight of the lift truck and loads.

Various types of vehicle restraints are used with these dock levelers. Vehicle restraints, dock leveler actuation and signaling for both the dock worker and the vehicle driver are usually combined into one control panel. Today, the vehicle restraint, dock leveler and sometimes even the door controls are interlocked to work in sequence.

Even so, many docks still do not have automatic vehicle restraints, and the truck must be chocked before loading or unloading. If the truck happens to pull away with the hydraulic dock leveler in place, the board may

drop only fractions of an inch, because the oil is kept in the hydraulic cylinder by a velocity fuse until the leveler can be safely cycled and the lip put back in the park position or re-established on the truck bed.

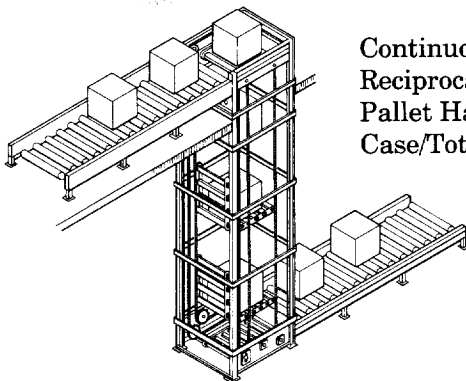
### New dock-leveler-powering devices

A new breed of dock levelers was introduced by Kelley Co. a couple years ago. It uses a 115-volt blower, much like those in a shop vacuum, to inflate a bellows-type air bag beneath the dock leveler. The blower is all that is needed to inflate the air bag and lift the dock leveler while a mechanical linkage extends the lip.

With the blower shut off, the air escapes slowly from the air bellows back through

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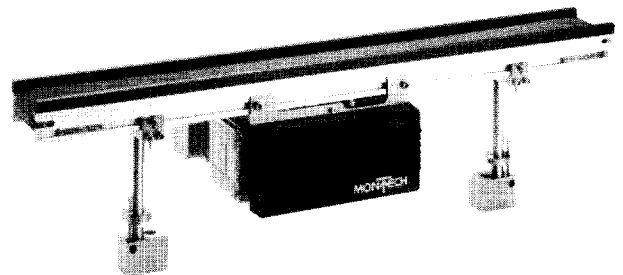
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the blower, and the dock leveler lip gently settles on the truck bed. The blower draws only 10 amps.

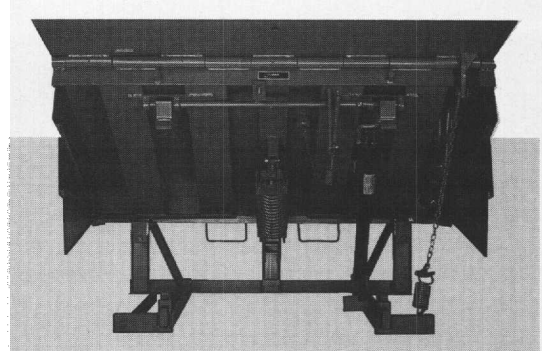
Introduced last year and shown for the first time at the ProMat show, the Serco electromechanical dock leveler is also a 115-volt AC device. It is basically a spring-balanced mechanical leveler that is biased slightly in the downward direction. A motor-driven screw actuator lifts the board to its full height, extends the lip and then retracts automatically, lowering the dock leveler and lip to the truck bed. From that point, the leveler acts just like a mechanical dock leveler.

A sudden departure by the vehicle being loaded permits the leveler to drop slightly until mechanical

legs arrest the downward leveler travel.

If loading below dock level is to take place, as when a truck bed comes in too low, a mechanical release must be actuated to move the mechanical drop legs out of the way to permit below-dock travel by the dock leveler. An optional control panel can be installed that stops the dock leveler at any point in the cycle. This leveler operates on 115 volts AC and draws about 3 amps.

A variation of this design, the Actionator by W.B. McGuire Co., uses an electromechanical actuator inside the counterbalancing coil springs. To accommodate below-dock truck access, a latch mechanism releases the safety legs so the



*The new EL electromechanical dock leveler from Serco Loading Dock Systems uses a time-proven 115-volt electromechanical actuator to lift and position the spring-counterbalanced leveler. This leveler requires less maintenance than a mechanical leveler.*

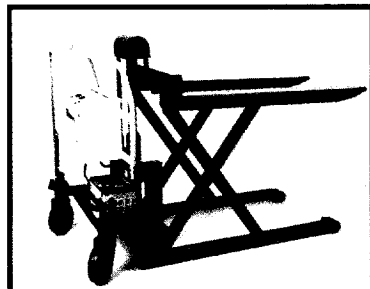
leveler can descend to the truck bed surface.

An optional feature offered only on this leveler is a hydraulic cylinder that exchanges oil between the top and the bottom of the cylinder as the leveler raises and



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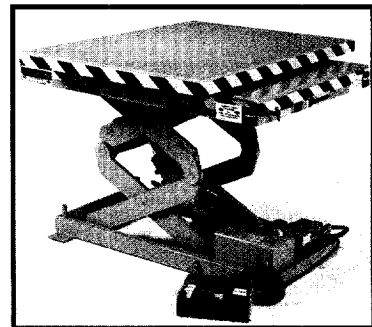
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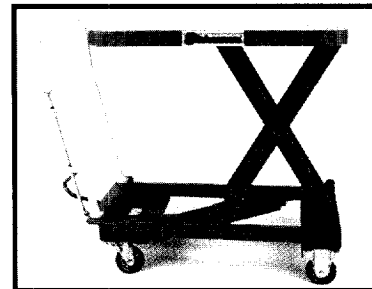
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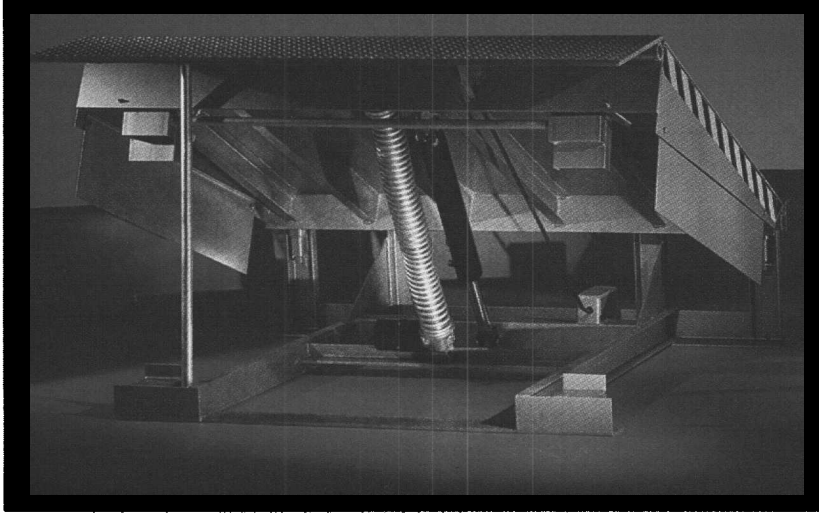
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**The newest contender for the powered mechanical dockboard business is the Actionator from W.B. McGuire. The motorized, linear-actuator-positioned leveler has a unique lip release latch so the operator does not have to be on or near the board for below-dock-level positioning. This is the only leveler in this category built to the ANSI B30.1 1993 Standard.**

lowers. It is simply a closed circuit oil transfer through the piston, but there is a velocity fuse

in the piston port so that any sudden drop in the leveler stops it short in the same way a pow-

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ered hydraulic board would.

This year Rite-Hite also entered the competition with a lower-cost hydraulic leveler. They believe that full control throughout all the board travel, offered by hydraulics, is the best approach.

The pump/motor/reservoir hydraulic unit can be built with motors that are powered by either 115- or 230-volt, single-phase AC power. The main advantage to the hydraulically powered board is the ability to float fully throughout the operating range. A control system permits lip retraction at any point in the working range.

### Why all these new models?

The main reason for all the activity in dock levelers is that the first non-mechanical/non-hydraulic levelers cost little more than the purely mechanical dock levelers and are far below the price of then-available hydraulic dock levelers.

The new leveler designs eliminate most of the worker's bending to actuate the lip that marks mechanical dock levelers.

Some hydraulic dock levelers, particularly the vertical rising type, are selected for reasons that the new breed of electromechanical boards do not satisfy, so there will always be a place for some full-featured hydraulic types.

The air-powered and linear-actuator types are definitely taking a bite out of the hydraulic dock leveler market, so there will probably be new introductions in the near future.

But for the user who would ordinarily pick a mechanical leveler because of price and the cost and problems with plumbing or wiring conventional hydraulic dock levelers, the new levelers offer an attractive alternative.

For more information on these and other dock levelers, see the literature focus on page 102. **MHE**

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