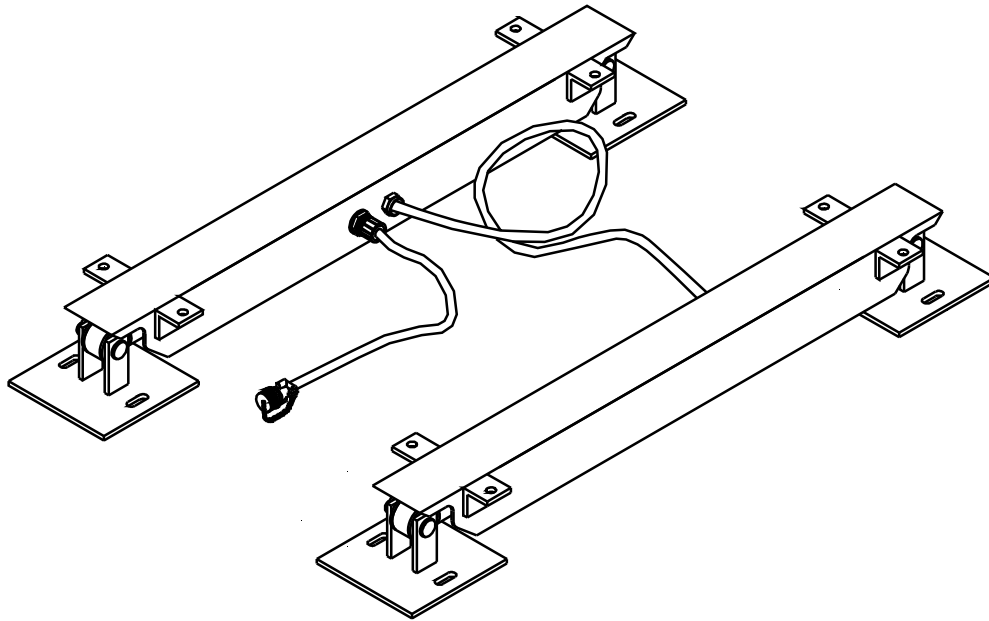


KLU Series

Universal Weighbars

Operator's Manual



RICE LAKE[®]
WEIGHING SYSTEMS
To be the best by every measure[®]



Jamieson Equipment Company
www.jamiesonequipment.com
toll free 800.875.0280



Contents

1.0	Introduction.....	1
	1.1 Safety	1
2.0	Technical Specifications	2
3.0	Installation	3
4.0	Parts List	4
5.0	Maintenance	8
	5.1 Calibration	8
6.0	Troubleshooting	10
	6.1 General	10
	6.2 Drifting	10
	6.3 Abnormally Large Reading	10
	KLU Series Limited Warranty	14
	For More Information	15

© Rice Lake Weighing Systems. All rights reserved. Printed in the United States of America.
Specifications subject to change without notice.
Rice Lake Weighing Systems is an ISO 9001 registered company.
August 27, 2013



1.0 Introduction

The electronic weighing equipment you have purchased has been manufactured using high quality components and the latest production techniques to ensure reliable, trouble-free operation for years to come. To obtain the best possible performance from your weighing equipment, please read this manual carefully.

The load bar consists of a steel tube containing load cell mounts, load cells, and mounting pads. Each bar contains two factory calibrated load cells. The load bars are of solid construction and, therefore, do not require any horizontal checking (check rods). Load bars are designed to withstand horizontal loads in the same range as their capacity without any damage. Care should be taken to remove the possibility of horizontal impacts with the scale platform. Impacts or collisions tend to create very high forces.

The versatility of the load bars allows any platform or container to become a weigh scale by placing a set of bars beneath them. Various indicator combinations can be matched to the load bars to meet specialized applications.

1.1 Safety

Safety Symbol Definitions:



Indicates a potentially hazardous situation that, if not avoided could result in serious injury or death, and includes hazards that are exposed when guards are removed.



Indicates information about procedures that, if not observed, could result in damage to equipment or corruption to and loss of data.

General Safety



Do not operate or work on this equipment unless you have read and understand the instructions and warnings in this manual. Failure to follow the instructions or heed the warnings could result in injury or death. Contact any Rice Lake Weighing Systems dealer for replacement manuals. Proper care is your responsibility.



Failure to heed may result in serious injury or death.

DO NOT allow minors (children) or inexperienced persons to operate this unit.

DO NOT operate without all shields and guards in place.

DO NOT jump on the scale.

DO NOT use for purposes other than weight taking.

DO NOT place fingers into slots or possible pinch points.

DO NOT use any load bearing component that is worn beyond 5% of the original dimension.

DO NOT use this product if any of the components are cracked.

DO NOT exceed the rated load limit of the unit.

DO NOT make alterations or modifications to the unit.

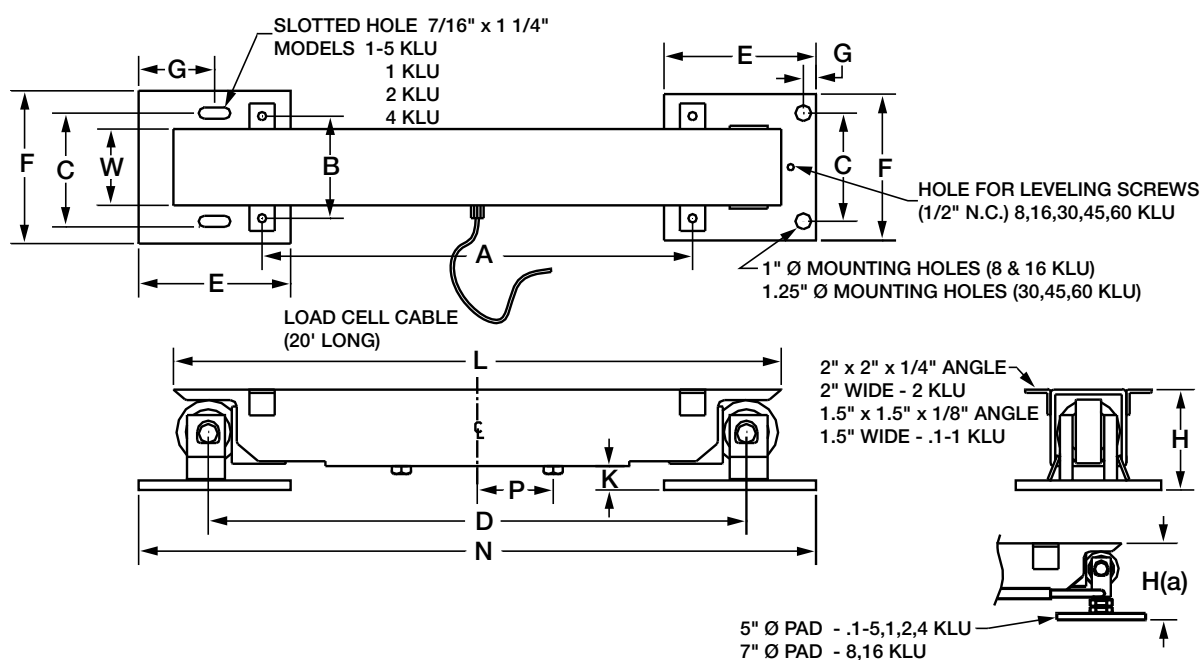
DO NOT remove or obscure warning labels.

Keep hands, feet and loose clothing away from moving parts.

2.0 Technical Specifications

For all KLU Series Load Bars	
Nominal Output	2.5 mV/V *
Max. Excitation Voltage	+15V D.C.
Thermal Shift	0.0012% FS/°F
Thermal Sensitivity Shift	0.0008% of Reading/°F
Hysteresis	0.02% FS
Non Linearity	0.02% FS
Operating Temp. range	-40 to 105°F (-40 to 40°C)
Overload Capacity	150% of Rated Capacity
Side Discrimination	1000:1
Bridge Resistance	350 Ohms
* Output is standardized for each load bar. Contact factory for details.	

Table 2-1. Specifications



KLU Model	Capacity (lb)	A	B	C	D	E	F	G	H	H(a) Portable Bar	K	L	N	P	W
*.1,.2,.3	100 to 300	15	5	4 1/4	L-2 1/4	6	6	3	3 7/8	4 1/4 - 4 3/4	7/8	22	L+3 3/4	---	3
*0.5,1	500 to 1000	15	5	4 1/4	L-1 3/4	6	6	3	3 7/8	4 1/4 - 4 3/4	7/8	22	L+4 1/4	---	3
2	2000	L-12	5	4 1/8	L-2 1/4	6	6	3	4	4 1/2 - 5	1	27-48	L+3 3/4	(L/2)-12 1/2	3
4	4000	L-12	5	4 1/4	L-2 1/2	6	6	3	4	4 1/2 - 5	1	28-72	L+3 1/2	(L/2)-12 1/2	3
8	8000	L-12	6	4 1/2	L-3 1/4	8	6	1	5 1/4	6 - 6 1/2	1 1/4	30-96	L+4 3/4	(L/2)-13 3/8	4
16	16000	L-12	6	4 1/2	L-2 3/4	8	6	1	5 1/4	6 - 6 1/2	1 1/4	30-96	L+5 1/4	(L/2)-13 3/8	4
30	30000	L-12	7	8	L-4 1/2	8	10	1	6 15/16	---	1 15/16	34-120	L+5 1/2	(L/2)-15 1/4	5
45	45000	L-12	7	8	L-4 1/2	8	10	1	6 15/16	---	1 15/16	34-120	L+5 1/2	(L/2)-15 1/4	5
60	60000	L-12	8	8 1/2	L-5 1/2	12	11 1/2	1	7 7/8	---	1 7/8	44-120	L+5 1/2	(L/2)-20 1/4	6
60KLUR	60000	10	8	8 1/2	L-5 1/2	12	11 1/2	1	7 7/8	---	1 7/8	44-120	L+6 1/2	(L/2)-20 1/4	6
60KLUP	60000	10	8	---	L-5 1/2	6	8	---	---	7 7/8	1 7/8	44-120	L+3/4	(L/2)-20 1/4	6

*These Load Bars available in only 22" lengths.
All measurement are in inches.

Table 2-2. Dimensions

3.0 Installation

The following points are to help ensure proper installation of the load bars. If any further assistance is required, please contact your nearest factory or dealer.



Important

When planning an outdoor location for the load bars, choose a site which will allow for adequate drainage away from the scale. Immersing the load cells in water can damage the load cells and void the warranty.

- Try to install the load bars on a firm, level surface. The load bars do not have to be installed perfectly level, but a substantial slope will decrease accuracy. All weight transfer must take place through the pads at the end of each load bar. Make sure there is no contact between the ground and the center of the load bar.
- Install the load bars in the upright position. This will allow for accurate weighing and will help keep any foreign material out of the load bar.
- Do not drill into or weld onto the load bars as this may cause internal structural or electrical damage. Secure the load bars to the weighing platform using the mounting lugs supplied.
- Install the cable so that it is not stepped on or run over. Cable failure due to physical damage is not covered under warranty.
- When constructing the weighing platform, ensure excessive sagging does not occur. This may cause inaccuracies in weighing and could damage the cable.

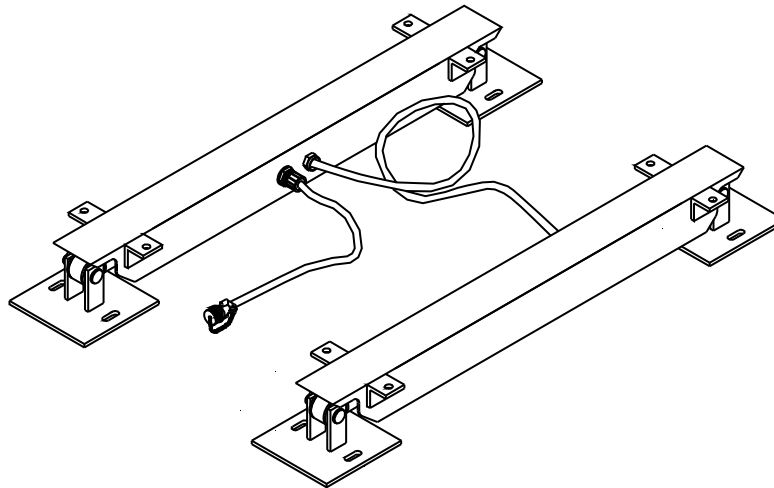


Figure 3-1. KLU Series Universal Weighbars

4.0 Parts List

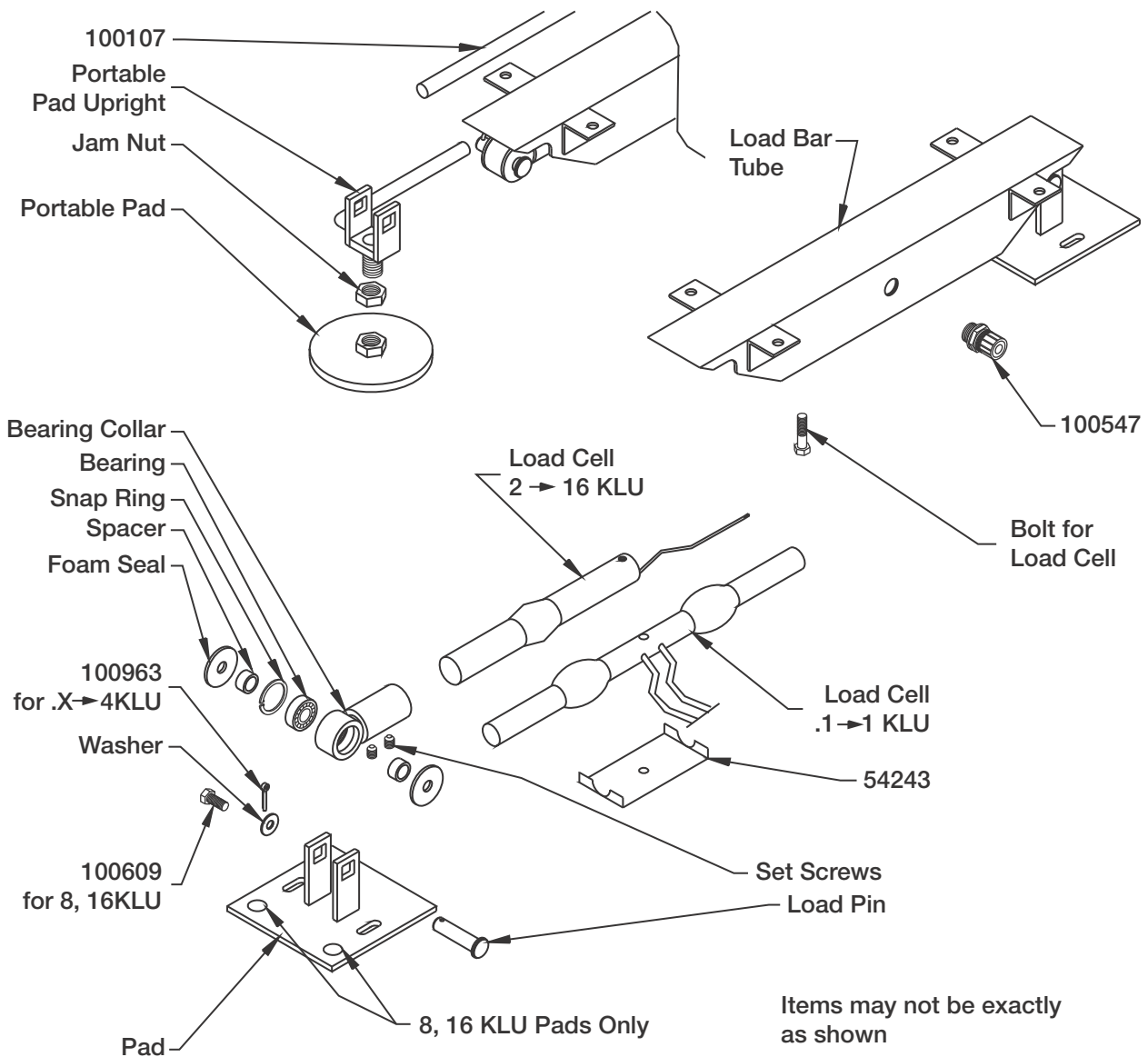


Figure 4-1. For 0.1 - 16 KLU Load Bar Parts

Description	0.x KLU	1 KLU	2 KLU	4 KLU	8 KLU	16 KLU
	Part #	Part #	Part #	Part #	Part #	Part #
Bearing	101211	1012114	101212	101212	101216	101216
Bearing Collar	54203	54203	55203	56203	63203	63203
*Bearing Collar Assembly	54202	54202	55202	56202	63202	63202
Cotter Pin (5/32" x 1")	100963	100963	100963	100963	100963	100963
Foam Seal	101232	101232	101232	101233	101234	101234
Hex Mounting Bolt	100735	100735	100735	100735	100718	100718
**Load Bar Tube	59206	59206	61206	62206	63206	64206
Load Cell	60201.X	60201	61201	62201	63201	64201
Load Cell Assm. (Incl. 202)	60200.X	60200	61200	62200	63200	64200
Load Pin	54209	54209	54209	54209	63209	63209
Load Pin Lock Bolt	-----	-----	-----	-----	100609	100609
Load Pin Spacer	54210	54210	54210	56210	63210	63210
Pad	54207	54207	54207	54207	63207	63207
Pad Base Plate	54207P-2	54207P-2	54207P-2	54207P-2	63207P-2	63207P-2
***Pad Portable Upright	54207PX	54207PX	54207PX	54207PX	63207PX	63207PX
Rodent Guard	54243	54243	-----	-----	-----	-----
Set Screw	100802	100802	100802	100802	100806	100806
Snap Button Cover	101008	101008	-----	-----	-----	-----
Snap Ring	101226	101226	101226	101227	101231	101231
Stop Tube	100107	100107	100107	100107	100107	100107
Washer	100931	100931	100931	100931	100938	100938
Operators Manual	127469	127469	127469	127469	127469	127469
*Assembly includes: collar, bearing, snap ring, seals, set screws **0.1 -> 1 KLU load bars available only in 22" lengths, specify length for others ***Portable Pad 54207PA(clockwise), 54207PB(counter clockwise) direction is determined by look down from top of load bar and determining direction the stop rod is pointing. Specify load bar length in inches						

Table 4-1. 0.1 - 16 KLU Load Bar Parts

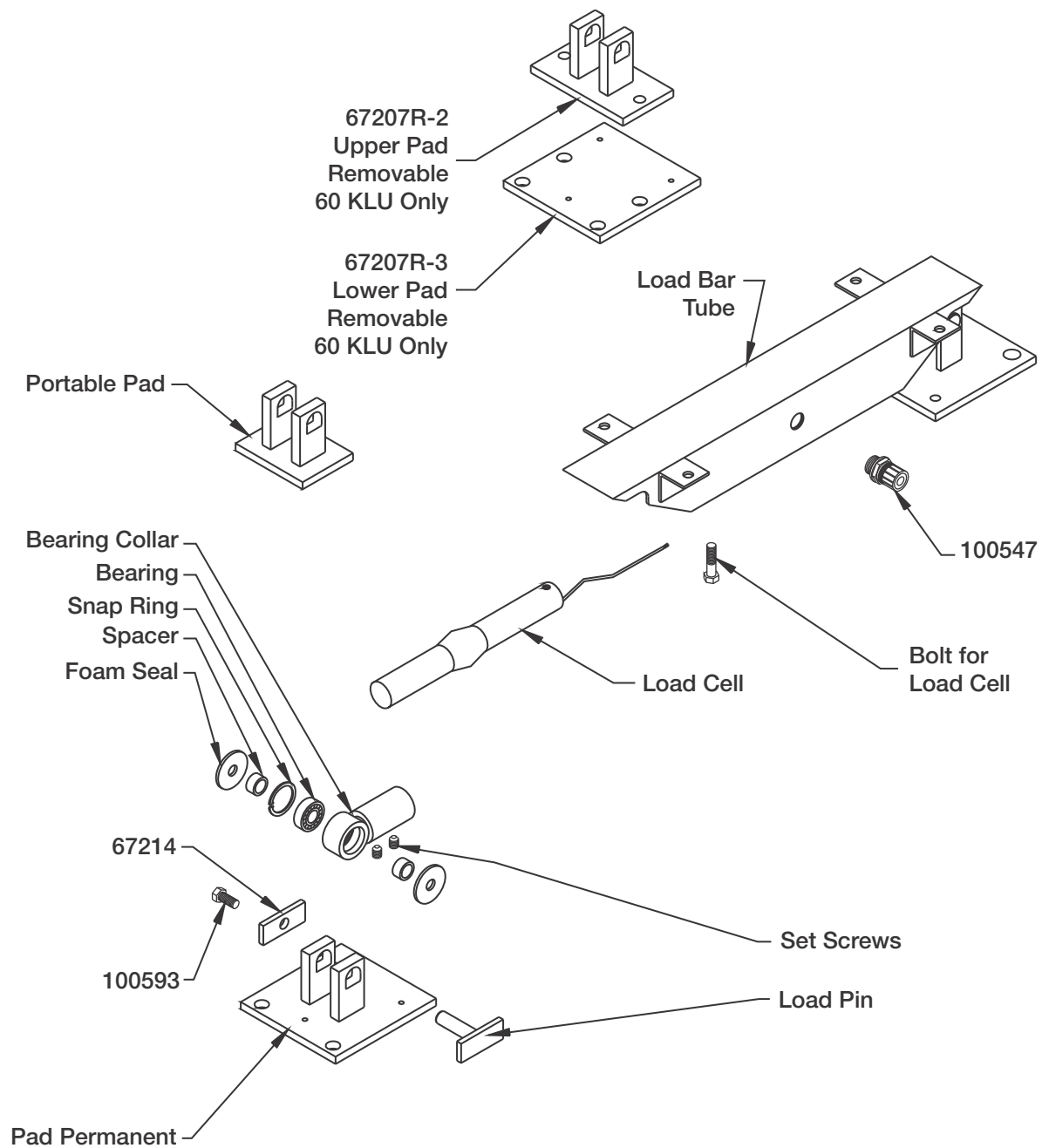


Figure 4-2. For 30, 45, 60 KLU Load Bars

Description	30 KLU		45 KLU		60 KLU	
	Part #		Part #		Part #	
Bearing	101214	128760	101214	128760	101217	127241
Bearing Collar	65203		66203	127834	67203	127837
*Bearing Collar Assembly ¹	65202		66202	127833	67202	
Foam Bearing Seal	101235	126824	101235	126824	101236	126825
Hex Mounting Bolt (Gr. 8)	100700	126999	100700	126999	100700	126999
Liquid-Tite Connector (3/8)	100547	127146	100547	127146	100547	127146
Load Bar Tube (Specify Length)	65206		66206		67206	
Load Cell	65201		66201		67201	
Load Cell Assembly (Incl. 202)	65200	127824	66200	127831	67200	127836
Load Pin	65209	127829	65209	127829	67209	127848
Load Pin (Removable Pad)	-----		-----		67209R	127849
Load Pin Lock Bolt	100593	127010	100593	127010	100593	127010
Load Pin Spacer	65210	127830	65210	127830	67210	127850
Load Pin Spacer (Removable Pad)	-----		-----		67210R	127851
Load Pin Stop	67214	127852	67214	127852	67214	127852
Pad – Permanent	65207	127826	65207	127826	65207	127826
Pad – Portable	-----		65207P	127828	67207P	127845
Pad – Removable	-----		-----		67207R	127846
Setscrew	100807	126985	100807	126985	100814	126986
Snap Ring	101229	126808	101229	126808	101230	126809
Operators Manual	127469		127469		127469	
*Assembly includes: collar, bearing, snap ring, seals and set screws.						

Table 4-2. For 30, 45, 60 KLU Load Bars

5.0 Maintenance

The most common type of problem that can occur is the load is not supported completely by the load bar pads. On a regular basis check around and under the weigh apparatus to see if any debris has collected near the scale. Any ice, dirt, mud or manure that builds up around the weigh apparatus can cause inaccurate readings. The scale should be kept clean to ensure proper operation.

It should also be noted that an excess of debris on top of the scale could also cause problems. Depending on the type of scale you have, there may be a limited range of weight you can “zero” off the scale. Always keep the build-up of material on top of the scale to a minimum.

Lubrication of the bearings in your scale is also important. The bearings are located in the bearing collar, as shown in the parts list diagrams in Figure 4-1 and Figure 4-2. Inject grease into the bearings using a syringe at least once every two years. Use good high-pressure grease to lubricate the bearings completely. Do not use an excess of grease – it should lubricate the bearing without bleeding around the foam seal.

5.1 Calibration

All Load cells are calibrated at the factory to reduce installation errors. Over the course of time, however, the load cells may drift out of calibration slightly. Normally when a scale's load cells go out of calibration, the digital indicator is adjusted to compensate for this.

The *KLU Series Loadbars* can be calibrated using the front panel, EDP commands, or the *Revolution*® configuration utility. Each method consists of the following steps:

- Zero calibration
- Entering the test weight value
- Span calibration
- Optional rezero calibration for test weights using hooks or chains.

The following sections describe the calibration procedure for each of the calibration methods.

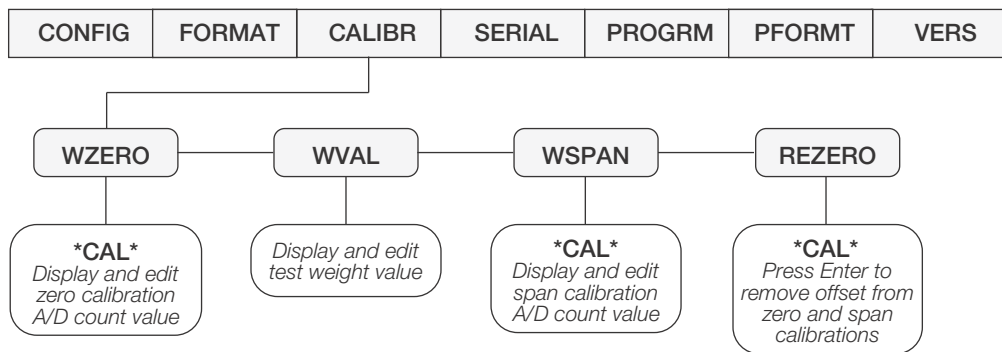


Figure 5-1. Calibration (CALIBR) Menu

Front Panel Calibration

To calibrate the indicator using the front panel, do the following:

1. Place the indicator in setup mode (display reads *CONFIG*) and remove all weight from the scale platform. If your test weights require hooks or chains, place the hooks or chains on the scale for zero calibration.
2. Press \triangleright until the display reads *CALIBR* (see Figure 5-1). Press ∇ to go to zero calibration (*WZERO*).
3. With *WZERO* displayed, press \leftarrow to calibrate zero. The indicator displays **CAL** while calibration is in progress. When complete, the A/D count for the zero calibration is displayed. Press \leftarrow again to save the zero calibration value and go to the next prompt (*WVAL*).
4. With *WVAL* displayed, place test weights on the scale and press \leftarrow to show the test weight value. Use the numeric keypad to enter the actual test weight, then press \leftarrow to save the value and go to span calibration (*WSPAN*).
5. With *WSPAN* displayed, press \leftarrow to calibrate span. The indicator displays **CAL** while calibration is in progress. When complete, the A/D count for the span calibration is displayed. Press \leftarrow again to save the span calibration value and go to the next prompt (*REZERO*).
6. The rezero function is used to remove a calibration offset when hooks or chains are used to hang the test weights.
 - If no other apparatus was used to hang the test weights during calibration, remove the test weights and press \triangle to return to the *CALIBR* menu.

- If hooks or chains were used during calibration, remove these and the test weights from the scale. With all weight removed, press \blacktriangleleft to rezero the scale. This function adjusts the zero and span calibration values. The indicator displays *CAL* while the zero and span calibrations are adjusted. When complete, the adjusted A/D count for the zero calibration is displayed. Press \blacktriangleleft to enter the value, then press \triangle to return to the CALIBR menu.
7. Press \triangleleft until the display reads *CONFIG*, then press \triangle to exit setup mode.



Note *To perform the calibration using EDP commands or Revolution[®], consult the indicator operator's manual.*

6.0 Troubleshooting

6.1 General

If you are having trouble with your load bars, a few simple procedures should help you determine where the problem lies. First, inspect the scale for any physical damage. Take special note of the cable and connectors. Wiggle the cables and connectors while watching the indicator display. If the readout jumps while moving a cable or connector, there is likely a short or loose connection. Repair or replace the cable or connector as appropriate.

6.2 Drifting

If the scale readout is drifting, moisture may be present somewhere in the scale's electrical circuit. Check for moisture in any of the connectors, junction boxes, or load bars. Dry any location where you suspect moisture is present. If you find a location where moisture is collecting on a regular basis, seal the location with a waterproof sealant.

6.3 Abnormally Large Reading

If the indicator shows a very large number and the readout cannot be changed using the indicators zero adjustment, there may be a problem in the circuit. To locate this type of problem, a series of electrical resistance measurements must be made. To perform these checks, you will need an *accurate* ohmmeter and a soldering iron.

To locate a faulty component with the ohmmeter, start by taking readings in the connector that plugs into the indicator cable (this is the cable the runs into your scale). The connector has four pins labelled A, B, C and D, the following chart lists the appropriate resistance readings. Remember, when making this type of measurement the power must be **OFF**. Further, be careful that your fingers are not making contact with the probes on the ohmmeter – if they are, the reading you take may be incorrect.

*Wire Color	Connector Pin	2-Load Bar System	**One Load Bar	***Single Load Cell
White – Red	D – C	145Ω	290Ω	395Ω
White-Green	D – B	175Ω	350Ω	350Ω
White-Black	D – A	145Ω	290Ω	395Ω
Black-Green	A – B	145Ω	290Ω	45Ω
Black-Red	A – C	197.5Ω	395Ω	790Ω
Green-Red	B – C	145Ω	290Ω	745Ω
White-Brown				350Ω
Brown-Red				45Ω
Black-GND		>10MΩ	>10MΩ	>10MΩ
GND-Frame		0	0	0
*See Figure 6-1				
**Valid only if Loadbar is disconnected from rest of circuit.				
***Valid only if Load Cell is disconnected from rest of circuit.				

Table 6-1. Ohmmeter Readings



Note This chart is only valid at a temperature of 22°C. Resistance will vary slightly with temperature.

The readings in Table 6-1 should be within 5 ohms of the value shown. The readings are slightly temperature dependent and as a result will not match Table 6-1 exactly. However, all the readings you take should differ from the table by the same percentage. For example, if the resistance across pins D & C reads $142\Omega \pm 1\Omega$, resistance across pins D & A should also read $142\Omega \pm 1\Omega$. In other words the values equal in Table 6-1 should also be equal when you take your measurements. If the readings correspond to the values in the table an electrical problem in the scale is not likely. If any readings across pins of the connector differ from the chart, each load cell must be checked individually.

To check a load bar separately, it must be completely disconnected from the scale's electrical circuit. This is accomplished by disconnecting the load bar at the scale's junction box, Figure 6-1. However if the junction box contains a Weights & Measures seal, consult your scale dealer before proceeding. To disconnect a load bar, loosen the screws on the circuit board for the load bar in question, and remove the wires. Resistance measurements can now be taken as shown in Table 6-1, and should correspond with the values in the "One Load Bar" column in the same way as described above. If not, consult your scale dealer. The dealer may ask you to check the individual load cells.

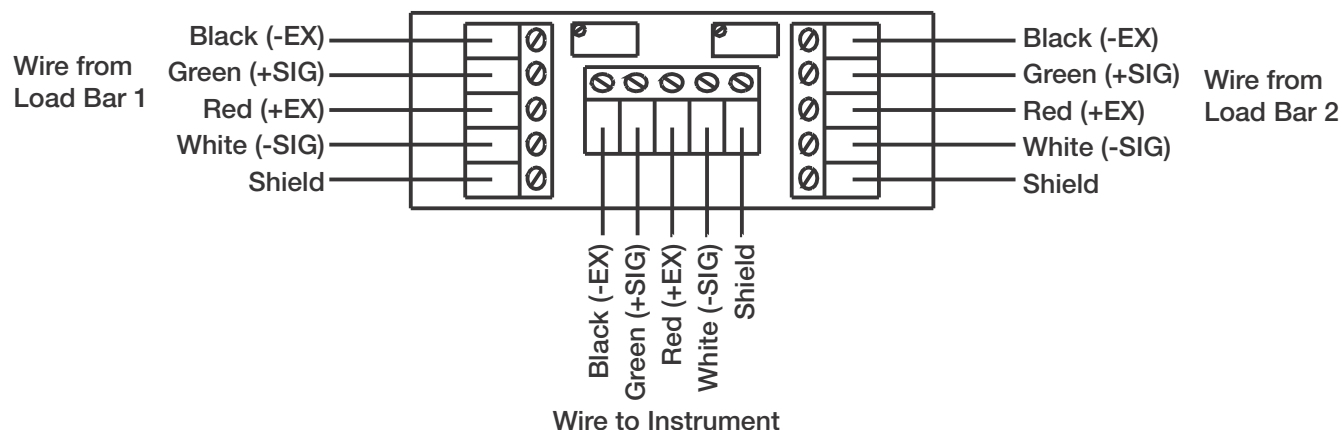


Figure 6-1. Junction Box Wire

When checking an individual load cell, it must be completely disconnected from the scale's electrical circuit. To accomplish this, the wires will need to be taken apart at the load bar cable splice. See Figure 6-2 for the wiring of a load bar system. The circuit diagram for the Load Cells of a single load bar is shown in Figure 6-4. Remember that each load cell contains five wires, but each load bar has only four wires running to the junction box. All five wires must be disconnected to separate that load cell from the circuit.

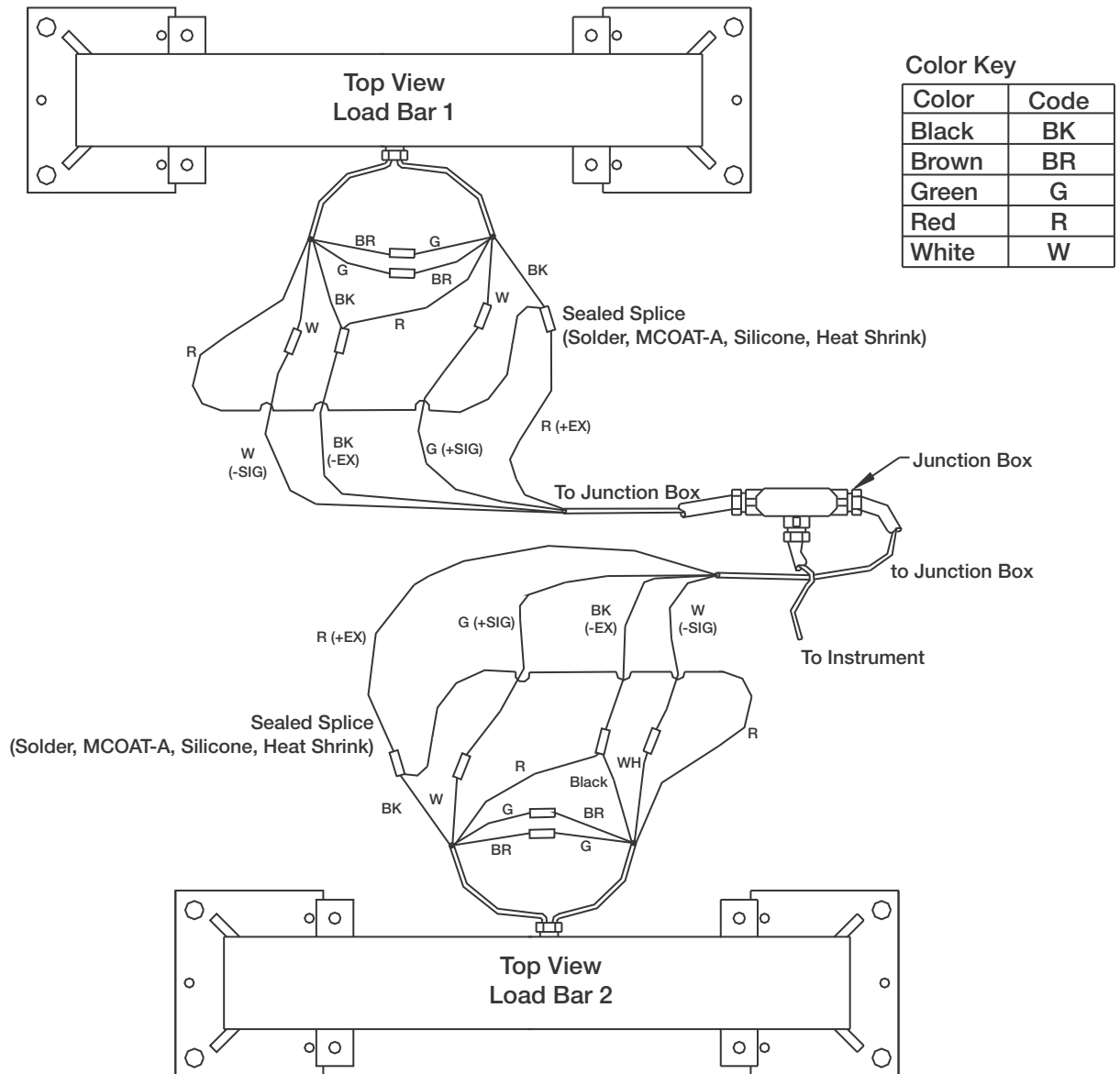


Figure 6-2. Load Bar System Wiring Diagram

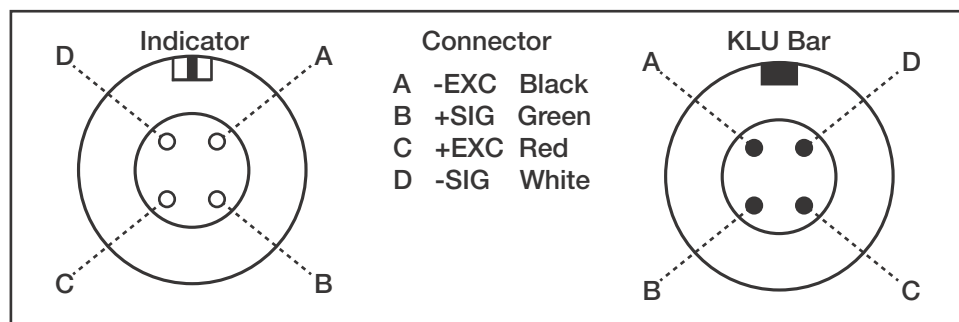


Figure 6-3. Load Bar System Connection

KLU Series Limited Warranty

Rice Lake Weighing Systems (RLWS) warrants that all RLWS equipment and systems properly installed by a Distributor or Original Equipment Manufacturer (OEM) will operate per written specifications as confirmed by the Distributor/OEM and accepted by RLWS. All systems and components are warranted against defects in materials and workmanship for two years.

RLWS warrants that the equipment sold hereunder will conform to the current written specifications authorized by RLWS. RLWS warrants the equipment against faulty workmanship and defective materials. If any equipment fails to conform to these warranties, RLWS will, at its option, repair or replace such goods returned within the warranty period subject to the following conditions:

- Upon discovery by Buyer of such nonconformity, RLWS will be given prompt written notice with a detailed explanation of the alleged deficiencies.
- Individual electronic components returned to RLWS for warranty purposes must be packaged to prevent electrostatic discharge (ESD) damage in shipment. Packaging requirements are listed in a publication, *Protecting Your Components From Static Damage in Shipment*, available from RLWS Equipment Return Department.
- Examination of such equipment by RLWS confirms that the nonconformity actually exists, and was not caused by accident, misuse, neglect, alteration, improper installation, improper repair or improper testing; RLWS shall be the sole judge of all alleged non-conformities.
- Such equipment has not been modified, altered, or changed by any person other than RLWS or its duly authorized repair agents.
- RLWS will have a reasonable time to repair or replace the defective equipment. Buyer is responsible for shipping charges both ways.
- In no event will RLWS be responsible for travel time or on-location repairs, including assembly or disassembly of equipment, nor will RLWS be liable for the cost of any repairs made by others.

THESE WARRANTIES EXCLUDE ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NEITHER RLWS NOR DISTRIBUTOR WILL, IN ANY EVENT, BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

RLWS AND BUYER AGREE THAT RLWS' SOLE AND EXCLUSIVE LIABILITY HEREUNDER IS LIMITED TO REPAIR OR REPLACEMENT OF SUCH GOODS. IN ACCEPTING THIS WARRANTY, THE BUYER WAIVES ANY AND ALL OTHER CLAIMS TO WARRANTY.

SHOULD THE SELLER BE OTHER THAN RLWS, THE BUYER AGREES TO LOOK ONLY TO THE SELLER FOR WARRANTY CLAIMS.

NO TERMS, CONDITIONS, UNDERSTANDING, OR AGREEMENTS PURPORTING TO MODIFY THE TERMS OF THIS WARRANTY SHALL HAVE ANY LEGAL EFFECT UNLESS MADE IN WRITING AND SIGNED BY A CORPORATE OFFICER OF RLWS AND THE BUYER.

© 2011 Rice Lake Weighing Systems, Inc. Rice Lake, WI USA. All Rights Reserved.

RICE LAKE WEIGHING SYSTEMS • 230 WEST COLEMAN STREET • RICE LAKE, WISCONSIN 54868 • USA

