

How Level vs. Non-Level Axle Groups Affects Weighing Accuracy

Commercial vehicle operators can use portable wheel/axle scales at most locations to determine axle, axle group and gross vehicle weight (GVW). The potential for inaccurate readings increases when axles within an axle group are not level during weighing. To mitigate these effects, Intercomp recommends placing scales under each wheel of axles within 10 feet (3 m) of one another.

Portable wheel/axle scales allow transport operators to cost effectively monitor vehicle weights almost anywhere. Using the correct number of scale pads (wheel weighers) - all axles in an axle group weighed on a level plane - each of Intercomp's portable truck scales are accurate within 1% of applied load.

During testing of various scale models, an FHWA Class 9 five-axle truck was used to compare variation when utilizing one and two pair of portable wheel/axle scales. The truck had a GVW of 64,860 lb (29,420 kg) - measured by a full-length, certified in-ground scale.

On a level paved surface the same truck was weighed using two 3-inch (76 mm) tall NTEP-Certified PT300™ scale pads. The result was a GVW variance of 5.7% and 5.3% from the in-ground truck scale during two separate weighings. In addition, a single pair of 1.5 inches (38 mm) tall NTEP-Certified LP600™ pads produced a 3.8% GVW variance.

Using four PT300™ scale pads, enough to support the four wheels in both tandem axle groups, the average deviation among the groups was within the 1% rating when compared to the full-length truck scale. Weighing axle groups with one pair of scale pads displaces downward force that a scale would otherwise register. Similar errors occur when attempting to use pads of different heights, also negating the 1% accuracy rating.

The errors become significant as gross, axle group and axle weights approach permissible limits. A truck loaded to 80,000 lb (36,000 kg) could be off between 3,200 lb (1,500 kg) and 4,800 lb (2,200 kg), increasing the potential for costly overweight citations and the promotion of unsafe vehicle operation.



Using two scale pads under all wheels in an axle group allows the weight to be distributed evenly between the two axles.



By using a pair of scale pads on one axle in a group, the compressed suspension shifts weight toward other axles in the group.



Ramp/levelers height matches that of the scale pad, ensuring all axles in the group are level to the ground.

Additional Data or Customer Testimonials Available Upon Request