CONCRETE AXLE WEIGHING WEIGHBRIDGE

(WB-AC)

Trade Weighing &Axle Weighing on Concrete Weighbridges

SASCO WEIGHING SYSTEMS

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The **SINGLE DECK WEIGHBRIDGES** are an important product within Sasco's range of Truck Weighing solutions. Other products within Sasco's truck weighing range which offer a similar solution, include multi deck weighbridges, axle weighing on standard metal decks, weigh-in-motion wimbridges, standard single deck weighbridges with upgraded instrumentation to enable axle weighing, group axle weighers and weigh pads.

Under conditions of both high exposure to rust and high vehicle volumes, and were both trade weighing and axle weighing is required, the WB-AC is the optimal solution for enabling highly accurate digital total weight trade weighing as well compliant axle weighing.

The WB-AC, when installed with Sasco ProWeigh+ software, provides for fully compliant axle weighing as well as an array of operational functionality including weighbridge automation, the total integration of weighing data generated with user IT systems and powerful cloud and networking data capabilities.
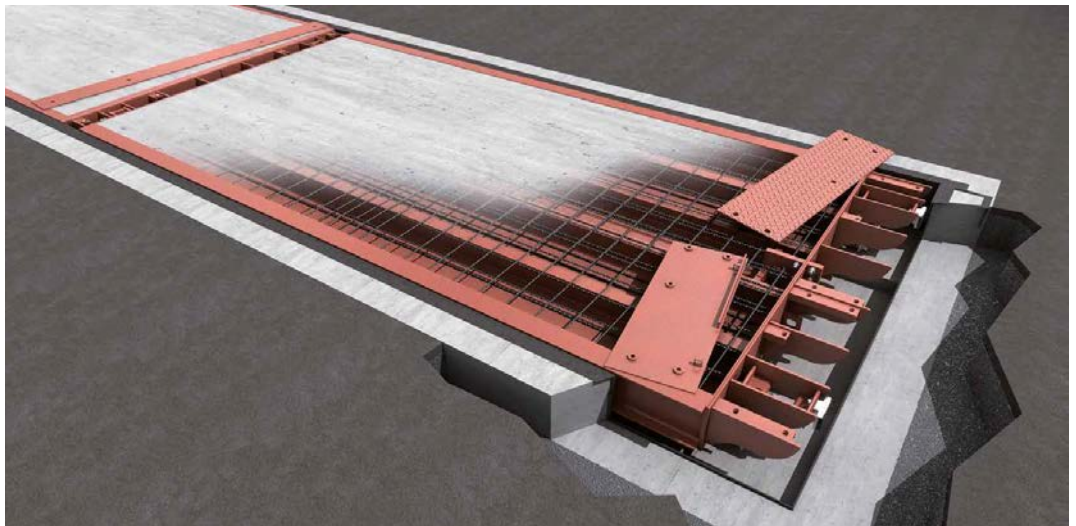
Product Overview

The WB-AC is a highly accurate concrete trade approved Truck Weighing System providing total weight and axle weights.

Sasco typically achieves accuracy levels on total weight 99.95% and 97.5% on axle weights on the system, with a maximum total loading of up to 80 tons. New data key elements of the system are:

- It is both cheaper to buy and cheaper to maintain than a steel multi deck weighbridge, yet achieves similar results.

- Complete digital instrumentation with all components being manufactured in Europe.

- The most common specification length for the weighbridge is 24m.

- The decks are concrete and can accommodate exceptional exceptionally heavy loadings.

- Mounting option are either pit mounted or mounted above the ground.

- Sasco ProWeigh + software is supplied as standard, which means the of adding on an array of weighbridge automation options is easy.

- Sasco ProWeigh+ also has the functionality to facilitate the integration of weighing data to a range of ERP systems whether directly or via the Cloud,

- The set-up menu of Sasco Proweigh+ Fleet Manager Database, allows for the option of single tare weighing as opposed to double weighing of vehicles.

- The set-up menu of Sasco Proweigh+ Fleet also allows for the option of SOLAS Weighing as well as total weight and axle weighing.

- Finally, there is the added option of fully unmanned operations whether on a stand-alone basis or as part of a Centralized Weighing Operations Control Centre configuration.

Benefits of Concrete Weighbridges

These include:

- Concrete decks are ideal for installations near the sea were rust corrosion is an issue.

- Concrete decks as a general rule, will last longer than steel deck scales. Checkered plate have a tendency to wear especially in abrasive applications like quarries and mines. High traffic volumes can also result in a wearing of the diamond treads.

- Concrete decks generally require less maintenance than steel decks. They do not require repainting. They do not show surface wear as steel decks often do.

- Concrete decks provide better traction in wet or slippery weather than do steel decks, which can be very slippery even in light rainy conditions. Mix the rain with a little oil from truck traffic, and surfaces can become very hazardous.

- Concrete decks, because of their design, have tendencies to better distribute the load over a wider area of the platform than does a steel deck.

- Due to the weight of a concrete deck and the mass, there is far less movement of a concrete weighbridge, minimizing wear on steel components such as links, stands, and load supports
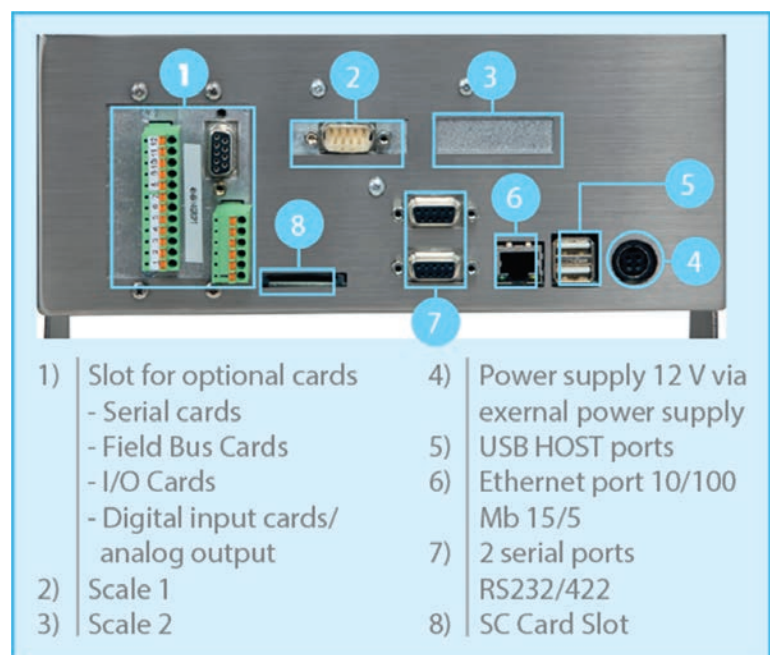
Indicator

The indicator used on the WB-AC is the DD1010, which is manufactured by Bilanciai in Italy. The reasons for deciding to specify the WB-AW with this indicator are as follows:

- Judged on reliability and functionality, Bilanciai is regarded as the leading manufacturer of weighing indicators globally.

- The DD1010 has the unique functionality to compute, from the total weight, the axle loadings of the vehicle on the weighbridge.

- The DD1010 stores all the load cell calibrations, such that when load cells require replacing, the correct calibrations can be simply be down loaded from the indicator to the relevant load cell. This reduces down time.

- The DD1010 offers and array of interfacing terminal options, can form part of a total facilities network and can also, on a standalone basis, directly manage and control multiple hardware devices used in weighbridge automation.

1)	Slot for optional cards - Serial cards - Field Bus Cards - I/O Cards - Digital input cards/ analog output	4)	Power supply 12 V via exernal power supply
		5)	USB HOST ports
		6)	Ethernet port 10/100 Mb 15/5
2)	Scale 1	7)	2 serial ports RS232/422
3)	Scale 2	8)	SC Card Slot

Load Cells

The WB-AC comes with the option of either CPD or S500 load cells. The S500 load cells are cheaper.

The accuracy of both the CPD and S500 load cells are both very high and both have stainless steel casing. However, the advantages of the more expensive CPD load cell over the S500 are:

• While both the CPD load cell and S500 IP68 rated, the CPD load cell has proven to be able to sustain being submerged for up to a month without compromising its operations.

• The continuing accuracy under conditions of extreme temperature changes, of CPD load cells, have been proven to be better particularly in environments of extreme heat.

• The CPD load cells come with inbuilt lightning protection in each load cell. This has proven invaluable when installations are in high lightning strike areas.

• The CPD load cells come complete with anti-rodent cabling. This has also proven to be invaluable were the products being weighed are prone to attracting rodents.

Software and Data Integration

The WB-AC runs on Sasco Proweigh + software and offers the functionality of seamless data integration, either directly or via the Sasco Cloud.

Configured in single weighing tare mode weighing the weighing sequence to be followed by the Weighbridge Operator is as follows:

FIRST ACTION:
Capture the registrations of the horse and trailer units, which can be automated via RFID, APNR cameras, or QR codes.

SECOND ACTION:
Weigh.

THIRD ACTION:
Select the vehicle configuration so as to determine the correct permissible weights. This can be automated if the vehicles are loaded on the ProWeigh+ Fleet Master database.

Compliant Total Weight and Axle Weighing Ticket

Once the weighing process is complete, print the weighing ticket. If ProWeigh is set up to integrate with the User's IT system or Sasco Cloud, all the relevant weighing information will also be immediately transmitted electronically to this data destination.

THIS DOCUMENTATION IS COMPLIANT WITH THE NATIONAL ROAD TRAFFIC AMENDMENT ACT 64 OF 2008

WEIGHBRIDGE TICKET SLIP

Horse Registration	: ABC123GP
Weighbridge Name	: Sasco Demo Weighbridge 1
Company Name	: Sasco Customer Demo Company
Site Name	: My Test Location
Product	:

SASCO ProWeigh+ Version 2.1.0

TICKET NUMBER	WBT000068	TICKET DATE	2018/05/22 15:47:00

VEHICLE DETAILS

Registration Number	ABC123GP	XYZ456GP	
Type	Horse	Trailer	****
Operator	My Transport	My Transport	****
Contact Person	****	****	****
Insurance Provider	****	****	****
Cover Type	****	****	****
Policy Number	****	****	****

TRADE WEIGHING DETAILS

First Weigh Details		Second Weigh Details		Weigh Calculations	
Weight (kg)	15 430	Weight (kg)	21 500	NETT Weight (kg)	6 070
Date Time	2018/05/22 15:42.51	Date Time	2018/05/22 15:46.59	Product NETT (kg)	6 070
Operator	sa	Operator	sa	Total Difference (kg)	6 070
				Total Cost	R0,00

** Scale Weights have been manually overwritten by Supervisor **

LOADING DETAILS

Axle Groups	Actual kg	Permissible kg	Difference kg
Group 1	5 100	7 700	(2 600)
Group 2	10 200	17 600	(7 400)
Group 3	6 750	7 000	(250)
TOTALS	22 050 kg	32 300 kg	(10 250)kg

CONSIGNEE DETAILS

Consignee Code		Address	
Consignee Name			
Document Number	SAS0000000002		
Document Type	Sales	Contact Name	****
Document Weight	0	Contact Number	****

CONSIGNOR DETAILS

Consignor Name	Sasco Customer Demo Company	Contact Name	****
Address	1 Test Street	Contact Number	0117654321
	****		
	JHB		

Compliant Solas Weighing Ticket Format

Should the SOLAS weighing option be selected the SOLAS ticket is as follows:

SOLAS COMPLIANT WEIGHING TICKET	
WEIGHBRIDGE NAME	Sasco P&W Pomona
DATE AND TIME:	2018/07/11 8:00:00
SANAS CERTIFICATE:	1121990
CALIBRATION CERTIFICATE:	1121990
CALIBRATION DATE:	2019/01/19

TICKET NUMBER	PM00002473	**TICKET DATE**	2018/07/11 8:00:00

TRANSPORTER INFORMATION

Horse Registration:	TESTGP	Driver Name:	
Trailer 1 Registration:	TRAILER01GP	Captured by:	sa
Trailer 2 Registration:			
Transporter Name:	Test Company		

CARGO INFORMATION

Customer Name:	Test Company	
Container Number:	MSKU2666542	
ISO Type:	ST20	
Load Type:		
Container Tare:	10 000	kg
Seal Number:	S12346	
Empty Vehicle Weight:	14 000	kg
Gross Vehicle Weight:	80	kg
Gross Cargo Weight:	-13 920	kg
Net Cargo Weight:	-23 920	kg

**COMPLETED BY** _____ **DRIVER** _____

DATE _____ **DATE** _____

This document also confirms that the minimum mass of the drive axles have been checked and that the mass on the steering axle has been checked for both over and under loading.

Add-on Hardware Options

ProWeigh + together with the DD1050 can accommodate the add-on of the following hardware devices:

- Robot
- Booms
- Cameras
- Electronic Display Board
- Bar Code Reader
- QR Code Reader
- RFID Reader
- Internet Communications Card

Additional automation hardware can be added without incurring development costs, simply through a standard menu driven activation process.
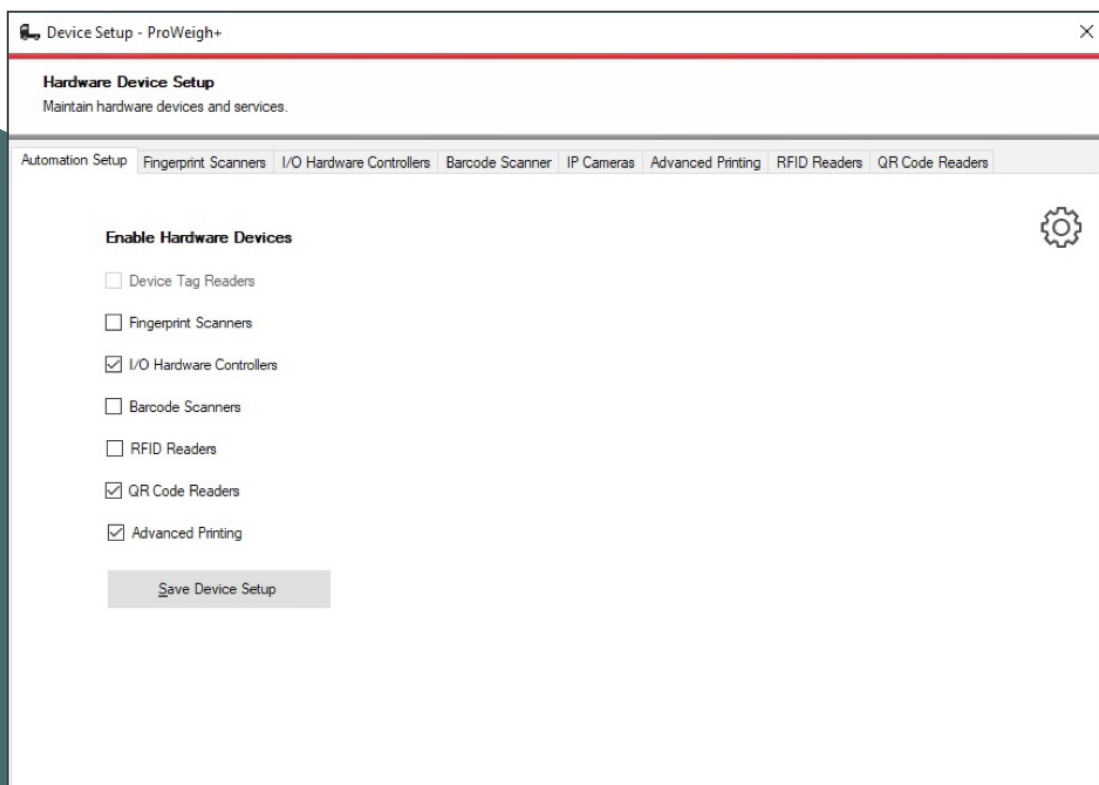
Application Example

WB-AC

Company N is a logistics port terminal operator, based in a container port. The company specializes in the import and export of containers. The volumes of traffic are significant, rust corrosion is a major problem as is flooding.

Imported goods arrive by sea in containers. These containers are brought into the Company's terminal from the ships and then re loaded onto trucks which carry these containers across Southern Africa.

Export containers are brought into the Company's terminal from all over Southern Africa. These containers are off loaded and re loaded on trucks for the short distance to the ships.

Included in the services Company N must offer are SOLAS weighing for inbound export containers, and axle weighing for outbound imported containers. All weighing data must also be fully integrated with the Company's ERP system.

All documentation carried by the trucks has fully details of the container cargoes and this data is also recorded in the form of a bar code.

The WB-AC, combined with ProWeigh+, will be the optimal solution and would be configured as follows:

- One WB-AC weighbridges, with CPD load cells will be installed.

- ProWeigh+ will be loaded on the PC's located in the Weighbridge Operators office. The PC will be networked to the DD1010 indicator and the Company's ERP system. A printer and bar code scanner will be connected to the PC.

- The ERP interfacing functionality of ProWeigh+ will also be activated and the weighbridge PC will be configured to the customer network.

- Tare weighing functionality will be activated in ProWeigh+. To enable this to work correctly all transporter vehicle details will be loaded on the ProWeigh+ Fleet

- Manager data file. This information will include horse and trailer tares.
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WB-AC

For trucks carrying <u>IMPORTED</u> containers out of the facility, for onward transportation to destinations in Southern Africa, the weighing procedure will be:

- The truck and trailer will drive onto the weighbridge.

- The Operator will enter the horse and trailer registrations. ProWeigh+ will access the Fleet Manager file and extract the horse and trailer data and using this data will do the permissible axle computations.

- The driver will pass the Operator documentation, which will be scanned.

- The Operator will then weigh, print the weighing ticket, and give this to the truck driver. All data will be immediately transmitted to the Company's ERP system.

- The weighing ticket generated will comply fully with the requirements of the Road Traffic Act in terms of axle loading.

For trucks carrying containers for <u>EXPORT</u>, into the facility, for export by sea, the weighing procedure will be:

- The truck and trailer will drive onto the weighbridge.

- The Operator will enter the horse and trailer registrations. ProWeigh+ will access the Fleet Manager file and extract the horse and trailer data and using this data will do the tare weight computation.

- The driver will pass the Operator documentation, which will be scanned. This information will comprise all the container related information required to generate a SOLAS weighing ticket

- The Operator will then weigh, print the weighing ticket, and give this to the truck driver. All data will be immediately transmitted to the Company's ERP system.

- The weighing ticket generated will comply fully with the requirements of SOLAS.

# Cement Application Specifications

The cement application specifications are normally:

- Cement mix should be 4.5 quintals/ cubic meter.

- Continuous particle size with aggregate of approximately 35mm.

- Water cement ratio of 0.5

- Additional cement fiber mix at a rate of 1kg / cubic meter.

- Surface of cast concrete should be dusted with spheroidal quartz 1mm in diameter at rate of 1kg per cubic meter.

- The casting of the weighbridge surface should be raised in the center by 1cm to create a convex surface for water run-off.

Installation
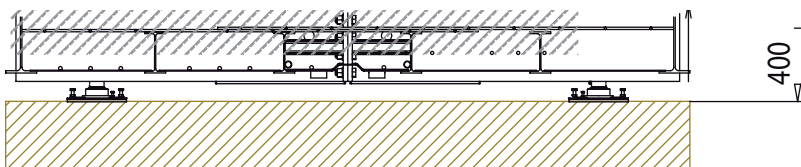
Surface mounted
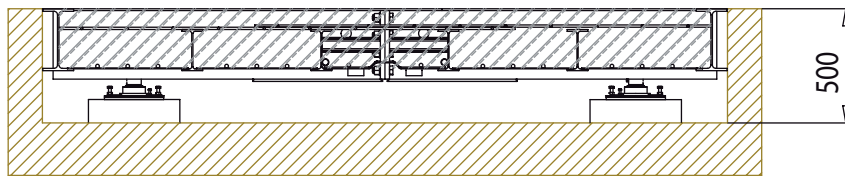
Pit mounted
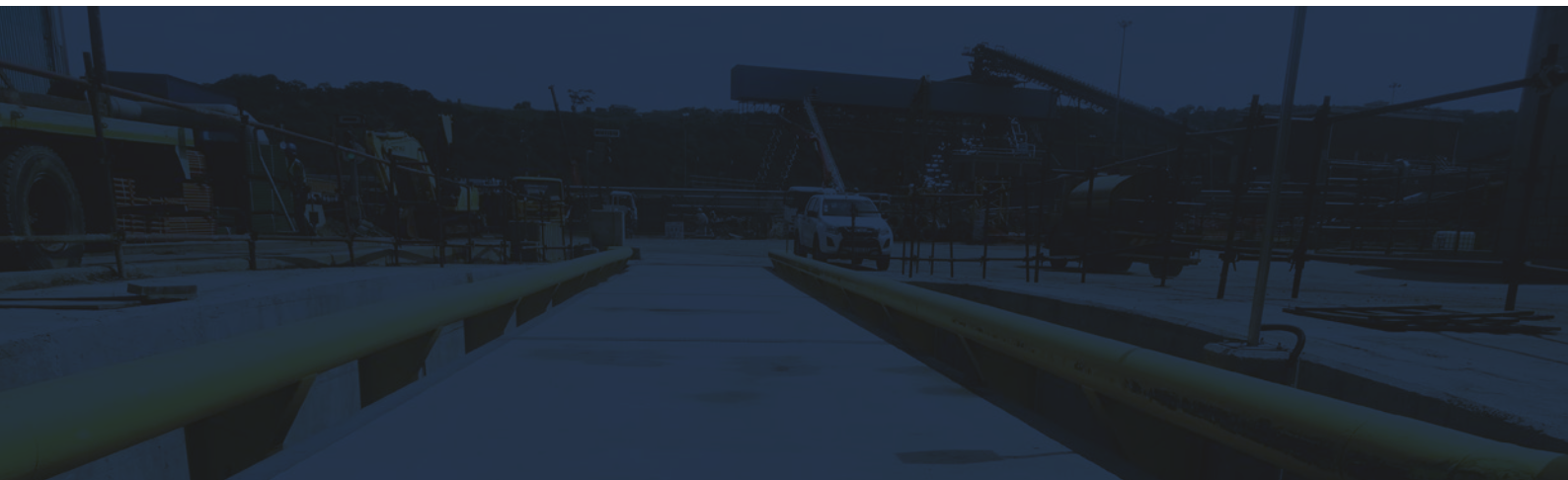
Technical Specifications

	SCPD Load Cells	S 500 Load Cells
Total Accuracy	+- 99.95%	+- 99.95%
Axle Weighing Accuracy	+- 97.50%	+- 97.50%
Installation	Above ground or pit	Above ground or pit
Deck Width	3m	3m
Deck Length	24m	24m
Number of Modules	One	One
Indicator	One – DD1010	One - DD1010
Indicator IP Rating	IP 48	IP 48
Load Cells	Ten - CPD	Ten -S500
Load Cell IP Rating	IP68	IP68
Dlink Required	No	Yes
Maximum Total Weigh	80 tons	80 tons
Maximum Axle Weigh	25 tons	25 tons
Reverse Calibration	Yes	Yes
Temperature Compensation	Yes	Yes
Maximum Number of Axle Groups	Unlimited	Unlimited
Total Weight Generated	Yes	Yes
Axle Weights Generated	Yes	Yes
RTA Compliant Ticket	Yes	Yes
SOLAS Weighing	Yes	Yes
Double or Single Weighing	Yes	Yes
Manned or Unmanned	Manned	Manned
PC Required	Yes	Yes
Option of Automation	Yes	Yes
Option of Unmanned	Yes	Yes
Option of Centralization	Yes	Yes
Direct IT Systems Interfacing Possible	Yes	Yes
Cloud Interfacing Possible	Yes	Yes
Pre- Loading of Fleet Possible	Yes	Yes
Deck Warranty	6 Years	6 Years
Instrumentation Warranty	12 months	12 months
Trade Approval	Yes	Yes