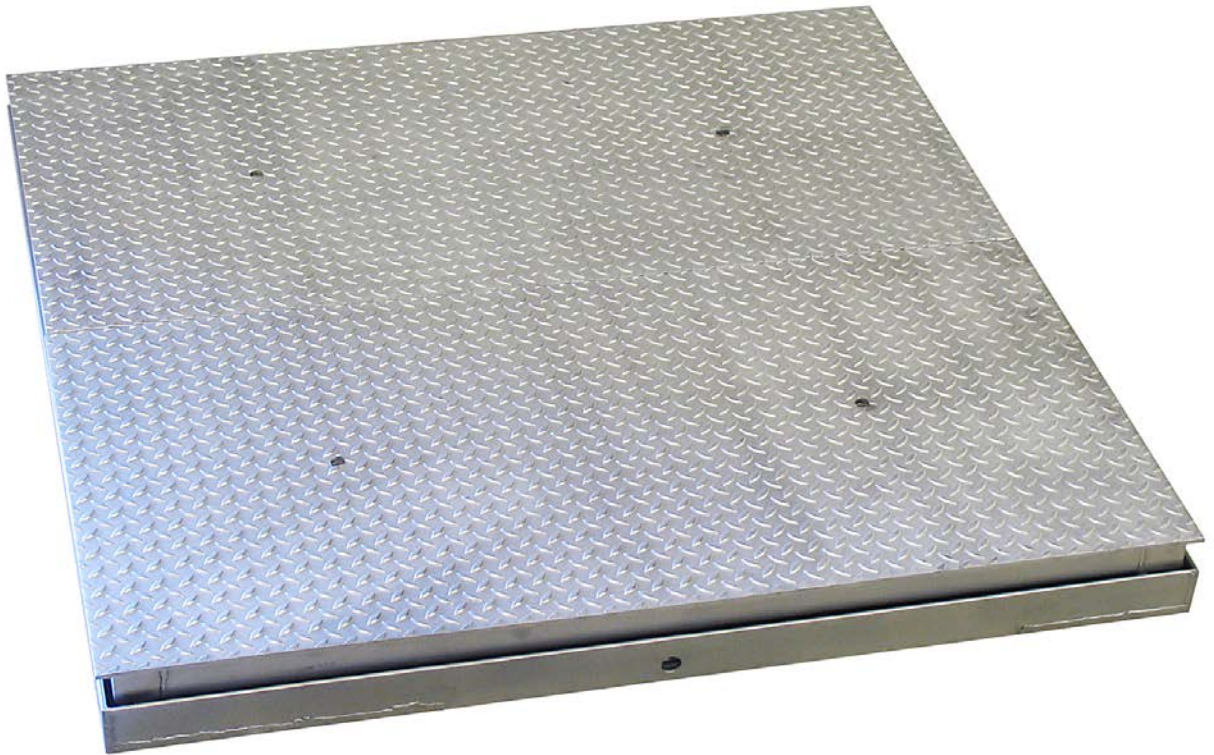




CARDINAL®



GUARDIAN®
HYDRAULIC FLOOR SCALES
OWNER'S MANUAL

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SERIAL NUMBER _____
DATE OF PURCHASE _____
PURCHASED FROM _____

RETAIN THIS INFORMATION FOR FUTURE USE

PRECAUTIONS

Before using this product, read this manual and pay special attention to all "NOTIFICATION" symbols:



IMPORTANT



ELECTRICAL
WARNING



STATIC
SENSITIVE

INTRODUCTION

The Guardian® System is a unique hydraulic based weighing system that utilizes Stainless Steel hydraulic load cells as a load receiving element. The load cells are coupled by copper or stainless steel tubing to a totalizer enclosure. The totalizer enclosure contains a simple manifold assembly and a Cardinal PTG-3K Pressure Transducer for each load cell. The Pressure transducers convert the hydraulic pressure generated by the load cell to an analog signal that is easily trimmed and summed.

The Guardian® has no electronic components at the scale. All components at the scale are highly resistant to water, moisture, lightning damage, and vibration.

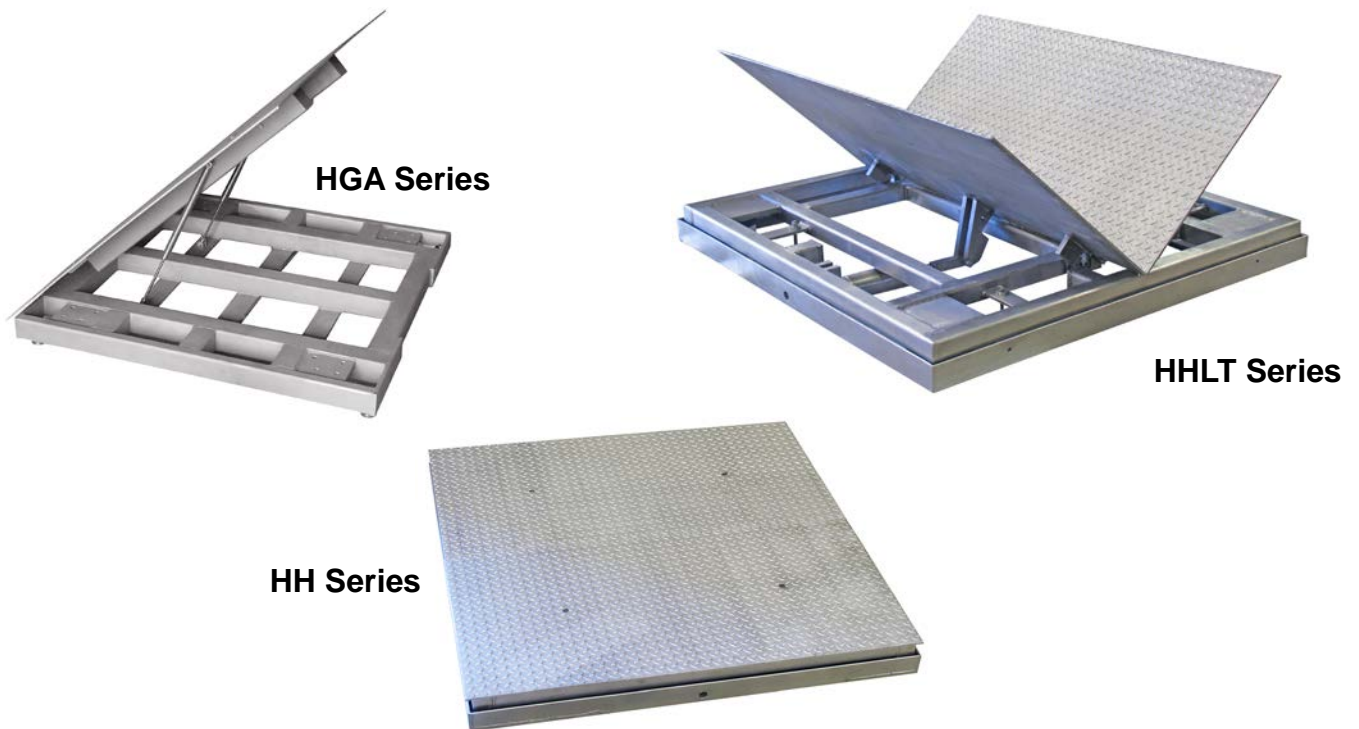


Figure No. 1 – Hydraulic Floor Scale Models



IMPORTANT! This manual must be used in conjunction with certified drawings of the particular scale being installed. *In case of conflict, the certified drawings will govern.* We recommend that you read this manual in its entirety before starting the installation.

SITE PREPARATION

Site preparation is consistent with any other scale installation. Conduit, if required, should be stubbed up at the scale and run to the location of the totalizer enclosure. Any deviation from this should be noted since extra tubing may be required. Tubing length may not exceed 125 feet from the load cell to the totalizer, and no splices are allowed. Consideration should be given to avoid tight radius bends in the conduit that would make it difficult to pull the tubes to the totalizer enclosure. The totalizer enclosure should be located in a protected area close to the scale and the indicator cable run in conduit to the weight indicator if long tube runs need to be avoided. The totalizer enclosure may be located near the weight indicator if it is convenient to the scale.

INSTALLATION

The Guardian Hydraulic Floor Scales utilize a diaphragm type load cell and a four transducer totalizer with standard PTG-3K Pressure Transducers. The totalizer has a standard floor scale trim board and a surge protection box to protect the transducers. Installation is easy and straightforward.

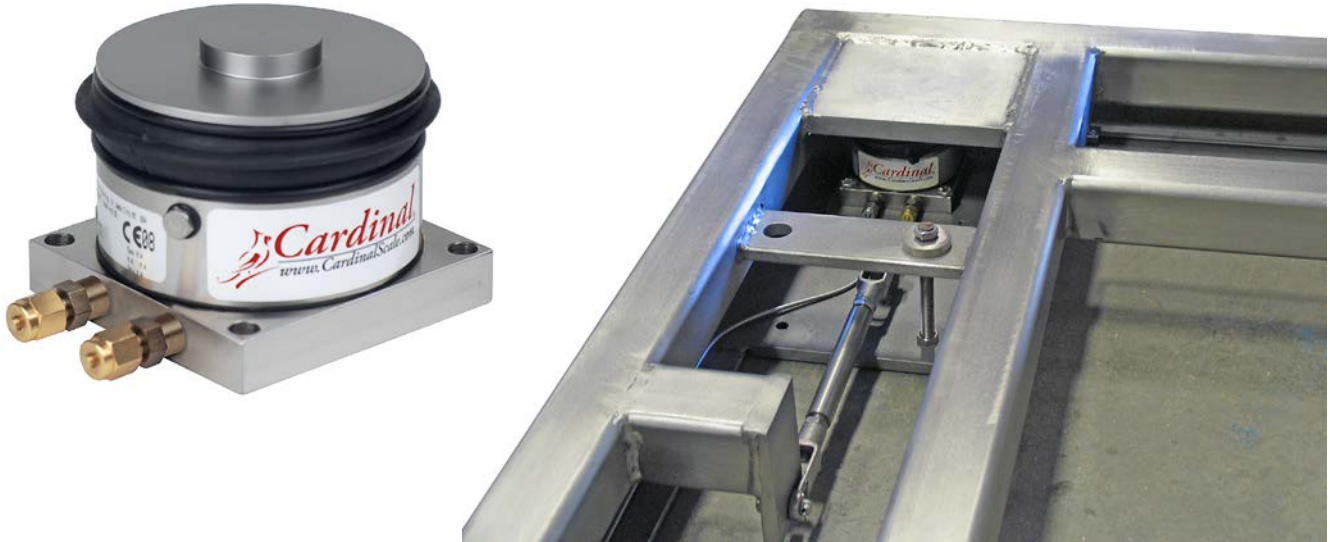


Figure No. 2 – Load Cell and Scale Deck



Figure No. 3 – 4-Cell Totalizer

INSTALLATION, CONT.



IMPORTANT! Due to the distance between the floor scale and the mounting location of the totalizer, it is recommended that an assistant be used during installation.

1. Position the scale on a solid floor with the hinges toward any wall or obstruction. The hole in the lower frame for the cell tubes should be toward the totalizer mounting location if possible.
2. Make sure all four load cell mounting pads are solid on the floor. Any corner that is not on the floor should be shimmed.
3. Drill the floor and install 5/8" x 5" expansion bolts on each corner. Tighten to hold lower frame in place.
4. Next remove the four shipping bolts and shipping spacers. The bridge will drop down about 1/8" to rest on the load cells. Make sure the vertical checks have 1/8" clearance and that all bridge checks are free and not bound up or taking load.

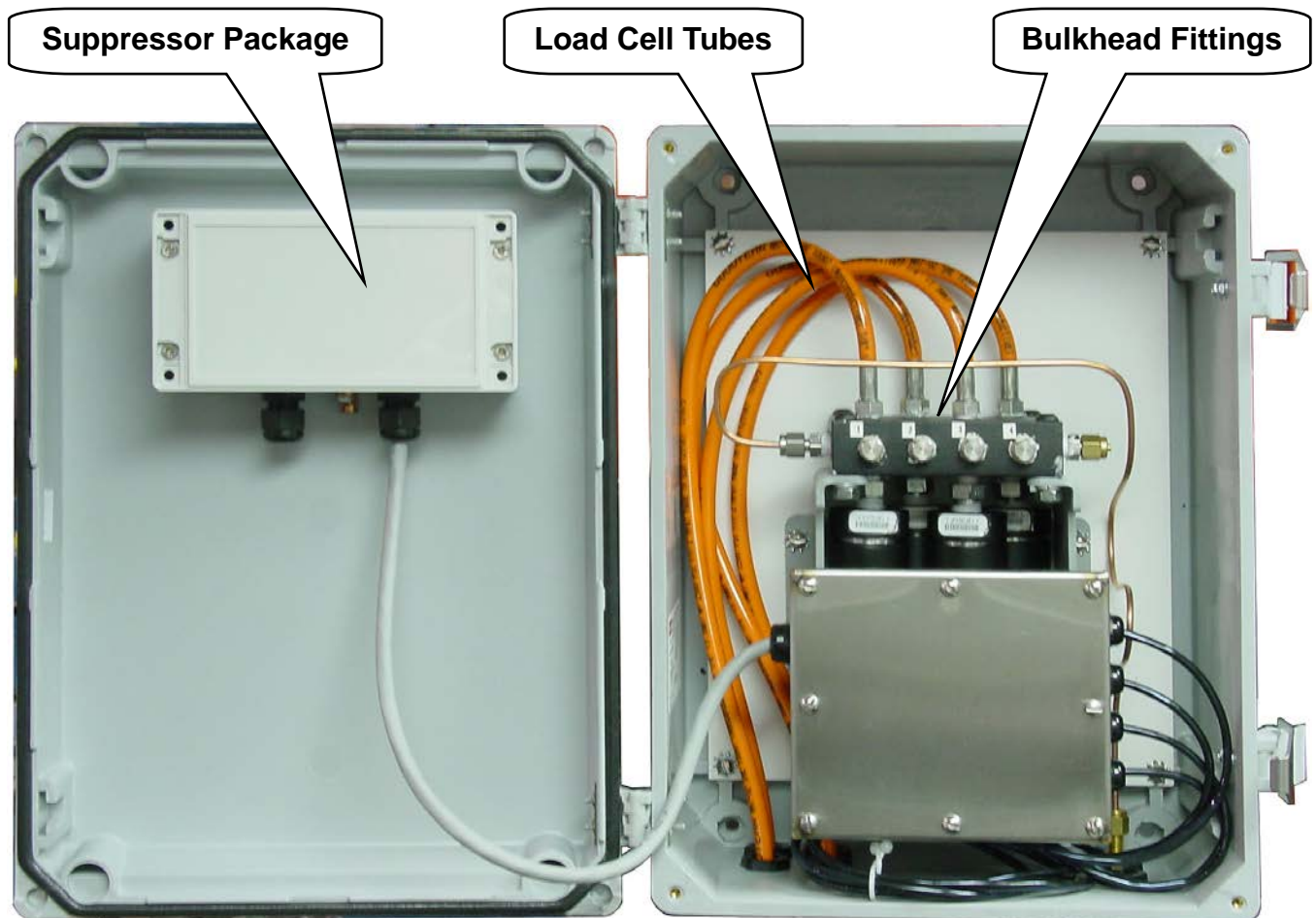


Figure No. 4
(4-Cell Totalizer Enclosure with Suppressor Package)

INSTALLATION, CONT.

5. Mount the totalizer enclosure in a convenient location as close to the scale and the digital weight indicator as possible.

The totalizer enclosure should be mounted with at least 24 inches of clearance below it to allow room to connect the hydraulic tubes running from the scale load cells to the bulkhead fittings. The totalizer should be located such that it is exposed to the same temperatures as the load cells. This ensures the proper operation of the temperature compensation circuits.

6. Install conduit from the Totalizer location to the scale. **NOTE:** A conduit fitting should be placed in the hole in the lower frame to protect the tubes.
7. After the scale and the totalizer enclosure have been located, the hydraulic tubes must be cut to length and installed. Always start with the longest runs first and be aware that the drops from some of the longer runs may be used for shorter runs.
 - 7.1 Using a sharp tube cutter, cut about one inch off of the end of each tube.
 - 7.2 Cut only half way through the tube then gently bend the tube back and forth to finish the cut. This keeps the inside diameter of the tube from collapsing when the cutter breaks through the tube wall. Use a jeweler's file to remove any burrs from the end of the tube.
 - 7.3 Place the nut and inner and outer ferrule over the tube and then assemble it finger tight onto the load cell or totalizer fitting.
 - 7.4 Mark the nut so that you can tell where you began tightening the fitting and tighten $\frac{3}{4}$ to 1 turn.
 - 7.5 Swagelok makes a simple gage to check the connection, so that if it will slide in between the fitting and nut, it needs tightend more.
 - 7.6 If you must remove a fitting, they recommend you mark the nut and fitting so that when you reassemble the connection you go back to exactly the same place, and then an additional $\frac{1}{8}$ to $\frac{1}{4}$ turn.



Figure No. 5 – Swagelok Gap Inspection Gauge

INSTALLATION, CONT.

8. Connect the load cell tubes to the totalizer enclosure bulkhead fittings. The tubes are normally installed with the tube for cell #1 being installed toward the front of the enclosure with the odd cells on the left and even cells on the right. Only finger-tighten the ends at the bulkhead fittings in the scale base.

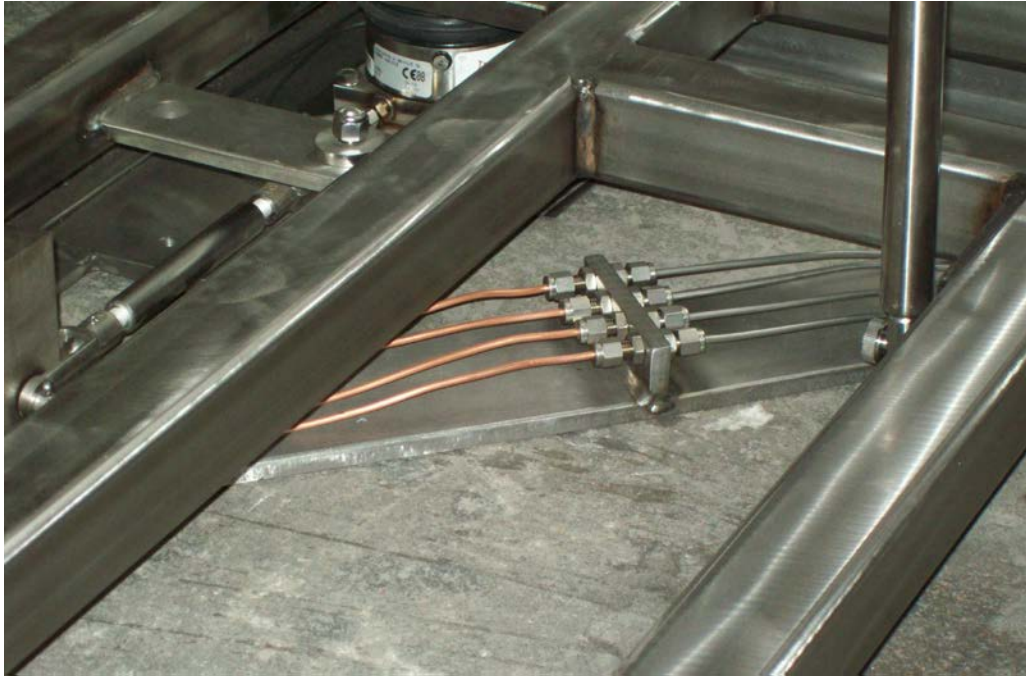


Figure No. 6 – Hydraulic Lines Terminated to Bulkhead Fittings



IMPORTANT! Terminate the Hydraulic Lines to bulkhead fittings on the lower frame. Make sure the tubes lay flat, secure with clamps and do not contact the check rod bracket hanging down from bridge. (Clearance is close).

9. Starting with circuit #1 pump oil through each tube to purge all air from that line. After line is purged connect the tube to the bulkhead fitting and tighten 1/8 to 1/4 turn.
10. Fill your oil pump and install on the oil inlet port on the Totalizer.
11. Remove the bleed cap from cell#1 and install the plastic bleed line. Place the open end in a suitable container. Open the totalizer valve for cell #1 and slowly pump oil through cell#1 to remove all air. When no bubbles are present remove the bleed line but **do not install the cap!**
12. Place your foot on the bridge at cell#1 and slowly apply pressure to force the fluid out of the load cell. When cell is empty install and tighten the bleed cap.
13. Now it is time to gauge the load cell.

INSTALLATION, CONT.

Gauging H2.5K and H5K Hydraulic Load Cells

The procedure for gauging the H2.5K and H5K load cells used in Guardian Floor Scales is significantly different than gauging the SST series of load cells. Where the SST series use a simple set of feeler gauges, the H2.5 and H5 load cells use a special gauging pin to gauge the correct amount of oil in the load cell.

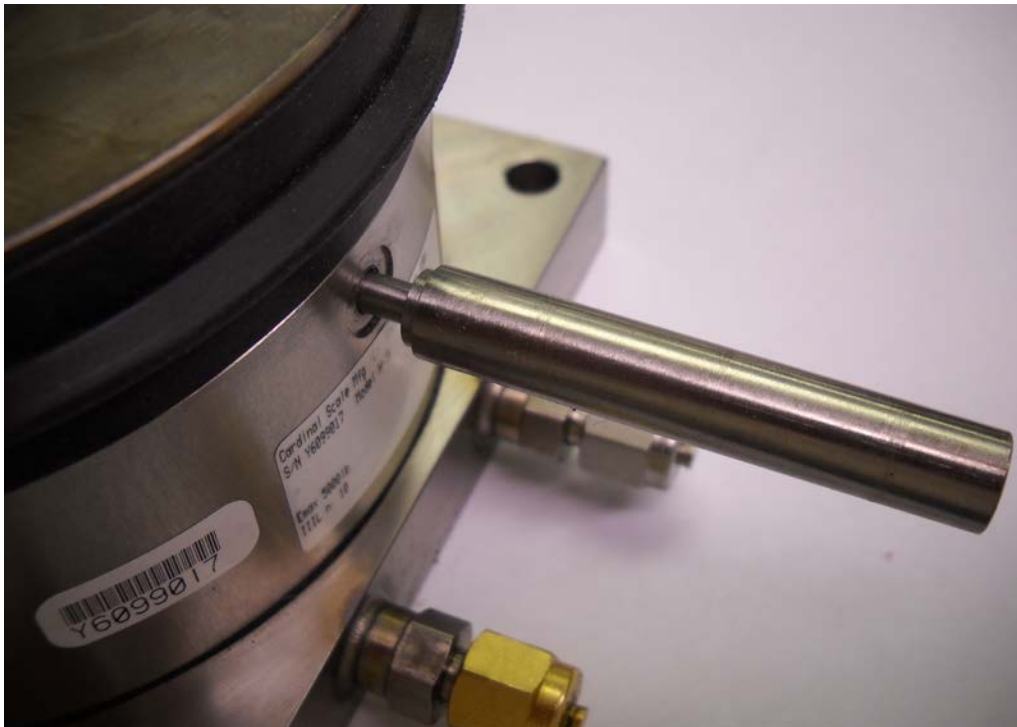
The gauge pin is a simple tool that has corresponding diameters to match the gauge port dimensions on the specific load cell (the H2.5 and H5 are different).



Figure No. 7 – H2.5K Gauge

When we are setting up a scale using the H2.5 or H5 load cells we always want to start with the cell out of oil and the piston all the way down. Carefully bleed the cell to make sure all air is out of the circuit, and then apply pressure on the top of the cell to force oil out of the bleed port. Remove the bleed tube and install and tighten the port cap.

- 13.1** Next remove the gauge port plug and slide the gauge in the port. It will contact the piston before it goes all the way in.



**Figure No. 8
(Gauge Pin in Port with Piston Down)**

INSTALLATION, CONT.

- 13.2** Next open the corresponding valve on the manifold, push the gauge into the cell against the piston and apply a bit of pressure. Very slowly add oil to the cell until the gauge snaps into the gauge slot in the piston. This locates the piston at the correct height.

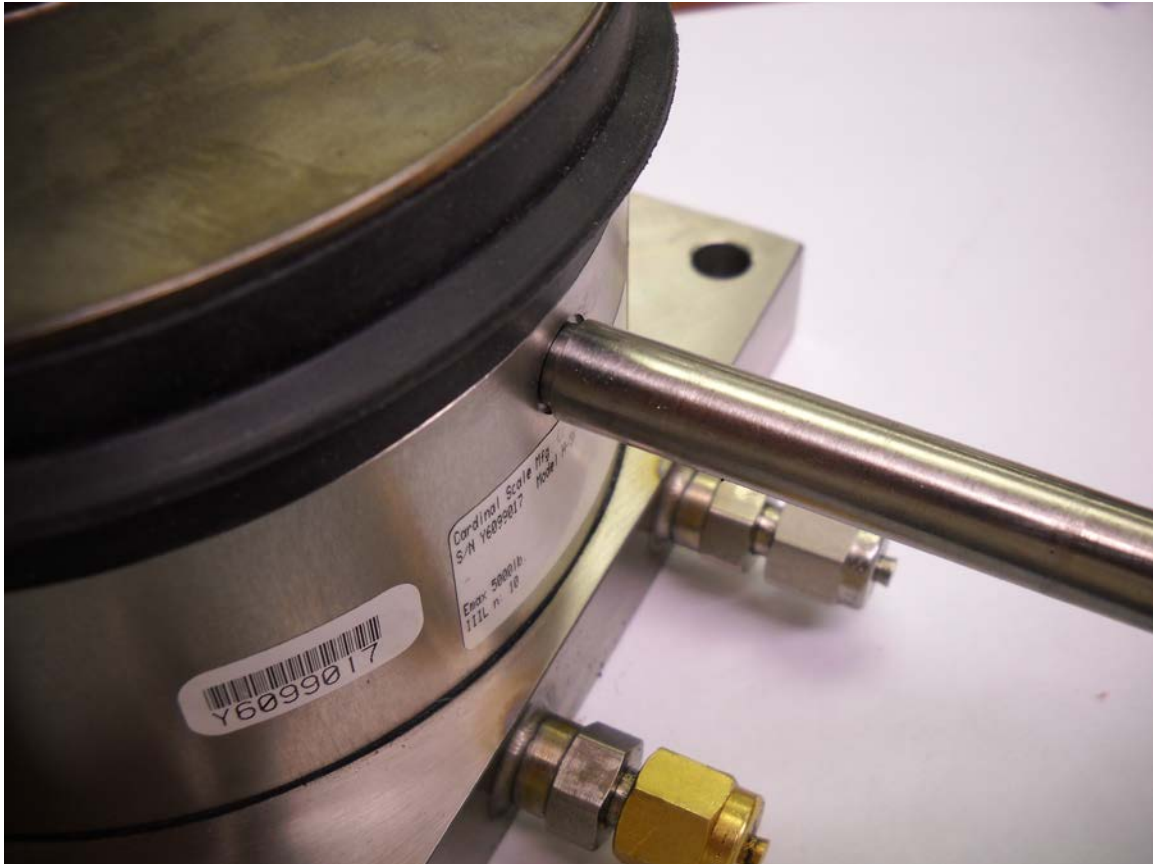


Figure No. 9
(Load Cell with correct amount of oil and Piston at correct height)

- 13.3** Tighten the manifold valve; make sure the gauge will slide in out of the gauge slot with Dead Load applied to the cell. Replace the gauge plug.



CAUTION! It is very important that you do not over fill the load cell. Small capacity Cardinal cells contain a diaphragm that can be damaged by over pressure. If the amount of oil in the cell is not known **ALWAYS** bleed all oil out of the cell to lower the piston and add fluid to bring it up to the correct height.

- 14.** After all four cells have been bled and filled, remove the pump from the totalizer and tighten all valves and system fittings.

INDICATOR INSTALLATION

15. Install the digital indicator. **NOTE:** The DEAD LOAD BOOST jumper should be installed in your indicator.
16. The indicator cable is terminated at the Surge Suppression box located in the front door of the Totalizer enclosure. Make sure the surge suppression box is grounded back to the indicator and the AC power ground. Failure to provide a good ground will make the surge suppression inoperative. See Figure No. 10.

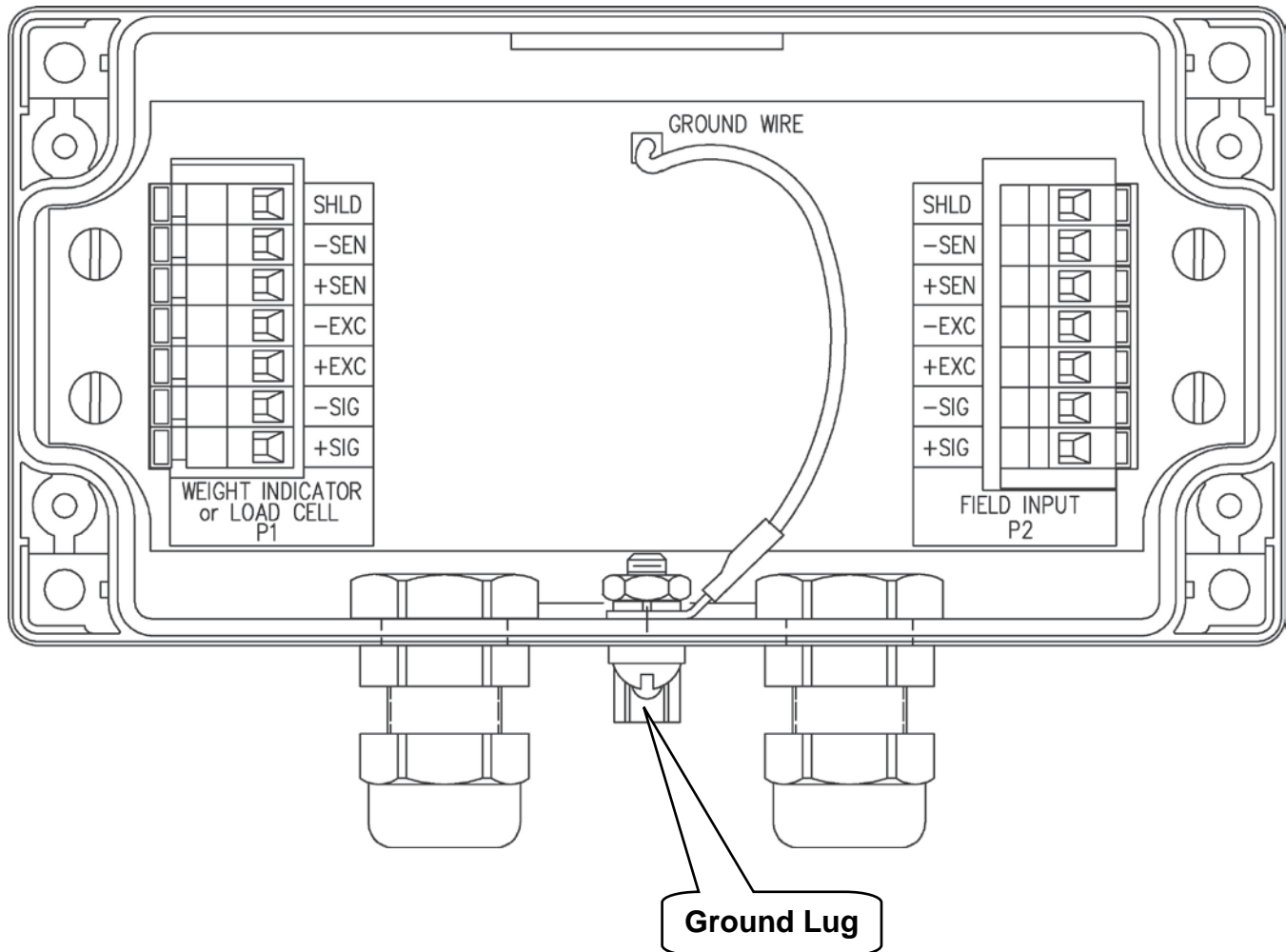


Figure No. 10 – Ground Lug Location



The Ground wire must be attached to the ground lug on the Suppressor Package. It should be run with the indicator cable and terminated to the ground lug on the weight indicator.

17. Power up the indicator, remove the signal lines from the summing card and read the signal from each transducer. Any transducer/cell pair that has a low output should be inspected to make sure it is taking load. If necessary place a small shim under the lower frame cell pad. **DO NOT ADD OIL TO THE CELL!!**

INDICATOR INSTALLATION, CONT.

18. Span the indicator and corner seal the scale using the trim pots in the summing box like any other floor scale. Refer to Figure No. 11.

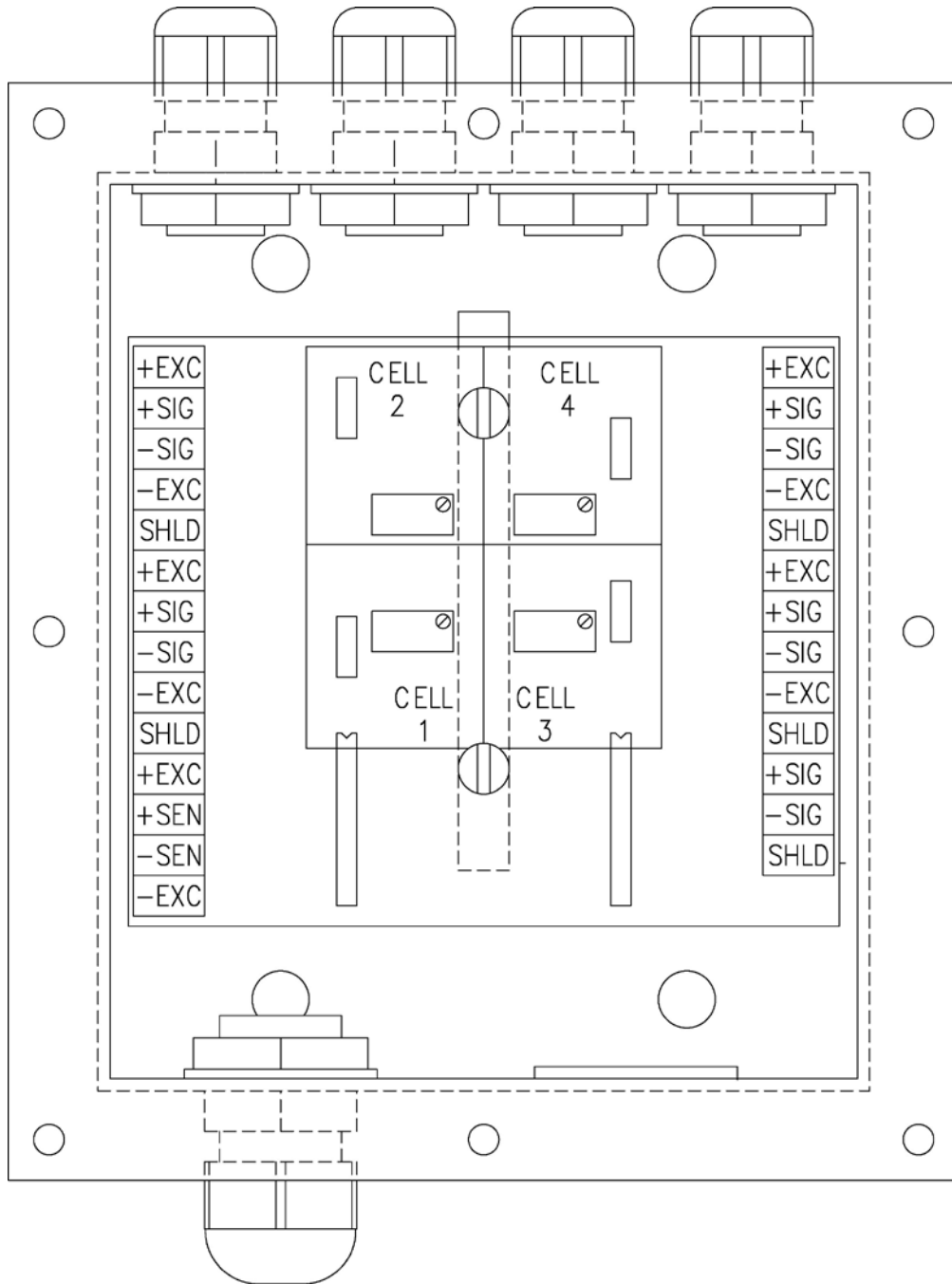


Figure No. 11 – J-Box Trim Assembly

19. If necessary the Guardian Linearization software in the indicator can be used to tweak out any small errors.

CONFORMAL COATING

After installation and testing have been completed, the last step is to conformally coat the summing card using Cardinal Part number 6560-0017, CONFORMAL COATING, SILICONE.

Apply the coating by spraying from top to bottom, holding the can 6 to 8 inches from the summing card. It is best to apply 2 to 3 coats changing the angle a little each time for the best coverage.

The coating dries to the touch in 1 hour and cures in approximately 72 hours. The wiring should not be disturbed until after the curing time.

CARE AND CLEANING

While stainless steel is a sturdy and attractive material, it is not incorruptible. Stainless steel is susceptible to rusting. There are three basic things which can break down stainless steel's outer layer and allow corrosion.

1. Mechanical abrasion – those things which will scratch the steel's surface, such as steel pads, wire brushes and scrapers.

Instead, use soft cloths or plastic scouring pads for cleaning and brush with the polish line or "grain." Clean food equipment frequently to avoid build-up.

2. Water – especially hard water which can leave behind deposits. When possible use treated water – soft water is much gentler on the stainless steel's surface.

3. Chlorides – often found in water, food and table salt. One of the worst perpetrators of chlorides can come from household and industrial cleaners, especially those with quaternary salts. Never use hydrochloric acid (muriatic acid) on stainless steel.

Instead, use non-chloride cleaners. If chlorinated cleaners must be used, rinse several times and wipe dry immediately.

MAINTENANCE

Like any other scale the Guardian Floor Scale needs routine maintenance to keep it working to its potential. Since there are no electronic components in the scale itself this is simplified on the Guardian.

- After initial installation it is recommended that gauge gaps on the load cells be checked after the scale has been in use one week, again after one month of use and then every six months. If there is a very small leak in one of the cell circuits it may not be apparent during initial setup and calibration of the scale.
- The scale should be inspected for dirt and debris under the weighbridge and cleaned every three (3) months or more often depending on the application.

TROUBLESHOOTING

If you are having a problem with a cell losing fluid (it will always be weighing light) remove the gauge port and see if the gauge pin will go into the cell. If not, we need to determine for sure that the cell has lost oil.

1. Take a stiff piece of wire (.045 welding wire works well) and use it to feel the position of the slot in the load cell. If the cell is low or out of fluid you can feel the top edge of the slot with the wire, and above it the piston.



Figure No. 12 – Probing cell gauge port to determine piston position.

2. If the cell has lost fluid, you must find the source of the leak and fix it. Simply pumping more oil in the cell may get it going again but it will soon fail.
3. Clean all fittings and the area around the cell (spray brake or carb cleaner works well), then wrap the fittings with absorbent tissue and apply a heavy load to the cell that appears to be leaking.
4. After a period of time remove the tissue and inspect it for signs of oil. If no external leaks can be found the cell should be considered suspect.
5. If you are unsure of the level of oil in the cell ALWAYS open the bleed port and let oil out of the cell and add it back until the gauge snaps in the groove in the piston.

PTG-3K TRANSDUCER TROUBLESHOOTING

The Cardinal PTG-3K pressure transducer is a simple device to convert hydraulic pressure into a voltage output that can be easily summed and trimmed. It can be checked much the same as a standard strain gauge based load cell.



Figure No. 13 – PTG-3K Pressure Transducer

The PTG-3K is rated at 1mV/V. Because of this you will see exactly half of the output from the transducer that you would normally see out of a 2mV/V load cell. The Transducer uses a modified Wheatstone bridge circuit and uses Balco resistors for span temperature compensation as well as copper alloy for zero temperature compensation.

To troubleshoot the PTG-3K you will first measure the resistance between the red and white signal leads. This value should be from 340 ohms to 360 ohms. Resistance between the black and green excitation leads will be from 402 ohms to 422 ohms.

Resistance from the circuit wires to the transducer body should be 5K Megohms (5 billion ohms) Normally a standard VOM meter is not capable of measuring this resistance. A Megohmmeter (also called an Insulation Resistance Tester) is required.

Since the PTG-3K will always have some amount of pressure on the gauged surfaces, it is impossible to check the absolute zero balance condition of the transducer without removing the transducer from the hydraulic circuit. This is something you normally will not want to do. When the scale is first set up you should record the output of the transducer with the deck jacked up off of the load cell. This value should be recorded and left inside the transducer cabinet so at a later date you can compare the no-load output from the transducer to see if there has been a significant shift in zero. A change of .2mV from the initial reading may indicate a change in the sensor output.

If a sensor must be changed in the scale, first jack up the weighbridge at the corresponding load cell to eliminate pressure from that circuit. Apply 2 wraps of Teflon tape to the new transducer threads and force them all the way into the bottom of the threads. Remove the transducer to be replaced, clean the manifold threads and check for loose Teflon in the manifold and install the new PTG-3K. The sensor should be very tight in the manifold to avoid leaks. Bleed the circuit and set the gauge gap in the cell and the scale should be ready to be calibrated.

RECOMMENDED SEALING PROCEDURE

If your Guardian Hydraulic Floor Scale is used in a commercial application and your local metrology laws require the use of physical sealing, a lead and wire security seal can be installed to prevent access to the interior components of the Totalizer Enclosure.

To prevent access to the interior components, refer to the illustrations below and seal the enclosure as follows:

1. Install the sealing tab before the "O" ring.
2. Tighten the screw.
3. Bend the tab as shown.
4. Install sealing wire.
5. Pull the wire tight and install the lead seal.
6. The screw can not be removed without damaging the seal.

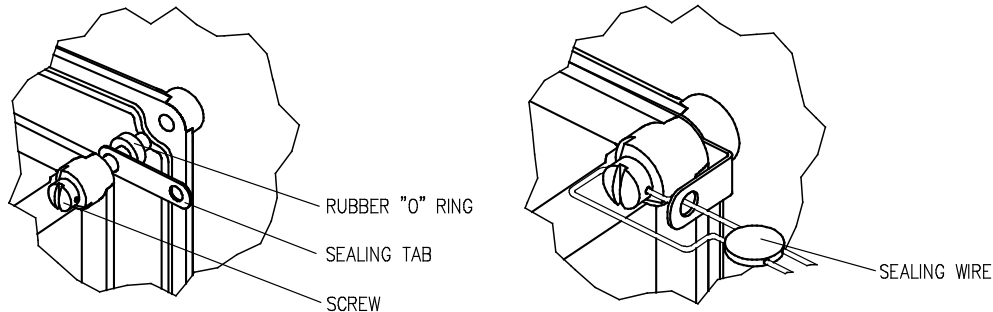
Note that the sealing tab and screw are available from the Cardinal Scale Mfg. Parts Department.

PARTS LIST

8530-B159-08 SEALING TAB

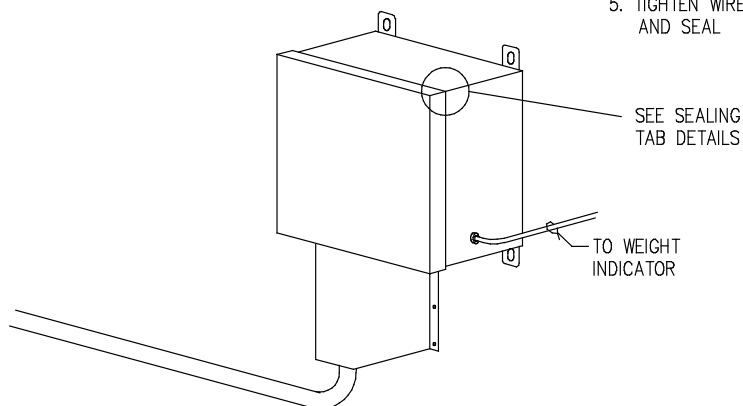
6021-1708 SCW FILLISTER. MACHINE-SCW 10-32X.75

SEALING TAB DETAIL



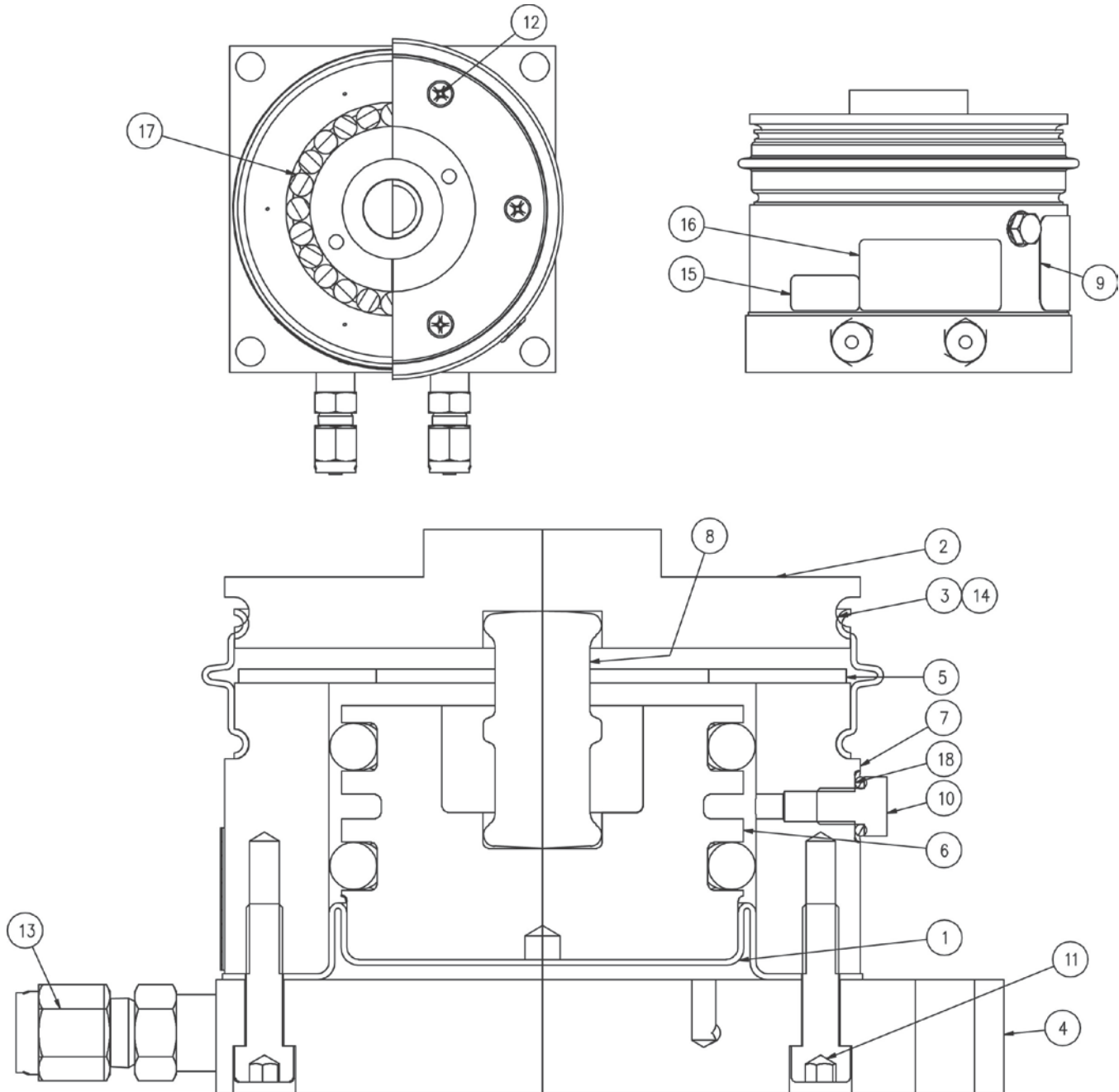
1. INSERT SEALING TAB
BEFORE "O" RING

2. TIGHTEN SCREW
3. BEND TAB
4. INSTALL SEALING WIRE
5. TIGHTEN WIRE
AND SEAL



PARTS IDENTIFICATION

2.5K Load Cell Assembly



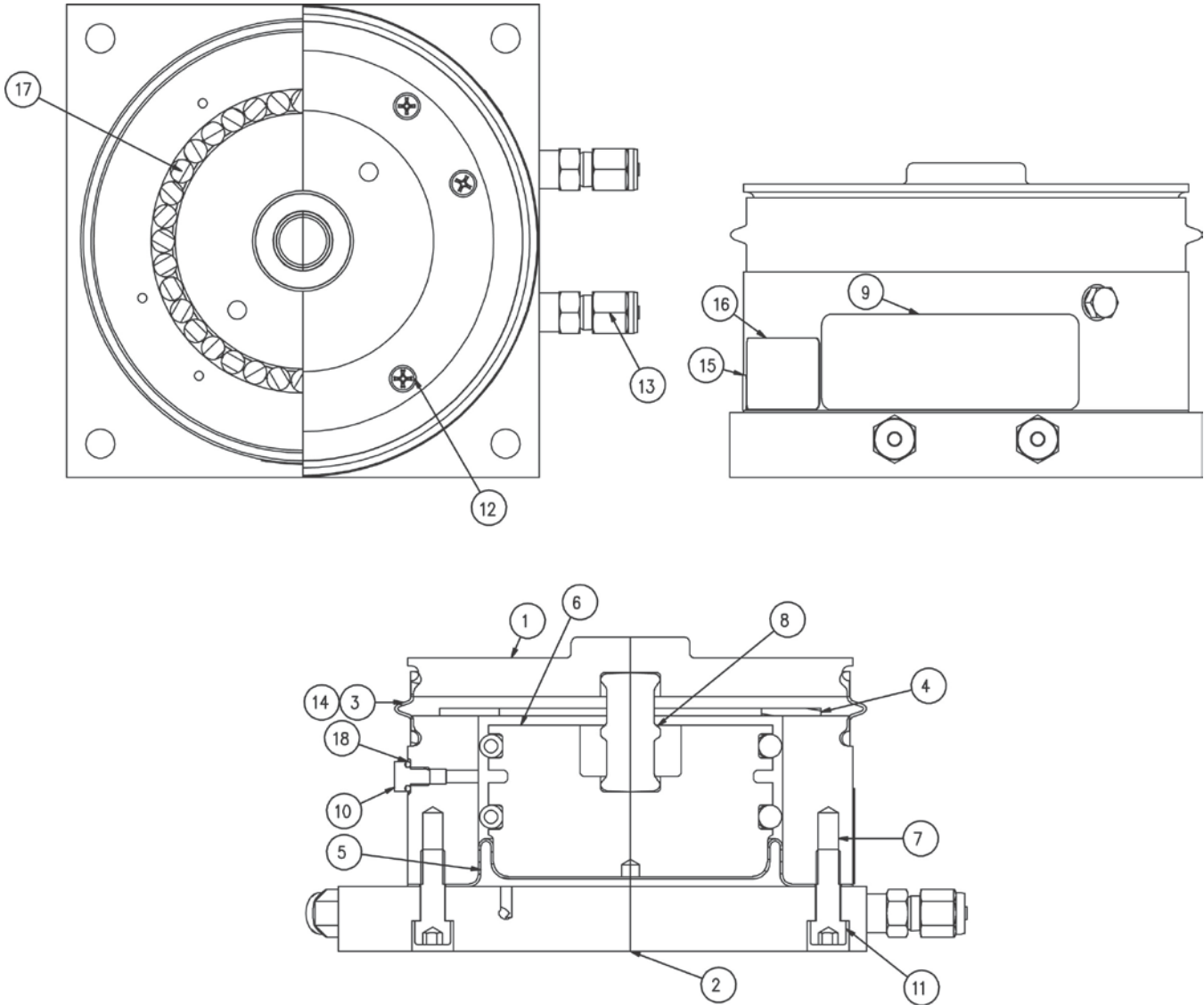
PARTS IDENTIFICATION, CONT.

H2.5K Load Cell Assembly

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	1771-B200-08	DIAPHRAGM
2	1	1771-B201-08	HEAD
3	1	1771-B234-08	BOOT
4	1	1771-B235-0A	BASE WELDMENT
5	1	1771-B237-08	RETAINER
6	1	1771-C202-08	PISTON
7	1	1771-C203-08	CYLINDER
8	1	1932-B015-08	ROCKER
9	1	5930-B106-08	LABEL: CARDINAL LOGO W/WEB ADDRESS
10	1	6021-0452	SCW HEX HEAD MACHINE SCW 10-32x.25
11	8	6021-0567	SCW UN-BRAKO SOCKET-HD. CAP-SCREW.. 10-32X.750
12	6	6021-1130	SCW FLAT HEAD MACHINE SCW 06-32x.250
13	2	6031-0521	FITTING, STAINLESS 1/8" PLUG
14	.05	6560-1120	ADHESIVE LOCTITE 380 INSTANT ADHSVE 1 OZ
15	1	6600-0650	LABEL HI-TEMP INVENTORY TRACKING .37x.9"
16	1	6600-0653	SER. TAG 3/4 x 1 1/2 SILVER MYLAR
17	48	6650-1031	BALL BEARING, 0.250 DIA GRADE 25
18	1	6650-1056	O-RING .187ID x .312OD x .062 THICK

PARTS IDENTIFICATION, CONT.

H5K Load Cell Assembly



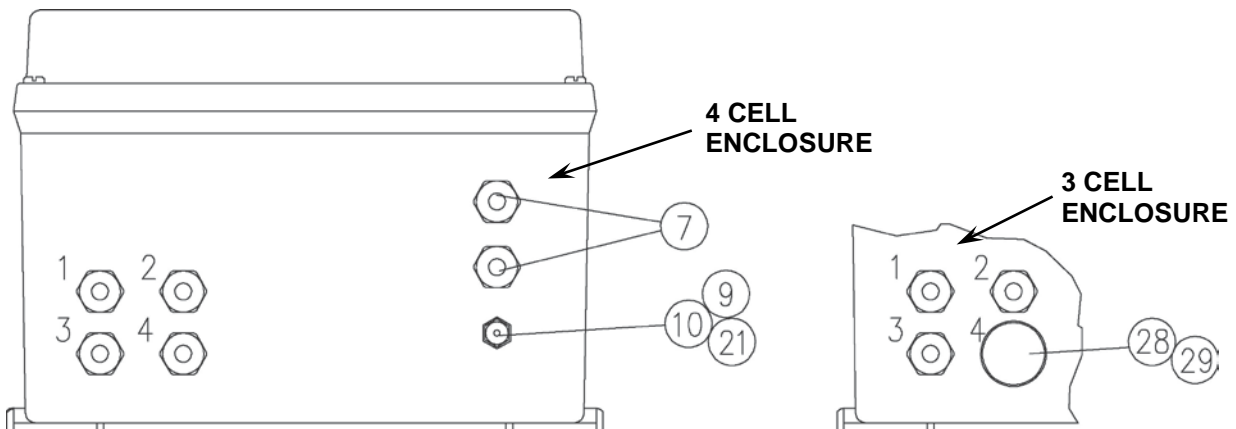
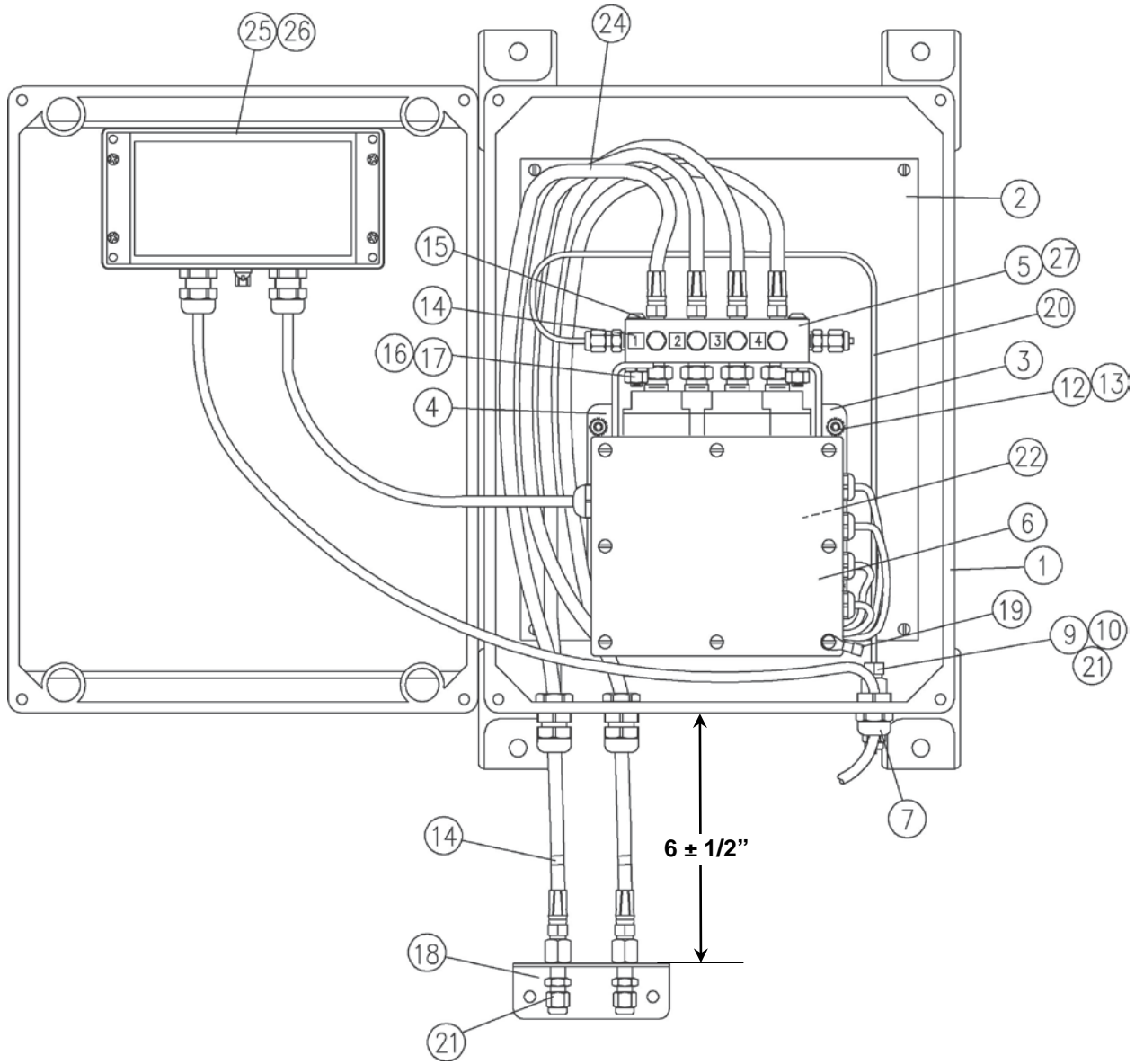
PARTS IDENTIFICATION, CONT.

H5K Load Cell Assembly

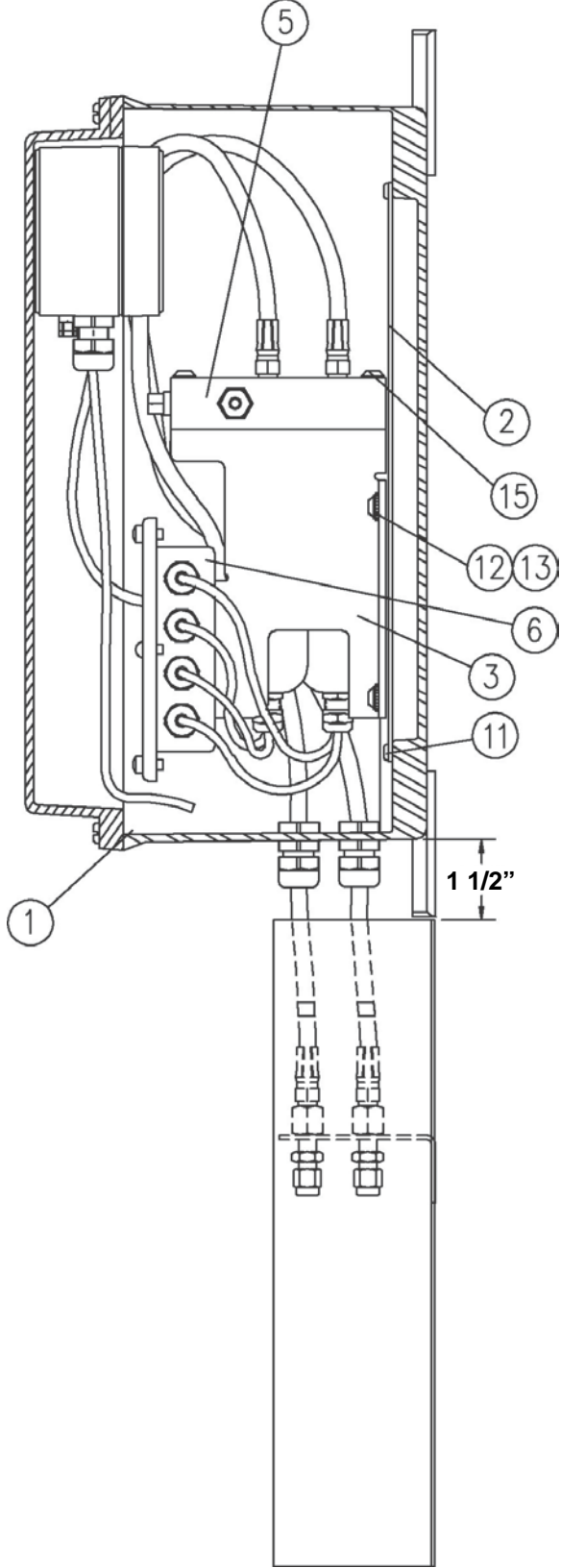
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	1771-B251-08	HEAD
2	1	1771-B255-0A	BASE WELDMENT
3	1	1771-B257-08	BOOT, H5K
4	4	1771-B350-08	RETAINER
5	1	1771-B250-08	DIAPHRAGM-H5K
6	1	1771-C252-08	PISTON
7	1	1771-C253-08	CYLINDER
8	1	1932-B015-08	ROCKER
9	1	5930-B106-08	LABEL: CARDINAL LOGO W/WEB ADDRESS
10	1	6021-0452	SCW HEX HEAD MACHINE SCW 10-32x.25
11	10	6021-1111	SCW UN-BRAKO SOCKET-HD. CAP-SCREW.. .25-28x.750
12	6	6021-1130	SCW FLAT HEAD MACHINE SCW 06-32x.250
13	2	6031-0521	FITTING, STAINLESS 1/8" PLUG
14	.05	6560-1120	ADHESIVE LOCTITE 380 INSTANT ADHSVE 1 OZ
15	1	6600-0650	LABEL HI-TEMP INVENTORY TRACKING .37x.9"
16	1	6600-0653	SER. TAG 3/4 x 1 1/2 SILVER MYLAR
17	72	6650-1031	BALL BEARING, 0.250 DIA GRADE 25
18	1	6650-1056	O-RING .187ID x .312OD x .062 THICK

PARTS IDENTIFICATION, CONT.

4 Cell Totalizer Enclosure

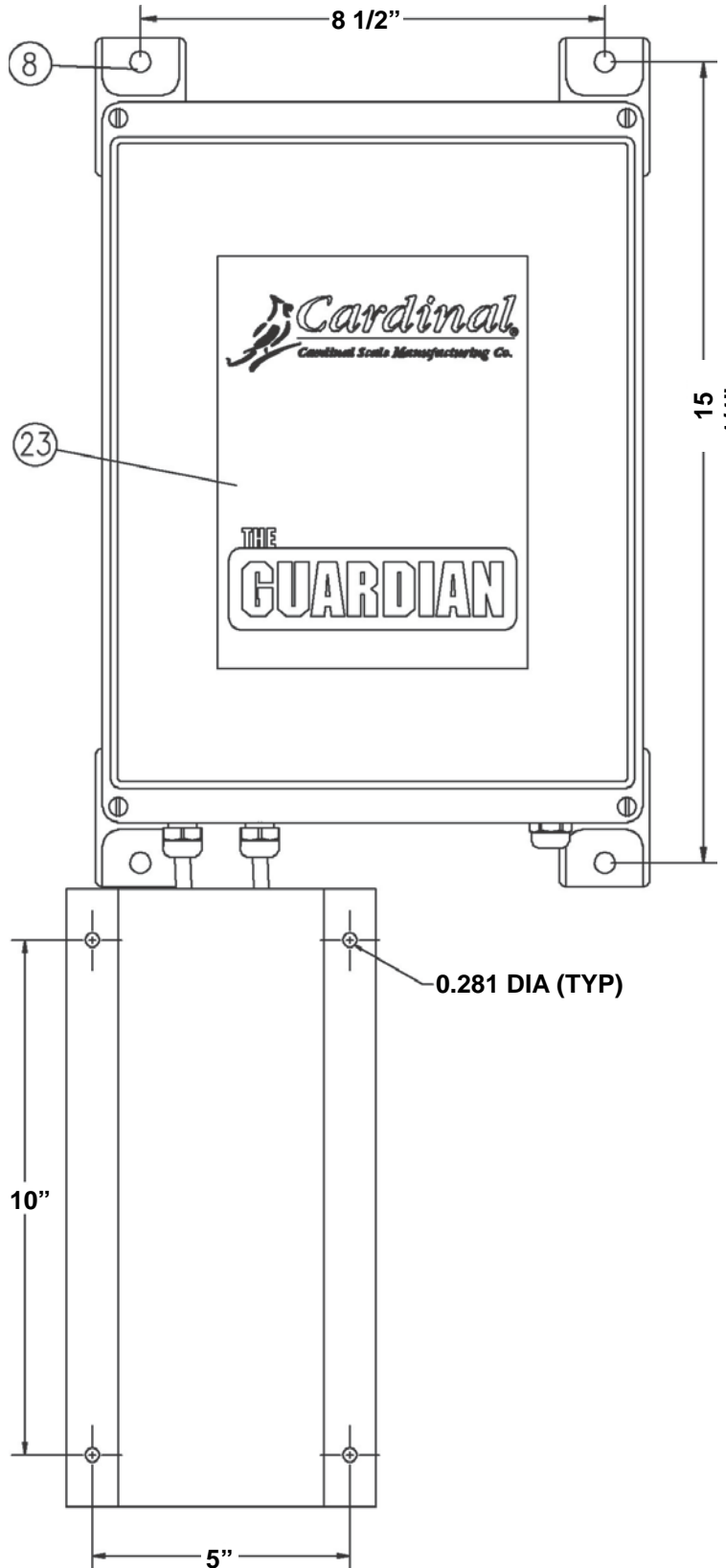


PARTS IDENTIFICATION, CONT.
4 Cell Totalizer Enclosure



PARTS IDENTIFICATION, CONT.

4 Cell Totalizer Enclosure



PARTS IDENTIFICATION, CONT.

4 Cell Totalizer Enclosure

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	1780-D049-08	ENCLOSURE
2	1	1780-C051-08	SUBPANEL - TOTALIZER
3	1	1780-D050-08	BRACKET
4	1	1780-D050-18	BRACKET
5	1	1772-C014-0A	VALVE BLOCK ASSY, 4 CELL SYSTEM (-0A VER)
6	1	1780-C052-0A	J-BOX TRIM ASSY
7	2	6610-2248	GLAND CONNECTOR
8	1	6540-0331	MOUNTING FEET
9	1	6031-0515	FITTING, BRASS
10	1	6031-0507	JAM NUT, BRASS
11	4	6021-1020	RHMS, #10-32UNF-2A X 3/8"
12	4	6021-1004	BHCS, #10-32 X 1/2"
13	4	6024-0049	WASHER LOCK, EXT TOOTH #10 TYPE A Z-PL
14	.2	6980-0139	WIRE MARKER #1-45 (10 SHEETS/BOOKLET)
15	4	6021-1533	BHCS, 1/4-20UNC-2A X 1 1/2"
16	4	6024-0039	WASHER LOCK, HELICAL 1/4"
17	4	6013-0045	HEX NUT, 1/4-20UNC-2B
18	1	1780-C042-18	BULKHEAD BRACKET (4 CELL)
19	1	6610-2449	RING TERMINAL, 1/4 STUD 12-10 AWG
20	3'	6031-0506	COPPER TUBING
21	5	6031-0502	PLUG, BRASS
22	4	6021-1707	FHSCS, 1/4-28 X 1/2"
23	1	1780-B028-18	LABEL: LOGO & GUARDIAN
24	4	1780-B053-0A	SHORTER HYD. HOSE (4 REQ'D -0A VERSION)
	3	1780-B053-0A	SHORTER HYD. HOSE (3 REQ'D -1A VERSION)
25	1	3502-C520-0A	TRANS SUPP. BOX
26	A/R	6710-1017	TAPE (AS REQUIRED)
27	1	1772-C014-1A	VALVE BLOCK ASSY, 3 CELL SYSTEM (-1A VER)
28	1	3502-B217-0A	HOLE PLUG
29	A/R	6560-0041	SILICON SEALER (AS REQUIRED)

CELL OUTPUT CALIBRATION WORKSHEET

Cell #	Deadload Output	-	Zero Balance Output	=	Circuit Gain
Cell #1	_____	-	_____	=	_____
Cell #2	_____	-	_____	=	_____
Cell #3	_____	-	_____	=	_____
Cell #4	_____	-	_____	=	_____

STATEMENT OF LIMITED WARRANTY

WARRANTY TERMS

Cardinal Scale Manufacturing Company warrants the equipment we manufacture against defects in material and workmanship. The length and terms and conditions of these warranties vary with the type of product and are summarized below:

PRODUCT TYPE	TERM	MATERIAL AND WORKMANSHIP	LIGHTNING DAMAGE See note 9	WATER DAMAGE See note 7	CORROSION See note 4	ON-SITE LABOR	LIMITATIONS AND REQUIREMENTS
WEIGHT INDICATORS	90 DAY REPLACEMENT ----- 1 YEAR PARTS	YES	YES	YES	YES	NO	1, 2, 3, 5, 6 A, B, C, D
LOAD CELLS (Excluding Hydraulic)	1 YEAR	YES	YES	YES	YES	NO	1, 2, 3, 5, 6 A, B, C, D
HYDRAULIC LOAD CELLS (When purchased with Guardian Vehicle Scale)	LIFETIME	YES	YES	YES	YES	90 DAYS	1, 5, 6, 8 A, B, C, D
HYDRAULIC LOAD CELLS (When purchased separately)	10 YEARS	YES	YES	YES	YES	NO	1, 5, 6, 8, 9 A, B, C, D
VEHICLE SCALE (Deck and Below Excl. PSC Series)	5 YEARS	YES	YES	YES	YES	90 DAYS	1, 2, 3, 5, 6 A, B, C, D, E
LSC SCALE (Deck and Below)	3 YEARS	YES	YES	YES	YES	90 DAYS	1, 2, 3, 5, 6, 11 A, B, C, D
GUARDIAN FLOOR SCALES	10 YEARS	YES	YES	YES	YES	NO	1, 2, 3, 5, 6, 9, 10 A, B, C, D
ALL OTHER CARDINAL PRODUCTS	1 YEAR	YES	YES	YES	YES	NO	1, 2, 5, 6 A, B, C, D, E
REPLACEMENT PARTS	90 DAYS	YES	YES	YES	YES	NO	1, 2, 4, 5, 6 A, B, C, D
SWIM AND 760 SERIES VEHICLE SCALES	1 YEAR	YES	YES	YES	YES	90 DAYS	1, 2, 5, 6 A, B, C, D
SOFTWARE	90 DAYS	YES	N/A	N/A	N/A	NO	1, 6 B, C, D
CONVEYOR BELT SCALES (including Belt-Way)	1 YEAR	YES	YES	YES	YES	NO	1, 2, 3, 5, 6 A, B, C, D, E, F



CARDINAL

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04/24
Printed in USA
315-WARRANTY-CAR-M

APPLICABLE LIMITATIONS AND REQUIREMENTS

1. This warranty applies only to the original purchaser. The warranty does not apply to equipment that has been tampered with, defaced, damaged, or had repairs or modifications not authorized by Cardinal or has had the serial number altered, defaced or removed.
2. This warranty is not applicable to equipment that has not been grounded in accordance with Cardinal's recommendations.
3. This equipment must be installed and continuously maintained by an authorized Cardinal / Belt-Way dealer.
4. Applies only to components constructed from stainless steel.
5. This warranty does not apply to equipment damaged in transit. Claims for such damage must be made with the responsible freight carrier in accordance with freight carrier regulations.
6. Warranty term begins with date of shipment from Cardinal.
7. Only if device is rated NEMA 4 or better or IP equivalent.
8. Lifetime warranty applies to damages resulting from water, lightning, and voltage transients and applies only to the hydraulic load cell structure itself (does not include pressure transducers, rubber seals, o-rings, and associated wiring).
9. 10-Year prorated warranty on hydraulic load cells.
10. 1-Year warranty for scale structure.
11. PSC models' warranty coverage applies only to agricultural installations on farms up to 3,000 acres (LSC models not limited in this manner).
12. Load cell kits MUST be installed in accordance with Cardinal Scale instructions. Failure to follow these instructions will void the warranty.

EXCLUSIONS

- A.) This warranty does not include replacement of consumable or expendable parts. The warranty does not apply to any item that has been damaged due to unusual wear, abuse, improper line voltage, overloading, theft, fire, water, prolonged storage or exposure while in purchaser's possession or acts of God unless otherwise stated herein.
- B.) This warranty does not apply to peripheral equipment not manufactured by Cardinal. This equipment will normally be covered by the equipment manufacturer's warranty.
- C.) This warranty sets forth the extent of our liability for breach of any warranty or deficiency in connection with the sale or use of our product. Cardinal will not be liable for consequential damages of any nature, including but not limited to loss of profit, delays or expenses, whether based on tort or contract. Cardinal reserves the right to incorporate improvements in material and design without notice and is not obligated to incorporate said improvements in equipment previously manufactured.
- D.) This warranty is in lieu of all other warranties expressed or implied including any warranty that extends beyond the description of the product including any warranty of merchantability or fitness for a particular purpose. This warranty covers only those Cardinal products installed in the forty-eight contiguous United States and Canada.
- E.) This warranty does not cover paint coatings due to the variety of environmental conditions.
- F.) Do not cut load cell cables on load cells returned for credit or warranty replacement. Cutting the cable will void the warranty.
- G.) Software is warranted only for performance of the functions listed in the software manual and/or the Cardinal proposal.
- H.) The software warranty does not cover hardware. Warranties on hardware are provided from the hardware vendor only.
- I.) The software warranty does not cover interfacing issues to non-Cardinal supplied hardware.
- J.) The software warranty does not include automatic software upgrades unless purchased separately.



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