Erection 3105

J-STAR ELECTRONICS

MODEL 5 and MODEL 15 ELECTRONIC SCALE INDICATORS

INSTALLATION INSTRUCTIONS OPERATION MANUAL & SERVICE PARTS

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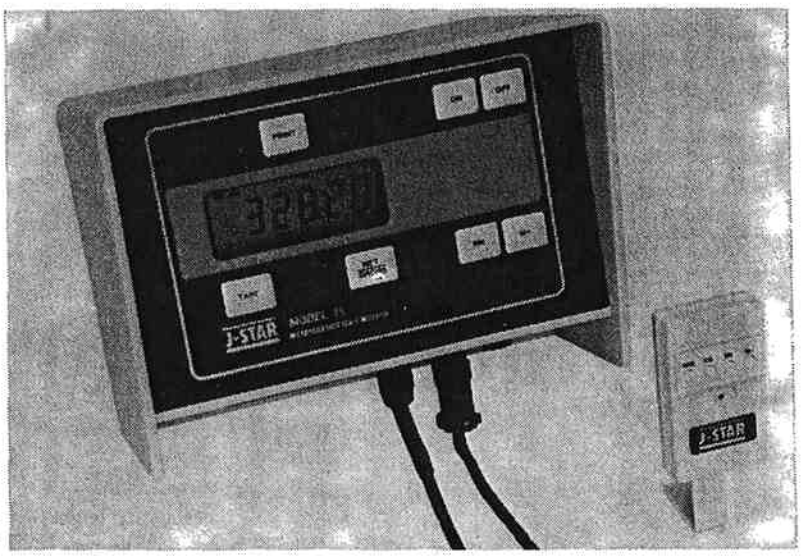
INTRODUCTION

The successful operation of your system depends upon the care it is given and the way it is operated. This manual has been carefully prepared and illustrated to make operation as easy as possible.

Read the entire manual carefuly and familiarize yourself with the operation before using the scales. For further information check with your Distributor.

MODEL 5



MODEL 15
(WITH OPTIONAL TRANSMITTER)

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GENERAL INFORMATION

The Electronic Scale System consists of one or more load cells and the Indicator.

The Scale System has been designed for use in outdoor environments and is weatherproof.

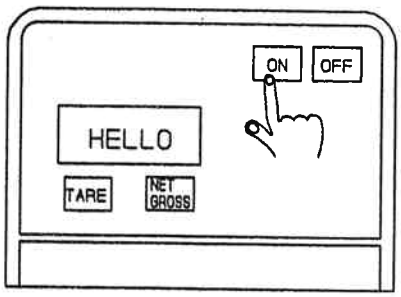
Operation is performed by pressing the keyboard on the front of the Indicator Panel. Feedback to the operator is by the Backlite Liquid Crystal Display on the Panel.

The Indicator operates from a 12 VDC power source.This can be a standard 12 VDC battery or a regulated 12 VDC power supply. IF a LOW BATTERY condition exists (less than 10.5 volts), this will be indicated on the display by the message LO BAT. During this condition the unit cannot be balanced or calibrated.

Your scale will measure total or gross weights of material. The System can also be used with a Tare Weight, in which case it will record weight added or removed since the last recorded Tare Weight. This last method is used to determine net weights or loads and is also used for batch weighing applications.

GETTING STARTED

The Panel



POWER ON

The operator can keep track of the operation of the Indicator by observing the small messages in the top and bottom edges of the large display window on the Panel.

When using the keyboard, the indicator responds to the operator as follows:

1) As each key is pressed an audible "beep" will be heard. If the beep is not heard, the key hasn't been adequately pressed to activate it or the weight on the scale is not stable.

2) Messages (annunciators), which are generally 3 or 4 letter abbreviations for an operation, will appear at either the top or bottom edge of the display to confirm to the operator that what he has requested is being executed.

3) When the weight is not stable the indicator displays a flashing "bell" shaped annunciator to tell the operator it is processing or stabilizing information. While this annunciator is flashing the indicator is not ready for, nor will it accept further input.

NOTE: The bell shaped annunciator refers to stability. There may be applications, such as weighing animals, when it is not possible for the reading to perfectly settle down. In these cases it is necessary to turn the bell annunciator off as described in the Setup And Calibration Procedure section of this manual.

In the upper RH corner of the panel you will find the ON and OFF keys. Pressing the ON key starts the unit. After about 4 seconds the unit will start and is indicated by a "HELLO" message on the display. However, the unit will not be ready for stable operation until it has been allowed to warmup for at least 10 minutes. In cold weather, allow 20-30 minutes for warmup. Pressing the OFF key will shut off power to the unit.

Test Function

If the ON key is depressed a second time after the "HELLO" message displays, the unit conducts a test of itself. During the test it will display program parameters and the display annunciates the word TEST. This function is not used during normal operation. Should you enter the test mode, which requires nearly a minute to complete, it can be cancelled by pressing any key except ON.

OPERATION

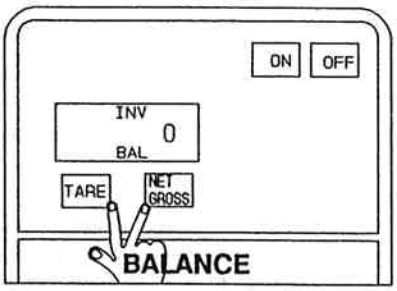
POWER ON

The indicator starts up in the GROSS weight mode.

This can be verified by observing the annunciator INV (*inventory*) at the top of the display.

BALANCING

After the display is warmed up and stable, the indicator should be balanced with no weight on the scale. Do this by pressing the NET/GROSS key and then while still holding it pressing the TARE key and hold both for one second. BAL will be displayed at the lower display to verify the operation. If 'INV' an '0' are not displayed, rebalance.



IMPORTANT: When balancing the scale, it must be empty and the display must be stable. Beware that if the scale is not empty during balancing, it will be in error. In a mobile application the vehicle must be stopped and on level ground.

Balancing can be done at any time, but if the bell shaped annunciator is flashing, the unit will not balance. The indicator "remembers" balance weights even when power is turned off but it should be checked regularly. Balance is affected by large temperature changes and by physical environment such as mud or snow buildup.

GROSS (INV) WEIGHING MODE

The INV annunuciator displayed in this mode stands for *Inventory* .

In the Gross (INV) mode, the Indicator displays the weight of items on the scale. If the scale is empty and the display is not zero, rebalance the indicator.

NET WEIGHING MODE (Using Tare Weights)

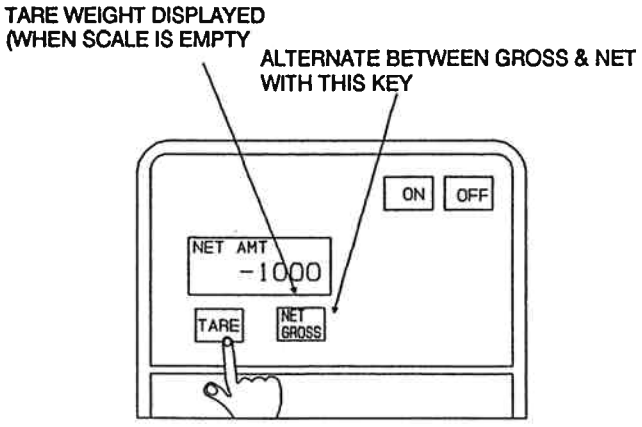
This method involves recording a TARE weight with the system (tare this weight off from future loads).

The NET mode does not function until a Tare Weight is entered. Therefore, if you change to the NET mode with "no Tare weight entered," the indicator displays a series of dashes.

Tare Weights can be entered in either GROSS or NET modes as follows:

With the Tare load on the scale and when the display is stable, press the TARE key. The display will then be in the NET mode and read zero. When the load is removed, the display indicates the Tare Weight as a negative value. Examples of a tare weight might be an empty truck to which you want to learn how much load has been added later; or a loaded truck to which you want to learn how much load has been removed later.

NOTE: The indicator does not "remember" Tare Weights if power is turned OFF. They must be entered again to use.



TARE

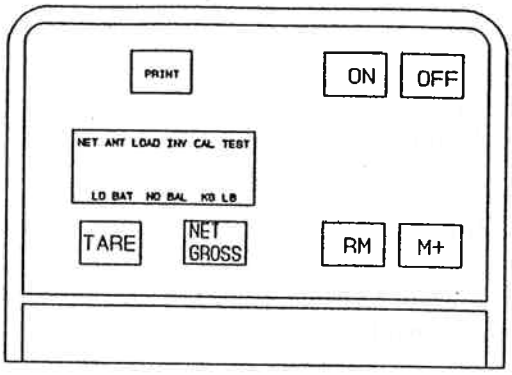
After the Tare Weight has been entered, the system will display the weight that is either added to or subtracted from the Tare Weight. When weight is added the display will be positive. When weight is removed the display will be negative and is the actual weight removed; not the difference between the Tare Weight and weight removed.

During the NET mode if you want to know the GROSS weight (NET plus TARE weights) on the scale, press the NET/GROSS key. This toggles the mode display between NET and GROSS.

MODEL 15 FEATURES

Memory Function

The Model 15 allows you to add or accumulate weights in memory. To do this in either GROSS or NET modes, simply press the M+ key with the load on the platform. Each time you press M+ the displayed weight is added to whatever value is currently in memory and the annunciator LOAD appears to verify function. To observe the accumulated value in memory, press RM (recall memory) key. You can recall the memory regardless of whether a load is or is not parked on the platform.



MODEL 15

NOTE: The indicator does not "remember" values in memory if the power is turned OFF.

To clear (re-zero) the memory, press the RM key and while still holding it, press the TARE key.

XT Option

The Model 15 can be used with printers, remote displays and computer interfaces, if the optional XT Expansion Board is installed. Contact your Distributor for additional information. See the XT Users Manual for more information, if the XT option and printer are used. See the TR4 Users Manual for more information.

Remote Zero Option

The Model 15 can be used with an optional TR4 Transmitter/Reciever. The remote transmitter can be used to perform the same functions as the keys on the keyboard with exception of ON and OFF. Printing occurs automatically when AUTO PRINT is enabled as described in the Setup And Calibration section of this manual.

OPERATION SUMMARY

KEY(S)	DESCRIPTION
ON	Turns the indicator on. If power is already on, holding ON for one second starts the display test.
OFF	Turns the indicator off.
NET/GROSS	Toggles the display mode between the gross (INV) and net (NET AMT) modes.
TARE	Puts the indicator in the net mode and zeroes the display.
<GROSS+TARE>	Balances the indicator.
The Following For Model 15 Only	
RM	Displays weight in memory.
M+	Adds the displayed weight to the memory.
<RM+TARE>	Clears the accumulated memory and sets memory at zero.
PRINT	Prints the displayed weight with a net or gross tag if XT option and printer are purchased.

WEIGHING EXAMPLES

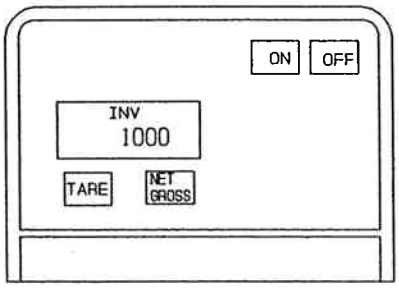
EXAMPLE 1. Typical Weighing Sequence In A Batch Mixing Application

1. Press ON. Your display will read HELLO for a short time.

2. Allow a 10 minute warm up period (20 - 30 minutes in cold weather).

3. Hold NET/GROSS and press TARE, "BAL" will be displayed for a short time and then the display will read 0.

4. Add the first ingredient until the desired weight is reached. Let's use 1000lbs.

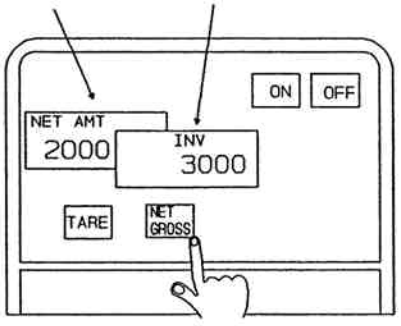


5. Press the TARE key. The mode changes to NET AMT and the display changes to 0.

6. Add the next ingredient. In this example assume 2000 more lbs. are added. The display will read 2000.

7. At any time the total (gross) weight can be viewed by pressing NET/GROSS. To return to the net weight display press NET/GROSS again. In this example the GROSS weight display will be 3000 lbs. (1000 + 2000).

PRESSING NET/GROSS KEY ALTERNATES DISPLAY BETWEEN NET AND GROSS MODES

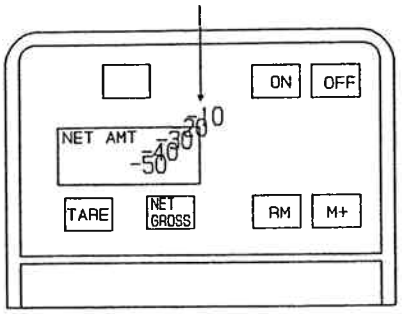


8. If more ingredients are required, then repeat steps 5 and 6 until loading is completed.

9. To begin unloading, press TARE to zero the display.

10. Dump material until the desired weight is reached. The displayed number will be negative to show that weight has been removed.

DISPLAY COUNTS DOWN WHILE UNLOADING



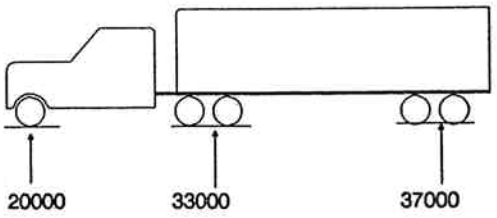
11. Repeat steps 9 and 10 as required.

EXAMPLE 2. Typical Weighing Method To Accumulate Axle Weights (requires memory, Model 15 only)

All weighing should be done with the scale in a level position.

The balance setting of the indicator should be periodically checked to compensate for a possible changing balance weight or significant temperature changes. The amount will vary with changes to the scale (mud or snow buildup, etc.) or with the magnitude of temperature changes. Large temperature changes can result in significant zero shifts. Correct by using the balance procedure.

Assume it is required to find the total load of a truck with the following axle weights.



1. Press ON. Your display will read HELLO for a short time.

2. Allow a 10 minute warmup period (20-30 minutes in cold weather).

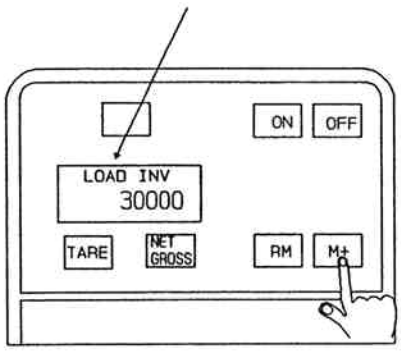
3. Hold NET/GROSS and press TARE, "BAL" will be displayed for a short time and the display will read 0.

4. Hold RM and press TARE to zero the accumulator memory.

5. Drive the first axle on the platform.

6. Press M+ after display stabilizes to add the displayed weight to the accumultor memory. "LOAD" will be displayed for a short time.

DISPLAYS WHILE ADDING TO MEMORY



7. Drive the next axle on the platform.

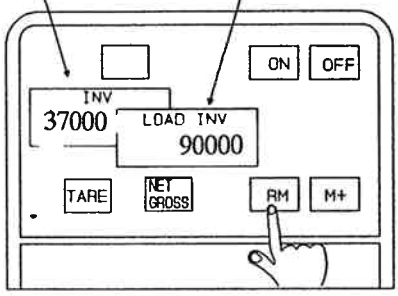
8 . Press M+ to add the displayed weight to the accumulator memory.

9. Repeat steps 7 and 8 to weigh the 3rd axle.

10. Press RM to display the accumulated weight. "LOAD" will be displayed as long as RM is held down.

PREVIOUS DISPLAY

DISPLAY WHILE HOLDING RM KEY



MAINTENANCE AND TROUBLE SHOOTING

MAINTENANCE:

The Model 5 and Model 15 scale indicators do not require regular maintenance to operate properly, however calibration of the scale system should be checked once a year to maintain the accuracy of the system. The manual supplied with the weighing portion of the system contains maintenance information for that specific product, *i.e.* Platform Scale, Mixer, Etc., but these general rules apply to all all systems:

1. Verify that there is no physical interference between the weighing surface and the frame.

2. Check that the load cell is not bound up in the mount. Verify that there is a slight amount of play between the load cell and mount.

3. If there are any moving parts in the weighing system (for example the power take off shaft of a mixer) make sure they are well lubricated and move easily.

4. Verify that the weighing surface is level with the frame so that all load cells are equally loaded and the weighing surface doesn't rock from corner to corner.

5. Apply a load to each corner of the weighing surface and verify that the corners read the same +/- 1 display increment. The easiest way to do this is stand on or hang from each corner.

TROUBLE SHOOTING:

The following table lists common problems and their possible cause, if a problem not listed in the table occurs contact your Distributor. All tests assume the scale system is on and warmed up for 10 to 30 minutes.

SYSTEM	CIRCUIT CONDITION	CORRECTIVE ACTION
I. System Dead	Power Switch On	Check fuses. Replace blown fuse. Check power cable for loose connection to the battery, or power supply. Voltage must be 10-1/2 V. minimum.
II. Display is unstable (varies more than 4 increments up and down in 5 seconds) . . or . . Display is unstable, gradual shift of weight in one direction (more than 10-20 increments in 1 hour)	Power On	Remove junction box cable from bottom of indicator. If display is still not stable, then indicator needs repair. **IMPORTANT:** On Model 5 after S/N 2681and Model 15 after S/N 2224 this test will not work. Display will flash 9999's. Use a simulator to test indicator stability or use a shorting wire between pins of J902 to eliminate flashing 9999's. If the indicator passes II. above, then disconnect load cells from junction box until the defective load cell is located. If all load cells check out O.K, then the junction box is defective. Check for loose or dirty connections, if none, contact your Distributor for repair or replacement.
III. System inaccurate, small error.	Power Switch On and Circuit Balanced	Contact your Distributor for calibration instructions.
IV. System inaccurate, 10% or more error.	Power Switch On and Scale Balanced	Apply weight to each corner to determine which load cell is defective. Before replacing, check for binding or interference with the mount.

INSTALLATION REQUIREMENTS

INDICATOR MOUNTING:

Various mounting plates are available. The indicator is easily attached by hooking the top of the indicator over the plate and securing with two #10-24 x 5/8" bolts and nuts. Figure 1.

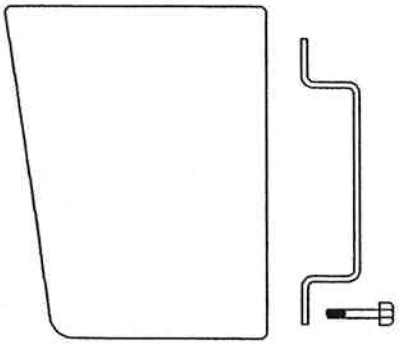


Figure 1

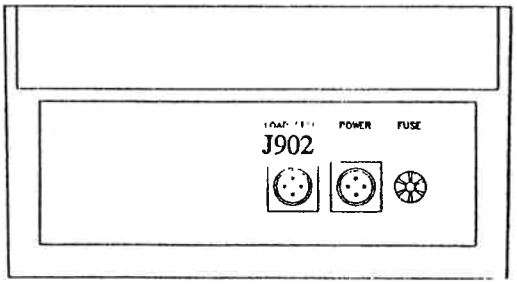


Figure 2 Bottom View

POWER CONNECTION:

The power cable should be connected directly to a vehicle battery or regulated power supply. The scale end of the power cable is connected to the indicator as shown in Figure 2. Connect +12 VDC to red wire and GROUND to white wire. The indicator is fused at 4 amps.

TABLE 1: Power Cable Connections:

J901

Wire Color	Wire Function
Red E1 PIN 1	Battery (+12VDC)
Black E2 PIN 2	Ground
Green	Not Used This Model
Black	Not Used This Model

LOAD CELL AND JUNCTION BOX CONNECTIONS:

The indicator is designed to operate with strain gage load cells. The indicator will be supplied with an interconnection cable going to the load cell junction box. If a new cable is required or if a longer installation dictates that a cable be made, consult your Distributor for required parts.

To connect the load cells, plug the J-Star supplied interconnect cable from the load cell junction box into the connector labeled J902 and located on the bottom of the scale. (See Figure 2).

Connect the cables from the load cells to the junction box terminals as follows (See instructions on junction box cover):

TABLE 2: Load Cell Connections In Junction Box:

J902

	Terminal Color	Description	
E3	A) Red	+Excitation	PIN 1
E6	B) Black	-Excitation	PIN 4
E5	C) White	+Signal Out	PIN 3
E4	D) Green	- Signal Out	PIN 2
	E) Blue	Shield	

NOTE: If load cells are not manufactured by J-Star, color codes of wires may not match J-Box.

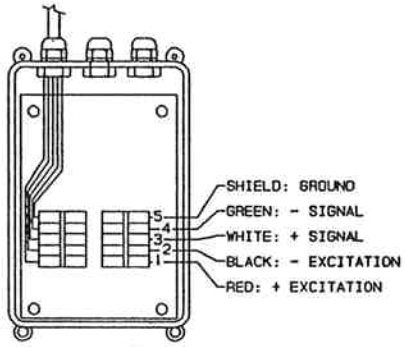


Figure 3

SPECIFICATIONS

SYSTEM

Operating Characteristics

Load Range	Up to 99,999 lbs. depending upon application
Accuracy	System 99.75% or 99.5% depending on load cell used
Power Requirements	12VDC (10-1/2 VDC min. 13VDC max.)
Temperature Range	
(Operating)	-20 to 140 degrees F
(Storage)	-40 to 180 degrees F
Remote Zero Option (TR4)	Operates up to 100 feet
LCD Back Light	Standard

JUNCTION BOX

Cable	5/16" dia. x 15' or 30' long standards. Also available in 50',70' & 90' Lengths
Capacity	4 Load Cells
Weight	2 pounds

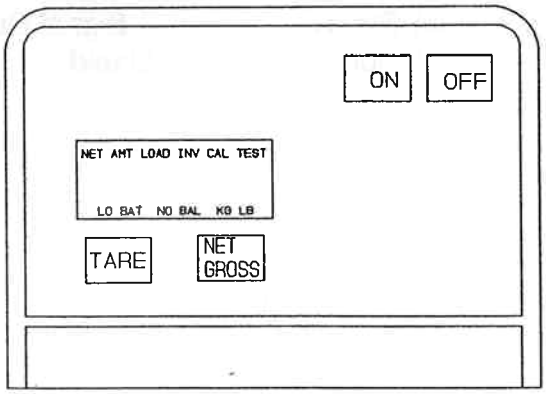
(Optional Duplex Kit Provides for up to 8 Load Cells)

LOAD CELLS

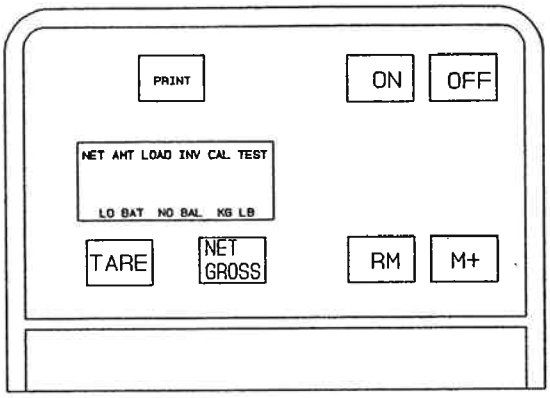
Operating Characteristics

Capacity	Depends on load cell
Overload Safety Factor	200% typical

PARTS LIST



MODEL 5
P/N 141620



MODEL 15
P/N 141503

ACCESSORIES

Part Number	Description
824461	Power Cord
141880	Junction Box, 30' Cable
141879	Junction Box, 15' Cable
143968	Junction Box, 30' Cable w/Lightning Protection
823872	AC/DC Converter (12VDC Power Supply)
824352	10' Trailer Extension for Power Cord w/Tractor Plug
141941	Junction Box Cable Extension Kit For Tractor Cab Mounting
141826	Receptacle For Tractor Plug

MODEL 5 AND 15
SETUP AND CALIBRATION PROCEDURE

! IMPORTANT !

Do not attempt to recalibrate the scale indicator unless it is absolutely necessary. Indicators are factory precalibrated to the load cells they are shipped with. If the indicator is to be used with load cells different from the cells originally used with the indicator it may be necessary to make an internal change. If you are moving the indicator to a system with a different kind of load cell, contact your Distributor for assistance. If the indicator is suspected to be inaccurate, then proceed with the calibration. To change calibration values you must have a known weight available or a load cell simulator. The known weight must be a minimum of 25 percent of the scale capacity.

GETTING STARTED, AN OVERVIEW OF SETUP

Setup and calibration of the Model 5 and Model 15 is done from the front panel. It is not necessary to open the indicator to change switch settings or turn a potentiometer. You will press the NET/GROSS and ON keys at same time to start calibration. The scale will show you which parameter it is ready to work on, and after a two second delay, the parameter itself. You will press the NET/GROSS and TARE keys if you wish to change this value. We will explain this in detail on the next page. To enter the new value you will press ON. You can continue in this manner until the scale is set as you wish. When you are done, you press TARE then ON at same time to go back to regular weighing. If you have set all possible parameters, the scale will go back to weighing by itself.

TEXT CONVENTIONS

We will be working with the keys and display. We will describe each key or part of the display the same way each time we refer to it. We will use the following plan:

DISPLAY INDICATIONS: Numbers or messages on the main display will be enclosed in single quotes i.e. '

ANNUNCIATORS INDICATIONS: An annunicator is one of the small signs around the main display. Annunicators will be described with the annunicator capitalized and in single quotes, i.e. 'INV'.

SWITCH OR KEY NAMES: Switches will be shown by capital letters and no quotes, i.e. TARE. Some operations require pressing and holding one key then pressing a second key. At the end of this, you should be holding two keys down at the same time. This will be designated with an arrow, i.e. NET/GROSS—>TARE.

To start the set up and calibration procedure press and hold NET/GROSS then press ON (NET/GROSS—>ON) and hold both keys for approximately one second . The indicator will beep when the keys have been held long enough and the 'CAL' annunicator in the main display will begin flashing. This annunicator will continue to flash as long as the indicator is in the setup and calibration procedure. You may release the NET/GROSS and ON keys at this point.

All of the parameters are set in one of the following three ways:

For most of the parameters, the indicator displays a message for one second to describe the parameter to be set, then changes to display the present value. To change the value, press NET/GROSS and the value will change to the next choice. When the suitable choice is displayed press ON to store the new value and advance to next parameter.

When entering numbers for overrange, calibration weight, time and date, NET/GROSS advances the flashing digit by one. To change another digit press TARE and the next digit to the left will begin flashing and can now be changed by pressing NET/GROSS as shown above. If you "over-shoot", the numbers continually loop or repeat from 9 to 0. When the digit is what you want, press TARE to move to the next digit. Note that the star annunciator (in the upper left corner of the main display) represents 100,000 pounds and should be off when a number is ready to be entered. If it is not, continue pressing NET/GROSS until the left most digit is correct and the star is off. Continue this way, using the GROSS/NET and TARE keys until the value is set the way you want it. After the correct value has been entered press ON to store the new value.

Some of the parameters (input and output units-LB/KG) show the label and parameter at the same time. To change the value, press NET/GROSS and the value will change to the next choice. After the correct choice has been made press ON to store the new value.

The calibration routine can be exited at any time by pressing and holding TARE then pressing ON (TARE-ON).
Note: ON must be pressed before TARE—>ON or any change to the displayed parameter will not be saved.

CALIBRATING THE INDICATOR

The following text describes the parameters, their possible values, and descriptions of what they do. The parameters may not appear in the order listed here. Depending upon options installed - see tables at end of this section.

NOTE: Depending on the revision level of indicator and installed options, your indicator may not have all of the following parameters. Please refer to the tables at the end to determine what parameters you should have. The indicator revision level maybe determined by entering the test mode. Press ON after indicator warmup.

We recommend that the scale operator contact your Distributor before attempting to change any of the setup and calibration parameters. Items marked with an * affect the scale indicator's performance and should only be modified by trained service personnel. Continue through these parameters by pressing ON or exit the setup and calibration routine by pressing TARE-- >ON at any time..

1. To begin, press and hold NET/GROSS then press ON until the indicator beeps and the 'CAL' annunicator begins flashing.

2. **sEt t** Enter time with hours, am/pm, minutes

The time is set using standard 12 hour format, with the am/pm letter set to 'A' for AM and 'P' for PM. Use the NET/GROSS key and the TARE key to change the time value.

Press ON.

3 **sEt d** Enter date

Enter month and day. The system makes no provision for leap years. Use the NET/GROSS key and the TARE key to change the date.

Press ON.

4. **sEt Yr** Enter year

Use the NET/GROSS key and the TARE key to change the year.

Press ON.

DISPLAY OPTIONS

5. **tc** 1, 2, 4, 8 Time constant

The time constant changes the responsiveness of the display to weight variations. 1 is the fastest and 8 is the slowest. Recommended values are 4 for batching applications and bin scales and 8 for platforms. Change by pressing NET/GROSS until the desired time constant is displayed.

Press ON.

6. **out** LB or KG Select pounds or Kilograms

Output units (display units.) Allow the displayed weights to be in either pounds or kilograms.Press NET/GROSS for desired selection. Recalibration is not required after changing the output units.

Press ON.

NOTE: 2 thru 4 support a time and date option which is not yet a standard product.

***7. cntS** .1, .2, .5, 1, 2, 5, 10, 20, 50, 100 Display count size

The count size determines the increment the scale will count by. The count size should normally be the scale capacity divided by 4,000. Setting the count size too low (less than capacity/4000) does not increase the accuracy of the scale system and can cause an unstable display. Use NET/GROSS key to select desired count size.

Press ON.

8. stAbl on or off Stability feature

Stability, commonly known as motion detection, must be on to calibrate the scale.

When motion detection is 'on', the bell (🔔) annunciator on the display will flash when the displayed weight is not stable. When the weight is not stable, the following functions are disabled until the weight is stable: print, balance, calibration and memory accumulation. When 'off', zero tracking (OtrAc) is also automatically set to 'off'. Stability must be on to allow calibration later in this procedure.

Use the NET/GROSS key to select 'on' or 'off.'

Press ON.

9. OtrAC on or off Zero track feature

When 'on' is selected, the scale will automatically zero the display, compensating for minor variations in zero balance. For example: if mud or snow accumulates on the weighing surface of a platform scale, the display will continue to display zero. This feature functions only when the displayed weight is within two counts of zero and is stable. The calibration procedure will automatically exit after over range is set if zero tracking is on.

Zero tracking must be set to 'off' to calibrate the scale. After calibration OtrAc may be reset to 'on'. Use the NET/GROSS key to select 'on' or 'off'.

Press ON.

10. tr4 clr or nEt TR4 option, Model 15 only

Applies to use of tr4 option only. One of four buttons on TR4 transmitter may be reprogrammed to perform either, 'clr' (clear memory) or 'nEt' (net/gross) functions. Refer to TR4 Users Manual for more information. Use the NET/GROSS key to select 'clr' or 'nEt'.
Press ON.

11. AutoP on or off Auto print feature, Model 15 only

When 'on' and a printer is connected, the scale will automatically print after each of the following keys are pressed: CM, PRINT, TARE, NET/GROSS, RM and M+. When NET/GROSS or TARE is pressed the weight displayed is printed and then the normal key function is performed. Use the NET/GROSS key to select 'on' or 'off'. Refer to XT Users Manual.

Press ON.

***12. in** LB or KG Select pounds or kilograms

Input units. Allows the calibration weights to be entered as pounds or kilograms. For example if weights are to be displayed as kilograms but the weights used to load the scale are certified in pounds, the input units are LB's and the output units are KG's. Press NET/GROSS for selection.

Press ON.

*13 o rng any valid weight Scale over range capacity 40,000

The overrange value is set by J-STAR for the application the indicator is to be used in. Do not change this value unless the indicator is moved to a different capacity scale. In this case the overrange value should be set at 5% above the rated capacity (i.e. 42000 for a 40000 lb capacity scale.) Use the NET/GROSS key and the TARE key to change the over range.

Press ON.

To exit the setup and calibration procedure at this point without changing the scale calibration press TARE– >ON.

***14. bAl** ------
Allows the scale to be balanced before calibration weights are added. Press the NET/GROSS key and hold, then press the TARE key (NET/GROSS– >TARE). The instrument will beep and display 'BAL' when balancing is achieved.

Press ON.

***15. Add** ------
At this point weight should be added to the scale or simulator switch moved to .2 mv/v or .4 mv/v. If the weight added is less than 5% of the scale capacity the indicator will continue to prompt to add weight. Recommended weight is 25 percent or more of scale capacity. See the J-STAR simulator manual for specific instructions on its use.

Press ON.

***16. cal** any valid weight
Enter the amount of calibration weight added to scale using NET/GROSS and TARE keys. Pressing ON after entering the calibration weight returns to the gross mode, and calibration is complete. When weight is removed from scale, indicator should display 0(zero). If not, repeat the calibration process.

DISPLAYING SETUP INFORMATION

After calibration the test procedure should be run to check for correct values. To do this press ON. The indicator will beep and begin a test. After the display test is completed the indicator setup information. The following table lists the parameters displayed and a short description of each parameter:

MESSAGE	*DESCRIPTION*
1. test pattern	display test
2. tc	the display time constant
3. cntS	display count size
4. stAbl	on or off (model 15 rev f or later)
5. OtrAc	on or off (model 15 rev f or later)
6. tr4	clr or net (model 15 rev f or later)
9. rng	used by service personnel only
10. prgno	program revision

Calibration Parameters for model 5 or 15, revision 'D'

Action	Display	Options
Select Time Constant	tc	1, 2, 4, 8, 16
Select Output Units	out	LB, KG
Select Count By	cnt	.1, .2, .5, 1, 2, 5, 10, 20, 50, 100
Select Input Units	in	LB, KG
Enter Over Range Value	o rAng	System overrange limit value. Should be 105% of system capacity.
Balance Scale Now	baL	Any weight, balance to zero.
Add Calibration Weight Now (may be simulator)	Add	Any weight greater than 100 and at least 5% of capacity.
Enter Calibration Value	CaL	Calibration value for system. Adjust to match known weight.

Calibration Parameters for model 15, revision 'F'

Action	Display	Options
Select Time Constant	tc	1, 2, 4, 8
Select Output Units	out	LB, KG
Select Count By	cnt	.1, .2, .5, 1, 2, 5, 10, 20, 50, 100
Enable Motion Detector	stAbL	on, Off
Enable Zero Track	0trAc	on, Off
4 Channel Remote Option	tr4	nEt, Clr
Enable Auto Print, with XT option	AutOp	on, Off
Select Input Units	in	LB, KG
Enter Over Range Value	o rAng	System overrange limit value. Should be 105% of system capacity.
Balance Scale Now	baL	Any weight, balance to zero.
Add Calibration Weight Now (may be simulator)	Add	Any weight greater than 100 and at least 5% of capacity.
Enter Calibration Value	CaL	Calibration value for system. Adjust to match known weight.

Calibration Parameters for model 5, revision 'G'.

Action	Display	Options
Select Time Constant	tc	1, 2, 4, 8
Select Output Units	out	LB, KG
Select Count By	cnt	.1, .2, .5, 1, 2, 5, 10, 20, 50, 100
Enable Motion Detector	stAbL	on, Off
Enable Zero Track	0trAc	on, Off
Select Input Units	in	LB, KG
Enter Over Range Value	o rAng	System overrange limit value.Should be 105% of system capacity.
Error, Zero Track Enabled. (Zero track must be off to set the next parameters.)	Error 0trAc	none Displayed only if OtrAc on.
Balance Scale Now	baL	Any weight, balance to zero.
Add Calibration Weight Now (may be simulator)	Add	Any weight greater than 100 and at least 5% of capacity.
Enter Calibration Value	CaL	Calibration value for system. Adjust to match known weight.

NOTE: Each line of the tables represents one parameter that may be adjusted with the calibration routine.

Calibration Parameters for model 15, revision 'G', without XT

Action	Display	Options
Select Time Constant	tc	1, 2, 4, 8
Select Output Units	out	LB, KG
Select Count By	cnt	1, .2, .5, 1, 2, 5, 10, 20, 50, 100
Enable Motion Detector	stAbL	on, Off
Enable Zero Track	0trAc	on, Off
4 Channel Remote Option	tr4	nEt, Clr
Select Input Units	in	LB, KG
Enter Over Range Value	o rAng	System overrange limit value.Should be 105% of system capacity.
Error, Zero Track Enabled. (Zero track must be off to set the next parameters.)	Error OtrAc	none Displayed only if OtrAc on.
Balance Scale Now	baL	Any weight, balance to zero.
Add Calibration Weight Now (may be simulator)	Add	Any weight greater than 100 and at least 5% of capacity.
Enter Calibration Value	CaL	Calibration value for system. Adjust to match known weight.

Calibration Parameters for model 15, revision 'G', with the XT option.

Action	Display	Options
Select Time Constant	tc	1, 2, 4, 8
Select Output Units	out	LB, KG
Select Count By	cnt	1, .2, .5, 1, 2, 5, 10, 20, 50, 100
Enable Motion Detector	stAbL	on, Off
Enable Zero Track	0trAc	on, Off
4 Channel Remote Option	tr4	nEt, Clr
Enable Auto Print	AutOp	on, Off
Select Input Units	in	LB, KG
Enter Over Range Value	o rAng	System overrange limit value. Should be 105% of system capacity.
Error, Zero Track Enabled. (Zero track must be off to set the next parameters.)	Error OtrAc	none Displayed only if OtrAc on.
Balance Scale Now	baL	Any weight, balance to zero.
Add Calibration Weight Now (may be simulator)	Add	Any weight greater than 100 and at least 5% of capacity.
Enter Calibration Value	CaL	Calibration value for system. Adjust to match known weight.

NOTE: Each line of the tables represents one parameter that may be adjusted with the calibration routine.

Calibration Parameters for model 15, revision 'G', with the XT and Clock option

Action	Display	Options
Enter Time	sEt t	HHAMM H=hour, A=am/pm, M=minute
Enter Date	sEt d	MM DD M=month, D=day
Enter Year	sEt y	YY Y=year
Select Time Constant	tc	1, 2, 4, 8
Select Output Units	out	LB, KG
Select Count By	cnt	1, .2, .5, 1, 2, 5, 10, 20, 50, 100
Enable Motion Detector	stAbL	on, Off
Enable Zero Track	0trAc	on, Off
4 Channel Remote Option	tr4	nEt, Clr
Enable Auto Print	AutOp	on, Off
Select Input Units	in	LB, KG
Enter Over Range Value	o rAng	System overrange limit value. Should be 105% of system capacity.
Error, Zero Track Enabled. (Zero track must be off to set the next parameters.)	Error 0trAc	none Displayed only if 0trAc on.
Balance Scale Now	baL	Any weight, balance to zero.
Add Calibration Weight Now (may be simulator)	Add	Any weight greater than 100 and at least 5% of capacity.
Enter calibration Value	CaL	Calibration value for system. Adjust to match known weight.

NOTE: Each line of the table represents one parameter that may be adjusted with the calibration routine.