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# Indian Railway Standard Track Manual

(Metric)

(Volume II)

Chapter VII to XII  
&  
Annexure to Volume II

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## PREFACE

Volume I of the IRS Track Manual was issued in 1980 and included six chapters I to VI, on-Rails and fastenings; Sleeper fastenings; Cast iron Sleepers; Steel trough sleepers; Turnouts; Diamonds with and without slips. In addition, a list of metric track parts which can be substituted for FPS track parts was also included.

The present Volume II to the Indian Railway Standard Track Manual (metric) comprises of six Chapters VII to XII and an Annexure. The Chapters cover Scissors and crossovers; Special layouts; Turnouts with CMS crossings; Track tools and Miscellaneous drawings; Track formulae and the Prestressed concrete sleepers.

The track tools for which the drawings and specifications have been adopted by Indian Railways, have been tabulated in the concerned Chapter X.

The necessity to add an Annexure to the Volume II was felt as the Railway Board have decided to switch over to the use of rail screws and plate screws in preference to dog spikes and round spikes on Indian Railways. The layouts with CMS crossings included in this Manual are with rail/plate screws only. New drawings of track assemblies are being prepared with rail screws and plate screws. The work of modifying the drawings using dog spikes and round spikes included in Chapters V to VIII is in progress and its completion may take some time. It should also be appreciated that while modifying assemblies, only certain parts viz., bearing plates, tie plates, slide chairs etc. are changed; other parts are not affected. As such it should be sufficient to give tables showing the old parts with dog spikes or round spikes and the new corresponding parts with rail or plate screws alongside the assemblies and sub-assemblies where they are used. While modifying, certain drawings have been completely changed or altogether new drawings added, wherever necessary. Such drawings have also been included in this Annexure.

A chapter on Prestressed concrete sleepers has been added in view of the importance these sleepers have gained over the recent years. A large number of factories have started manufacturing these sleepers and the field staff need information about their dimensions and part numbers. The designs included in this Chapter are those which are most commonly used on the broad gauge track.

The size of the Manual and its loose leaf feature have been retained as in Volume I to facilitate additional pages to be added or replacements made subsequently, if necessary. Separate content pages before each Chapter shall facilitate quick reference. Brief notes given before each Chapter are meant to make the Manual more useful, especially for those who are not sufficiently familiar with the special features of the drawings included.

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### CHAPTER VII—Scissors and Ordinary Crossovers (SX)

Brief notes on scissors and ordinary crossovers; tables of assemblies, sub-assemblies and parts; main dimensions of BG scissors crossovers at 5180 mm and 4725 mm track centres and for MG at 4420 mm, 4265 mm and 3810 mm track centres; main dimensions of left hand crossovers for BG at 4725 mm and 4265 mm track centres and for MG at 4265 mm track centres; length of rails for scissors and left hand crossovers for BG and MG; typical 1 in  $8\frac{1}{2}$ , 1 in  $4\frac{1}{4}$ , 1 in 12 and 1 in 6 crossings for scissors crossovers at 5180 mm and 4725 mm track centres for BG and 4420 mm, 4265 mm and 3810 mm track centres for MG; typical tapered check rails and Vee check rails for BG acute crossings; typical check rails for BG & MG obtuse crossings; typical tie plates for BG & MG acute and obtuse crossings.

### CHAPTER VIII—Special Layouts (SL)

Brief notes on special layouts; tables of assemblies, sub-assemblies and parts; main dimensions of symmetrical splits, turnouts with spring crossings; BG-MG mixed gauge turnouts and BG double turnout; main dimensions for setting out special layouts and their rail lengths; offsets for setting out special layouts; typical left hand and right hand 1 in  $8\frac{1}{2}$  special crossings for use with snag dead end BG&MG; typical left hand and right hand 1 in  $8\frac{1}{2}$  and 1 in 12 spring crossings for BG and 1 in 12 crossing for MG; typical left hand and right hand 1 in 12 crossing for BG-MG mixed gauge; typical left hand and right hand 1 in 12 MG crossing for BG-MG mixed gauge; typical left hand and right hand 1 in 14·07 switch crossing for BG-MG mixed gauge; typical 1 in 6 and 1 in  $8\frac{1}{2}$  crossing of double turnout BG; typical curved switch for 1 in  $8\frac{1}{2}$  and 1 in 12 symmetrical splits BG; typical curved switch for 1 in 16 symmetrical splits on steel and wooden sleepers BG; typical long switch for BG-MG mixed gauge; typical short switch for double turnout BG; typical right

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hand short switch for double turnout BG; typical check rails, pivot blocks, fishplates for use with pivot blocks, hold down brackets, keeper plates, 27 mm dia special bolts and 18 mm dia CSK head square neck bolts for left hand and right hand spring crossings; typical tie plates for switches and crossings; typical slide chairs for special layouts; typical heel bearing plates; special flat bearing plates, M.S. stop, M.S. brackets; leading and following stretcher bars for BG-MG mixed gauge turnouts.

### **CHAPTER IX—Turnouts, Switches and Cast Manganese Steel Crossings (TSCA)**

Brief notes; tables of assemblies, sub-assemblies and parts; main dimensions of BG and MG turnouts with CMS crossings; main dimensions for setting out turnouts, their offsets and rail lengths; typical 1 in  $8\frac{1}{2}$ ; 1 in 12 and 1 in 16 CMS crossings for BG & MG; typical curved switch for 1 in 16 high speed BG turnout; typical curved switch for 1 in 16 MG turnout; typical tie plates for BG and MG crossings; typical leading and following stretcher bars (ordinary) for BG curved switches; M.S. brackets for stretcher bars; typical check rails MG.

### **CHAPTER X—Track Tools, and Miscellaneous Drawings (TMC)**

Brief notes; tables of track tool drawings PART 'A' and miscellaneous drawings PART 'B'.

#### **Part 'A'**

Non-infringing track jacks, solid box spanners, rail gauges; spirit levels; level-cum-gauge.

#### **Part 'B'**

Expansion joints for long welded rails BG & MG; glued insulated rail joints BG & MG; visibility test objects; 15 tonne dip lorry; point screw clamps; spring point levers—self reversing (still handle); arrangement for clamping loose heel BG switches in open position.

**CHAPTER XI—Track Formulae (TF)**

Brief notes; calculation for lead and radius of turnouts with straight, curved and partly curved switches; calculation of lead and radius of symmetrical splits with straight and curved switches; calculations of main distances of crossovers, scissors crossovers and diamond crossing; calculations of dimensions for distance blocks and M.S. flat bearing plates with rail screws; calculation of bolt lengths for points and crossings.

**CHAPTER XII—Prestressed Concrete Sleepers (SPC)**

Brief notes ; table of prestressed concrete sleepers and their fastenings; prestressed concrete sleepers for 52 kg and UIC 60 kg rails; elastic rail clip and malleable or spheroidal graphite cast iron inserts; grooved rubber sole plates and mild steel and composite insulating liners.

**ANNEXURE (ANX) .**

Brief notes ; comparative statement of track parts used with rail/plate screws in lieu of dog spikes/round spikes for turnouts; switches and crossings; diamonds and slips; scissors and crossovers; special layouts; ordinary and insulated tie plates; crossing and switch tie plates; slide chairs.

## CHAPTER VII

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