



Accuweigh Steel Deck Weighbridges - Installation Sequences:

The following typical installation sequences are for Accuweigh's steel deck weighbridges using a concrete slab foundation to enable it to be certified for trade use. For non-trade applications, other suitable means of providing a stable base may be used.



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Weighbridge Foundations:

Concrete foundations are used to ensure a stable load bearing surface is achieved to ensure high weighing accuracy can be achieved and maintained over the life of the weighbridge. The foundations for the steel deck weighbridge are best laid on level ground to minimise the height and length of the truck access ramps.



Concrete Foundations For Steel Deck Weighbridge

As metal deck weighbridges have a much lighter deck weight than a concrete deck weighbridge, the foundations do not need to be quite as substantial which can reduce overall weighbridge installation costs.

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Weighbridge Centre Block Assemblies:

Accuweigh's steel deck weighbridges are delivered to site in prefabricated sections ready for assembly.



Load Bearing Components Of The Weighbridge

Accuweigh steel deck weighbridges use a unique design where the weighbridge joining sections are also the load bearing points containing the weighbridge load cells and associated mounting hardware to ensure a very strong and robust weighbridge design.

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Weighbridge Assembly:

The weighbridge deck sections and centre block assemblies are lifted into place using a light crane and positioned onto blocks.



Lifting The Metal Components Into Position

Structural bolts are inserted between the mating sections firmly securing the decks to the centre block assemblies.

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Assembly Progress:

The deck sections and centre block assemblies are positioned to suit the required weighbridge size. The steel decks are normally supplied in six metre sections, but in this application, custom decks were manufactured to allow multiple nine metre deck lengths.



Assembling The Weighbridges

In this application, each weighbridge deck comprises two deck sections and three centre block assemblies for each weighbridge deck to have a nine metre length.

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Structural Assembly Completed:

This weighbridge consists of three nine metre weighbridge decks positioned end to end for an overall length of twenty seven metres.



Structural Assembly Nearing Completion

Having three nine metre decks will allow B Doubles to be weighed in a single weighing transaction.

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Grouting The Load Cell Plates:

The load cells are correctly aligned and then the mounting plates are grouted into position in the concrete slab using industrial epoxy.



Industrial Epoxy Secures The Load Cell Mounting Plates

For strong protection against lightning damage, the load cells are fitted with internal surge suppressors, an earth strap is fitted between the top and bottom load cell mounting plates and a special non-conductive grout is used.

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Terminating The Load Cell Cables:

The load cell cables are connected to the summing boxes mounted under the removable centre plates of the weighbridge deck.



Terminating The Junction Boxes

Excess cable is neatly stored in metal compartments and output cables are then run to the weighbridge office.

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Fitting The Weighing Electronics:

The load cell output cables from the three weighbridge decks are connected to separate digital weight indicators to allow the weight on each deck to be displayed individually. Each digital weight indicator then outputs its weight readings to a summing indicator to display the total weight on all three weighbridge decks – the GVM of the vehicle.



Digital Weight Indicators & Summing Indicator

This weighbridge configuration is known as a multi-deck weighbridge and its main benefit is the ability to display the weights of individual vehicle components in a single weighing operation; in a B Double these would be truck, trailer and second trailer.

Multi-deck weighbridges are almost becoming a mandatory requirement for all vehicle weighing applications as most instances of vehicle overloading are not caused by exceeding the allowable gross vehicle mass (GVM) but by individual axle groups being overloaded.

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Installing The Remote Displays:

Serial Output's from each of the digital weight indicators and the summing indicator are cabled to four externally mounted remote displays to allow the truck drivers to see their vehicle and axle group weights.



Large Digit Remote Displays

These remote displays have a weather-proof cast aluminium housing and are powder coated for corrosion resistance. The displays use high intensity LED digits 125mm high and suitable for use in direct sunlight.

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Weighbridge End & Side Stops:

The metal weighbridge decks are highly susceptible to excessive movement caused by vehicle acceleration and braking when entering and leaving the weighbridge. Strong metal restrainers limit the movement of the weighbridge decks, both end to end and sideways.



Weighbridge Restraining Plates

Weighbridge end clearance is a very important issue on any weighbridge but extremely so when using multiple decks positioned back to back as each deck must have clearance to cater for expansion and contraction of the metal due to temperature changes for day to night and for seasonal changes.

On a single deck weighbridge, an end clearance of 5-10mm may be suitable but on a weighbridge comprising three or more individual decks this adds up to 30-40mm of longitudinal movement. Excessive vehicle acceleration or braking can ram the weighbridge decks together and then all will be forced to one end. Over time, the restrains or end walls of the weighbridge will be damaged causing yet more end to end movement which allows excessive load cell tilt and significantly reduces load cell life expectancy.

Fitting speed bumps to the approaches reduces damage to the bumper stops and load cells.

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Weighbridge Testing & Calibration:

Certified test masses are then positioned over each load cell in turn to ensure correct weights are achieved at all points on the weighbridge deck.



Loading The Weighbridge With Test Weights

The weighbridge is then testing to full capacity using the test masses and then combined with dead load. Calibrations are performed if required to ensure compliance with government regulations.

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Weighbridge Certification & Maintenance:

After calibration, the weighbridges are then certified for trade use.



Accuweigh/QWM's Brisbane Test Unit

Weighbridges need regular servicing if the load cells are to last more than a few years! As per page 11; Weighbridge End & Side Stops, the restraining plates play a very important role in protecting the load cells from premature wear caused by excessive end-to-end movements which eventually will cause physical damage to the load cells & mounting cups.

Critical Service Components Include:

1. Regular adjustment of the weighbridge end & side stops which are usually fitted with adjustable bolts to regulate the movement of the weighbridge deck(s).
2. Regular greasing of the load cell pendles and mounting cups to eliminate water, dust and other foreign materials from forming a grinding paste in these high load areas.
3. The weighbridge end gaps and the underside of the weighbridge deck(s) needs to be kept clean to prevent material build-up from restricting weighbridge movements.

Accuweigh is Australia's largest industrial weighing company and has branches in all mainland states fully equipped with trained staff and weighbridge test trucks ready to cater for all weighbridge servicing and breakdown needs.