Service Manual

Fairbanks Scale

MECHANICAL & LEVERTRONIC

Two, Four, & Five Section

Type “S” Motor Truck Scale

50571

Revision 3 6/2019

AMENDMENT RECORD

Fairbanks Scales
MECHANICAL & LEVERTRONIC
Two, Four, & Five Section
Type "S" Motor Truck Scale
Document 50571

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

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Revision 1	12/2017	Released manual
Revision 2	04/2018	Major update, new drawings, installation method suggestions, parts listings updated
Revision 3	06/2019	Updated end extension lever information

Disclaimer

Every effort has been made to provide complete and accurate information in this manual. However, although this manual may include a specifically identified warranty notice for the product, Fairbanks Scales makes no representations or warranties with respect to the contents of this manual, and reserves the right to make changes to this manual without notice when and as improvements are made.

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Section 1: General Information

1.1 Introduction & Description

This manual provides installation information and parts lists for Fairbanks 2, 4, and 5 Section Type “S” Mechanical and Levertronic Motor Truck Scales. This information is presented as supplementary to the Certified Scale Plans and is intended for use by qualified installation technicians fully familiar with these scales. As such, these instructions are intended more as a checklist and guide than a step by step procedure. Assembly and installation should only be attempted with the presence and guidance of an experienced factory trained scale erector.

1.2 Description of Type “S” Motor Truck Scales

Fairbanks Type “S” Motor Truck Scales are available in three standard types: 2, 4, and 5 Sections, depending on the platform size and capacity.

The Instrument, which can be remotely located from the scale, provides a direct reading digital weight display for instant recognition of loads applied and removed from the scale. Peripheral devices, such as remote displays, printers, computer outputs, fieldbus outputs, cameras, card readers, rf tag readers, and other types, can further aid in the weighing operations.

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 extra strength and stability, while the double parallel link suspension is designed to swing parallel to the traffic direction, ensuring long life and accuracy.

The main lever suspension assembly is vertically adjustable to maintain a level platform and equal loading on the lever system, eliminating the need for shims, and suspension connections between levers are fully adjustable, to keep all parts in true vertical and horizontal alignment.

The standard Type “S” Motor Truck Scale is equipped with a single tension loadcell, which converts loads applied to an electrical signal which is transmitted by wire cable to an electronic weight indicating Instrument. Older Type “S” Motor Truck Scales that are equipped with a mechanical beam or dial can be converted to levertronic in similar fashion.

NOTE: Some models of Type “S” scales are specifically designed and built for the State of Michigan. Michigan permits trucks weighing up to 164,000 pounds on their roads. However, different than other states, Michigan requires a lower weight per axle which more evenly distributes the load and reduces wear and tear on roads.

TYPE "S" MOTOR TRUCK SCALES

Product #	Model #	Capacity Tons	Platform Size	Number of Sections	CLC Pounds	Deck Construction
90951	3116	15	22 x 9	2	30,000	Concrete
90952	3141	25	24 x 10	2	50,000	Concrete
90953	3153	30	24' x 10'	2	60,000	Concrete
90954	3157	30	30' x 10'	2	60,000	Concrete
90955	3158	30	34' x 10'	2	60,000	Concrete
90956	3381	60	34' x 10'	4	60,000	Concrete
90957	3342	60	50' x 10'	4	60,000	Concrete
90958	3344	60	60' x 10'	4	60,000	Concrete
90959	3446	60	70' x 10'	5	60,000	Concrete
90960	3484	60	80' x 10'	5	60,000	Concrete
90961	3352	60	50' x 10'	4	80,000	Concrete
90962	3354	60	60' x 10'	4	80,000	Concrete
90963	3356	60	70' x 10'	5	80,000	Concrete
90964	3394	80	60' x 10'	4	80,000	Concrete
90965	3482	80	70' x 10'	5	80,000	Concrete
90966	3485	80	80' x 10'	5	80,000	Concrete
90967	3364	120	60' x 12'	4	120,000	Concrete
90969	3374	120	60' x 14'	4	120,000	Concrete
90968	3466	120	70' x 12'	5	120,000	Concrete
90970	3476	120	70' x 14'	5	120,000	Concrete
90971	3141	25	24' x 12'	2	50,000	Concrete
90972	3153	30	24' x 12'	2	60,000	Concrete
90973	3157	30	30' x 12'	2	60,000	Concrete
90974	3158	30	34' x 12'	2	60,000	Concrete
90975	3381	50	34' x 12'	4	60,000	Concrete
90976	3342	60	50' x 12'	4	60,000	Concrete
90977	3344	60	60' x 12'	4	60,000	Concrete
90978	3446	60	70' x 12'	5	60,000	Concrete
90979	3484	60	80' x 12'	5	60,000	Concrete
90986	3446	60	70' x 14'	5	60,000	Concrete
90980	3352	60	50' x 12'	4	80,000	Concrete
90981	3354	60	60' x 12'	4	80,000	Concrete
90982	3356	60	70' x 12'	5	80,000	Concrete
90983	3394	80	60' x 12'	5	80,000	Concrete
90984	3482	80	70' x 12'	5	80,000	Concrete
90985	3485	80	80' x 12'	5	80,000	Concrete
90987	3482	80	70' x 14'	5	80,000	Concrete
90988	3485	80	80' x 14'	5	80,000	Concrete
Michigan Scales						
91512	3396	100	60' x 10'	4	80,000	Concrete
91513	3497	100	70' x 10'	5	80,000	Concrete
91514	3498	100	80' x 10'	5	80,000	Concrete
91515	3396	100	60' x 12'	4	80,000	Concrete
91516	3497	100	70' x 12'	5	80,000	Concrete
91517	3498	100	80' x 12'	5	80,000	Concrete

1.3 Specifications & Requirements

Specifications for typical two, four, and five section scales are given on the following pages. Basic dimensions, loading specifications, and concrete requirements are included for general reference.

NOTE:

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

1. Pit construction is the responsibility of the customer or as contracted. Certified Pit Plans are available from Fairbanks and must be used.

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

2. All calculations are approximate and should be used for estimating purposes only.

3. Pit construction

   Excavation quantities are based on the following:

A. Height - Seven feet below ground level.

B. Width - Three feet clearance from the outside of each pit wall. For 12 feet wide scales, add 10%.

4. Non-reinforced pit concrete quantities:

   For pit support where soil has a minimum of 4000 PSF bearing capacity.
   For Inside pit depth is approximately 6 feet. For 12 foot wide scales, add 20%.

5. Reinforced pit concrete and rebar quantities:

   For pit support where the soil has a minimum of 2000 PSF bearing capacity. Inside pit depth is approximately 6 feet. For 12-foot-wide scales, add 20%.

6. Fairbanks normally supplies all levers and stands, connecting shackles, weighbridge steel, bumpers, pit coping, deck reinforcing, deck channels, and anchor bolts.

7. The following items are NOT included, and are sold separately, supplied by the customer, or as contracted.
8. Instrumentation & Printers, Load cell and linkage, Surge Voltage Protection, Corrugated steel for deck forming, Load cell cable, and Manholes.

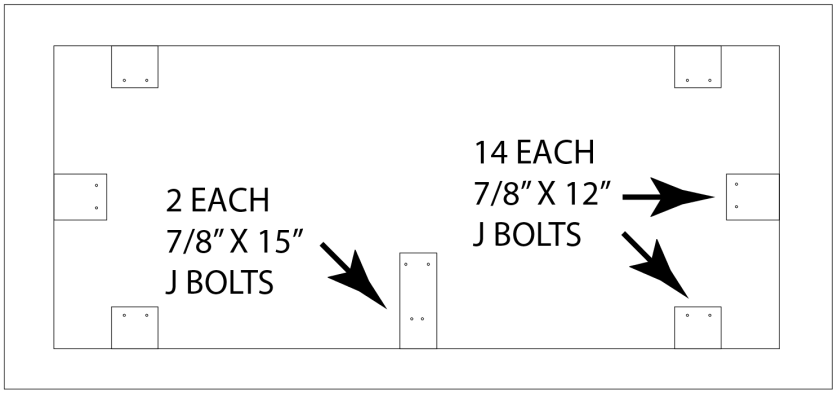
9. All quantities are based on 16-inch end walls and 12-inch sidewalls.

10. Grease is used to protect the pivot and bearings from rust and to prevent introduction of foreign matter or debris to a critical area. A light, white lithium grease is recommended, this grease maintains pliability in a wide range of temperatures and will not harden and cause errors. Grease should not be so thickly applied as to make a maintenance inspection difficult. The purpose of the grease is to prevent debris and ice from entering the space between the pivots and the bearings.

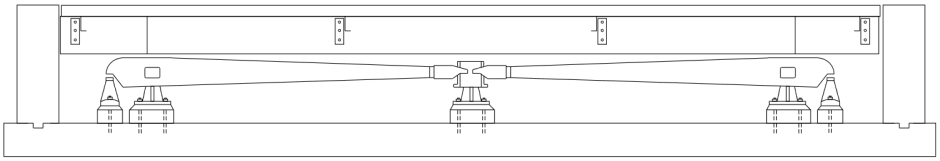
    NOTE: The abbreviation "CLC" stands for "Concentrated Load Capacity". This term describes the scale's ability to weigh a load concentrated in a relatively small area on the scale platform.

1.4 Two Section Scales:

The following 2 drawings show the top view of the pit showing the piers, cast in place J-bolts, and side view of the installed scale. The list is the current types of 2 section scales available.



Embedded J-Bolts and their location on the lever piers.

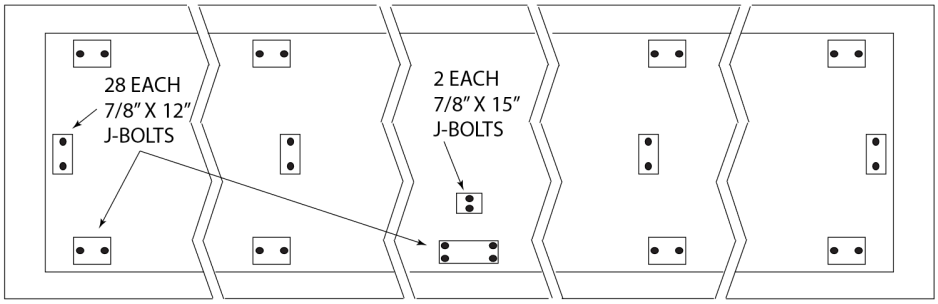


2-Section Scale side view.

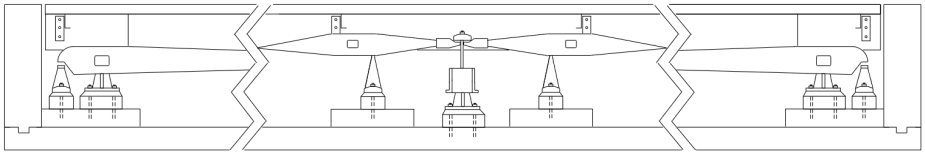
Product #	Model #	Capacity	CLC	Platform Size
90951	3116	30,000 lbs.	30,000 lbs.	22' x 9'
90952	3141	50,000 lbs.	50,000 lbs.	24' x 10'
90953	3153	60,000 lbs.	60,000 lbs.	24' x 10'
90954	3157	60,000 lbs.	60,000 lbs.	30' x 10'
90955	3158	60,000 lbs.	60,000 lbs.	34' x 10'
90971	3141	50,000 lbs.	50,000 lbs.	24' x 12'
90972	3153	60,000 lbs.	60,000 lbs.	24' x 12'
90973	3157	60,000 lbs.	60,000 lbs.	30' x 12'
90974	3158	60,000 lbs.	60,000 lbs.	34' x 12'

1.5 Four Section Scales:

The following 2 drawings show the top view of the pit showing the piers, cast in place J-bolts, and side view of the installed scale. The list is the current types of 4 section scales available.



Embedded J-Bolts and their location on the lever piers.



4-Section Scale side view.

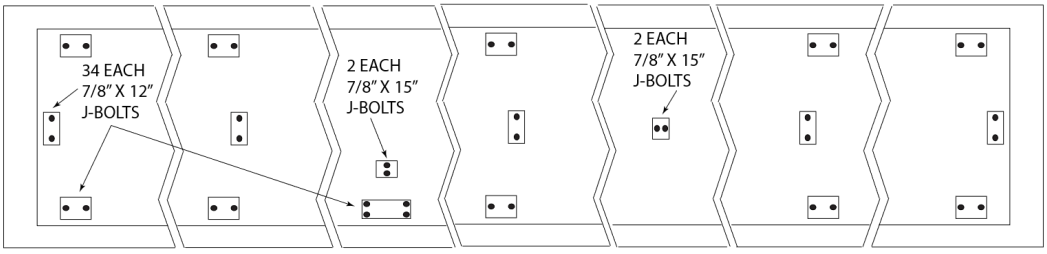
Product #	Model #	Capacity	CLC	Platform Size
90956	3381	100,000 lbs.	60,000 lbs.	34' x 10'
90957	3342	120,000 lbs.	60,000 lbs.	50' x 10'
90958	3344	120,000 lbs.	60,000 lbs.	60' x 10'
90961	3352	120,000 lbs.	80,000 lbs.	50' x 10'
90962	3354	120,000 lbs.	80,000 lbs.	60' x 10'
90964	3394	160,000 lbs.	80,000 lbs.	60' x 10'
90967	3364	240,000 lbs.	120,000 lbs.	60' x 12'
90969	3374	240,000 lbs.	120,000 lbs.	60' x 14'
90975	3381	100,000 lbs.	60,000 lbs.	34' x 12'
90976	3342	120,000 lbs.	60,000 lbs.	50' x 12'
90977	3344	120,000 lbs.	60,000 lbs.	60' x 12'
90980	3352	120,000 lbs.	160,000 lbs.	50' x 12'
90981	3354	120,000 lbs.	160,000 lbs.	60' x 12'

For Michigan Scales:

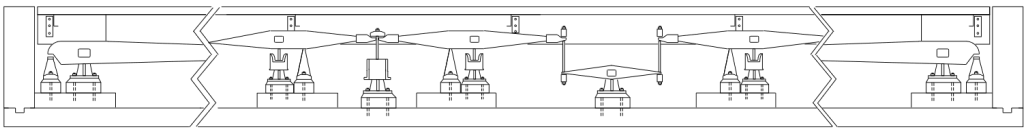
Product #	Model #	Capacity	CLC	Platform Size
91512	3396	200,000 lbs.	80,000 lbs.	60' x 10'
91515	3396	200,000 lbs.	80,000 lbs.	60' x 12'

1.6 Five Section Scales:

The following 2 drawings show the top view of the pit showing the piers, cast in place J-bolts, and side view of the installed scale. The list is the current types of 5 section scales available.



Embedded J-Bolts and their location on the lever piers.



5-Section Scale side view.

Product #	Model #	Capacity	CLC	Platform Size
90959	3446	120,000 lbs.	60,000 lbs.	70' x 10'
90960	3484	120,000 lbs.	60,000 lbs.	80' x 10'
90963	3356	120,000 lbs.	80,000 lbs.	70' x 10'
90964	3394	160,000 lbs.	80,000 lbs.	60' x 10'
90965	3482	160,000 lbs.	80,000 lbs.	70' x 10'
90966	3485	160,000 lbs.	80,000 lbs.	80' x 10'
90968	3466	240,000 lbs.	120,000 lbs.	70' x 12'
90970	3476	240,000 lbs.	120,000 lbs.	70' x 14'
90978	3446	120,000 lbs.	60,000 lbs.	70' x 12'
90979	3484	120,000 lbs.	60,000 lbs.	80' x 12'
90986	3446	120,000 lbs.	60,000 lbs.	70' x 14'
90982	3356	120,000 lbs.	80,000 lbs.	70' x 12'
90983	3394	160,000 lbs.	80,000 lbs.	60' x 12'
90984	3482	160,000 lbs.	80,000 lbs.	70' x 12'
90985	3485	160,000 lbs.	80,000 lbs.	80' x 12'
90987	3482	160,000 lbs.	80,000 lbs.	70' x 14'
90988	3485	160,000 lbs.	80,000 lbs.	80' x 14'

For Michigan Scales:

Product #	Model #	Capacity	CLC	Platform Size
91513	3497	200,000 lbs.	80,000 lbs.	70' x 10'
91514	3498	200,000 lbs.	80,000 lbs.	80' x 10'
91516	3497	200,000 lbs.	80,000 lbs.	70' x 12'
91517	3498	200,000 lbs.	80,000 lbs.	80' x 12'

1.7 Single Tension Loadcell and the Weight Display Instrument

The transverse lever transfers the applied forces to a single tension loadcell which is attached to electric isolator blocks to prevent damage from electric current from such sources as lightning strikes. The Weight Display Instrument is connected to the loadcell with a wire and can be placed in a convenient location. Peripheral devices such as printers, remote displays, badge readers, PC outputs, and other devices can interface to provide better processing of weighments.

The following lists Load Cell specifications for Type "S" Scales.

ALL 2 section scales require a 2,000-lb. capacity loadcell.

4 Section Scales:

Product #	Model #	Capacity	Platform Size	Loadcell Capacity
90956	3381	100,000 lbs.	34’ x 10’	3,000 lbs.
90957	3342	120,000 lbs.	50’ x 10’	3,000 lbs.
90958	3344	120,000 lbs.	60’ x 10’	3,000 lbs.
90961	3352	120,000 lbs.	50’ x 10’	3,000 lbs.
90962	3354	120,000 lbs.	60’ x 10’	3,000 lbs.
90964	3394	160,000 lbs.	60’ x 10’	5,000 lbs.
90967	3364	240,000 lbs.	60’ x 12’	5,000 lbs.
90969	3374	240,000 lbs.	60’ x 14’	5,000 lbs.
90975	3381	100,000 lbs.	34’ x 12’	5,000 lbs.
90976	3342	120,000 lbs.	50’ x 12’	5,000 lbs.
90977	3344	120,000 lbs.	60’ x 12’	5,000 lbs.
90980	3352	120,000 lbs.	50’ x 12’	5,000 lbs.
90981	3354	120,000 lbs.	60’ x 12’	5,000 lbs.

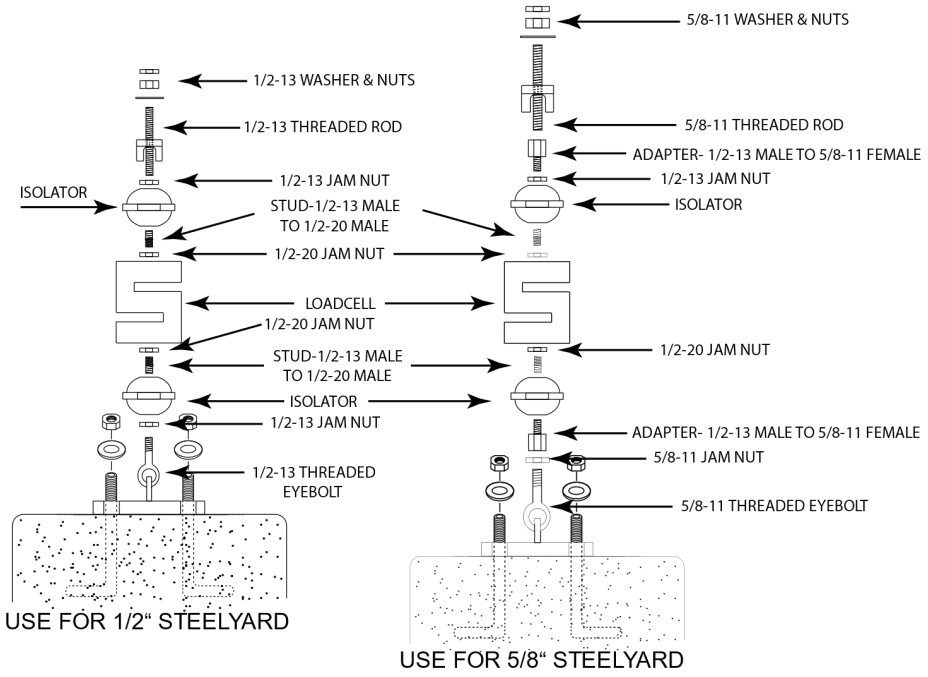
ALL 5 section scales require a 5,000-lb. capacity loadcell.

1.8 Loadcell Kits

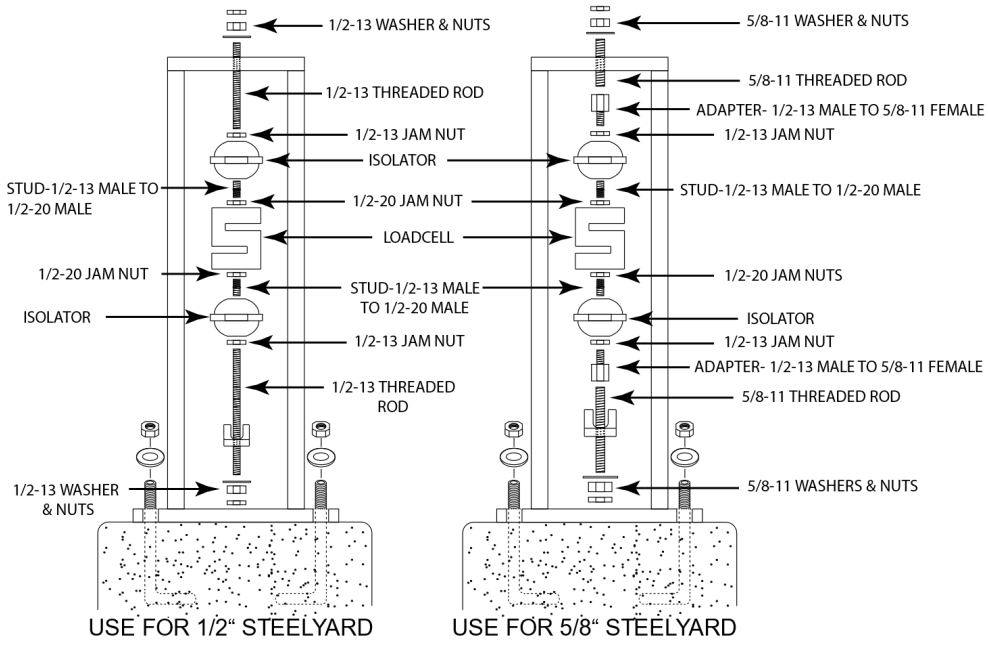
All loadcell kits include the loadcell, Isolators, Stud adapters, Jam nuts, and 20 feet of 18-gauge, 6 conductor cable with shrink tubing.

Product #	ACC #	Loadcell Capacity
12146	1109	2,000 lbs.
12147	1111	3,000 lbs.
12148	1112	5,000 lbs.

Loadcell linkage arrangement for ½” and 5/8” up pull stand.



Loadcell linkage arrangement for ½” and 5/8” down load stand.



1.9 Load Cell Installation

1. Tension-mounted load cells should be installed so that the cell cable is not part of the live load, otherwise cable movement will cause weight readout errors. Mount the cell either upside down or right side up, depending upon application, so that the movable end, (or "diaphragm") of the cell is connected to the moving load (lever end), and the stationary portion (with cable) is mounted to the base or stand.

2. Unless the readout instrument is within the cell's cable-length of the load cell, a junction box or a splice to a longer cable will be required. The cell cable leads are connected to the extension cable, color-to-color, using properly insulated solder connections. The junction box or splice must be watertight.

3. If the cell is subjected to water-saturation, the weight signal will eventually deteriorate. If the cable cannot be guaranteed a dry environment; waterproof conduit must be used. The importance of keeping the cable away from standing, running, or dripping water cannot· be over-emphasized. Do not hang the cable on pit walls, do not leave on the pit floor, and do not position in any way in which it can be water soaked. Cable moisture and insecure connections are the major problem areas in electronic installations.

4. The signal from the loadcell is a very low voltage and can be affected by electromagnetic induction and radio frequency energy. Loadcells and loadcell wiring must be separated from all power lines and wiring at a distance of 36 inches. Overhead runs must be avoided.

5. The maximum interface cable wire distance can be affected by the loadcell interface being used. Loadcell cable distance specifications should be found in the loadcell interface and Instrument Manuals.

NOTE: Further information and parts listings can be found in manual # 50025.

Section 2: Scale Installation Notes

2.1 Introduction

This section describes pit construction, stands, lever system, weighbridge, and scale deck installation techniques for Fairbanks Type "S" Motor Truck 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.

2.2 Pit Construction

A. Foundation

1. All concrete work should be performed in accordance with the best practice as described 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 plans are the minimum recommended where normal soil conditions prevail.

4. If the soil has low load bearing capacity and/or heavy vehicle traffic that should be parallel and near to side walls, concrete should be reinforced for the required strength.

5. Approaches must be equal to 1/2 the platform length, with at least 10 feet adjacent to the platform constructed of concrete.

6. LEVERTRONIC scales require ground rods through the pit floor (See certified prints).

B. 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 plan, and the height to which the bolts project above the finished concrete must be strictly adhered to.

3. All stands that are not up-pull stands have 12” long J-Bolts embedded in the concrete. All stands that ARE up-pull stands have 15” long J-Bolts embedded in the concrete.

4. It is recommended that piers be poured about 1/2 inch lower than shown on the certified prints and lever stands be grouted to their proper elevation.

C. Coping Angle and Bumper Plates

1. Angle iron pit coping is to be attached to the top of the wall form at the elevation, as shown on the certified prints.

2. Bumper plates should be placed in their proper locations on the inside of the form so they will be flush with the face of the wall. Bolt heads are to be in the wall projecting as indicated on the certified prints.

2.3 Unpacking

A. Levers are shipped with wood blocking protecting the pivot 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 boxes, check them carefully against the furnished packing list. If any parts cannot be found, determine the part number and description from the list and advise the Fairbanks 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 the proper parts.

2.4 Installation of Lever System

A. To guarantee a proper installation, all levers must be level. Lever system leveling starts with the transverse lever, then moving to the center extension levers and end extension levers, and ending with the main levers. Also, all connections between levers must be plumb. Check by holding a plumb bob at the top of the connections.

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

C. At the point the experienced scale technician gets involved with the installation, the scale pit and foundation will be completed, the pit coping installed, the piers and J bolts placed and the piers poured, and all pit and foundation concrete cured.

The sequence of Installation then is:

1. Lever Stands located, grouted, and installed per the certified prints.

2. Lever system and levers, bearing blocks, connecting shackles installed, with all levers leveled.

3. Trunnions, Links, Saddle blocks, and girder chairs installed and adjusted.

4. Weighbridge steel installed, including deck coping tack welded to the pit coping.

5. Deck corrugation and supporting timber shoring installed.

6. Manhole assemblies and deck reinforcing rod installed and tied per the certified prints.

7. Concrete deck poured, finished, and allowed to cure a minimum of 21 days before applying any loads to the scale.

8. Freeing the deck from all welds and removing all wood timber shoring. Bumper bolt adjustment. Installation of the loadcell kit, and connections to the home run cable.

9. Installation of the scale Instrument, configuring and scale testing and calibration.

10. Completion of any peripheral equipment such as printers, remote displays, and customer training.

NOTE:

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

2.10 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.

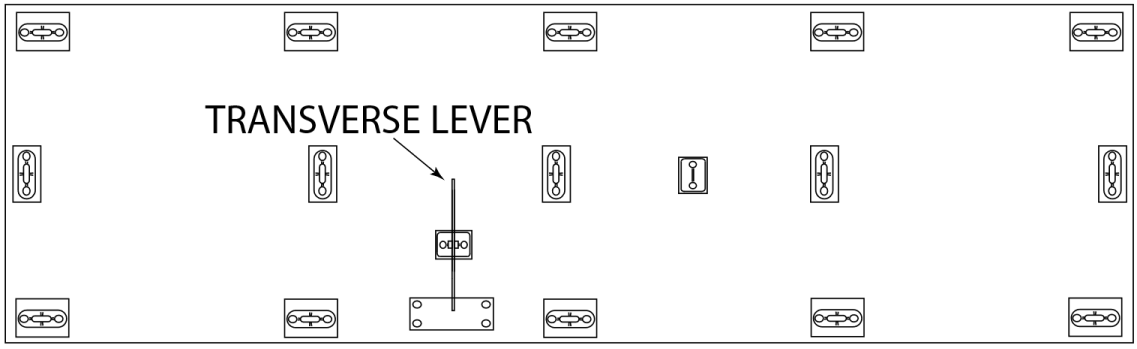
Using the square tubing and moving it as required, the longitudinal and lateral location of each lever stand as measured from the center line center mark can be determined as stated by the certified prints. A plumb bob hung from this square tubing can be used to precisely position the stands center in 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.

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

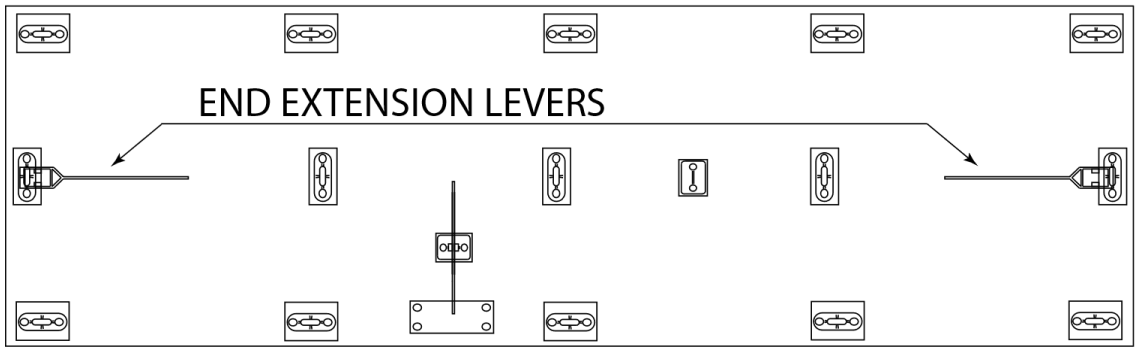
1. The transverse lever is installed first. Place this lever in position over the fulcrum stand casting; the block containing the bearing steel must be removed to install the lever.



Transverse lever installation.

2. Bolt the bearing block to the stand and, with the fulcrum pivot of the transverse lever properly seated, block under the lever to attain a level position. The raised ribs at the sides of the lever are used to position a level tool.

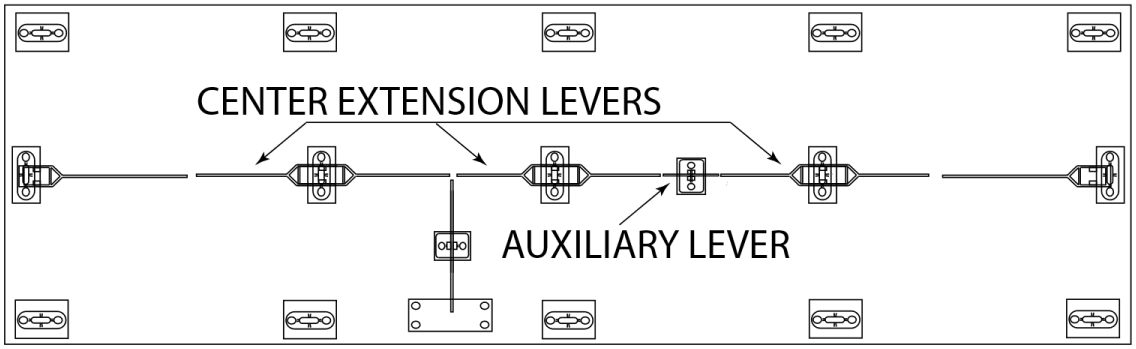
3. Install the end extension levers at both ends of the scale. The lever tips can be supported by a wood block temporarily.



End extension levers installation.

4. Locate the center extension lever with the widest nose iron and install it on its stand in a position to be connected to the transverse lever. Refer to the certified print.

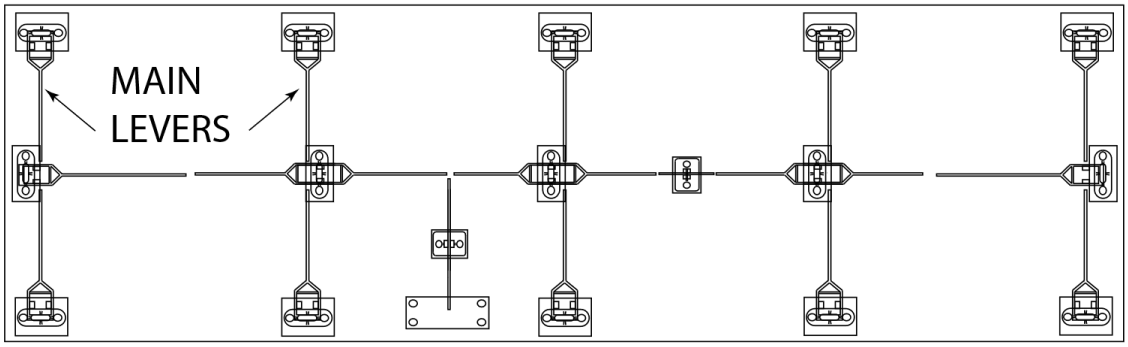
5. Install the remaining center extension and auxiliary levers.



Center extension and auxiliary lever installation.

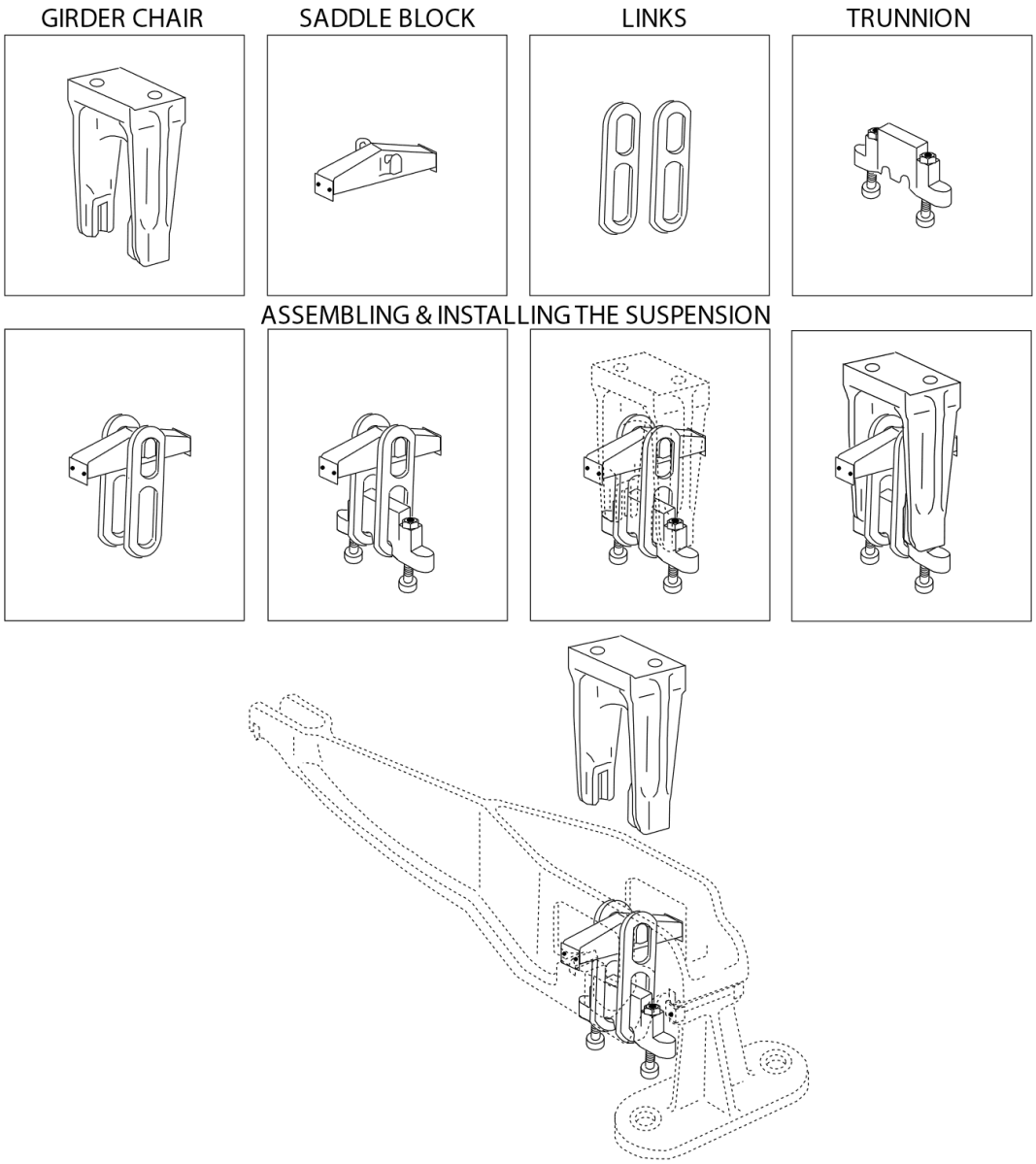
6. Install all main levers and their load and tip blocks. Make sure the end main lever tips are not touching the body of the end extension levers and are supported by the pivots.

7. Assemble and connect all tip bearing blocks and connecting linkage. Level the levers from the transverse lever first, to the center extension levers, to the auxiliary lever, to the end extension levers, and ending with the main levers.Note the leveling pads on the side of the levers.



Main lever installation.

8. 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. ·



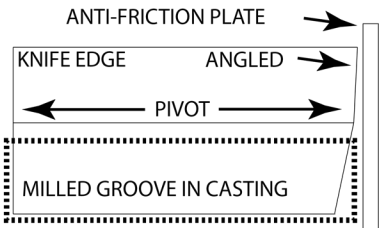
Links and trunnion block should be centered, after which the girder chair may be lowered between the double web section with the trunnion block engaging the chair. When seated and the chair top is level, the links will hang plumb.

9. 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.

10. If adjustment is necessary after the scale has been installed, loosen both lock nuts (if required) and turn the bolts up or down as required. Care must be taken to tum 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.

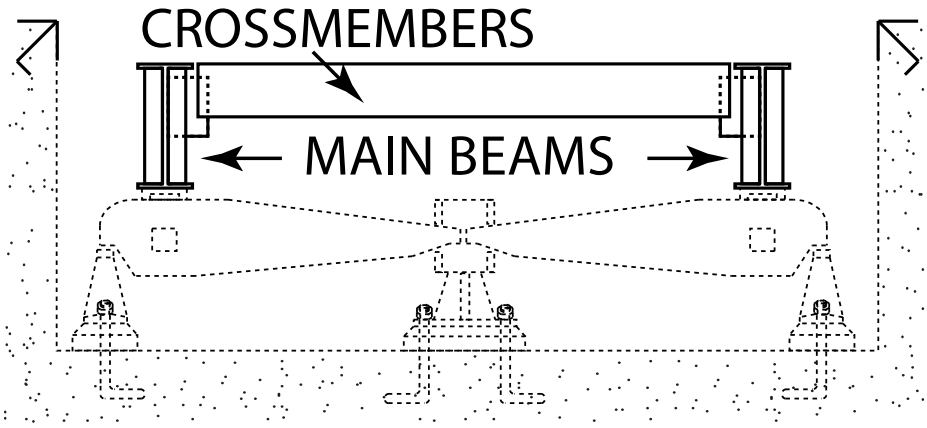
C. As levers and shackles and bearing blocks are installed, a thin coat of lithium grease should be applied. The amount of grease should be such that the position of the scale components can be easy to visually inspect to assure they are correctly in place.

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.

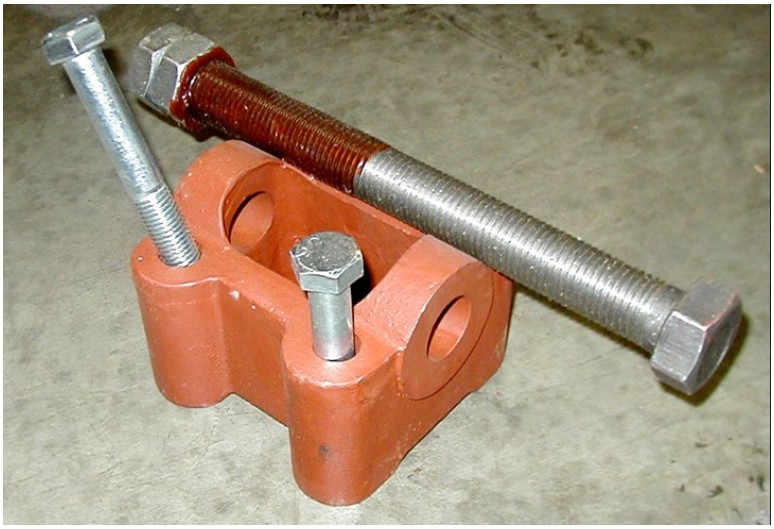
2.12 Installation of Weighbridge

The steel understructure supports the concrete deck and the loads applied to it, and transfers that load to the lever system. The main beams are located where a vehicles tires will be applied and firmly supported, and they are reinforced with connecting cross members.



Weighbridge as viewed from the end of the scale.

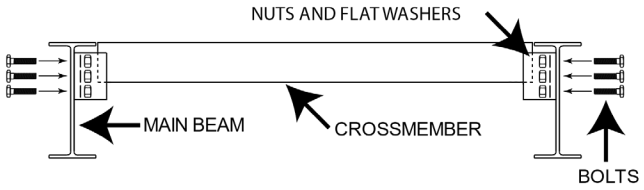
Bumper bolts are installed to the ends of the main beams to strike on striker plates installed flush in the approach end walls. This limits the weighbridge movement caused be trucks pulling on and off the scale deck, and prevents damage to the concrete deck, the concrete approach, and the main levers.



Type “S” Cast Checking Block with Bumper Bolt and securing hardware.

A suggested method of installing the weighbridge follows:

The weighbridge is generally constructed of main beam sections held together by crossmembers manufactured from channel iron. These sections should be assembled and bolted together separately near the pit, and then placed into position with a crane or a knuckle boom. The order of installation should be end, middle, end.



Weighbridge assembly

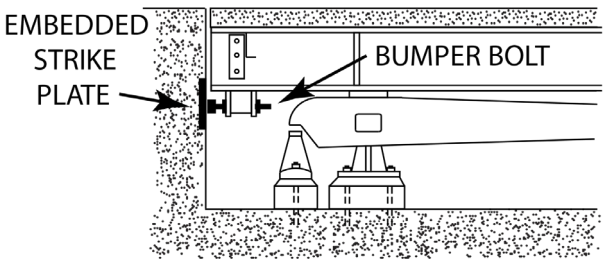
There are drilled flat steel plates installed on the bottom of the main beams to bolt them together from one section to the other, as well as the middle web of these beams. To maintain a level weighbridge, drilled flat steel plates are also installed on the end sections on top of the girder chairs to maintain a level weighbridge support.

The bumper blocks and bolts **MUST** be installed before placing the assembled end weighbridge sections into their final positions. The cast blocks should be tightened to the main beams, but the large bumper bolt left loose and pulled back for now.

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 section of weighbridge being installed. Once the weighbridge section 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 safely 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.

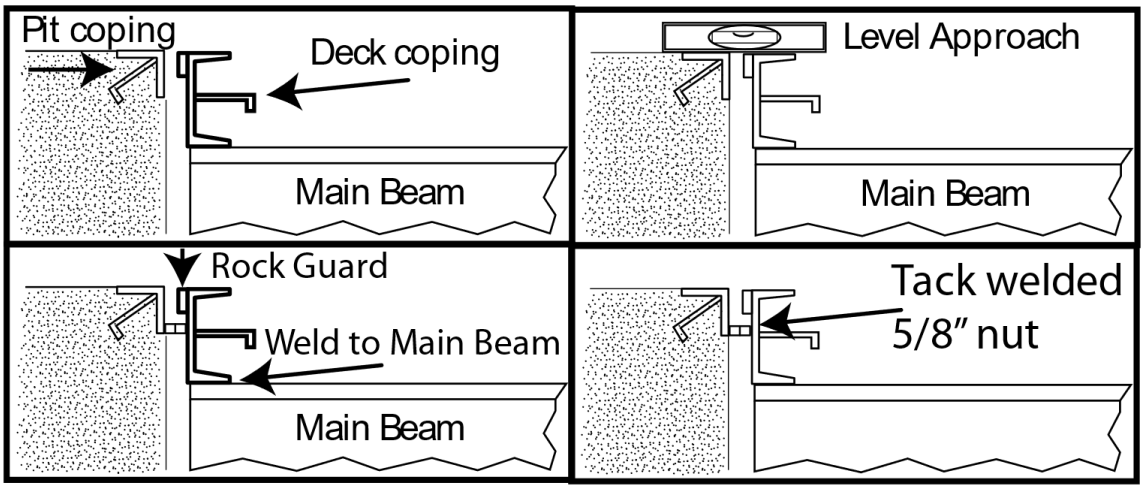
Upon completing the installation of the weighbridge, adjust the bumpers so they touch the striker plates and prevent movement. Do not allow the weighbridge to be shifted by the bumper bolts, just adjust them to prevent any movement. Lock them in place with the nuts.



Bumper Bolts at main beam ends.

2.13 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.



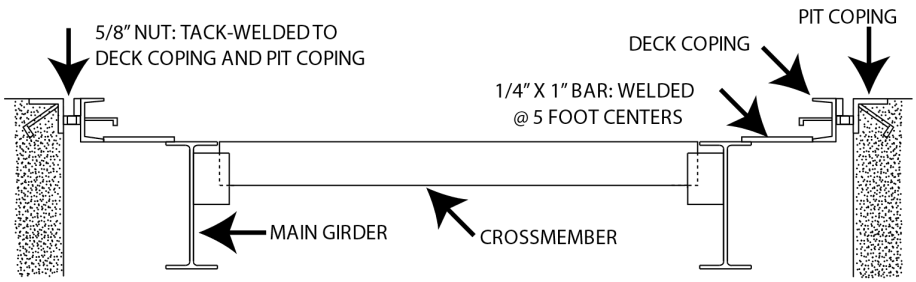
View at side of approach end: Installing approach deck coping.

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.

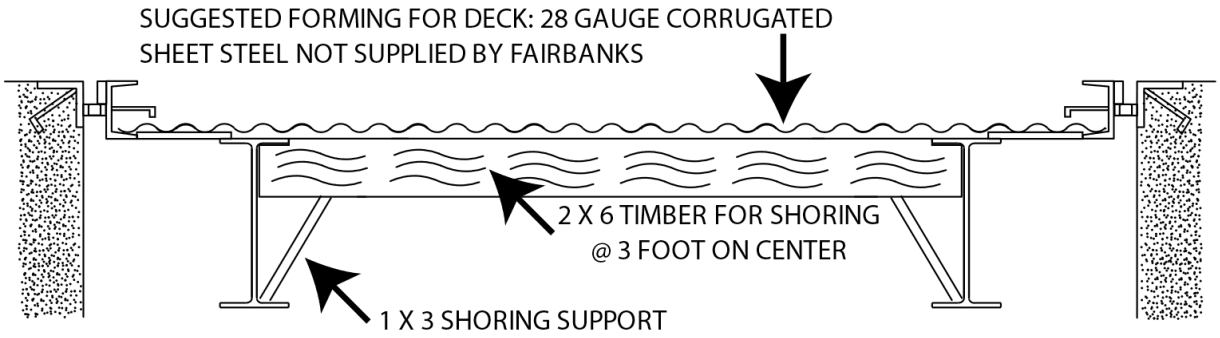
B. Once the 5/8-inch nuts have been tack welded, place and position the approach coping across the main beams at one end of the weighbridge. Check that the coping is level with the approach pit coping. Then weld it on the inside flange to the top of the main beams. Next, tack weld the 5/8-inch nuts to 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.

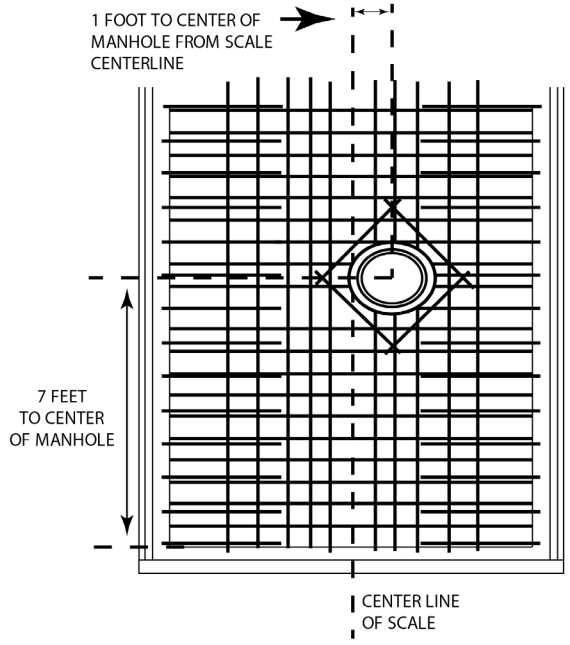


View from approach end of the scale.

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.

2.14 Manhole Placement



Position the manhole ring onto the corrugation in the dimension shown on the drawing below. 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.

2.15 Completion of Weighbridge Assembly

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. Adjust each of the bumper bolts for 1/8" clearance between the head and the bumper plate mounted in the pit wall. Ensure the scale weighbridge moves freely.

5. Install the loadcell, isolators and linkage. Connect to the scale instrument and configure and calibrate the scale.

Section 3: Section 3: Loadcell & Weight Instrument Installation

3.1 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.

3.2 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.

A. 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 ¼" to ½".

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: Section 4: General Maintenance & Troubleshooting

4.1 Introduction

A properly maintained truck 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, and yearly cleaning, 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. Trucks should always have a straight approach to the scale, and a straight departure from the scale. Trucks should never perform a turn when any wheels are supported by the scale. Slowly applying loads with slow, steady speeds and the gentle application of brakes will ensure long life and satisfactory performance. Fifth wheel and tandems should NEVER be shifted while on the scale. And the scale understructure should be kept as dry as possible to prolong the life of the steel supporting structure.

4.2 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 should be checked for proper operation monthly.

4.3 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	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.
Excessive motion from liquid loads	Truck parking brakes are engaged.	Release truck brakes.
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: Section 5: Parts List

5.1 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 connecting bolts and linkage assemblies.

C. Part number and casting number cross reference

5.2 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
Center Extension Lever
Even Lever
Transverse Lever
Bumper Bolts

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.

Parts description and quantity
Models 3157
Product # 91030; 34 x 10, 2 section

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	Load cell up pull plate

Parts description and quantity
Models 3344
Product # 90958; 60 x 10, 4 section
Product # 90977; 60 x 12, 4 section

Quantity	Description
8	Main Lever Assembly
10	Main lever and end extension lever stands
10	Main lever and end extension lever fulcrum bearing
8	Saddle block
16	Links
8	Trunnion
8	Main lever tip block assembly
2	End extension lever assembly
2	End extension lever load block assembly
2	End extension nose iron assembly
2	End extension tip block assemblies
2	Center extension lever assembly
2	Center extension lever stands
2	Center extension fulcrum bearings
2	Center extension tip block assemblies
2	Center extension load block assemblies
1	Transverse lever assembly
1	Transverse lever stand
1	Transverse lever fulcrum bearing
1	Transverse lever load block assembly (small)
1	Transverse lever load block assembly (large)
1	Load cell stand

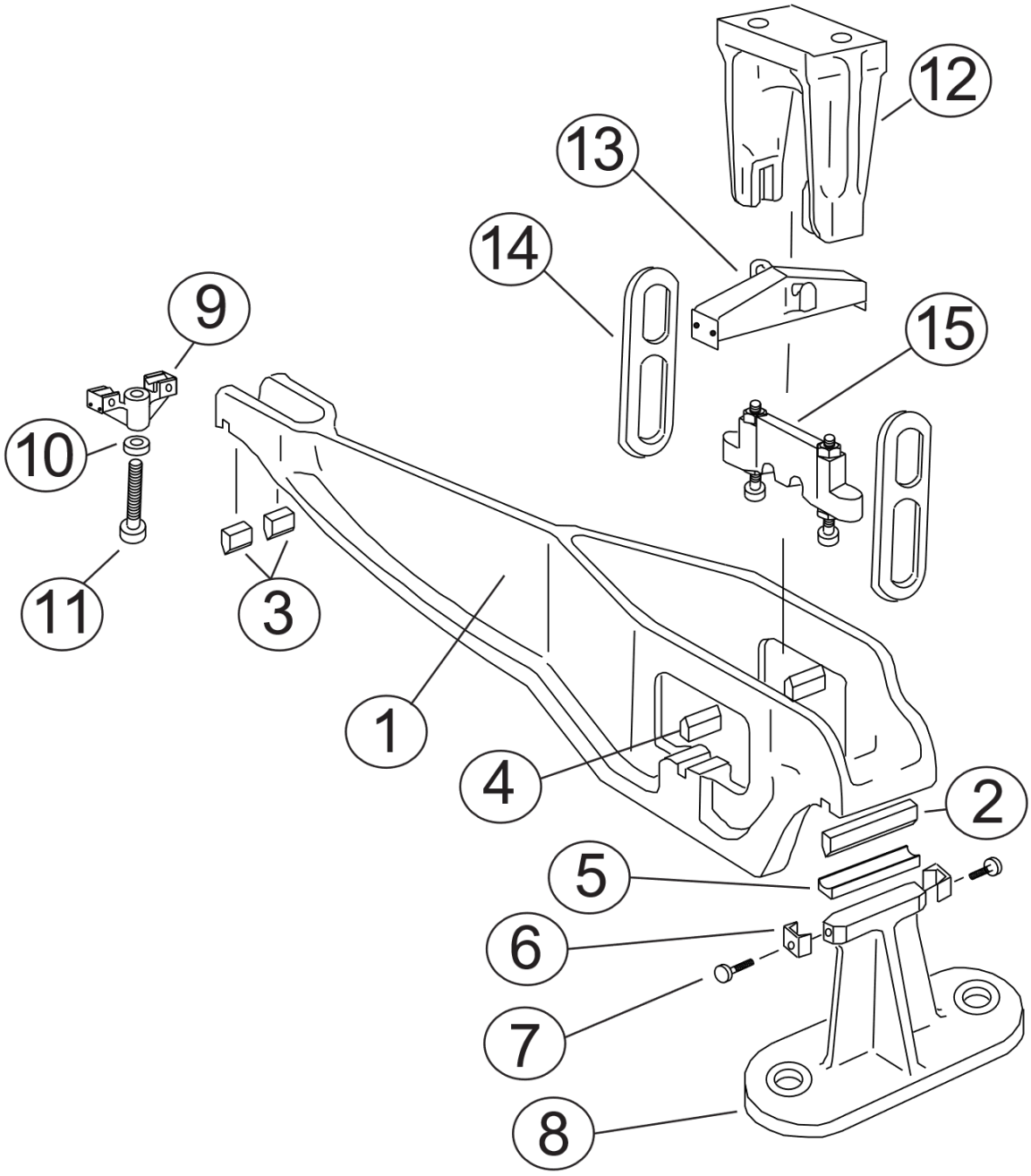
Parts description and quantity
Models 3346
Product # 90959; 70 x 10, 5 section
Product # 90978; 70 x 12, 5 section

Quantity	Description
10	Main Lever Assembly
12	Main lever and end extension lever stands
12	Main lever and end extension lever fulcrum bearing
10	Saddle block
20	Links
10	Trunnion
10	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
3	Center extension lever assembly
3	Center extension lever stands
3	Center extension fulcrum bearings
4	Center extension tip block assemblies (Not at Transverse lever)
3	Center extension load block assemblies
4	Center extension nose irons (Not at Transverse lever)
1	Center extension nose iron (At Transverse lever; large)
1	Center extension nose iron (At Transverse lever; small)
1	Auxiliary lever assembly (Even lever)
1	Auxiliary lever stand
1	Auxiliary lever fulcrum bearing
2	Auxiliary lever tip block assemblies
1	Transverse lever assembly
1	Transverse lever stand
1	Transverse lever fulcrum bearing
1	Transverse lever load block assembly (small)
1	Transverse lever load block assembly (large)
1	Transverse lever tip block assembly
1	Load cell stand

Parts description and quantity
Models 3485
Product # 90966; 80 x 10, 5 section
Product # 90985; 80 x 12, 5 section

Quantity	Description
10	Main Lever Assembly
12	Main lever and end extension lever stands
12	Main lever and end extension lever fulcrum bearing
10	Saddle block
20	Links
10	Trunnion
10	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
3	Center extension lever assembly
3	Center extension lever stands
3	Center extension fulcrum bearings
4	Center extension tip block assemblies (Not at Transverse lever)
3	Center extension load block assemblies
4	Center extension nose irons (Not at Transverse lever)
1	Center extension nose iron (At Transverse lever; large)
1	Center extension nose iron (At Transverse lever; small)
1	Auxiliary lever assembly (Even lever)
1	Auxiliary lever stand
1	Auxiliary lever fulcrum bearing
2	Auxiliary lever tip block assemblies
1	Transverse lever assembly
1	Transverse lever stand
1	Transverse lever fulcrum bearing
1	Transverse lever load block assembly (small)
1	Transverse lever load block assembly (large)
1	Transverse lever tip block assembly
1	Load cell stand

5.16 Parts List: Main Lever

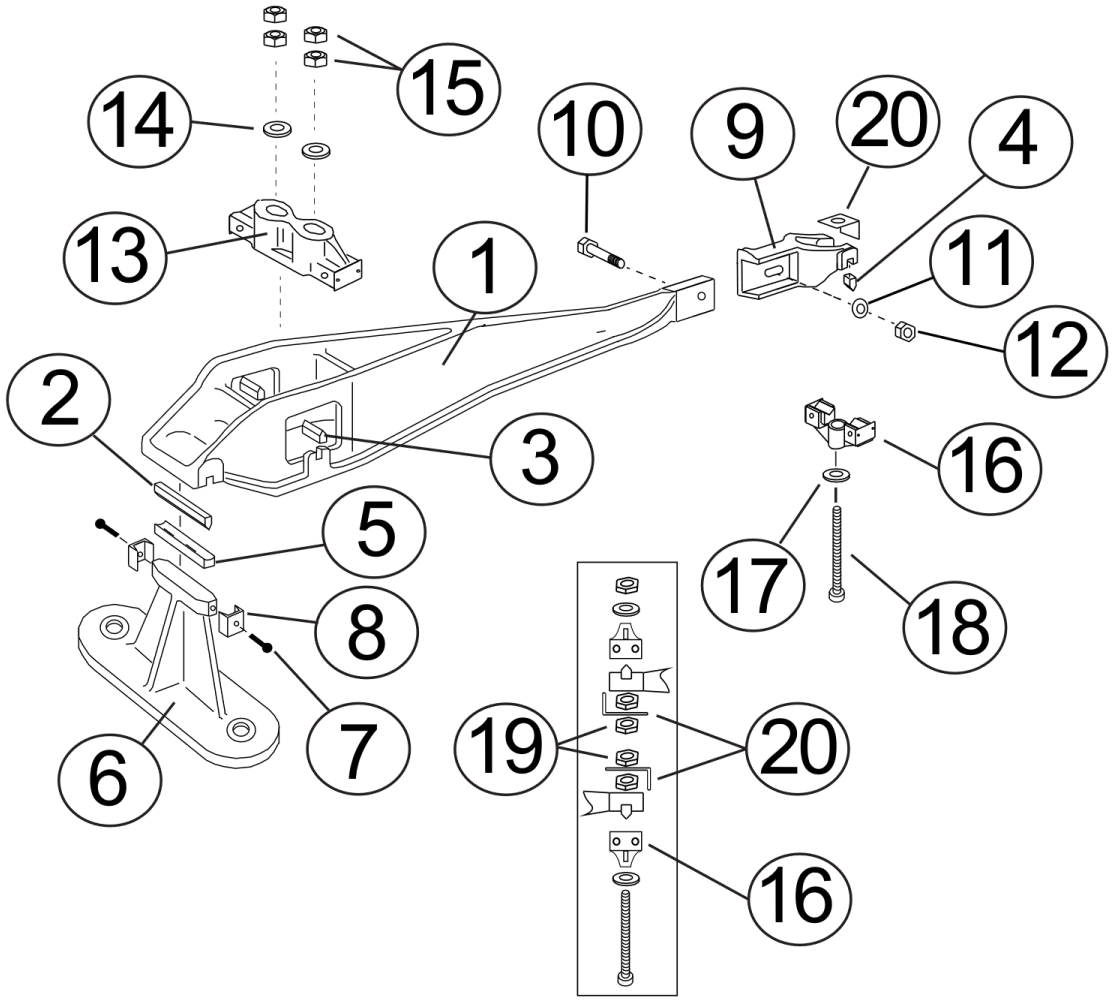


Parts List: Main Lever

NOTE: Horizontal dash ("-") indicates same part is used as on the model to the left.
"0" indicates part is not used.

KEY #	DESCRIPTION	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE
		90954 3157 30' x 10'	90958 3344 60'X10'	90977 3344 60'x12'	90959 3446 70'x10'	90978 3446 70'x12'	90966 3485 80'x10'	90985 3485 80'x12'
1	PART #	60724	-	-	-	-	60363	-
1	CASTING #	87380	-	-	-	-	87426	-
2	FULCRUM PIVOT	54465 ½" X 1" X 5 ¼"	-	-	-	-	54464 ½" X 1" X 7"	-
3	TIP PIVOT	54710 ½" X 1" X 1"	-	-	-	-	-	-
4	LOAD PIVOT	54721 ½" X 1" X 3 ¼"	-	-	-	-	54720 ½" X 1" X 3 7/8"	-
5	FULCRUM BEARING	60247 ½" X 1" X 5 3/8"	-	-	-	-	60265 ½" X 1" X 7 1/8"	-
6	ANTI-FRICTION PLATE	60287	-	-	-	-	-	-
7	BOLT	54260 3/8-16 X 5/8"	-	-	-	-	-	-
8	STAND	60399	-	-	-	-		
9	TIP BLOCK COMPLETE ASSEMBLY	60413	-	-	-	-	60414	-
10	WASHER							
11	BOLT							
12	GIRDER CHAIR	60387	-	-	-	-	60389	-
13	SADDLE BLOCK COMPLETE ASSEMBLY	60372	-	-	-	-	60373	-
14	LINKS	60396	-	-	-	-	-	-
15	TRUNNION COMPLETE ASSEMBLY	60380	-	-	-	-	-	-

5.17 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.
"N/A" indicates part is not used.

NOTE: The 30' scale has two different end extension levers.
The 60' scale has two of the same end extension levers.

KEY #	DESCRIPTION	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE
		91030 3157 30' x 10'	91030 3157 30' x 10'	90958 3344 60'X10'	90958 3344 60'X10'	90977 3344 60'x12'	90977 3344 60'x12'
1	PART #	60443	60444	60447	-	60447	-
1	CASTING #	SD-5-U	SD-5-WM	SD-5-EM1	-	-	
2	FULCRUM PIVOT	54465 ½" X 1" X 5 ¼"	-	54465	-	-	-
3	LOAD PIVOT	54710 ½" X 1" X 1"	-	54710	-	-	-
4	TIP PIVOT	54710	-	54710	-	-	-
5	FULCRUM BEARING	60247 ½" X 1" X 5 3/8"	-	-	-	-	-
6	STAND	60399	-	-	-	-	-
7	BOLT	54260	-	-	-	-	-
8	ANTI-FRICTION PLATE	60287	-	-	-	-	-
9	NOSE IRON	60427	-	60426	-	-	-
10	BOLT	54485 5/8-11 X 3" CAP SCREW	-	-	-	-	-
11	FLAT WASHER	54225 5/8" FW	-	54225	-	-	-
12	NUT	54363 5/8-11 HEX	-	54363	-	-	-
13	BEARING BLOCK, LOAD				-	-	-
14	WASHER				-	-	-
15	NUTS				-	-	-
16	TIP BLOCK	N/A	N/A	60413	-	-	-
17	WASHER				-	-	-
18	BOLT, CONNECTING				-	-	-
19	NUTS				-	-	-
20	RETAINERS, ANGLE IRON	N/A	N/A	59822	-	-	-

Parts List: End Extension Lever

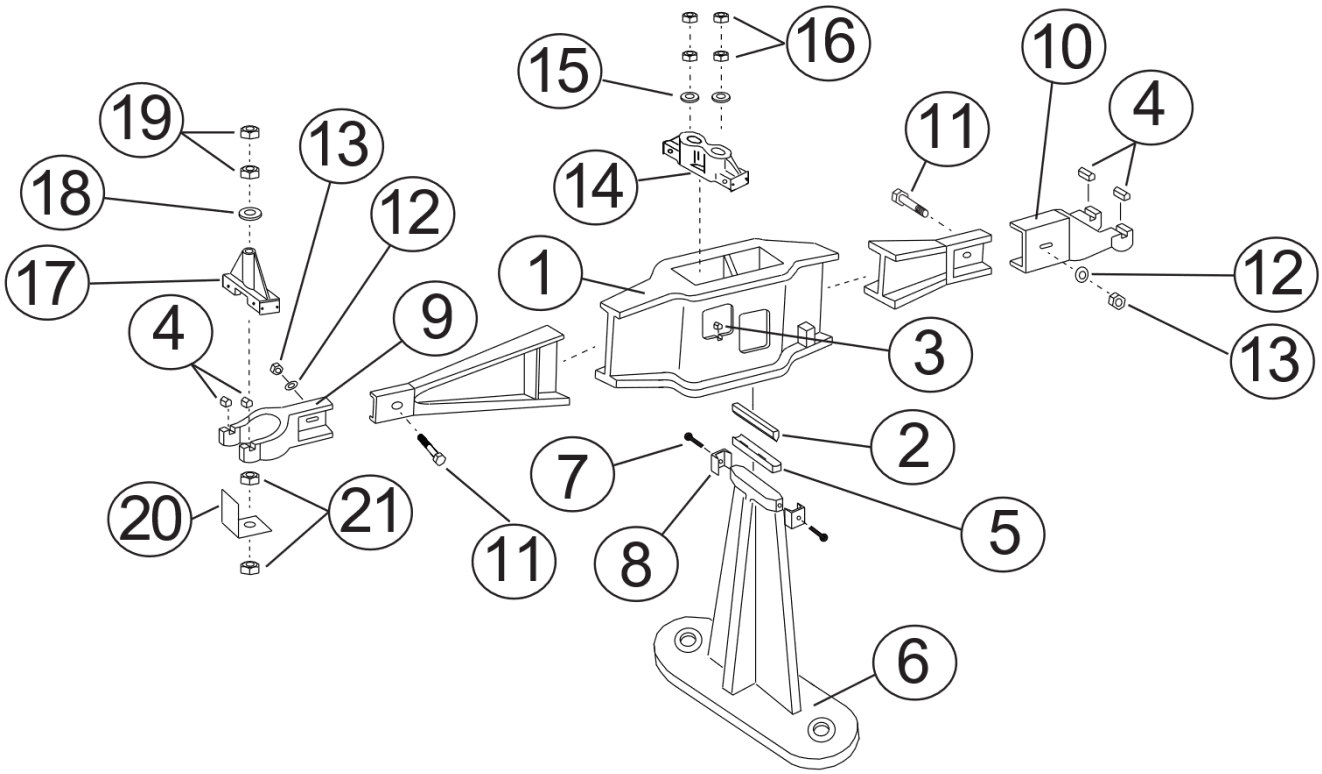
NOTE: Lever part number is the complete assembly including pivots and nose iron. Load and tip blocks are also complete assemblies including bearings and anti-frictions. Horizontal dash (“-“) indicates same part is used as on the model to the left. “N/A” indicates part is not used.

NOTE: The 70’ scale has two different end extension levers. The 80’ scale has two of the same end extension levers.

KEY #	DESCRIPTION	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE
		90959 3446 70'x10'	**90959 3446 70'x10'**	**90978 3446 70'x12'**	**90978 3446 70'x12'**	**90966 3485 80'x10'**	**90985 3485 80'x12'**
1	PART #	60442	60446	60442	60446	60449	-
1	CASTING #	SDC5E-M1	SD-5A-M1	SDC5E-M1	SD-5A-M1	74386	-
2	FULCRUM PIVOT	54465 ½” X 1” X 5 ¼”	-	-	-	54464 ½” X 1” X 7”	-
3	LOAD PIVOT	54710 ½” X 1” X 1”	-	-	-	54711 ½” X 1” X 1 ½”	-
4	TIP PIVOT	54710 ½” X 1” X 1”	-	-	-	-	-
5	FULCRUM BEARING	60247 ½” X 1” X 5 3/8”	-	-	-	60265 ½” X 1” X 7 1/8”	-
6	STAND	60399	-	-	-	60400	-
7	BOLT	54260	-	-	-	-	-
8	ANTI-FRICTION PLATE	60287	-	-	-	-	-
9	NOSE IRON	60427	60426	60427	60426	60424	-
10	BOLT	54485 5/8-11 X 3"	-	-	-	54532 3/4-10 X 3"	-
11	FLAT WASHER	54225 5/8"	-	-	-	54233, 3/4"	-
12	NUT	54363 5/8” HEX	-	-	-	54264, 3/4-10 HEX	-
13	BEARING BLOCK, LOAD						
14	WASHER						
15	NUTS						
16	TIP BLOCK						
17	WASHER						
18	BOLT, CONNECTING						
19	NUTS						
20	ANGLE IRON	59822	-	-	-	-	-

5.18 Parts List: Center Extension Lever with small nose irons

NOTE:
The 60’ scale has two center extension levers, 60460 and 60461.
The 70’ scale has three center extension levers, 60458, 60459, and 60460.
The 80’ scale has three center extension levers, 60465, 60466, and 60467.

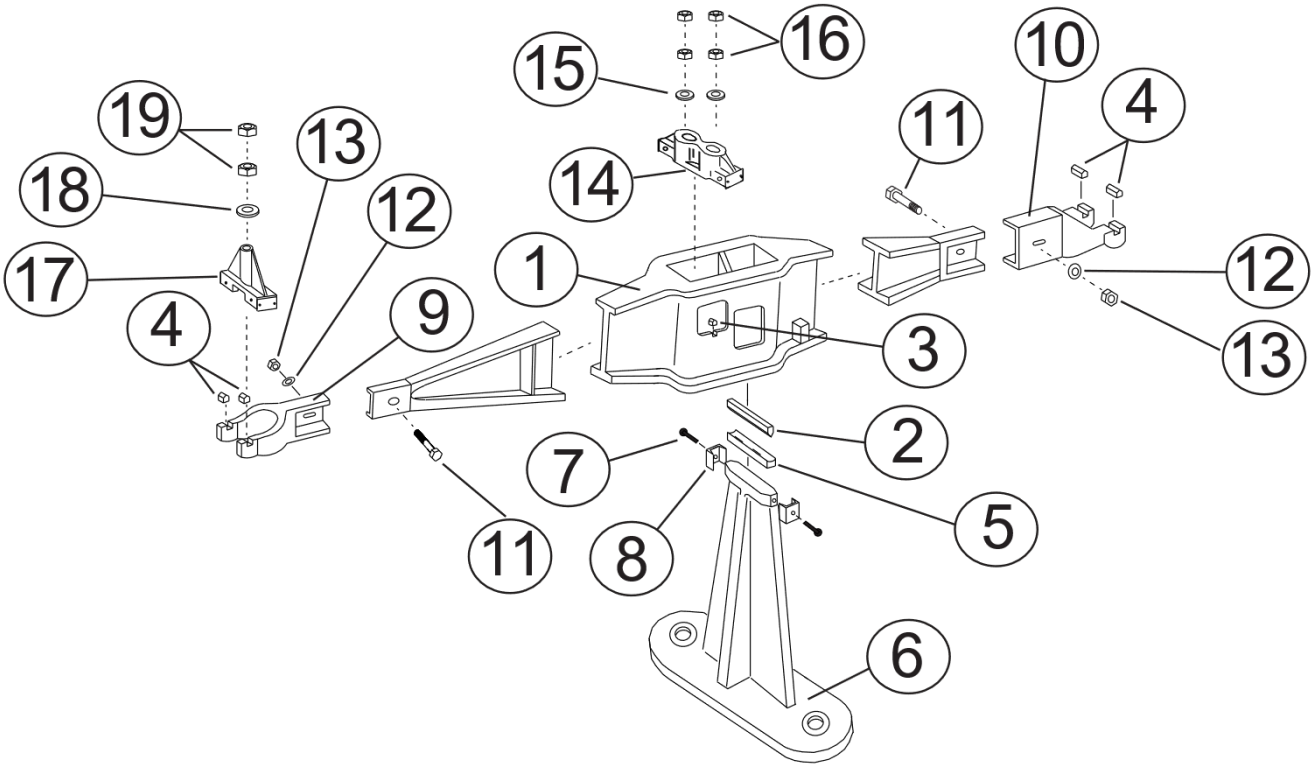


Parts List: Center Extension Lever with small nose irons

KEY #	DESCRIPTION	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE
		90958 3344 60’X10’	90977 3344 60’x12’	90959 3446 70'x10'	90959 3446 70'x10'	90978 3446 70'x12'	90978 3446 70'x12'
1	CENTER EXTENSION LEVER PART #	60460	-	-	60459		
1	CENTER EXTENSION LEVER CASTING #	SD-6-A3	-	-	80740		
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	NOSE IRON	60430	-	60427	-		
11	BOLT	54485	-	-	-	-	-
12	FLAT WASHER	54225	-	-	-	-	-
13	NUT	54363	-	-	-	-	-
14	BEARING BLOCK, LOAD, COMPLETE ASSEMBLY	60411	-				
15	WASHER						
16	NUTS						
17	TIP BLOCK, COMPLETE ASSEMBLY						
18	WASHER						
19	NUTS						
20	RETAINER, ANGLE IRON	59822	-				
20	NUTS						

KEY #	DESCRIPTION	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE
		90966 3485 80'x10'	90966 3485 80'x10'	90985 3485 80'x12'	90985 3485 80'x12'
1	PART #	60466	60467	60466	60467
1	CASTING #	87325	87326	87325	87326
2	FULCRUM PIVOT	54464	-	-	-
3	LOAD PIVOT	54711	-	-	-
4	TIP PIVOT	54710	-	-	-
5	FULCRUM BEARING				
6	STAND				
7	BOLT				
8	ANTI-FRICTION PLATE				
9	NOSE IRON	60423	-	-	
10	NOSE IRON	60433	60423	60433	
11	BOLT	54555	-	-	
12	FLAT WASHER	54233	-	-	
13	NUT	54264	-	-	
14	BEARING BLOCK, LOAD, COMPLETE ASSEMBLY	60414	-	-	-
15	WASHER				
16	NUTS				
17	TIP BLOCK, COMPLETE ASSEMBLY				
18	WASHER				
19	NUTS				
20	RETAINER, ANGLE IRON	59822	-	-	
20	NUTS				

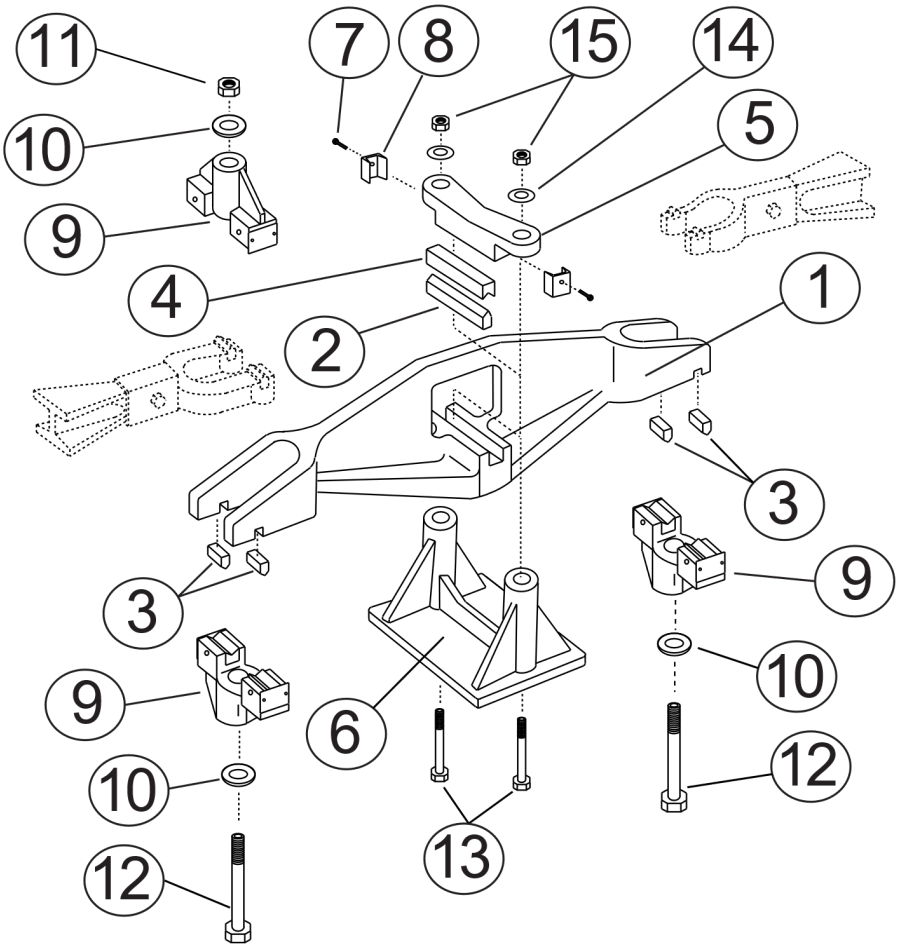
5.19 Parts List: Center Extension Lever with large nose iron



Parts List: Center Extension Lever with large nose iron

KEY #	DESCRIPTION	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE
		90958 3344 60’X10’	90977 3344 60’x12’	90959 3446 70'x10'	90978 3446 70'x12'	90966 3485 80'x10'	90985 3485 80'x12'
1	PART #	60461	-	60458	-	60465	-
1	CASTING #	SD 6 A3	-	80740	-	74146	-
2	FULCRUM PIVOT	54465	-			54464	-
3	LOAD PIVOT	54710	-			54711	-
4	TIP PIVOT	54710	-	-	-	-	-
5	FULCRUM BEARING						
6	STAND, LEVER	60399	--	60401	-	60402	-
7	BOLT						
8	ANTI-FRICTION PLATE						
9	NOSE IRON BIG	60431	-			60432	-
10	NOSE IRON SMALL	60427	-			60423	-
11	BOLT	54485	-			54555	-
12	FLAT WASHER	54225	-			54233	-
13	NUT	54363	-			54264	-
14	BEARING BLOCK, LOAD, COMPLETE ASSEMBLY						
15	WASHER						
16	NUTS						
17	TIP BLOCK, COMPLETE ASSEMBLY						
18	WASHER						
19	NUTS						

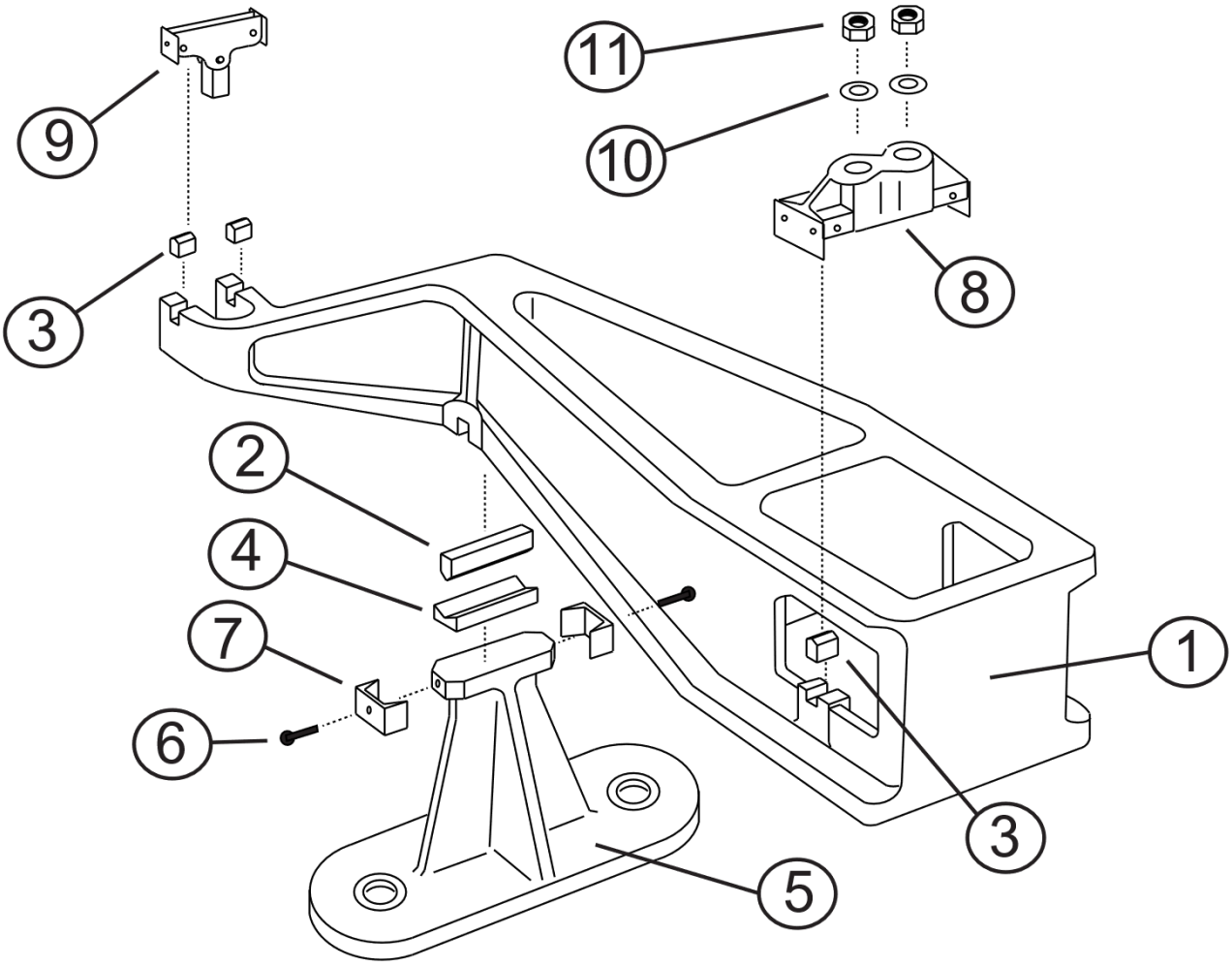
5.20 Parts List: Even Lever, Standard (Auxiliary Lever)



Parts List: Even Lever, Standard (Auxiliary Lever)

KEY #	DESCRIPTION	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE
		90959 3446 70'x10'	90978 3446 70'x12'	90966 3485 80'x10'	90985 3485 80'x12'
1	EVEN LEVER PART #	60509	-	60498	-
1	EVEN LEVER CASTING #	83775	-	84247	-
2	FULCRUM PIVOT	54465 ½" X 1" X 5 ¼"	-	-	-
3	TIP PIVOTS	54710 ½" X 1" X 1"	-	-	-
4	FULCRUM BEARING				
5	BEARING BLOCK				
6	STAND				
7	BOLT				
8	ANTI-FRICTION PLATE				
9	TIP BLOCK, COMPLETE ASSEMBLY				
10	WASHER				
11	NUT				
12	CONNECTING BOLT				
13	STAND BEARING BLOCK BOLTS				
14	WASHER				
15	NUTS				

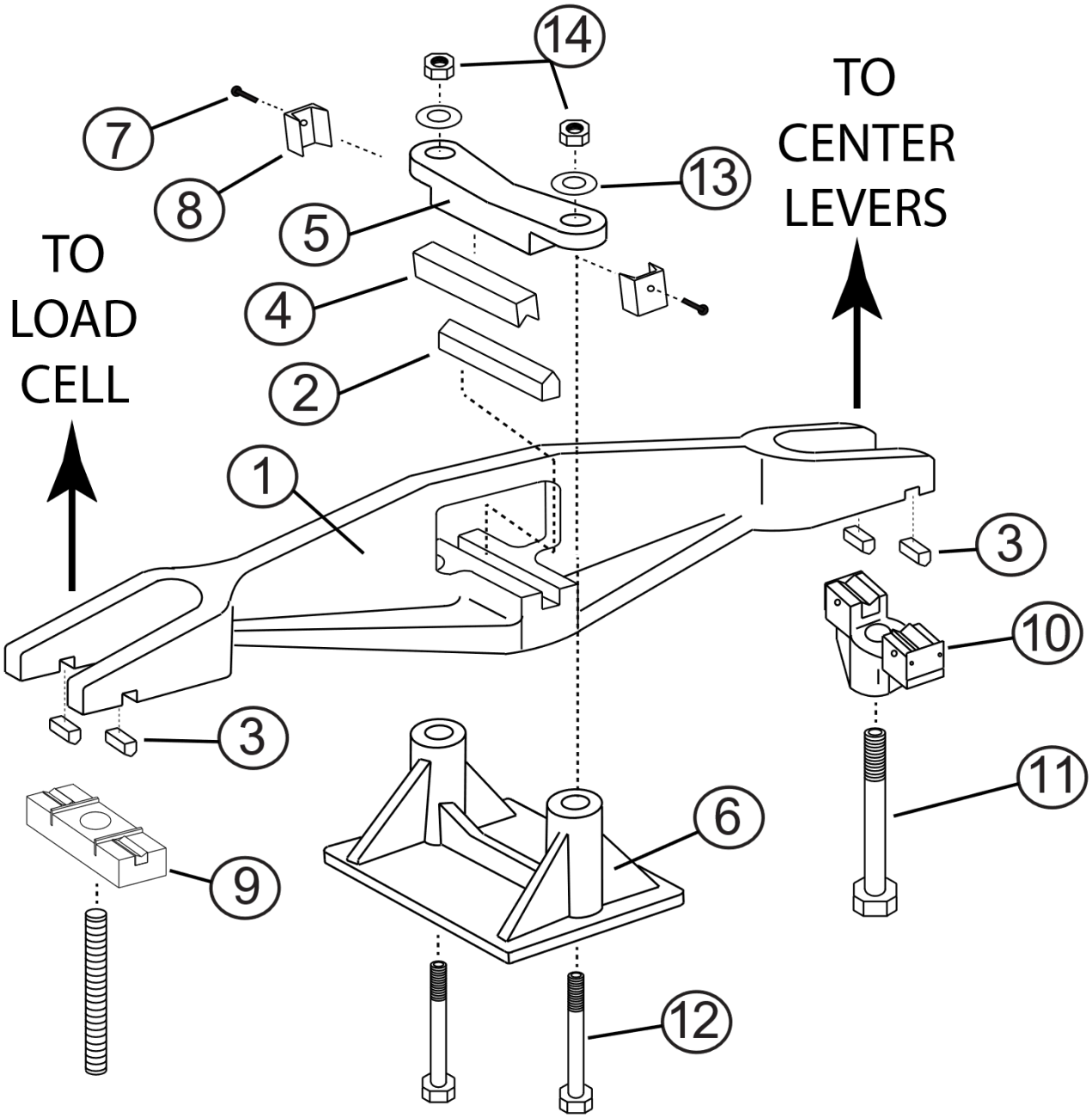
5.21 Parts List: Transverse Lever, Up-Pull, Standard



Parts List: Transverse Lever, Up-Pull, Standard

KEY #	DESCRIPTION	PRODUCT # MODEL # SIZE
		91030 3157 30’ x 10’
1	PART #	60493
1	CASTING #	
2	FULCRUM PIVOT	54465 ½” X 1” X 5 ¼”
3	TIP & LOAD PIVOTS	54710 ½” X 1” X 1”
4	FULCRUM BEARING	
5	STAND	60399
6	BOLT	54260 3/8-16 X 5/8"
7	ANTI-FRICTION PLATE	60287
8	BEARING BLOCK COMPLETE ASSEMBLY	
9	TIP BLOCK, COMPLETE ASSEMBLY	
10	WASHER	
11	NUT	

5.22 Parts List: Transverse Lever, Standard



Parts List: Transverse Lever, Standard

KEY #	DESCRIPTION	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE	PRODUCT # MODEL # SIZE
		90958 3344 60’X10’	90977 3344 60’x12’	90959 3446 70'x10'	90978 3446 70'x12'	90966 3485 80'x10'	90985 3485 80'x12'
1	PART #	60498	-	-	-	-	-
1	CASTING #	84247	-	-	-	-	-
2	FULCRUM PIVOT	54465 ½” X 1” X 5 ¼”	-	-	-	-	-
3	TIP & LOAD PIVOTS	54710 ½” X 1” X 1”	-	-	-	-	-
4	FULCRUM BEARING						
5	BEARING BLOCK						
6	STAND						
7	BOLT						
8	ANTI-FRICTION PLATE						
9	TIP BLOCK, COMPLETE ASSEMBLY						
10	LOAD BLOCK, COMPLETE ASSEMBLY						
11	CONNECTING BOLT						
12	STAND BEARING BLOCK BOLTS						
13	WASHER						
14	NUTS						

5.23 Parts List: Cast Checking Blocks

A kit is available that contains four complete bumper bolt assemblies. These and installed at the bottom ends of the weighbridge main beams, and strike embedded steel striker plates in the approach pit walls.

Kit Part Number: 71389 contains the following:

Part #	Quantity	Description
62028	4	Cast Bumper Check Block
59814	4	1 ¼-7 x 13” Bumper Bolt
54894	8	1 ¼-7 Jam Nut
54525	16	¾-10 x 5” Cap Screw
54264	16	¾-10 Hex Nut

5.24 Parts List: Loadcells and Loadcell Kits

The loadcell kits contain the loadcells, Isolators, threaded adapters, jam nuts, shrink tubing, and additional 6 conductor cable.

For complete parts lists, part numbers, and descriptions, refer to manual 50025.

Loadcell Kits:

Kit #	Accessory #	Load Cell Size
12143	1106	500 #
12145	1107	750 #
12149	1108	1,000 #
12146	1109	2,000 #
12147	1111	3,000 #
12148	1112	5,000 #

Loadcells Only:

Part #	Load Cell Size
11644	500 #
11645	750 #
11646	1,000 #
11647	2,000 #
11648	3,000 #
12909	5,000 #

5.25 Part Number Cross Reference

These parts are all complete assemblies except for: Stands and old style **drop in bearing blocks** are **not** supplied with bearings. They are supplied with anti-friction plates.

Levers are supplied with all pivots and nose irons.
Saddle blocks, tip blocks, and load blocks are supplied with bearings and anti-frictions.
Trunnions are supplied complete with bolts, lock washers, and nuts.

LEVERS

DESCRIPTION	OLD PART #	NEW PART #	CASTING #
MAIN LEVER	87206	60360	SEC-8-A
MAIN LEVER	87207	60361	80736
MAIN LEVER	87208	60362	80738
MAIN LEVER	87210	60363	87426
MAIN LEVER	87213	60367	74291
E. E. LEVER	87288	60434	SE-5-C
E. E. LEVER	87289	60435	SE-5-B
E. E. LEVER	87290	60436	SEC-5
E. E. LEVER	87291	60437	SEC-5-A
E. E. LEVER	87292	60438	SGC-5-EM1
E. E. LEVER	87294	60439	SG-5-B
E. E. LEVER	87295	60440	SD-5-F
E. E. LEVER	87296	60441	SDC-5-G
E. E. LEVER	87297	60442	SDC-5-EM1
E. E. LEVER	87299	60443	SD-5-UM1
E. E. LEVER	87300	60444	SD-5-WM1
E. E. LEVER	87301	60445	SD-5-DM1
E. E. LEVER	87302	60446	SD-5-AM1
E. E. LEVER	87303	60447	SD-5-EM1
E. E. LEVER	87304	60448	80762
E. E. LEVER	87305	60449	74386
E. E. LEVER	87306	60450	SH-6-TM1
E. E. LEVER	87308	60451	80300
E. E. LEVER	87309	60452	86796
E. E. LEVER	87310	60453	SH-6-BEM1
C. E. LEVER	87312	60454	57072
C. E. LEVER	87313	60455	57072
C. E. LEVER	87314	60456	57072
C. E. LEVER	87315	60457	80740
C. E. LEVER	87316	60458	80740
C. E. LEVER	87317	60459	80740
C. E. LEVER	87318	60460	SD-6-A3
C. E. LEVER	87319	60461	SD-6-A3
C. E. LEVER	87320	60462	SD-6-A3
C. E. LEVER	87322	60463	80220
C. E. LEVER	87323	60464	80220
C. E. LEVER	87324	60465	74146
C. E. LEVER	87325	60466	74146
C. E. LEVER	87326	60467	74146

DESCRIPTION	OLD PART #	NEW PART #	CASTING #
T. LEVER	87327	60468	SEC-12
T. LEVER	87328	60471	SEC-12-A
T. LEVER	87330	60473	MM-5420
T. LEVER	87331	60474	SE-12-M1
T. LEVER	87333	60476	SD-12-P
T. LEVER	87335	60478	SD-12-Q
T. LEVER	87336	60479	SD-12-S
T. LEVER	87341	60482	74203
T. LEVER	87342	60485	74210
T. LEVER	87343	60489	80756
T. LEVER	87346	60491	83709
T. LEVER	87347	60492	SD-12-D
T. LEVER	87349	60493	80855
T. LEVER	87350	60498	84247
EVEN LEVER	87353	60501	83761
EVEN LEVER	87354	60502	83761
EVEN LEVER	87355	60503	83761
EVEN LEVER	87356	60504	83761
EVEN LEVER	87357	60505	83766
EVEN LEVER	87358	60506	83766
EVEN LEVER	87360	60507	86522
EVEN LEVER	87361	60508	83774
EVEN LEVER	87362	60509	83775
FABRICATED EVEN LEVER 48" LONG	87363	60065	85138
EVEN LEVER	87364	60511	86521
EVEN LEVER	87365	60512	85120
EVEN LEVER	87368	60514	85120
MAIN LEVER	87371	60515	SG-8-D2
E. E. LEVER	87372	60516	SDC-5-D
EVEN LEVER	87378	60517	SD-5-H
EVEN LEVER	87379	60518	SD-5-CM1
MAIN LEVER	87828	60724	87380

SUSPENSION

DESCRIPTION	OLD PART #	NEW PART #	CASTING #
SADDLE BLOCK	87215	60368	RA-191
SADDLE BLOCK	87216	60369	RB-191
SADDLE BLOCK	87217	60370	RC-191
SADDLE BLOCK	87218	60371	RC-191-A
SADDLE BLOCK	87219	60372	RD-191
SADDLE BLOCK	87220	60373	80253
SADDLE BLOCK	87221	60374	82107
SADDLE BLOCK	87222	60375	85414
SADDLE BLOCK	91092	62003	85414
SADDLE BLOCK	87223	60376	85413
TRUNNION ASSY	87225	60377	80261
TRUNNION ASSY	87226	60378	80264
TRUNNION ASSY	87227	60379	80267
TRUNNION ASSY	87228	60380	80270
TRUNNION ASSY	87229	60381	82108
TRUNNION ASSY	87230	60382	85412
TRUNNION ASSY w SPECIAL NUTS	88253	60866	80270
TRUNNION ASSY w SPECIAL NUTS	88276	60880	80267
GIRDER CHAIR	87232	60383	80241
GIRDER CHAIR	87233	60384	80260
GIRDER CHAIR	87234	60385	80263
GIRDER CHAIR	87235	60386	80266
GIRDER CHAIR	87236	60387	80269
GIRDER CHAIR	87237	60389	80811
GIRDER CHAIR	87238	60391	82121
GIRDER CHAIR	87239	60392	85411
LINK	87240	60393	RA-135
LINK	87241	60394	RB-135
LINK	87242	60395	RC-135
LINK	87243	60396	RD-135
LINK	87244	60397	84136

BLOCKS, STANDS, NOSE IRONS, ETC..

DESCRIPTION	OLD PART #	NEW PART #	CASTING #
LEVER STAND	87245	60398	86739
LEVER STAND	87246	60399	86693
LEVER STAND	87247	60400	86764
LEVER STAND	87248	60401	86738
LEVER STAND	87249	60402	86766
LEVER STAND	87251	60403	56875
ANCHOR STAND	87253	60404	83662

DROP IN BEARING BLOCKS FOR OLD STYLE STANDS: WITHOUT BEARINGS;

BEARING BLOCK	**87255**	**60406**	**86797**
BEARING BLOCK	**87256**	**60407**	**86822**
BEARING BLOCK	**87257**	**60408**	**86880**
BEARING BLOCK	**87258**	**60409**	**86832**
BEARING BLOCK	**87259**	**60410**	**86833**

FOR UP-PULL LEVER

TIP BEARING BLOCK	87260	60411	82360
TIP BEARING BLOCK	87261	60412	82361
TIP BEARING BLOCK	87262	60413	SD-190-B
TIP BEARING BLOCK	87263	60414	SH-190-M1
BEARING BLOCK	87264	60415	TX-195-A
HOOK SHACKLE	87265	60416	TX-1146
BEARING BLOCK	87266	60417	SEC-195-A
BEARING BLOCK	87267	60418	SE-195-B
LOAD BEARING BLOCK	87268	60419	SD-195-DM1
BEARING BLOCK	87269	60420	SD-195-C
LOAD BLOCK	87270	60421	SH-195-M1
BEARING BLOCK	87271	60422	82538
NOSE IRON	87272	60423	57002-M1
NOSE IRON	87274	60424	SD-15-CM1
NOSE IRON	87275	60425	SD-15-EM1
NOSE IRON	87278	60426	SDC-15
NOSE IRON	87279	60427	SDC-15-A
NOSE IRON	87281	60428	SEC-15
NOSE IRON	87283	60429	SH-15-HM1
NOSE IRON	87284	60430	80814
NOSE IRON	87285	60431	80815
NOSE IRON	87286	60432	82155-M1
NOSE IRON	87287	60433	82156-M1
BEARING BLOCK	91151-D	62024	WS-388-PV
LEVER STAND	91152-D	62026	SD-19-PV
BACKBONE STAND	91172	62030	91171
TORQUE TUBE STAND			

PIVOTS & BEARINGS

DESCRIPTION	NEW PART #	DIMMENSIONS #
PIVOT	54710	1/2" X 1" X 1"
PIVOT	54711	1/2" X 1" X 1 1/2"
PIVOT	54716	1/2" X 1" X 2"
PIVOT	54736	1/2" X 1" X 3"
PIVOT	54721	1/2" X 1" X 3 1/4"
PIVOT	54720	1/2" X 1" X 3 7/8"
PIVOT	54789	1/2" X 1" X 4"
PIVOT	54465	1/2" X 1" X 5 1/4"
PIVOT	55684	1/2" X 1" X 6"
PIVOT	55685	1/2" X 1" X 6 1/2"
PIVOT	54464	1/2" X 1" X 7"
BEARING	60247	1/2" X 1" X 5 3/8"
BEARING	54585	1/2" X 1" X 1 1/16"
BEARING	106034	1/2" X 1 1/4" X 3 1/2"
BEARING	54584	1/2" X 1" X 3 5/16"
BEARING	60265	1/2" X 1" X 7 1/8"
BEARING	54580	1/2" X 1" X 2 1/16"
BEARING	54581	1/2" X 1 1/4" X 3 15/16"
BEARING	54582	1/2" X 1" X 1 9/16"
BEARING	160317	1/2" X 1" X 1 5/16"

HARDWARE

NEW PART #	OLD PART #	DESCRIPTION
54260	113-CS	3/8-16 X 5/8” HEX CAP SCREW
54652	212-MS	10-24 X 3/8” SCREW
54485	141-CS	5/8-11 X 3" CAP SCREW
60311	86875	7/8 X 5 1/2" FULL THREAD BOLT
60312	86876	1-8 X 6 ½” FULL THREAD BOLT ZINC
54568	171-MB	5/8-11 X 6 ½” HEX HEAD BOLT
54660	217-MB	7/8-9 X 7 ½” HEX HEAD BOLT
54644	204-MB	3/4-10 X 14” HEX HEAD BOLT
148770	88822	1 1/2-6 X 7" FULL THREAD BOLT
54722	256-MB	1 1/8-7 X 12” HEX HEAD BOLT
54706	250-MB	1-8 X 19” HEX HEAD BOLT
54723	258-MB	1 1/8" X 21" HEX HEAD BOLT
59619	61256-R	7/8" X 19" FULL THREAD BOLT
54555	162-CS	3/4-10 X 3 ½” CAP SCREW
54688	231-MB	7/8" X 22" HEX HEAD BOLT
54620	197-MB	3/4" X 10 ½” HEX HEAD BOLT
59842	82501	3/4" X 20" FULL THREAD BOLT
54617	196-MB	3/4" X 10" HEX HEAD BOLT
54252	111-NU	1/2" HEX NUT
54363	126-NU	5/8" HEX NUT
54264	113-NU	3/4-10 HEX NUT
54270	114-NU	7/8" HEX NUT
54277	115-NU	1" HEX NUT
54304	118-NU	1 1/8-7 HEX NUT
54310	119-NU	1 1/4-7 HEX NUT
54875	506-NU	5/8" JAM NUT
54878	507-NU	3/4" JAM NUT
54884	508-NU	7/8" JAM NUT
54887	509-NU	1" JAM NUT
54891	510-NU	1 1/8-7 JAM NUT
54894	511-NU	1 1/4-7 JAM NUT
54220	106 WA	1/2" WASHER
54225	107-WA	5/8” FLAT WASHER
54233	108-WA	3/4" FLAT WASHER
54241	109-WA	7/8 CUT FLAT WASHER
54249	110-WA	1" FLAT WASHER
54255	111-WA	1 1/8” FLAT WASHER
54258	112-WA	1 ¼” FLAT WASHER, ZINCA
54180	100-WA	3/16” FLAT WASHER

MISCELLANEOUS

NEW PART #	OLD PART #	DESCRIPTION
60287	86823	BEARING RETAINER
59921	83905	CLEVIS CUT LENGTH 2 1/8 INCHES
60056	85068	3/8 X 1 3/4" CLEVIS PIN
59851	83364	FRICTION PLATE
59822	80859	ANGLE, TIP BEARING LOCK WITH HOLE
61239	89278	CONNECTION STUD, ROUND, THD, RH, FULL, 1/2-13 X 2.75"
61225	89258	LOAD CELL STAND, WELDMENT, 30 1/2"
59993	84439-2	1/2-13 X 9" RH FULL THREAD CONNECTION ROD

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

Fairbanks Scale

MECHANICAL & LEVERTRONIC

Two, Four, & Five Section

Type “S” Motor Truck Scale

Document 50571 Revision 3

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

www.fairbanks.com