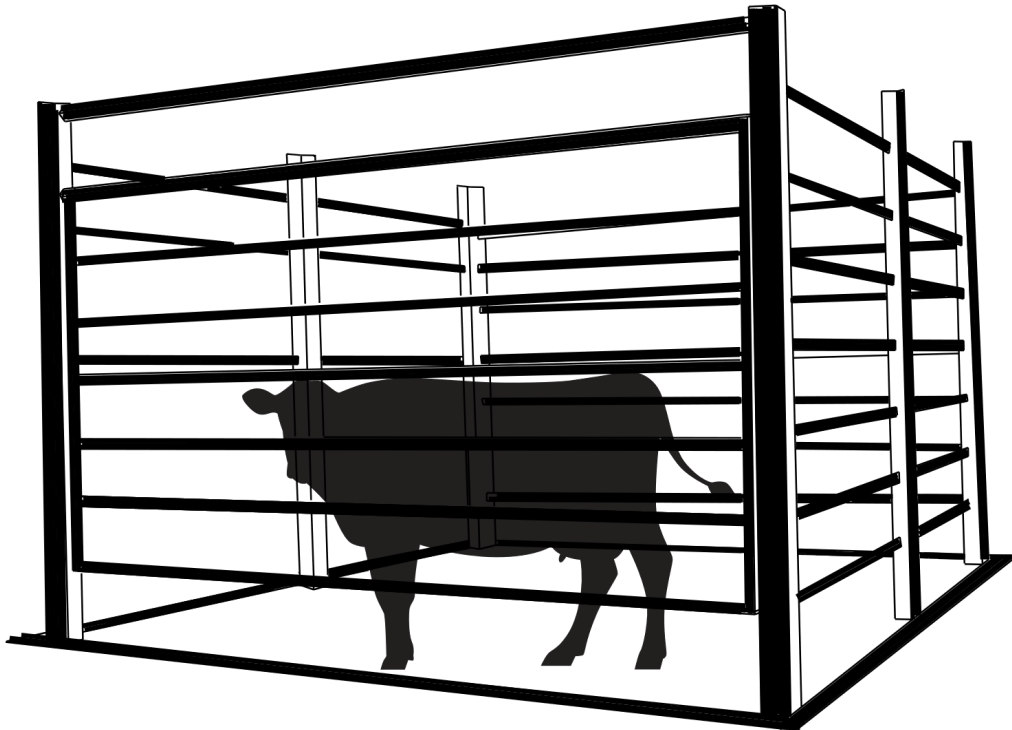




Parts List and Instructions

Fairbanks Scale

Type "S" Livestock Scales



50572

AMENDMENT RECORD

Fairbanks Scales Type "S" Livestock Scales

Document 50572

Manufactured by **Fairbanks Scales Inc.**
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Kansas City, Missouri 64106

Revision 3	7/2018	Major update, new drawings, installation method suggestions, models and parts listings updated
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Section 1: Introduction & Description

1.01: Scope of Manual

This manual provides installation information and parts lists for Fairbanks Type "S" Livestock Scales. This information is presented as supplementary to the certified scale plans and is for use by qualified installation technicians fully familiar with the assembly of these scales. As such, the instructions are intended more as a check list and guide than a step-by-step procedure. Assembly should be attempted only with the presence and guidance of an experienced scale erector.

1.02: Description of Type "S" Livestock Scales

Type "S" Scales featuring levers of high tensile cast iron for maximum strength, rigidity and permanence, are equipped with contact-surface heat treated alloy steel pivots and bearings for maximum wear and breakage resistance. Double-webbed levers provide strength while the double parallel link suspension, designed to swing parallel to the traffic direction, insure long life and accuracy. The main lever Suspension Assembly is vertically adjustable for platform leveling eliminating the need for shims. Suspension connections between levers are fully adjustable to keep all parts in true vertical and horizontal alignment.

Live Stock Scales are similar in design to Axle Load Scales and may also be considered as two-section versions of the larger four-, and five-section Type "S" Scales. Their installation and assembly techniques are similar in most respects.

By the installation of an electronic strain-gauge load cell in the steelyard, Livestock scales may be converted to, or available as LEVETRONIC Scales. The tension loading on the cell is converted to an electrical signal which is transmitted by cable to an electronic weight display Instrument. This instrument, which may be remotely located from the scale, provides a direct-reading digital weight display for instant recognition and may provide further interface with recording devices as required.

1.03 Specifications & Dimensions

Specifications for typical livestock scales are given in this section. Basic dimensions, loading specifications, and concrete requirements are included for general reference, as well as load cell data.

A. General Information Notes

1. All calculations are approximate and should be used for estimating purposes only.
2. Pit construction and design is the responsibility of the customer or as contracted. Actual quantities are dependent on the design used. Certified pit plans will be supplied by Fairbanks and must be used.
3. All quantities and dimensions are based on the version of each particular model.
4. Excavation quantities are based on excavation 7 feet below ground level and 3 foot clearance from the outside pit wall.
5. Non-reinforced pit concrete quantities are based on a typical non-reinforced pit supported on soil with a minimum of 4,000 PSF bearing capacity. Pit depth is 6 feet.
6. Reinforced pit quantities are based on a typical reinforced pit supported on soil with a minimum of 2,000 PSF bearing capacity. Pit depth is 6 feet.
7. Fairbanks normally supplies all weighbridge steel, pit coping, deck reinforcement for concrete deck scales, deck channels, and anchor bolts. Pit and approach reinforcing are supplied by the customer or as contracted.

B. Scale Structural Specifications

Product #	Model #	Capacity Tons	Platform Size	Deck Construction
91214	6186AW	5	14' x 8'	Wood
91215	6186A	5	14' x 8'	Concrete 3" Deck
91216	6187AW	10	16' x 8'	Wood
91217	6187A	10	16' x 8'	Concrete 3" Deck
91218	6188AW	10	18' x 9'	Wood
91219	6188A	10	18' x 9'	Concrete 4" Deck
91220	6189A	10	20' x 9'	Concrete 4" Deck
91221	6190AW	10	22' x 9'	Wood
91222	6190A	10	22' x 10'	Concrete 4" Deck
91223	6192A	15	24' x 10'	Concrete 4" Deck
91224	6197A	20	26' x 14'	Concrete 4" Deck



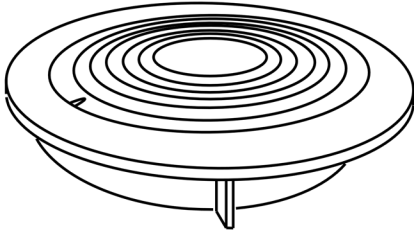
C. Load Cell Specification Data for Levertronic Livestock Scales

Model #	Multiple	Load Pull	Total Cell Load	Cell Capacity	Graduation Size	# Graduations
6186	41 2/3	400 #	640 #	750 #	5 #	2,000
6187	41 2/3	440 #	920 #	2,000 #	5 #	4,000
6188	41 2/3	560 #	1,040 #	2,000 #	5 #	4,000
6189	41 2/3	580 #	1,060	2,000 #	5 #	4,000
6190	41 2/3	685 #	1,165 #	2,000 #	5 #	4,000
6192	41 2/3	880 #	1,600 #	2,000 #	5 #	6,000
6197	41 2/3	1,160 #	2,120 #	3,000 #	5 #	8,000

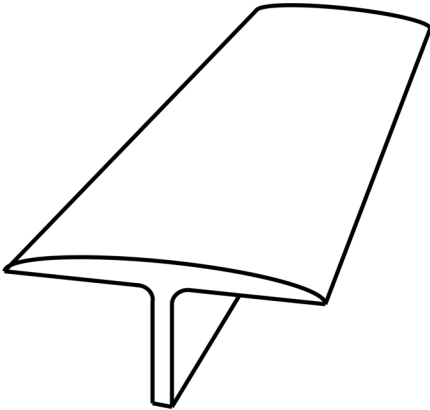
NOTE:

Only **Certified** Fairbanks Pit Plans and Setting Plans are to be used.

1.04: Options & Accessories



<u>Product</u>	<u>Description</u>
55008	936 Accessory, Manhole cover and frame. Ring O.D. = 30", 6" deep. Ring opening = 22.5" Cover O.D. = 23.75"



<u>Product</u>	<u>Description</u>
64315	T Strip Belting

T-Belting is an excellent accessory to help minimize the amount of debris that gathers between the scale deck and pit coping.

1.05 Pit Pump

Pits which are not drained and are subject to accumulating water must be equipped with a float operated sump pump. Water contacting scale levers will cause them to effectively lose weight due to a floating tendency, rendering inaccurate weights.

1.06 Electronic Instrument Readout

The use of a strain-gauge load cell connected to the transverse lever provides electrical signals in direct proportion to weight applied and removed from the scale, and allows the use of electronic Instrumentation for maximum operating speed and system flexibility.

The levertronic configuration combines the low maintenance dependability of the Type "S" scale with the capabilities of an automatic weight display, recording, printing, and data processing, wherein the scale becomes an integral part of a total, automatic weighing system.

1.07 Scale Grounding

Levertronic scales equipped for digital electronic operation are supplied with grounding equipment which must be included in the installation.

An 8-foot-long, 3/4" copper clad rod is driven into the pit floor to its full depth and located near the tension load cell. The ground rod is driven before the pit floor is poured with concrete, and is also tied to the pit reinforcing bars, the upper end must protrude approximately 3 inches from the concrete surface.

Ground braid, clips and clamps are provided for electrically connecting the weighbridge steel to the ground rod.

The ground rod installation provides an essential measure of protection for the scale electronics and allows future installation of a surge voltage protection system, if required.

Section 2: Scale Installation Notes

2.01 Introduction

This section describes pit construction, stands, lever system, weighbridge, and scale deck installation techniques for Fairbanks Type "S" Livestock Scales. These instructions are supplemental to the certified prints, and are presented as an aid and "check list" for the installer. The services of a qualified Fairbanks scale technician are required.

2.02 Foundation

1. All concrete work should be performed in accordance with the best practice as prescribed by the American Concrete Institute.
2. Inside and center line dimensions of the pit must be maintained.
3. Pit walls and footing depth as indicated on the certified plans are the minimum recommended where normal solid conditions prevail.
4. If the soil has low load bearing capacity, and/or if heavy vehicle traffic will be parallel and near to side walls, concrete should be reinforced for the required strength.
5. Approaches, level with the platform, should be provided at each end of the scale.
6. The levertronic scale requires a ground rod in the pit floor. Refer to the certified drawings.

2.03 Anchor Bolts and Piers

1. Care must be exercised in spacing the templates for the lever stand anchor bolts.
2. All anchor bolts must be located in strict accordance with the certified print plans and the height which the bolts project above the finished concrete must be strictly adhered to.
3. It is recommended that the piers be poured about 1/2 inch lower than shown on the certified prints and the lever stands afterwards should be grouted to their proper elevation.

2.04 Unpacking

- A. Levers are shipped with wood blocking protecting the knife edges.
- B. Just before installing the lever, remove the wood blocking and scrape the knife edge with a small knife to remove the paint. Do not expose the entire pivot, just the knife edge.
- C. When taking scale parts out of the boxes, check them carefully against the packing list furnished. If any parts cannot be found, determine the part number and description from the list and advise the Fairbanks Scales Sales office.
- D. If any levers or parts have been broken in shipment, the customer should place a claim against the transportation company for damage and reorder proper parts.

2.05 Installation of Lever Stands

Since the levers are manufactured to their proper length, it is imperative that the lever stands be located in their precise location as indicated on the certified prints. If the stands are so placed, it is a simple matter to place the levers in the proper location, resulting in plumb connections throughout.

A suggested method of locating stands in their proper position follows:

On the approach pit coping at each end of the pit, locate the point midway along the pit coping angle for the width of the pit at each end. With a hacksaw, saw a notch at this point, cutting into the angle iron about 1/8 inch. Insert a strong string, cord, or a light weight wire, into this sawed slot. With the string or wire so inserted and the far end tied into a knot, peen over the top of the slot with a hammer to trap the line within the slot. . Attach the line to the corresponding slot on the other end of the pit and draw it tight so it is tensioned across the length of the pit and similarly secure it by peening with a hammer.

Carefully measure this installed centerline and mark the exact middle of its length at the center of the pit. All stand location measurements are to be made from this point to the dimension stated by the certified prints.

Obtain a square tube that is straight and true, and long enough to straddle the pit width and be supported by the pit coping. A mark on the square tubing middle can be used to align with the pit centerline.

Using the square tubing and moving it as required, the longitudinal and lateral location of each lever stand as measured from the center line center mark can be determined as stated by the certified prints. A plumb bob hung from this square tubing can be used to precisely position the stands center in its correct place. Measure and mark the stands exact center with a sharpie marking pen. And a measurement of the height of the stand can also be determined by measuring from the stand top to the square tubing bottom. All measurements and elevations are found in the certified prints and must be strictly adhered to and followed.

In working the stand installation, soak the concrete pier with clean water to prepare it for adhering to the grout mix. The grout mix should be stiff enough to support the stand, but still pliable enough to enable the stand to be tapped laterally to center it under the plumb bob, and to sink it down to shift the stand to its correct height. Use a level to level the top of the stand and check the level condition on the length and width side, or in two directions, and recheck the lateral position with the plumb bob, and the height with a ruler. When finished, leave the stand undisturbed and allow the grout to set and dry. This will take 24 hours.

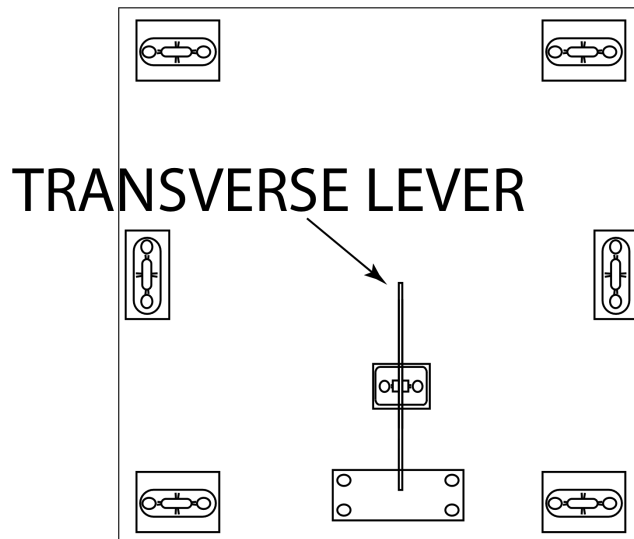
After 24 hours, install and tighten all stand anchors with their washers and nuts. If rust and concrete has accumulated on the anchor bolt threads, a properly sized thread file can be used to clean the threads. Anchor bolt thread size is 7/8-9.

2.06 Lever System Installation

After the stands are all located properly, and the grout is dried and set, the lever system can be installed.

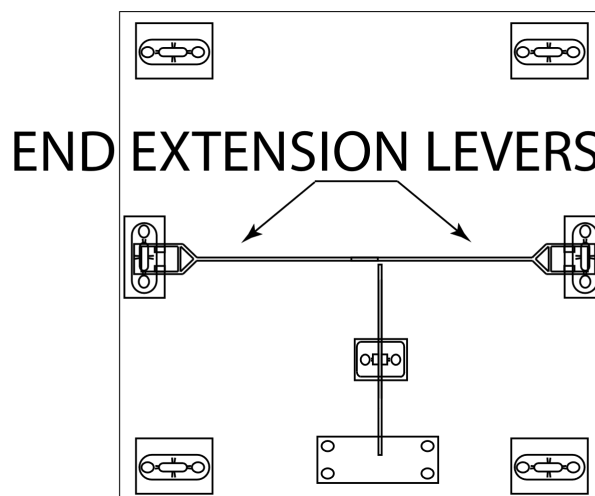
1. The transverse lever is installed first. Place this lever in position over the fulcrum stand casting. The block containing the bearing steel must be removed during this time.

When the lever is in place, bolt the bearing block with its bearing steel back into position, ensuring the levers fulcrum pivot is properly seated into the bearing steel. Use wood blocking to temporarily position the lever in a level condition and support it.



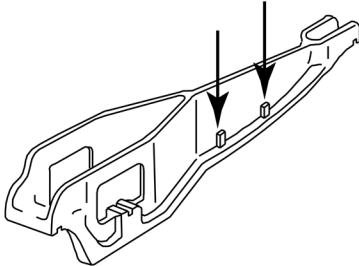
Transverse lever installation.

2. Assemble the tip connection bolt assemblies for both end extension levers, and then install the end extension levers.



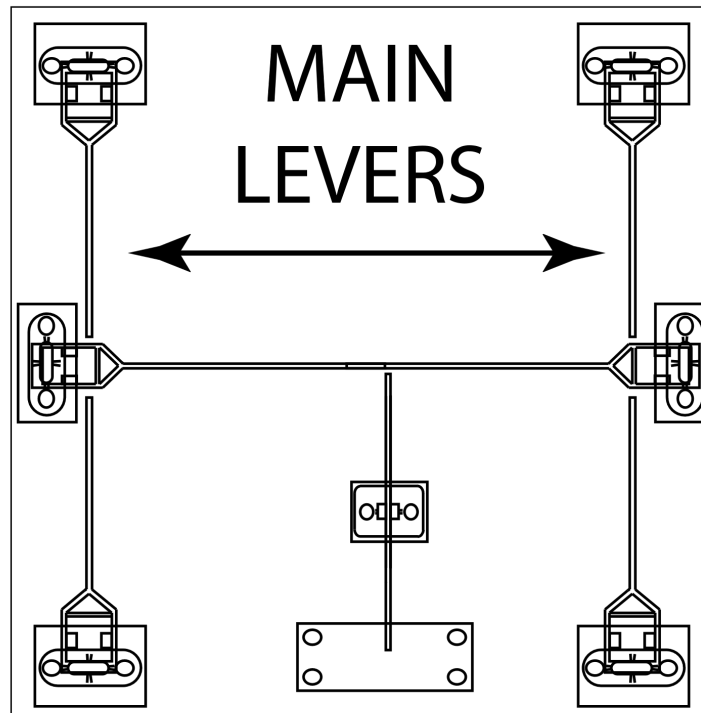
End extension levers installation.

- Adjust the tip block connections to level the levers, using the leveling pads at the sides of the levers.



All levers have cast in place leveling lugs.

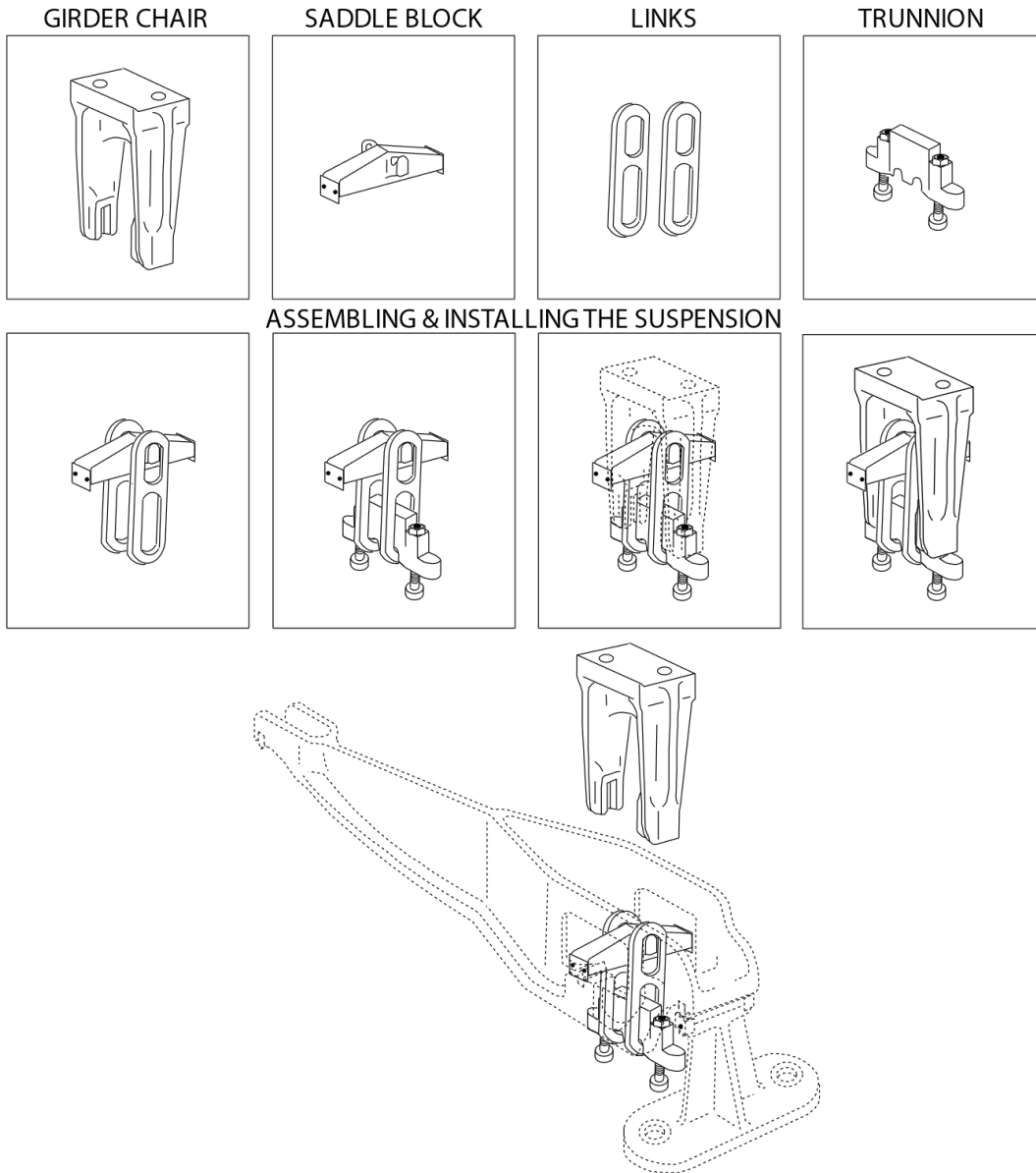
- Install all main levers and their load and tip blocks. Make sure the end main lever tips are not touching the body of the end extension levers and are supported by the pivots.



Main lever installation.

- Assemble and connect all tip bearing blocks and connecting linkage. Level the levers from the transverse lever first, to the end extension levers, and ending with the main levers.

6. To assemble the suspension parts in the main lever, put the saddle block in its correct position on the load pivots and hang the suspension links from the lugs on each side of the saddle block. Then place the trunnion block in position at the bottom of the suspension links.



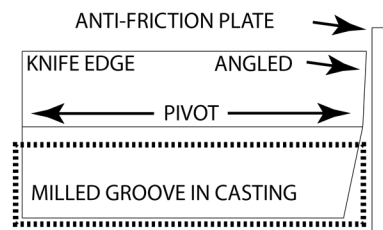
Links and trunnion block should be centered, after which the girder chair may be lowered between the double web section with the trunnion block engaging the chair. When seated and the chair top is level, the links will hang plumb.

7. Before installing the trunnion block, the two adjusting bolts must be checked. A hex nut shall be in each recess in the top of the block with a jam nut on the bottom surface of the block. The bolt must protrude no more than 7/8" above the casting surface.
8. If adjustment is necessary after the scale has been installed, loosen both lock nuts and turn the bolts up or down as required. Care must be taken to turn both bolts an equal amount to prevent tipping the trunnion and saddle block. After the adjustment has been made, tighten the lock nuts (where full threaded bolts have been provided). The bolt must project no more than 7/8" above the casting.

CAUTION!

Do not adjust the bolts to uneven lengths. The bolts must be no more than 7/8" above the casting surface.

Notes:



A. Where ever a knife edge pivot faces an anti-friction plate on a bearing block, the pivot is finished at a slight angle. Ensure this is the case for all pivots in the lever system.

B. All shackles and bearing assembly blocks should have a side to side clearance of 1/16" to 1/8" sideways movement to the pivots they contact. . The clearance can be adjusted by tapping the pivot with a brass drift pin to move the pivot sideways within the milled groove of the lever. A bearing block must not squeeze the lever pivots tightly between the anti-friction plates.

C. As levers and shackles and bearing blocks are installed, a thin coat of lithium grease should be applied. The amount of grease should be such that the position of the scale components can be easy to visually inspect to assure they are correctly in place.

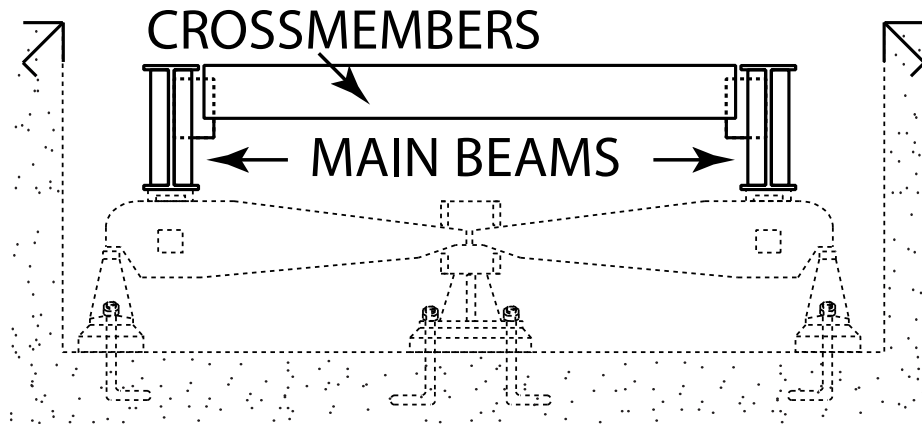
D. All threaded connections should be installed with the threaded ends in the upright position. This will cause less thread damage from water accumulation, and permit future easier maintenance inspections.

E. Install the saddle block, links, trunnion block, and girder chair to each main lever. Make sure the trunnion bolts are protruding away from the trunnion casting and are in contact with the girder chair, supporting it. Make sure the trunnion lock nuts are tight. The cast numbers on the links should be facing outwards.

F. To guarantee a proper installation, all levers must be leveled using their cast leveling lugs with a level, and all connections between the levers must be plumb. Check by holding a plumb bob at the tops of the connections.

2.07 Installation of Weighbridge

The steel understructure supports the concrete or wood deck and the loads applied to it, and transfers that load to the lever system. The main steel girder beams are reinforced with connecting cross members.

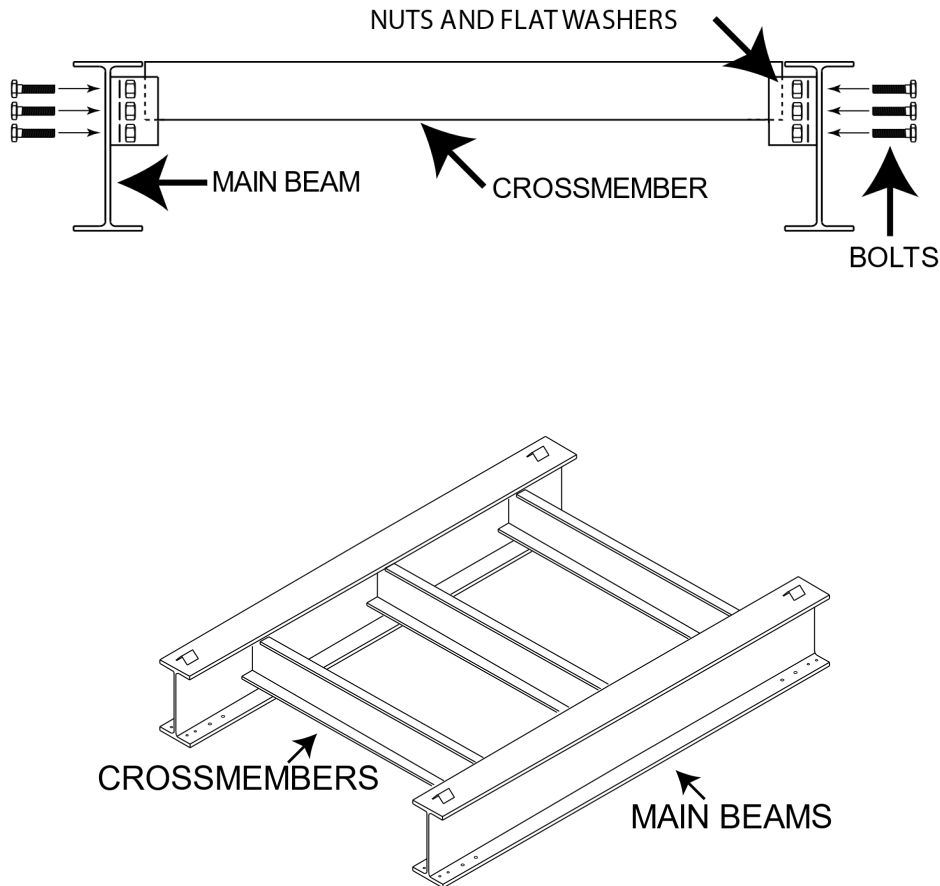


Rigid check rods coupled with flexible rubber pads are installed to prevent the lateral movement of the platform caused by livestock. They prevent the instability of the Instrument's weight display due to livestock movement on the platform.

The check rods are installed between mounting brackets on the pit walls and on the weighbridge. Rubber pads are used to prevent binding the platform and causing scale errors.

A suggested method of installing the weighbridge follows:

The weighbridge is generally constructed of two main steel girder beams held together by crossmembers manufactured from channel iron. This should be assembled and bolted together near the pit, and then placed into position with a crane or a knuckle boom.



The bolts used to secure the girder chairs to the main beams should be placed to the mounting holes of the main beams upside down and pointing down and used to guide and position the weighbridge being installed. Once the weighbridge is completely installed into position and resting on the supporting girder chairs, the bolts should be installed threads up from the girder chair up through the main beam and the washers and nuts installed and tightened. The girder chairs should be centered in the main levers web.

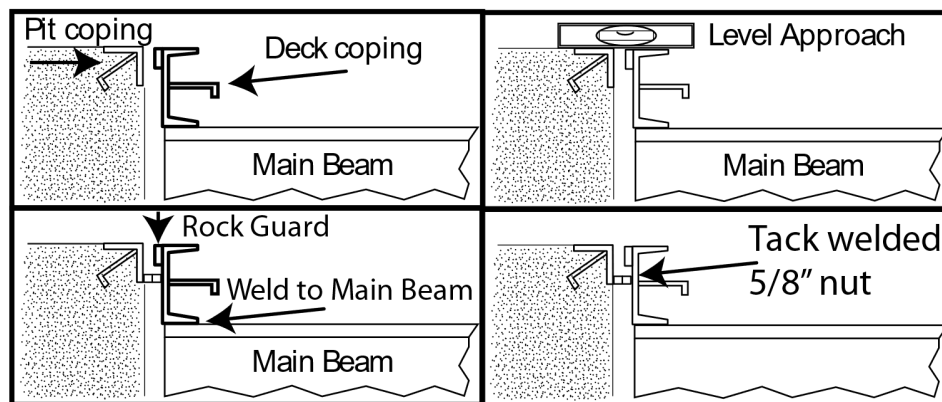
If concrete safety stands are installed, make sure they are at least 1" from contacting the scale beams. The purpose of the safety stands is to support the weighbridge in the event of a supporting scale lever breaking and not providing support.

If the transverse lever safety stand is installed, make sure it is adjusted so there is at least ½ inch clearance from touching the lever.

Upon completing the installation of the weighbridge, adjust the check rods so they lock the weighbridge into position and prevent any lateral movement. Do not allow the weighbridge to be shifted by the check rods, just adjust them to prevent any lateral movement. Lock them in place with the nuts.

2.08 Installation of Concrete Deck

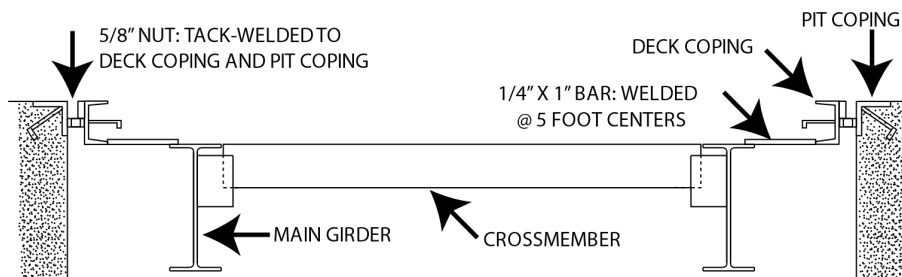
A reinforced concrete deck will complete the weighbridge installation. The addition of manholes will allow access to the scale understructure for adjustment, inspection, maintenance, and repairs.



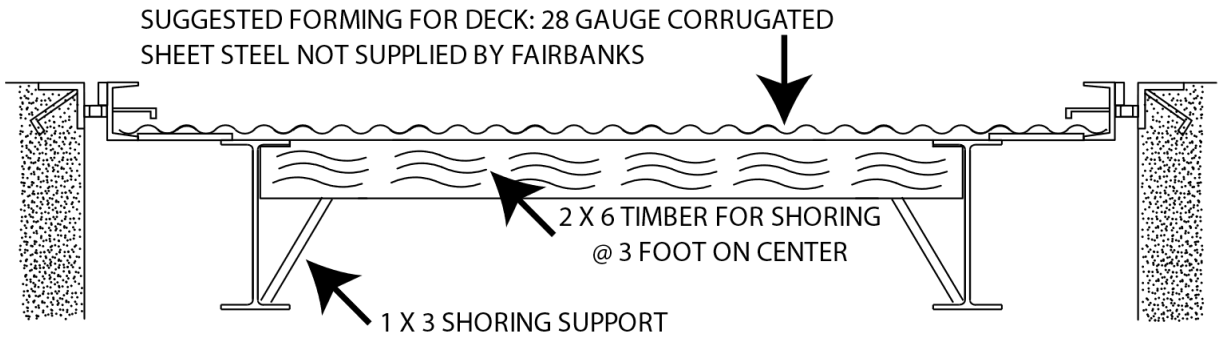
View at side of approach end: Installing approach deck coping.

- A.** The installation begins by positioning 5/8-inch nuts just under the rock guard of the approach deck coping and tack welding them. Spacing should be about 16 inches apart along the length of the coping, using more if needed. These 5/8-inch nuts will also be tack welded to the pit coping to form the long sides of the deck to support the coping position and to maintain a uniform gap between the scale deck and the pit coping.
- B.** Once the 5/8-inch nuts have been tack welded, place and position the approach coping across the main beams at one end of the weighbridge. Check that the coping is level with the approach pit coping. Then weld it on the inside flange to the top of the main beams. Next, tack weld the 5/8-inch nuts to the pit coping. Following this procedure, install both ends of the deck coping.
- C.** Continue installing and tack-welding the 5/8" spacer nuts onto the side deck coping. Spacing should be about 16 inches apart along the length of the coping, using more if needed. Position and tack weld each section to the pit coping, ensuring it is level and straight. 1/3" X 1" bar stock is included with the scale, and is welded to the bottom of the side deck coping and to the tops of the main beams at 5 feet spacing.

NOTE: The approach deck coping is cut at the factory to fit flush with the side pit coping to prevent concrete from spilling out. Weld the corner joints together to secure the corner.



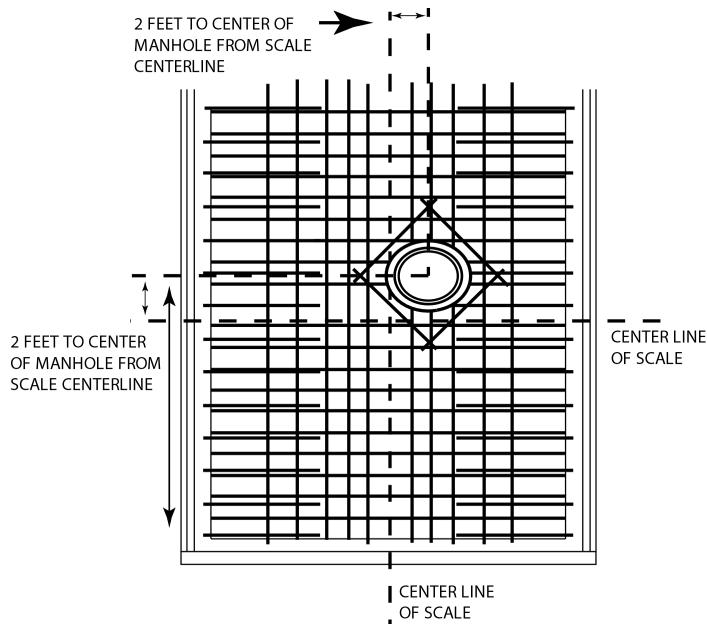
View from approach end of the scale.



View from approach end of the scale.

- D. 2" by 6" timber is recommended to support the corrugated steel sheets, rebar, manholes, and concrete. It is cut to fit inside the width of the pit inbetween the main beams. This support is held upwards by two 1" by 3" timbers so cut as to wedge the support from the inside bottom flange of the main beam as shown in the above drawing. Use nails if needed to secure the supports.
- E. After the timber supports have been placed into position, install the corrugated sheet steel onto the weighbridge, making sure it is pressed up against the lower flanges of the installed deck coping. The panels of the corrugated sheet steel should overlap each other to prevent concrete from leaking out of the pan. Make certain all gaps are sealed to prevent concrete leakage.

2.09 Manhole Placement



View from the approach end of the scale.

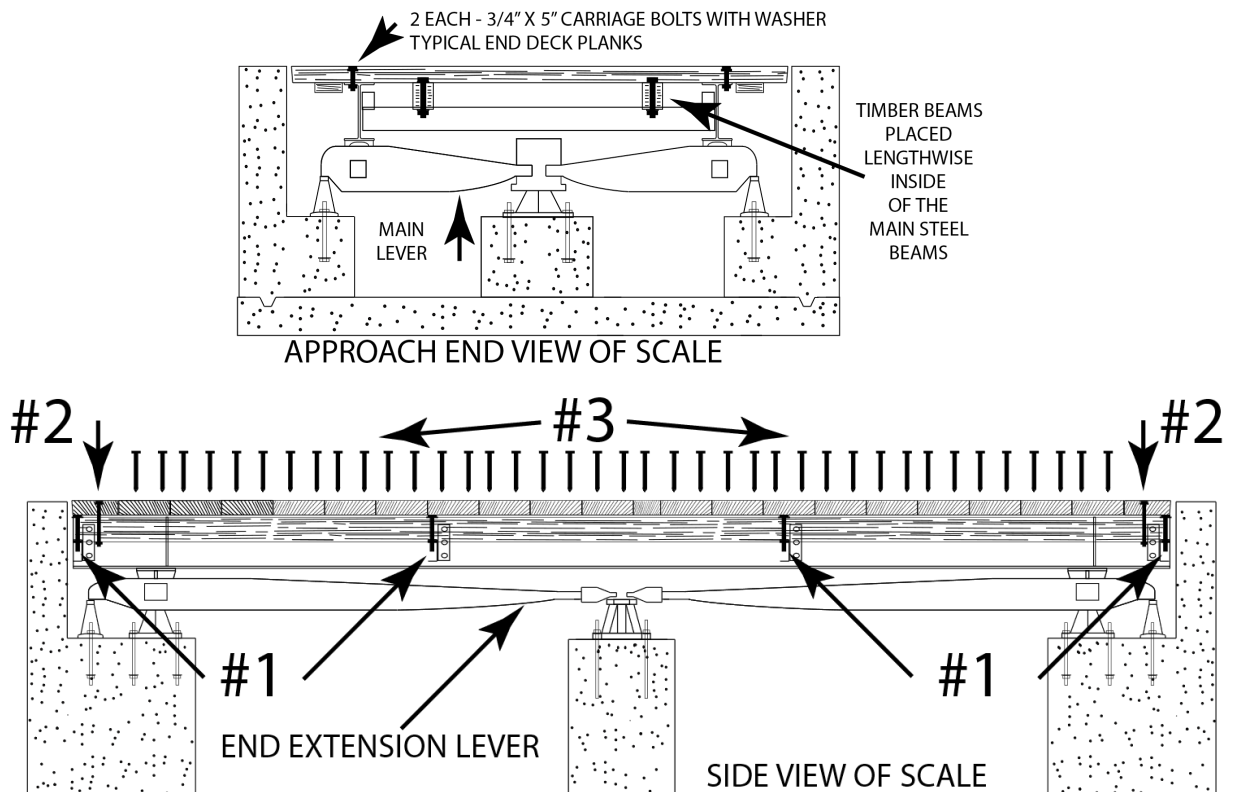
Position the manhole ring onto the corrugation in the dimension shown on the drawing. Place a large plastic trash bag filled with sand or dirt inside the ring to help keep the opening from filling with concrete.

- F. Proceed with the installation and tying of the deck rebar following the instructions in the certified prints. Pour and finish the concrete deck. Allow concrete to cure thoroughly. Do not use the deck until concrete has reached its desired strength, a minimum of 21 days.

2.10 Installation of Wood Deck

The timbers used to bolt and nail to the steel weighbridge understructure are not standard and not supplied by Fairbanks Scales. The material dimensions and quantities are stated on the scale certified plans.

There are two timber beams placed on the scale lengthwise and drilled and fastened to the scale steel crossmembers with bolts, and located just inside the main steel girder beams. The end deck planks are drilled through these longitudinal timber beams and then bolted to them with carriage bolts to secure them in place. The rest of the deck planks are fastened with large spike nails driven into the deck plank and the longitudinal timber beams.



#1: Timber beams placed lengthwise on the inside of the main steel beams and drilled and bolted to the steel crossmembers.

#2: End deck planks are drilled through the timber beams and bolted with carriage bolts.

#3: Remaining deck planks are fastened with large spike nails driven into the deck plank and the longitudinal timber beams.

NOTE: The means to enter the scale understructure must be provided.

2.11 Completion of Weighbridge Assembly with Concrete Deck

1. Remove the sand filled plastic bags from the manhole rings and cut through the sheet metal corrugation to open access to the scale pit.
2. Remove all timbers used to shore up the deck and manholes during the deck concrete cure.
3. Drive or torch the 5/8" nuts out from between deck and pit coping.
4. Check the adjustment of the rigid check rods and ensure they are tight without pulling, pushing, or influencing the scale weighbridge.
5. Install the loadcell, isolators and linkage. Connect to the scale instrument and configure and calibrate the scale.

Section 3: Loadcell & Weight Instrument Installation

3.01 Introduction

This section briefly describes installation techniques for electronic Scale Instruments used with Type “S” Truck Scales. This information is to be considered as supplemental to the Instrument Service Manual.

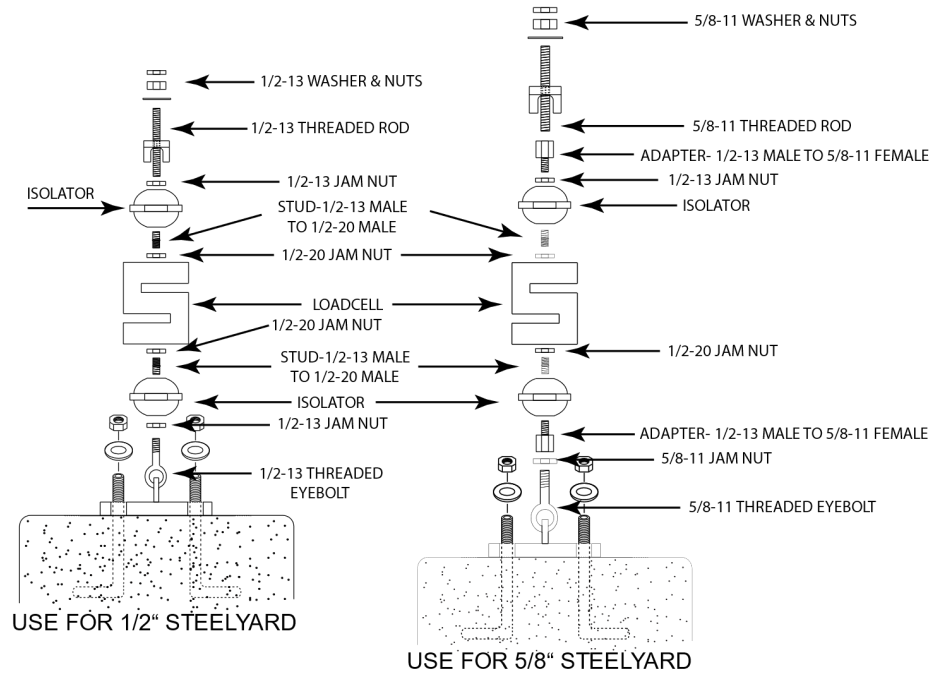
3.02 Levertronic Installation

On Levertronic Installations, the tip pivots of the transverse lever are connected to a bearing block applying force to a tension mounted load cell. The loadcell is also connected to isolator blocks to prevent damage to the loadcell from an electrical discharge delivered from a lightning bolt or other sudden surge of electric current. The load cell converts the tension force from the lever system to an electric signal in direct proportion to the loads being applied to and removed from the scale platform. The electric signal is furnished to the digital Instrument, where it is filtered, gated, converted to digital, and then displayed as weight information according to the programmed parameters of the Instruments configuration.

3.03 Load cell Installation

1. Tension mounted loadcells should be installed so that the cell cable is not part of the live load, otherwise cable movement will cause weight readout errors.
2. The tension loadcell should be installed in the upside-down position, and the cable should be dressed downward and away to lead water away from the load cell. The cable should be free from any obstructions and to provide freedom of movement for the loadcell to function properly.
3. This is also true for a canister design loadcell, where the loading end of the cell has a much thinner gauge of metal to both maintain the hermetic seal and to prevent obstruction to loads applied and removed. If the loadcell is not installed upside down, water collecting on the thin metal cover will rust through and then enter the loadcell body, shorting it out.
4. Unless the Instrument is located close enough to the loadcell to be directly connected to it, either a junction box or a splice will be required with the installation of additional cable.
5. The safety stand under the transverse lever is to prevent excessive movement in the case of a loadcell or Isolator failure. Ensure it is not touching the transverse lever, leaving a gap of at least $\frac{1}{2}$ ”.

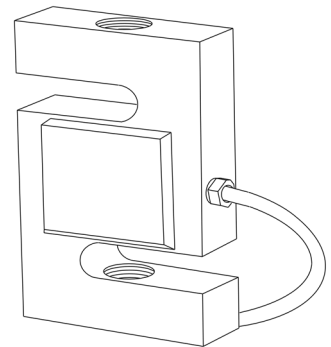
3.04 Loadcell linkage arrangement for 1/2" and 5/8" up pull stand.



B. System Interface

Levertronic systems have three main advantages over mechanical Indicators, weight Instrument location flexibility, provisions for electronic system interfaces, and speed of operation.

1. Thoroughly protect the loadcell cable from traffic and water contamination on its run from the scale to the Instrument. Buried, waterproof conduit is recommended.
2. Overhead cable installations must be strictly avoided.
3. Connect the cable to the Instrument and calibrate the system according to instructions in the Instruments service manual.



Detailed Installation and part list instructions are in; Manual 50025: Load Cell Isolator Linkage Kits for Tension Mounted Steelyard Applications.

Section 4: General Maintenance & Troubleshooting

4.01 Introduction

A properly maintained livestock scale will give many years of accurate and reliable service. Periodic maintenance is recommended to keep the scale in top condition.

Maintenance is generally performed by a regular maintenance program that includes inspections, testing for accuracy with certified test weights, cleaning when needed to prevent debris from affecting scale accuracy, close inspection, and greasing. All this work should be performed by an experienced and well-equipped scale service provider like Fairbanks Scales.

Care should always be exercised when driving loads onto the scale, as well as removing loads from the scale. Slowly applying loads with slow, steady speeds will ensure long life and satisfactory performance. And the scale understructure should be kept as clean and dry as possible to prolong the life of the steel supporting structure.

4.02 Maintenance

A minimum of two inspections and testing per year is recommended. The scales pivots and bearings should be cleaned, inspected, and greased once a year. The sump pump, if equipped, should be checked for proper operation monthly.

4.03 Scale Troubleshooting Chart

Most of the following suggested remedies for malfunctions can be performed by scale operating personnel. Keep in mind that major overhaul and calibration procedures should be handled by Fairbanks Service.

The following table is a guide to help determine the most likely causes for various symptoms.

PROBLEM	POSSIBLE CAUSE	SOLUTION
No Weight	Electronic Instrument not ON or not receiving power.	Switch Instrument ON; check that power cord is connected.
	Loadcell linkage broken	Repair and replace as needed.
Non-repeatability	Material between deck and coping, material in pit touching levers	Clean out material.
	Water in pit	Pump out water.
	Loose coping contacting deck.	Repair and secure coping.
	Pit wall contacting deck.	Realign deck by having Fairbanks Service adjust girder chairs, or repair pit wall.
	Wind across deck.	Provide a wind barrier.
		Adjust filtering
Multiple progressive errors	Electronic Instrument out of span.	Have Fairbanks Service calibrate Instrument.
Non-linearity	Scale levers out of level.	Realign levers.
	Suspension out of plumb.	Realign suspension.
	Worn pivots, bearings and links.	Have Fairbanks Service repair or overhaul the Scale. Worn pivots and bearings can be replaced with factory new parts, and the suspension can also be replaced with new saddle blocks, links, and trunnion blocks.
	Indicator out of adjustment.	Contact Fairbanks Service.

Section 5: Parts List

5.01 Introduction

This section is divided into three main subsections as follows:

A: Lever system descriptions and quantities of parts.

This section details the number of sections, and the list and quantity of parts in the lever system.

B. Lever System Parts

Illustrated exploded view parts lists for each lever type, including check rods and brackets, connecting bolts and linkage assemblies.

C. Part number and casting number cross reference

5.02 Lever System Parts

The following pages illustrate and list the parts used in Type "S" Motor Truck Scale Lever Systems. Parts are grouped by the lever type with which they are associated, as listed below:

Main Lever
End Extension Lever
Transverse Lever
Check brackets and rods

Lever stands and old style drop in stand bearing blocks come with Anti Friction plates installed, but **DO NOT HAVE BEARINGS**.

The Saddle Blocks, Load Blocks, and Tip Block part numbers are all complete assemblies with the Bearings and Anti-friction plates already installed.

The Trunnions are also complete with their bolts, nuts, and lock washers already installed.

Pier stand J-Bolts each are supplied with a flat washer and a full nut.

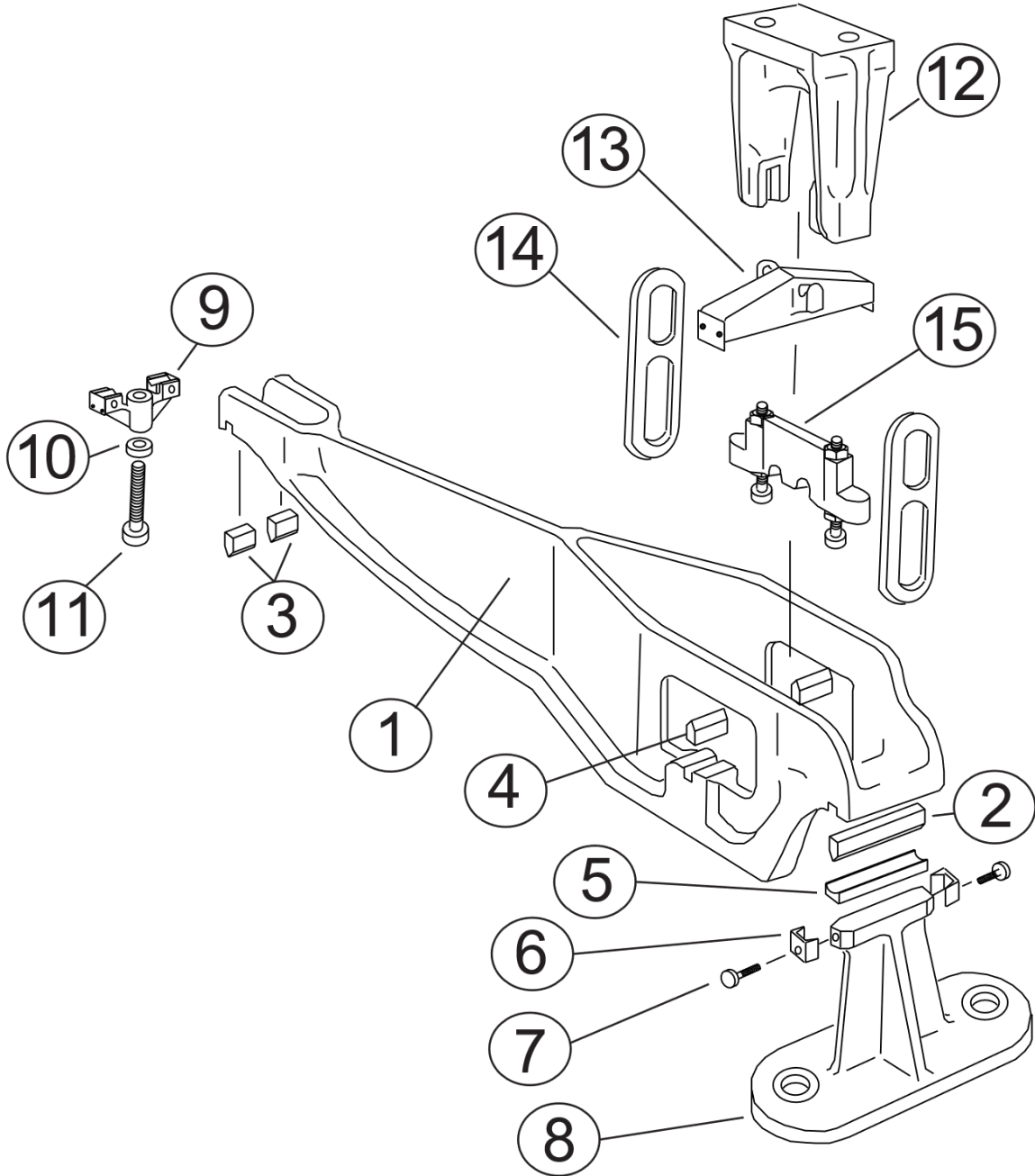
5.03 Model, Parts List, and Quantity of Parts Required

Product #	Model #	Capacity Tons	Size	Platform Material
91214	6186AW	5	14' X 8'	Wood
91215	6186A	5	14' X 8'	Concrete, 3" Thick
91216	6187AW	10	16' X 8'	Wood
91217	6187A	10	16' X 8'	Concrete, 3" Thick
91218	6188AW	10	18' X 9'	Wood
91219	6188A	10	18' X 9'	Concrete, 4" Thick
91220	6189A	10	20' X 9'	Concrete, 4" Thick
91221	6190AW	10	22' X 9'	Wood
91222	6190A	10	22' X 10'	Concrete, 4" Thick
91223	6192A	15	24' X 10'	Concrete, 4" Thick
91224	6197A	20	26' X 14'	Concrete, 4" Thick

All Models: Parts Quantities below.

Quantity	Description
4	Main Lever Assembly
6	Main lever and end extension lever stands
6	Main lever and end extension lever fulcrum bearing
4	Saddle block
8	Links
4	Trunnion
4	Main lever tip block assembly
2	End extension lever assembly
2	End extension lever load block assembly
2	End extension nose iron assembly (Supplied with the lever)
2	End extension tip block assemblies
1	Transverse lever assembly
1	Transverse lever stand
1	Transverse lever fulcrum bearing
1	Transverse lever load block assembly
1	Transverse lever tip block assembly
1	Transverse Lever Safety Stand (If Equipped)
1	Load cell up pull plate

5.04 Parts List: Main Lever



Parts List: Main Lever

NOTE: Horizontal dash (“-”) indicates same part is used as on the model to the left.

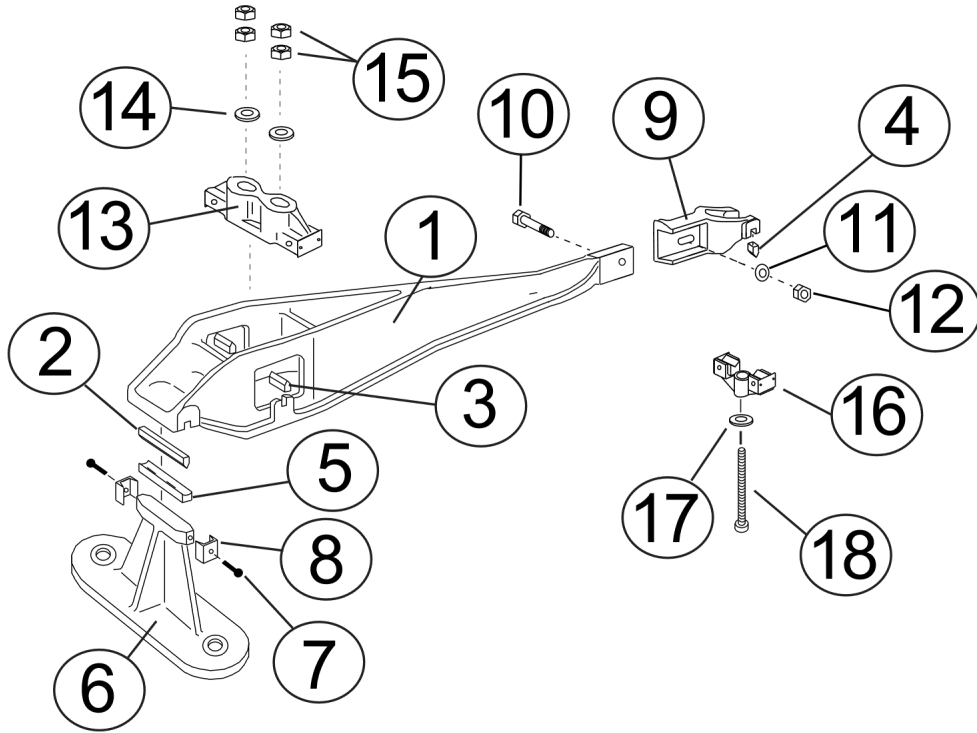
Key #	Description	Product # Model # Size	Product # Model # Size	Product # Model # Size	Product # Model # Size	Product # Model # Size
		91214 6188AW 14' X 8'	91215 6186A 14' X 8'	91216 6187AW 16' X 8'	91217 6187A 16' X 8'	91218 6188AW 18' X 9'
1	Part #	60360	-			
1	Casting #	SEC-8-A	-			
2	Fulcrum Pivot	54465	-			
3	Tip Pivot	54710	-			
4	Load Pivot	54710	-			
5	Fulcrum Bearing	60247	-			
6	Anti- Friction Plate					
7	Bolt					
8	Stand	60398	-			
9	Tip Block Complete Assembly					
10	Washer					
11	Bolt					
12	Girder Chair	60384	-			
13	Saddle Block Complete Assembly	60368	-			
14	Links	60393	-			
15	Trunnion Complete Assembly	60377	-			

Parts List: Main Lever

NOTE: Horizontal dash (“-”) indicates same part is used as on the model to the left.

Key #	Description	Product # Model # Size	Product # Model # Size	Product # Model # Size	Product # Model # Size	Product # Model # Size	Product # Model # Size
		91219 6188A 18' X 9'	91220 6189A 20' X 9'	91221 6190AW 22' X 9'	91222 6190A 22' X 10'	91223 6192A 24' X 10'	91224 6197A 26' x 14'
1	Part #			60360	-	60361	
1	Casting #			SEC-8-A	-	80736	
2	Fulcrum Pivot						
3	Tip Pivot						
4	Load Pivot						
5	Fulcrum Bearing			60247	-		
6	Anti-Friction Plate						
7	Bolt						
8	Stand			60398	-	60398	
9	Tip Block Complete Assembly			60412	-	60412	
10	Washer						
11	Bolt						
12	Girder Chair			60384	-	60385	
13	Saddle Block Complete Assembly			60368	-	60396	
14	Links			60393	-	60394	
15	Trunnion Complete Assembly			60377	-	60378	

5.05 Parts List: End Extension Lever



Parts List: End Extension Lever

NOTE: Lever part number is the complete assembly including pivots and nose iron. Load and tip blocks are also complete assemblies including bearings and anti-frictions. Horizontal dash (“-”) indicates same part is used as on the model to the left.

Key #	Description	Product # Model # Size	Product # Model # Size	Product # Model # Size	Product # Model # Size	Product # Model # Size
		91214 6188AW 14' X 8'	91215 6186A 14' X 8'	91216 6187AW 16' X 8'	91217 6187A 16' X 8'	91218 6188AW 18' X 9'
1	Part #		60464			
1	Casting #		80220			
2	Fulcrum Pivot		54464			
3	Load Pivot		54711			
4	Tip Pivot		54710			
5	Fulcrum Bearing					
6	Stand		60398			
7	Bolt					
8	Anti- Friction Plate					
9	Nose Iron		60423			
10	Bolt		54555			
11	Washer		54233			
12	Nut		54264			
13	Bearing Block – Load- Complete Assembly					
14	Washer					
15	Nuts					
16	Tip Block Complete Assembly					
17	Washer					
18	Bolt, Connecting					

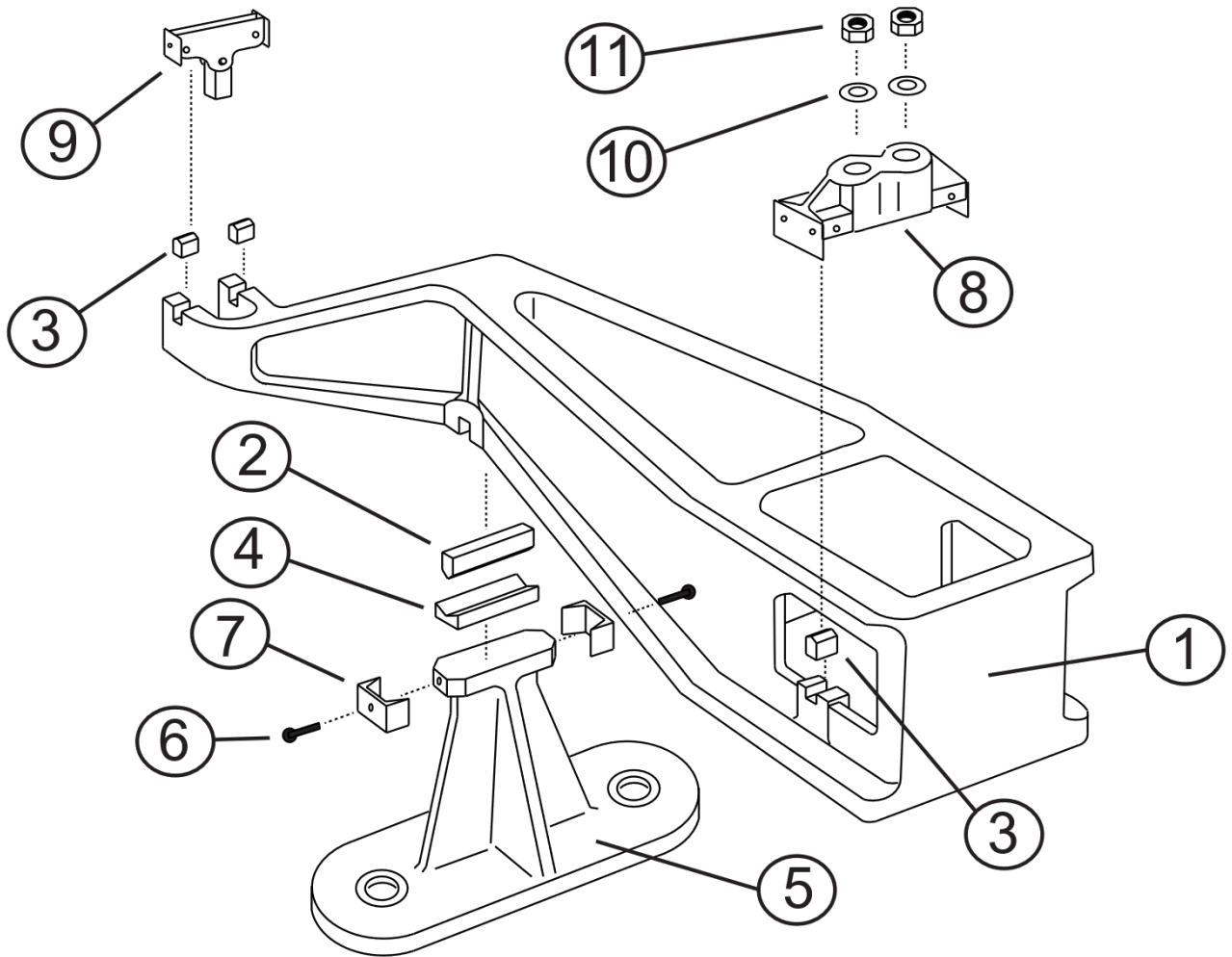


Parts List: End Extension Lever

NOTE: Lever part number is the complete assembly including pivots and nose iron. Load and tip blocks are also complete assemblies including bearings and anti-frictions. Horizontal dash (“-”) indicates same part is used as on the model to the left.

Key #	Description	Product # Model # Size	Product # Model # Size	Product # Model # Size	Product # Model # Size	Product # Model # Size	Product # Model # Size
		91219 6188A 18' X 9'	91220 6189A 20' X 9'	91221 6190AW 22' X 9'	91222 6190A 22' X 10'	91223 6192A 24' X 10'	91224 6197A 26' X 14'
1	Part #					60438	
1	Casting #					SGC-5-EM	
2	Fulcrum Pivot					54465	
3	Load Pivot					54710	
4	Tip Pivot					54710	
5	Fulcrum Bearing						
6	Stand						
7	Bolt						
8	Anti-Friction Plate						
9	Nose Iron					60427	
10	Bolt					54485	
11	Washer					54225	
12	Nut					54363	
13	Bearing Block – Load-Complete Assembly						
14	Washer						
15	Nuts						
16	Tip Block Complete Assembly						
17	Washer						
18	Bolt, Connecting						

5.06 Parts List: Transverse Lever, Up-Pull, Standard





Parts List: Transverse Lever, Up-Pull, Standard

Key #	Description	Product # Model # Size	Product # Model # Size	Product # Model # Size	Product # Model # Size	Product # Model # Size
		91214 6188AW 14' X 8'	91215 6186A 14' X 8'	91216 6187AW 16' X 8'	91217 6187A 16' X 8'	91218 6188AW 18' X 9'
1	Part #					
1	Casting #					
2	Fulcrum Pivot					
3	Load & Tip Pivots					
4	Fulcrum Bearing					
5	Stand					
6	Bolt					
7	Anti- Friction Plate					
8	Load Block Complete Assembly					
9	Tip Block Complete Assembly					
10	Washer					
11	Nut					



Parts List: Transverse Lever, Up-Pull, Standard

Key #	Description	Product # Model # Size	Product # Model # Size	Product # Model # Size	Product # Model # Size	Product # Model # Size	Product # Model # Size
		91219 6188AW 18' X 8'	91220 6189A 20' X 9'	91221 6190AW 22' X 9'	91222 6190A 22' X 10'	91223 6192A 24' X 10'	91224 6197A 26' X 14'
1	Part #						
1	Casting #						
2	Fulcrum Pivot						
3	Load & Tip Pivots						
4	Fulcrum Bearing						
5	Stand						
6	Bolt						
7	Anti- Friction Plate						
8	Load Block Complete Assembly						
9	Tip Block Complete Assembly						
10	Washer						
11	Nut						

5.07 Load cell data for Type “S” Livestock Scale Load Cells

Product #	Model #	Loadcell Capacity
91214	6186AW	750 lb.
91215	6186A	750 lb.
91216	6187AW	2,000 lb.
91217	6187A	2,000 lb.
91218	6188AW	2,000 lb.
91219	6188A	2,000 lb.
91220	6189A	2,000 lb.
91221	6190AW	2,000 lb.
91222	6190A	2,000 lb.
91223	6192A	2,000 lb.
91224	6197A	2,000 lb.

5.08 Parts List: Loadcell and Loadcell Kit

The loadcell kit contain the loadcell, Isolators, threaded adapters, jam nuts, shrink tubing, and additional 6 conductor cable. Refer to manual 50025 for more information.

Loadcell Kits:

Kit Part #	Accessory #	Capacity
12145	1107	750 Pounds
12146	1109	2,000 Pounds

The 750 lb. capacity load cell kit has Isolators with two female tapped holes, 1/2-13 at one end, and 1/2-20 at one end. The Studs are threaded male adapters with 1/2-20 at both ends. The tension load cell has two tapped female holes 1/2-20.

The 2,000 lb. capacity load cell kit has Isolators with two female tapped holes. Both are 1/2-13. The Studs are threaded male adapters, 1/2-13 at one end and 1/2-20 at one end. The tension load cell has two tapped female holes 1/2-20.

Loadcell Only:

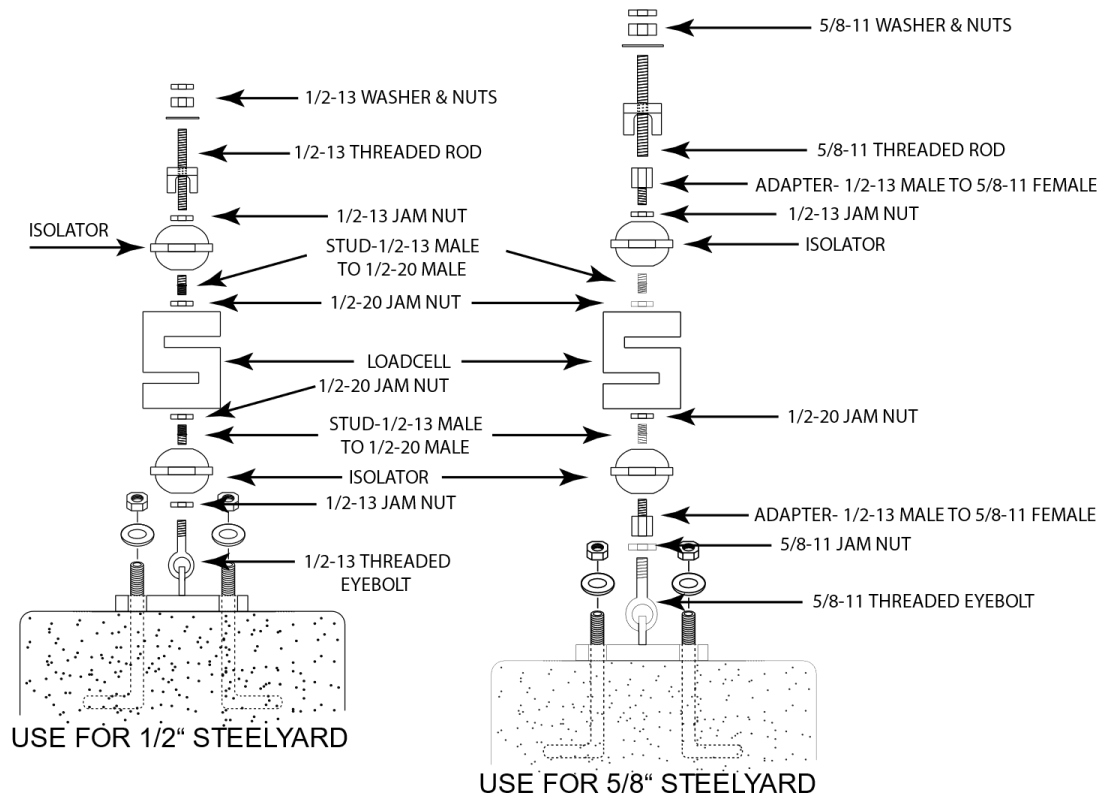
Part #	Load Cell Size
11645	750 #
11647	2,000 #

**Kit Part # 12145
Accessory 1107
750# LC KIT**

Part #	Quantity	Description
13007	2	ISOLATOR, 750#, 1/2-13 Female, 1/2-20 Female
11645	1	LOAD CELL, 750# S TYPE
12144	20 Feet	WIRE, L/C, 3 Pair, 18 AWG, Shielded
12284	2	Adapter, S/S, Hex, 1/2-13 Male to 5/8-11 Female
50025	1	Bulletin
10116	2	NUT, JAM HEX .500-13 NC
11283	.25800 Feet	1/16-inch diameter, Tubing, Black, Shrinkable
10411	.29200 Feet	1/4 inch diameter, Tubing, Black, Adhesive, Shrinkable
12655	1 Foot	1/2 inch diameter, Tubing, Black, Adhesive, Shrinkable
10117	4	NUT, JAM HEX .500-20 UNF
13010	2	Stud, 1/2-20 X 2 1/2 inches long
11209	1	Lug

**Kit Part # 12146
Accessory 1109
2,000# LC KIT**

PART #	QUANTITY	DESCRIPTION
13008	2	ISOLATOR (3K), 1/2-13 X 0.56" FEMALE, BOTH ENDS
11647	1	LOAD CELL, TENSION, 2K, 1/2-20 FEMALE, BOTH ENDS
12144	20 FEET	18 AWG, 3 PAIR LOAD CELL CABLE, SHIELDED
12284	2	ADAPTER, S/S, HEX, 1/2-13 X 0.94" MALE TO 5/8-11 X 0.75" FEMALE
50025	1	BULLETIN
10116	4	NUT, HEX, JAM, 1/2-13
11283	0.258 FEET	SHRINK TUBING
10411	0.292 FEET	SHRINK TUBING
12655	1.0 FEET	SHRINK TUBING
10117	2	NUT, HEX, JAM, 1/2-20
13011	2	STUD, THREADED, 1/2-20 X 1.12" LONG MALE AND 1/2-13 X 1.12" LONG MALE, 2.5" LONG TOTAL



5.09 Parts List: Transverse Lever Safety Stand

In the event of loadcell and/or linkage breaking apart, the Transverse Lever Safety Stand will prevent the lever system from collapsing. The Safety Stand is installed just behind the up-pull Transverse Lever so it will be supported in the event of linkage failure.

There should be ½" to 1" clearance between the stand and the lever during normal operation.

Part #	Quantity	Description

5.10 Parts List: Loadcell Linkages

61238 89276 1/2 RD HRS X 20 ANCHOR PLATE ASSY

Kit Part Number: 61238 contains the following:

Part #	Quantity	Description
60343	1	U BOLT, 5 1/16" LG
60344	1	ANCHOR PLATE
66327	1	1/2-20 X 1 1/2, EYE BOLT

60147 85671 LOADCELL LINKAGE CUT LENGTH 62"

Kit Part Number: 60147 contains the following:

Part #	Quantity	Description
64976	1	1/2" CONN. LINK 4750# CAP
66327	1	1/2-20 X 1 1/2, EYE BOLT
66612	1	1/2-13 X 1 1/2, EYE BOLT

60353 86987 CONNECTION ROD ASSY, FOR 2K & 3K LOAD CELL INSTALL

Kit Part Number: 60353 contains the following:

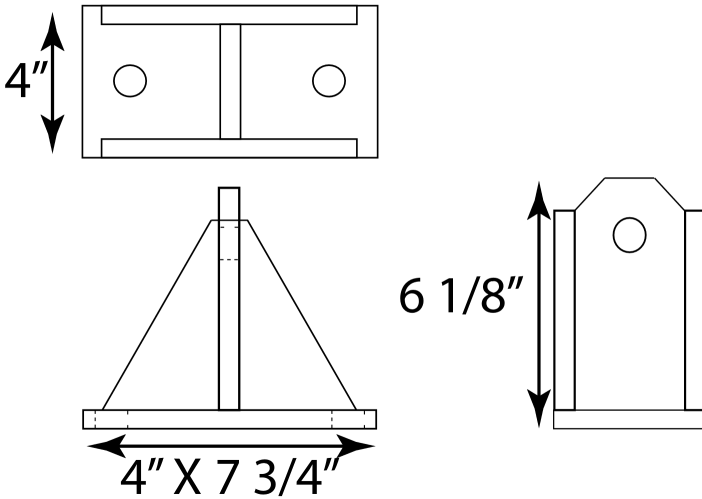
Part #	Quantity	Description
54865	3	1/2-13 JAM NUT
59995	1	ROUND, THD, RH, FULL, 1/2-13 x 12"
60356	1	BUSHING
54220	1	1/2" FLAT WASHER

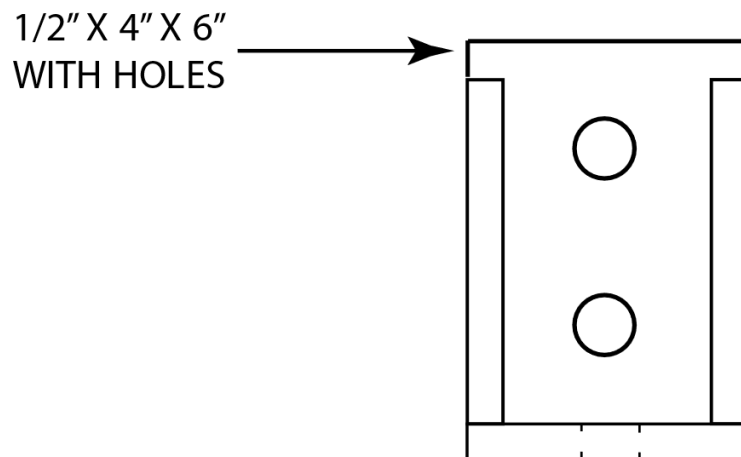
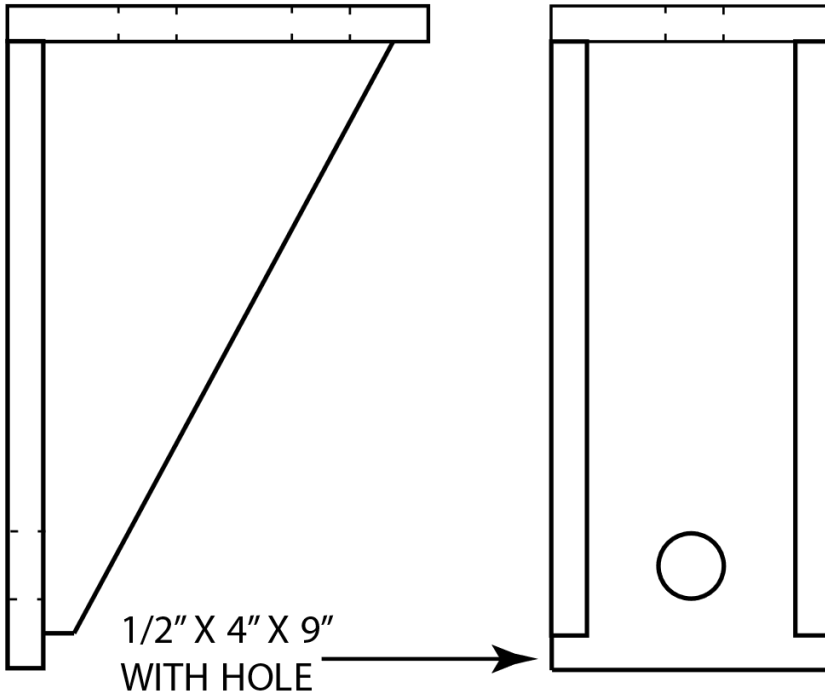
61435 90051 ANCHOR PLATE ASSEMBLY

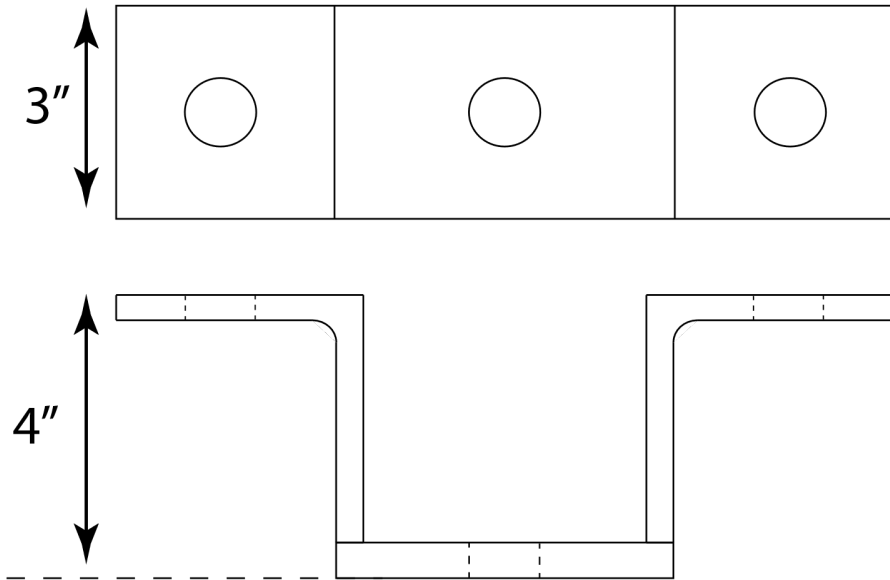
Kit Part Number: 61435 contains the following:

Part #	Quantity	Description
60344	1	ANCHOR PLATE
61434	1	EYEBOLT
60343	1	U BOLT, 5 1/16" LG

5.11 Parts List: Checking Brackets and Rods



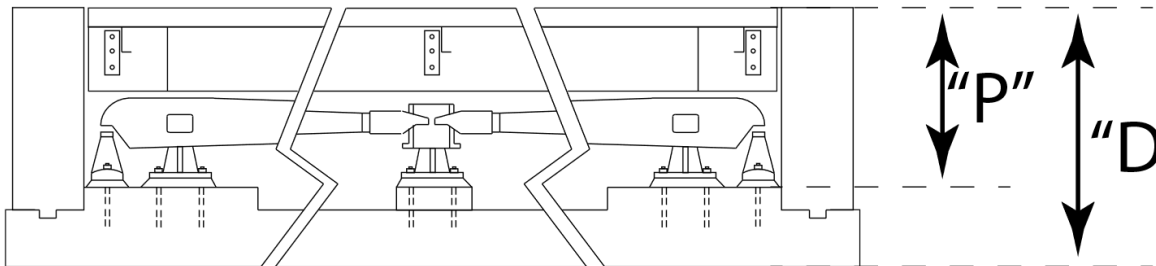


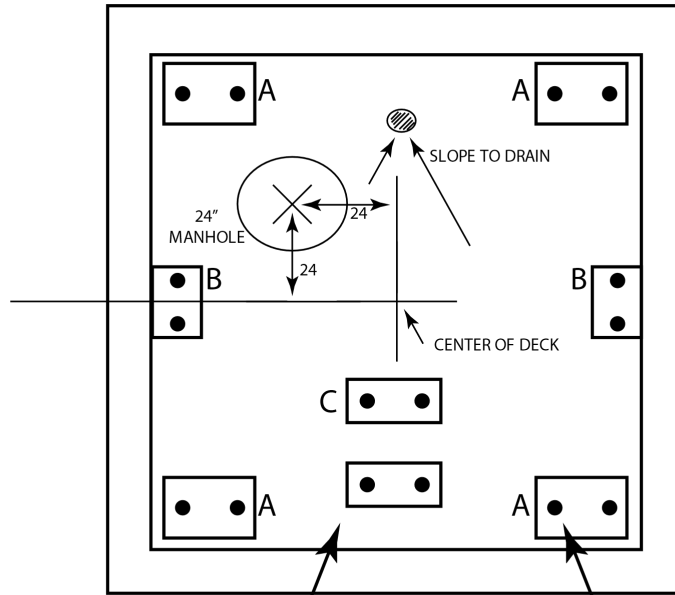


Pit Wall Checking Bracket

APPENDIX I:

Product #	Model #	Excavation Cubic Yards	Concrete without rebar cubic yards	Concrete with rebar cubic yards	Rebar lbs.	Pier Depth "P"	Pier Depth "D"
91214	6186	90	7	26	900	27 1/2"	78"
	6187	100	7	28	1000	29 3/8"	78"
	6188	120	8	30	1000	32 1/2"	78"
	6189	130	9	32	1000	32 1/2"	78"
	6190	150	12	33	1200	32 1/2"	78"
	6192	160	15	42	1200	35 1/2"	78"
	6197	190	28	47	1500	39"	78"





2 EACH - 7/8" X 15" ANCHOR BOLTS WITH WASHER AND NUT. BOLTS PROJECT 3 1/2".

14 EACH - 7/8" X 12" ANCHOR BOLTS WITH WASHER AND NUT. BOLTS PROJECT 3".

Fairbanks Scale

Type "S" Livestock Scales



Manufactured by Fairbanks Scales, Inc.
821 Locust Street
Kansas City, MO 64106

www.fairbanks.com

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