

JIS

JAPANESE INDUSTRIAL STANDARD

**Dimension of Turnouts
and Crossings**

JIS E 1304—1989

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In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

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Dimension of Turnouts and Crossings

E 1304-1989

1. Scope

This Japanese Industrial Standard specifies dimension of turnouts and crossings of 1067 mm and 1435 mm in gauge of track, hereinafter referred to as "dimension". However, except the turnouts and crossings of new trunk-line railroad.

2. Dimension

Classification of dimension specified in this Standard shall be as given in Table 1. Dimension drawing and symbol for attaching of slack shall be as given in Table 2 and the symbol of skeleton, as given in Table 3.

3. Marking

In the case of marking the classification of dimension on the drawing and the like, by using the symbols shown in Table 4, the gauge of track, kind of turnout and crossing types of rail number, and division of right-and-left and both openings as well as division of dimension shall be expressed in the order. However, in the case of diamond crossing, because there are not division of right-and-left and both openings as well as division of dimension, it becomes the marking as shown in Example 2.

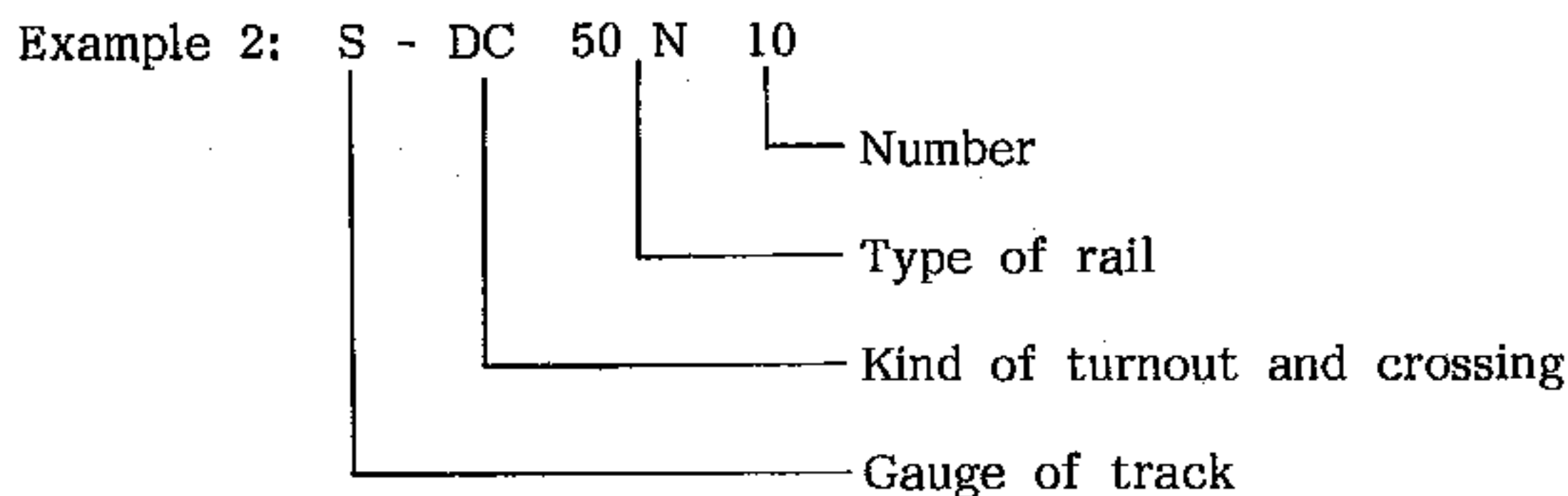
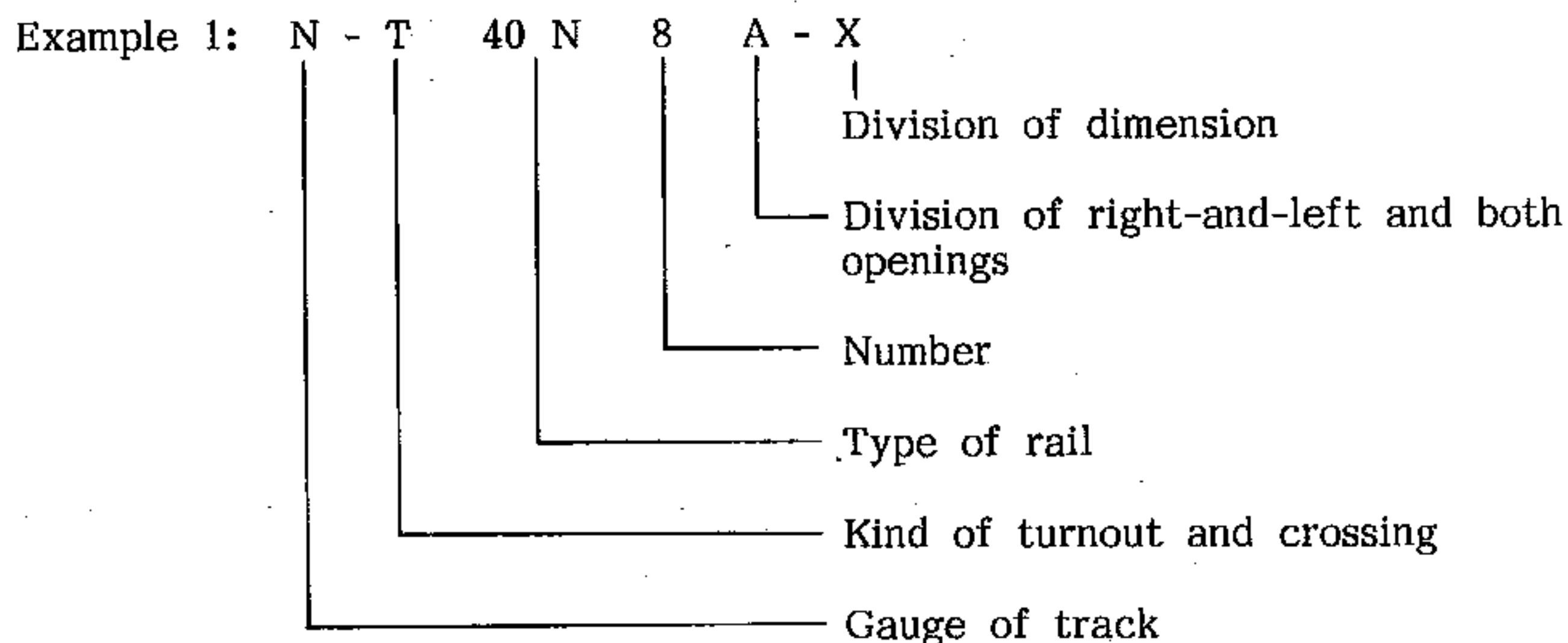


Table 1. Classification of Dimension

Name of turnout and crossing	Division of dimension	Division of structure	Attached Fig. number	
Single open turnout and crossing	In the case of using curved tongue rail without incident angle	Articulated point	Dimension Fig.	1.1
			Attaching method of slack	1.2
			Skeleton	1.3
		Elastic point	Dimension Fig.	2.1
			Attaching method of slack	2.2
			Skeleton	2.3
		Elastic point s shrinkage type ⁽¹⁾	Dimension Fig.	3.1
			Attaching method of slack	3.2
			Skeleton	3.3
	In the case of using curved tongue rail having incident angle	Articulated point	Dimension Fig.	4.1
			Attaching method of slack	4.2
			Skeleton	4.3
		Elastic point	Dimension Fig.	5.1
			Attaching method of slack	5.2
			Skeleton	5.3
	In the case of using linear tongue rail	Slide point	Dimension Fig.	6.1
			Attaching method of slack	6.2
			Skeleton	6.3
Both opening turnout and crossing	In the case of using curved tongue rail without incident angle	Articulated point	Dimension Fig.	7.1
			Attaching method of slack	7.2
			Skeleton	7.3
		Elastic point	Dimension Fig.	8.1
			Attaching method of slack	8.2
			Skeleton	8.3

Table 1. (Continued)

Name of turnout and crossing	Division of dimension	Division of structure	Attached Fig. number	
Both opening turnout and crossing	In the case of using curved tongue rail having indident angle	Elastic point	Dimension Fig.	9.1
			Attaching method of slack	9.2
			Skeleton	9.3
Diamond crossing		Fixed K-letter crossing	Dimension Fig.	10.1
			Skeleton	10.2
		Articulated movable K-letter crossing	Dimension Fig.	11.1
			Skeleton	11.2
		Elastic movable K-letter crossing	Dimension Fig.	12.1
			Skeleton	12.2
Cross-over turnout and crossing		Cross-over point	Dimension Fig.	13.1
			Attaching method of slack	13.2
			Skeleton	13.3

Note (1) Such structure that the slack of reference line is shrinked and the slack of front end of point is decreaded on allover length of tongue rail.

Table 2. Dimension Figure and Symbol for Attaching of Slack

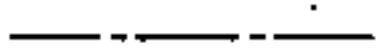
Symbol	Meaning
	Track gauge line and guard rail
	Imaginary track gauge line
○	Rail joint having space in design
●	Rail joint without space in design
L_0	Theoretical lead length
L	Actual lead length
R	Lead radius
P	Length of tongue rail or cross-over rail
P_0	$L_0 - L$
M	Front end length of crossing
N	Rear end length of crossing
k	In the case of fixed K-letter crossing: the distance from intersecting point of crossing until K-letter crossing end
	In the case of movable K-letter crossing: length of movable rail
G	Length of guard rail
G_1	Length of guard rail of reference line
G_2	Length of guard rail of turnout and crossing
θ	Crossing angle
I	Incident angle
f	Distance from the central position of guard rail until rear end of crossing
f_1	Distance from the central position of guard rail of reference line until rear end of crossing
f_2	Distance from the central position of guard rail of branch line until the rear end of crossing
g	Gauge of track
s	Slack
l, l_1, l_2, l_3	Length of rail

Table 2. (Continued)

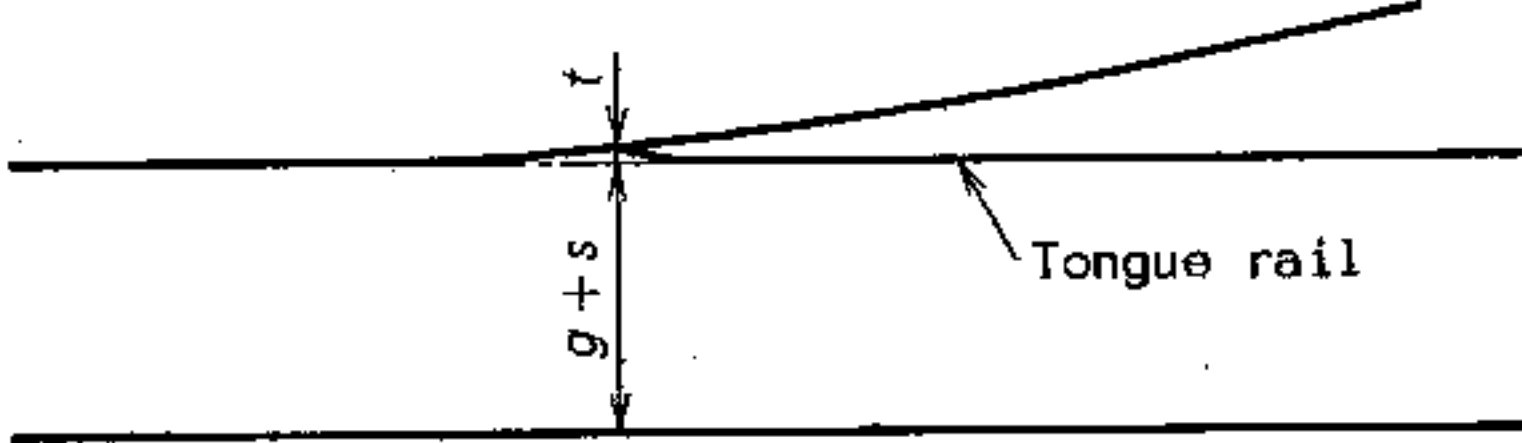
Symbol	Meaning
t	Theoretical head-part width at the top end of tongue rail in the case of a tongue rail without incident angle 
e	Amount of dislocation of top-end positions of tongue rail at right and left

Table 3. Symbols of Skeleton

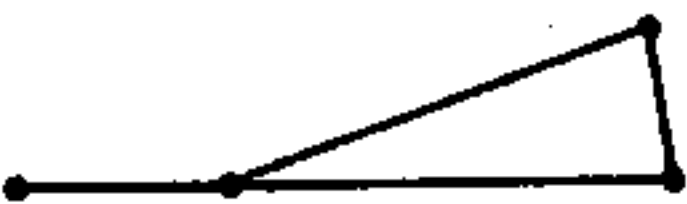
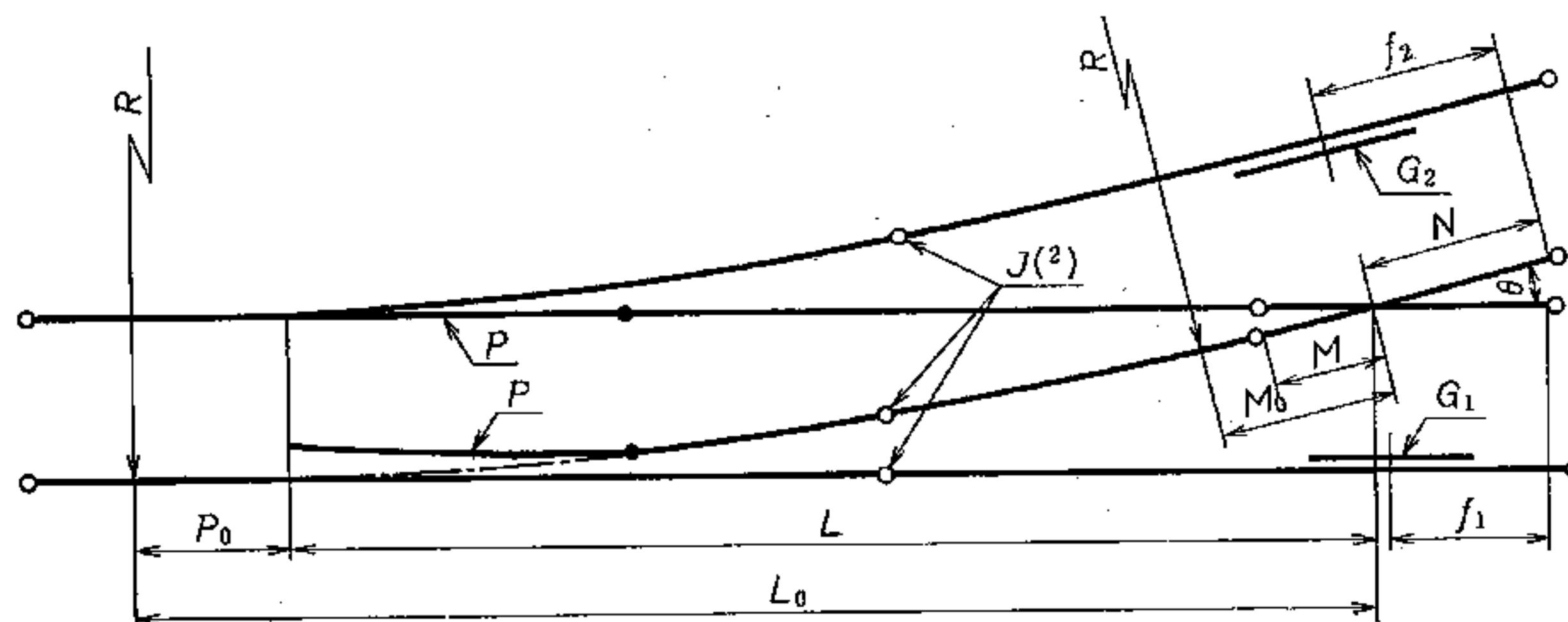
Symbol	Meaning
	Line and point to express branch intersecting point, branch direction and front-and-rear ends of turnout
○	Rail joint at front end of turnout and rail joint at rear end of turnout
θ	Branching angle

Table 4. Symbols of Marking Matters

Marking matter	Symbol	Meaning
Gauge of track	N	For gauge of track of 1067 mm
	S	For gauge of track of 1435 mm
Kind of turnout and crossing	T	Turnout and crossing
	DC	Diamond crossing
Type of rail	30 A	For 30 kg rail
	37 A	For 37 kg rail
	40 N	For 40 kgN rail
	50 PS	For 50 kg rail
	50 N	For 50 kgN rail
	60	For 60 kg rail
Number	8, 10, etc.	No. 8, No. 10, etc.
Division of right-and-left and both openings	A	Single open left turnout and crossing
	B	Single open right turnout and crossing
	C	Both open turnout and crossing
Division of dimension	X	In the case of using curved tongue rail without incident angle
	Y	In the case of using curved tongue rail having incident angle
	Z	In the case of using linear tongue rail
	O	In the case of using cross-over point

Attached Fig. 1. Dimension of Single Open Turnout and Crossing
(In the case of using curved tongue rail without
incident angle, articulated point)

1.1 Dimension Figure



Unit: mm

Gauge of track	Type of rail	Number	L_0	L	R	P	P_0	M	N	M_0	G_1	G_2	f_1	f_2
1 067	40 N	8	15 439	14 516	110 978	4 800	923	1 200	2 250	1 639	2 700	2 800	2 210	2 510
		10	19 205	18 027	171 181	5 800	1 178	1 450	2 750	2 165	2 700	2 800	2 885	2 820
		12	23 277	21 820	251 821	6 800	1 457	1 700	3 250	2 359	2 700	2 800	3 485	3 445
		14	27 881	26 106	362 828	8 000	1 775	2 050	3 850	—	3 200	3 300	4 235	4 135
		16	31 990	29 934	477 818	9 100	2 056	2 200	4 250	—	3 200	3 300	4 440	4 395
	50 N	8	15 878	14 922	118 005	4 900	956	1 200	2 250	—	3 800	4 100	2 210	3 390
		10	19 920	18 688	185 502	6 000	1 232	1 450	2 750	—	3 800	4 700	2 735	3 920
		12	23 936	22 430	267 659	7 000	1 506	1 700	3 250	—	3 800	4 700	3 115	4 595
		14	27 881	26 106	362 828	8 000	1 775	2 050	3 850	—	3 800	5 200	3 635	5 385
		16	31 990	29 934	477 818	9 100	2 056	2 200	4 250	—	3 800	5 600	4 090	5 845
1 435	40 N	20	39 868	37 275	741 400	11 300	2 593	2 900	5 450	—	3 800	4 100	5 290	6 335
		6	16 209	15 546	91 913	4 500	663	1 000	4 900	—	1 800	2 000	1 675	2 070
		7	19 001	18 154	126 097	5 200	847	1 100	2 050	—	1 800	2 000	1 925	2 255
		8	21 769	20 665	165 328	5 700	1 104	1 200	2 250	—	1 800	2 000	2 220	2 390
		10	27 291	25 921	259 496	7 000	1 370	1 450	2 750	—	1 800	2 000	2 865	3 090
	50 N	12	32 778	31 016	374 060	8 100	1 762	1 700	3 250	—	1 800	2 200	3 210	3 630
		6	16 209	15 546	91 913	4 500	663	1 000	1 900	—	3 000	2 000 3 800	1 900	2 070 2 970
		7	19 001	18 154	126 097	5 200	847	1 100	2 050	—	3 800	2 000 4 100	2 225	2 255 3 055
		8	21 769	20 665	165 328	5 700	1 104	1 200	2 250	—	3 800	2 000 4 100	2 200	2 390 3 350
		10	27 291	25 921	259 496	7 000	1 370	1 450	2 750	—	3 800	2 000 4 500	2 725	3 090 3 890
		12	32 778	31 016	374 060	8 100	1 762	1 700	3 250	—	3 800	2 200 4 700	3 110	3 630 4 600
		16	43 782	41 314	666 927	10 700	2 468	2 200	4 250	—	3 800	2 500 5 300	4 085	4 595 5 795

Note (2) The number and position of joint J indicates one example.

Remarks 1. The fact that G_2 of 50 N of gauge of track of 1435 mm is shown in two stages means the following:

- Upper stage: in the case where the guard rail is not taken into consideration on side wear prevention of front end part of crossing
Lower stage: in the case where the guard rail is taken into consideration on side wear prevention of front and part of crossing.

2. At the place where numerals in M_0 column are not described, $M_0 = M$.