

Dock Leveler Capacity – Understanding Loading Dock Capacity

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Capacity is one of the deciding factors in determining what type of Dock Leveler to use in a loading dock installation. Capacity refers to the absolute amount of weight that can be evenly distributed across the deck of a dock leveler in the stored position or the maximum weight that can travel across an extended leveler in use.

It is extremely important to calculate the capacity of a dock leveler needed for a specific customer application. Improper capacity selection can lead to many unwanted issues ranging from pitting or dishing of the leveler, to having the entire loading dock disengage from its back channel and fall from the pit. Or complete structural failure leading to serious injury.

Many people and organizations do not understand the difference between static and dynamic capacity. It is extremely important that you become knowledgeable or utilize the design templates and guidelines provided by the dock leveler manufacturers. As well Dock leveler manufacturers will make design recommendations, including the recommended capacity. To do this the manufacture will require specific information on the application.

Typically capacity rating for dock levelers range from 25,000lbs. to 80,000lbs. Over 90% of all dock leveler installations fall within this capacity range. It is important to understand that this rating is a static rating. Static Capacity is an engineered calculation of the dock leveler's structural capacity. This calculation determines the dock leveler's capacity to support an evenly distributed "still" load placed on it in stored position. The Static capacity rating for a dock leveler is an indication of the maximum weight that can be evenly distributed on the dock leveler.

Dynamic Capacity is a range of motion (dynamic) which involves a range of forces that are dramatically greater than static loads. It relates to the speed, frequency of use, and percentage of grade, and other dynamic factors while the fork lift is traveling across the leveler during use.

When trying to determine the Dynamic Capacity factor of the dock leveler the following information needs to be considered:

- The weight of the heaviest fork truck or Material Handling Equipment being used including attachments that maybe placed on the fork truck;
- Heaviest load weight that the Material Handling Equipment will be moving;
- Whether a fork truck has three or four wheels as well as the size of the tires;
- How many loads per shift or per day.

The common division factor is 2.5 when calculating capacity for standard dock levelers. However, capacity factors can range from 2.0 to 5.0 depending on the severity of the application and the manufacturer. Since there is no recognized industry standard, manufacturers rate their capacities differently. Some may use lower safety factors to be more competitively priced or leave the impression that their particular dock leveler is stronger than other manufacturers. Variables like fork trucks, fork truck weights, type and speed could cause you to increase capacity. Numbers of shifts, weight of loads, percentage of incline and decline for the leveler can also influence capacity. When in doubt it is always better to increase the capacity factor. There is no such thing as too much capacity and the cost of increasing capacity is low relative to the overall cost of the dock leveler. Below is an example of how to calculate the capacity rating of the dock leveler required. An example of the calculation is as follows:

A fork truck is a total of 8,824lbs with the weight of the heaviest load (WL) included being 2000 lbs. To determine the Static Capacity Rating of the dock leveler add the WFT and the WL together:

Weight of fork truck, (WFT) 8,824 lbs.

Weight of heaviest load (WL) 2,000 lbs.

Number of wheels; 4

Loads/Trucks per shift 2

WFT + WL= DC

8,824 + 2,000 = 10,824

We have now determined the total maximum live load of the dock leveler that will be exposed to and we can use the total maximum live load to determine the capacity of the dock leveler required.

DC x Factor= SC

10,824 x 2.5 = 27,060 lbs

We have now determined our the rated capacity of the dock leveler required and can now make a design recommendation and prepare a quotation for the proper capacity leveler. At a minimum, always round the number that is calculated as rated capacity up to the next available capacity of dock leveler; you will find that you can safely recommend a 30,000 lbs unit in this example.

There are other additional factors which also need to be considered in the determination of a safe and reliable loading dock.

Degree of Incline

The typical degree of incline and decline of the leveler deck has an effect on the leveler. The greater the incline or decline of the leveler in use the greater the impact forces when the fork lift drives over the leveler.

Abnormal features of the forklift trucks can require you to increase the capacity of a dock leveler.

Three wheel fork trucks or trucks with very narrow tires put more of the weight on a smaller surface area which can cause dishing of the deck or broken welds on the leveler. Fork truck speed on the dock leveler plays an important role in capacity. The standard rating is based on a fork truck moving across a dock leveler at 5 MPH. If the speed is higher than the capacity has to be higher as well.

The bottom line is that you cannot have too much capacity. A good leveler properly applied and serviced should last structurally for many years. Once a dock leveler has been installed there is little that can be done to increase the capacity. A customer using a pallet jack today could be using a fork truck tomorrow. Increasing the dock leveler capacity rating is relatively inexpensive in relation to the overall cost of the dock leveler.