



Accurately Weighing Africa



WIM 2000

IN-MOTION AXLE WEIGHING

High Volume High Accuracy

SASCO WEIGHING SYSTEMS

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The **WIM 2000** is an important product within Sasco's range of Truck Weighing solutions. Other products within Sasco's truck weighing range offering similar axle weighing functionality include multi deck weighbridges, group axle weighers and weigh pads.

The WIM 2000 is the optimal solution for enabling full compliance with axle overloading regulations providing high volume, high accuracy weighing while also providing for the total integration of weighing data generated with user IT systems. The WIM 2000 is cost effective, compact, accurate, and has a powerful cloud and networking data capabilities.

The WIM 2000 is also fully capable of doing SOLAS container weighing, such use being subject only to obtaining local country regulatory approval.



WIM 2000 with traffic lights and display board

Product Overview

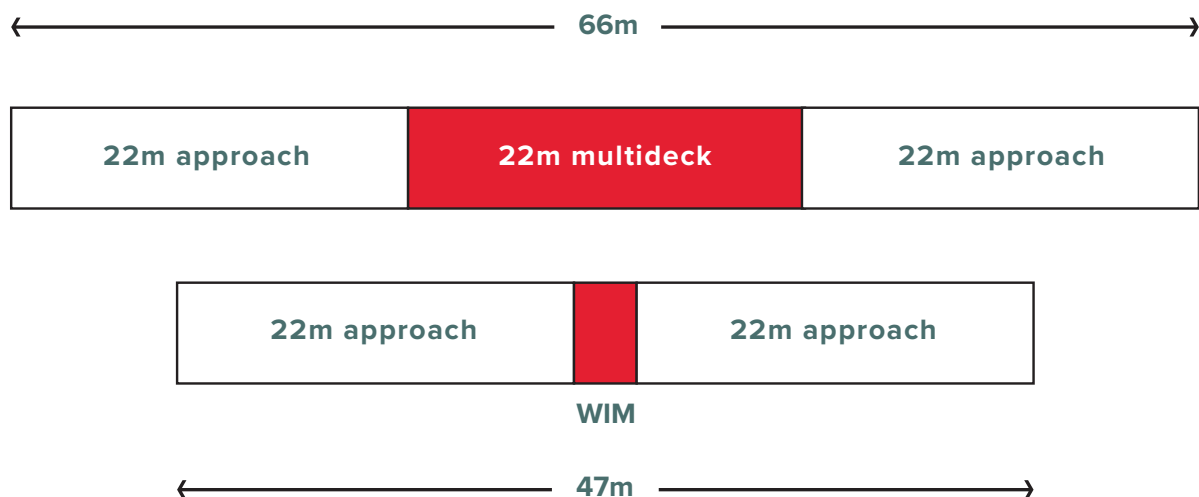
The WIM 2000 comprises a steel weighing deck, indicator, computer, software and a range of optional automation hardware.

The steel weighing deck is approximately 3 sqm and is mounted flush in the ground. The concrete civil works around the deck are therefore straight forward but it is important that the approaches to the WIM 2000 are of a hard surface and are level.

The WIM 2000 is highly robust and can accommodate axle loadings of up to 30T per axle which is exceptionally strong.

Vehicle of any length can be weighed on the WIM 2000 and this is done in-motion at speeds not exceeding 5 kmph. Once complete, vehicle total weight and group axle weight data will be generated.

One of a number of advantages the WIM 2000 has over multi deck weighbridges, is the amount of space required. Taking a normal articulated truck length of 22m and the requirement for the truck to be straight when approaching the weighing device, the relative space requirements are as follows:



Instrumentation

The WIM 2000 is powered by the SW 2000, an indicator developed specifically for the WIM 2000. The SW 2000 is a specific axle weighing indicator and is capable of measuring at speeds of up to 5 kmph the precise loadings of axles as the truck's tyres pass over the WIM 2000 deck.



Proven Operational Accuracy

Trucks are weighed in motion as they pass over the WIM 2000.

The WIM 2000 is capable of weighing approximately 15 trucks per hour. With the addition of APNR number recognition cameras or RFID readers, the hourly volume of weighings can increase to approximately 20 trucks per hour.

The printing of weighing tickets often consumes most of the weighing time, and accordingly if weighing tickets or the underlying weighing data is transmitted electronically to an ERP system or the required recipient, then hourly weighing volumes can be increased further.

Under normal operating conditions, the weighing accuracy of the WIM 2000 has been validated through parallel weighbridge cross testing to be as follows:

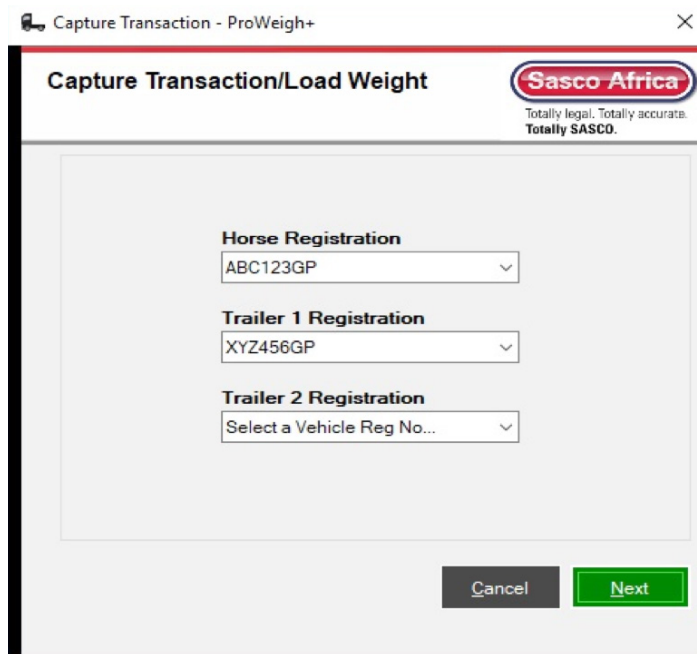
APPROACH SPEED	PERCENTAGE ERROR ON TOTAL WEIGHT	PERCENTAGE ERROR ON AXLE GROUP
3 Kmph	< 1 %	< 2.5 %
5 Kmph	± 1 %	< 2.5 %

The approach speeds in excess of 5 kmph onto the WIM 2000 will impact the accuracy of the system and for this reason the SW 2000 generates data showing the actual speed of the truck speed against the resulting weighing. This information is included on the weighing ticket.

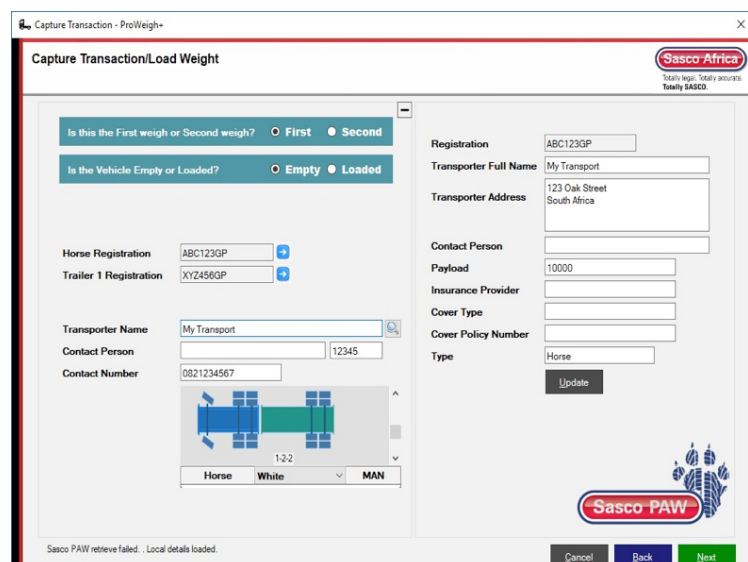
Simple Weighing Sequence

The WIM 2000 operates with ProWeigh+ software to deliver a simple to use **three stage weighing sequence**.

First action: Capture the registrations of the horse and trailer units. This must be inputted on the PC, key board or if Barcodes or QR Codes are being used these must be scanned.



Second action: For units that are pre-loaded on the Fleet Master database in ProWeigh, the correct configuration picture is automatically generated by the software. If not loaded on the Fleet Manager database, select the right configuration picture from the menu for the vehicle.



Third action: 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.

Process WIM Weigh

Vehicle Details

Horse Registration: Horse Steering Axles: TOTAL No. Axles:
 Capacity (KG): Horse No. of Axles: TOTAL No. Axle Groups:
 Tare Weight (KG): Horse No. of Axle Groups: TOTAL Capacity (KG):

Trailer Configuration

Trailer Registration	Vehicle Code	No. of Axles	No. of Axle Groups	Capacity (KG)	Tare Weight (KG)
XYZ456GP	T-D2	2	1	7000	6000

Configuration Vehicle Code: **A1-D2;T-D2**

Axle 1	Axle 2	Axle 3	Axle 4	Axle 5
5100	5100	5100	3450	3300
7700	8800	8800	3500	3500
Pass	Pass	Pass	Pass	Pass

Weigh Load Now

21500
Vehicle Detected

Vehicle Detected

Vehicle Speed (km/h): **1.5**

Abort Weighing **Weigh Completed**

If the vehicle is carrying a container for which a SOLAS weighing is also required, there is an additional **Four Action** in the weighing sequence which requires the Operator to capture the container details, tare weight and vehicle tare.

Capture Transaction - ProWeigh+

Capture Transaction/Load Weight

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Totally legal. Totally accurate.
Totally SASCO.

Container Number:

Container Number ISO Type:

Load Type:

Seal Number:


Container Tare (kg):

Cancel **Back** **Next**


Ticket Generation Functionality

The WIM 2000 has a flexible output functionality that enables weighing results, whether for an axle loading weighing or SOLAS weighing, to be presented in various formats being either human readable, QR code format or dual formats.

An axle loading weighing ticket in readable form is normally printed in the following format:

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	: ****		
		Product	:		
TICKET NUMBER	SC00000023		TICKET DATE	2020/06/01 13:19:00	
VEHICLE DETAILS					
Registration Number	ABC123GP		DEF456GP	GHI789GP	
Type	****		****	****	
Operator	****		****	****	
Contact Person	****		****	****	
Insurance Provider	****		****	****	
Cover Type	****		****	****	
Policy Number	****		****	****	
TRADE WEIGHING DETAILS					
First Weigh Details		Second Weigh Details		Weigh Calculations	
Weight (kg)	15 000	Weight (kg)	35 000	NETT Weight (kg)	20 000
Date Time	2020/06/01 13:18.22	Date Time	2020/06/01 13:18.50	Product NETT (kg)	20 000
Operator	sa	Operator	sa	Total Difference (kg)	20 000
				Total Cost	R0,00
LOADING DETAILS					
Axle Groups	Actual kg	Permissible kg	Difference kg		
Group 1	5 000	7 700	(2 700)		
Group 2	10 000	18 000	(8 000)		
Group 3	10 000	18 000	(8 000)		
Group 4	10 000	18 000	(8 000)		
TOTALS	35 000 kg	61 700 kg	(26 700) kg	Speed 2.6 km/h	
CONSIGNEE DETAILS					
Consignee Code			Address		
Consignee Name					
Document Number	SAS000000023				
Document Type	Sales		Contact Name	****	
Document Weight	0		Contact Number	****	
Consignee Code			Address		
Consignee Name					
Document Number	SAS000000023				
Document Type	Sales		Contact Name	****	
Document Weight	0		Contact Number	****	
The contents of this document are protected by copyright.					
Supplied by Sasco Metrology Services (PTY) LTD (v4.4.1)				Page 1 of 3	

A SOLAS weighing ticket in readable form is normally printed in the following format.

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																																								
	<table border="1"> <tr> <td>Horse Registration:</td> <td>TESTGP</td> <td>Driver Name:</td> <td></td> </tr> <tr> <td>Trailer 1 Registration:</td> <td>TRAILER01GP</td> <td>Captured by:</td> <td>sa</td> </tr> <tr> <td>Trailer 2 Registration:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Transporter Name:</td> <td colspan="3">Test Company</td> </tr> </table>	Horse Registration:	TESTGP	Driver Name:		Trailer 1 Registration:	TRAILER01GP	Captured by:	sa	Trailer 2 Registration:				Transporter Name:	Test Company																										
Horse Registration:	TESTGP	Driver Name:																																							
Trailer 1 Registration:	TRAILER01GP	Captured by:	sa																																						
Trailer 2 Registration:																																									
Transporter Name:	Test Company																																								
CARGO INFORMATION																																									
<table border="1"> <tr> <td>Customer Name:</td> <td colspan="3">Test Company</td> </tr> <tr> <td>Container Number:</td> <td colspan="3">MSKU2666542</td> </tr> <tr> <td>ISO Type:</td> <td colspan="3">ST20</td> </tr> <tr> <td>Load Type:</td> <td colspan="3"></td> </tr> <tr> <td>Container Tare:</td> <td>10 000</td> <td>kg</td> <td></td> </tr> <tr> <td>Seal Number:</td> <td colspan="3">S12346</td> </tr> <tr> <td>Empty Vehicle Weight:</td> <td>14 000</td> <td>kg</td> <td></td> </tr> <tr> <td>Gross Vehicle Weight:</td> <td>80</td> <td>kg</td> <td></td> </tr> <tr> <td>Gross Cargo Weight:</td> <td>-13 920</td> <td>kg</td> <td></td> </tr> <tr> <td>Net Cargo Weight:</td> <td>-23 920</td> <td>kg</td> <td></td> </tr> </table>		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	
Customer Name:	Test Company																																								
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Container Tare:	10 000	kg																																							
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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 _____																																									
<p>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.</p>																																									
<p style="text-align: center;">The contents of this document are protected by copyright.</p>																																									
<p>Supplied by Sasco Africa Holdings (PTY) LTD (v3.1) Page 1 of 1</p>																																									

Example of a typical paper form or electronic form SOLAS weighing ticket generated by either WIM-PW or WIM-UM.

An axle loading ticket in QR form is normally printed in the following format:



Example of prompted QR code

ERP Interfacing

The WIM 2000 operates using the ProWeigh+ software with all the integration functionality that ProWeigh+ offers.

ProWeigh+ offers two distinct integration methods, the first being Business Connector which synchronizes data between your various weighbridges with a central database, from here it can then be integrated into a host of applications including ERP's such as SAP, Sage, and Syspro as well as reporting tools like QlikView and Microsoft PowerBI.

The second method is Web Services which is a standardized messaging protocol which allows you to closely interact with ProWeigh to maintain and monitor various aspects

Figure 1:
ProWaste Webservices

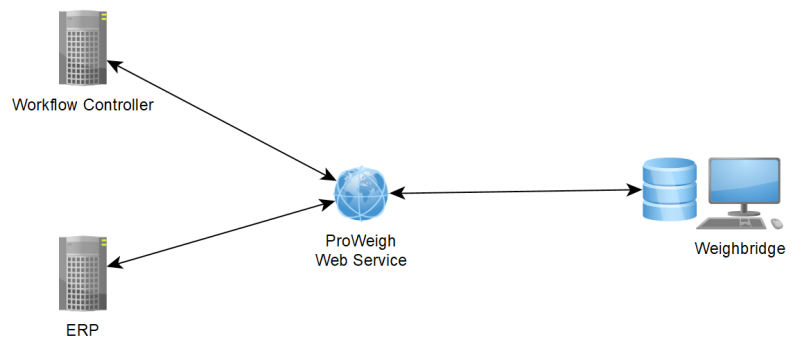
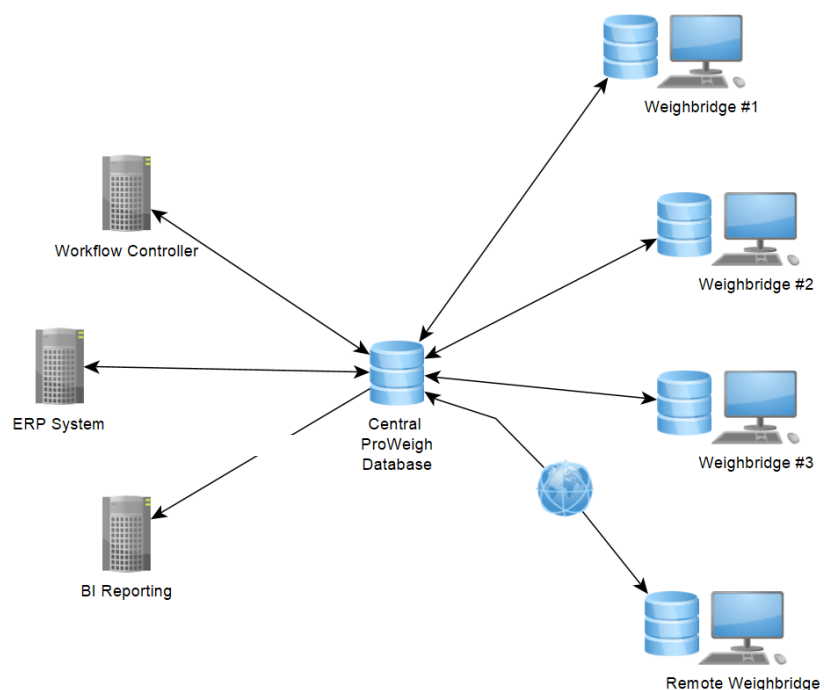


Figure 2:
ProWaste Centralised Database



Automation

The WIM 2000 can accommodate the addition of the following hardware devices to provide for various levels of automation:

- | | |
|-----------------------------|---------------------------------|
| • Robots. | • QR code reader. |
| • Booms. | • RFID reader. |
| • Cameras. | • APNR cameras. |
| • Electronic display board. | • Internet communications card. |
| • Bar code reader. | |

Application Example:

Company A is a logistics and warehousing business. The facility operates 24/7 with all vehicles departing through dedicated exit gate which is manned at all times.

Company A's customers want to ensure that their vehicles are fully compliant with over loading laws and that drivers have a compliant weighing ticket in the vehicle. Some of the vehicles are carrying containers for export and if possible, the transporters would also like to obtain SOLAS compliant weighing tickets at the time of loading.

Company A would also like to automate the exit gate opening process and install a system that provides images of all vehicle leaving the premises. In addition, the weighing solution must also be integrated to **Company A's** ERP system, so that all data generated at the point of weighing can be integrated with databases on the ERP system.

Finally, with space being an issue, **Company A** therefore would prefer a solution that does not require installing a full-length weighbridge.

The optimal solution is the WIM 2000, installed flush in the ground at the exit gate. A weighing cabin will be erected next to the WM 2000, which will house the SW 2000 indicator, a PC and printer. The following automation hardware will also be installed:

- APNR camera to read the departing vehicles registration numbers.
- Traffic lights which ProWeigh will turn go green once the departing vehicles registration read by the APNR camera is uploaded into ProWeigh.
- CCTV cameras linked which will capture images of the departing vehicles and these images will be combined with the weighing data in ProWeigh and then all this data will be transmitted to the ERP system.
- Electrical cabling to the gate motor so that once the weighing is complete ProWeigh can trigger the gate to open.
- Data cabling between the PC and the ERP system in the main office.

Technical Specifications

	WIM - PW
Deck Width	0.76 m
Deck Length	3.2 m
Required Length of Level Approach	7 m
Number of Load Cells	4
Maximum Weighing Speed	5 kmph
Minimum Weighing Speed	3 kmph
Weight Accuracy at Maximum Speed	± 99 %
Weight Accuracy at Minimum Speed	> 99 %
Maximum Number of Axle Groups	4
Maximum Vehicle Length	Unlimited
Weighing Indicator or Integrator	SW 2000
Manned or Unmanned	Manned
PC Required	Yes
Mains Power Required	Yes
Printer Required	Yes
Robots	1
Other Peripheral Device Add-ons	Yes
QR Code Reader	Yes
Total Weight Generated	Yes
Axle Weights Generated	Yes
RTA Compliant Ticket Generated	Yes
Vehicle Weighing Speed Provided	Yes
Direct IT Systems Interfacing Possible	Yes
Cloud Interfacing Possible	Yes
Pre- Loading of Fleet Possible	Yes
Compliant Axle Weighing Ticket	Yes
Compliant SOLAS Ticket	Yes

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