

Flatness for Defined Travel Paths

BHS requires all new equipment to be installed on floors which meet minimum requirements for safety. The F-min numbering system measures and specifies floor tolerances for defined traffic floors. The following information will help clarify the details of measuring defined traffic floors and the benefits of floor flatness.

What is F-min?

Defined traffic floors are found in narrow aisle warehouses and battery rooms where forklifts and Operator Aboard Battery Extractors (BE) move along defined travel paths. A single number, F-min, is used to measure the floor flatness and levelness for defined traffic paths. F-min rating results from four different F-numbers representing the floor's longitudinal levelness, longitudinal flatness, transverse levelness, and transverse flatness.

How is F-min Measured?

The floor is measured along the exact travel path that each wheel of the equipment follows. Changes in elevation along each wheel path are used to determine whether the floor meets the specified F-min requirements. Any area of the path that falls outside of the specification is identified for correction as part of the measurement process.

What do Flat Floors Mean to You?

Small imperfections on a floor can dramatically reduce the F-min rating. An uneven floor in a defined travel path causes vibration, flexing, and stress on equipment resulting in decreased productivity of your forklift fleet or BE. Lift heights of BE systems and forklifts magnify the effect of an uneven floor. As elevation increases, so does the amount of flex and strain on the machine. A floor with an appropriate F-min rating provides for safe and proper operation of your equipment. Consequently, you will save money with fewer repairs, fewer parts purchased, less downtime and less potential for personal injury or equipment damage.

What is an Appropriate Rating?

As BE systems increase in height, any defects in the floor further amplify both static and dynamic shifts of the load while traveling. For this reason, F-min requirements are higher for triple and quad stack BE systems. BHS specifies the following minimum requirements to ensure satisfactory operation of BE's. *Note: Contact factory if seismic certification is needed.*

BE Tolerances for Defined Travel Path:

BE Model	Transverse Tolerance	Longitudinal Tolerance	Slope Variance Tolerance/ft	F-min
SL/DS	0.192	0.268	0.096	40
TS	0.129	0.186	0.066	60
QS	0.091	0.131	0.047	85

What if the floor does not meet the F-min rating?

At the time of installation, BHS qualified contractors provide a flooring profile to determine nonconforming areas of the floor. If the floor does not meet the required rating, corrective action is necessary.

BHS includes pricing for grinding of the travel path with all new equipment quotations. Once it is determined the floor does not meet the required rating, BHS qualified contractors perform spot grinding to bring the floor into specification as part of installation. If BHS is not selected to perform the work, the work must be performed by another party and meet the required rating to obtain the full BHS equipment warranty.

BHS recommends all new construction and expansion plans specify the appropriate defined travel path requirements (F-min rating) to the concrete or construction contractor prior to the pouring of the concrete. By specifying the requirements early, the contractor can reduce or eliminate the need to correct the floor after the pour.

