

## WHITE PAPER

# Reconciling Dimensioning Errors in Parcel Transportation Invoicing

*“Carriers are overcharging because of dimensioning errors. Identifying the errors is simple with the right technology. Correcting overcharges might be another story.”*

*5 min. read*

**Although parcel freight rate tables** use pounds as the unit of measure, carriers measure their system capacity by the cubic foot. Trucks, vans, airplanes, conveyors and even sortation hub buildings are not limited by weight – they’re limited by cubic footage.

For example, a 53-foot trailer has a cubic capacity of 3,400 cubic feet and a weight capacity of 42,000 lbs. A fully cubed parcel trailer doesn’t weigh even a fraction of 42,000 pounds. To invoice the entire 42,000 lb. potential for a full trailer, the cubic footage of each parcel is converted into weight via a complicated set of rules. Pricing includes a dimensional weight divisor and other penalties under the blanket term, “accessorial” charges which aren’t always visible to the shipper. In the end, contrary to what the rate tables indicate, customers aren’t paying by the pound, they’re paying by the cubic foot.

**How does the carrier know the size of the package?** In the transportation hub, packages are conveyORIZED at high-speed through a scanning tunnel that reads the shipping label barcode, weighs the package and measures the dimensions. Dimensions and weight are reported back to the carriers’ order tracking system where the “billable weight” is calculated based on the dimensions. Other penalties are assessed if any one dimension exceeds the small-sort length limit, if the package is tubular, or if the package requires special handling.

Given that carriers spend millions on next-generation measuring devices, it is universally assumed that their metrics are right – or at least “more right” than the shipper who rarely has the dimensions of the package in their outbound transportation management system.

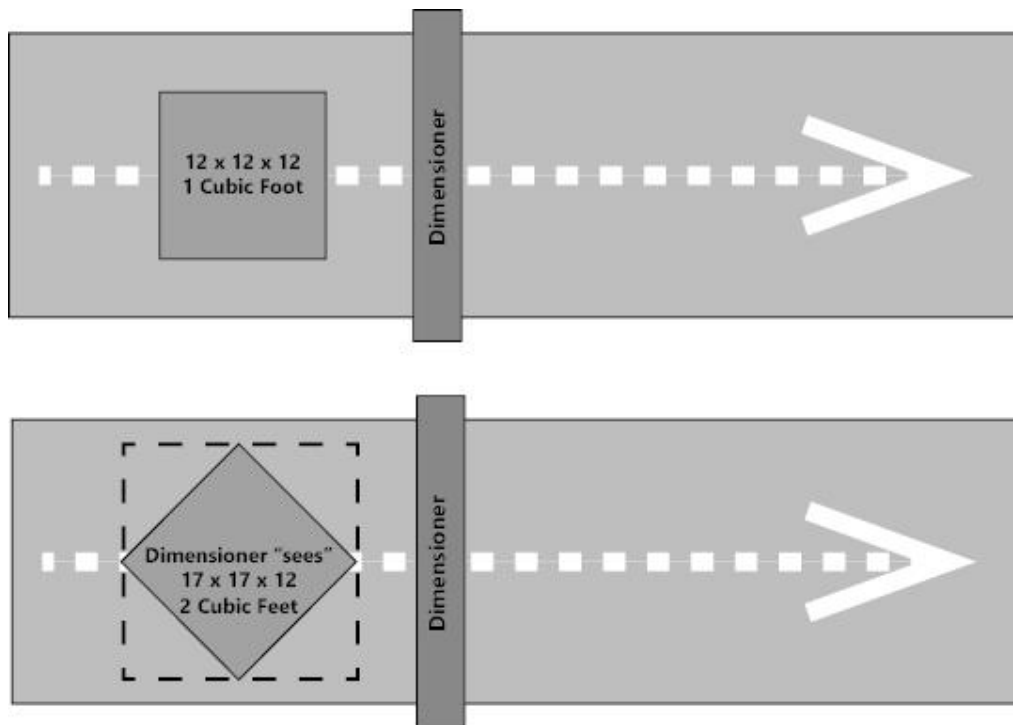
**Do carriers make errors measuring boxes?** The short answer is yes. Although dimensioning systems are relatively accurate, the boxes rarely pass through them perfectly straight, causing the photocells that measure the width of the package to “see” the box as being larger than it really is.

A box measuring 12 x 12 x 12, one cubic foot, will double in volume if it is skewed 45 degrees while traveling through the dimensional weight tunnel. Because of the extraordinary speed of conveyors, it is virtually impossible to control for skewing, even when aligners are built into the system. And not every system even has an aligner. *[See figure below].*

**IQpack has evaluated millions of lines of invoice data** using software that can compare the actual dimensions with the “billable” dimensions, and the errors are significant and on par with the other invoicing errors – often 10% to 40% of the total invoice cost. Using certified dimensioning systems on the outbound conveyors, in conjunction with integrated software, shippers can identify and report dimensioning *[over...]*

errors to the carriers. Certified outbound systems are more accurate than the parcel measuring systems because the conveyors are moving much slower, and packages can be aligned accurately and measured with precision.

For zero-air corrugated box systems, the packaging machinery reports the dimensions of the box with precision, because the machine made the box. Zero-air corrugated box systems can report the data to integrated analytics software so that the freight bill can be checked for accuracy.



*A 12 x 12 x 12 box, traveling through a dimensioner at 45 degrees doubles in cubic volume because the dimensioning system “sees” a 17 x 17 x 12 box. A one cubic foot carton becomes two cubic feet, simply because the carton was skewed on the conveyor and the hypotenuse is measured instead of the length and width.*

**Conclusion:** Given the alarming increase in parcel rates, shippers should consider capturing the dimensional data on outbound freight, integrate the dimensions into specialized software, and reconcile errors with their parcel carriers. It is not clear at this stage if the carriers will refund overcharges as they routinely do with other invoicing errors. Invoicing errors are known to be egregious in scale and have birthed an industry of freight invoice auditing services. Those services do not currently evaluate measurement errors. Additionally, parcel carriers are burying the dimensions they use for calculating pricing in invoices that are either incomplete, or difficult to upload into other systems for evaluation. In the terms and conditions that shippers must sign, data sharing for the purposes of analysis is prohibited – presumably to shield the carriers from compliance with state-level statutes regulating measuring systems for commerce. Currently, carrier scales are certified, but not dimensioning systems – an issue that needs to be addressed – there’s more to come on this topic from IQpack.

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