SW500 WIRED SCALE SYSTEM

User Manual

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TABLE OF CONTENTS

EU DECLARATION OF CONFORMITY

PRODUCT DESCRIPTION: SW500 Wired Scale System

We, Intercomp Company
3839 County Road 116
Medina, Minnesota 55340 USA

Declare under the sole responsibility of Intercomp Company that the SW500 Wired Scale System which this declaration relates is in conformity with the relevant Union harmonization legislation, and meets the essential health and safety requirements, and is in conformity with the relevant EC Directives listed below using the relevant section of the following standards and other normative documents.

DIRECTIVE	DIRECTIVE TITLE / PURPOSE
2001/95/EC	On general product safety
2004/108/EC	Relating to electromagnetic compatibility and replacing Directive 89/336/EEC
2009/125/EC	Ecodesign requirements for energy-related products (2005/32/EC recast)
2012/19/EU	On waste electrical and electronic equipment (WEEE) (Directive 20/96/EC recast)
2013/56/EU (amending 2006/66/EC)	Sets out that the limit of 0.0005% of mercury in batteries will also apply to button cell batteries from 1st October 2015. The exemption of button cell batteries in hearing aids will be review by 1st October 2014 AKA Batteries and accumulators directive
2014/31/EU	Of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of Member States relating to the making available on the market of non-automatic weighing instruments Text with EEA relevance. AKA Non-automatic weighing instruments (NAWI)
2014/35/EU	Of the European Parliament and Council of 26 February 2014 on the harmonization of the laws of Member States relating to the making available on the market pf electrical equipment designed for use within certain voltage limits Text with EEA relevance
2015/863 (amending 2011/65/EU	Commission Delegated Directive (EU) 2015/863 (RoHS 3) of 31 March 2015 amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council as regards to the list of restricted substances (Text with EEA relevance). Intercomp declares that the SW500 Wired Scale System is in compliance with the requirements of the European Union Restriction of the use of certain Hazardous Substances in electrical and electronic equipment (RoHS) Directive (EU) 2015/863

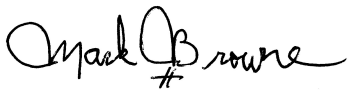
EU DECLARATION OF CONFORMITY

DIRECTIVE	DIRECTIVE TITLE / PURPOSE
EN 45501:2015	Metrological aspects of non-automatic weighing instruments
EN 55011:2009, Class B	Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics-Limits and methods of measurement
EN 61000-6-1:2019	Generic standard, Residential, commercial and light industry environment
EN 61000-6-2:2019	Electromagnetic compatibility (EMC) - Part 6-2: Immunity for industrial environments
EN 61000-6-3:2007+A1:2011	Electromagnetic compatibility (EMC). Generic standards: Emission standard for residential, commercial and light-industrial environments
IEC 61010-1 3.1 Edition, January 1, 2017	Safety requirements for electrical equipment for measurement, control and laboratory use

The safety issues of this measurement equipment have been evaluated under the self-certification provisions of the relevant directives. This product complies with all safety-relevant provisions referring to protection against electrical hazards and other hazards, such as mechanical hazards, fire hazards, noise and vibration.

The related technical construction files are held for inspection in the U.K. at Intercomp Europe Limited.

Signed for and on the behalf of Intercomp Company:



Mark Browne / Quality Manager
Medina, Minnesota USA
December 05, 2019

INTRODUCTION

This manual contains specifications and operating instructions for Intercomp SW500 Wired Scale System.

OPTIONAL EQUIPMENT

PRODUCT	PART NUMBER	DESCRIPTION
Aluminum Ramps Set of 4	100342	15 in x 15 in for 15 in scales. Set of 4
Quik Ramp Scale Ramps	171002	Lightweight, composite ramps
Quik Ramp Scale Ramps with Roll-Off, Set of 4	171005	Extra length ramps with roll-off/levelers. Set of 4
Thermal Ticket Printer	340105	External printer can be connected to indicator
Printer Cable	170002	25-pin connector. Provides RS232 serial connection
Computer Cable	170136	9-pin connector. Provides RS232 serial connection
Battery	330101	NiMH Rechargeable Battery (9V)
Replacement Cables Set of 4	170135	Replacement Cable, Red (560036)
		Replacement Cable, Green (560038)
		Replacement Cable, White (560037)
		Replacement Cable, Black (560035)

SPECIFICATIONS

CONTROLS

DISPLAY KEYS			
ON/OFF	ZERO	BACKLIGHT	PRINT
CLEAR	STORE/ENTER	ACTUAL	TARGET
COMPARE	LF	LR	RF
RR	CG	NUMERIC KEY SCALE	
DISPLAY SCREEN			
4 Line X 20 Character (0.5 inch), LCD Readout			

ELECTRICAL

FUNCTION	DESCRIPTION
Voltage	6 - 15 VDC
Batteries	9V alkaline (standard)
Battery Life	80 hours with alkaline battery (with backlight off)
Filtering	Analog and Digital filtering result in stable weight readings
Input / Outputs	Input: 4 Analog channels
	Output: Digital serial RS232 and USB

PERFORMANCE

FUNCTION	DESCRIPTION	
Speed	≈1 - 3 sec to typical reading (static)	
Accuracy	±0.1% of applied load or ± display graduation, whichever is greater	
Division	SW Standard	6000 lb/ 2800 kg capacity: graduation = 1 lb/0.5 kg
	SW Kart	1600 lb/ 725 kg capacity, graduation = 0.1 lb/0.05 kg
	SW 8.8K	8800 lb/ 4000 kg capacity, graduation = 1 lb/0.5 kg
	SW 20K	20000 lb/ 9070 kg capacity: graduation = 1 lb / 0.5 kg
	SW Motorcycle	1000 lb / 500 kg cap: graduation = 0.5 lb / 0.2 kg

SPECIFICATIONS

ENVIRONMENTAL

FUNCTION	DESCRIPTION
Humidity	10 to 95% non-condensing
Temperature	Operating +14 F to +104 F / -10 C to +40 C
	Storage -40 F to +170 F / -40 C to +75 C

PHYSICAL

ITEM	DESCRIPTION	SPECIFICATION
Standard and Motorcycle Scale	Dimensions	15 in x 15 in x 2.5 in / 381 mm X 381 mm X 635 mm
	Weight	23 lb / 10.5 kg
SW 8.8K and 20K Scale	Dimensions	15 in x 15 in x 4 in / 381 mm x 381 mm x 100 mm
	Weight	35 lb / 15.9 kg
SW Kart Scale	Dimensions	10 in x 10 in x 2 in / 254 mm x 254 mm x 510 mm
	Weight	6.6 lbs / 3.0 kg
Indicator (with cables)	Dimensions	11 in x 8 in x 2.7 in / 279 mm x 203 mm x 685 mm
	Weight	8 lbs / 3.6 kg
Carrying Case	Dimensions	17 in x 11 in x 7 in / 432 mm x 279 mm x 178 mm
	Material	ABS structural foam

INDICATOR OVERVIEW

This section provides an overview on the capabilities and operation of the Model SW500 Indicator and scale system.

INDICATOR CONTROLS

ON/OFF

Press the ON/OFF key to turn the indicator ON and OFF.

ZERO

Press the ZERO key to access the Zero Menu. Press the LF, RF, LR, or RR key to zero an individual scale. Press the ZERO key to zero all four scales. When the scale is turned off, the current zero will be retained. If a car is on the scales and the indicator is turned off, the current weight will be displayed on the indicator when the scale is turned on.

AZT (Auto Zero Tracking)

The SW RFX Indicator has a feature called Auto Zero Tracking (AZT). AZT corrects slight zero changes during normal operation. If small weights are added while the display is at or near zero, the indicator will zero the weights off.

INDICATOR OVERVIEW

Scale Controls (continued)

BACKLIGHT

Press the BACKLIGHT key to turn the backlight on and off.

PRINT (SERIAL OUTPUT)

Press the PRINT key to access the PRINT Menu. Press the 1 key to print the screen. The print format displayed will be the same as the last active screen format used. The following screenshot is an example of a print layout.

```
INTERCOMP, U.S.A.
TEL: 763-476-2531

ACTUAL LBS
LF 232 RF 222
LR 241 RR 206
LEFT 52.50% C 51.39%
REAR 49.61% T 901
```

Press the 2 key to access the PRINTING OPTIONS Menu. The following menu is displayed.

```
 PRINTING OPTIONS
1: TOGGLE CONTINUOUS
    (OFF     )
2: SELECT BAUD RATE
```

In this example, Print Option 1 - TOGGLE CONTINUOUS (continuous serial output) is disabled (OFF). The serial output is an externally available signal that can drive a numeric overhead display, a computer RS-232 input or other peripheral devices

To select the continuous serial output setting, press the 1 key. Four settings are available to select from. Refer to the following table for the available setting functions.

SETTING	FUNCTION
OFF	Continuous output disabled. Print screen enabled
MULTI-LINE	Continuous output enabled, multi-line format
TOTAL ONLY	Continuous output enabled, total only format
13-LINE	Continuous output enabled, 13-line format

INDICATOR OVERVIEW

Indicator Controls (continued)

The Baud Rate of the SW scale must match the Baud Rate setting of the indicator to enable wireless communication. To change the Baud Rate press the 2 key. The active Baud Rate will have an asterisk to the right the of the number displayed. Press the corresponding key to change the Baud Rate. Refer to the Serial Output section for additional information.

CLEAR

When in Normal weighing mode, press the CLEAR key to erase a memory location. Press the CLEAR key to reset the number to 00 when accessing a numeric entry screen. Refer to the Clear Baseline Setup section for additional information.

STORE/ENTER

The STORE/ENTER key is used to store a setup as a target setup. Refer to the Store Baseline Setup section for additional information. The STORE/ENTER key is also used to save a numeric entry.

COMPARE

Press the COMPARE key to compare the actual weight to the target weight. The value is positive when the actual weight is less than target weight. The value is negative when the actual weight is greater than the target weight.

TARGET

The ideal weight setup for the car is described as the Target weight. Press the TARGET key to view the target weight. Refer to the Store Baseline Setup and Recall Baseline Setup sections for additional information.

ACTUAL

Press the ACTUAL key to view the actual weight.

INDICATOR OVERVIEW

Indicator Controls (continued)

CENTER OF GRAVITY - CG

Press the Center of Gravity (CG) key to access Center of Gravity feature. Press the 1 key for Standard CG. Press the 2 key for Vertical CG.

STANDARD CG

1. Enter the axle width dimension.
2. Enter the wheel base dimensions.

The center of gravity screen is displayed. To exit the CG mode, press the CG key. Press any key except key I or 2.

VERTICAL CG

1. Position the car level on the scale. Enter the wheel base length.
2. Enter the height the rear wheels will be elevated to for the vertical CG calculation.

The center of gravity screen is displayed. To exit the CG mode, press the CG key. Press any key except key I or 2.

Refer to the Center of Gravity section for additional information.

NUMERIC KEYPAD

Use the numeric keypad when prompted to enter a number. When the desired number is entered, press the STORE/ENTER key to save the entry.

The Numeric Keypad can be used to recall target setups when the scale is in Normal weighing mode. Refer to the Recalling Baseline Setups section for additional information.

INDICATOR OVERVIEW

Indicator Controls (continued)

LF, RF, LR, RR

The following keys are used when in the Road Racing format.

KEY	DESCRIPTION
LR	Left Front
RF	Right Front
LR	Left Rear
RR	Right Rear

When a key is pressed, the corresponding scale toggles between select and unselect. If the scale is selected, an arrow will be displayed to the left of the weight displayed on the screen.

SPECIAL KEY COMBINATIONS

Press the ZERO and PRINT keys simultaneously to access the Special Key Combination menu.

```
1. SWITCH lb/kg
2. READ ONLY (OFF/ON)
3. HUB MODE (OFF/ON)
  (HIT ACTUAL TO EXIT)
```

1. Switch LB/KG

To switch from the pound unit of measure (lb) to kilograms (kg), press the 1 key to toggle between the lb and kg unit of measure.

2. Read Only Mode

When using multiple indicators, all indicators except for the indicator designated as the master indicator must be set to READ ONLY. Press the 2 key to toggle between OFF and ON. Press the ACTUAL key to exit the screen.

3. Hub Mode

Press the 3 key to access the Hub Mode options. Refer to the Quick Start (Hub Mode) section for further instructions on how to configure the system.

INDICATOR OVERVIEW

Change Display Format (continued)

CHANGE DISPLAY FORMAT

To change the display format (the first screen displayed when the indicator is turned on), press the 1 key and 0 key simultaneously. The following screen will be displayed:

```
1:OVAL      5:DRAG/RALLY
2:CUP/NW          6:WHT+%
3:ROAD RACE       7:TOTAL
4:DIRT TRK   8:TOTAL + 4
```

Press a key (1 - 8) to change the format to corresponding description.

LOCK DISPLAY FORMAT

The Lock Display Format feature allows a specific display format to be displayed immediately after power-up. The different display formats are presented in the Auto Displays and Kart Displays sections. To activate Lock Display Format feature, select the desired display format. Simultaneously press the RF key, the 3 key and CLEAR key. The message DISPLAY CHOICE SAVED will be displayed for approximately 1 second. Turn the indicator off and then back on. The indicator will automatically display the selected format when the indicator is turned on.

To unlock the Lock Display Format feature, simultaneously press the RF key, the 3 key and the CLEAR key. The message DISPLAY CHOICE UNLOCKED will be displayed for approximately 1 second. The Change Display Format menu will then be displayed when the indicator is turned on.

INDICATOR OVERVIEW

Baseline Setup (continued)

BASELINE SETUP

STORE BASELINE SETUP

Up to 99 setups can be stored in the indicator. Press the STORE/ENTER key to store a weight setup as a target setup. Use the numeric keypad to enter the setup and save it in a memory location (from 1 to 99). If a setup has already been stored in the selected location, the following message will be displayed:

```
* THIS MEMORY SPOT *
* ALREADY HAS DATA *
    1: OVERWRITE
    2: EXIT
```

To continue with the save and overwrite the information that currently resides in the location, press the 1 key. To save the setup to another location, press the 2 key to exit the memory location.

MANUALLY ENTER THE TARGET SETUP

To manually enter target weights, press the STORE/ENTER key. Enter setting 00. Press the STORE/ENTER key. Press either the 1, 2, or 3 key to select the method used to enter the target weights (Direct Key-In, Wedge, Target %).

1: DIRECT KEY-IN

Manually entering values in Direct Key-In format enables targets to be entered with the following parameters: Left Front Weight, Right Front Weight, Left Rear Weight and Right Rear Weight.

1. Press the STORE/ENTER key to enter a target setup.
2. Enter 00 and press STORE/ENTER.
3. Press 1 to select the Direct Key-In format.
4. Enter target weight for Left Front Wheel.
5. Enter target weight for Right Front Wheel.
6. Enter target weight for Left Rear Wheel.
7. Enter target weight for Right Rear Wheel.

INDICATOR OVERVIEW

Baseline Setup (continued)

8. Enter a memory location (1-99) to save the target setup entry.
9. The screen will return to Normal weighing mode.

The screen will display the targets entered. Press the ACTUAL key or the COMPARE key to view the actual weight on the scales or to compare the targets entered to the actual weights on the scales.

2: WEDGE

Manually entering values in Wedge format enables targets to be entered with respect following parameters: Total Weight, Left Side %, Rear % and Wedge %.

1. Press the STORE/ENTER key to enter a target setup.
2. Enter setting 00. Press the STORE/ENTER key.
3. Press the 2 key to select the Wedge format.
4. Enter the Total Weight.
5. Enter the Left Side %.
6. Enter the Rear %.
7. Enter the Wedge %.
8. Enter a memory location (1-99) to save the target setup entry.
9. The screen will return to Normal weighing mode.

The screen will display the targets entered. Press the ACTUAL key or the COMPARE key to view the actual weight on the scales or to compare the targets entered to the actual weights on the scales.

INDICATOR OVERVIEW

Baseline Setup (continued)

TARGET %

Manually entering values in the Target % format enables targets to be set with the following parameters: Left Front %, Right Front %, Left Rear %, Right Rear %.

1. Press the STORE/ENTER key to enter a target setup.
2. Enter setting 00. Press the STORE/ENTER key.
3. Press the 3 key to select the Target % format.
4. Enter the Total Weight.
5. Enter the Left Front %.
6. Enter the Right Front %.
7. Enter the Left Rear %.
8. Enter the Right Rear %.
9. Enter a memory location (1-99) to save the target setup entry in.
10. The screen will return to Normal weighing mode.

The screen will display the targets entered. Press the ACTUAL key or the COMPARE key to view the actual weight on the scales or to compare the targets entered to the weights on the scales.

RECALL BASELINE SETUP

To recall one of the 99 setups, use the numeric keypad to access a memory location between 0-99. The following menu will be displayed. In this example, memory location 06 was selected.

```
RECALL SETUP FROM
MEMORY#1-99: 06

(HIT ACTUAL TO EXIT)
```

Enter the desired memory location number. Press the STORE/ENTER key. The scale automatically switches to TARGET mode to display the stored setup. Press the ACTUAL key to view the current weights on the scales. Press the COMPARE key to display a comparison of the current weights to the target weights.

INDICATOR OVERVIEW

Baseline Setup (continued)

CLEAR BASELINE SETUP

To clear a setup from a memory location, press the CLEAR key. The following screen will be displayed. Use the numeric keypad to enter the number of the memory location to be cleared. Press the STORE/ENTER key to save the entry. To exit, press the ACTUAL key. The Clear Baseline Setup feature will clear a baseline setup (target weight) in the selected memory location. The current target weight will not be cleared.

```
CLEAR SETUP FROM
MEMORY #1-99: 01
(OR ENTER '00' TO
CLEAR ALL SETUPS)
```

DISPLAY CONTRAST

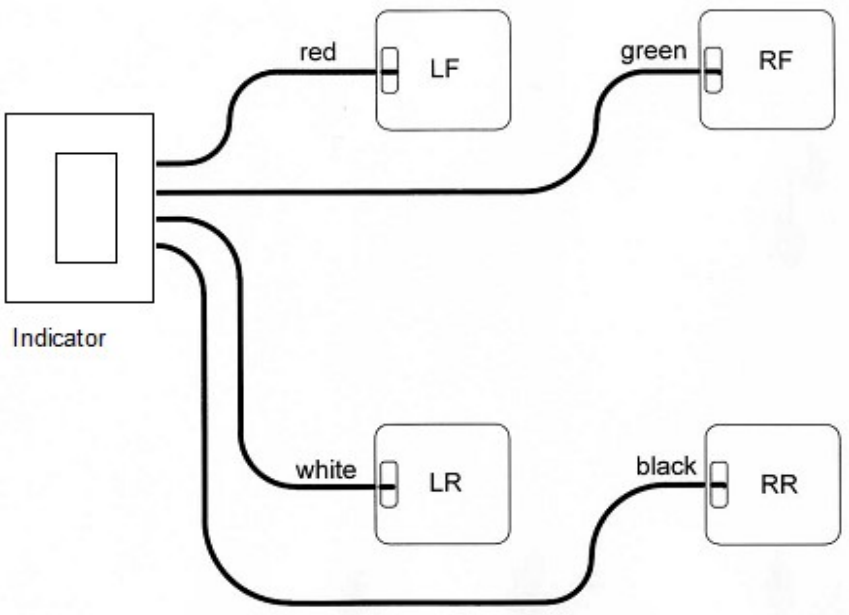
Adjusting the contrast can improve the viewing quality of the display when viewed from different angles. The display contrast is adjusted by pressing the BACKLIGHT key and one of the WHEEL keys simultaneously. Press the BACKLIGHT key and either the RF or LF key simultaneously to increase the contrast. Press the BACKLIGHT key and either the RR key or LR key simultaneously to decrease the contrast.

SETUP

SYSTEM CONFIGURATION

ATTENTION: If using the Precision Hub Plate Scale, refer to the Hub Plate Scale user manual and the Quick Start Hub Mode instructions set forth in the Operation section.

WIRED SYSTEM SETUP CONFIGURATION DIAGRAM



1. Position each of the four scales near the car tire using the following guide. LF by Left Front, RF by Right Front, LF by Left Rear and RR by Right Rear. Turn all of the scales on.
2. Connect one end of each cable to the scale as depicted in the system configuration diagram: LF-Red cable, RF-Green cable, LR-White cable, RR-Black cable.
3. Turn the indicator on. If the scale readings are not zeroed, press the ZERO key.
4. Jack the car onto each scale. If the optional ramps are available, position a ramp and scale in front of each tire. Slowly drive the vehicle onto the scales.
5. When the vehicle is positioned on the scales, refer to the Overview procedure in the Operation section to set up the system to display the desired readings

ATTENTION: When in set in Motorcycle Mode and using motorcycle scale sets, use the LF (red cable) for the Front tire, and the LR (white cable) for the Rear tire. Refer to the Special Display section for motorcycle applications.

OPERATION

QUICK START NORMAL MODE

Arrange the scales as described in the SETUP section referenced on previous page. Turn the indicator on. Turn the scales on. The copyright screen will be briefly displayed followed by the Change Display Format screen. To display the Copyright screen for an extended view, press and hold the ON key when turning the indicator on.

```
1:OVAL     5:DRAG/RALLY
2:CUP/NW         6:WHT+%
3:ROAD RACE      7: TOTAL
4:DIRT TRK 8: TOTAL + 4
```

ATTENTION: If using a SW777RFX Pro Kart scale, menu item #2 will be displayed as KART instead of CUP/NW.

All formats referenced in the menu are fixed display formats with the exception of menu item #3, ROAD RACE. ROAD RACE is a dynamic display format providing the capability to select which wheel weights will be totaled and displayed as the selected weight.

DISPLAY LAYOUT

LINES 1-2

Four weights displayed on the first two lines are individual wheel weights. The weights are displayed in the same pattern as the wheels are installed on the car; Left Front, Right Front, Left Rear, Right Rear.

A specific scale can be selected or removed by pressing the LF, RF, LR, RR key. Each time a position key is pressed, a select arrow will turn on and off on the right side of the weight displayed for a specific scale.

LINE 3

The third line displays the selected weight and the percentage of selected weight to the total weight.

LINE 4

The fourth line displays the total weight on all four scales.

OPERATION

QUICK START HUB MODE

The QUICK START HUB MODE is used with Precision Hub Plate systems. The Quick Start procedure provides instructions to compensate for the weight difference of the Precision Hub Plate System wheel and tire assemblies. Prior to initiating the QUICK START HUB MODE procedure, refer to the QUICK START NORMAL procedure for initial screen setup instructions.

The following Compensation Formula is used to calculate the following hub compensations for each wheel; Tire Weights, Hub Assembly Weights and Cambers.

COMPENSATION FORMULA

Displayed Weight For Each Corner = [Uncompensated Weight* + Tire Assy Weight - Hub Plate Weight]

* If cambers have been entered, the uncompensated weight reflects the camber input.

ATTENTION: When weights are entered for the hub plate and tire assemblies, pressing the ZERO key will zero the system. However, the difference between the tire and hub plate weights for each wheel position may result in the indicator zeroing to a non-zero value.

If using the Precision Hub Plate / Scale System, follow the setup instructions set forth in the SETUP section of the Precision Hub Plate System User Manual.

ATTENTION: Prior to accessing the HUB Mode, weigh each wheel, tire and Hub Plate assembly to be replaced. Record the values for future use.

OPERATION

HUB MODE ENTRIES

1. Turn the indicator and scales on.

2. Press the ZERO key and PRINT key to access the HUB Mode Menu. The HUB MODE menu item will be displayed as either OFF (disable) or ON (enabled).

```
1. SWITCH lb/kg
2. READ ONLY (OFF)
3. HUB MODE(OFF)
 (HIT ACTUAL TO EXIT)
```

3. Press the 3 key to access the HUB MODE screen.

```
1. HUB COMP (OFF)
2. ENTER TIRE/HUB PLT

 (HIT ACTUAL TO EXIT)
```

1) Press the 1 key to toggle the HUB MODE ON.

ATTENTION: When HUB MODE has been enabled (turned ON), the message "HUB COMPENSATION ENABLED!" will be displayed briefly at power-up when the indicator is turned on. The message is a reminder that the system is operating in HUB MODE and the weights are being compensated accordingly.

2) Press the 2 key to enter the Tire Assembly weights and Hub Plate weights. A prompt will be displayed to enter each of the (4) Tire Assembly weights individually. When the tire assembly weights have been entered, a prompt will be displayed to enter each of the (4) Hub Plate weights individually. When the hub plate weights have been entered the display will return to the HUB MODE screen

OPERATION

AUTOMOTIVE OVERVIEW

The SW500 Wired Scale System is designed to independently measure the force applied by each tire of a car. The measurement is referred to as the ACTUAL weight applied by each tire. Corner weights can be entered and will be displayed as the TARGET weight. The COMPARE weight values equate to the amount of weight that needs to be added or subtracted to a CORNER weight to achieve the TARGET weight. For example, when the COMPARE value displayed is a negative (-) value, the ACTUAL weight is greater than the TARGET weight.

The SW500 Wired Scale System can also perform a number of calculations automatically. In lieu of displaying the wheel weights (Actual, Target or Compare), the weights can be displayed as a percentage of the total weight or as a percentage and weight. Additionally, scales can be selected in groups (for example; left front and left rear or left rear and right front) and the scale will calculate the percentage of the total weight that applies to the selected grouping of scales.

The scale has eight default display modes.

DEFAULT MODE	DESCRIPTION
OVAL TRACK	The following parameters are displayed: Individual Wheel Weight, Left Side %, Rear %, Cross %, Total Weight
CUP/NW	The following parameters are displayed: Individual Wheel Weight, Right Side Weight, Front %, Cross %, Total Weight
ROAD RACING	Selection #3 (Road Racing) is a dynamic display format to select the wheel weights to be totaled and displayed as the Selected Weight. Individual Wheel Weight, Selected Weight, Selected % to Total Weight and Total Weight are displayed
DIRT TRACK	The following parameters are displayed: Left Wheel Weight and %, Rear Weight and %, Cross Weight and %, Rear Bite
DRAG/RALLY	The following parameters are displayed: Individual Wheel Weight, Front %, Rear % and Total Weight
WHEELS AND PERCENTAGES	The following parameters are displayed: Individual Wheel Weight, Front Right %, Left %, Right %, Wedge, Right Rear % and Total Weight
TOTAL	The TOTAL option will provide a quick snapshot of the total weight applied to all of the scales in the system
TOTAL + 4	TOTAL + 4 option provides the total weight on all of the scales and displays the individual weight applied to each scale

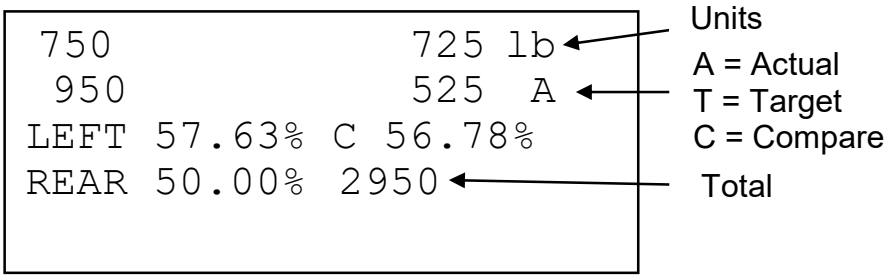
OPERATION

AUTOMOTIVE DISPLAYS

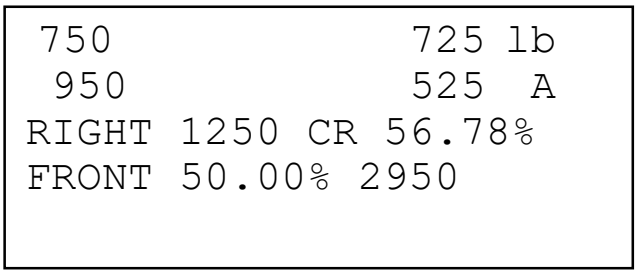
The following displays are representative of the displays referenced in the Automotive Overview section.

OVAL TRACK

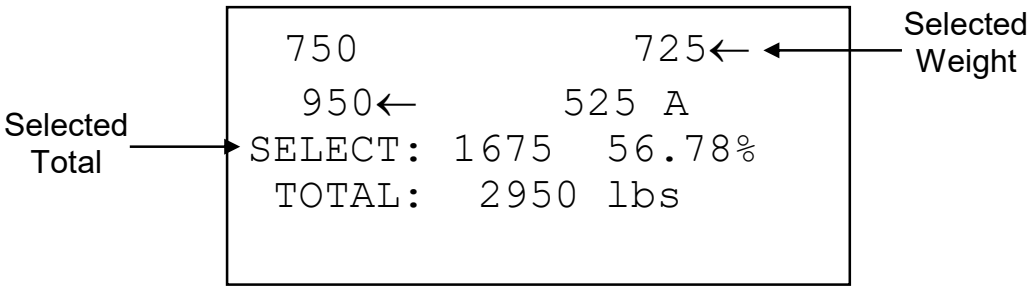
NOTE
CR = Cross = LR + RF



CUP/NW



ROAD RACING



OPERATION

Automotive Displays (continued)

DIRT TRACK

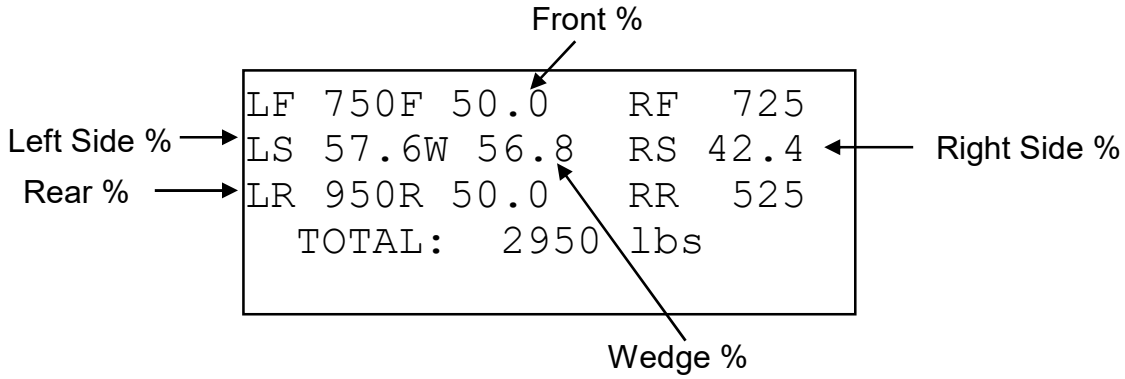
```
LEFT    1700    57.63%
REAR    1475    50.00%
CROSS   1675    56.78%
 REAR BITE    425   A
```

NOTE
Rear Bite = LR - RR

DRAG/RALLY

```
  750                725
   950               525
FRONT 50.00%
REAR  50.00%    2950
```

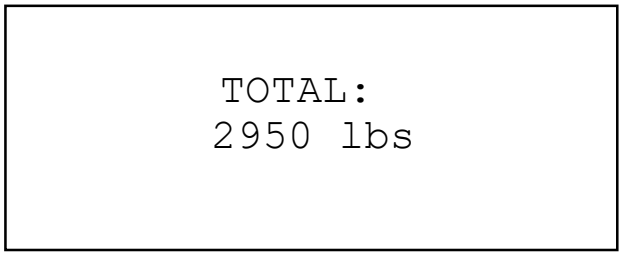
WHEELS AND PERCENTAGES



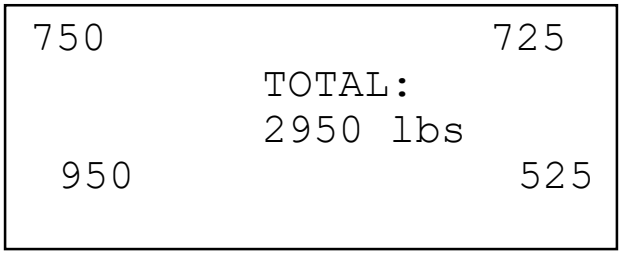
OPERATION

Automotive Displays (continued)

TOTAL



TOTAL + 4



OPERATION

KART OVERVIEW

The SW500 Wired Scale System is designed to independently measure the force applied by each tire of a kart. The measurement is referred to as the ACTUAL weight applied by each tire. Corner weights can be entered which will be displayed as the TARGET weight. The COMPARE weight values equate the amount of weight that needs to be added or subtracted to a CORNER weight to achieve the TARGET weight. For example, when the COMPARE value displayed is a negative (-) value, the ACTUAL weight is greater than the TARGET weight.

The SW500 Wired Scale System can also perform a number of calculations automatically. In lieu of displaying the wheel weights (Actual, Target or Compare), the weights can be displayed as a percentage of the total weight or as a percentage and weight. Additionally, scales can be selected in groups (for example; left front and left rear, or left rear and right front) and the scale will calculate the percentage of the total weight that applies to the selected grouping of scales.

The scale has eight default display modes.

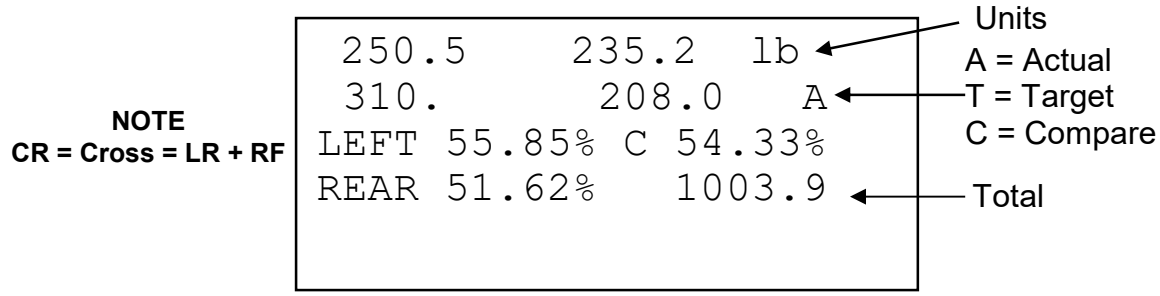
DEFAULT MODE	DESCRIPTION
OVAL TRACK	The following parameters are displayed: Individual Wheel Weight, Left Side %, Rear %, Cross %, Total Weight
KART	The following parameters are displayed: Individual Wheel Weight, Left Side %, Front %, Cross %, Total Weight
ROAD RACING	Selection #3 (Road Racing) is a dynamic display format to select the wheel weights to be totaled and displayed as Selected Weight. Individual Wheel Weight, Selected Weight, Selected % to Total Weight and Total Weight are displayed
DIRT TRACK	The following parameters are displayed: left wheel weight and %, rear weight and %, cross weight and %, Rear Bite
DRAG/RALLY	The following parameters are displayed: Each Wheel Weight, Front %, Rear % and Total Weight
WHEELS AND PERCENTAGES	The following parameters are displayed: Each Wheel Weight, Front Right %, Left %, Right %, Wedge, Right Rear % and Total Weight
TOTAL	TOTAL option will provide a quick snapshot of the total weight applied to all of the scales in the system.
TOTAL + 4	TOTAL + 4 option provides the total weight on all of the scales and displays the individual weight applied to each scale

OPERATION

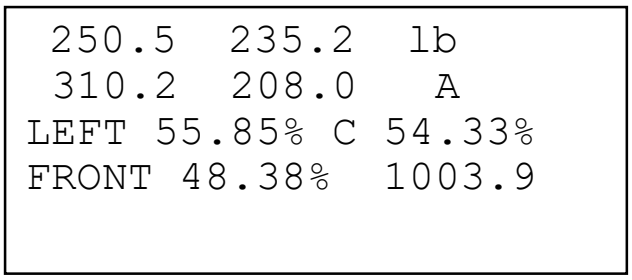
KART DISPLAYS

The following displays are representative of the displays referenced in the Kart Overview section.

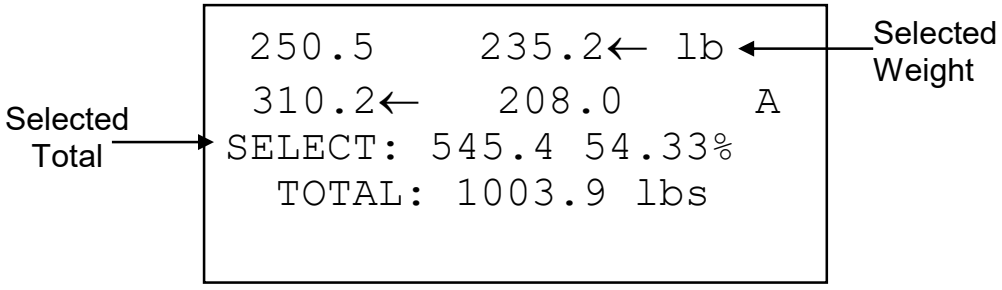
OVAL TRACK



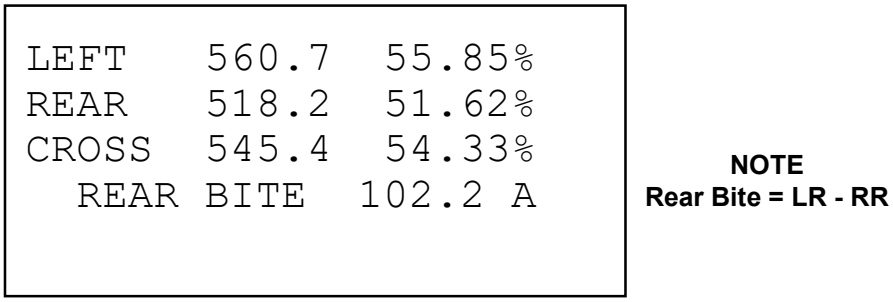
KART



ROAD RACING



DIRT TRACK



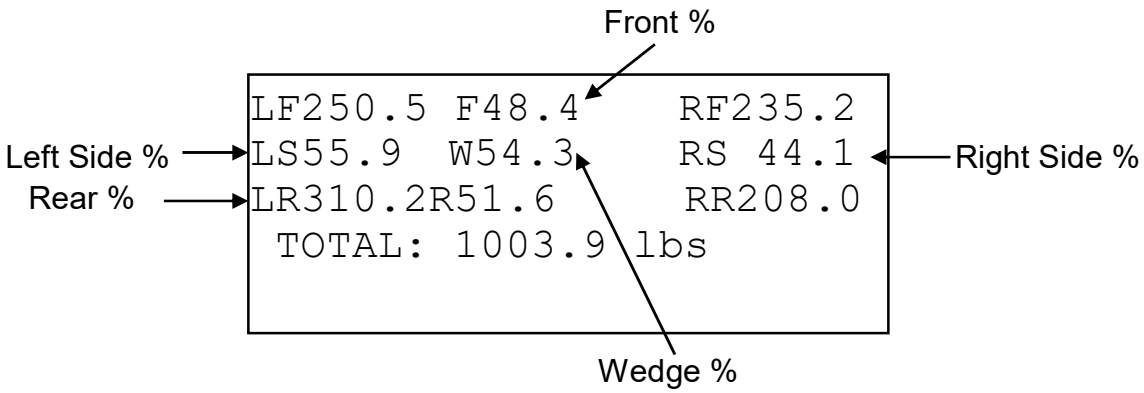
OPERATION

Kart Displays (continued)

DRAG/RALLY

```
 250.5       235.2 lb
 310.2       208.0   A
FRONT 48.38%
REAR 51.62%   1003.9
```

WHEELS AND PERCENTAGES



TOTAL

```
TOTAL:
1000.3 lbs
```

TOTAL + 4

```
250.5              235.2
       TOTAL:
       1000.3 lbs
310.2              208.0
```

OPERATION

MOTORCYCLE DISPLAY

When using motorcycle scale sets, use the LF (red cable) for the Front tire and the LR (white cable) for the Rear tire.

When the Motorcycle display format is selected, the following screenshot will be displayed. The Front Wheel Weight, Rear Wheel Weight, Individual Wheel Weight as % of Total Weight and Total Weight will be displayed.

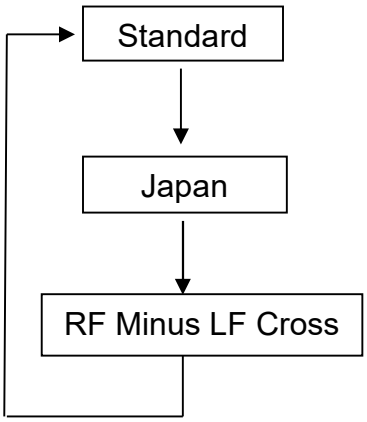
```
FRONT    300      60%
REAR     200      40%

TOTAL    500 lb     A
```

SPECIAL DISPLAYS

There are two Special Display formats available for use with the SW RFX Series Scale System; JAPAN and RF MINUS LF CROSS. The formats can be accessed by simultaneously pressing the LF key, 2 key and CLEAR key and toggling between the two display selections.

The order in which the display formats are toggled is depicted in the following diagram.



The screen will briefly display the selected Display Format and then return to Normal weighing mode. Turn the scale off and then turn it back on to view the selected display format.

OPERATION

Special Displays (continued)

JAPAN VERSION

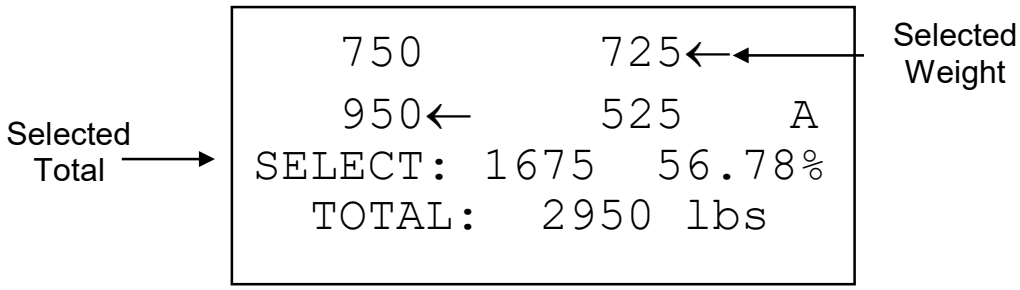
Simultaneously press the LF key, 2 key and CLEAR key to toggle the JAPAN display format. Turn the scale off and then turn on the scale back on. The following screenshot will be displayed.

```
 SELECT RACING TYPE
1:FREE SCALING
2:FIXED SCALING
```

Press the 1 key to select the Free Scaling option. Press the 2 key to select the Fixed Scaling option.

FREE SCALING

The FREE SCALING display format displays each individual wheel weight, the total weight of the selected scales, the percentage of the selected weight to total weight and the total weight. An example of a Free Scaling Display Format is shown below.



FIXED SCALING

The FIXED SCALING display format displays each individual wheel weight, the total of the front end, the total of the left side, the cross percentage and the total weight. An example of a Fixed Scaling Display Format is shown below.

```
  750     725   lb
  950     525    A
FRONT 1475 C 56.78%
LEFT  1700   2950
```

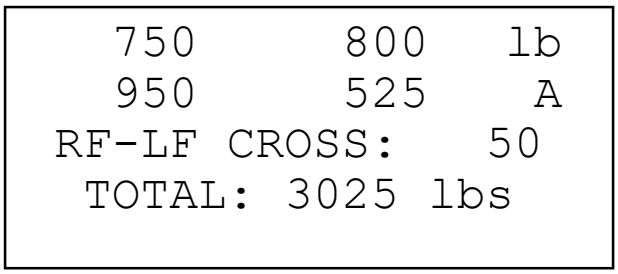
OPERATION

Special Displays (continued)

RF-LF CROSS VERSION

Simultaneously press the LF key, 2 key and CLEAR key to toggle the RF-LF CROSS version display format. The RF-LF Cross formula is the RF Weight minus the LF Weight. Turn the scale off and then turn the scale back on. The following screenshot will be displayed.

When the RF-LF Cross format is selected, the indicator will automatically display the WEIGH Mode. Refer to the following screenshot. There are no other display formats available for viewing. The display information displayed includes each individual wheel weight, the RF - LF Cross weight and the total weight.

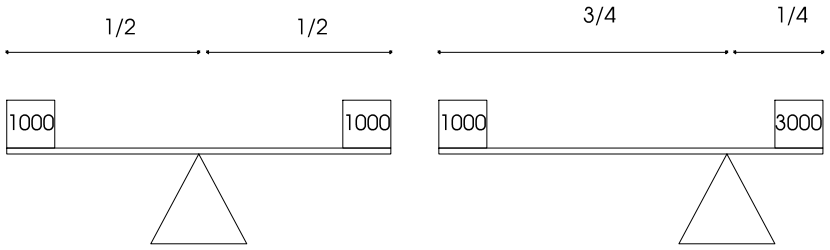


CENTER OF GRAVITY

The Center of Gravity (CG) of an object such as a car, is the point at which the object will balance when placed on a pivot point. The following diagram demonstrates two Center of Gravity scenarios where the weight is represented by the force applied by two tires of the car.

In the first example, the weight applied to each tire is the same. The CG is exactly in the middle of the scale. The second example depicts one tire that is 3X heavier than the other tire. In Example 2, the CG is closer to the heavier tire.

CENTER OF GRAVITY EXAMPLES



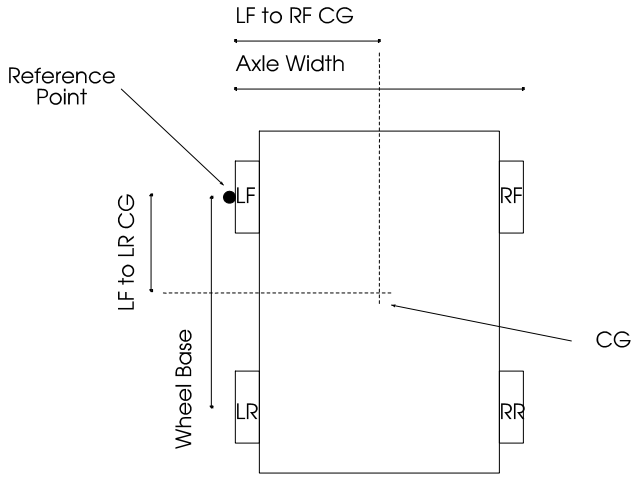
Example 1 **Example 2**

A car has three axis; 1) Front to Back, 2) Left to Right, 3) Top to Bottom. The center of gravity of the first two axis can be determined directly by the weight of each wheel. The Top to Bottom or Vertical axis, requires that one end of the car be raised up. The Top to Bottom or Vertical axis CG is addressed in the Vertical CG section.

CENTER OF GRAVITY

STANDARD CG

The Standard CG calculation requires that the axle width and the wheel base dimensions be measured and entered. Prior to measuring the axle width and wheel base, verify the front tires are aligned straight forward. The axle width should be measured from the outside of the left tire to the outside of the opposite right tire. The wheel base measurement is taken from the middle of a front tire to the middle of a rear tire. The measurements as depicted in the following diagram are the results taken from marked reference points.



STANDARD CENTER OF GRAVITY

CALCULATING STANDARD CG

1. Position the car level with the ground.
2. Press the CG key to access the CENTER OF GRAVITY Menu. Select option #1 to begin calculating Standard CG.
3. A prompt will be displayed to enter the axle width. Enter the axle width.
4. A prompt will be displayed to enter the wheel base length. Enter the wheel base length.

CENTER OF GRAVITY

Standard CG (continued)

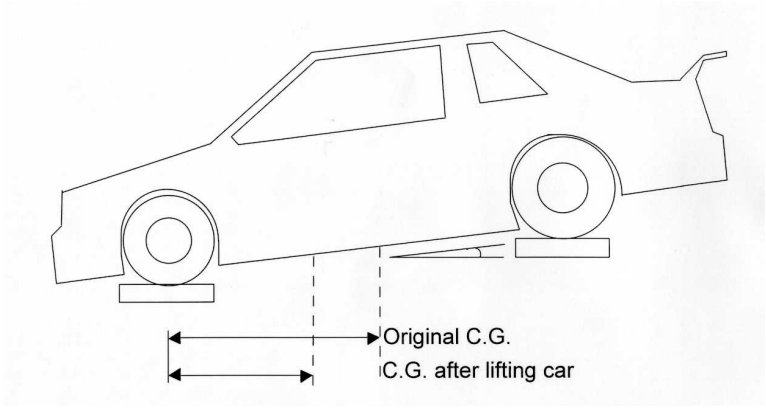
5. The Standard CG location will be displayed from the left front to right front tire and from the left front to left rear tire. Refer to the diagram on the previous page. Additionally the percentage of the wheel base (left front to left rear) and the percentage of the axle width (left front to right front) is displayed. Refer to the following screenshot. The screen information is updated if the wheel weights are shifted.

```
LEFT TO RIGHT:  25.4
 (42.33% OF   60.0 )
FRONT TO REAR:  55.0
 (50.00% OF  110.0 )
```

Press the CG key to return to the regular weight screen.

VERTICAL CG

The Vertical CG is the point that the car would balance if turned on the side. The following diagram demonstrates the theory of Vertical CG. Note that the amount of CG movement has been exaggerated to illustrate the point. If the back of the car is elevated, the front to back center of gravity will move forward. The amount of movement is related to how high the center of gravity has been elevated in the car.



VERTICAL CENTER OF GRAVITY

CENTER OF GRAVITY

Vertical CG (continued)

CALCULATING VERTICAL CG

1. Position the car level with the ground
2. Press the CG key to access the CENTER OF GRAVITY Menu.
3. Select option #2 to begin calculating Vertical CG.
4. A prompt will be displayed to enter the wheel base length. Refer to the diagram referenced in the Standard center of Gravity section. Enter the wheel base.
5. A prompt will be displayed to enter the distance the rear wheels are elevated to.
6. Elevate the back of the car and the scales. When calculating the Vertical CG, it is recommended that the back of the vehicle be elevated one inch for each foot of wheel base.
7. Measure the distance the back wheels were elevated from bottom of the scale to ground. Record the distance in increments of tenths (inches or centimeters).
8. A prompt will be displayed to enter the Wheel Center Height. The height is the Axle Height and is measured from the center of the wheel hub to the edge.
9. When all of the measurements have been entered, the results will be displayed as depicted in the following screenshot.

```
VERTICAL CG:    17.3
ORIGINAL CG:    55.0
CURRENT  CG:    54.3
WB:  110.0 H     10.0
```

10. Press the PRINT key followed by the 1 key to print the Vertical Center of Gravity screen.
11. Press the CG key to return to the regular weight screen.

SERIAL OUTPUT

Serial Output is available on the stereo jack (RS232) and the USB port located on the left side of the indicator. The Serial Output setting has four options to choose from as shown in the following table.

OPTION	DESCRIPTION
1	OFF (on demand print screen)
2	Multi-Line Continuous Output
3	Total Only Continuous Output
4	13-Line Continuous Output

To change the Serial Output setting, press the PRINT key to access the PRINT Menu. Press the 2 key to access the PRINTING OPTIONS Menu. Press the 1 key to view the three Serial Output setting options. Refer to the PRINT (Serial Output) description in the Indicator Overview section for additional information.

The transmitted signal has the following characteristics:

- Fixed 8 data bits, no parity, 1 stop bit.
- Baud Rate is configurable. Refer to the PRINT (Serial Output) description in the Indicator Overview section for additional information on setting the Baud Rate.

MULTI-LINE CONTINUOUS OUTPUT

The MULTI-LINE setting enables a multi-line print output. The number of lines displayed is dependent on the number of scales in the system. The following is an example of a multi-line output using (4) scales.

```
1: 500
2: 1000
3: 1201
4: 1150
3851 lb TOTAL of 04 SCALES
```

TOTAL ONLY CONTINUOUS OUTPUT

When the TOTAL ONLY continuous output is selected, the indicator will transmit a line with the total weight approximately four times per second:

```
"  5002<cr><lf>"
"  5002<cr><lf>"
"  5004<cr><lf>"
```

SERIAL OUTPUT

13-LINE CONTINUOUS OUTPUT

The 13-Line Continuous Output option will transmit 13 pieces of data continuously in a repeating pattern. The following example shows a 13-Line continuous output transmission.

Notes: ASCII <cr> and <lf> follow the weight.
The decimal place is used only if required.

The first character of each line is the Data Identifier. The next group of characters (XXXX.X) follow the data identifier and reference the weight for the specific data description. Refer to the following table for each data identifier and the corresponding weight description. For example, Data Identifier 0 represents the weight for the Left Front.

DATA IDENTIFIER	DATA	DATA IDENTIFIER	DATA
0	Left Front	7	Rear
1	Right Front	8	Front Bite
2	Left Rear	9	Rear Bite
3	Right Rear	:	Cross
4	Left Side	:	Total
5	Right Side	<	Total Selected
6	Front		

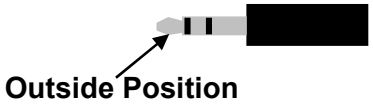
ATTENTION: It is important to note that each line of data will be preceded by an ESC (0x1B) character and a ~ (0X7E) character. The data transmitted will be the actual weights regardless of the mode selected (Actual, Target or Compare).

SERIAL OUTPUT

STEREO JACK RS232

The RS-232 Output is accessed using the stereo jack located on the left side panel of the indicator. The Stereo Jack is typically used to connect the indicator to an optional external printer. The connection will require an interface cable with a 3.5mm stereo plug as depicted below.

The 3.5mm stereo plug has 3 rings (3 connections) on the post.



RING LOCATION	FUNCTION
Outside Ring	-NA-
Middle Ring	TXD
Inside Ring	GND

USB OUTPUT

The USB port is located on the left side panel of the indicator. The USB port is the recommended connection when interfacing with an external computer.

To operate the indicator with a computer, first determine the operating system used by the computer. Next, select the driver that supports FT232R. The driver can be downloaded from the following website:

http://www.ftdichip.com/Drivers/VCP.htm

When the driver has been downloaded, save it to the computer. Connect a USB cable from the indicator to the computer. Initiate a search for the driver folder when prompted by the computer.

TROUBLESHOOTING

ERROR MESSAGES

SCALE ERROR MESSAGES

MESSAGE	DEFINITION
OFF	No communication from the selected scale. Verify scale is turned on (scale LED will blink when scale is working properly). If the LED does not turn on, check the scale batteries.
LOST	Communication has been lost with a scale. Verify scale was not turned off. Verify scale batteries have sufficient power. Replace if using alkaline batteries. Charge batteries if using rechargeable NiMH batteries.
EEPROM	Contact Intercomp Service Department for assistance.
BATT	The scale has a low battery. The BATT indicator will begin to blink. The weight applied to the scale will also start flashing.
CAP	Message will blink if weight present on the scale exceeds the scale capacity, scale is not plugged in or scale may have failed. Reduce load on the scale and zero the scale. If the message persists, check for bad load cell or load cell wiring failure.
UNITS	The scale unit of measure does not match the unit of measure set for the indicator. Toggle the Units setting on the indicator to send the correct unit of measure to the scale.
GRAD	The scale is set to a different grad size (car or kart) than the indicator.

INDICATOR ERROR MESSAGES

MESSAGE	DEFINITION
LOW DISPLAY BATTERY	Message will blink on the screen is low battery power. Replace batteries if using alkaline batteries. Charge batteries if using rechargeable NiMH batteries.
EEPROM ERROR ENTER CODE: 00	EEPROM check fail. Contact Intercomp Service Department for assistance.
HUB COMPENSATION ENABLED!	This is not an error, but a notice that the Hub Mode Compensation setting is enabled. If not using a hub plate system, disable the Hub Mode. Press the ZERO key and PRINT key simultaneously followed by 3 key. Press the 1 key to switch HUB MODE setting from ON to OFF.

MAINTENANCE

POWER / BATTERY

The SW500 Indicator is powered by 9V alkaline battery. Access to the battery is located on the back of the indicator. To change the battery, lift the battery holder up and out on Remove the old battery. Install new battery paying special attention to polarity. Push the battery holder back in. The scale will operate approximately 80 hours with a new alkaline battery.

An optional battery charger is available for use with a rechargeable 9V NiMH battery. Refer to the Optional Equipment section for additional information.

WARNING: Do not plug in the battery charger if using non-rechargeable 9V alkaline batteries. Damage could result to the batteries and the scale.

The indicator will operate indefinitely when using the battery charger to charge the NiMH battery. It will take approximately 12 to 16 hours to completely recharge the battery. A fully charged 9V NiMH battery will operate for approximately 35 hours. Battery life will be less when using the backlight.

The SW500 Indicator can detect when battery power is low and will flash a Low Battery message on the indicator screen. The indicator will shut off if the batteries are not charged or replaced after the low battery warning is displayed.

AUTO-OFF

The SW500 Wired Scale System has an AUTO-OFF feature to conserve battery power and extend battery life. In situations where keys are not pressed, serial data has not been sent or the weigh readings have not changed for **10** minutes, the backlight will automatically turn off.

In situations where keys are not pressed, serial data has not been sent or the weigh readings have not changed for **60** minutes, the indicator will automatically turn off.

HOW TO CONTACT INTERCOMP SERVICE

Please provide the following information when requesting service for the SW500 Wired Scale System.

1. Item Description and Part Number (if available)
2. Serial Number(s) of Item (if available)
3. When was item purchased (mm/yyyy)?
4. Where was item purchased (company/location)?

For Intercomp Service call or fax:

Main Office: 763-476-2531
Toll Free: 1-800-328-3336
Fax: 763-476-2613

Or complete the Service Support request form at:
http://www.intercompcompany.com/service-contact.html

NOTES

Corporate Office
3839 County Road 116
Medina, MN 55340 U.S.A.
Tel. 763-476-2531, 1-800-328-3336
Fax: 763-476-2613
www.intercompcompany.com

Intercomp Service Department
3839 County Road 116
Medina, MN 55340 U.S.A.
Tel. 763-476-2531, 1-800-328-3336
Fax: 763-476-2613