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**SERVICE MANUAL 5793**

**WEIGH RAIL**

**TYPE IV**

September, 1975  
B-10/84-100-1138-2

**UNION SWITCH & SIGNAL DIVISION**  
AMERICAN STANDARD INC. / SWISSVALE, PA 15218





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## SECTION I

### DESCRIPTION AND OPERATION

#### 1.1 GENERAL DESCRIPTION

The weigh rail is a special rail section used in automated classification yards to determine the weight ranges of cars about to be processed. This weight information is used to set the ceiling pressures in a retarder during automatic operation.

The specially designed weigh rail is seven feet four inches long and has a horizontal milled slot at its midpoint. The milled slot contains a lever mechanism, sensitive to the weight exerted by passing car wheels.

The main components of the weigh rail are as follows:  
(Refer to Dwg. F451059-Sh. 2, listed in the appendices of this manual).

##### 1.1.1 Main Rail Section (UM377531)

The weigh rail is rectangular in cross section and will bolt directly to 140 pound RE rail. The weigh rail can be fitted to any size standard rail sections by means of compromise joints.

The steel used in the rail section is a special heat treated alloy which will perform satisfactorily under severe service.

##### 1.1.2 Deflection Multiplication System

The multiplication mechanism consists of two levers, a support bracket and four contact actuating screws (see Figure 1). Its purpose is to multiply rail deflection caused by the weight of the car wheel and indicate this weight by operating the proper contact.

The lever mechanism is attached to the side plate and protected by the controller box. The side plate is dowel fitted to the stationary (lower) part of the rail. One end of the primary lever is always in contact and thus moves with the vertical deflection of the rail head. The opposite end of the primary lever positions the secondary lever through the master adjusting screw. Four individual adjusting screws (figure 2) are set in the opposite end of the secondary lever. These screws operate four contacts which are provided for light, medium, heavy, and extra heavy weight cars. As one faces the open controller box, reading from left to right, are the extra heavy contact, the light contact, the medium contact, and finally the heavy contact.

##### 1.1.3 Side Plates (UR451060-1201 and UM349734)

The slot cut through the center of the rail is covered by side plates which are bolted directly to the rail section.



The side plates protect the slot and internal lever mechanism from dirt and other foreign elements. O-rings are installed between the side plates and rail section to further increase protection of the internal mechanism.

The controller box houses the controller mechanism, a terminal block and a heater. The heater prevents frost from interfering with the contact movement. A toggle switch in the junction box adjacent to the weigh rail provides on-off control of the heater.

The weigh rail is shipped from the factory with all internal wiring connections completed. The external wiring connections between the controller box and junction box, are made at the time of installation with control cable UN451060-1901, which is shipped with the equipment.

## 1.2 OPERATION

As shown in figure 1, the weigh rail has a horizontal milled slot at its midpoint. As a car wheel passes over the rail section, the rail portion above the slot deflects in relation to the lower rail section. Maximum deflection occurs when the wheel is at the center of the slot where the lever mechanism is located. The deflection of the rail section above the slot is directly proportional to the weight of the passing car.

### 1.2.1 Operation Sequence

The mechanical operating sequence, as a car passes over the weigh rail, is as follows:

A downward deflection of the rail section above the slot produces a corresponding displacement of the primary lever.

The primary lever pivots on bearing Y, causing an upward movement of the master adjustment screw on the end of the primary lever.

The secondary lever pivots on bearing X, producing a downward movement of the four individual adjustment screws.

The downward movement of the individual adjustment screws closes the corresponding electrical contacts.

### 1.2.2 Contacts

Four contacts are provided (light, medium, heavy, and extra heavy). The individual adjustment screws and electrical contacts are adjusted so that a light weight car will close only the light contact. A medium weight car will close both the light and medium contacts. A car in the heavy weight class will close the light, medium, and heavy contacts.

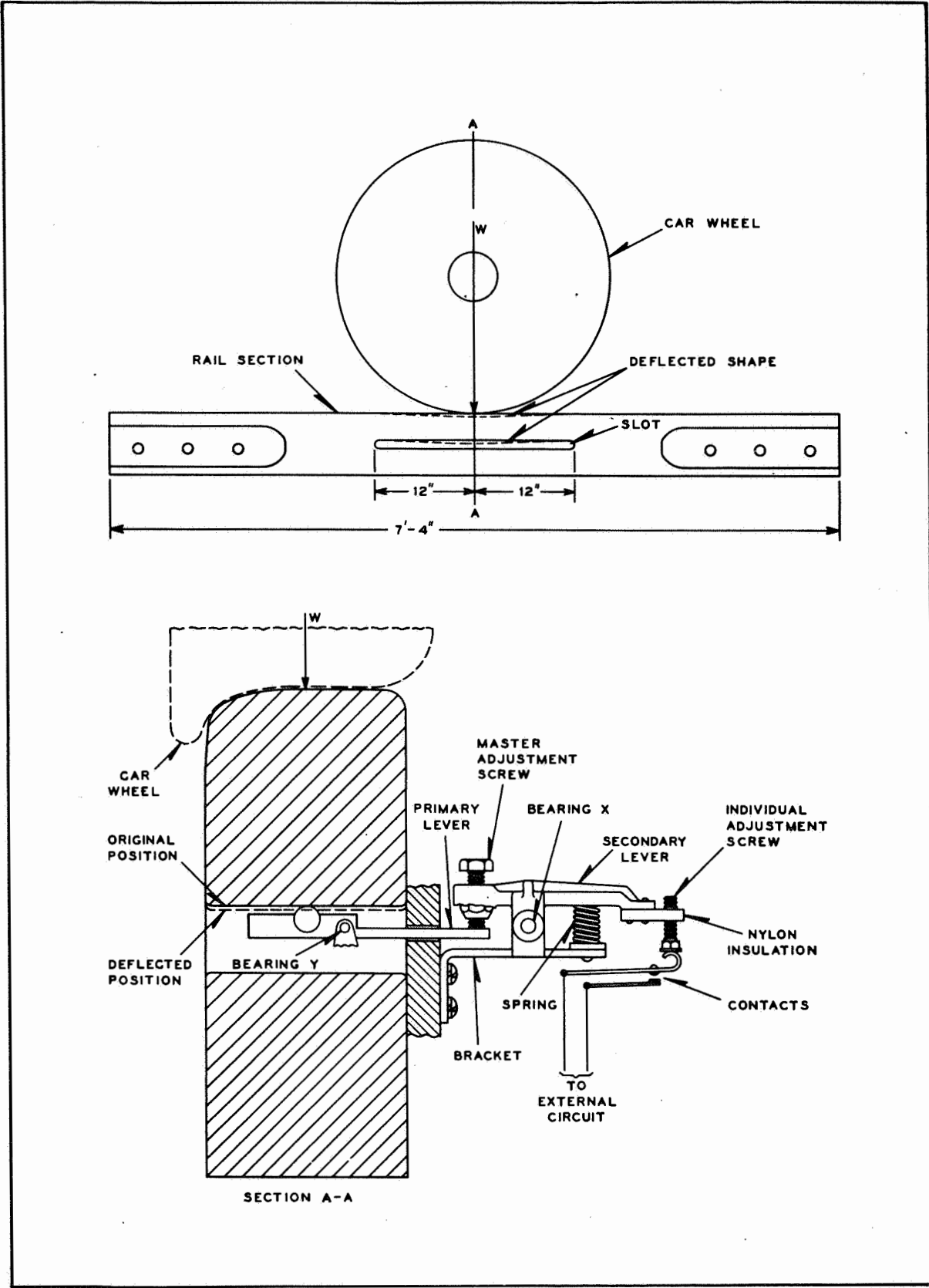


Figure 1. Weigh Rail Schematic Operation



And finally, an extra heavy car will close all four contacts.

The spring installed between the secondary lever and the mounting bracket prevents lost motion in the lever system and insures the primary lever is always in contact with the upper surface of the slot.





## SECTION II

## INSTALLATION

The list of general instructions below should be followed in the installation of a weigh rail. The detailed instructions for installing a weigh rail have been illustrated in Dwg. F452002-Sh. 06 or Sh. 22.

## 2.1 GENERAL INSTRUCTIONS

1. The weigh rail must be located on a concrete foundation or a well tamped road bed. The concrete base is preferred.
2. The weigh rail must be placed on top quality ties.
3. The center of the weigh rail must be accurately placed over the center of a sixteen inch space between the middle tie plates.
4. The track gage should be widened about one quarter to one half inch in the vicinity of the weigh rail and a guard rail (straight section not less than six feet in length) should be installed inside the opposite rail.
5. The weigh rail must be located in a straight section of track, preferably at least twenty-five feet from a track curvature.
6. The weigh rail must be located on an even grade. Best performance results when vertical curves are absent for a distance of twenty-five feet from either end of the weigh rail.
7. The weigh rail must be level with adjoining rails.
8. Joining rails should be equipped with anti-creepers to prevent unnecessary end load on the weigh rail.



## SECTION III

## ADJUSTMENT

## 3.1 CONTACTS

The method of setting contacts by use of a shim gage is illustrated in figure 2. The shim is inserted between the base of the adjusting screw and top of the upper curved contact spring.

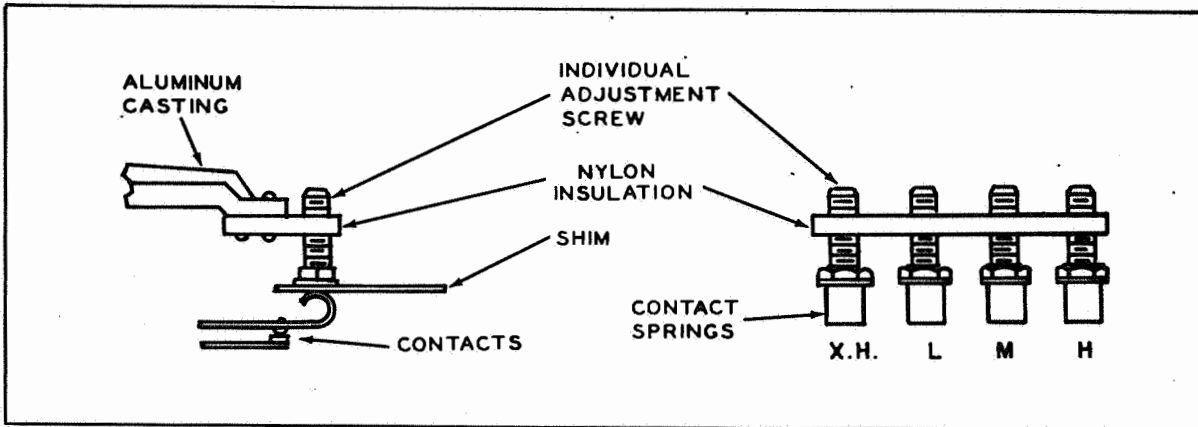


Figure 2. Method of Setting Contacts

NOTE

Never insert the shim between contacts. Contacts should never be adjusted when a car wheel is positioned on the weigh rail.

In addition to the standard contact setting instructions listed below, each individual application drawing includes a detailed adjustment procedure.

Shim gage utilized in setting contacts should be similar to "Lufkin Thickness Gage #126T". A small one-quarter inch open end wrench should be used for individual screw adjustment.

## 3.1.1 Standard Contact Settings

To determine circuit continuity in the following adjustments, an analyzer such as an ohmmeter, buzzer (or light) and battery should be used.

Light Weight (L) - 14 to 35 Ton Car Loads

Connect analyzer between the white (common) and green (light weight) wire leads in the junction box. Insert .015" shim gage between the "L" adjustment screw and the long contact spring (see figure 2).



Place the shim flush against the adjustment screw head. With the shim inserted correctly, turn the "L" adjustment screw until the circuit is just completed.

#### Medium Weight (M) - 35 to 52 Ton Car Loads

Connect analyzer between the white and black (medium weight) wire leads in the junction box. Insert .040" shim gage between the "M" adjustment screw and the long contact spring. Turn the "M" adjustment screw to just make the circuit.

#### Heavy Weight (H) - 52 to 110 Ton Car Loads

Connect analyzer between the white and red (heavy weight) wire leads in the junction box. Insert .060" shim gage between the "H" adjustment screw and the long contact spring. Turn the "H" adjustment screw to just make the circuit.

#### Extra Heavy Weight (XH) - 110 Ton and Up Car Loads

Connect analyzer between the white and blue (extra heavy weight) wire leads in the junction box. Insert .135" shim gage between the "XH" adjustment screw and the long contact spring. Turn the "XH" adjustment screw to just make the circuit.

### 3.1.2 Five Weight Categories

The Type IV Weigh Rail when shipped from the factory is preadjusted for the standard four weight setup. In those installations using a five weight system, the following procedure is to be followed.

The Automatic Light indicator (0-24 tons) is derived from track occupancy. The weigh rail provides the four remaining weight indications. The settings are different than for the standard four weight system.

Shown in Figure 3 is a graph illustrating the relationship between the contact gap setting versus the gross car weight.

#### Light Weight (L) 24 to 35 Ton Car Loads

Connect analyzer between the white (common) and green (light weight) wire leads in the junction box. Insert .029" shim gage between the "L" adjustment screw and the long contact spring (see figure 2). Place the shim flush against the adjustment screw head. With the shim inserted correctly, turn the "L" adjustment screw until the circuit is just completed.

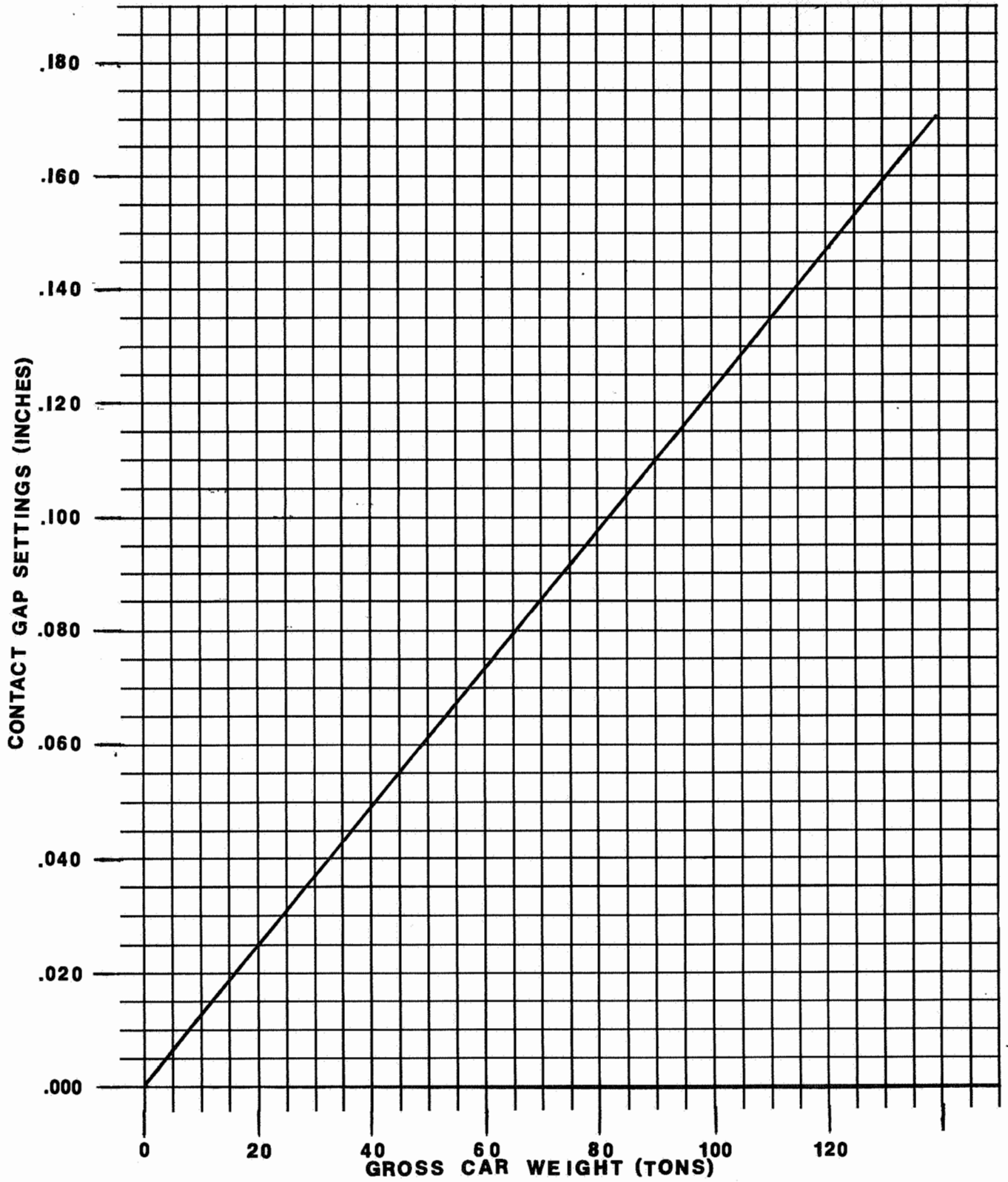


Figure 3. Contact Setting for Various Car Weights



### Medium Weight (M) - 35 to 55 Ton Car Loads

Connect analyzer between the white and black (medium weight) wire leads in the junction box. Insert .043" shim gage between the "M" adjustment screw and the long contact spring. Turn the "M" adjustment screw to just make the circuit.

### Heavy Weight (H) - 55 to 90 Ton Car Loads

Connect analyzer between the white and red (heavy weight) wire leads in the junction box. Insert .068" shim gage between the "H" adjustment screw and the long contact spring. Turn the "H" adjustment screw to just make the circuit.

### Extra Heavy Weight (XH) - 90 Ton and Up Car Loads

Connect analyzer between the white and blue (extra heavy weight) wire leads in the junction box. Insert .110" shim gage between the "XH" adjustment screw and the long contact spring. Turn the "XH" adjustment screw to just make the circuit.

#### 3.1.3 Master Adjustment Screw

Under normal conditions the master adjustment screw (see Dwg. F451059-Sh. 02), which is set at the factory, need not be adjusted. Should there be any difficulty in obtaining desired settings of the individual adjustment screws due to extreme wear of component parts, rail set, etc., a moderate change in the master adjustment screw setting will return the individual adjustment screws to their original settings.

Any alteration of the master adjustment screw setting will effect all four individual screw settings. A clockwise rotation of the master adjustment screw will cause a narrowing (closing) of individual screw contacts while a counter-clockwise rotation will cause a widening (opening) of individual contacts.

A small 7/16" open end wrench should be used for master screw adjustments.

#### 3.1.4 External Parts

Weigh rail side plate bolts should be checked periodically (refer to Dwg. F451059-Sh. 02). These bolts should be tight to prevent entrance of foreign matter into the operating mechanism.

The controller box cover should be held tightly in place insuring compression of the internal gasket.



## SECTION IV

### LUBRICATION

Periodic lubrication of the weigh rail is essential to proper operation. The weigh rail should be lubricated (at least once a year), depending upon amount of service. The weigh rail need not be removed from the track for lubrication. To prevent damage to components, exercise care in following the disassembly procedure outlined below.

#### 4.1 WEIGH RAIL DISASSEMBLY (REFER TO DWG. F451059-SH. 02)

1. Place the heater switch, at the junction box, to the OFF position.
2. Remove the ramp (item 3, Dwg. F452002-SH. 06 or Sh. 22).
3. Clean both sides of the rail section above and around the side plates, removing all dirt, grease and corrosion. Clean the side plates, the top of the rail, etc., to prevent foreign matter from entering the mechanism during disassembly.
4. Remove the controller box cover (item 4, Dwg. F451059-Sh. 2).
5. Measure and record contact gaps (L, M, H, and XH). The contact settings will be checked (and may be duplicated if necessary) before the rail is returned to service.
6. Replace the controller box cover.
7. Remove the bolts and washers (items 21 and 24) holding the back plate (item 3) to the rail section.
8. Remove the back plate.
9. Remove the muslin bag (item 22), containing VPI crystals from the slot. If necessary refill with two ounces of crystals, Specification M-7450-1. (See specification tabulation in "Lubricant Specification" Section).
10. Remove the bolts and washers (item 21 and 24) holding front plate (item 2) to the rail section.

#### 4.2 WEIGH RAIL LUBRICATION

1. The following materials are required for proper lubrication of the weigh rail.
  - a. Two (2) O-rings, UJ67134 (17" inner diameter x .139" cross-section).



- b. O-ring Grease, UJ41593, Specification M-7680-2.\*
  - c. No-Rust Grease #1, UA41229.\*
  - d. Instrument Oil UA41099 or lightweight high grade non-gumming machine oil.
  - e. VPI (vapor phase inhibitor) crystals, UA41087, Specification M-7450-1.\*
2. The procedure for lubricating the weigh rail is as follows:
- a. Remove and discard side plate O-rings (item 28).
  - b. Using mineral spirits, remove all corrosive material from the O-ring grooves, the interior side plate surface and mating rail section surface and the slot. Wipe dry with a clean lintless cloth.
  - c. Apply liberal amounts of O-ring lubricant (UJ41593) to the new O-ring (UJ67134) and O-ring grooves, then install new O-rings into the grooves.
  - d. Coat the side plates with grease (UA41229).
  - e. Apply a few drops of instrument oil (UA41099) to primary lever bearing Y (see figure 1).

#### 4.3 WEIGH RAIL ASSEMBLY (REFER TO DWG. F451059-SH. 02)

1. Replace back plate (item 3), bolts and washers.
2. Replace muslin bag containing VPI crystals in the space between the end of the slot and retaining bracket (item 13).
3. Using the dowel pin as a guide, replace the front side plate.
4. Replace the front plate, bolts and washers.
5. Remove controller box cover and carefully clean contacts with a relay contact file or fine emery cloth.
6. Readjust contacts to agree with original settings if necessary. (See "Adjustments", A. Contacts).
7. Replace the ramp.

\* Specific information covering the above lubricants together with approved sources of supply are listed in "Lubricant Specifications" section following.



SECTION V

LUBRICANT SPECIFICATIONS

5.1 SPECIFICATION NO. M-7680-2 (UJ41593) - NO. 2 SILICONE GREASE

1. This grease must conform to MIL-L-4343A.
2. This grease can be obtained from either U.S.&S. by ordering the above commodity number or from:

Manufacturer: Dow Corning Corporation  
Trade Name: No. 55 Pneumatic Grease

3. A satisfactory source of supply for this grease in Canada is:

Manufacturer: Dow Corning Silicone, LTD.  
Toronto, Canada  
Trade Name: No. 55 Pneumatic Grease

5.2 SPECIFICATION UA41229, RUST PREVENTIVE GREASE

1. This grease can be obtained from either U.S.&S. by ordering the above commodity number or from:

Manufacturer: Gulf Oil Corporation, Gulf Bldg.  
Pittsburgh, Pennsylvania  
Trade Name: Gulf No-Rust, No. 3

2. This grease is not stocked in Canada and must be obtained as indicated above.

5.3 SPECIFICATION M-7611-01 (UA41099), INSTRUMENT OIL

1. The above oil must conform to the following specifications.
  - a. General Composition - This specification covers a high quality synthetic lubricating oil suitable for clock-work mechanisms and delicate instruments in a temperature range of from 30°F to 150°F. It is oxidation resistant, has low volatility and does not creep or spread.





- b. Properties - The oil shall have the following typical characteristics:

Gravity, A.P.I	21.6
Viscosity, Centistokes	
at 32°F	270
at 100°F	28
Viscosity SUV at 100°F,	132
seconds	
Flash, °F	405
Pour Point, °F	-40
Color, ASTM, Union	1.0
Neutralization Value	
ASTM D974, Total Acid No.	.01

2. This oil can be obtained either from U.S.&S. by ordering the above commodity number or from:

Manufacturer: Gulf Oil Corporation, Gulf Bldg.  
Pittsburgh, Pa.  
Trade Name: Gulf Special Instrument Oil

3. This oil is not stocked in Canada and must be obtained as indicated above.

5.4 SPECIFICATION NO. M-7450-01 (UA41097), VPI CRYSTALS

1. These crystals may be obtained from U.S.&S. by ordering the above commodity number or from:

Manufacturer: Shell Oil Company  
Trade Name: VPI Crystals No. 260

2. A satisfactory source of supply for these crystals in Canada is:

Manufacturer: Shell Oil Company, Toronto,  
Canada  
Trade Name: VPI Crystals, No. 260



SECTION VI

GENERAL MAINTENANCE INSTRUCTIONS

6.1 WEIGH RAIL

1. The rail mounting (in track) should be checked periodically. The center gap of 16 inches must be maintained. The weigh rail should be held tightly to the ties and foundation so that there is no "pumping". Side plate bolts should be tight.

6.2 CONTACTS

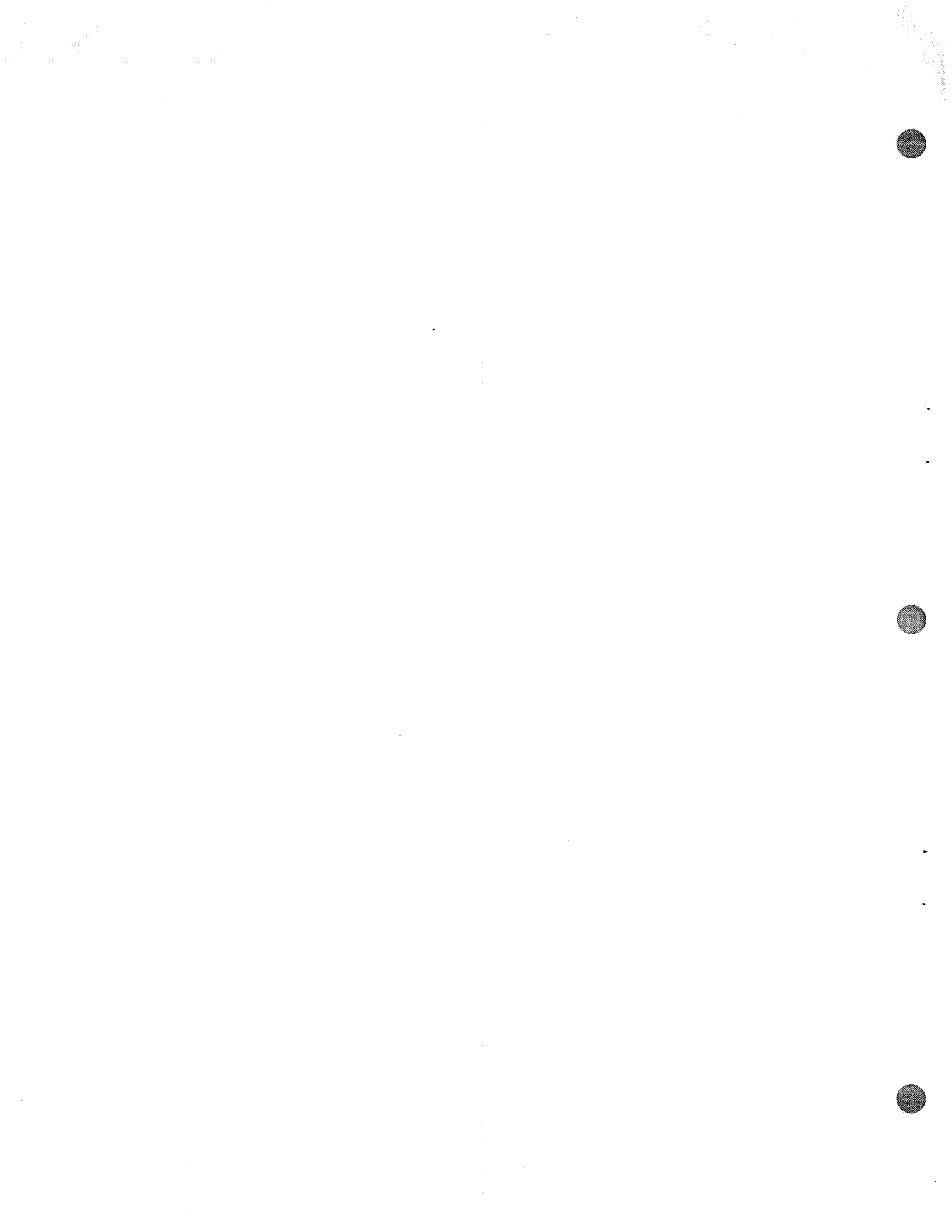
1. Contacts should be cleaned and settings checked at least every sixty days.

6.3 HEATER

1. The heater should be turned on at temperatures of 40°F or lower. During freezing weather conditions the heater should be operated continuously.
2. The application of external heat such as a torch to the weigh rail or controller box is not recommended. Application of external heat hastens the loss of lubricant and in extreme cases can damage internal wiring.



APPENDICES

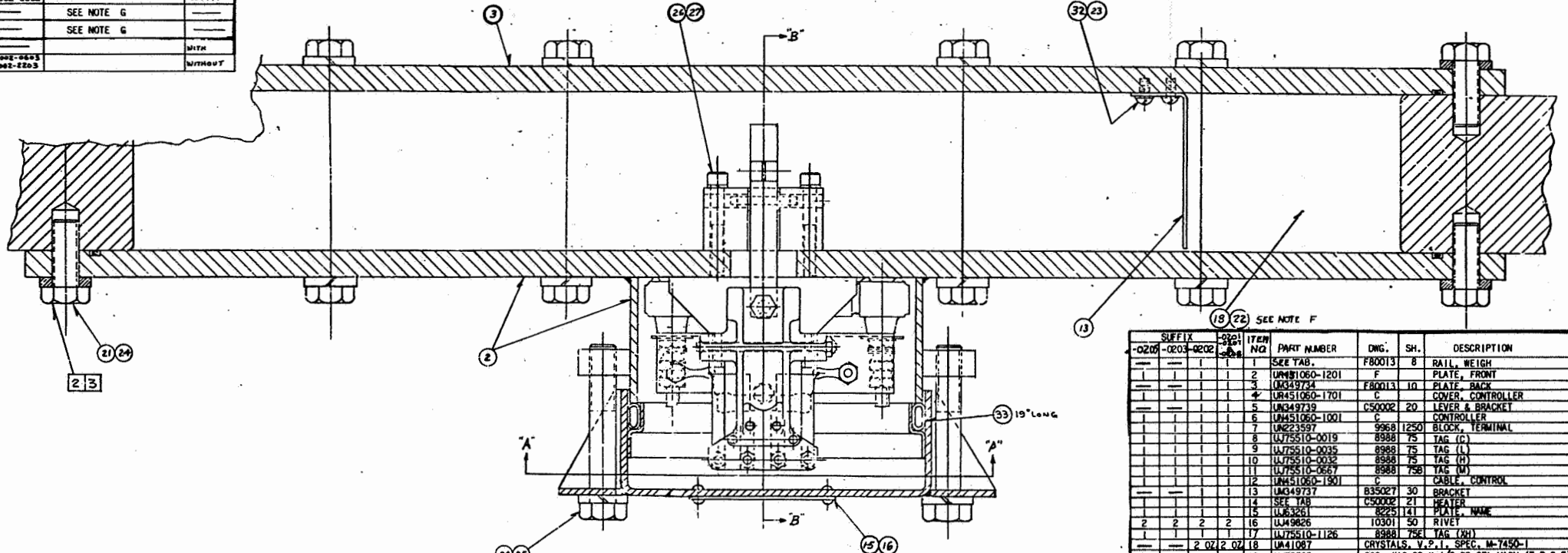


MATERIAL KIT (SERVICE PARTS)	WEIGH RAIL COMPL. (UN)	FRONT PLATE ASSEMBLY (U)	WEIGH RAIL (1)	JOINT BAR DRILLING	HEATER (14)	GEN. DWG.	REMARKS	FOR REF. (Holes "Z")
-0201	UM377531		F80013	SH. A B C	C50002	SH. VOLT		
-0202	UM377531		8 3 1/2 6 6	UM432333	21 24	UM452002-0601	WITH	
-0204		-0203	WITHOUT		UM432333	21 24	SEE NOTE G	
-0205		-0205	WITHOUT		UM432333	21 24	SEE NOTE G	
-0207	UM349694		8 2 1/2 6 7	UM432332	21 14		WITH	
-0208	UM384762		8		UM432333	21 24		WITHOUT

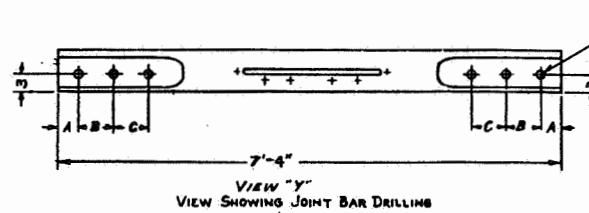
SUFFIX NO'S. MARKED \* ARE FOR CONVERTING EXISTING WEIGH RAILS FROM THREE-WEIGHT TO FOUR-WEIGHT CLASSIFICATION.

- NOTE - INSPECT & TEST PER SPEC. EUS005
- NOTE A - PAINT PP-7720-1 (BLACK) AFTER ASSEMBLY. PAINT PP-7768-2 (BLACK) EXCEPT PLATED PARTS.
- NOTE B - BEFORE ASSEMBLY, COAT BACK OF FRONT & BACK PLATES, ITEMS 2 AND 3 WITH A HEAVY COATING OF ITEM 30, OR ITEM 5
- NOTE C - AFTER CONTR. IS ASSEMBLED TO FRONT PLATE, AND BEFORE ASSEMBLING FRONT PLATE TO RAIL, APPLY A FEW DROPS OF SPECIAL INSTRUMENT OIL (UM41099) AT BEARINGS X & Y
- NOTE D - TIE LEADS WITH #6 VICTOR WAXED MANILLA CORD (UM61005) AT PLACES INDICATED.
- NOTE E - WHEN ASSEMBLING, COAT O-RINGS, ITEM 28 OR ITEM 1 WITH LIBERAL AMOUNT OF O-RING GREASE M-7680-2, (UM41598) OR ITEM 5
- NOTE F - VAPOR BAG, ITEM 22, IS TO BE FILLED WITH VAPOR INHIBITOR CRYSTALS, ITEM 18 (UM41087), TIED CLOSED AND INSERTED INTO SPACE INDICATED BY ARROW.
- NOTE G - INSPECT PER EUS005 MASTER ADJUSTMENT SCREW & WEIGHT ADJUSTMENT SCREWS TO BE SET TO APPROX. POSITIONS.

For Adjustment of Rail for Use in Five Weight Categories, Refer to Paragraph 3.1.2

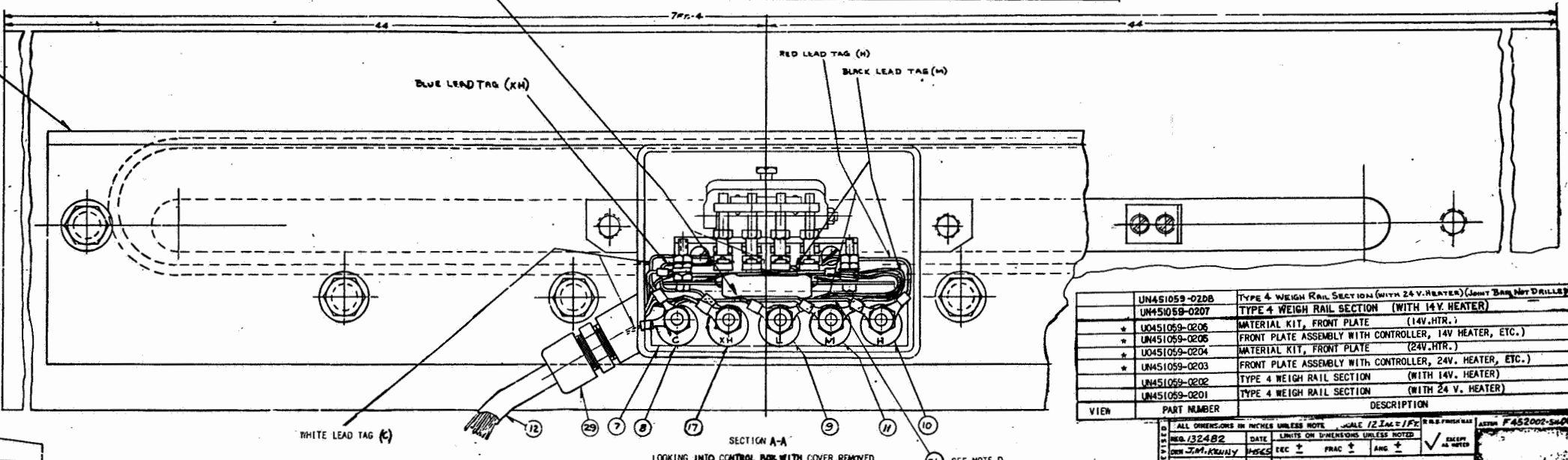
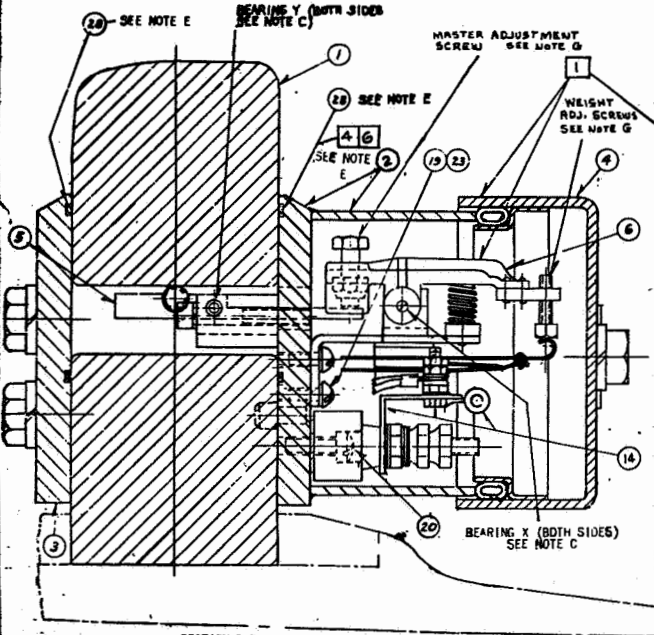


SUFFIX	ITEM NO.	PART NUMBER	DWG.	SH.	DESCRIPTION
-0205	1	UM451060-1201	F	8	RAIL, WEIGH
	2	UM451060-1701	C	10	PLATE, FRONT
	3	UM451060-1001	C	10	PLATE, BACK
	4	C50002		20	COVER, CONTROLLER
	5	UM4349739		9888	LEVER & BRACKET
	6	UM4349739		9888	CONTROLLER
	7	UM223597		1250	BLOCK, TERMINAL
	8	UM75510-0019		8988	TAG (C)
	9	UM75510-0035		8988	TAG (L)
	10	UM75510-0032		8988	TAG (H)
	11	UM75510-0657		8988	TAG (M)
	12	UM451060-1901		9888	CABLE, CONTROL
	13	UM49737		835027	BRACKET
	14	SEE TAB		C50002	HEATER
	15	UM63261		8225	PLATE, NAME
	16	UM49826		10301	RIVET
	17	UM75510-1126		8988	TAG (N)
	18	UM41087			CRYSTALS, V.P.I., SPEC. M-7450-1
	19	UM52565			SCR., #10-32 X 1/2 RD. STL. MACH. (T.P.C.S.)
	20	UM52201			SCR., 1/4 X 3/4 FIL. STL. MACH.
	21	UM50144			SCR., 1/2-20 X 1-1/4 HEX. STL. CAP (CAD. P.C.)
	22	UM52003			SCR., 1/2-20 X 1-1/4 HEX. STL. CAP (CAD. P.C.)
	23	UM41390			SCR., 1/2-20 X 1-1/4 HEX. STL. CAP (CAD. P.C.)
	24	UM47769			WASHER, 1/2 LOCK STL. (M)
	25	UM45200			BOLT, 1/2 X 3 HEX. HD. TAP (CAD. P.C.)
	26	UM50258			SCR., 1/4-20 X 1-3/4 HEX. SOCKET CAP
	27	UM47775			WASHER, 1/4 LOCK STL. (M)
	28	UM71134			O-RING, 1 1/2 I.D. X 1/32 SEC.
	29	UM71126			CONNECTOR, CABLE
	30	UM41390			COMPOUND, CONTROL
	31	UM61005			CORD, #6 VICTOR WAXED MANILLA
	32	UM52564			SCR., #10-32 X 3/8 RD. STL. MACH. (T.P.L.)
	33	UM75163			TUBING, NEOPRENE



THE FOLLOWING ITEMS ARE FOR S.B.M.S. (ITEM NO'S ARE SHOWN IN SQUARES IN FIELD OF DWG.)

SUFFIX	ITEM NO.	PART NUMBER	DWG.	SH.	DESCRIPTION
	1	SEE TAB		F	PLATE, FRONT
	2	UM450144			SCR., 1/2-20X1-1/4 HEX. STL. MACH.
	3	UM47769			WASHER, 1/2 LOCK STL. (M)
	4	UM41390			O-RING, 1 1/2 I.D. X 1/32 SEC.
	5	UM41390			COMPOUND, CONTROL
	6	UM41598			O-RING, M-7680-2
	7	UM37829		C50002	SWITCH, HEATER
	8	UM75510-1125		8988	TAG (GRN)
	9	F451029			PRINT, BLUE LINE
	10	F451018			PRINT, BLUE LINE
	11	UM71242			CONNECTOR, CABLE
	12	UM75510-0860		8988	TAG (GLI)
	13	UM75510-0857		8988	TAG (GHI)
	14	UM75510-0859		8988	TAG (GMI)
	15	UM75510-0868		8988	TAG (HTR)
	16	UM75510-0777		8988	TAG (H14)
	17	UM75510-0854		8988	TAG (H14E)
	18	UM75510-0586		8988	TAG (N24)
	19	UM75510-0587		8988	TAG (N24)



VIEW	PART NUMBER	DESCRIPTION
	UM451059-02DB	TYPE 4 WEIGH RAIL SECTION (WITH 24 V. HEATER) (JOINT BAR NOT DRILLED)
	UM451059-0207	TYPE 4 WEIGH RAIL SECTION (WITH 14V. HEATER)
*	UM451059-0205	MATERIAL KIT, FRONT PLATE (14V. HTR.)
*	UM451059-0206	FRONT PLATE ASSEMBLY WITH CONTROLLER, 14V. HEATER, ETC.)
*	UM451059-0204	MATERIAL KIT, FRONT PLATE (24V. HTR.)
*	UM451059-0203	FRONT PLATE ASSEMBLY WITH CONTROLLER, 24V. HEATER, ETC.)
	UM451059-0202	TYPE 4 WEIGH RAIL SECTION (WITH 14V. HEATER)
	UM451059-0201	TYPE 4 WEIGH RAIL SECTION (WITH 24 V. HEATER)

SECTION B-B

SECTION A-A

LOOKING INTO CONTROL BOX WITH COVER REMOVED

GEN. DWG. OF MODEL 66-E.P. CAR RETARDER

UNION SWITCH & SIGNAL

F451059

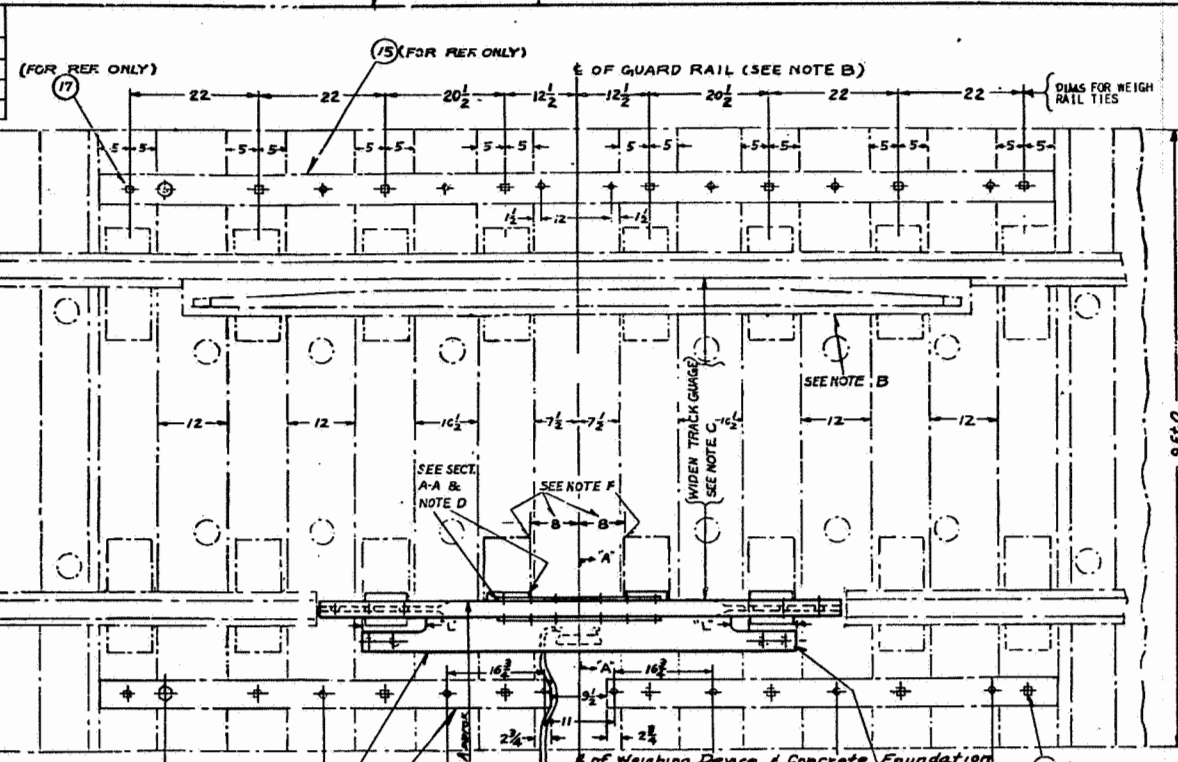
02

02

02

PC. NO. COMPL.	WEIGH RAIL (1)	JUNCTION BOX (2)	RAMP (3)	REMARKS
X452002-0601	U451059-0201 SH. HEATER WITH (#2) HOLES "Z"	D66316	UR349681	
U452002-0602	U451059-0202 SH. HEATER WITH (#2) HOLES "Z"	UN390207	UR349681	
X452002-0603	U451059-0203 SH. HEATER WITH (#2) HOLES "Z"	UN390250	UR349681	
X452002-0604	U451059-0204 SH. HEATER WITH (#2) HOLES "Z"	UN390207	UR435122	
X452002-0604	U451059-0204 SH. HEATER WITH (#2) HOLES "Z"	N330207	R349681	

NOTE: FOR MATERIAL KITS FOR FIELD APPLICATION OF FRONT PLATE ASSEMBLIES FOR CONVERTING EXISTING WEIGH RAILS FROM THREE-WEIGHT TO FOUR-WEIGHT CLASSIFICATION SEE U451059-0204 & U451059-0205 OR DWG. F451059-SH.02



NOTE: WEIGH RAIL TO BE MOUNTED ON CONCRETE SLAB CONSTRUCTION SHOWN IS ONLY SUGGESTIVE AND MAY BE CHANGED TO AGREE WITH LOCAL ROAD BED CONDITIONS.

NOTE G - HOLES "Z" TO BE DRILLED IN EACH END OF WEIGH RAIL BY CUSTOMER TO SUIT DRILLING IN JOINT BAR SUPPLIED BY CUSTOMER.

ITEM	QUANTITY	PC. NO.	DWG.	SH.	DESCRIPTION
1	1	(SEE TAB)	F451059	02	RAIL WEIGH
2	1	(SEE TAB)	D66316	6	BOX JUNCTION
3	1	(SEE TAB)	F80013	9	RAMP
4	4	UM326482	C50002	5	BLOCK SPACER
5	4	UM326483	C50002	5	BLOCK SPACER
6	1	UX432351-001	D66316	2	OUTLET
7					
8					
9					
10					
THE FOLLOWING ITEMS ARE FOR REFERENCE ONLY					
12	16	UM376133	7913	52	BOLT, FOUNDATION
13	16	UM47509			WASHER, 1 STL. PLATE (CAD. PL.)
14	16	UM48030			NUT, 1 STL. HEX. (CAD. PL.)
15	1	UM376657	C50052	2	PLATE, TIE (1 X 5 X 13 FT. 8)
16	2	UM376658	C50052	2	PLATE, TIE (1 X 5 X 6 FT. 5-1/4)
17	16	UM50347			SCREW, 3/4 X 6 LAG
18					
19					
20					
FURNISH THE FOLLOWING ITEMS FOR EACH RETARDER YARD INSTALLATION					
21	1	UM326557	A2586	1551	WRENCH

- NOTE A - PARTS SHOWN IN FULL LINES FURNISHED BY U.S.A.S.
- NOTE B - GUARD RAIL TO BE CENTERED OPPOSITE CENTER LINE OF WEIGHING DEVICE. STRAIGHT PORTION PREFERRED AS LONG AS WEIGH RAIL (7 FT.-4) BUT IN ANY CASE NOT LESS THAN 66 INCHES.
- NOTE C - TRACK GAUGE TO BE WIDENED 1/4 TO 1/2 INCH IN VICINITY OF WEIGHING DEVICE SO GUARD RAILS WILL BE EFFECTIVE IN PREVENTING WHEEL FLANGE LATERAL PRESSURE ON WEIGH RAIL.
- NOTE D - SPACER BLOCKS SHOULD BE WELDED TO THE PLATES BEFORE INSTALLING WEIGH RAIL. SEE SECTION A-A.
- NOTE E - BOTTOM OF JUNCTION BOX FLUSH WITH TOP OF TIE.
- NOTE F - THE INNER EDGE OF THE TIE PLATES SHOULD BE LOCATED 8 INCHES FROM A OF THE WEIGH RAIL TO CONFORM WITH WEIGH RAIL CALIBRATION.
- NOTE G -

ASSEMBLY  
INSTALL RAIL & RAMP IN TRACK AS SHOWN. SPOT HEAVY CAR OR LOCOMOTIVE WHEEL ON CENTER LINE OF CONTROLLER, AND TIGHTEN NUTS. RUN CABLE INTO JUNCTION BOX, BUT DO NOT PLACE ON POST.

ADJUSTMENT  
CONNECT BUZZER AND BATTERY TO THE WHITE AND GREEN WIRES IN JUNCTION BOX.

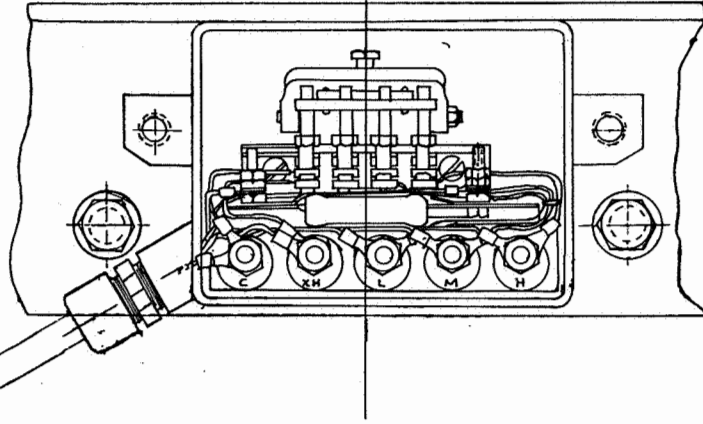
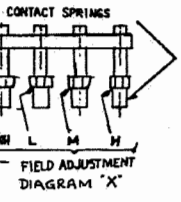
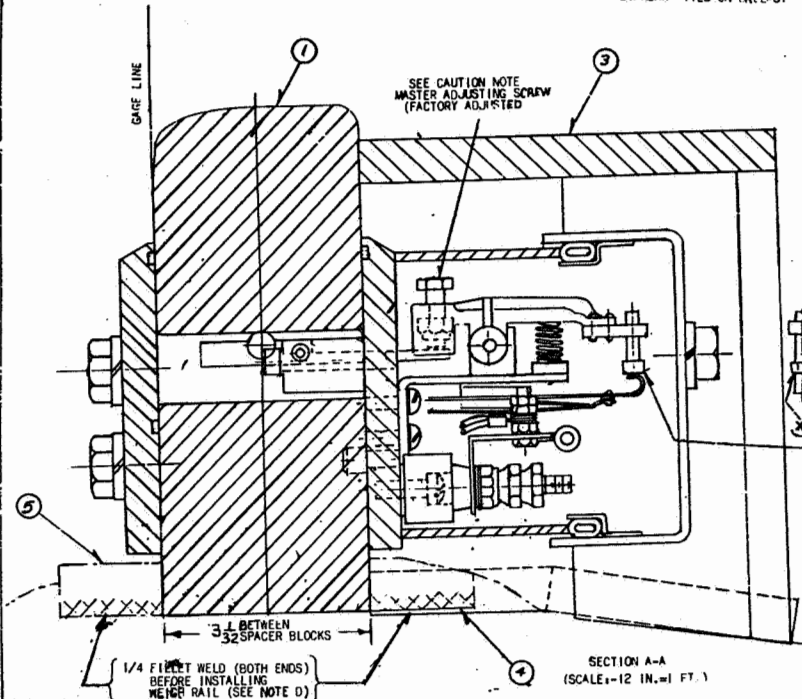
INSERT .015 GAGE (SHIM) BETWEEN THE "I" ADJUSTMENT SCREW AND THE LONG CONTACT SPRING AS SHOWN ON DIAGRAM "X". THE SHIM SHOULD ALWAYS BE KEPT FLUSH WITH THE ADJUSTMENT SCREW HEAD. TURN THE "I" ADJUSTMENT SCREW TO JUST MAKE THE CIRCUIT WITH THE ABOVE SHIM INSERTED.

CONNECT BUZZER AND BATTERY TO THE WHITE AND BLACK WIRES IN JUNCTION BOX.  
INSERT .040 GAGE (SHIM) BETWEEN THE "M" ADJUSTMENT SCREW AND THE LONG CONTACT SPRING. TURN THE ADJUSTMENT SCREW TO JUST MAKE THE CIRCUIT.

CONNECT BUZZER AND BATTERY TO THE WHITE AND RED WIRES IN JUNCTION BOX.  
INSERT .060 GAGE (SHIM) BETWEEN THE "H" ADJUSTMENT SCREW AND THE LONG CONTACT SPRING. TURN THE ADJUSTMENT SCREW TO JUST MAKE THE CIRCUIT.

CONNECT BUZZER AND BATTERY TO THE WHITE AND BLUE WIRES IN JUNCTION BOX.  
INSERT .135 GAGE (SHIM) BETWEEN THE "X" ADJUSTMENT SCREW AND THE LONG CONTACT SPRING. TURN THE ADJUSTMENT SCREW TO JUST MAKE THE CIRCUIT.

CAUTION  
THE MASTER ADJUSTMENT SCREW AS SHOWN IN SECTION A-A IS SET AT THE FACTORY. THIS SETTING SHOULD NOT BE CHANGED UNDER NORMAL CONDITIONS. SHOULD THERE BE ANY DIFFICULTY IN OBTAINING THE DESIRED SETTINGS OF THE INDIVIDUAL ADJUSTMENT SCREWS DUE TO EXTREME WEAR OF COMPONENT PARTS, RAIL SET, ETC. A MODERATE CHANGE IN THE MASTER ADJUSTMENT SCREW SETTING, WILL RETURN THE INDIVIDUAL ADJUSTMENT SCREWS TO THEIR ORIGINAL POSITIONS.



For Adjustment of Rail for Use in Five Weight Categories, Refer to Paragraph 3.1.2

VIEW	PART NUMBER	DESCRIPTION	REV
X452002-0604	WEIGH RAIL, MOUNTED ON CONCRETE FOUNDATION (USING 24V. HEATER)	WITH TYPE B RAMP	
U452002-0603	WEIGH RAIL, MOUNTED ON CONCRETE FOUNDATION (USING 24V. HEATER)	WITH TYPE B RAMP	
U452002-0602	WEIGH RAIL, MOUNTED ON CONCRETE FOUNDATION (USING 14 V. HEATER)		
U452002-0601	WEIGH RAIL, MOUNTED ON CONCRETE FOUNDATION (USING 24 V. HEATER)		

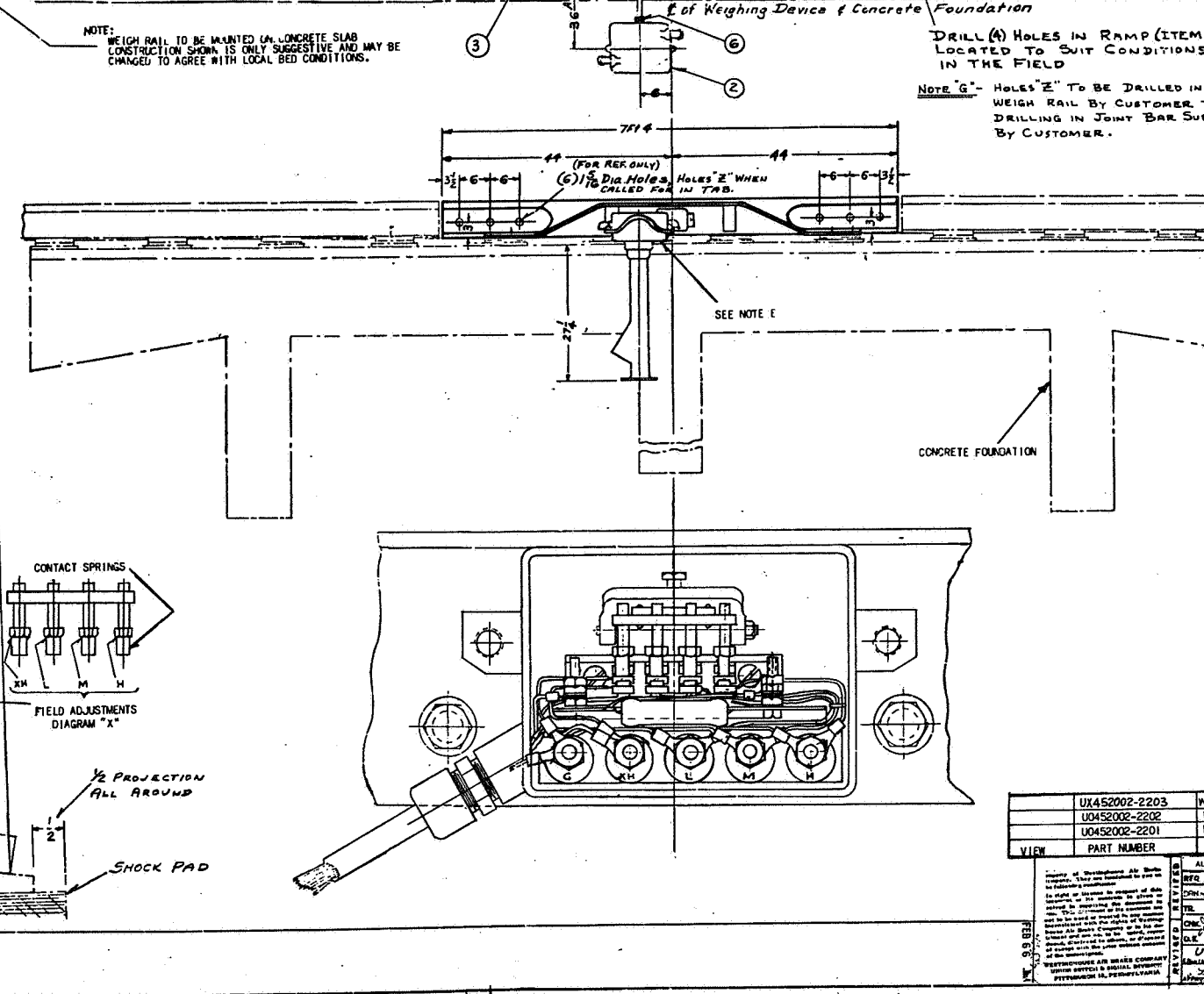
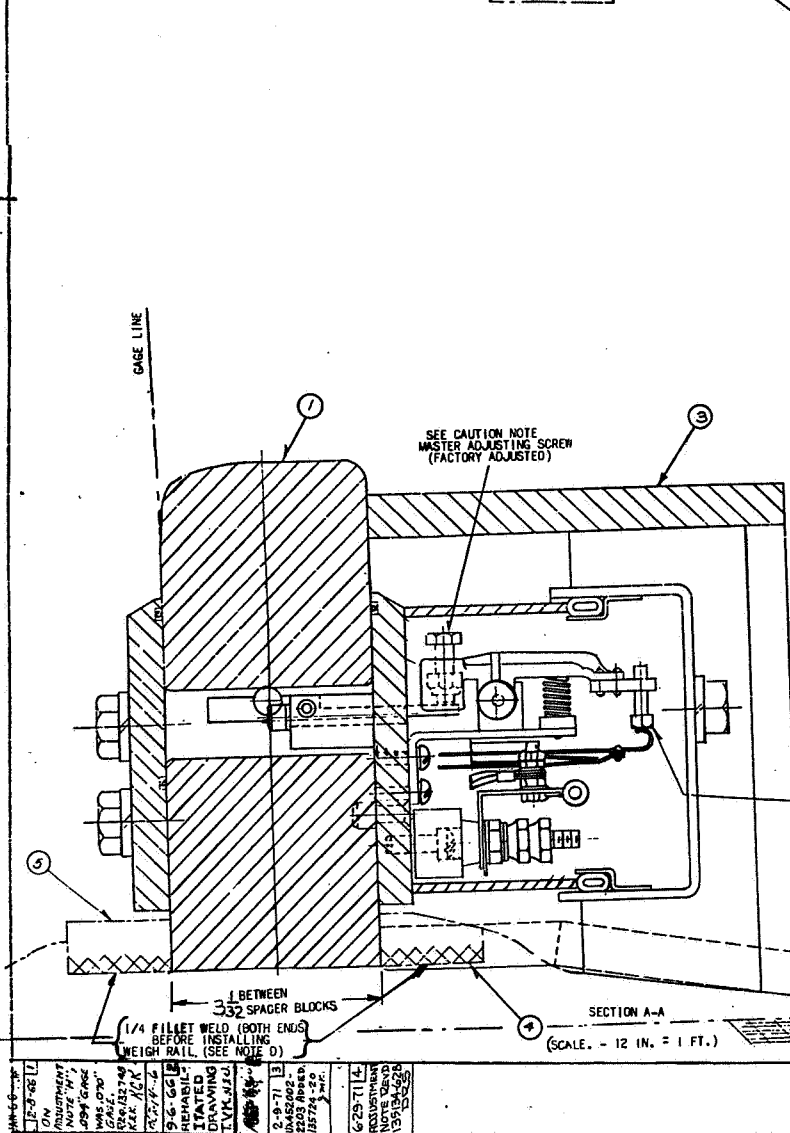
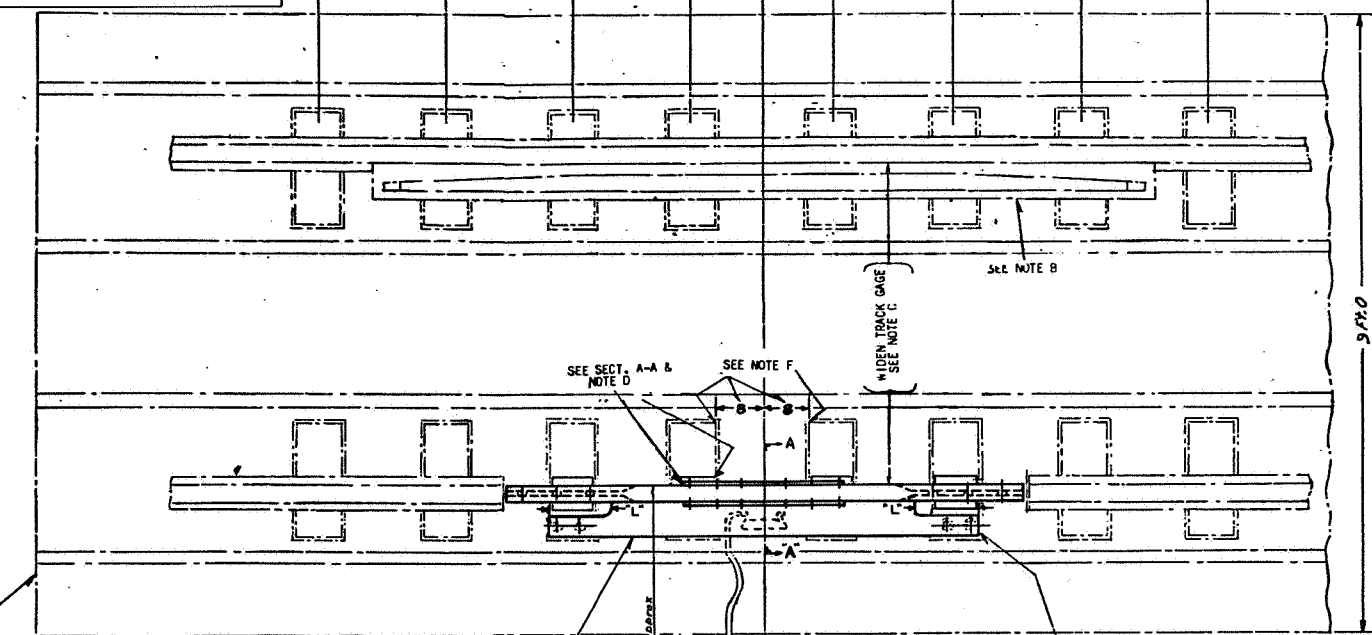
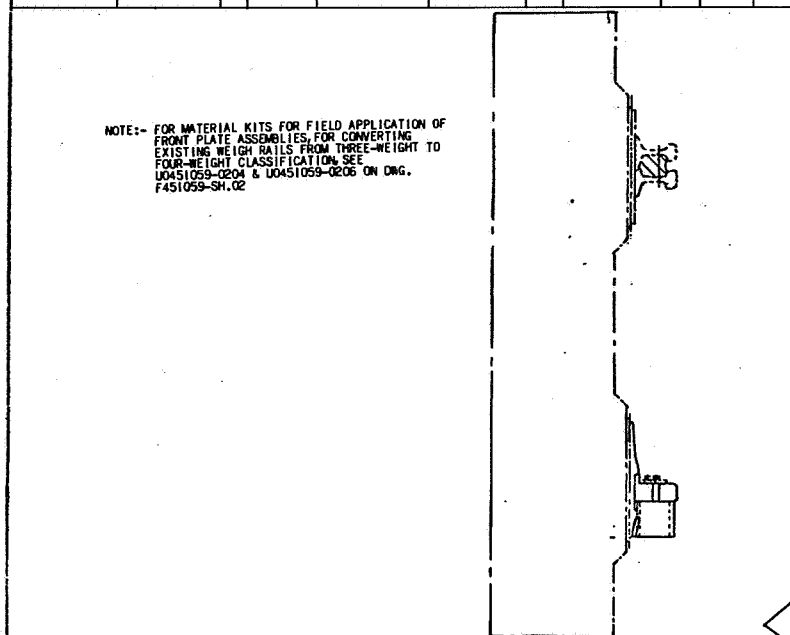
DATE	BY	CHK'D	APP'D	SCALE	UNIT	NO. OF COPIES
12-24-82	DMJ	MEJ	WJ	1/8" = 1"	INCHES	10

GEN. DWG. OF MODEL 66		06
CAR RETARDER.		
UNION SWITCH & SIGNAL		F452002
WESTINGHOUSE AIR BRAKE COMPANY		
PITTSBURGH, PENNSYLVANIA		

F452002 SH.06 6

PC. NO. COMPL.	WEIGH RAIL (1)		JUNCTION BOX (2)		RAMP (3)		REMARKS			
	SH.	HEATER	HOLES "Z"	SH.	SH.	Dim. L				
U452002-2201	U451059-0201	02	24-VOLT	WITH (AS SHOWN)	UN390207	6	UR349681	9	11 3/8	FIRST MADE FOR N & W RY. CO. BELLEVUE YD.
U452002-2202	U451059-0202	02	14-VOLT	WITH (AS SHOWN)	UN390250	6	UR349681	9	11 3/8	FIRST MADE FOR T & P RY. CO. LANCASTER YD.
U452002-2203	U451059-0203	02	24-VOLT	SEE NOTE "G"	UN390207	6	UR435722	9	13 3/8	



QUANTITY	PC. NO.	IMG.	SH.	DESCRIPTION
1	(SEE TAB. 1)	F451059	02	RAIL WEIGH
2	(SEE TAB. 1)	D66316	6	BOX JUNCTION
3	(SEE TAB. 1)	F80013	9	RAMP
4	U4026482	C50002	5	BLOCK SPACER
5	U4026483	C50002	5	BLOCK SPACER
6	U432351-001	D66316	2	OUTLET

FURNISH THE FOLLOWING ITEMS FOR EACH RETARDER YARD INSTALLATION:

21	U4026557	A2586	155	WRENCH
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NOTE A - PARTS SHOWN IN FULL LINES FURNISHED BY U.S.G.S.  
 NOTE B - GUARD RAIL TO BE CENTERED OPPOSITE CENTER LINE OF WEIGHING DEVICE. STRAIGHT PORTION PREFERRED AS LONG AS WEIGH RAIL (7 FT.-4) BUT IN ANY CASE NOT LESS THAN 66 INCHES.  
 NOTE C - TRACK GAGE TO BE WIDENED 1/4 TO 1/2 INCH IN VICINITY OF WEIGHING DEVICE SO GUARD RAILS WILL BE EFFECTIVE IN PREVENTING WHEEL FLANGE LATERAL PRESSURE ON WEIGH RAIL.  
 NOTE D - SPACER BLOCKS SHOULD BE WELDED TO TIE PLATES BEFORE INSTALLING WEIGH RAIL. SEE SECTION A-A.  
 NOTE E - BOTTOM OF JUNCTION BOX FLUSH WITH TOP OF TIE.  
 NOTE F - THE INNER EDGE OF THE TIE PLATES SHOULD BE LOCATED 8 INCHES FROM 1/2 OF THE WEIGH RAIL TO CONFORM WITH WEIGH RAIL CALIBRATION.  
 NOTE G -

**ASSEMBLY**  
 INSTALL RAIL & RAMP IN TRACK AS SHOWN. SPOT HEAVY CAR OR LOCOMOTIVE WHEEL ON CENTER LINE OF CONTROLLER, AND TIGHTEN NUTS. RUN CABLE INTO JUNCTION BOX, BUT DO NOT PLACE ON POST.

**ADJUSTMENT**

CONNECT BUZZER AND BATTERY TO THE WHITE AND GREEN WIRES IN JUNCTION BOX.

"L" 14 TO 35 TON CAR LOADS  
 INSERT .015 GAGE (SHIM) BETWEEN THE 1/4" ADJUSTMENT SCREW AND THE LONG CONTACT SPRING AS SHOWN ON DIAGRAM "X". THE SHIM SHOULD ALWAYS BE KEPT FLUSH WITH THE ADJUSTMENT SCREW HEAD. TURN THE 1/4" ADJUSTMENT SCREW TO JUST MAKE THE CIRCUIT WITH THE ABOVE SHIM INSERTED.

CONNECT BUZZER AND BATTERY TO THE WHITE AND BLACK WIRES IN JUNCTION BOX.

"M" 35 TO 52 TON CAR LOADS  
 INSERT .040 GAGE (SHIM) BETWEEN THE 1/4" ADJUSTMENT SCREW AND THE LONG CONTACT SPRING. TURN THE ADJUSTMENT SCREW TO JUST MAKE THE CIRCUIT.

CONNECT BUZZER AND BATTERY TO THE WHITE AND RED WIRES IN JUNCTION BOX.

"H" 52 TO 110 TON CAR LOADS  
 INSERT .060 GAGE (SHIM) BETWEEN THE 1/4" ADJUSTMENT SCREW AND THE LONG CONTACT SPRING. TURN THE ADJUSTMENT SCREW TO JUST MAKE THE CIRCUIT.

CONNECT BUZZER AND BATTERY TO THE WHITE AND BLUE WIRES IN JUNCTION BOX.

"XH" 110 TON AND UP CAR LOADS  
 INSERT .135 GAGE (SHIM) BETWEEN THE 1/4" ADJUSTMENT SCREW AND THE LONG CONTACT SPRING. TURN THE ADJUSTMENT SCREW TO JUST MAKE THE CIRCUIT.

**CAUTION**  
 THE MASTER ADJUSTMENT SCREW AS SHOWN IN SECTION A-A IS SET AT THE FACTORY. THIS SETTING SHOULD NOT BE CHANGED UNDER NORMAL CONDITIONS. SHOULD THERE BE ANY DIFFICULTY IN OBTAINING THE DESIRED SETTINGS OF THE INDIVIDUAL ADJUSTMENT SCREWS DUE TO EXTREME WEAR OF COMPONENT PARTS, RAIL SET, ETC., A MODERATE CHANGE IN THE MASTER ADJUSTMENT SCREW SETTING WILL RETURN THE INDIVIDUAL ADJUSTMENT SCREWS TO THEIR ORIGINAL POSITIONS.

For Adjustment of Rail for Use in Five Weight Categories, Refer to Paragraph 3.1.2

VIEW	PART NUMBER	DESCRIPTION	REV.
	U452002-2203	WEIGH RAIL, MOUNTED ON CONCRETE BASE (USING 24V. HEATER)	
	U452002-2202	WEIGH RAIL, MOUNTED ON CONCRETE BASE (USING 14V. HEATER)	
	U452002-2201	WEIGH RAIL, MOUNTED ON CONCRETE BASE (USING 24V. HEATER)	

UNION SWITCH & SIGNAL	GEN. DWG. OF MODEL 66 CAR RETARDER.	22
F452002		







**UNION SWITCH & SIGNAL DIVISION**  
AMERICAN STANDARD INC. / SWISSVALE, PA 15218



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