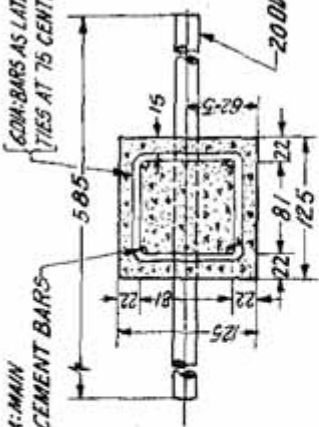
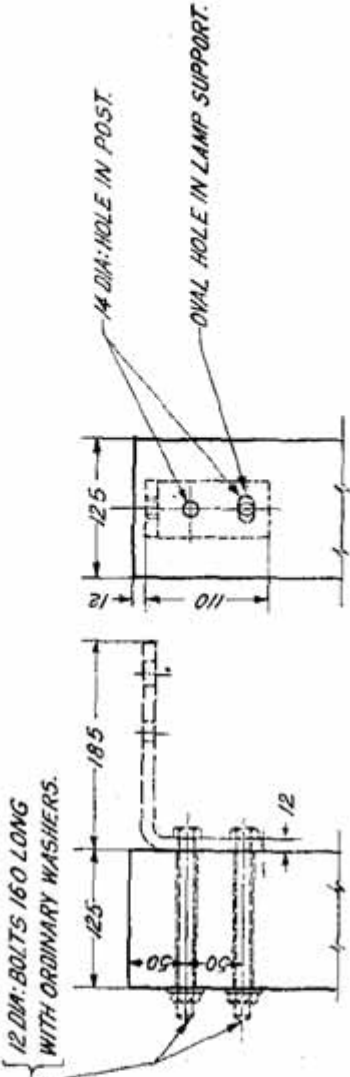
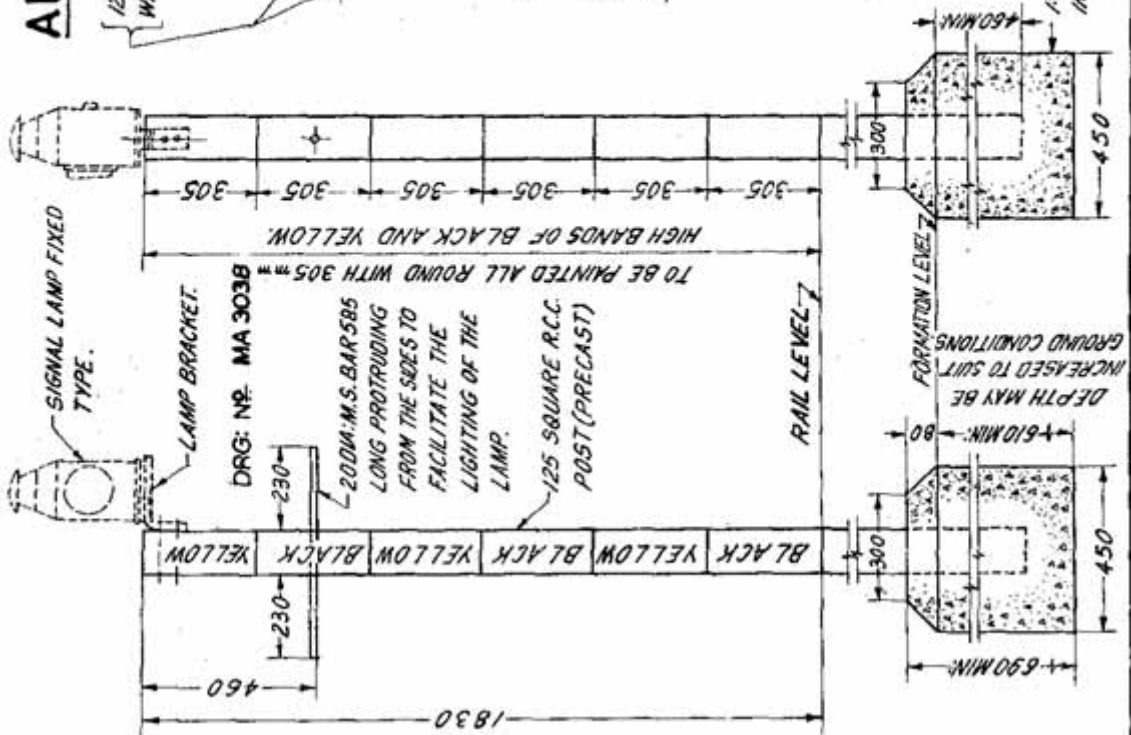
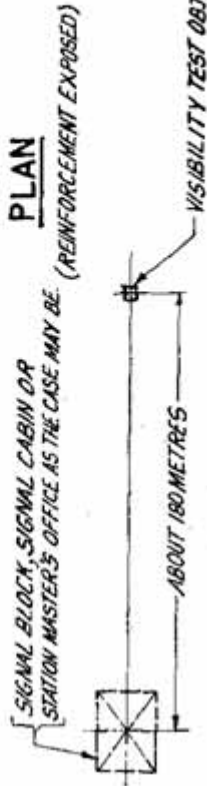


**ALT: VISIBILITY TEST OBJECT PRECAST R.C.C.**



**DETAIL AT TOP**

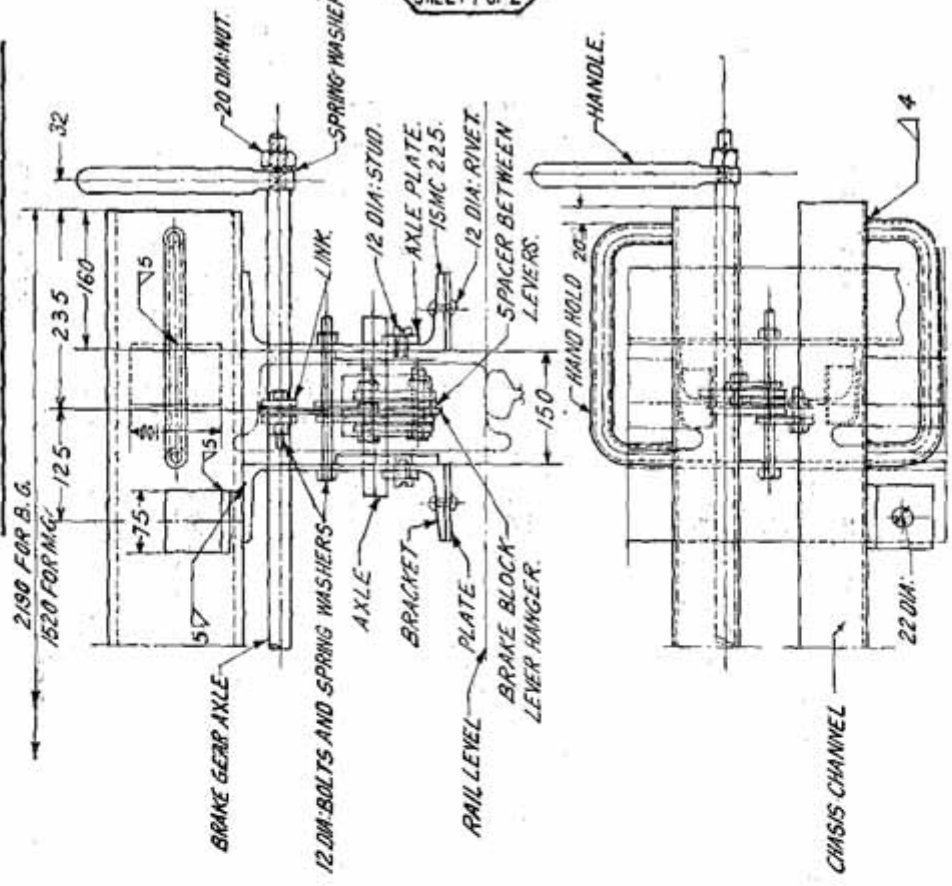
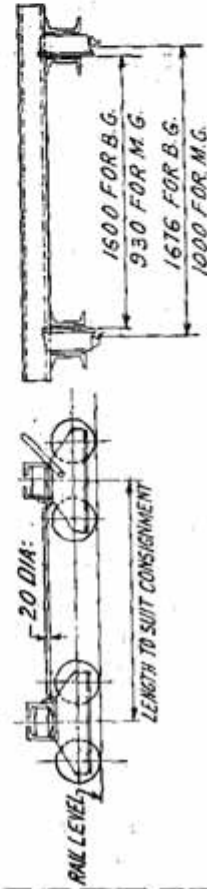
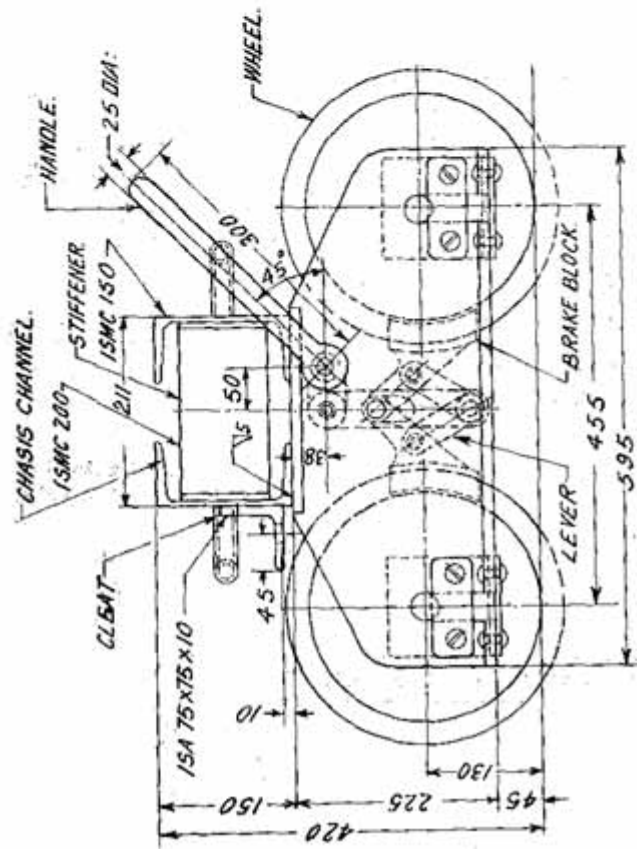


**POSITION OF OBJECT**

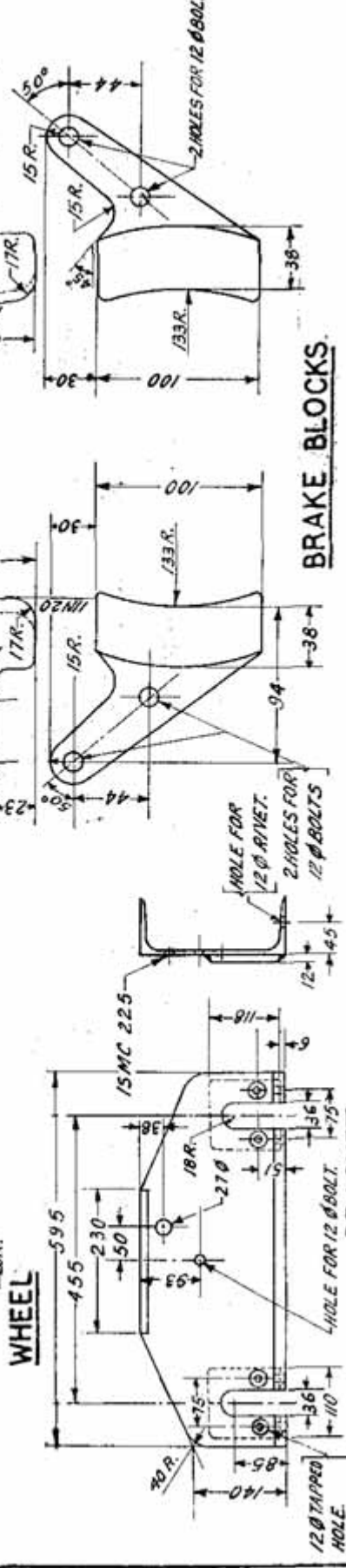
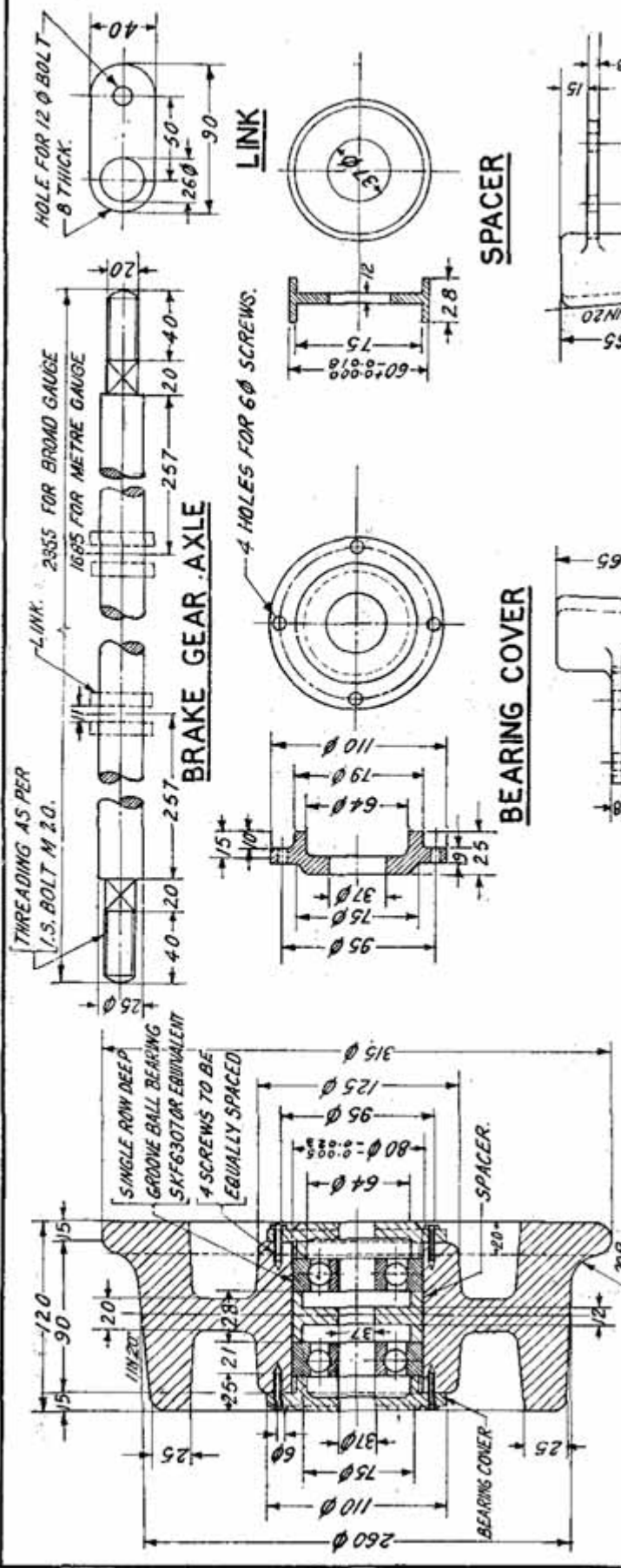
1:3:6 CEMENT CONCRETE IN FOUNDATION. (CAST IN-SITU)

# 15 TONNE DIP LORRY

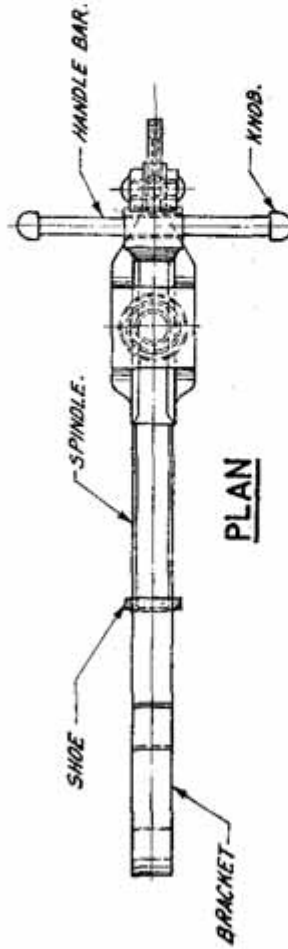
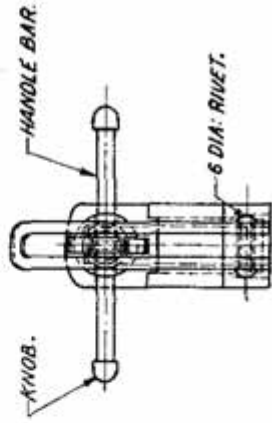
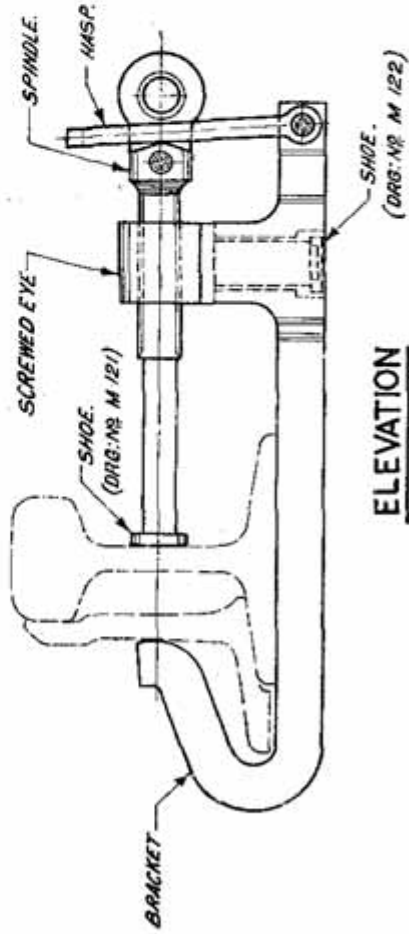
TMC 10  
SHEET 1 OF 2



THE DETAIL OF DIP LORRY SHOWN ARE  
AS PER DRG: NO. MA 3041.



# POINT SCREW CLAMPS



NOTE- POINT SCREW CLAMPS TO DRAWING N.P.M.A 3032 FOR B.G. ARE SUITABLE FOR B.S. NOS 90R. & 75R RAILS.  
POINT SCREW CLAMPS TO DRAWING N.P.M.A 3033 FOR M.G. ARE SUITABLE FOR B.S. NOS 60R. & 50R RAILS.

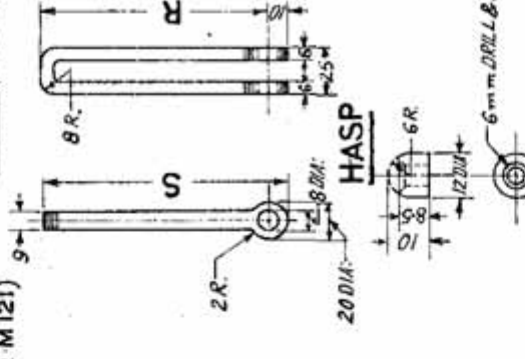
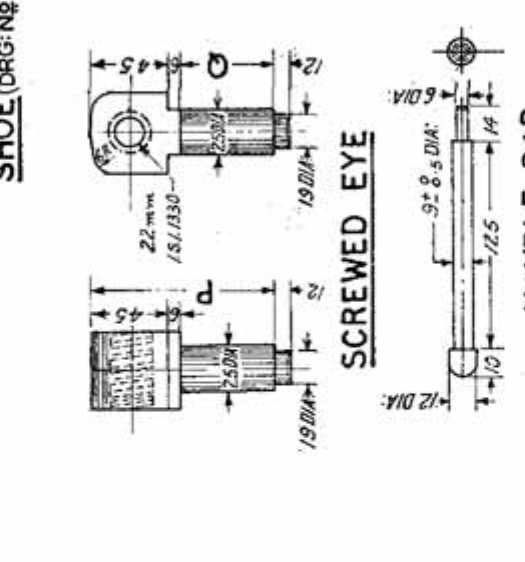
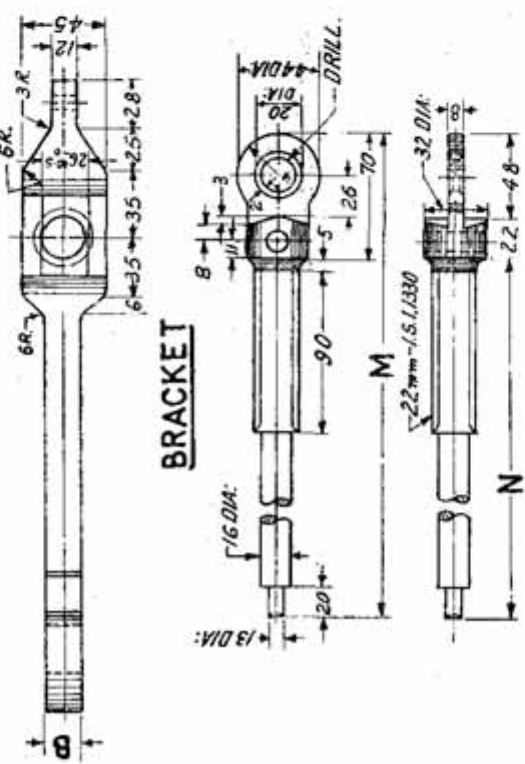
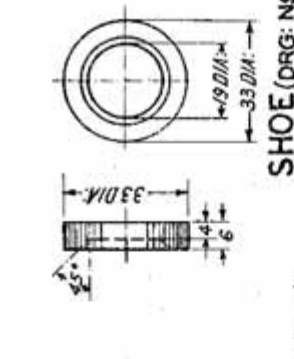
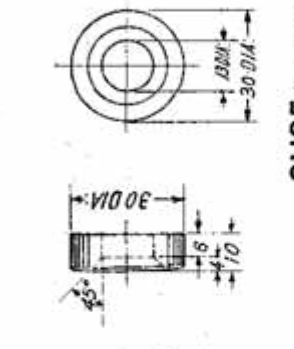
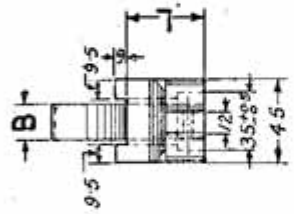
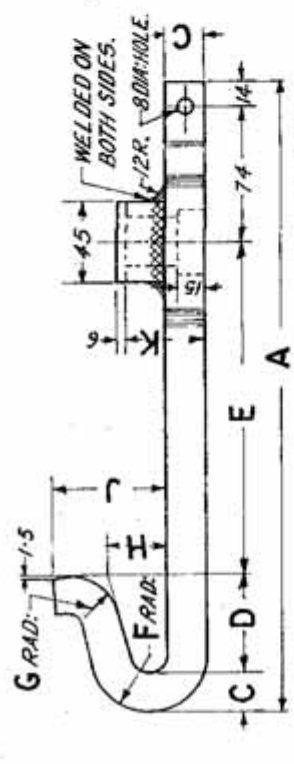
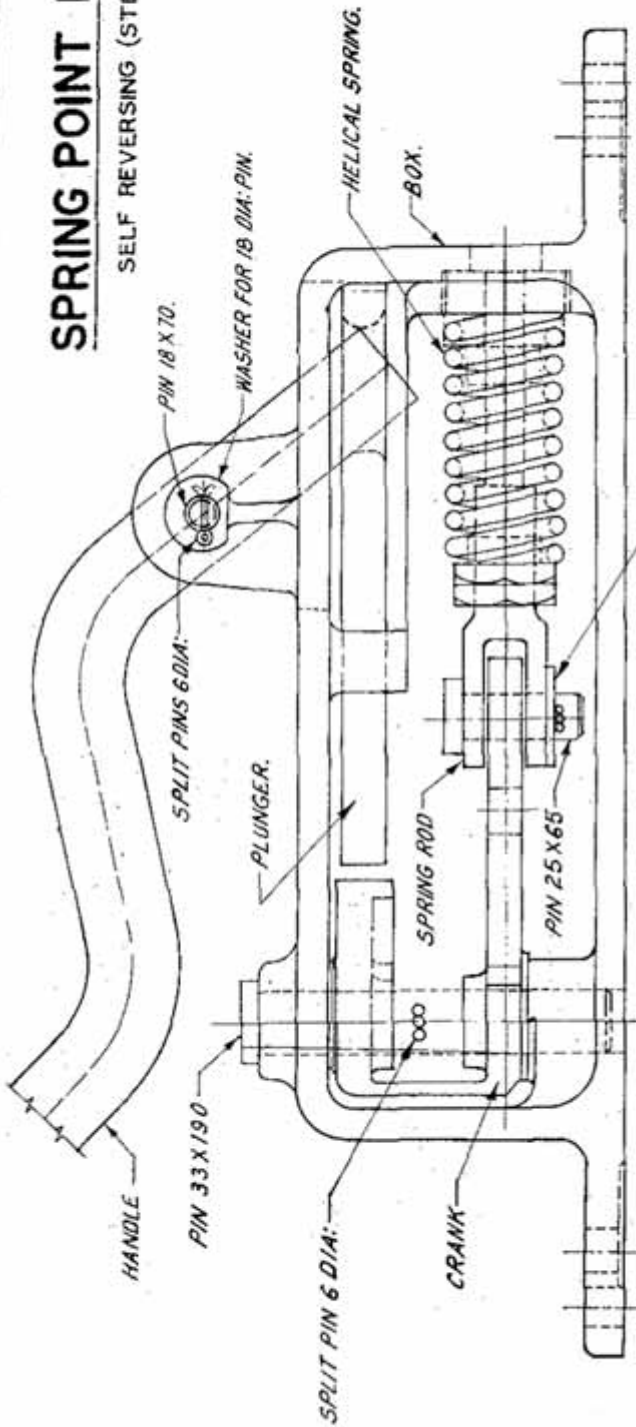


TABLE OF DIMENSIONS (DRG: NQ M 123)

GAUGE	ASSEMBLY DRAWING N <sup>o</sup>	PART NUMBER (BRACKET)	D I M E N S I O N S (mm)																		
			A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S		
B.G.	MA 3032	M 117	385	22	25	67	205	37	28	43.5	75	60	100	280	190	M 118	103	52	M 125	125	135
M.G.	MA 3033	M 126	350	19	22	54	186	32	25	30.5	63	44	85	270	180	M 127	87	36	M 128	110	120

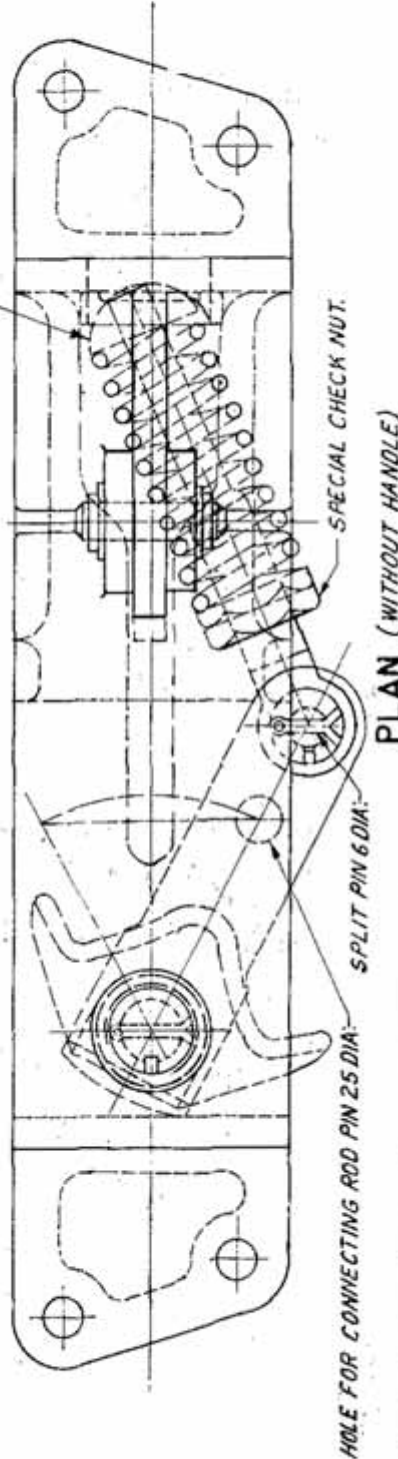
# SPRING POINT LEVERS

SELF REVERSING (STILL HANDLE)

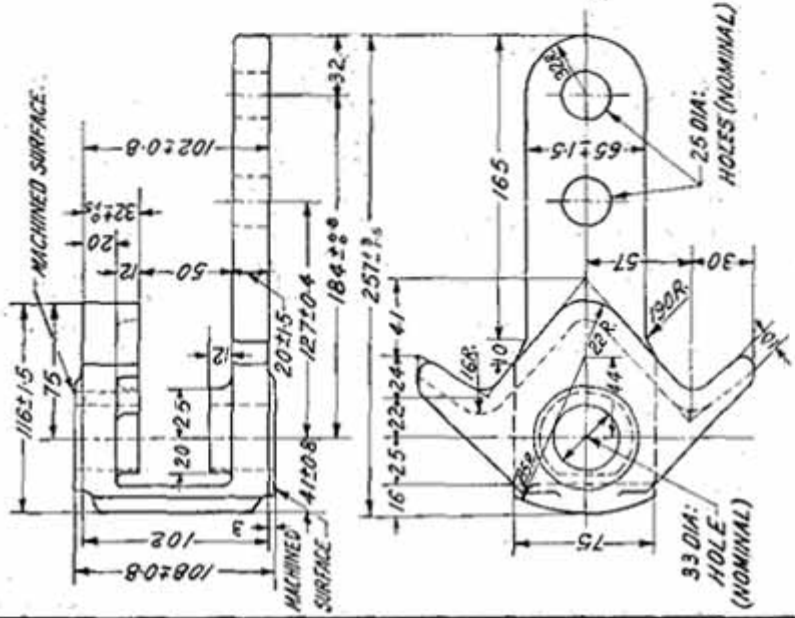


## ELEVATION

DRG: N2 MA 3040

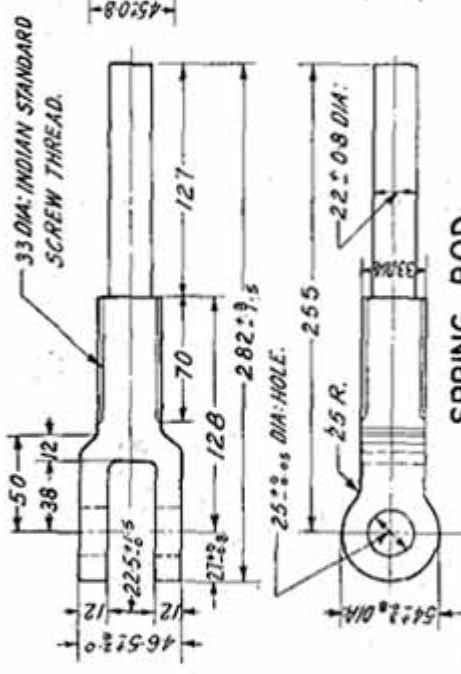


## PLAN (WITHOUT HANDLE)



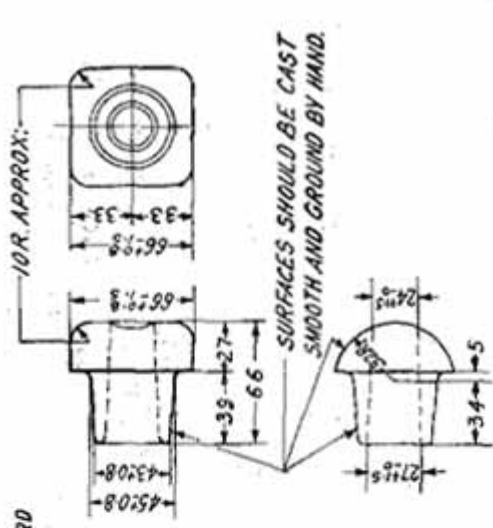
**CRANK**

(DRG: NO. M-134)



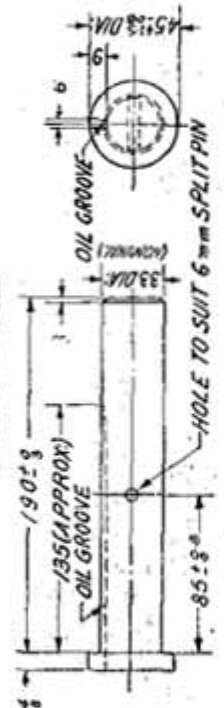
**SPRING ROD**

(DRG: NO. M-136)



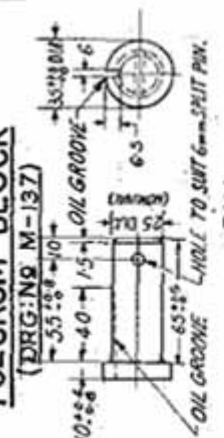
**FULCRUM BLOCK**

(DRG: NO. M-137)



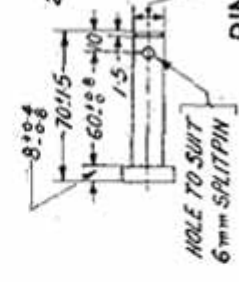
**PIN**

(DRG: NO. M-141)



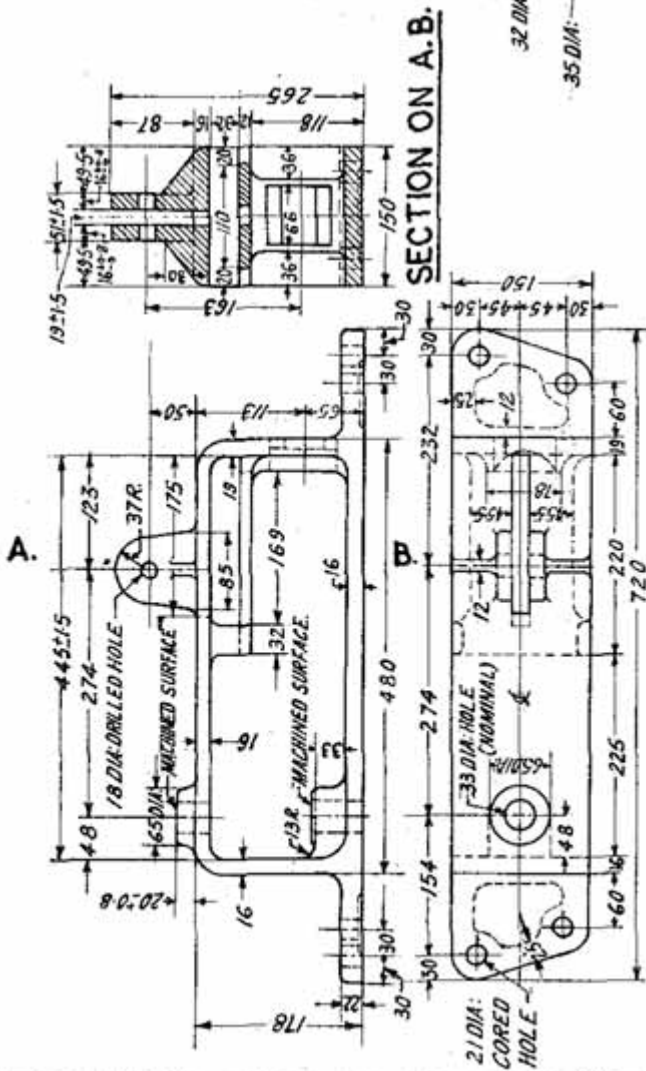
**PIN**

(DRG: NO. M-144)

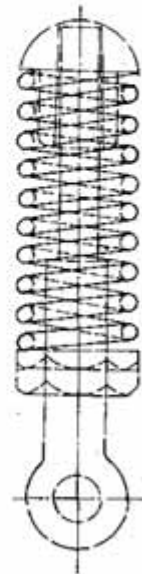
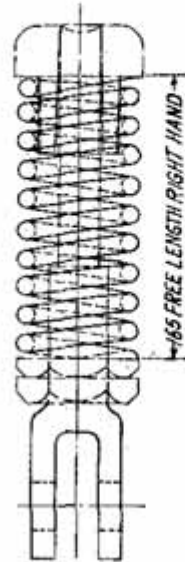


**PIN**

(DRG: NO. M-143)

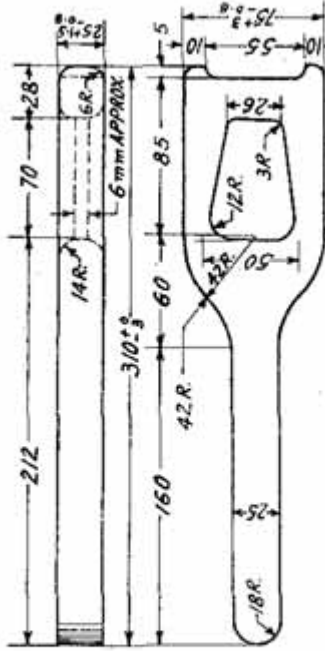


**BOX (DRG. NO. M-142)**

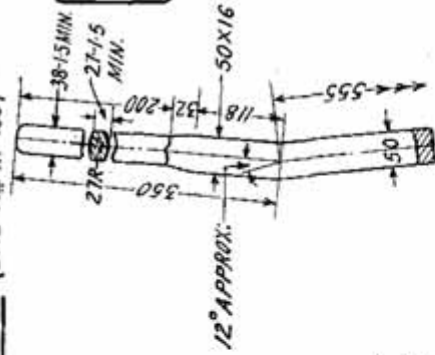
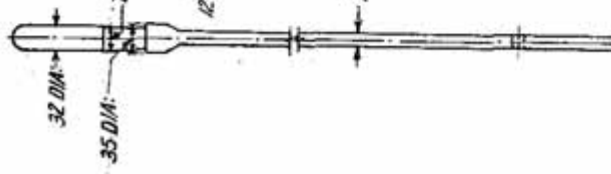


**SIDE VIEW**

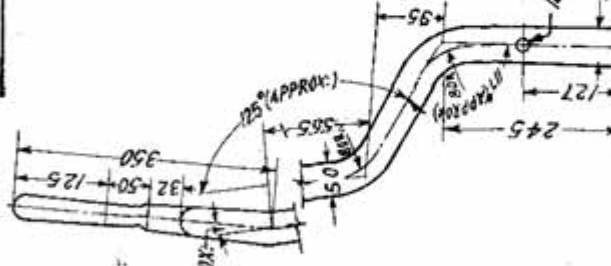
**HELICAL SPRING (DRG. NO. M-140)**



**PLUNGER (DRG. NO. M-135)**



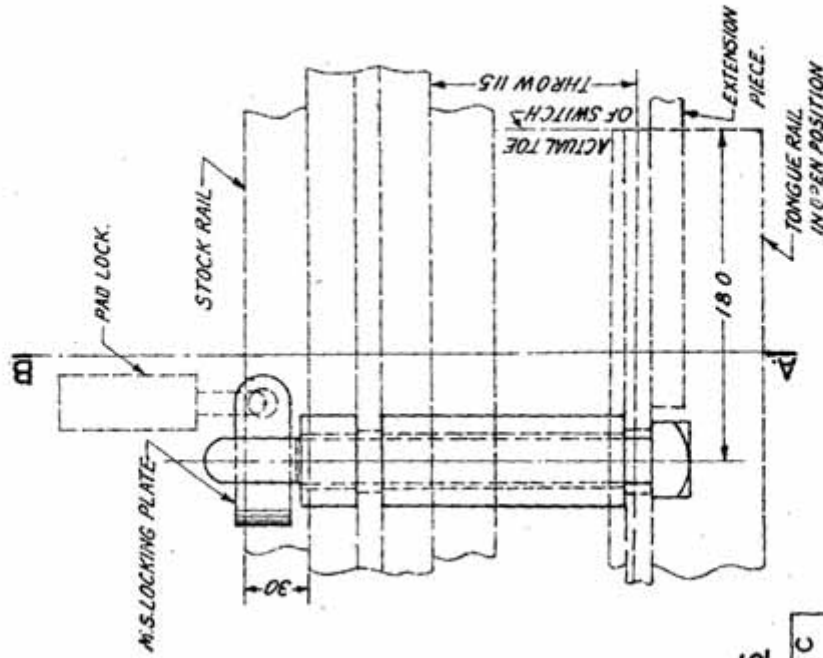
**ALTERNATIVE GRIP FOR HANDLE**



**HANDLE (DRG. NO. M-133)**

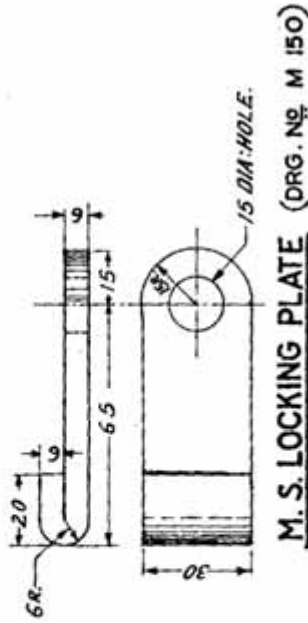


**ARRANGEMENT FOR CLAMPING LOOSE HEEL SWITCHES B.G. IN OPEN POSITION**

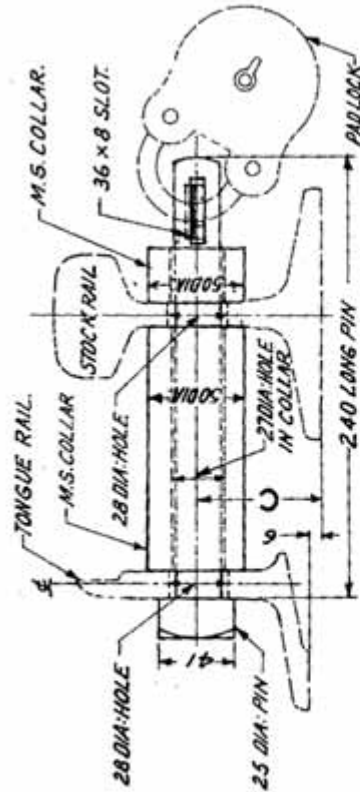


**PART PLAN AT TOE OF SWITCH**

(DRG. NO. MA 304-1)



**M. S. LOCKING PLATE (DRG. NO. M 150)**



**SECTION ON A.B.**

**TABLE OF DIMENSIONS**

RAIL SECTION	DIMENSION C (mm)
52 Kg	73
90R.	66
75R.	60

**CHAPTER XI**  
**TRACK FORMULAE**

	Page
Brief notes on track formulae. . . . .	TFa to TFb
Calculations for lead and radius of turnouts . . . . .	TF1
Calculation for lead and radius of symmetrical splits . . . . .	TF2
Calculations for main distances of cross-overs and diamonds. . . . .	TF3
Calculations of dimensions for distance blocks and M.S. flat bearing plates with rail screws. . . . .	TF4
Calculation of bolt lengths for points and crossings. . . . .	TF5

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**Brief notes on track formulae**

**Turnouts :** As already mentioned in Chapter V on Turnout, Switches and Crossings in Volume I, the lead and radius are the most important dimensions to be computed in a turnout. A turnout may be laid with a straight switch, a partly curved switch or a fully curved switch. There are slight variations in the formulae used for calculating lead and radius of the turnouts with these alternate types of switches. Page TF1 gives the formulae for calculating these dimensions. The straight lengths 'C' along rail from the theoretical nose of crossing to the tangent point of the lead curve and the heel divergence 'X' are suitably adopted for each turnout, depending upon its crossing length and the switch entry angle.

**Symmetrical splits :** The lead and radius of a symmetrical split layout are calculated by the formulae used for ordinary turnout except for the change that in computations the values of the crossing angle, the switch entry angle, the heel divergence and the gauge are halved. This nearly doubles the value of radius as compared to an ordinary turnout with the same switch and crossing angles. The modified formulae of lead and radius are given at page TF2.

**Cross-overs :** The distance 'D' from the theoretical nose of crossing to the theoretical nose of crossing on the main track is a function of crossing angle 'Z', the distance between track centres G1, and the track gauge 'G'. This can be calculated by the formula given at Page TF3. The lead and radius of turnouts are calculated in the same way as given in an earlier para on turnouts. It may be noted that the two turnouts may have equal or different crossing angles.

**Scissors cross-overs :** In a scissors cross-over, the distance '2A' from the theoretical nose of crossing to the theoretical nose of crossing of acute crossings of diamond, is the gauge 'G' multiplied by the cosecant of the crossing angle 'Z'. Distance '2D' from the theoretical nose of crossing to the theoretical nose of crossing of acute crossings on main track can be calculated by the formulae given at page TF3. The

calculations are based on the assumptions that a scissors cross-over is symmetrical about the two central axes, all the four turnouts have equal crossing angles and the two main tracks are parallel to each other.

**Diamond crossing :** The principal dimension required for laying a diamond crossing is the distance 'A' from the theoretical nose of acute crossing to the theoretical nose of obtuse crossing. The formula for calculating this is the one given in an 'the' earlier para on scissors cross-over. The distance 'X' between the acute noses of point rails of obtuse crossing is calculated by the formula given at page TF3. The calculations are based on the assumption that the two tracks crossing each other are of equal gauge.

**Distance blocks and M.S. flat bearing plates :** The width of distance blocks and the spacing of holes in M.S. flat bearing plates is obtained by adding some constants to the clearance between rail heads. Pages TF4 give the formulae for calculating these dimensions along with the assumptions made.

**Bolts for points and crossings :** The grip 'G' of the bolt is the distance between the outside faces of the webs of the outermost rails which it holds. The bolt length 'L' can be calculated by adding a constant to the value of the grip 'G'. The value of the constants depends upon different combinations of plain, spherical or spring washers used and the diameter of the bolt. The table on pages TF5 give the values of such constants for 22mm and 25mm diameter bolts. These constants are meant to be used for black bolts only.

# CALCULATIONS FOR LEAD AND RADIUS OF TURNOUTS

- WHERE,
- G = TRACK GAUGE.
  - W = CROSSING ANGLE.
  - V = SWITCH ANGLE.
  - C = STRAIGHT LENGTH ALONG RAIL MEASURED FROM THEORETICAL NOSE OF CROSSING TO THE TANGENT POINT OF LEAD CURVE.
  - X = DIVERGENCE AT HEEL.
  - D<sub>2</sub> = THICKNESS OF TONGUE RAIL HEAD AT ACTUAL TOE.
  - D<sub>1</sub> = THICKNESS OF TONGUE RAIL HEAD AT JUNCTION OF RAIL HEADS I.E. AT THE SPRINGING POINT OF LEAD CURVE.
  - T = SWITCH LENGTH I.E. DISTANCE FROM HEEL TO ACTUAL TOE OF SWITCH.
  - P = DISTANCE FROM SPRINGING POINT OF LEAD CURVE TO HEEL (FOR PARTLY CURVED SWITCH ONLY).
  - Z = LEAD OF TURNOUT I.E. FROM HEEL TO THEO. NOSE OF CROSSING.
  - R<sub>1</sub>, R<sub>2</sub> = RADII OF LEAD CURVES. WITH STRAIGHT SWITCH, WITH PARTLY CURVED SWITCH AND WITH CURVED SWITCH RESPECTIVELY.

TURNOUT WITH STRAIGHT SWITCH

$$\text{LEAD } Z = \frac{G - X - C \sin W}{\tan \frac{W+V}{2}} + C \cos W$$

$$\text{RADIUS } R = \frac{G - X - C \sin W}{2 \sin \frac{W+V}{2} \sin \frac{W-V}{2}}$$

TURNOUT WITH PARTLY CURVED SWITCH

$$\text{LEAD } Z = \left\{ \frac{G - D_1 - C \sin W}{\tan \frac{W+V}{2}} + C \cos W \right\} - P$$

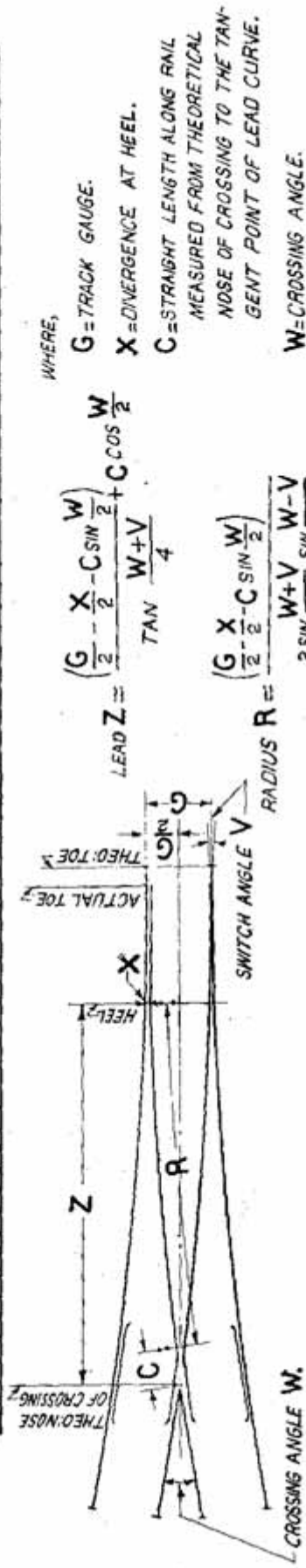
$$\text{RADIUS } R_1 = \frac{G - D_1 - C \sin W}{2 \sin \frac{W+V}{2} \sin \frac{W-V}{2}}$$

TURNOUT WITH CURVED SWITCH

$$\text{LEAD } Z = \left\{ \frac{G - D_2 - C \sin W}{\tan \frac{W+V}{2}} + C \cos W \right\} - T$$

$$\text{RADIUS } R_2 = \frac{G - D_2 - C \sin W}{2 \sin \frac{W+V}{2} \sin \frac{W-V}{2}}$$

# CALCULATIONS FOR LEAD AND RADIUS OF SYMMETRICAL SPLITS.

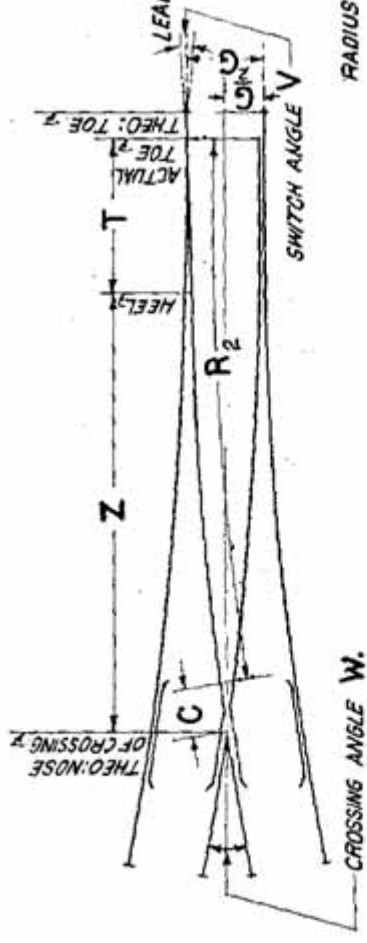


WHERE,  
**G** = TRACK GAUGE.  
**X** = DIVERGENCE AT HEEL.  
**C** = STRAIGHT LENGTH ALONG RAIL MEASURED FROM THEORETICAL NOSE OF CROSSING TO THE TANGENT POINT OF LEAD CURVE.  
**W** = CROSSING ANGLE.  
**V** = SWITCH ANGLE.  
**R** = RADIUS WITH STRAIGHT SWITCH.

$$\text{LEAD } Z = \left[ \frac{G}{2} - \frac{X}{2} - C \sin \frac{W}{2} \right] \tan \frac{W+V}{4} + C \cos \frac{W}{2}$$

$$\text{RADIUS } R = \frac{W+V}{2 \sin \frac{W}{4}} \frac{W-V}{4}$$

# SYMMETRICAL SPLITS WITH STRAIGHT SWITCH



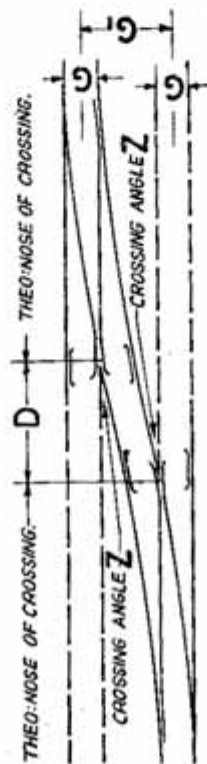
WHERE,  
**G** = TRACK GAUGE.  
**D** = THICKNESS OF TONGUE RAIL AT ACTUAL TOE.  
**C** = STRAIGHT LENGTH ALONG RAIL MEASURED FROM THEORETICAL NOSE OF CROSSING TO THE TANGENT POINT OF LEAD CURVE.  
**T** = SWITCH LENGTH.  
**W** = CROSSING ANGLE.  
**V** = SWITCH ANGLE.  
**R<sub>2</sub>** = RADIUS WITH CURVED SWITCH.

$$\text{LEAD } Z = \left[ \frac{G}{2} - \frac{D}{2} - C \sin \frac{W}{2} \right] \tan \frac{W+V}{4} + C \cos \frac{W}{2} - T$$

$$\text{RADIUS } R_2 = \frac{W+V}{2 \sin \frac{W}{4}} \frac{W-V}{4}$$

# SYMMETRICAL SPLITS WITH CURVED SWITCH

# CALCULATIONS FOR MAIN DISTANCES OF CROSS-OVERS AND DIAMONDS

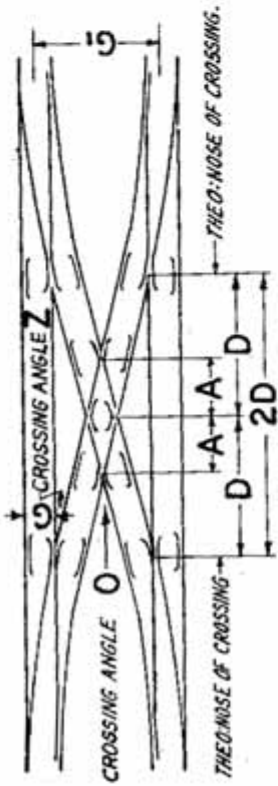


WHERE,  
 $Z$  = CROSSING ANGLE.  
 $G$  = TRACK GAUGE.  
 $G_1$  = DISTANCE BETWEEN TRACK CENTRES.  
 $D$  = DISTANCE FROM THEORETICAL NOSE OF CROSSING TO THEORETICAL NOSE OF CROSSING ON MAIN TRACK.

$$D = [G_1 - G - G \sec Z] \cot Z$$

$$Z = \arcsin \frac{G}{G_1 - G}$$

## CROSS-OVER

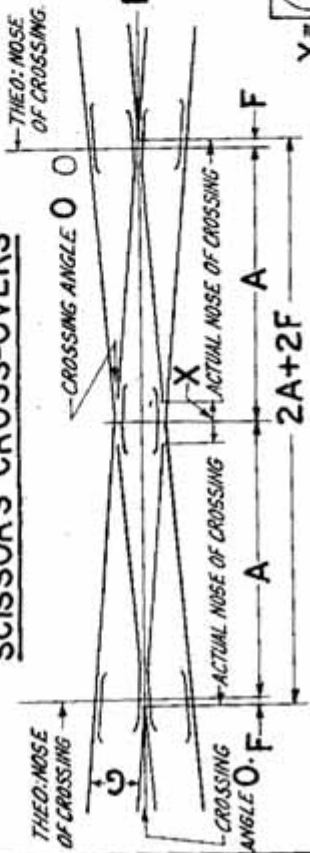


WHERE,  
 $Z$  = CROSSING ANGLE.  
 $G$  = TRACK GAUGE.  
 $G_1$  = DISTANCE BETWEEN TRACK CENTRES.  
 $D$  = DISTANCE FROM THEORETICAL NOSE OF CROSSING TO THEORETICAL NOSE OF CROSSING OF ACUTE CROSSINGS ON MAIN TRACK.  
 $2A$  = DISTANCE FROM THEORETICAL NOSE OF CROSSING TO THEORETICAL NOSE OF CROSSING OF ACUTE CROSSINGS OF DIAMOND.  
 $O$  = ANGLE OF ACUTE AND OBTUSE CROSSINGS IN DIAMOND.  
 WHERE,  
 $O$  = ANGLE OF ACUTE AND OBTUSE CROSSINGS IN DIAMOND.  
 $F$  = DISTANCE FROM THEORETICAL NOSE OF CROSSING TO ACTUAL NOSE OF CROSSING.  
 $G$  = TRACK GAUGE.  
 $A$  = DISTANCE FROM THEORETICAL NOSE OF ACUTE CROSSING TO THEORETICAL NOSE OF OBTUSE CROSSING.  
 $X$  = DISTANCES BETWEEN ACTUAL NOSES OF POINT RAILS OF OBTUSE CROSSING.  
 $O$  = CLEARANCE AT NOSE

$$2D = [G_1 - G - G \sec Z] \cot Z$$

$$2A = G \operatorname{cosec} Z$$

## SCISSORS CROSS-OVERS



WHERE,  
 $O$  = ANGLE OF ACUTE AND OBTUSE CROSSINGS IN DIAMOND.  
 $F$  = DISTANCE FROM THEORETICAL NOSE OF CROSSING TO ACTUAL NOSE OF CROSSING.  
 $G$  = TRACK GAUGE.  
 $A$  = DISTANCE FROM THEORETICAL NOSE OF ACUTE CROSSING TO THEORETICAL NOSE OF OBTUSE CROSSING.  
 $X$  = DISTANCES BETWEEN ACTUAL NOSES OF POINT RAILS OF OBTUSE CROSSING.  
 $O$  = CLEARANCE AT NOSE

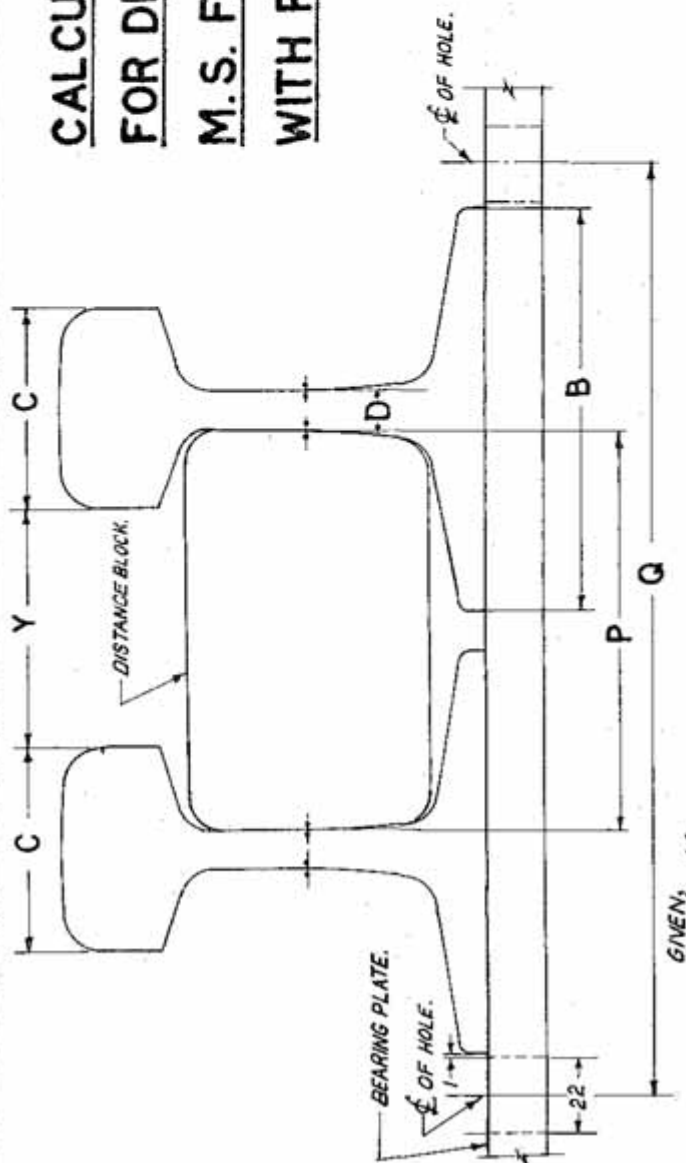
$$F = \frac{\text{THICKNESS OF RAIL WEB} \times \cot Z}{2}$$

$$X = \left[ \left( \text{CLEARANCE AT NOSE} \right) + \left( \frac{\text{THICKNESS OF RAIL WEB}}{2} \right) \operatorname{cosec} \frac{O}{2} \right]$$

## DIAMOND CROSSING

44 mm FOR B.G.  
41 mm FOR M.G.

**CALCULATIONS OF DIMENSIONS**  
**FOR DISTANCE BLOCKS AND**  
**M. S. FLAT BEARING PLATES**  
**WITH RAIL SCREWS.**



GIVEN;

$Y$  = CLEARANCE BETWEEN RAIL HEADS.

$\theta$  = CROSSING ANGLE.

$P$  = REQUIRED WIDTH OF BLOCK.

$Q$  = REQUIRED SPACINGS OF HOLES IN BEARING PLATE.

$P = Y + \frac{C-D}{\cos \theta/2} = Y + A \text{ CONSTANT, FOR DISTANCE BLOCKS IN CROSSINGS.}$

AND,  $P = Y + C - D = Y + A \text{ CONSTANT, FOR DISTANCE BLOCKS NEAR HEELS OF SWITCHES ( PROVIDED THE ANGLE SUBTENDED BY THE LEAD RAILS AT THAT POINT IS QUITE SMALL ).}$

$Q = Y + \frac{B+C}{\cos \theta/2} + 24 = Y + A \text{ CONSTANT, FOR BEARING PLATES IN CROSSINGS.}$

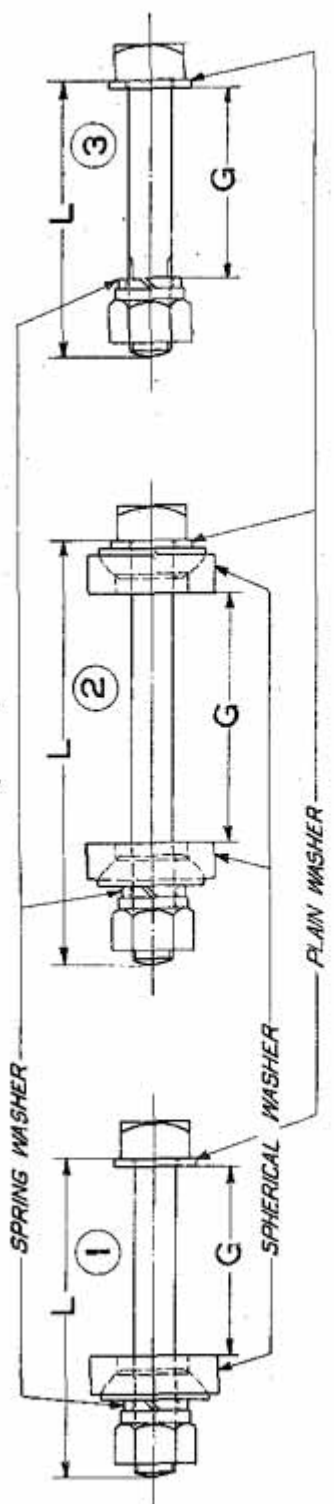
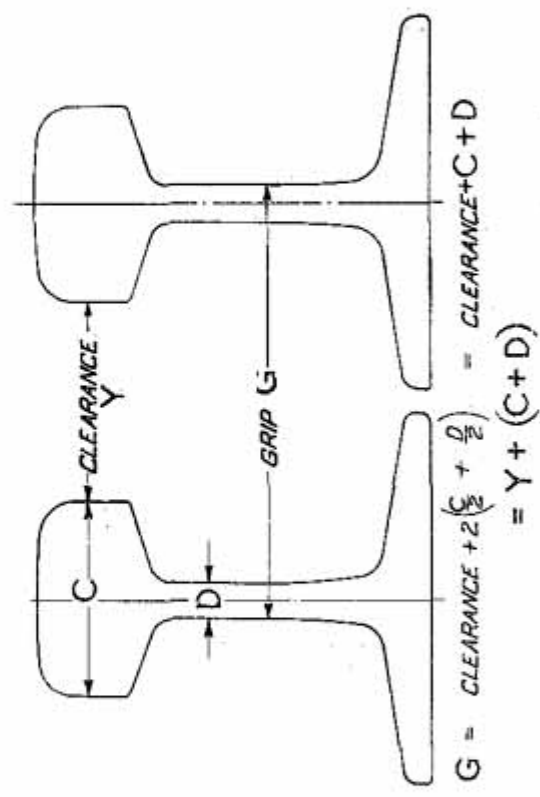
AND,  $Q = Y + B + C + 24 = Y + A \text{ CONSTANT, FOR BEARING PLATES NEAR HEELS OF SWITCHES ( PROVIDED THE ANGLE SUBTENDED BY THE LEAD RAILS AT THAT POINT IS QUITE SMALL ).}$



**TABLE FOR CALCULATING WIDTHS OF DISTANCE BLOCKS & SPACING OF HOLES IN BEARING PLATES**

DESCRIPTION OF CROSSING OR SWITCH	WIDTH OF BLOCK = P				SPACING OF HOLES IN BEARING PLATE = Q			
	52 Kg	90R.	75R.	60R.	52 Kg	90R.	75R.	60R.
1 IN 20 CROSSING	—	Y+ 52-8	—	—	—	Y+ 227-3	—	—
1 IN 16 CROSSING	Y+ 51-5	Y+ 52-8	Y+ 48-8	Y+ 46	Y+ 227-1	Y+ 227-3	Y+ 208-2	Y+ 190-8
1 IN 12 CROSSING	Y+ 51-5	Y+ 52-8	Y+ 48-8	Y+ 46	Y+ 227-2	Y+ 227-4	Y+ 208-3	Y+ 190-8
1 IN 8½ CROSSING	Y+ 51-5	Y+ 52-8	Y+ 48-8	Y+ 46-1	Y+ 227-3	Y+ 227-6	Y+ 208-5	Y+ 191-0
1 IN 6 CROSSING	Y+ 51-6	Y+ 52-9	Y+ 48-9	Y+ 46-1	Y+ 227-7	Y+ 227-9	Y+ 208-8	Y+ 191-3
1 IN 4¼ CROSSING	Y+ 51-8	Y+ 53-1	Y+ 49-1	Y+ 46-3	Y+ 228-4	Y+ 228-6	Y+ 209-4	Y+ 191-8
1150 mm O.R. SWITCH	—	Y+ 52-8	—	—	—	Y+ 227-2	—	—
1120 mm O.R. SWITCH	Y+ 51-5	—	—	—	Y+ 227	—	—	—
9750 mm O.R. SWITCH	Y+ 51-5	Y+ 52-8	—	—	Y+ 227	Y+ 227-2	—	—
7730 mm O.R. SWITCH	Y+ 51-5	Y+ 52-8	—	—	Y+ 227	Y+ 227-2	—	—
6400 mm O.R. SWITCH	Y+ 51-5	Y+ 52-8	—	—	Y+ 227	Y+ 227-2	—	—
4725 mm O.R. SWITCH	Y+ 51-5	Y+ 52-8	—	—	Y+ 227	Y+ 227-2	—	—
7420 mm O.R. SWITCH	—	—	Y+ 48-8	Y+ 46	—	—	Y+ 208-2	Y+ 190-7
6700 mm O.R. SWITCH (PARTLY CURVED)	—	—	Y+ 48-8	Y+ 46	—	—	Y+ 208-2	Y+ 190-7
5500 mm O.R. SWITCH	—	—	Y+ 48-8	Y+ 46	—	—	Y+ 208-2	Y+ 190-7
5485 mm O.R. SWITCH	—	—	Y+ 48-8	Y+ 46	—	—	Y+ 208-2	Y+ 190-7
4115 mm O.R. SWITCH	—	—	Y+ 48-8	Y+ 46	—	—	Y+ 208-2	Y+ 190-7

# BOLTS FOR POINTS & CROSSINGS



A MINIMUM PROJECTION OF 5 mm SHOULD BE WORKED TO, AND THE BOLTS CUT OFF IN LENGTHS VARYING BY 10 mm ± c., IF THE THEORETICAL LENGTH, INCLUDING THE 5 mm PROJECTION, IS 250 mm BOLT. IF IT IS 255 mm USE A 260 mm BOLT.

TABLE SHOWING CALCULATIONS OF BOLT LENGTHS FOR POINTS & CROSSINGS

DESCRIPTION	BOLT LENGTH "L" FOR 25 mm DIA. BOLTS	BOLT LENGTH "L" FOR 22 mm DIA. BOLTS
① SPHERICAL WASHER WITH SPRING WASHER AT ONE END AND PLAIN WASHER AT THE OTHER END.	G + 72	G + 65
② SPHERICAL WASHER AT BOTH ENDS WITH SPRING WASHER AT ONE END AND PLAIN WASHER AT THE OTHER END.	G + 95	G + 88
③ SPRING WASHER AT ONE END AND PLAIN WASHER AT THE OTHER END.	G + 49	G + 42

NOTE:-- THE BOLT LENGTHS GIVEN ABOVE ARE APPLICABLE FOR BLACK BOLTS ONLY.

## CHAPTER XII

### PRESTRESSED CONCRETE SLEEPERS

	Page
Brief notes on prestressed concrete sleepers and fastenings. . . . .	SPCa to SPCc
Table of drawings for prestressed concrete sleepers and fastenings. . . . .	SPC1
Prestressed concrete sleepers BG. . . . .	SPC2
Elastic rail clip and Malleable or Spheroidal graphite cast iron inserts. . . . .	SPC3
Grooved rubber sole plates and mild steel nylon composite insulating liners. . . . .	SPC4

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**Brief notes on prestressed concrete sleepers and fastenings**

**Prestressed concrete sleepers:** BG prestressed concrete sleepers to drawing No. RDSO/T-2495 for use with 52 kg rail section and RDSO/T-2496 for use with 60 kg UIC rail section has been the result of evolution of concrete sleepers based on experience and field trials with other earlier designs. These are standard designs of prestressed concrete sleepers for broad gauge. In addition to these, there are 5 other different designs of prestressed concrete sleepers being manufactured and laid in track. Details of the standard prestressed concrete sleepers furnished on pages SPC2 in 2 sheets and for other designs, relevant detailed drawings may be referred to.

This sleeper is of pretensioned type and can be manufactured by longline or stress bench or individual mould methods. This design utilises 18 nos. of 3mm×3mm diameter high tensile strands with an ultimate tensile strength of 184 kg/mm<sup>2</sup> and a minimum 28-day concrete cube strength of 525 kg/cm<sup>2</sup>.

This sleeper is cast with malleable or spheroidal graphite cast iron inserts for use with elastic rail clips along with grooved rubber sole plate and insulating liners. The fastening system renders the sleeper usable in track circuited areas.

For nominal distances shown in drawing between inserts, a nominal gauge of 1673.5mm is expected. This may vary slightly depending upon the effect of tolerances on various distances and components used in the assembly. Sleepers to drawing Nos. RDSO/T-2495 and RDSO/T-2496 differ only in respect of distances between inserts so as to accommodate higher rail sections and in all other respects, they are identical.

**Elastic rail clip type RT-1892:** Elastic rail clip RT-1892 is used in conjunction with malleable or spheroidal graphite cast iron insert cast integrally with concrete sleeper. The centre leg of the elastic rail clip houses into the eye of

insert while toe of the clip rests on the flange of rail and heel of the clip rests on the heel shoulder of insert. Same clip is used for BG 52 kg and 60 kg UIC rail sections but with different insert designs. The clip is manufactured out of 20.64 mm dia silico-manganese spring steel bars suitably heat treated and tempered to meet the requirements of IRS Specification No. T-31 to give toe load value of about 710 kg at 11.4mm toe deflection. Details of the elastic rail clip are shown on page SPC3.

**Inserts :** Cast iron inserts integrally cast with concrete sleepers can be of malleable cast iron or of spheroidal graphite cast iron. The stem of the insert which is embedded into concrete is suitably shaped to offer adequate pullout resistance. Inserts for use with 52 kg and 60 kg UIC rail sections differ in dimensions of apex hole height, with respect to top of sleeper surface at railseat which is suitably kept to obtain a toe deflection of 11.4mm. Inserts cast with solid stem are in large scale use. However, inserts with gate stem are considered a suitable alternative, which may also be used. MCI inserts are to be manufactured to IRS Specification No. T-32 while SGCI inserts are to be manufactured to the 'Draft IRS Specification for SGCI Inserts'. Details and critical dimensions of the solid stem insert are shown on page SPC3 and for drawing numbers of other types of inserts page SPC1 may be referred.

**Insulating liners :** Composite insulating liners 4mm thick, consisting of a metallic backing plate and a nylon moulding are used at present. These liners offer necessary electrical insulation for the sleeper for use in track circuited areas. At locations where track circuiting is not contemplated, mild steel liners (4mm thick) can be used in lieu of composite insulating liners. The liners have slope to match the slope of rail flange. The composite insulating liners are to be manufactured to 'Draft IRS Specification for Composite Insulating Liners'. Details of composite insulating liners are shown on Page SPC4, and for drawing numbers of other types of liners page SPC1 may be referred.

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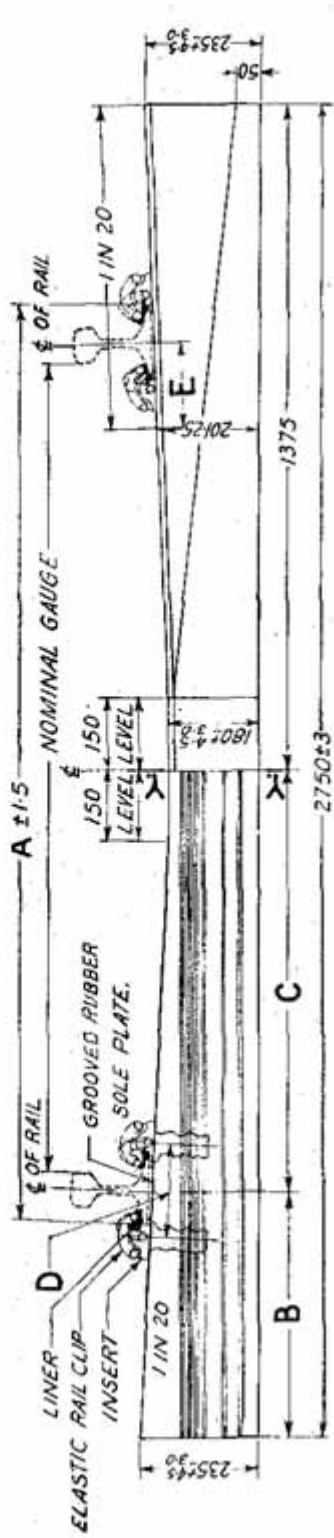
**Grooved rubber sole plates :** Grooved rubber sole plates 4.5mm thick are placed beneath the rail over the sleeper for electrical insulation and affording resilience. The size of grooved rubber sole plate should match the size of rail flange and top width of sleeper at railseat. For different rail sections, size of pads have been accordingly proposed. Details of grooved rubber pads are shown on page SPC4.

**PRESTRESSED CONCRETE SLEEPERS & THEIR FASTENINGS**

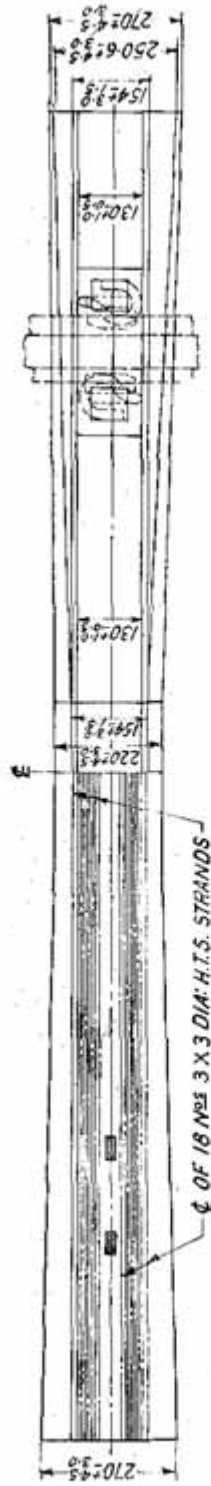
GAUGE	RAIL SECTION	DESCRIPTION	SLEEPER DRAWING NUMBER (PAGE SPC)	SLEEPER FASTENINGS								REMARKS	
				INSERT		ELASTIC RAIL CLIP		GROOVED RUBBER SOLE PLATE		LINER			
			DRAWING NO	PAGE	DRAWING NO	PAGE	DRAWING NO	PAGE	DRAWING NO	PAGE	DRAWING NO	PAGE	
B. G.	60 kg UIC	PCS-14, PRESTRESSED CONCRETE SLEEPER	RDSO/T-2477 OR RDSO/T-2479	- SPC 3	RDSO/T-1892	SPC 3	RDSO/T-2053	SPC 4	RDSO/T-2462 OR RDSO/T-2463 OR RDSO/T-2464 OR RDSO/T-2465	- - SPC 4 -	ONLY LINER TO DRG: NO RDSO/T-2464 AND INSERT TO DRG: NO RDSO/T-2479 HAVE BEEN INCLUDED IN THIS CHAPTER		
B. G.	52 kg	PCS-12, PRESTRESSED CONCRETE SLEEPER	RDSO/T-381 OR RDSO/T-2071	SPC 3 -	RDSO/T-1892	SPC 3	RDSO/T-2052	SPC 4	RDSO/T-383 OR RDSO/T-653 OR RDSO/T-1895 OR RDSO/T-645	- - SPC 4 -	ONLY LINER TO DRG: NO RDSO/T-1895 HAS BEEN INCLUDED IN THIS CHAPTER		



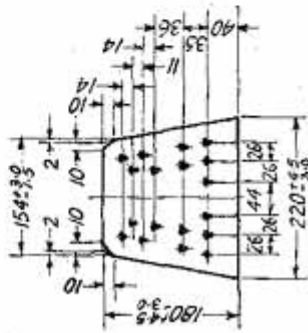
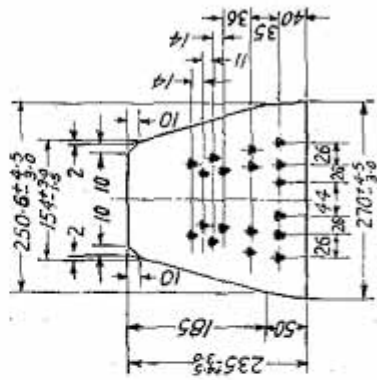
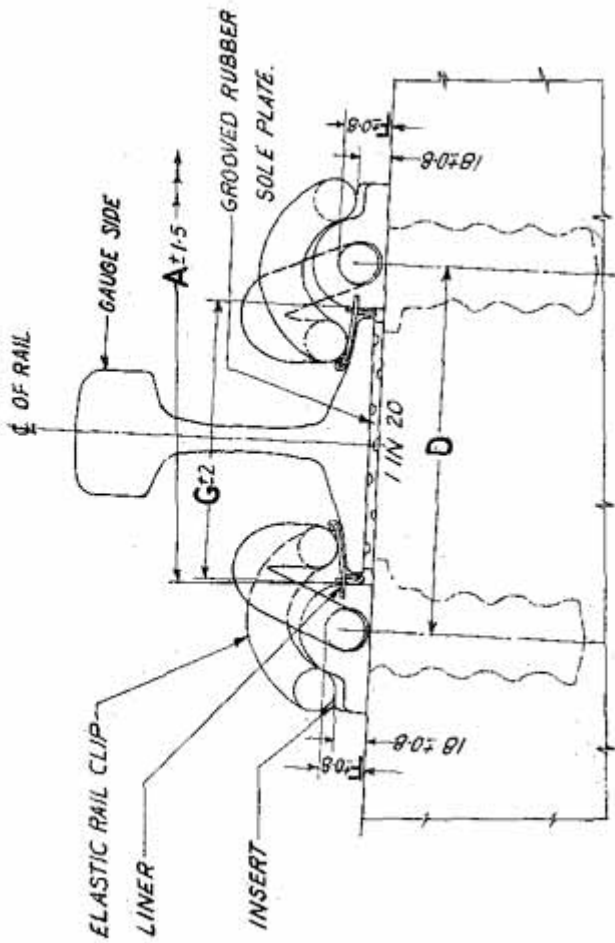
# PRESTRESSED CONCRETE SLEEPERS



HALF SECTIONAL ELEVATION



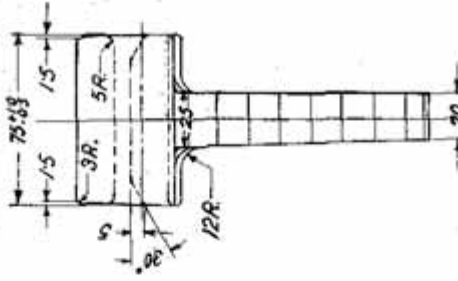
HALF SECTIONAL PLAN



**TABLE OF MAIN DIMENSIONS**

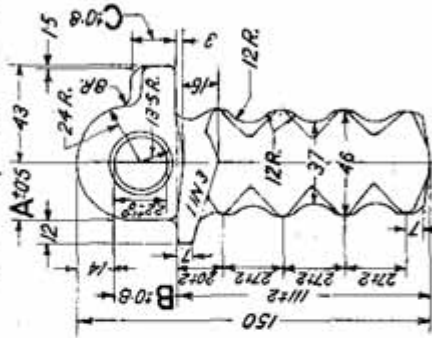
RAIL SECTION	DRAWING NUMBER	TYPE OF SLEEPER	D I M E N S I O N S (mm)							VOLUME OF CONCRETE PER SLEEPER EXCIS (cms <sup>3</sup> )	WEIGHT PER SLEEPER EXCIS (kg)
			A	B	C	D	E	F	G		
60 kg UIC	RDSO/F-2496	PCS-14	1922.5	494.5	880.5	211	178	25.75	163	108900	282
52 kg	RDSO/F-2495	PCS-12	1902.5	497.5	877.5	197	175	25	149	108900	282

ELASTIC RAIL CLIP & MALLEABLE OR SPHEROIDAL GRAPHITE CAST IRON INSERTS

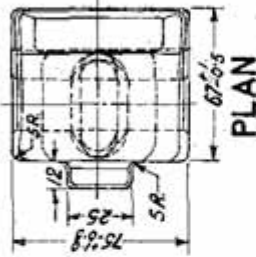


SIDE ELEVATION

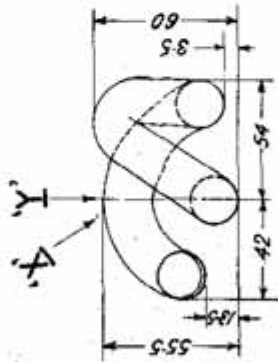
MALLEABLE OR SPHEROIDAL  
GRAPHITE CAST IRON INSERT



ELEVATION



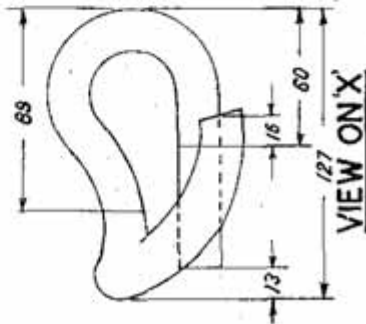
PLAN



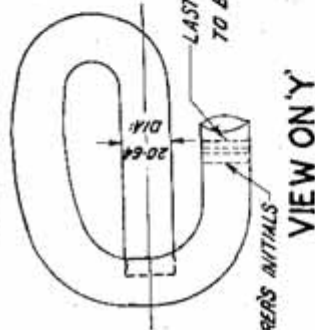
ELASTIC RAIL CLIP  
TYPE RT-1892

WEIGHT = 1.0 kg (APPROX.)

LAST TWO DIGITS OF YEAR OF MANUFACTURE  
TO BE STAMPED HERE.



VIEW ON 'X'



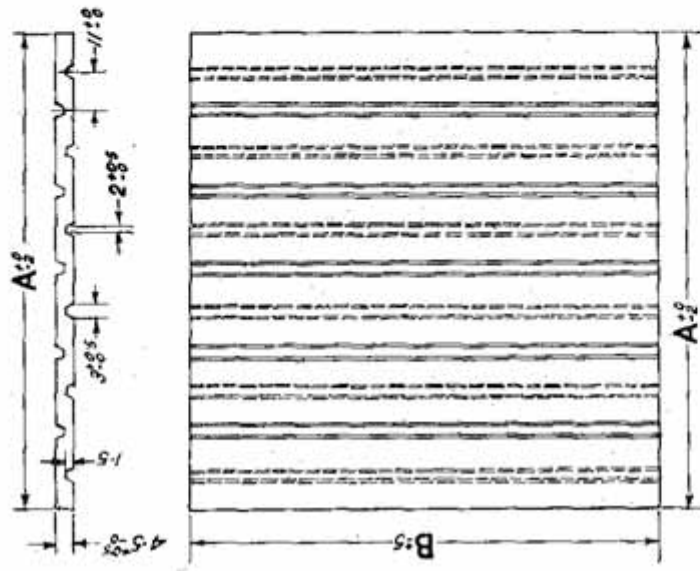
VIEW ON 'Y'

PART NUMBERS & CRITICAL DIMENSIONS OF INSERTS

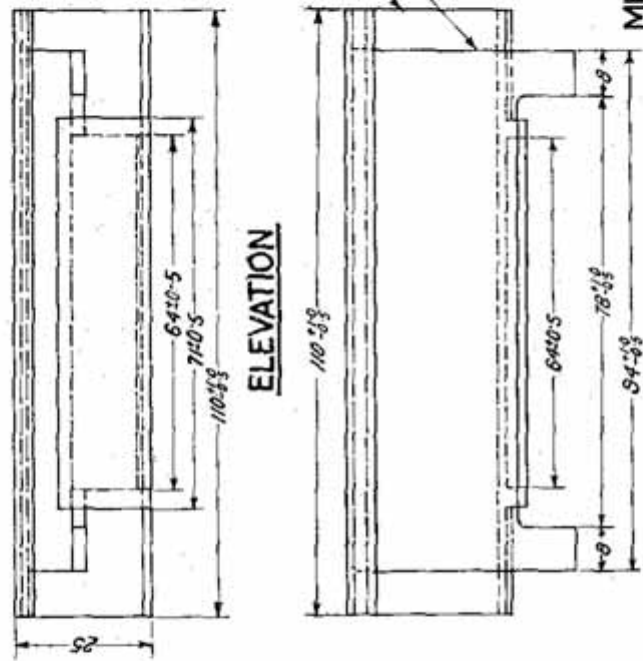
RAIL SECTION	DRAWING NUMBER	DIMENSIONS (mm)			WEIGHT Kg (APPROX.)
		A	B	C	
60 kg UIC	RDSO/T-2479	24	2575	18	17
52 kg & 90R.	RDSO/T-381	24	25	18	17

# GROOVED RUBBER SOLE PLATES & MILD STEEL NYLON COMPOSITE INSULATING LINERS

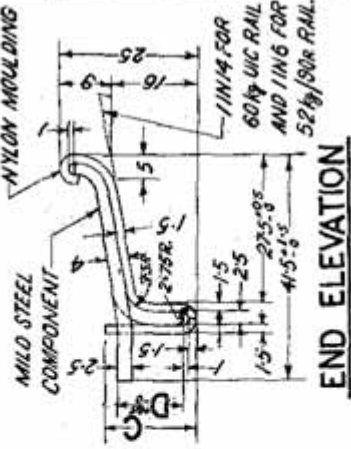
SPC 4  
SHEET 1 OF 1



GROOVED RUBBER SOLE PLATE



MILD STEEL NYLON COMPOSITE INSULATING LINER



END ELEVATION

**TOLERANCES**

THICKNESS OF M.S. COMPONENT  $\pm 0.3$   
THICKNESS OF NYLON MOULDING  $\pm 0.3$

**PART NUMBERS & MAIN DIMENSIONS**

RAIL SECTION	GROOVED RUBBER SOLE PLATE		COMPOSITE INSULATING LINER				
	PART NUMBER	DIMENSIONS (mm)	A	B	PART NUMBER	DIMENS (O.N.S) (mm)	
60 kg UIC	RDSO/JT-2053	145	125		RDSO/JT-2464	C	D
52 kg & 90R.	RDSO/JT-2052	130	125		RDSO/JT-1895	165	125

## ANNEXURE

**(Changes due to adoption of rail screws/plate screws in lieu of dog spikes/  
round spikes)**

	Page
Brief notes. . . . .	ANXa to ANXc
Comparative statement of track parts used with Rail/ plate screws in lieu of dog spikes/round spikes.	
For Chapter V (Turnouts, Switches and Crossings).	ANX1
For Chapter VI (Diamond & Slips). . . .	ANX2
For Chapter VII (Scissors and Crossovers). . .	ANX3
For Chapter VIII (Special Layouts). . . .	ANX4
For ordinary and insulated tie plates. . . .	ANX 5
Typical crossing tie plates. . . . .	ANX 6
Typical switch tie plates. . . . .	ANX 7 <sup>o</sup>
Typical slide chairs. . . . .	ANX 8

**General :** As almost all the drawings included in the Chapters of IRS Track Manual use dog spikes/round spikes, this Annexure gives the layout assemblies, sub-assemblies and their corresponding track parts using rail screws/plate screws.

**Brief notes :** Most of the standard track layout drawings with wooden sleepers included in the previous Chapters have been prepared with dog spikes/round spikes as sleeper fastenings. As per the Railway Board's letter No. 76/W6/TS/ 1 dated 22-1-77 rail screws/plate screws are to be used in lieu of the old type of fastenings viz. dog spikes and round spikes. The subsequent designs of track layout are designed with the new type of fastenings, viz. rail screws/plate screws. The work of modifications of existing drawings with the recommended fastenings is in progress and some drawings have already been modified.

There is no basic change in the assemblies and sub-assemblies of the layouts and their drawing numbers have also not been changed. The work of modifying old drawings is essentially limited to carrying out a few changes in certain components viz. bearing plates, tie plates, slide chairs and M.S. chairs. Thus, a comparative statement showing the track parts and their drawing numbers using dog spikes/round spikes as well as the corresponding new parts having new drawing numbers using rail screws/plate screws would serve the purpose—both for layouts with dog spikes/round spikes as well layouts with rail screws/plate screws.

The layouts of ordinary turnouts, diamonds and slips, scissors and crossovers and the special turnouts included in their respective Chapters of IRS Track Manual Vol. I and Vol. II were initially designed with dog spikes/round spikes generally and with rail screws/plate screws in some cases. Subsequent modifications in the track parts to incorporate the new fastenings and the new part drawing numbers can be referred to in this Annexure at pages ANX1 to ANX5. At certain places, the columns have been kept blank for provision of corresponding new parts as and when prepared.

The comparative statements given at pages ANX1 to ANX4 show the assembly and sub-assembly numbers along with their relevant parts and drawing numbers using dog/round spikes and the corresponding new parts and drawing numbers using the new type of fastenings. The statements have been arranged chapterwise from Chapter V to Chapter VIII. Page ANX5 is meant exclusively giving comparative statement of ordinary tie plates and insulated tie plates.

The corresponding new part drawings of typical crossing tie plates, switch tie plates and slide chairs using rail screws/plate screws have also been included at pages ANX6 to ANX8 respectively.

**Comparative statements :**

**For Chapter V (Turnouts, switches and crossings) :** Pages ANX1, sheets 1 and 2 cover layout assemblies and sub-assemblies of turnouts, switches and crossings of ordinary turnouts. The track parts which are likely to be substituted and the corresponding new parts are shown in the statements. However, as stated above some columns have been kept blank for Chapters V to VIII and tie plates at pages ANX1 to ANX5 for the provision of the corresponding new parts which have not been prepared as yet.

**For Chapter VI (Diamonds and slips) :** Pages ANX2, sheets 1 and 2 cover layout assemblies and sub-assemblies of diamonds and slips.

**For Chapter VII (Scissors and cross-overs) :** Pages ANX3, sheets 1 and 2 cover layout assemblies and sub-assemblies of scissors and cross-overs.

**For Chapter VIII (Special layouts) :** Pages ANX4, sheets 1 and 2 cover layout assemblies and sub-assemblies of special layouts.

**For ordinary and insulated tie plate :** Page ANX5 sheet 1 covers ordinary and insulated tie plates in a similar way.

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All the sub-assemblies of Chapter IX (Turnouts with CMS crossings) included, are designed with integrally cast bearing plates using rail/plate screws only.

**Crossing tie plates :** Pages ANX6 give salient dimensions of typical crossing tie plates with rail screws.

**Switch tie plates :** Pages ANX7 give salient dimensions of typical switch tie plates with platescrews.

**Slide chairs :** Pages ANX8 give salient dimensions and part numbers of different types of typical slide chairs with plate screws.



**ASSEMBLIES & SUB-ASSEMBLIES OF CHAPTER V TO BE MODIFIED FOR USE  
WITH RAIL SCREWS / PLATE SCREWS IN LIEU OF DOG SPIKES / ROUND SPIKES**

GAUGE	RAIL SECTION	ASSEMBLY DRG. NUMBER	DESCRIPTION	
B.G.	52 kg	TA 20104	1 IN 8½ TURNOUT WITH 4725 mm STRAIGHT SWITCH AND BUILT-UP CROSSING.	
	90 R.	TA 20196	1 IN 8½ TURNOUT WITH 6400 mm CURVED SWITCH AND BUILT-UP CROSSING.	
		TA 20110	1 IN 8½ TURNOUT WITH 4725 mm STRAIGHT SWITCH AND BUILT-UP CROSSING.	
	52 kg	TA 20148	1 IN 8½ TURNOUT WITH 6400 mm CURVED SWITCH AND BUILT-UP CROSSING.	
		TA 5268(M)	1 IN 12 TURNOUT WITH 6400 mm STRAIGHT SWITCH AND BUILT-UP CROSSING.	
		TA 20171	1 IN 12 TURNOUT WITH 7730 mm CURVED SWITCH AND BUILT-UP CROSSING.	
		90 R.	TA 5044(M)	1 IN 12 TURNOUT WITH 6400 mm STRAIGHT SWITCH AND BUILT-UP CROSSING.
			TA 20125(M)	1 IN 12 TURNOUT WITH 7730 mm CURVED SWITCH AND BUILT-UP CROSSING.
		52 kg	TA 20141	1 IN 16 TURNOUT WITH 9750 mm CURVED SWITCH AND BUILT-UP CROSSING.
	90 R.	TA 20138	1 IN 16 TURNOUT WITH 9750 mm CURVED SWITCH AND BUILT-UP CROSSING.	
		TA 20122	1 IN 20 TURNOUT WITH 11150 mm CURVED SWITCH AND BUILT-UP CROSSING.	
		TA 20404	1 IN 8½ TURNOUT WITH 4115 mm STRAIGHT SWITCH AND BUILT-UP CROSSING.	
75 R.		TA 20451	1 IN 8½ TURNOUT WITH 5500 mm CURVED SWITCH AND BUILT-UP CROSSING.	
M.G.	60 R.	TA 20407	1 IN 8½ TURNOUT WITH 4115 mm STRAIGHT SWITCH AND BUILT-UP CROSSING.	
	75 R.	TA 20416	1 IN 8½ TURNOUT WITH 5500 mm CURVED SWITCH AND BUILT-UP CROSSING.	
		TA 20401	1 IN 12 TURNOUT WITH 5485 mm STRAIGHT SWITCH AND BUILT-UP CROSSING.	
	60 R.	TA 20464	1 IN 12 TURNOUT WITH 6700 mm PARTLY CURVED SWITCH AND BUILT-UP CROSSING.	
		TA 20410	1 IN 12 TURNOUT WITH 5485 mm STRAIGHT SWITCH AND BUILT-UP CROSSING.	
		TA 20466	1 IN 12 TURNOUT WITH 6700 mm PARTLY CURVED SWITCH AND BUILT-UP CROSSING.	
		TA 20473	1 IN 16 TURNOUT WITH 7420 mm CURVED SWITCH AND BUILT-UP CROSSING.	

**COMPARATIVE STATEMENT OF PART DRAWINGS WITH DOG SPIKES/ROUND SPIKES AND RAIL SCREWS/PLATE SCREWS FOR SUB-ASSEMBLIES OF CHAPTER V VOL. I**

GAUGE	CROSSING	RAIL SECTION	ASSEMBLY DRAWING NUMBER	SWITCH						CROSSING											
				SLIDE CHAIR			TIE PLATE WITH ROUND SPIKES			TIE PLATE WITH PLATE SCREWS			SUB-ASSEMBLY DRAWING NUMBER			TIE PLATE WITH RAIL SCREWS					
				WITH ROUND SPIKES	WITH PLATE SCREWS	PAGE	DRG. NR	DRS. NR	PAGE	DRG. NR	PAGE	DRG. NR	PAGE	DRG. NR	PAGE	DRG. NR	PAGE	DRG. NR	PAGE		
B.G.	1 IN 8 1/2	52 kg	TA 20104	TA 20106	T 19629 & T 19629/A	T 31657(M)	T 15107	TA 20105	T 15009	T 15113	TSC 58	ANS: 8 ST. 182	T 3165(M)	TSC 50	T 15107	ANS: 7 ST. 182	TA 5268(M)	T 3164(M)	TSC 48 ST. 182	T 15110	ANS: 6 ST. 223
			TA 20106	TA 20107	T 19630 & T 19630/A	T 3167(M)	T 15108	TA 20111	T 15011	T 15122											
		TA 20110	TA 20112	T 19630 & T 19630/A	T 3165(M)	T 15107	TA 20112	T 15012	T 15123												
		TA 20148	TA 20149	T 19630 & T 19630/A	T 3167(M)	T 15108	TA 20140	T 15033	T 15132												
		TA 20171	TA 20172	T 19630 & T 19630/A	T 3165(M)	T 15107	TA 20124	T 15017	T 15119												
		TA 5268(M)	TA 5070(M)	T 19630 & T 19630/A	T 3167(M)	T 15108	TA 5272(M)	T 15038	T 15129												
	1 IN 16	90 R.	TA 5044(M)	TA 5272(M)	T 19629 & T 19630/A	T 3165(M)	T 15107	TA 20142	T 15038	T 15129											
			TA 20125	TA 20126	T 19630 & T 19630/A	T 3165(M)	T 15107	TA 20140	T 15033	T 15132											
		52 kg	TA 20141	TA 20143	T 19630 & T 19630/A	T 3165(M)	T 15108	TA 20140	T 15033	T 15132											
			TA 20138	TA 20139	T 19630 & T 19630/A	T 3165(M)	T 15107	TA 20140	T 15033	T 15132											
		90 R.	TA 20122	TA 20123	T 19630 & T 19630/A	T 3165(M)	T 15108	TA 20124	T 15017	T 15119											
			TA 20404	TA 20405	T 19631 & T 19631/A	T 15003	T 15112	TA 20406	T 15008	T 15119											
M.G.	1 IN 8 1/2	75 R.	TA 20451	TA 20452	T 19638 & T 19638/A	T 15010	T 15125	TA 20409	T 15009	T 15126											
			TA 20407	TA 20408	T 19638 & T 19638/A	T 15010	T 15125	TA 20409	T 15009	T 15126											
	60 R.	TA 20416	TA 20417	T 19638 & T 19638/A	T 15005	TSC 50	TA 20403	T 15004	T 15111												
		TA 20464	TA 20465	T 19631 & T 19631/A	T 15005	TSC 50	TA 20403	T 15004	T 15111												
	1 IN 12	75 R.	TA 20401	TA 20402	T 19631 & T 19631/A	T 15005	TSC 50	TA 20403	T 15004	T 15111											
			TA 20466	TA 20467	T 19638 & T 19638/A	T 15010	TSC 50	TA 20412	T 15018	T 15133											
1 IN 16	60 R.	TA 20410	TA 20411	T 19638 & T 19638/A	T 15010	TSC 50	TA 20415	T 15037	T 15160												

ASSEMBLIES & SUB-ASSEMBLIES OF CHAPTER VI TO BE MODIFIED FOR USE  
WITH RAIL SCREWS/PLATE SCREWS IN LIEU OF DOG SPIKES/ROUND SPIKES

		D E S C R I P T I O N	
GAUGE	RAIL SECTION	ASSEMBLY DRG. NUMBER	
	90 R.	TA 20146	11N 8½ DIAMOND CROSSINGS WITH SINGLE AND DOUBLE SLIPS.
	52kg	TA 20220	11N 8½ MOVABLE OVER-RIDING SWITCH DIAMONDS WITH SINGLE AND DOUBLE SLIPS.
B.G.	90 R.	TA 20136	11N 8½ MOVABLE OVER-RIDING SWITCH DIAMONDS WITH SINGLE AND DOUBLE SLIPS.
		TA 20131	11N 10 MOVABLE OVER-RIDING SWITCH DIAMONDS WITH SINGLE AND DOUBLE SLIPS.
		*TA 20238	11N 12 MOVABLE OVER-RIDING SWITCH DIAMONDS WITH SINGLE AND DOUBLE SLIPS.
	52kg	TA 20216	11N 12 MOVABLE OVER-RIDING SWITCH DIAMONDS WITH SINGLE AND DOUBLE SLIPS.
M.G.	60 R.	TA 20424	11N 8½ DIAMOND CROSSINGS WITH SINGLE AND DOUBLE SLIPS.
	75 R.	TA 20491	11N 12 MOVABLE OVER-RIDING SWITCH DIAMONDS WITH SINGLE AND DOUBLE SLIPS.

\* TA 20238 ALONG THEIR SUB-ASSEMBLIES & PARTS  
WILL BE INCORPORATED LATER ON IN CHAPTER III



**ASSEMBLIES & SUB-ASSEMBLIES OF CHAPTER VII TO BE MODIFIED FOR USE  
WITH RAIL SCREWS/PLATE SCREWS IN LIEU OF DOG SPIKES/ROUND SPIKES**

GAUGE	RAIL SECTION	ASSEMBLY DRG: NUMBER	DESCRIPTION
		TA 20150	1 IN 8½ SCISSORS CROSS-OVER (5180 mm TRACK CENTRES).
		TA 20158	1 IN 8½ SCISSORS CROSS-OVER (4725 mm TRACK CENTRES).
	90 R.	TA 20234	1 IN 8½ SCISSORS CROSS-OVER WITH 6400 mm CURVED SWITCHES (4725 mm TRACK CENTRES).
		TA 20163	1 IN 12 SCISSORS CROSS-OVER (5180 mm TRACK CENTRES).
		TA 20167	1 IN 12 SCISSORS CROSS-OVER (4725 mm TRACK CENTRES).
		TA 20235	1 IN 12 SCISSORS CROSS-OVER WITH 7730 mm CURVED SWITCHES (4725 mm TRACK CENTRES).
	B.G.	TA 20190	1 IN 8½ SCISSORS CROSS-OVER (5180 mm TRACK CENTRES).
		TA 20186	1 IN 8½ SCISSORS CROSS-OVER (4725 mm TRACK CENTRES).
	52 kg	TA 20227	1 IN 8½ SCISSORS CROSS-OVER WITH 6400 mm CURVED SWITCHES (4725 mm TRACK CENTRES).
		TA 20200	1 IN 12 SCISSORS CROSS-OVER (5180 mm TRACK CENTRES).
		TA 20204	1 IN 12 SCISSORS CROSS-OVER (4725 mm TRACK CENTRES).
		TA 20226	1 IN 12 SCISSORS CROSS-OVER WITH 7730 mm CURVED SWITCHES (4725 mm TRACK CENTRES).
		TA20442&TA20443	1 IN 8½ SCISSORS CROSS-OVER (4265 mm AND 3810 mm TRACK CENTRES).
	60 R.	TA 20430	1 IN 8½ SCISSORS CROSS-OVER (4420 mm TRACK CENTRES).
		TA 20436	1 IN 12 SCISSORS CROSS-OVER (4420 mm TRACK CENTRES).
		TA 20434	1 IN 8½ SCISSORS CROSS-OVER (4420 mm TRACK CENTRES).
		TA 20484	1 IN 8½ SCISSORS CROSS-OVER (4265 mm TRACK CENTRES).
	75 R.	TA 20488	1 IN 8½ SCISSORS CROSS-OVER WITH CURVED SWITCHES (4420 mm TRACK CENTRES).
		TA 20476	1 IN 12 SCISSORS CROSS-OVER (4420 mm TRACK CENTRES).
		TA 20486	1 IN 12 SCISSORS CROSS-OVER WITH PARTLY CURVED SWITCHES (4420 mm TRACK CENTRES).
		TA 20487	1 IN 12 SCISSORS CROSS-OVER WITH PARTLY CURVED SWITCHES (4265 mm TRACK CENTRES).
		TA 20480	1 IN 12 SCISSORS CROSS-OVER (4265 mm TRACK CENTRES).

COMPARATIVE STATEMENT OF PART DRAWINGS WITH DOG SPIKES/ROUND SPIKES  
AND RAIL SCREWS/PLATE SCREWS FOR SUB-ASSEMBLIES OF CHAPTER VII VOL. II

ASSEMBLY DRAWING NUMBER	RAIL SECTION	CROSSING	GAUGE	SUB-ASSEMBLIES																		
				MAIN ACUTE CROSSING				SCISSORS ACUTE CROSSING				OBTUSE CROSSING				SWITCH						
				TIE PLATE		TIE PLATE		TIE PLATE		TIE PLATE		TIE PLATE		TIE PLATE		SLIDE CHAIR		TIE PLATE				
SUB- ASSEMBLY DRAWING NUMBER	WITH DOG SPIKES DRAWING PAGE NR	WITH RAIL SCREWS DRAWING PAGE NR	SUB- ASSEMBLY DRAWING NUMBER	WITH DOG SPIKES DRAWING PAGE NR	WITH RAIL SCREWS DRAWING PAGE NR	SUB- ASSEMBLY DRAWING NUMBER	WITH DOG SPIKES DRAWING PAGE NR	WITH RAIL SCREWS DRAWING PAGE NR	SUB- ASSEMBLY DRAWING NUMBER	WITH DOG SPIKES DRAWING PAGE NR	WITH RAIL SCREWS DRAWING PAGE NR	SUB- ASSEMBLY DRAWING NUMBER	WITH DOG SPIKES DRAWING PAGE NR	WITH RAIL SCREWS DRAWING PAGE NR	WITH DRAWING NR & PAGE NR & PAGE	WITH DRAWING NR & PAGE NR & PAGE						
TA 20150		90°	B.G.	TA 20153	T15040 ST.1		TA 20151	T15040 ST.1	TA 20152	T15041		TA 20152	T15040 ST.1		TA 20112	T4930(M) T19630 & T19630(A) ANX. 6 T9C 68 ST. 18.2		TA 20112	T4930(M) T19630 & T19630(A) ANX. 6 T9C 68 ST. 18.2		TA 20112	T15108 ANX. 7 ST. 18.2
TA 20158				TA 20161	T15042 ST.3		TA 20159	T15042 ST.3	TA 20160	T15041		TA 20160	T15042 ST.3		TA 20149	T19630(A) ANX. 6 T9C 50 ST. 18.2		TA 20149	T19630(A) ANX. 6 T9C 50 ST. 18.2		TA 20149	T15108 ANX. 7 ST. 18.2
TA 20234				TA 20163	T15046 ST.1		TA 20164	T15046 ST.1	TA 20165	T15045		TA 20165	T15046 ST.1		TA 20163	T4930(M) T19630 & T19630(A) ANX. 6 T9C 68 ST. 18.2		TA 20163	T4930(M) T19630 & T19630(A) ANX. 6 T9C 68 ST. 18.2		TA 20163	T15108 ANX. 7 ST. 18.2
TA 20167				TA 20170	T15047 ST.4		TA 20168	T15047 ST.4	TA 20169	T15045		TA 20169	T15047 ST.4		TA 20167	T4930(M) T19630 & T19630(A) ANX. 6 T9C 68 ST. 18.2		TA 20167	T4930(M) T19630 & T19630(A) ANX. 6 T9C 68 ST. 18.2		TA 20167	T15108 ANX. 7 ST. 18.2
TA 20235				TA 20193	T15063 ST.1		TA 20194	T15063 ST.1	TA 20192	T15045		TA 20192	T15063 ST.1		TA 20190	T4930(M) T19630 & T19630(A) ANX. 6 T9C 68 ST. 18.2		TA 20190	T4930(M) T19630 & T19630(A) ANX. 6 T9C 68 ST. 18.2		TA 20190	T15108 ANX. 7 ST. 18.2
TA 20186		52 Kg		TA 20189	T15062 ST.2		TA 20187	T15062 ST.2	TA 20188	T15041		TA 20188	T15062 ST.2		TA 20186	T4930(M) T19630 & T19630(A) ANX. 6 T9C 68 ST. 18.2		TA 20186	T4930(M) T19630 & T19630(A) ANX. 6 T9C 68 ST. 18.2		TA 20186	T15107 ANX. 7 ST. 18.2
TA 20227				TA 20203	T15066 ST.1		TA 20201	T15066 ST.1	TA 20202	T15045		TA 20202	T15066 ST.1		TA 20197	T4930(M) T19630 & T19630(A) ANX. 6 T9C 50 ST. 18.2		TA 20197	T4930(M) T19630 & T19630(A) ANX. 6 T9C 50 ST. 18.2		TA 20197	T15107 ANX. 7 ST. 18.2
TA 20200				TA 20207	T15067 ST.2		TA 20205	T15067 ST.2	TA 20206	T15045		TA 20206	T15067 ST.2		TA 20200	T4930(M) T19630 & T19630(A) ANX. 6 T9C 50 ST. 18.2		TA 20200	T4930(M) T19630 & T19630(A) ANX. 6 T9C 50 ST. 18.2		TA 20200	T15107 ANX. 7 ST. 18.2
TA 20204				TA 20433	T15049 ST.1		TA 20431	T15050 ST.3	TA 20432	T15048		TA 20432	T15050 ST.3		TA 20172	T19506 & T19506(A) ANX. 6 T9C 68 ST. 18.2		TA 20172	T19506 & T19506(A) ANX. 6 T9C 68 ST. 18.2		TA 20172	T15125 ANX. 7 ST. 18.2
TA 20226				TA 20442	T15049 ST.1		TA 20440	T15056 ST.4	TA 20441	T15054		TA 20441	T15056 ST.4		TA 20402	T19506 & T19506(A) ANX. 6 T9C 68 ST. 18.2		TA 20402	T19506 & T19506(A) ANX. 6 T9C 68 ST. 18.2		TA 20402	T15125 ANX. 7 ST. 18.2
TA 20430		60°		TA 20443	T15049 ST.1		TA 20441	T15056 ST.4	TA 20435	T15053		TA 20435	T15056 ST.4		TA 20408	T19506 & T19506(A) ANX. 6 T9C 68 ST. 18.2		TA 20408	T19506 & T19506(A) ANX. 6 T9C 68 ST. 18.2		TA 20408	T15125 ANX. 7 ST. 18.2
TA 20443				TA 20437	T15052		TA 20435	T15053	TA 20436	T15051		TA 20436	T15053		TA 20405	T19506 & T19506(A) ANX. 6 T9C 68 ST. 18.2		TA 20405	T19506 & T19506(A) ANX. 6 T9C 68 ST. 18.2		TA 20405	T15125 ANX. 7 ST. 18.2
TA 20438				TA 20477	T15098		TA 20478	T15099	TA 20479	T15100		TA 20479	T15099		TA 20402	T19506 & T19506(A) ANX. 6 T9C 68 ST. 18.2		TA 20402	T19506 & T19506(A) ANX. 6 T9C 68 ST. 18.2		TA 20402	T15125 ANX. 7 ST. 18.2
TA 20434				TA 20481	T15098		TA 20481	T15098	TA 20482	T15100		TA 20482	T15098		TA 20402	T19506 & T19506(A) ANX. 6 T9C 68 ST. 18.2		TA 20402	T19506 & T19506(A) ANX. 6 T9C 68 ST. 18.2		TA 20402	T15125 ANX. 7 ST. 18.2
TA 20484		75°	M.G.	TA 20487	T15098		TA 20487	T15098	TA 20488	T15100		TA 20488	T15098		TA 20402	T19506 & T19506(A) ANX. 6 T9C 68 ST. 18.2		TA 20402	T19506 & T19506(A) ANX. 6 T9C 68 ST. 18.2		TA 20402	T15125 ANX. 7 ST. 18.2
TA 20488				TA 20489	T15098		TA 20489	T15098	TA 20490	T15100		TA 20490	T15098		TA 20402	T19506 & T19506(A) ANX. 6 T9C 68 ST. 18.2		TA 20402	T19506 & T19506(A) ANX. 6 T9C 68 ST. 18.2		TA 20402	T15125 ANX. 7 ST. 18.2

**ASSEMBLIES & SUB-ASSEMBLIES OF CHAPTER VIII TO BE MODIFIED FOR USE WITH RAIL SCREWS / PLATE SCREWS IN LIEU OF DOG SPIKES/ROUND SPIKES**

		D E S C R I P T I O N	
Gauge	RAIL SECTION	ASSEMBLY DRG. NUMBER	
B.G.	52 kg	TA 2 0 1 5 4	1 IN 8 1/2 SYMMETRICAL SPLITS AND 4725 m m O.R. SWITCH WITH L.H. SPECIAL X-ING FOR USE WITH SMAG DEAD END.
		TA 2 0 1 5 6	1 IN 8 1/2 SYMMETRICAL SPLITS AND 4725 m m O.R. SWITCH WITH R.H. SPECIAL X-ING FOR USE WITH SMAG DEAD END.
	90 R.	TA 2 0 2 4 3	1 IN 8 1/2 SYMMETRICAL SPLITS AND 6400 m m O.R. SWITCH (CURVED) WITH L.H. SPECIAL X-ING FOR USE WITH SMAG DEAD END.
		TA 2 0 2 4 5	1 IN 8 1/2 SYMMETRICAL SPLITS AND 6400 m m O.R. SWITCH (CURVED) WITH R.H. SPECIAL X-ING FOR USE WITH SMAG DEAD END.
		TA 2 0 1 8 0	1 IN 8 1/2 SYMMETRICAL SPLITS AND 4725 m m O.R. SWITCH WITH L.H. SPECIAL X-ING FOR USE WITH SMAG DEAD END.
		TA 2 0 1 8 2	1 IN 8 1/2 SYMMETRICAL SPLITS AND 4725 m m O.R. SWITCH WITH R.H. SPECIAL X-ING FOR USE WITH SMAG DEAD END.
		TA 2 0 2 4 0	1 IN 8 1/2 SYMMETRICAL SPLITS AND 6400 m m O.R. SWITCH (CURVED) WITH L.H. SPECIAL X-ING FOR USE WITH SMAG DEAD END.
		TA 2 0 2 4 2	1 IN 8 1/2 SYMMETRICAL SPLITS AND 6400 m m O.R. SWITCH (CURVED) WITH R.H. SPECIAL X-ING FOR USE WITH SMAG DEAD END.
		TA 2 0 2 3 2	1 IN 12 SYMMETRICAL SPLITS AND 7730 m m O.R. SWITCH (CURVED).
		TA 2 0 2 2 4	1 IN 16 SYMMETRICAL SPLITS AND 9750 m m O.R. SWITCH (CURVED).
M.G.	90 R.	TA 2 0 1 7 8	1 IN 16 SYMMETRICAL SPLITS AND 9750 m m O.R. SWITCH (CURVED).
		TA 2 0 4 1 8	1 IN 8 1/2 SYMMETRICAL SPLITS AND 4115 m m O.R. SWITCH WITH L.H. SPECIAL X-ING FOR USE WITH SMAG DEAD END.
	60 R.	TA 2 0 4 2 0	1 IN 8 1/2 SYMMETRICAL SPLITS AND 4115 m m O.R. SWITCH WITH R.H. SPECIAL X-ING FOR USE WITH SMAG DEAD END.
		TA 2 0 4 4 7	1 IN 8 1/2 SYMMETRICAL SPLITS AND 4115 m m O.R. SWITCH WITH L.H. SPECIAL X-ING FOR USE WITH SMAG DEAD END.
		TA 2 0 4 4 9	1 IN 8 1/2 SYMMETRICAL SPLITS AND 4115 m m O.R. SWITCH WITH R.H. SPECIAL X-ING FOR USE WITH SMAG DEAD END.
		TA 2 0 2 3 0	1 IN 8 1/2 LEFT TURNOUT WITH SPRING X-ING AND 4725 m m O.R. SWITCH.
		TA 2 0 1 9 8	1 IN 8 1/2 LEFT TURNOUT WITH SPRING X-ING AND 4725 m m O.R. SWITCH.
		TA 2 0 2 0 8	1 IN 8 1/2 RIGHT TURNOUT WITH SPRING X-ING AND 4725 m m O.R. SWITCH.
		TA 2 0 2 2 2	1 IN 12 LEFT TURNOUT WITH SPRING X-ING AND 6400 m m O.R. SWITCH.
		TA 2 0 1 8 4	1 IN 12 LEFT TURNOUT WITH SPRING X-ING AND 6400 m m O.R. SWITCH.
M.G.	75 R.	TA 2 0 1 9 4	1 IN 12 RIGHT TURNOUT WITH SPRING X-ING AND 6400 m m O.R. SWITCH.
		TA 2 0 4 6 8	1 IN 12 LEFT TURNOUT WITH SPRING X-ING AND 5485 m m O.R. SWITCH.
	90 R.	TA 2 0 4 7 0	1 IN 12 RIGHT TURNOUT WITH SPRING X-ING AND 5485 m m O.R. SWITCH.
		TA 2 0 1 1 3	1 IN 12 L.H. TURNOUT AND 6400 m m O.R. SWITCH MIXED GAUGE STRAIGHT B.G. & M.G.
B.G.	90 R.	TA 2 0 1 1 5	1 IN 12 R.H. TURNOUT AND 6400 m m O.R. SWITCH MIXED GAUGE STRAIGHT B.G. & M.G.
		TA 2 0 1 7 3	1 IN 12 L.A.B.R.H. DOUBLE TURNOUT WITH 4725 m m O.R. SWITCH.

COMPARATIVE STATEMENT OF PART DRAWINGS WITH DOG SPIKES/ROUND SPIKES AND RAIL SCREWS/PLATE SCREWS FOR SUB-ASSEMBLIES OF CHAPTER VIII VOL. II

HEEL BEARING PLATES  
SPECIAL FLAT BEARING PLATES

DOUBLE TURN-OUT	GAUGE	CROSSING	RAIL SECTION	SLIDE CHAIR				SWITCH				CROSSING															
				ASSEMBLY DRAWING NUMBER	WITH ROUND SPIKES DRAWING NO.	WITH PLATE SCREWS DRAWING NO.	PAGE	WITH ROUND SPIKES DRAWING NO.	WITH PLATE SCREWS DRAWING NO.	PAGE	WITH ROUND SPIKES DRAWING NO.	WITH PLATE SCREWS DRAWING NO.	PAGE	WITH ROUND SPIKES DRAWING NO.	WITH PLATE SCREWS DRAWING NO.	PAGE											
B.G.	M.G.	/IN 8 1/2	52R	TA 20154	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182	T 3165(M)	T 15107	TA 20155	TA 20157	ANK 7 ST 182	T 15107	TA 20155	TA 20157	ANK 7 ST 182	T 15107	TA 20155	TA 20157	ANK 7 ST 182	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED				
				TA 20156	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182	-	-	-	-	TA 20155	TA 20157	ANK 7 ST 182	-	TA 20155	TA 20157	ANK 7 ST 182	-	TA 20155	TA 20157	ANK 7 ST 182	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED		
				TA 20245	-	-	-	-	-	-	-	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED	
				TA 20180	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182	T 3167(M)	T 15106	TA 20181	TA 20183	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED	
				TA 20240	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182	T 3167(M)	T 15106	TA 20181	TA 20183	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED	
				TA 20242	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182	T 3167(M)	T 15106	TA 20181	TA 20183	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED	
				TA 20232	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182	T 3167(M)	T 15106	TA 20181	TA 20183	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED	
				TA 20224	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182	T 3167(M)	T 15106	TA 20181	TA 20183	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED	
				TA 20178	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182	T 3167(M)	T 15106	TA 20181	TA 20183	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED	
				TA 20416	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182	T 3167(M)	T 15106	TA 20181	TA 20183	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED	
				TA 20420	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182	T 3167(M)	T 15106	TA 20181	TA 20183	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	TA 20181	TA 20183	-	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED	
				B.G.	M.G.	/IN 8 1/2	60R	TA 20449	T 7350 & T 7350/A	T 19638 & T 19638/A	ANK 6 ST 182	T 15010	T 15125	TA 20448	TA 20450	ANK 7 ST 182	T 15107	TA 20448	TA 20450	ANK 7 ST 182	T 15107	TA 20448	TA 20450	ANK 7 ST 182	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED
TA 20230	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182					T 3165(M)	T 15107	TA 20231	TA 20233	ANK 7 ST 182	TA 20231	TA 20233	ANK 7 ST 182	TA 20231	TA 20233	ANK 7 ST 182	TA 20231	TA 20233	ANK 7 ST 182	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED			
TA 20198	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182					T 3167(M)	T 15107	TA 20199	TA 20201	ANK 7 ST 182	TA 20199	TA 20201	ANK 7 ST 182	TA 20199	TA 20201	ANK 7 ST 182	TA 20199	TA 20201	ANK 7 ST 182	TA 20199	TA 20201	ANK 7 ST 182	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED
TA 20208	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182					T 3167(M)	T 15107	TA 20209	TA 20211	ANK 7 ST 182	TA 20209	TA 20211	ANK 7 ST 182	TA 20209	TA 20211	ANK 7 ST 182	TA 20209	TA 20211	ANK 7 ST 182	TA 20209	TA 20211	ANK 7 ST 182	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED
TA 20222	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182					T 3167(M)	T 15107	TA 20223	TA 20225	ANK 7 ST 182	TA 20223	TA 20225	ANK 7 ST 182	TA 20223	TA 20225	ANK 7 ST 182	TA 20223	TA 20225	ANK 7 ST 182	TA 20223	TA 20225	ANK 7 ST 182	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED
TA 20184	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182					T 3167(M)	T 15107	TA 20185	TA 20187	ANK 7 ST 182	TA 20185	TA 20187	ANK 7 ST 182	TA 20185	TA 20187	ANK 7 ST 182	TA 20185	TA 20187	ANK 7 ST 182	TA 20185	TA 20187	ANK 7 ST 182	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED
TA 20194	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182					T 3167(M)	T 15107	TA 20195	TA 20197	ANK 7 ST 182	TA 20195	TA 20197	ANK 7 ST 182	TA 20195	TA 20197	ANK 7 ST 182	TA 20195	TA 20197	ANK 7 ST 182	TA 20195	TA 20197	ANK 7 ST 182	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED
TA 20468	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182					T 3167(M)	T 15107	TA 20469	TA 20471	ANK 7 ST 182	TA 20469	TA 20471	ANK 7 ST 182	TA 20469	TA 20471	ANK 7 ST 182	TA 20469	TA 20471	ANK 7 ST 182	TA 20469	TA 20471	ANK 7 ST 182	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED
TA 20470	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182					T 3167(M)	T 15107	TA 20472	TA 20474	ANK 7 ST 182	TA 20472	TA 20474	ANK 7 ST 182	TA 20472	TA 20474	ANK 7 ST 182	TA 20472	TA 20474	ANK 7 ST 182	TA 20472	TA 20474	ANK 7 ST 182	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED
TA 20113	-	-	-					-	-	-	-	-	TA 20114	TA 20115	-	TA 20114	TA 20115	-	TA 20114	TA 20115	-	TA 20114	TA 20115	-	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED
TA 20118	T 4930(M) & T 4930(M) ST 182	T 19638 & T 19638/A	ANK 6 ST 182					T 3167(M)	T 15016	TA 20119	TA 20121	ANK 7 ST 182	TA 20119	TA 20121	ANK 7 ST 182	TA 20119	TA 20121	ANK 7 ST 182	TA 20119	TA 20121	ANK 7 ST 182	TA 20119	TA 20121	ANK 7 ST 182	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED
TA 20174	-	-	-					-	-	-	-	-	TA 20177	TA 20178	-	TA 20177	TA 20178	-	TA 20177	TA 20178	-	TA 20177	TA 20178	-	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED
TA 20173	-	-	-	-	-	-	-	-	TA 20176	TA 20177	-	TA 20176	TA 20177	-	TA 20176	TA 20177	-	TA 20176	TA 20177	-	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED				
TA 20175	-	-	-	-	-	-	-	-	TA 20176	TA 20177	-	TA 20176	TA 20177	-	TA 20176	TA 20177	-	TA 20176	TA 20177	-	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED				

SYMMETRICAL SPLITS

SPRING CROSSING

MIXED GAUGE

DOUBLE TURN-OUT



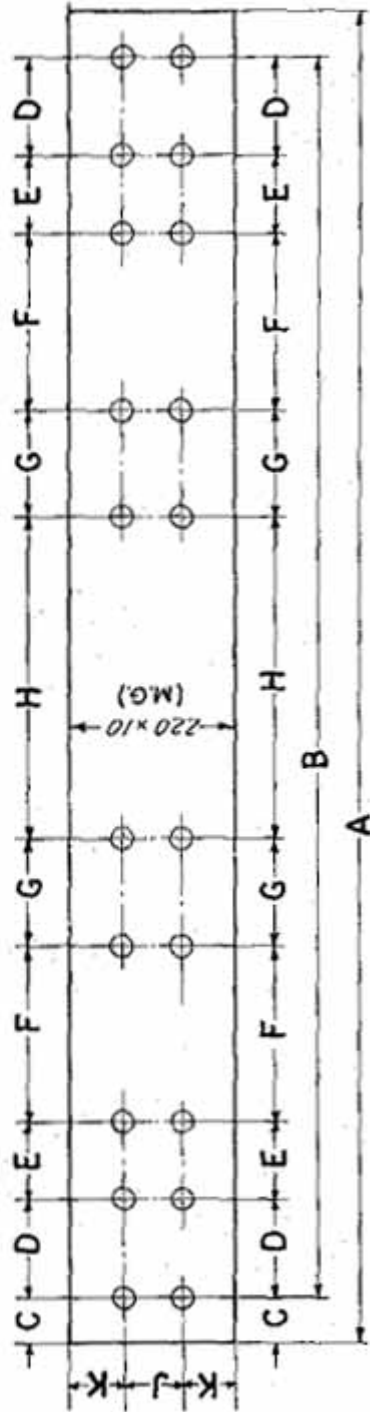
**COMPARATIVE STATEMENT OF ORDINARY AND INSULATED TIE PLATES WITH DOG SPIKES/ROUND SPIKES AND WITH RAIL SCREWS / PLATE SCREWS**

SUB-ASSEMBLY	CHAPTERS	GAUGE	RAIL SECTION	ORDINARY TIE PLATES			INSULATED TIE PLATES			
				DRAWING NO	PAGE NO	WITH DOG / ROUND SPIKES WITH RAIL / PLATE SCREWS	DRAWING NO	PAGE NO	WITH DOG / ROUND SPIKES WITH RAIL / PLATE SCREWS	
SWITCHES	V, VI, VII & VIII	B. G.	52 kg 90 R.	T 3165 (M)	T 15107	T 15081 & T 15082	T 15081 & T 15082	T 15081 & T 15082		
		M. G.	75 R.	T 15005	T 15108	T 15019 & T 15020	T 15019 & T 15020	T 15019 & T 15020	T 15019 & T 15020	
			60 R.	T 15010	T 15112	T 15023 & T 15024	T 15023 & T 15024	T 15023 & T 15024	T 15023 & T 15024	
		INTERMEDIATE PORTION FOR CHAPTER VI	B. G.	52 kg	T 15096	T 15125	T 15025 & T 15026	T 15025 & T 15026	T 15025 & T 15026	
	M. G.		90 R.	T 15091						
			52 kg	T 15026						
			60 R.	T 15043						
	FOR ACUTE CROSSINGS		M. G.	75 R.	T 15038	T 15127	T 15078 TO T 15080	T 15078 TO T 15080	T 15078 TO T 15080	
				52 kg	T 15003	T 15129				
	CROSSINGS	FOR ACUTE CROSSINGS	B. G.	90 R.	T 15017	T 15110	T 15083 TO T 15085	T 15083 TO T 15085	T 15083 TO T 15085	
75 R.				T 15004	T 15113	T 15086 TO T 15088	T 15086 TO T 15088	T 15086 TO T 15088		
M. G.			60 R.	T 15009	T 15132					
			90 R.	T 15011	T 15109	T 15070 TO T 15072	T 15070 TO T 15072	T 15070 TO T 15072	T 15070 TO T 15072	
FOR OBTUSE CROSSING & SLIPS		B. G.	90 R.	T 15030	T 15122	T 15073 TO T 15075	T 15073 TO T 15075	T 15073 TO T 15075		
			52 kg	T 15009	T 15126					
		M. G.	60 R.	T 15039						
			75 R.	T 15095						
			90 R.	T 15029						
			52 kg	T 15091						

NOTE- FOR THE PLATES TO BE USED IN RELEVANT SUB-ASSEMBLIES, INDEX SHEETS OF EACH CHAPTER MENTIONED MAY BE REFERRED TO.

# TYPICAL CROSSING TIE PLATES

(FOR 1 IN 8 1/2 DIAMOND CROSSINGS)

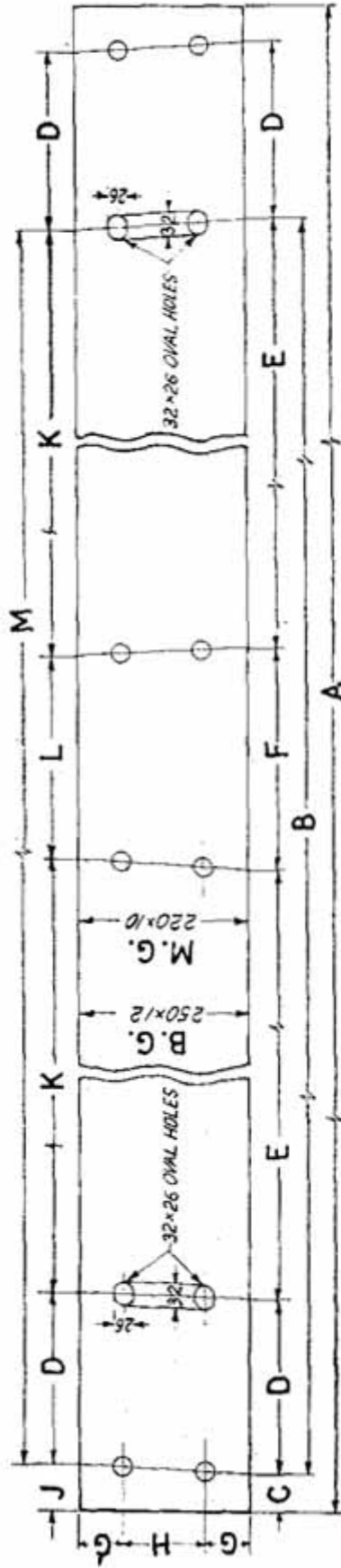


NOTE: ALL HOLES ARE 26 mm DIA.

TABLE OF DIMENSIONS

RAIL SECTION	DRAWING NUMBER	GAUGE	DIMENSIONS (mm)									
			A	B	C	D	E	F	G	H	J	K
60 R.	T 15128	M. G.	1800	1678	60	133	105	239	144	436	80	70

TYPICAL CROSSING TIE PLATES

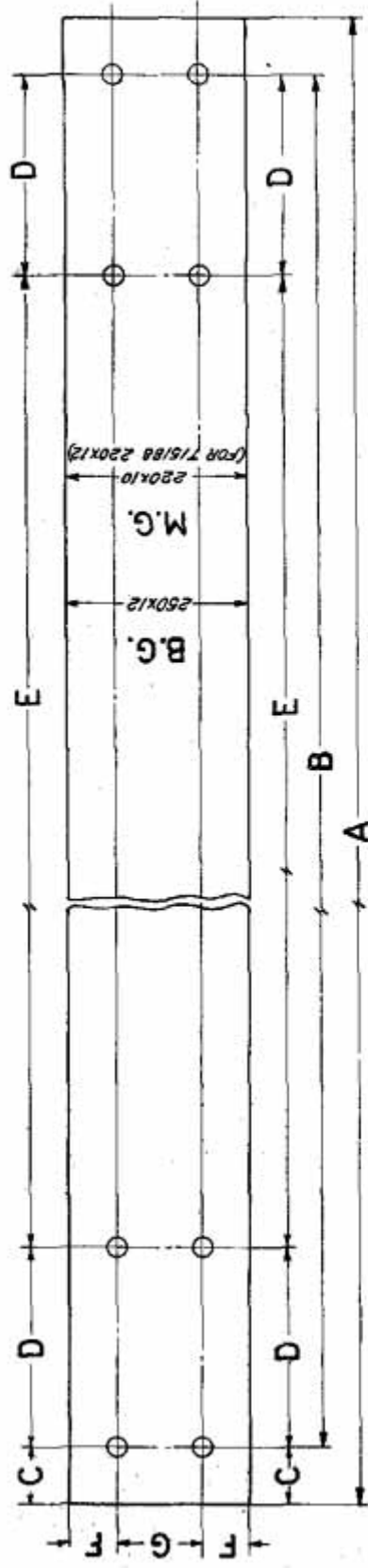


NOTE :- ALL HOLES ARE 26 mm DIA: EXCEPT WHERE OTHERWISE SHOWN.

**PART NUMBERS & MAIN DIMENSIONS**

RAIL SECTION	PART NUMBER	FOR CROSSING	GAUGE	DIMENSIONS (mm.)												
				A	B	C	D	E	F	G	H	J	K	L	M	
52 Kg	T 15113	1 IN 6 1/2	B.G.	3820	3371	90	268	1364	375	65	120	105	1364	346	3342	
90 R.	T 15122	1 IN 8 1/2	B.G.	3810	3360.5	86	267.5	1364.5	375	65	120	101	1364.5	344	3340.5	
52 Kg	T 15110	1 IN 12	B.G.	3810	3358	91	268	1364	362	65	120	101	1364	341	3337	
90 R.	T 15109	1 IN 12	B.G.	3810	3357	91	267.5	1364.5	360.5	65	120	101	1364.5	339.5	3336	
52 Kg	T 15129	1 IN 16	B.G.	3800	3318	91	268	1364	354	65	120	98.5	1364	339	3603	
90 R.	T 15132	1 IN 16	B.G.	3810	3348.5	97	267.5	1364.5	352	65	120	105	1364.5	336.5	3333	
.75 R.	T 15119	1 IN 6 1/2	M.G.	2450	2012	95	246	713	340	75	70	108	713	314	1986	
60 R.	T 15126	1 IN 8 1/2	M.G.	2440	2010	101	228	731	320	70	80	114	731	294.5	1984.5	
75 R.	T 15111	1 IN 12	M.G.	2440	2001	96	246	713	329	75	70	105	713	311	1985	
60 R.	T 15133	1 IN 12	M.G.	2440	1999.5	106	228	731	309.5	70	80	115	731	291	1981	
60 R.	T 15180	1 IN 16	M.G.	2440	1993	109	228	731	303	70	80	116	731	289	1979	

**TYPICAL TIE PLATES**  
(OBTUSE CROSSING FOR SCISSORS)



NOTE:- ALL HOLES ARE 26 mm DIA:

TABLE OF DIMENSIONS

RAIL SECTION	DRAWING NUMBER	CROSSING	GAUGE	D I M E N S I O N S (mm)						
				A	B	C	D	E	F	G
52 Kg 90R.	7/5/82		B.G.	2090	1930	80	2865	1357	65	120
75R. 60R.	7/5/83	1 IN 4 1/4	M.G.	1930	1226	50	260	706	70	80
52 Kg 90R.			B.G.							
75R. 60R.	7/5/88	1 IN 6	M.G.	1320	1220	50	257	706	70	80



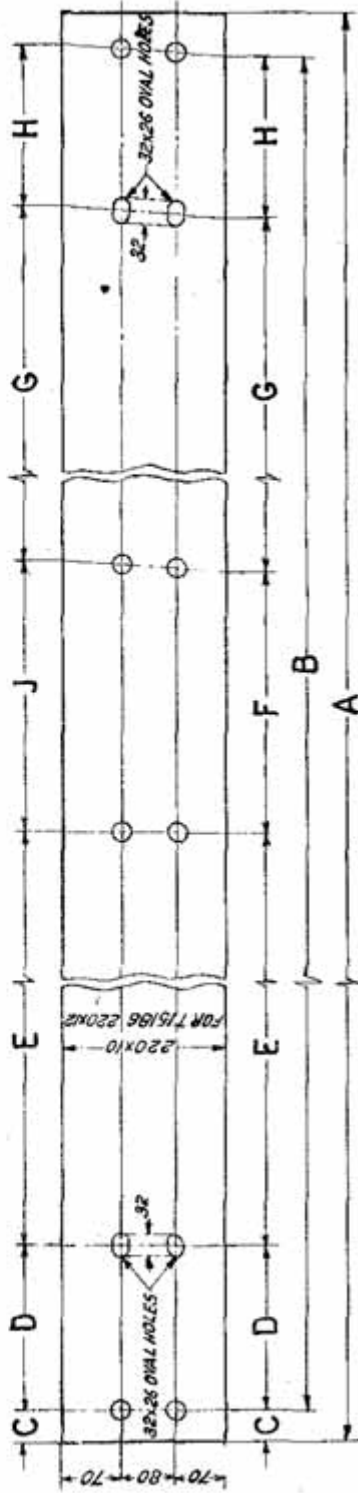






# TYPICAL TIE PLATES

(ACUTE CROSSING FOR SCISSORS  
4420m TRACK CENTRES M.G.)

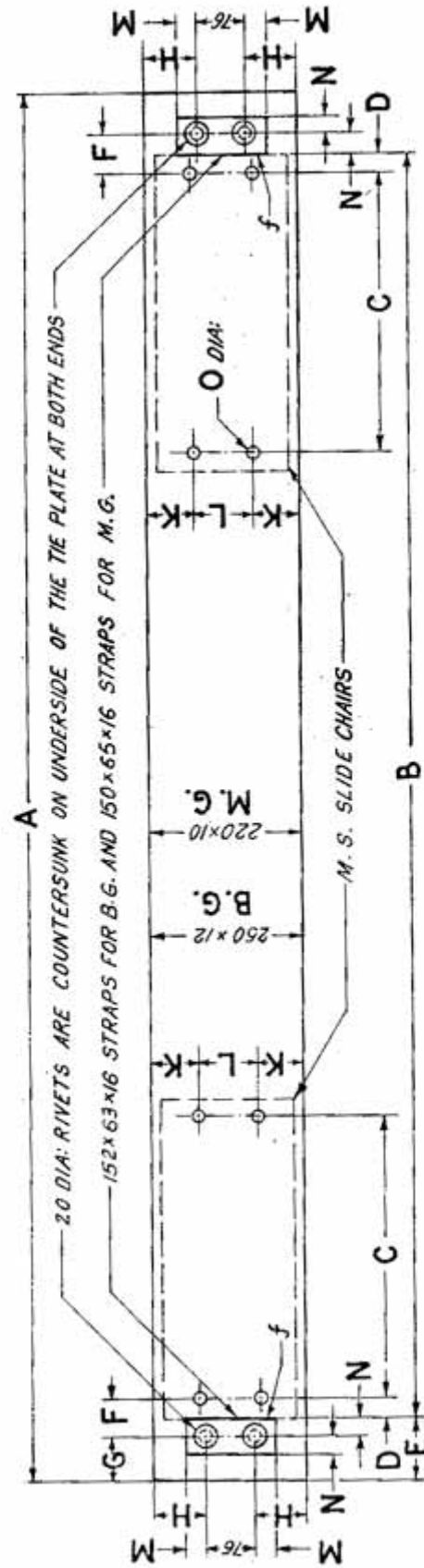


NOTE: ALL HOLES ARE 26mm DIA. EXCEPT WHERE OTHERWISE SHOWN.

TABLE OF DIMENSIONS

RAIL SECTION	DRAWING NUMBER	CROSSING	DIMENSIONS (mm)									
			A	B	C	D	E	F	G	H	J	
75R.	T/15184	1/IN 8 1/2	2370	2234	55	246	713	314	715	246	340	
75R.	T/15186	1/IN 12	2360	2233	55	246	713	311.5	715.5	247	330	

# TYPICAL SWITCH TIE PLATES



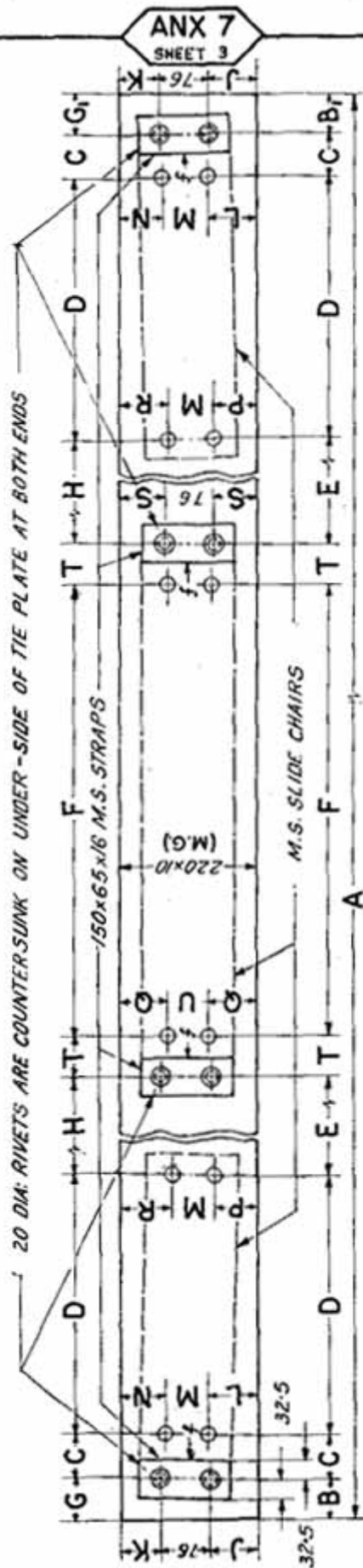
NOTE:— MACHINED SURFACES ARE SHOWN THUS ..... f

PART NUMBERS & MAIN DIMENSIONS

RAIL SECTION	GAUGE	PART NUMBER	DIMENSIONS (in mm)												
			A	B	C	D	E	F	G	H	K	L	M	N	O
52 kg	B.G.	T 15107	2440	2221	485	38	110	69.5	78.5	87	75	100	38	31.5	23
90 R.	B.G.	T 15108	2440	2219	485	38	110	69.5	78.5	87	75	100	38	31.5	23
75 R.	M.G.	T 15112	1690	1551	448	41	70	73.5	37.5	72	76	70	37	32.5	22
60 R.	M.G.	T 15125	1690	1490	423	39	100	71.5	67.5	72	75	70	37	32.5	22

# SWITCH TIE PLATES

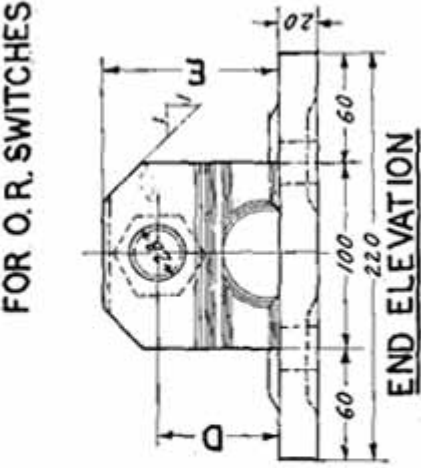
(FOR SINGLE & DOUBLE SLIPS)



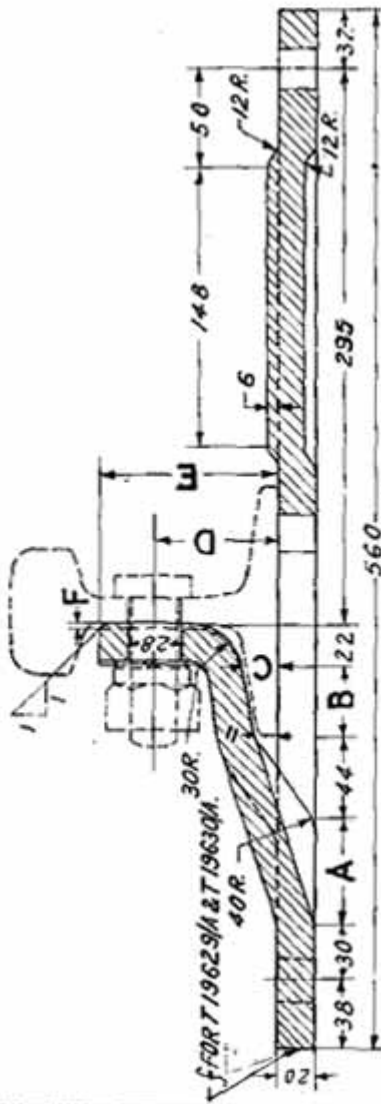
NOTE: ALL HOLES ARE 22mm DIA. EXCEPT WHERE OTHERWISE SHOWN.  
MACHINED SURFACES SHOWN THUS



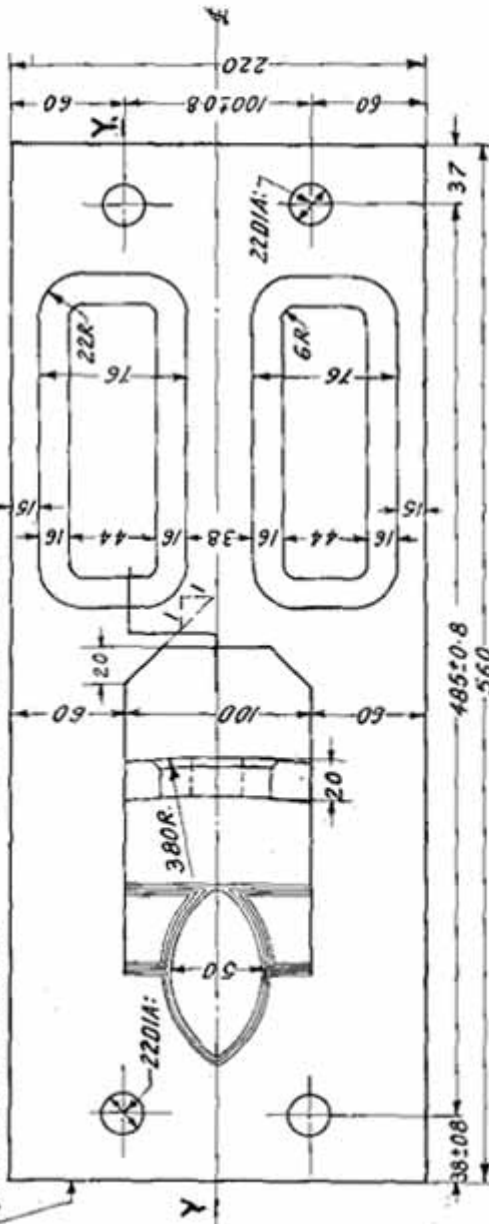
**TYPICAL SLIDE CHAIRS**  
FOR O. R. SWITCHES



**END ELEVATION**



**SECTION ON Y. Y.**



**PLAN**

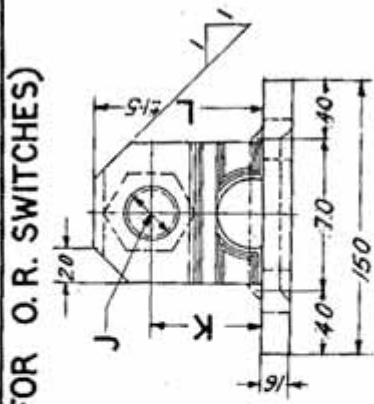
NOTE: MACHINED SURFACES SHOWN THUS *f*

PART NUMBERS & MAIN DIMENSIONS

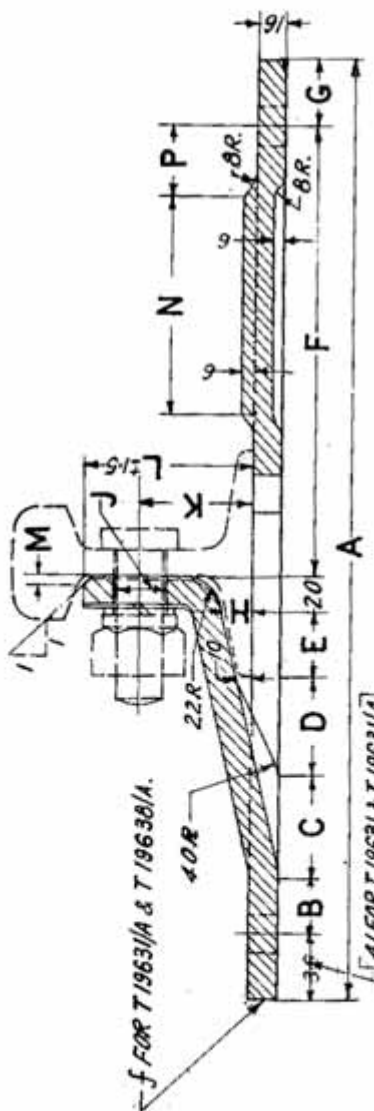
RAIL SECTION	GAUGE	PART NUMBER	DIMENSIONS (mm)					
			A	B	C	D	E	F
52kg	B.G.	T-19629 & T-19629/A	56	38	220	73	100	6
90R.	B.G.	T-19630 & T-19630/A	55	39	175	66	95	3



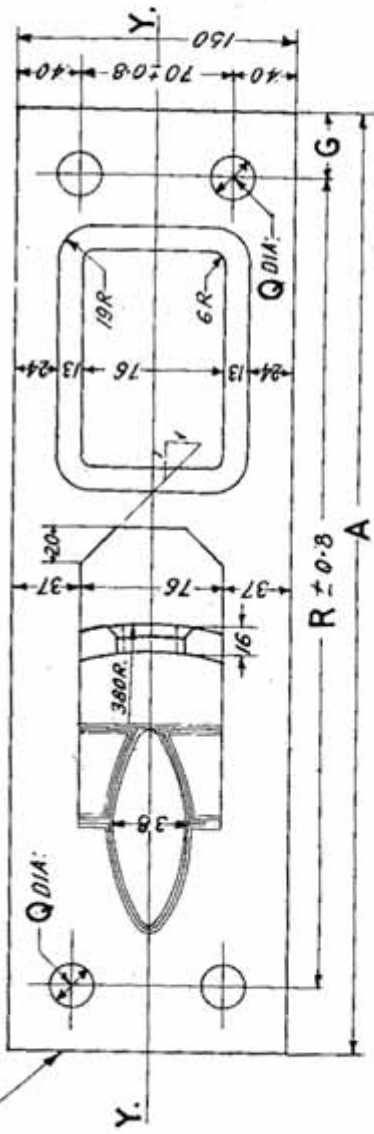
**TYPICAL SLIDE CHAIRS**  
(FOR O. R. SWITCHES)



**END ELEVATION**



**SECTION ON Y. Y.**



**PLAN**

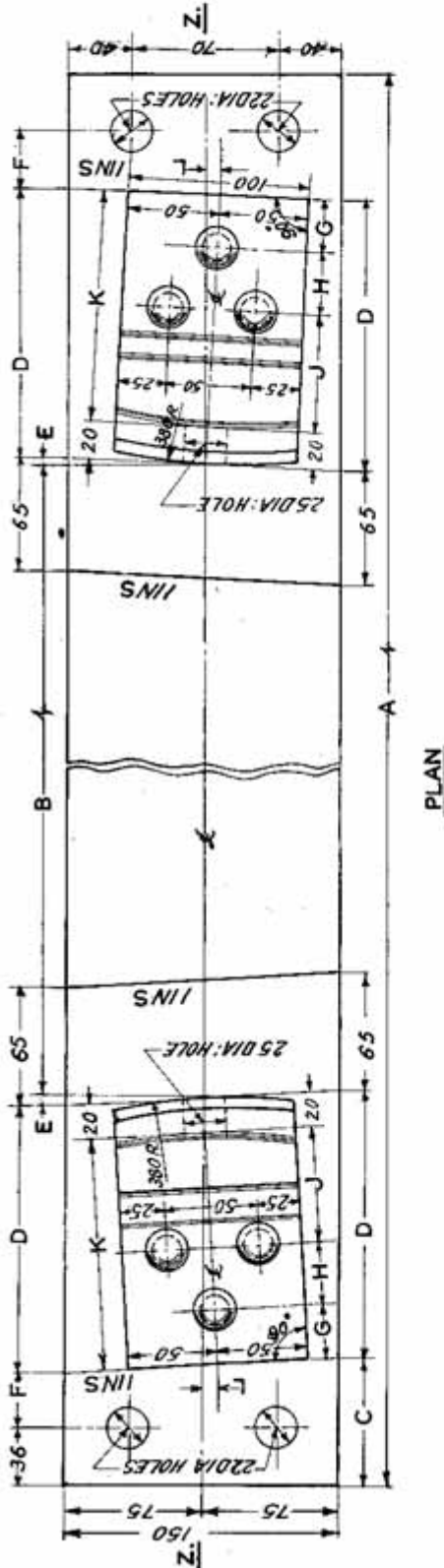
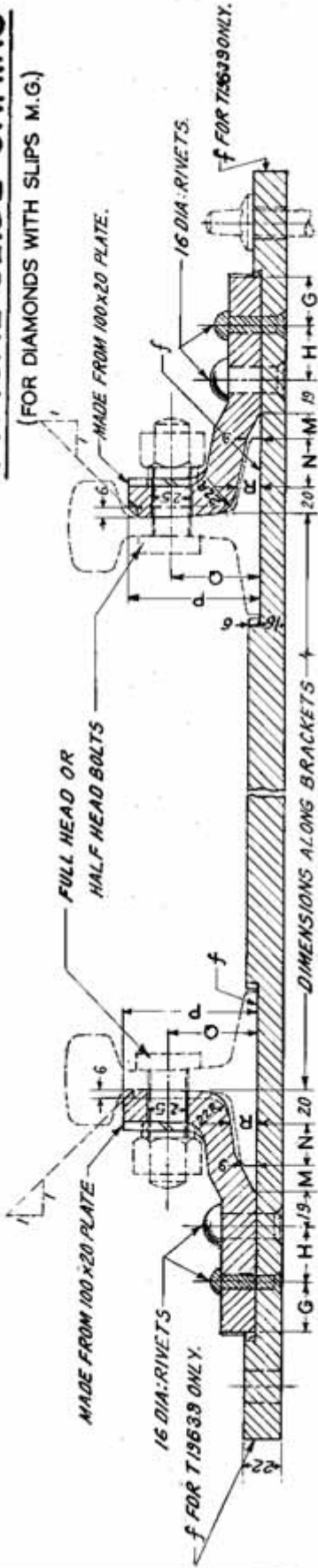
NOTE - MACHINED SURFACES SHOWN THUS.....f

PART NUMBERS & MAIN DIMENSIONS

RAIL SECTION	GAUGE	PART NUMBER	D I M E N S I O N S															
			A	B	C	D	E	F	G	H.	J	K	L	M	N	P	Q	R
75 R.	M.G.	T/19631 & T/19631/A	530	30	56	53	35	254	41	16	28	60	90	5	118	50	22	448
60 R.	M.G.	T/19638 & T/19638/A	500	25	50	44	30	254	38	15	25	53.5	80	6	125	50	22	423

# TYPICAL SLIDE CHAIRS

(FOR DIAMONDS WITH SLIPS M.G.)



NOTE- MACHINED SURFACES SHOWN THUS -----f

TABLE OF DIMENSIONS

RAIL SECTION	CROSSING	DRAWING NUMBER	DIMENSIONS (in. mm)																
			A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
60 R.	11N 8 1/2	T 19639	805.5	354.5	80	150	4.5	35	30	35	65	130	9	16	30	80	53.5	14	17
60 R.	11N 8 1/2	T 19640	880	420	80	150	4.5	35	30	35	65	130	9	16	30	80	53.5	14	17
60 R.	11N 8 1/2	T 19641	930	476	80	150	4.5	35	30	35	65	130	9	16	30	80	53.5	14	17
60 R.	11N 8 1/2	T 19642	990	539	80	150	4.5	35	30	35	65	130	9	16	30	80	53.5	14	17