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FLB
(Flexure Lever Base)
Technical Manual

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INTRODUCTION

The **Flex Weigh** Model FLB scale bases are designed for application requiring high accuracy and reliability. The bases have no moving parts found in conventional mechanical scales. The Model FLB bases are built with thin high-strength flexure plates which never wear out and are always aligned. Standard models come with mild steel platform and environmentally protected load cell with 20 feet of signal cable.

DESCRIPTION

All **Flex-Weigh** Model FLB Flexure Lever Bases are mechanically the same and composed of six major components.

1. **Base Frame.**
2. **Load Bridge.**
3. **Lever System.**
4. **Flexure Plates.**
5. **Load Cell..**
6. **Weigh Platform.**

BASE FRAME

The base frame is a rigid one piece, welded unit that supports the remaining scale system. The fulcrum flexure support stands are welded directly to the base frame.

LOAD BRIDGE

A structural member consisting of two pieces of tubing or channel iron, one on either side of the scale, tied together by two cross members. The weigh platform is supported by the load bridge through four platform support pipes or tubing. The load bridge is suspended from the lever system through the load flexures.

LEVER SYSTEM

Structural members on each side of the scale witch are supported from the base by the fulcrum flexure and witch support the weigh platform through the lever system to the tip of the primary lever witch is supported by the load cell.

FLEXURE PLATES

Flat, high-strength thin plates, which transmit the load forces due to the weight applied to the platform and to the lever system. The flexures provide a maintenance free pivot point, which support the levers from the base and transmit forces from the load bridge to the levers and on to the load cell.

LOAD CELL

Electronic force measuring device that is mounted near the corner of the scale and is rigidly fixed to the load bridge structure. Fastened to the other end of the tension load cell is pull cable which fastness to the tip of the primary lever.

WEIGH PLATFORM

A rigid welded frame unit with removable deck plate which item to be weighed is placed. The applied load is transmitted from the weigh platform to the load bridge to the levers and then to the load cell.

UNPACKING AND INSPECTION

1. Remove the banding straps and lift the scale base from the wooden pallet.

2. Remove weigh platform deck plate, usually fastened down by four (4) counter-sunk screws.
3. Remove weigh platform frame.

4. Visually inspect for signs of damage such as bend scale frame, broken or bend flexures and broken welds. This visual inspection is very important and should be conducted with care as merchandise often is handled roughly in transit.

5. Inspect all gripper plate bolts to be sure that they are tight.

INSTALLATION

1. Move scale base to its permanent location. Location should be fairly level and have a solid stable foundation. An unstable location will cause inaccurate or fluctuating weight reading.

2. Check to insure that the base rests firmly against the floor on all four corner gussets. Shim between the gusset and the floor as required to attain a firm and stable mounting.

3. Untie the load cell package from the lever arm and remove load cell with pull cable.

4. Remove the shipping bolt and spacer retaining the primary lever arm to the load cell Support frame. It is helpful to insert a block under the primary lever before removing shipping bolt.

5. The load cell is shipped with the pull cable installed in the bottom of the cell.

CAUTION:

The load cell is a delicate device and can be damaged easily if dropped, twisted when mounting or hammering on scale base near the cell after being mounted.

6. Remove the outer nut from the load cell pull cable.

7. Remove the load cell mounting bolt from the top of cell.

8. Carefully lower the load cell at an angle into position. Make sure that pull cable threaded rod end goes through the hole of the nose iron (sometimes called the shoe) first.

9. Position cell vertically and lift up until it touches load cell support frame (sometimes called the Bridge). Align the top hole of the cell with the mounting hole of the support frame and thread the load cell mounting bolt down through the housing into the load cell.

10. Position load cell so it is not rubbing or touching the side of the support frame or lever system. Thread the bottom nut onto the load cell pull cable until it is finger tight against the nose iron. The top nut of the pull cable threaded rod should be flush with the top of the threaded rod. Carefully raise lever nose iron and tighten bottom nut finger tight. With a wrench carefully tighten bottom nut. Be sure to remove block from under primary lever.

11. Grasp the load cell with your hand as indicated in the "S" Load Cell drawing (to prevent twisting) and tighten mounting bolt with wrench, wrist thght only.
DO NOT ALLOW THE LOAD CELL TO TWIST.

CAUTION:

When tightening the bottom nut, do not allow the cable to twist in any direction. A twisted cable will cause side forces in the cell that will cause weight errors when loaded.

12. Route the load cell signal cable out of bottom of the base. Be sure the signal cable is clear and is not touching any portion of the live weighing deck or levers.

13. Connect the load cell signal cable to the digital weight-meter.

14. Inspect under and around the lever arms, pivot heads and load bridge for any foreign material witch could interface with the live portion of the scale.

15. Re-install the weigh platform and deck plate.

NOTE:
The weigh platform frame and scale base are match marked on the corner near the load cell for proper re-assembly.

17. The scale base is now ready for calibration.

CALIBRATION

PRELIMINARY CALIBRATION

1. Zero balance the digital weightmeter.
2. Place test weights on weigh platform and adjust weightmeter span for the correct reading.
3. Remove test weights and check zero.
4. Repeat Step 1 through 3 if weightmeter does not return to zero.

SHIFT TEST (refer TO FIGURE A)

NOTE:

The corners of the scale base have been factory adjusted. If corners have extreme differences check for bent flexures, broken welds or foreign object in the corner.

1. Apply weights equal to 25% of scale capacity to each corner in sequence, observing the weightmeter. Record these weights on a sheet of paper for reference.

2. If the corner shift reading is within tolerance proceed to the calibration procedure.

3. If corner shift reading is out of tolerance proceed to next step.

4. Remove deck plate and weigh platform frame.

5. Loosen all check link mounting bolts.

6. Loosen top and bottom load flexure gripper plate bolts. It is not necessary to completely remove gripper plate bolts as the shims are slotted.

7. Adding shims to increase the fulcrum to load distance will increase the weight reading for that corner being adjusted.

8. Removing shims to decrease the fulcrum to load distance will decrease the weight reading for that corner being adjusted.

9. Shims are available in 0.010 inch and 0.030 inch thickness.

10. Tighten all check link bolts

11. Re-install weigh platform and deck plate.

12. Re-check corners as per Step 1

FINAL CALIBRATION

1. Zero weightmeter display.

2. Place test weights equal to 100% capacity and adjust weightmeter span to read correct weight.

3. Remove test weights and check zero

4. Repeat Step 1 through 3 if weightmeter does not return to zero.

PROBLEM CHECK POINTS

1. Extreme erratic weight readings and zero shift is usually caused by broken weld, damaged pull cable, cracked flexure, defective load cell or the corners of the scale base are not shimmed properly.

2. Constant zero shifting is usually caused by loose flexure plate gripper bolts, damaged pull cable or dragging on the weighbridge assembly.

3. Non-linear weight readings is usually caused by scale base not shimmed properly, bend flexure, levers not level, load cell pull cable bend or twisted and sometimes caused by defective load cell.

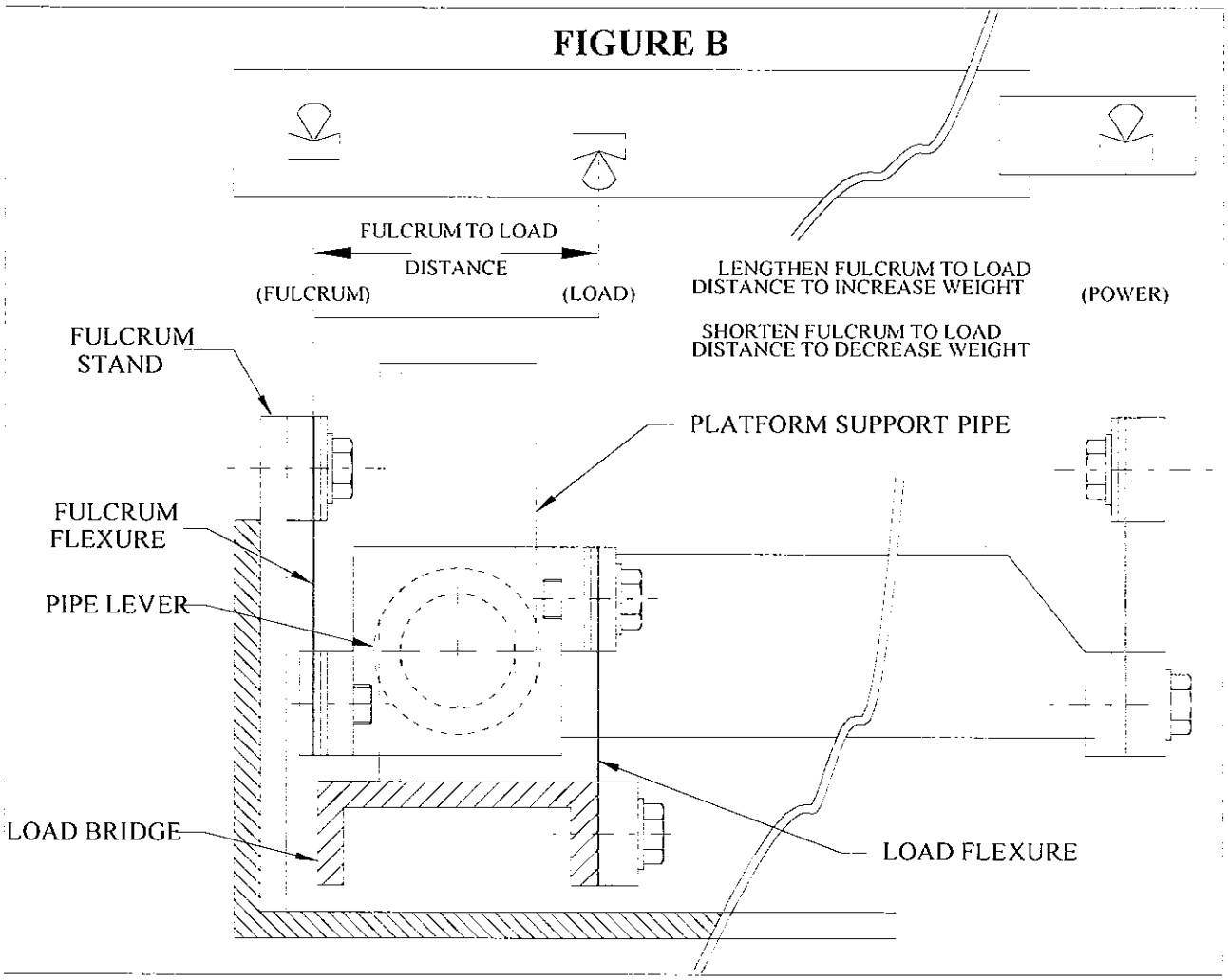
HOW FLEXURE LEVERS WORK

Flexure levers are relatively simple in design and are better understood when comparing them to the pivot and bearing type of lever system.

In Figure B, you will see where the flexure plates replace the pivots and bearing for the fulcrum, load and power points on the lever.

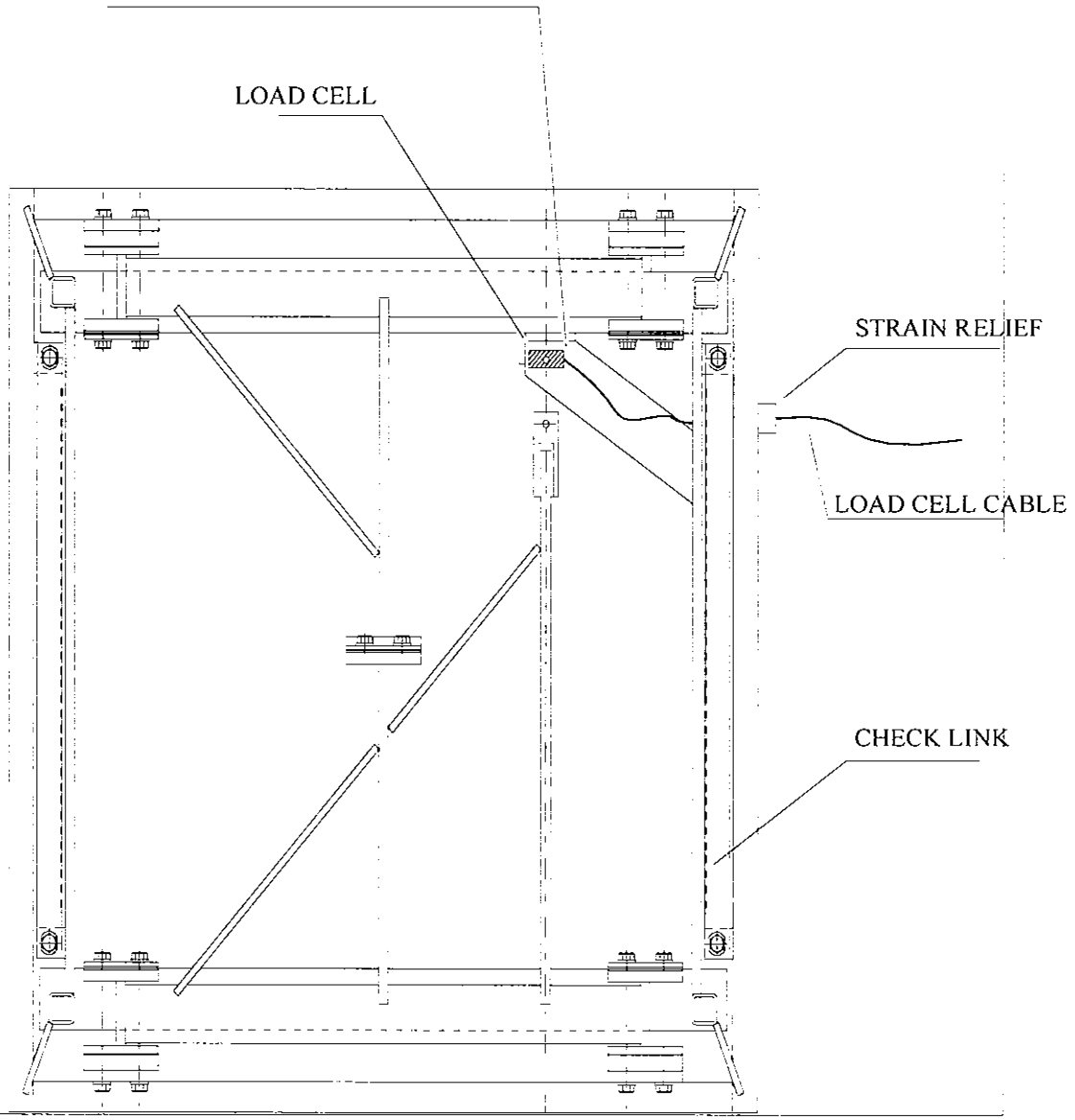
The multiple of the lever is calculated in the same manner for both the flexure or pivot and bearing lever system, keeping in mind that the reference point of the flexure is the center line through the flexure itself.

FIGURE B



NOTE:

WHEN INSTALLING LOAD CELL BE SURE LOAD CELL CABLE IS FACING RIGHT HAND SIDE OF BASE.



TROUBLE SHOOTING

PROBLEM PROBABLE CAUSE

ZERO SHIFT

Corners not shimmed tightly to floor.
Misalignment of flexures or cable assemblies
Loose gripper.
Live assembly touching dead assembly.
Something under load bridge (probably at a corner).
Shipping block not removed during unpacking>
Damaged load cell.

POOR CORNER READING

Pivot heads need shimming.
Corners not shimmed tightly to floor.
Misalignment of flexure or cable assemblies.
Loose gripper.

ERRATIC READING

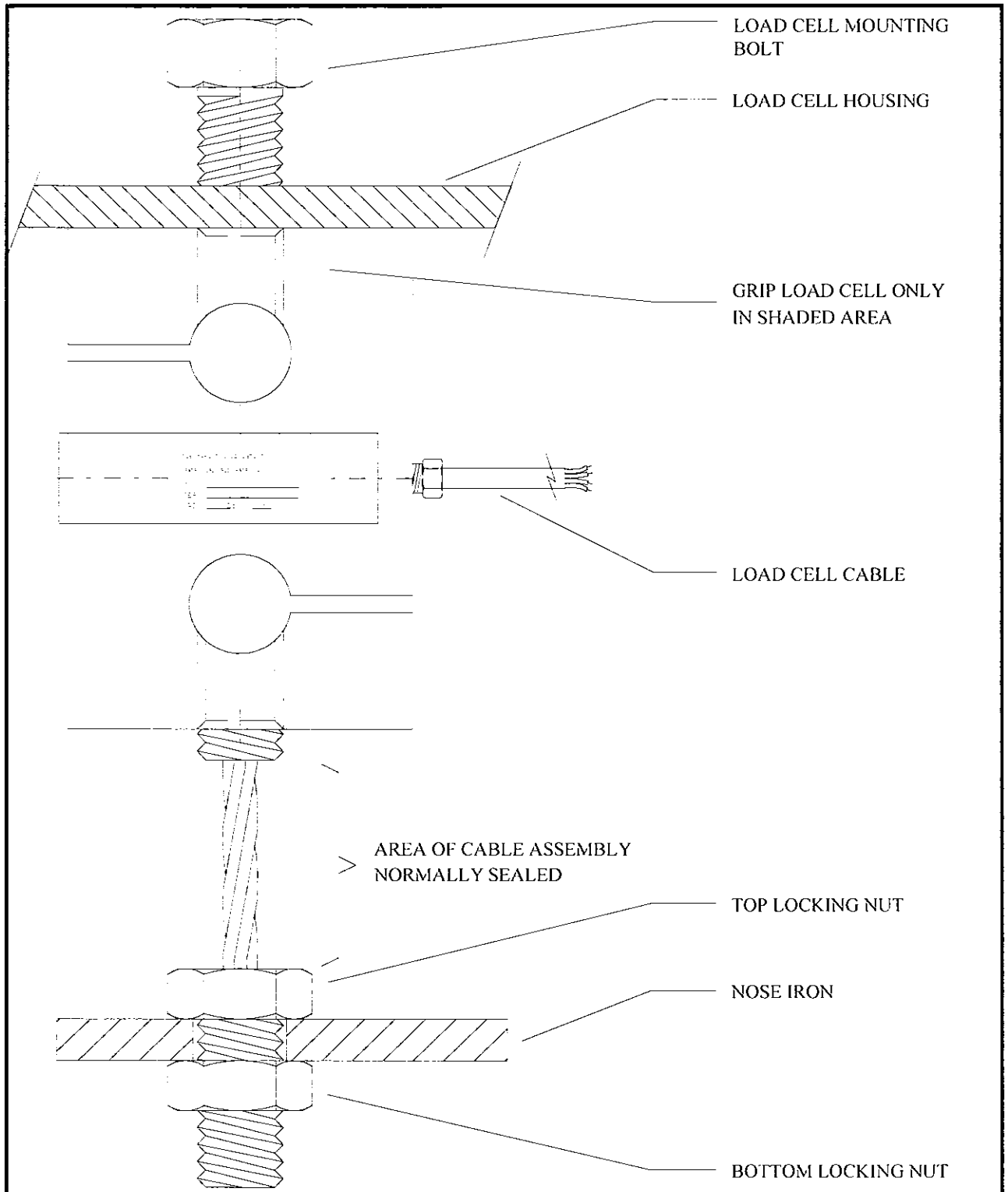
Loose connection in junction box.
Ground shield not connected to cannon plug or meter shield.
Corners not shimmed tightly to floor.
Center leveling bolts not down far enough; down too far.
Bent flexures or cable assembly.

NON-LINEAR READING

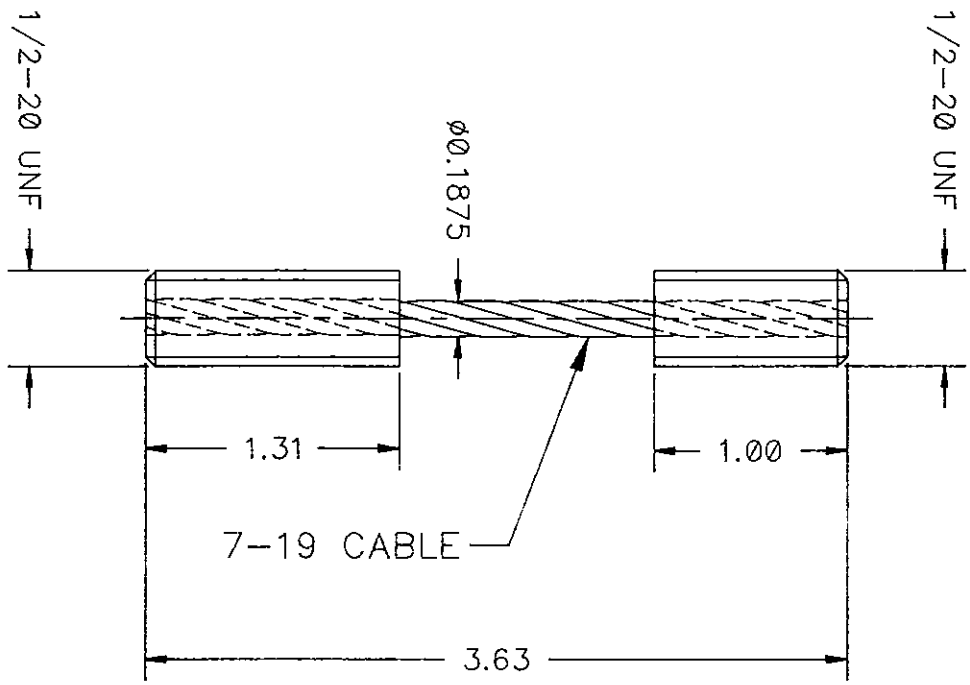
Misaligned flexure or cable assembly.
Nose-iron on power lever too high or too low.
Center flexure offset from centerline.
Damage to load cell.
Pivot head needs shimming.

DIFFERENT END READING

Center flexure offset from centerline.
Pivot heads need shimming.
Nose-iron on power lever too high or too low.
Corners not shimmed tightly to floor.


LOAD CELL MOUNTING BOLT
LOAD CELL HOUSING
GRIP LOAD CELL ONLY IN SHADED AREA
LOAD CELL CABLE
AREA OF CABLE ASSEMBLY NORMALLY SEALED
TOP LOCKING NUT
NOSE IRON
BOTTOM LOCKING NUT

S-TYPE



NOTES:

- ALL STAINLESS STEEL CONSTRUCTION
- 3700 Lb. PULL TEST (7-19 CABLE)

TOLERANCE UNLESS OTHERWISE SPECIFIED .X ± .XX ± .XXX ± DEC. ± FRAC.± ANG. ±	APPROVALS	DATE	flex-weigh corporation SANTA ROSA, CALIFORNIA 95403
	DRAWN. Jbottu	3/3/95	
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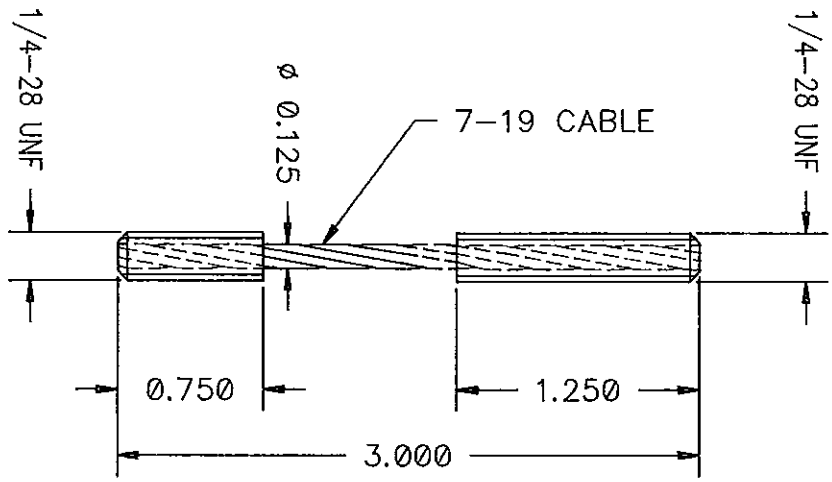

NOTES:

- ALL STAINLESS STEEL CONSTRUCTION
- 1750 Lb PULL TEST (7-19 CABLE)

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	DRAWN. Jbottu	1 APRIL 97	
	CKD.		TITLE F - 102 PULL CABLE
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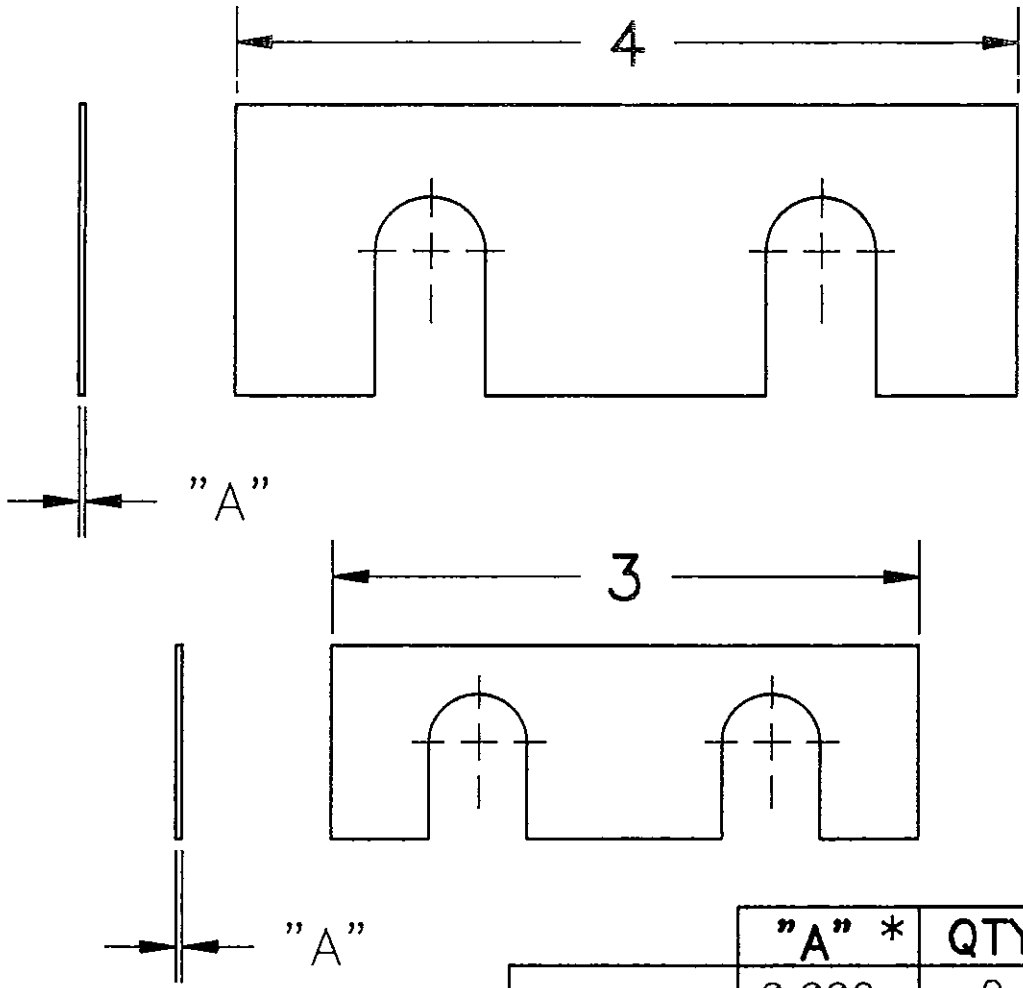

	"A" *	QTY
3"	0.006	2
	0.022	1
	0.039	1
4"	0.010	2
	0.030	1

* – DIMENSIONS ARE REPRESENTATIVE OF TYPICAL VARIETY OF ASSORTMENT

TOLERANCE UNLESS OTHERWISE SPECIFIED .X ± .XX ± .XXX ± DEC. ± FRAC.± ANG. ±	APPROVALS	DATE	flex-weigh corporation SANTA ROSA, CALIFORNIA 95403
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	CKD. B. Maffia	12/3/96	TITLE: SHIMS KIT
	ENG.		
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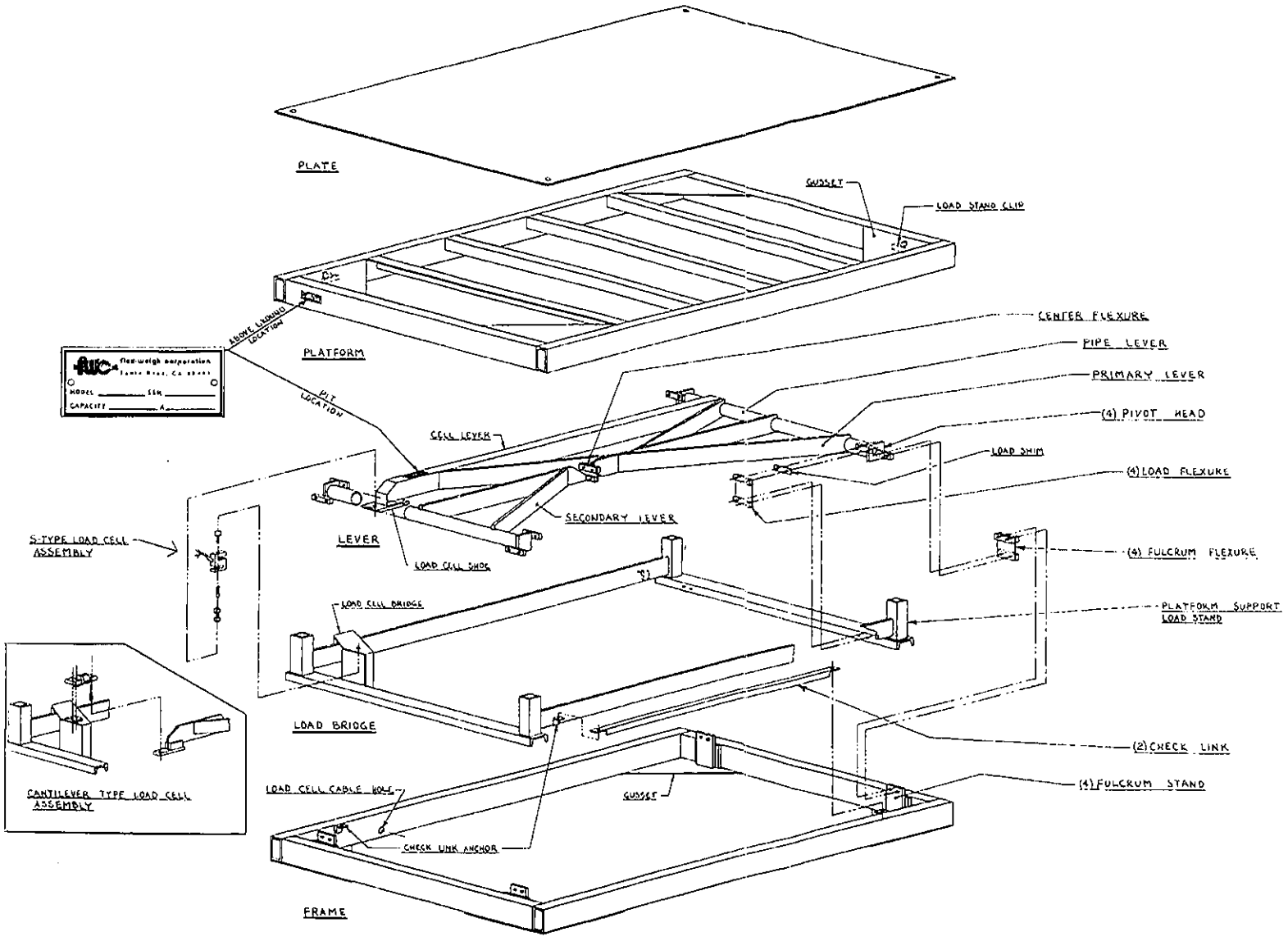

flex-weigh corporation
SANTA ROSA, CALIFORNIA 95401

DATE 2-24-82

MODEL FLB - FLEXURE LEVER BASE

MD-1584

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