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(Reaffirmed : 2003)

Railway switches — Shapes and dimensions

ICS 45.080

Descriptors : railway track, point work, turnouts, shape, dimensions

Reference number : JIS E 1305 : 1998 (E)

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Transportation through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law. Consequently **JIS E 1305:1990** is replaced with **JIS E 1305:1998**.

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Printed in Japan

Railway switches — Shapes and dimensions

1 Scope This Standard specifies shape and dimensions of railway switches for 1 067 mm and 1 435 mm gauge turnouts (thereafter referred to as "switches"). This Standard does not apply to the switch of SINKANSEN railways based on the National SINKANSEN Network Law.

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards indicated below shall be applied.

JIS B 0205 *Metric coarse screw threads*

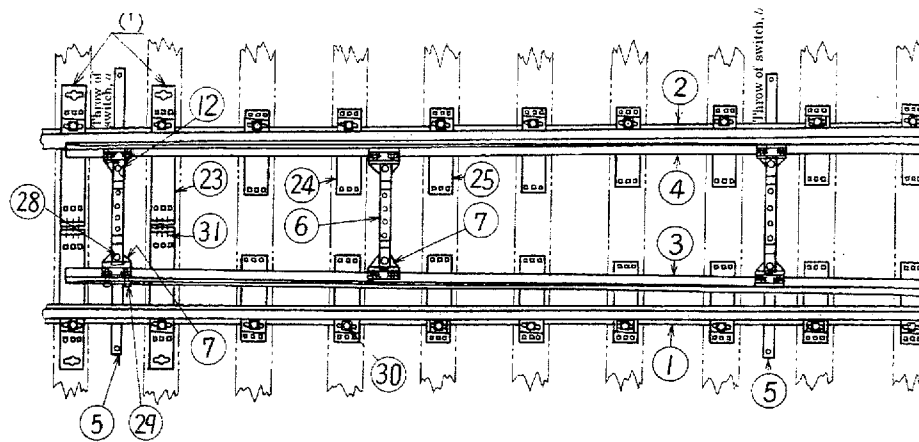
JIS E 1304 *Dimension of turnouts and crossings*

3 Classification, shape and dimensions of switches For the purposes of this Standard the classification of switches and their shape and dimensions shall be as given in Table 1.

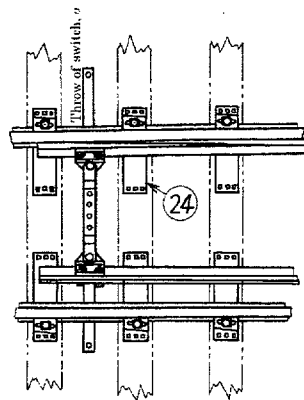
Those not given in Attached Figures shall be in accordance with **JIS E 1304**.

Table 1

Classification	Applicable tongue rail	Attached Fig. No.				Remarks
		Switch	Stock rail	Tongue rail and elevated rail	Components	
Articulated switch	Tangential curved tongue rail	1	—	1.1	1.2 to 1.28	Tongue rail used, to be 50S for 40 kgN rail, and 70S for 50 kgN rail
	Intersecting curved tongue rail	2	—	2.1	1.2, 1.3, 1.5, 1.8 to 1.23, 1.26 to 1.28	Tongue rail used, to be 70S rail
Flexible switch	Tangential curved tongue rail	3	3.1, 3.2, 3.5, 3.6	3.3, 3.4, 3.7 to 3.9	1.2, 1.4, 1.8, 1.13, 1.14, 1.19 to 1.21, 1.26 to 1.28, 1.30, 3.10 to 3.54	Tongue rail used, to be 70S for 50 kgN rail, and 80S, 90S or 70S for 60 kg rail
	Intersecting curved tongue rail	4	4.1	4.2 to 4.5	1.13, 1.20, 1.30, 3.10, 3.12, 3.14 to 3.17, 3.19 to 3.25, 3.28, 3.33, 3.34, 3.36, 3.39, 3.44, 3.45, 3.47	Tongue rail used, to be 80S or 90S
Flexible switch reduced slack type	Tangential curved tongue rail	5	5.1 to 5.3, 5.6 to 5.8	5.4, 5.5, 5.9 to 5.14	1.2, 1.8, 1.13, 1.19, 1.20, 1.26, 1.27, 1.30, 3.10 to 3.31, 3.33 to 3.54	Tongue rail used, to be 70S for 50 kgN rail, and 80S, 90S or 70S for 60 kg rail
Loose heel switch	Straight tongue rail	6	—	6.1	1.2, 1.3, 1.5, 1.9, 1.13 to 1.16, 1.18, 1.21 to 1.25, 1.27, 1.28, 6.2 to 6.6	Tongue rail used, to be 40 kgN for 40 kgN rail, and 50 kgN for 50 kgN rail
		7	—	6.1	7.1 to 7.23	Tongue rail used, to be 30 kg for 30 kg rail, 37 kg for 37 kg rail, and 50 kg for 50 kg rail
Run-over type switch	—	8	—	8.1, 8.2	8.3 to 8.17	Tongue rail and elevated rail used, to be 40 kgN for 40 kgN rail, and 50 kgN for 50 kgN rail
	—	9	—	9.1, 9.2	1.20, 1.30, 3.26, 3.35, 8.5, 8.6, 8.9 to 8.11, 9.3 to 9.9	Tongue rail and elevated rail used, to be 50 kgN rail



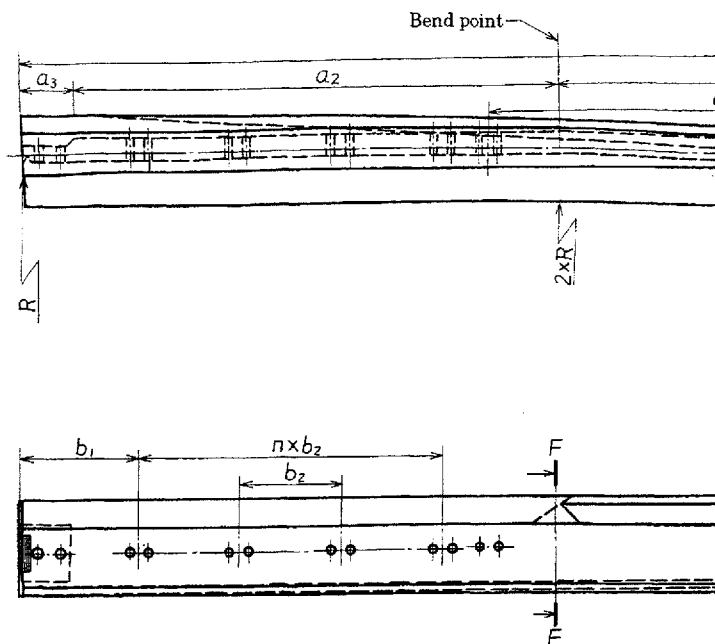
Note (1) For the base plate at the toe of switch, code 23 may be replaced with 24 according to the working condition.



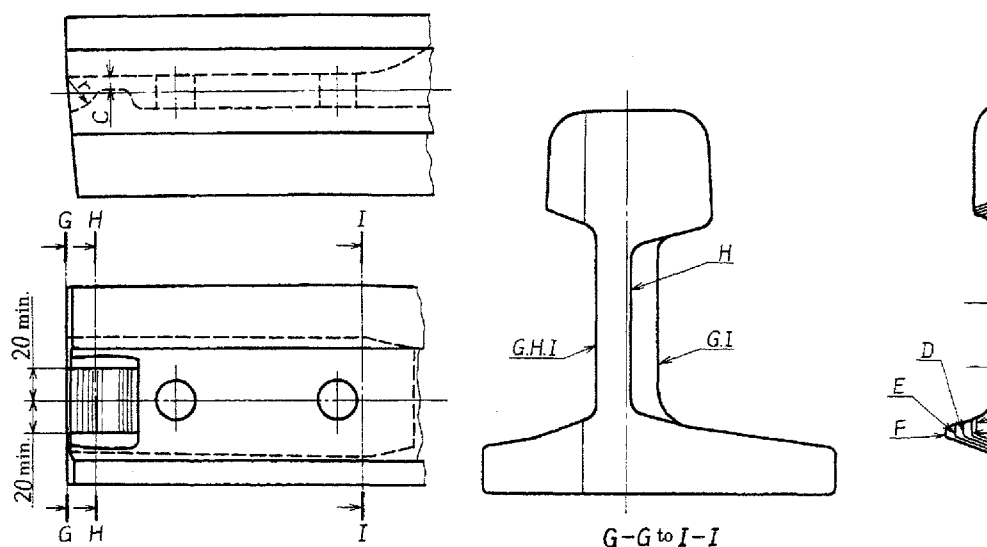
- Remarks
1. The shape drawn shows the case of 1067 mm gauge 50 kgN rail purpose No. 20 simple turnout.
 2. The throw of switch, a and b , may be changed depending on the working condition.

Code	Name	Reference
1	Stock rail	Omit
2	Stock rail	
3	Tongue rail	1.1
4	Tongue rail	1.1
5	Switch rod	1.2
6	Strecher bar	1.6
7	Bearing clip	1.8
8	Stud	1.9
9	Filler	1.10
10	Filler	1.11
11	Fish plate	1.12
12	Collar	1.13
13	Washer	1.14
14	Washer	1.15
15	Washer	1.16
16	Washer	1.18
17	Washer	1.19
18	Washer	1.17
19	Washer	Omit
20	Rail brace	1.21
21	Base plate	1.22
22	Base plate	1.23
23	Base plate	1.26
24	Base plate	1.27
25	Base plate	1.28
26	Bolt	Omit
27	Bolt	
28	Bolt	
29	Bolt	
30	Bolt	
31	Bolt	

Attached Fig. 1 Articulated switch (w



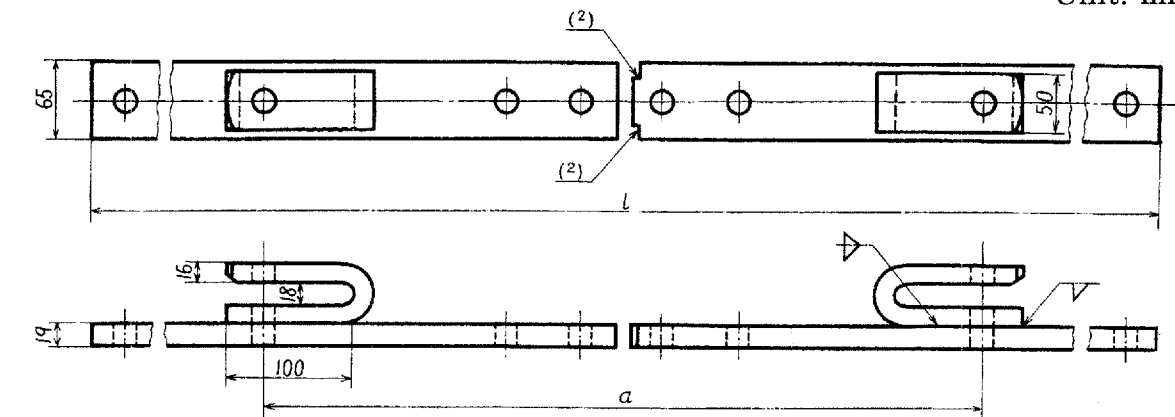
Gauge	Rail type	No.	P	a ₁	a ₂	a ₃	a ₄	a ₅	a ₆	a ₇	b ₁	b ₂
1 067	40 N	6	3 700	2 205	845	650	1 610	—	—	—	800	0
		8	4 800	2 822	1 118	860	1 970	—	—	—	760	610
		10	5 800	3 474	1 389	937	2 420	—	—	—	870	720
		12	6 800	4 185	1 686	929	2 900	—	—	—	770	620
		14	8 000	4 997	2 023	980	3 450	3 290	—	—	860	710
		16	9 100	5 715	2 322	1 063	3 940	4 100	—	—	980	800
	50 N	6	3 700	2 218	1 192	290	1 610	—	—	—	800	0
		8	4 900	2 924	1 593	383	2 030	—	—	—	760	610
		10	6 000	3 632	1 998	370	2 510	—	—	—	880	740
		12	7 000	4 337	2 399	263	2 980	—	—	—	770	630
		14	8 000	5 029	2 792	179	3 450	3 290	—	—	850	700
		16	9 100	5 751	3 205	144	3 940	4 100	—	—	960	800
		20	11 300	7 129	3 995	176	4 870	2 110	2 500	3 040	960	800



Details of tongue rail heel area

Attached Fig. 1.1 (1) Tong

Unit: mm

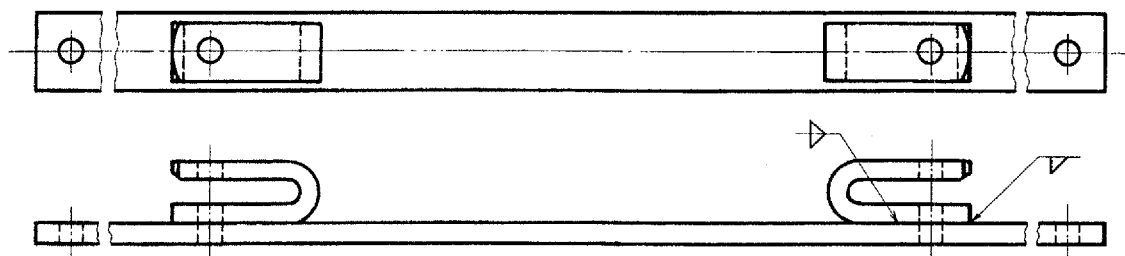


Gauge	a	l
1 067	570	1 825
1 435	938	2 195

Note (2) These notches need not be made depending on the shape of insulator.

Remarks: Dimensions of a and l may be changed according to the working condition.

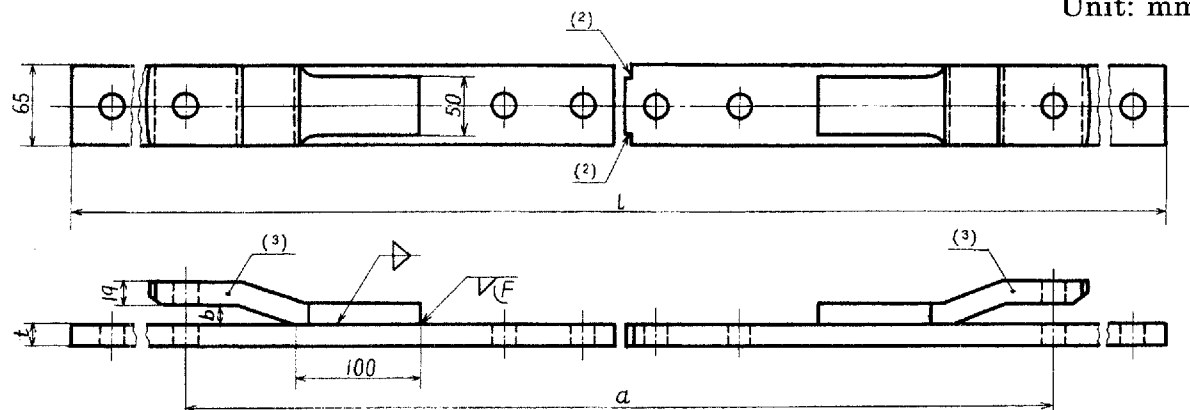
Attached Fig. 1.2 Switch rod



Remarks: The dimensions are identical with Attached Fig. 1.2.

Attached Fig. 1.3 Switch rod

Unit: mm



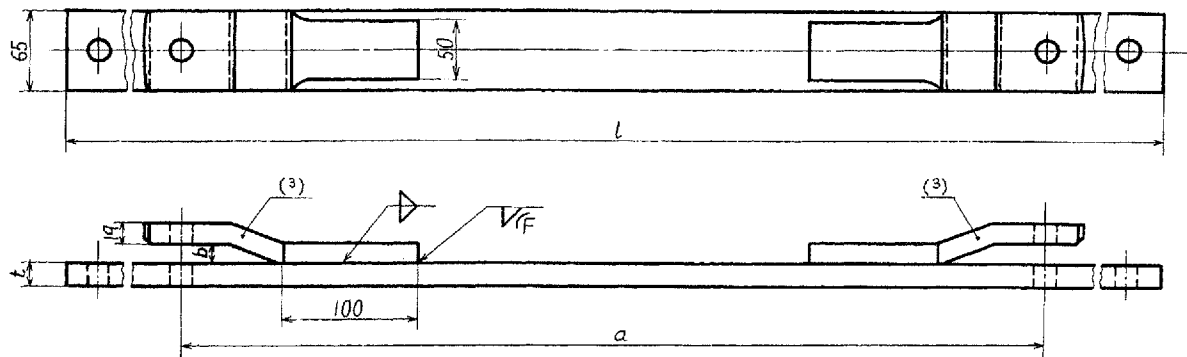
Gauge	a	b	t	l
1 435	884	18	19	2 195

Note (3) The width of 65 mm may be changed into 50 mm by the working condition.

Remarks: Dimensions of a , b , t and l may be changed according to the working condition.

Attached Fig. 1.4 Switch rod

Unit: mm

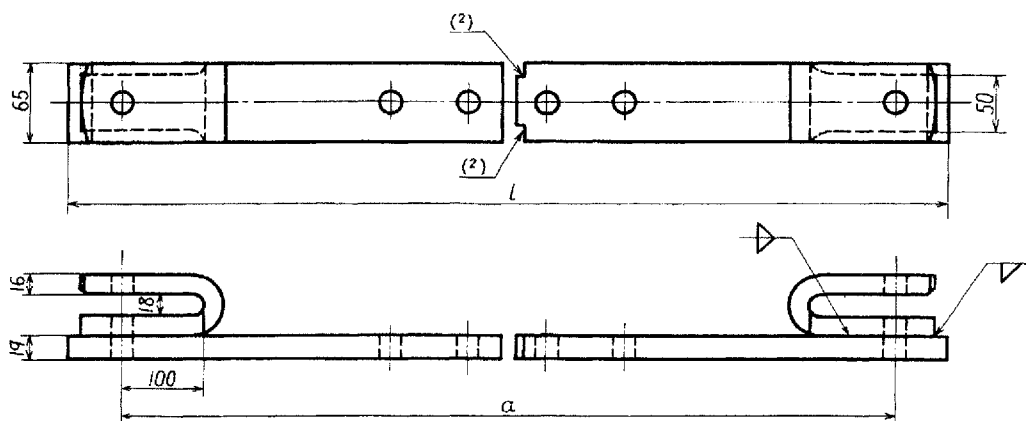


Gauge	a	b	t	l
1 067	516	18	19	1 825
1 435	884			2 190

Remarks: Dimensions of a , b , t and l may be changed according to the working condition.

Attached Fig. 1.5 Switch rod

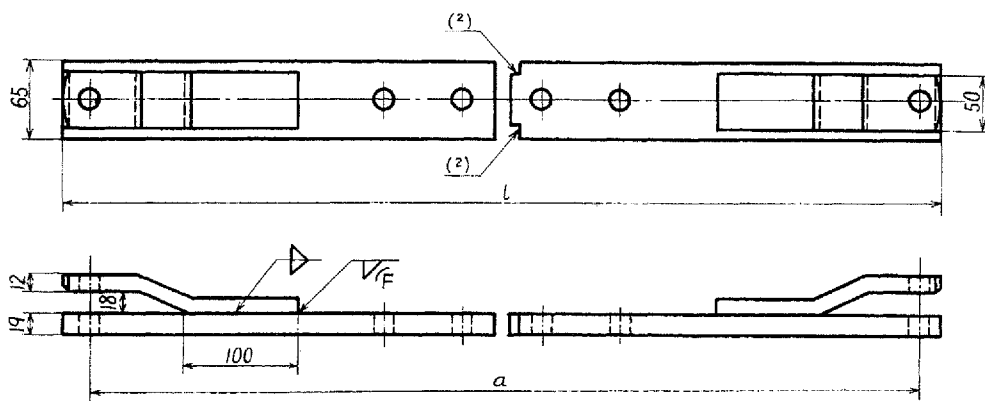
Unit: mm



Remarks: Dimensions of a and l shall be determined by the working position.

Attached Fig. 1.6 Stretch bar

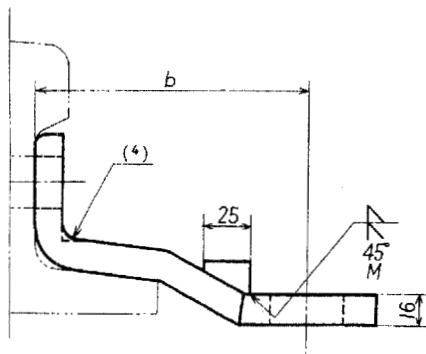
Unit: mm



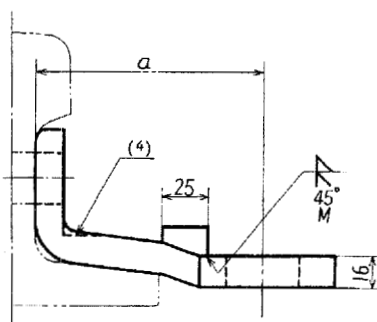
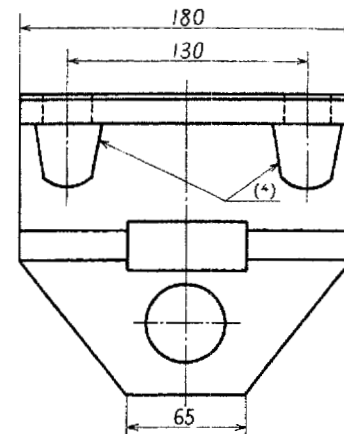
Remarks: Dimensions of a and l shall be determined by the working position.

Attached Fig. 1.7 Stretch bar

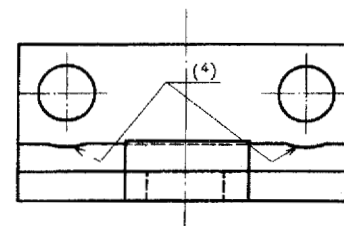
Unit: mm



Side view of the case where the switch rod and stretcher bar of Attached Figs. 1.4 or 1.5 and 1.7 are to be used respectively.



Side view of the case where the switch rod and stretcher bar of Attached Figs. 1.2 or 1.3 and 1.6 are to be used respectively.

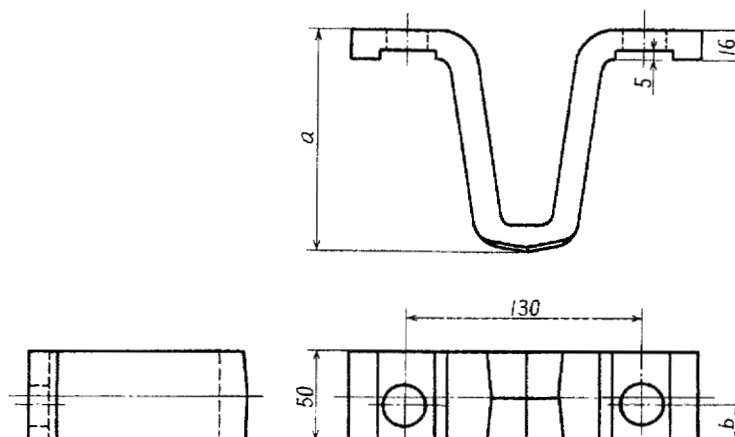


Note (4) These recessions apply only to the case of 40 kgN rail purpose.

Remarks: Dimensions of a and b shall be determined by the working position.

Attached Fig. 1.8 Bearing clip

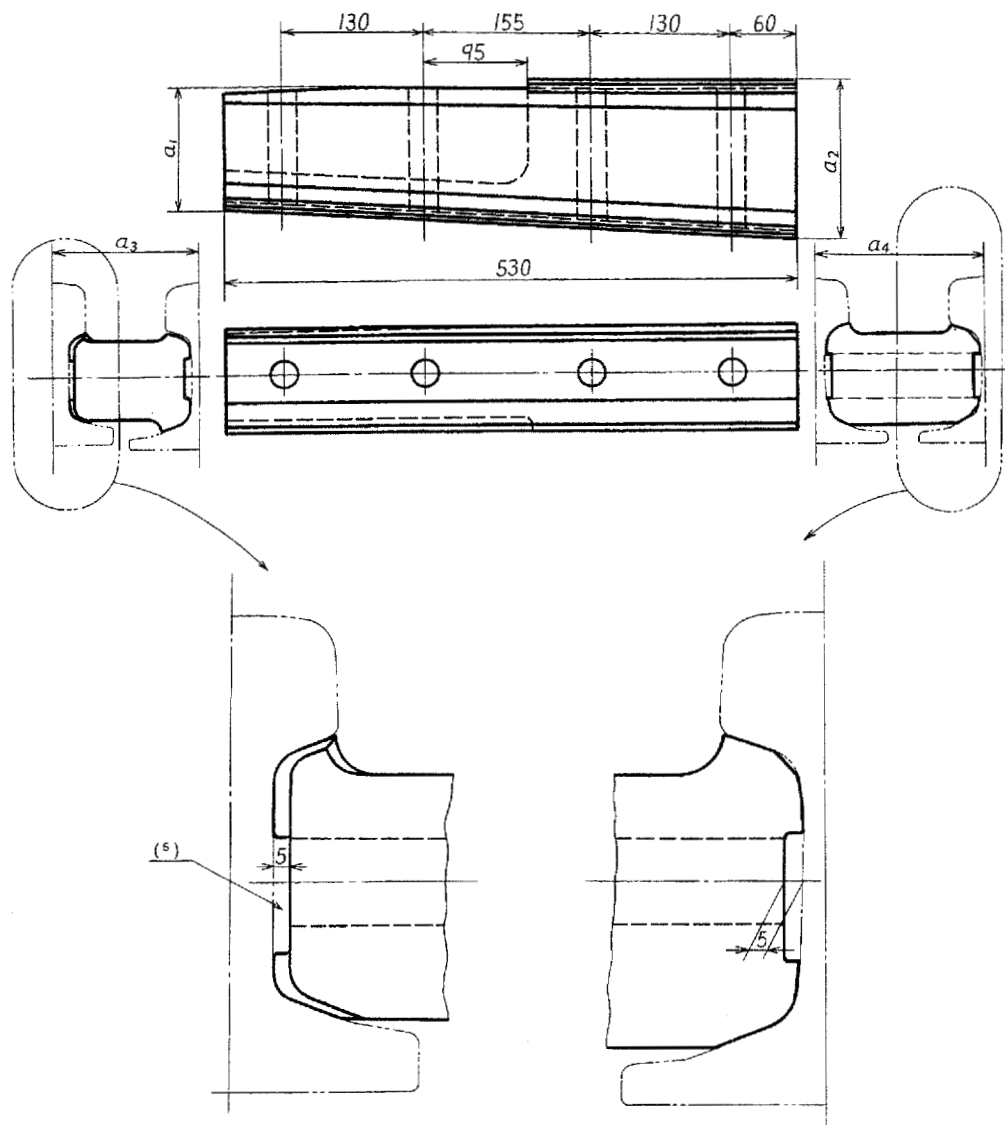
Unit: mm



Remarks: Dimensions of a and b shall be determined by the working position.

Attached Fig. 1.9 Stud

Unit: mm



Note ⁽⁵⁾ This recess applies only to the case of 40 kgN rail purpose.

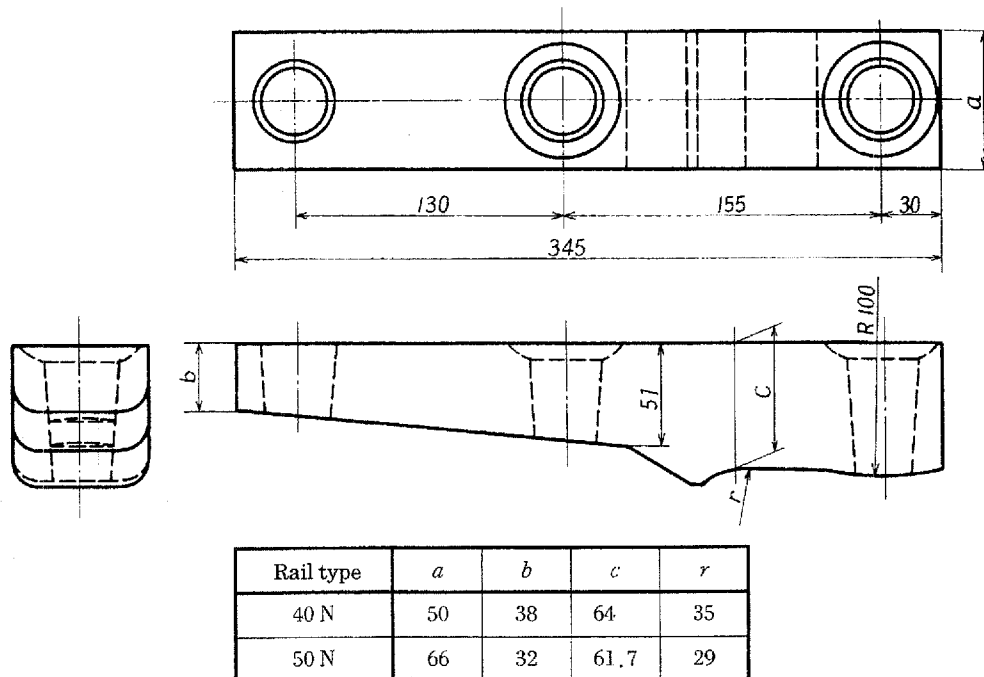
Remarks: Dimensions of a_1 , a_2 , a_3 and a_4 shall be determined by the working position.

Attached Fig. 1.10 Filler

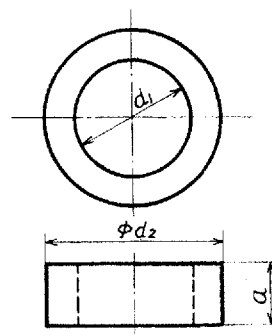
Omitted the drawings, which are symmetrical shape to those shown in Attached Fig. 1.10.

Attached Fig. 1.11 Filler

Unit: mm

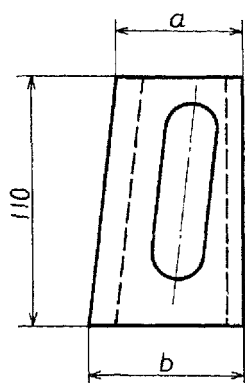


Attached Fig. 1.12 Fish plate



Remarks: Dimensions of a_1 , d_1 and d_2 shall be determined by the working position.

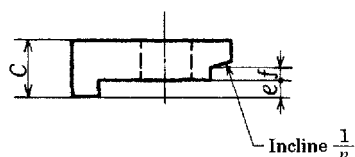
Attached Fig. 1.13 Collar



Unit: mm

Rail type	<i>e</i>	<i>f</i>	<i>n</i>
40 N	2	7	9
50 N	7	5	10

Remarks: Dimensions of *a*, *b* and *c* shall be determined by the working position.

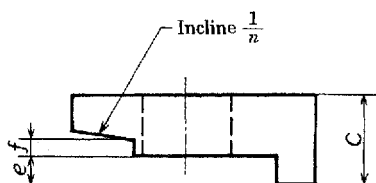
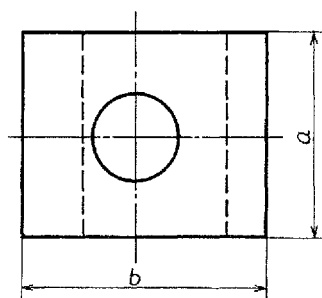


Omitted the drawings, which are symmetrical shape to those shown in Attached Fig. 1.14.

Attached Fig. 1.14 Washer

Attached Fig. 1.15 Washer

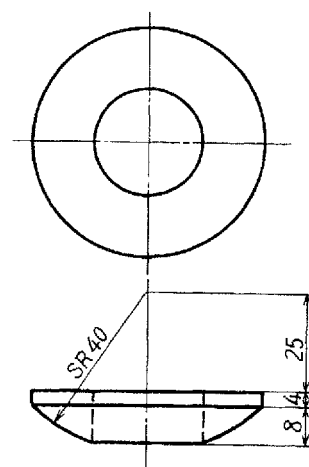
Unit: mm



Unit: mm

Rail type	<i>e</i>	<i>f</i>	<i>n</i>
40 N	2	7	9
50 N	7	5	10

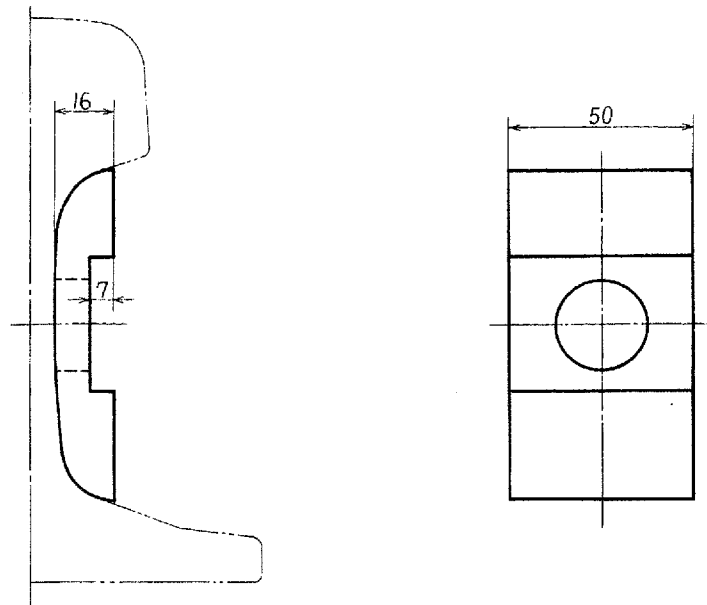
Remarks: Dimensions of *a*, *b* and *c* shall be determined by the working position.



Attached Fig. 1.16 Washer

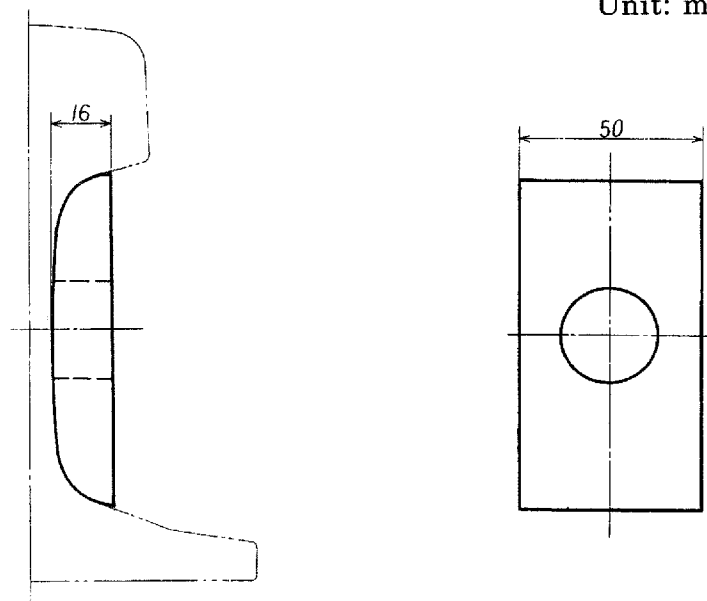
Attached Fig. 1.17 Washer

Unit: mm

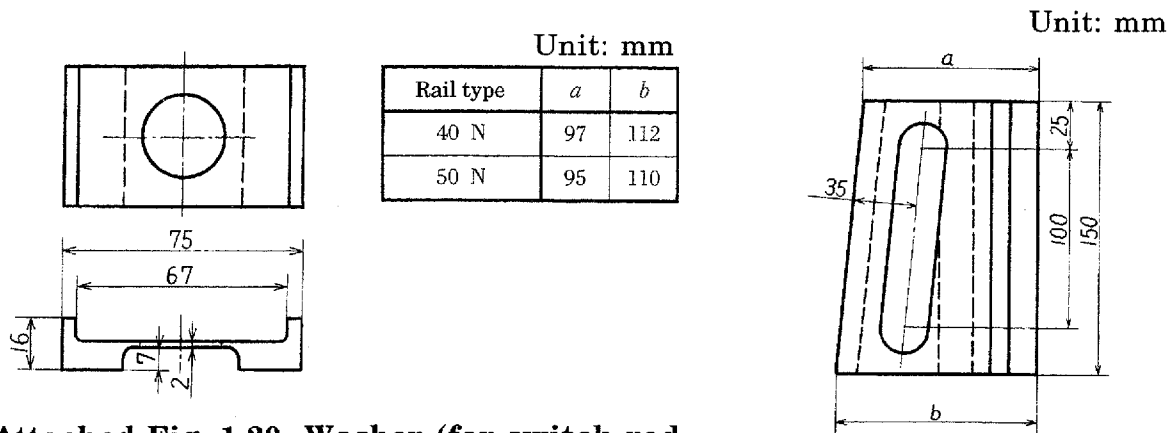


Attached Fig. 1.18 Washer

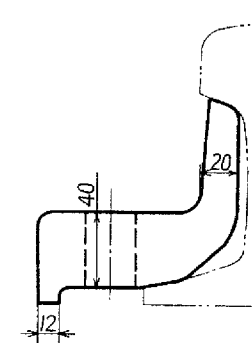
Unit: mm



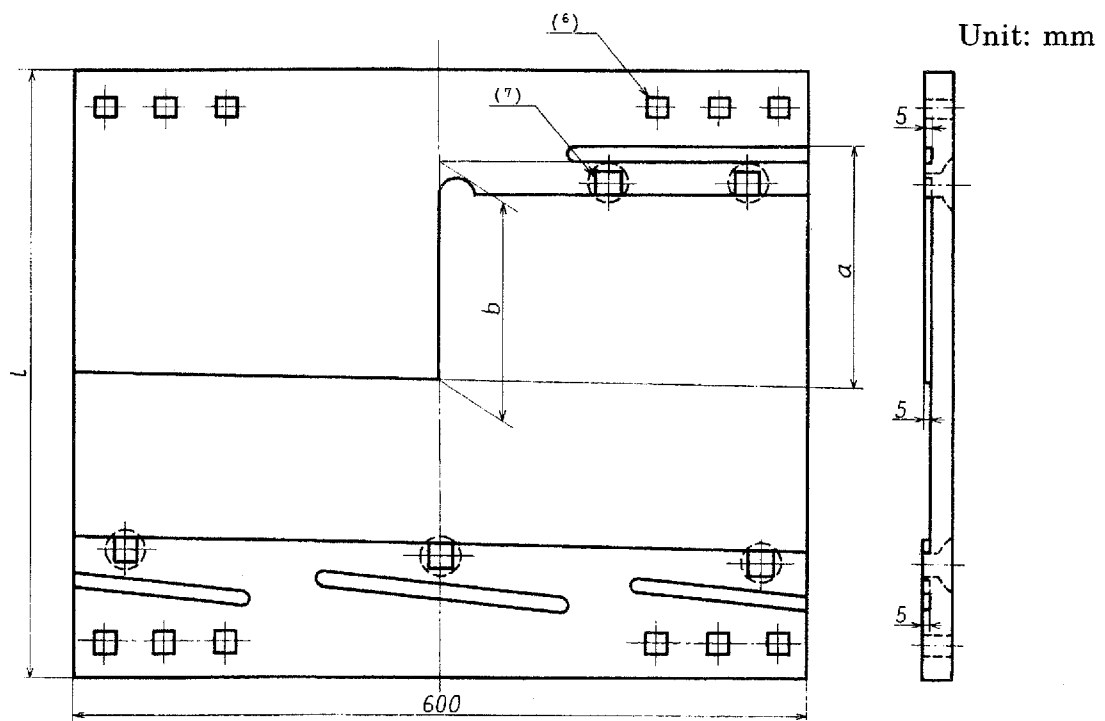
Attached Fig. 1.19 Washer



Attached Fig. 1.20 Washer (for switch rod bolt turning stop)



Attached Fig. 1.21 Rail brace



Notes (6) To be shaped into round hole for the case of using round stem spikes or screw spikes.

(7) May be shaped into ellipse depending on the shape of bolt used.

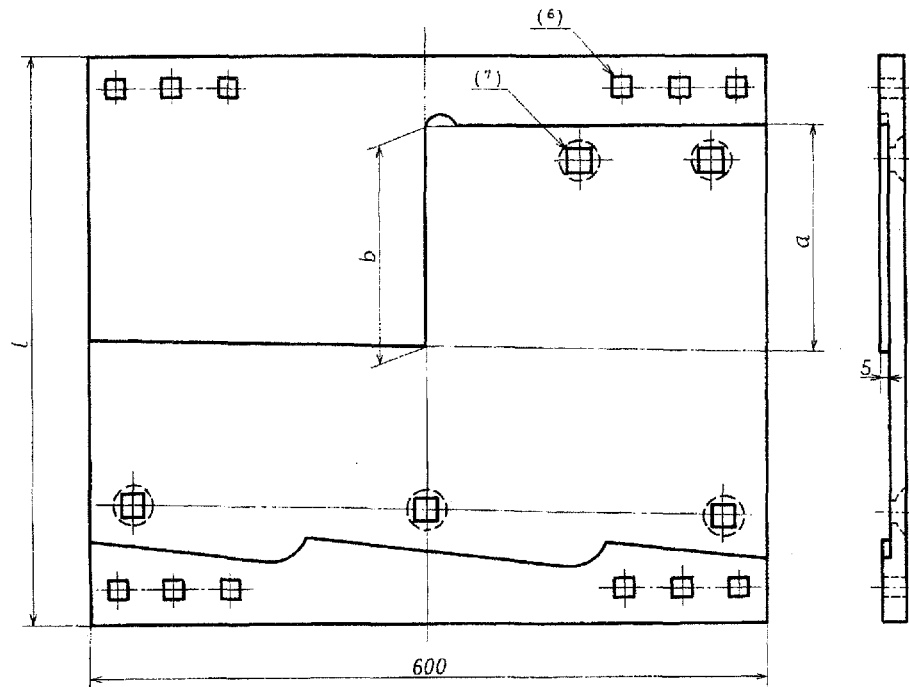
Remarks: Dimensions of a , b and l shall be determined by the working position.

Attached Fig. 1.22 Base plate (for 50 kgN rail)

Omitted the drawings, which are symmetrical shape to those shown in Attached Fig. 1.22.

Attached Fig. 1.23 Base plate (for 50 kgN rail)

Unit: mm



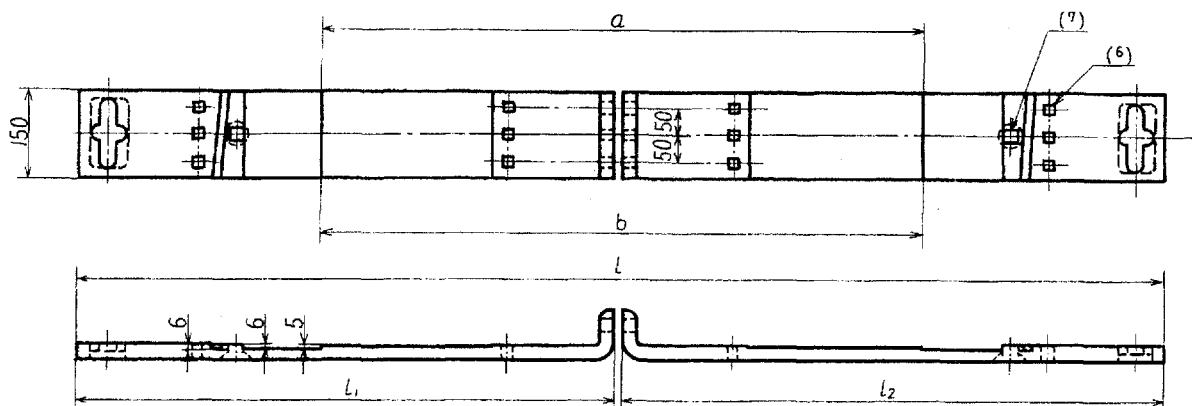
Remarks: Dimensions of a , b and l shall be determined by the working position.

Attached Fig. 1.24 Base plate (for 40 kgN rail)

Omitted the drawings, which are symmetrical shape to those shown in Attached Fig. 1.24.

Attached Fig. 1.25 Base plate (for 40 kgN rail)

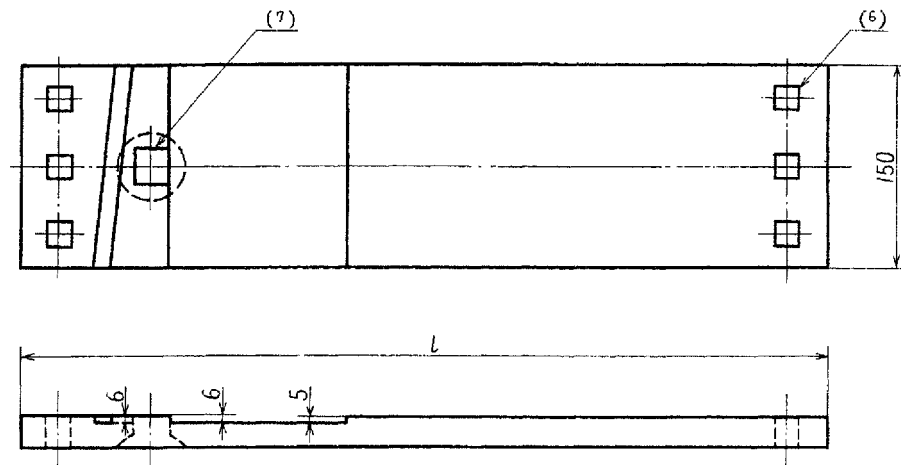
Unit: mm



Remarks: Dimensions of a , b , l , l_1 and l_2 shall be determined by the working position.

Attached Fig. 1.26 Base plate

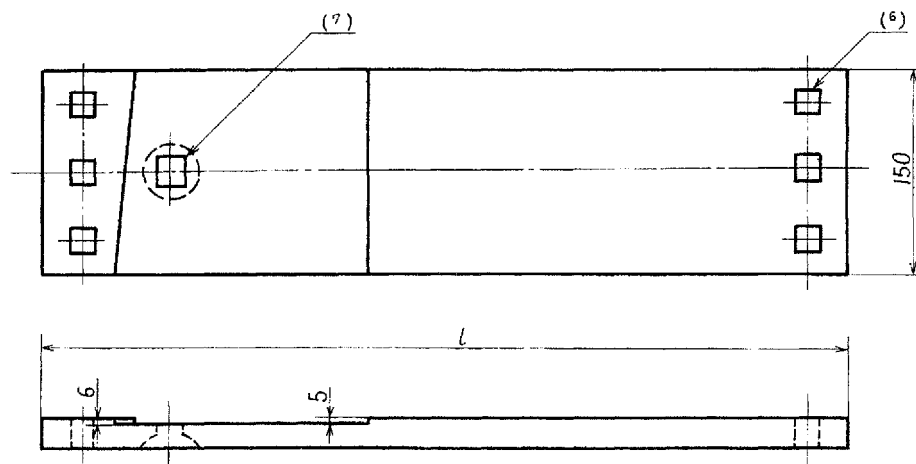
Unit: mm



Remarks: The dimension l shall be determined by the working position.

Attached Fig. 1.27 Base plate

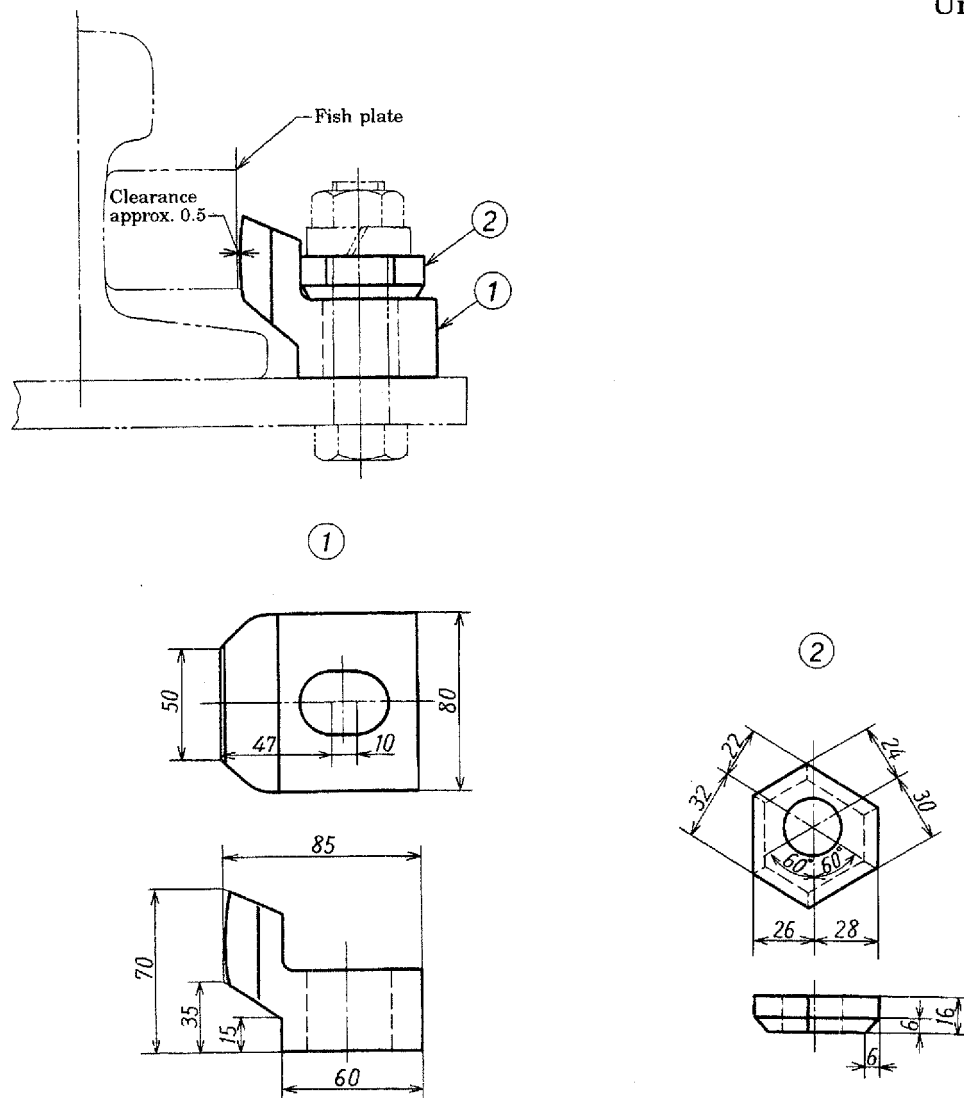
Unit: mm



Remarks: The dimension l shall be determined by the working position.

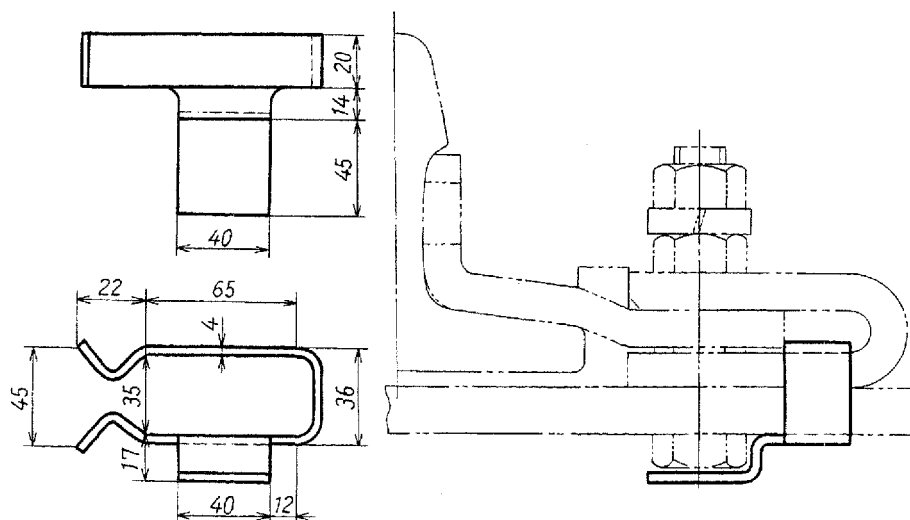
Attached Fig. 1.28 Base plate

Unit: mm

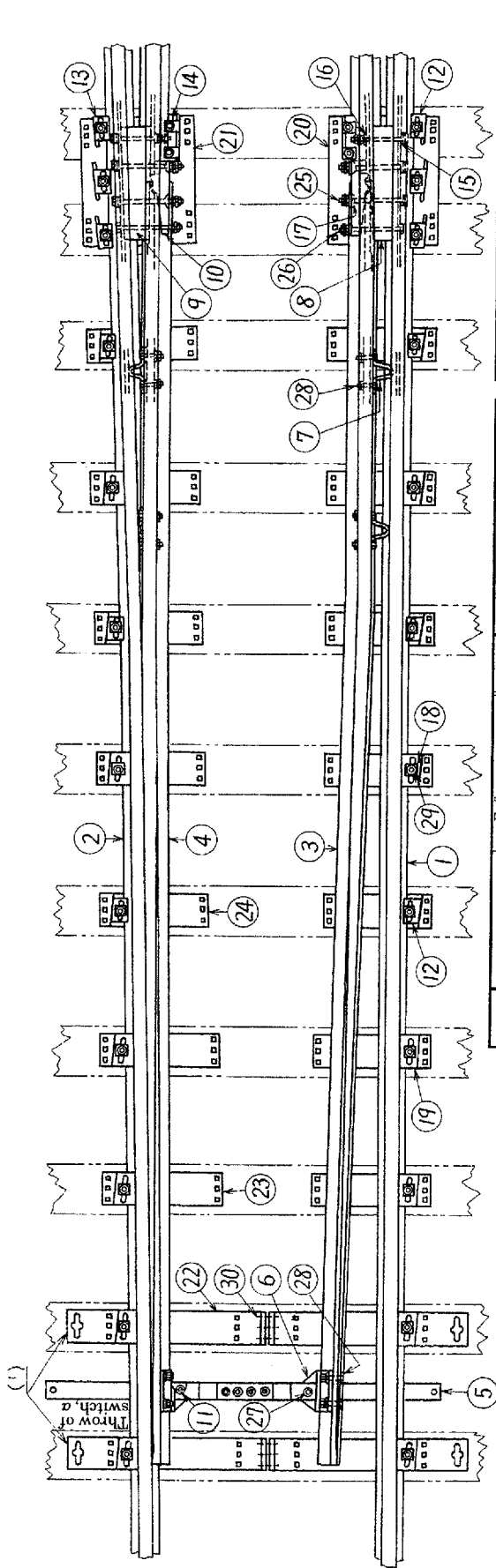


Attached Fig. 1.29 Washer (fish plate keeping washer)

Unit: mm



Attached Fig. 1.30 Washer (for keeping switch rod bolt from removal)

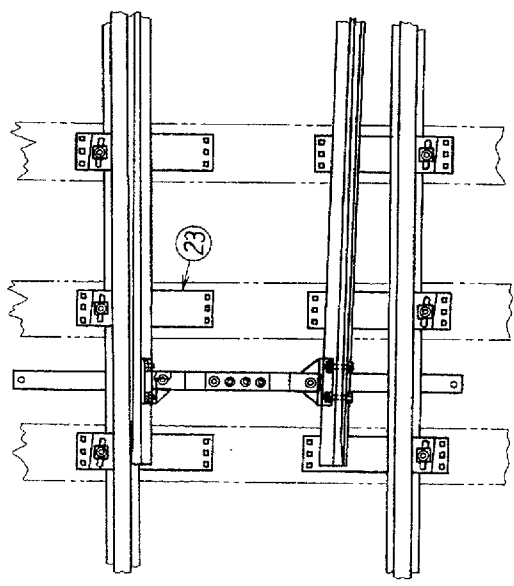


Gauge mm	Type of rail	Type of turnout	No.	Throw, α mm
1 067	50 N	Simple turnout	8	159
			10	161

Remarks 1. The shape drawn here shows the case of No. 10.
2. The throw of switch, α , may be changed depending on the working condition.

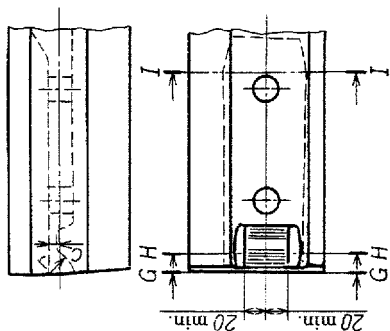
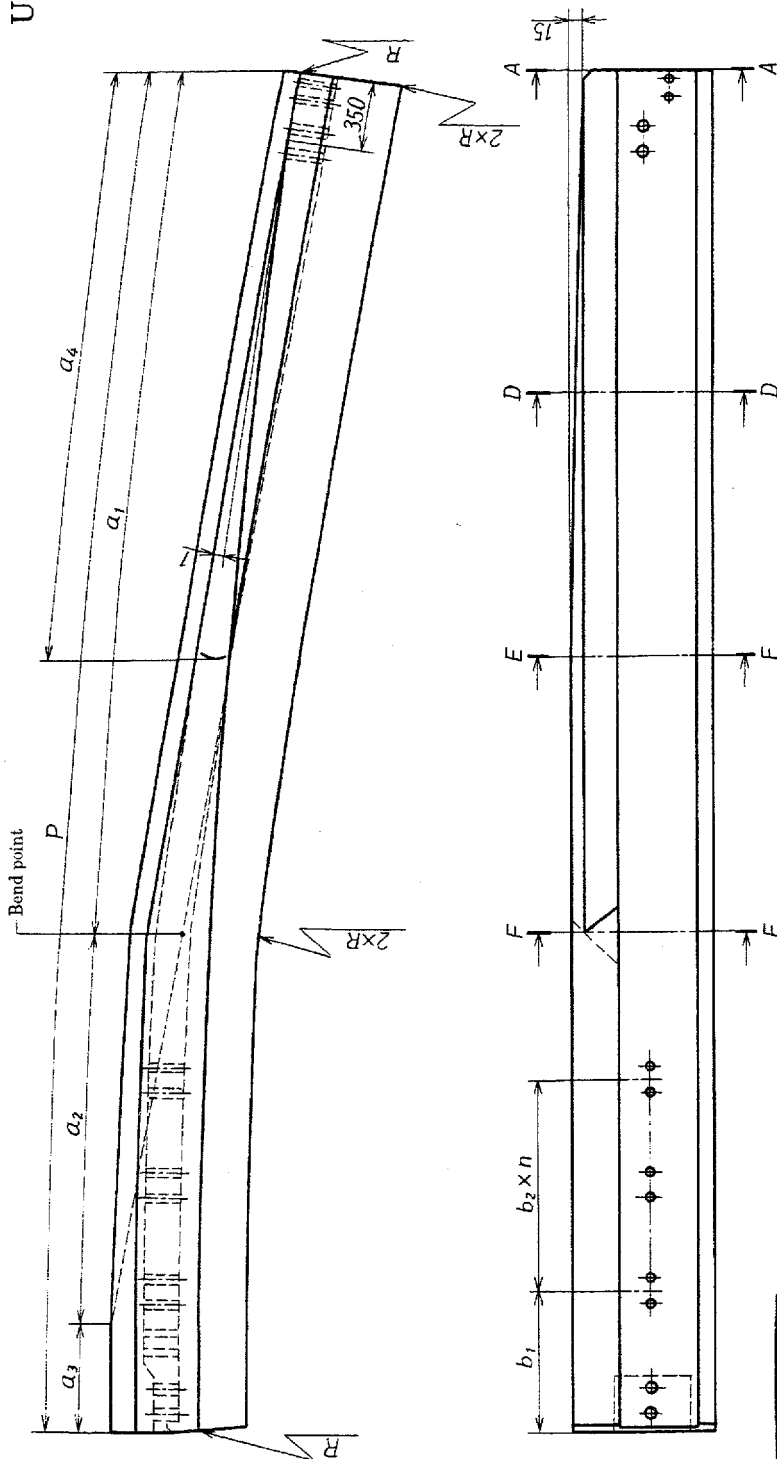
Code	Name	Reference Attached Fig.	Code	Name	Reference Attached Fig.
1	Stock rail	Omitted	16	Washer	1.19
2	Stock rail		17	Washer	1.17
3	Tongue rail	2.1 (1)	18	Washer	Omitted
4	Tongue rail	2.1 (2)	19	Rail brace	1.21
5	Switch rod	1.2, 1.3, 1.5	20	Base plate	1.22
6	Bearing clip	1.8	21	Base plate	1.23
7	Stud	1.9	22	Base plate	1.26
8	Filler	1.10	23	Base plate	1.27
9	Filler	1.11	24	Base plate	1.28
10	Fish plate	1.12	25	Bolt	Omitted
11	Collar	1.13	26	Bolt	
12	Washer	1.14	27	Bolt	
13	Washer	1.15	28	Bolt	
14	Washer	1.16	29	Bolt	
15	Washer	1.18	30	Bolt	

Note (1) For the base plate at the toe of switch, code 22 may be replaced with 23 according to the working condition.



Attached Fig. 2 Articulated switch (intersecting curved tongue rail)

Unit: mm



Magnification of tongue rail heel area

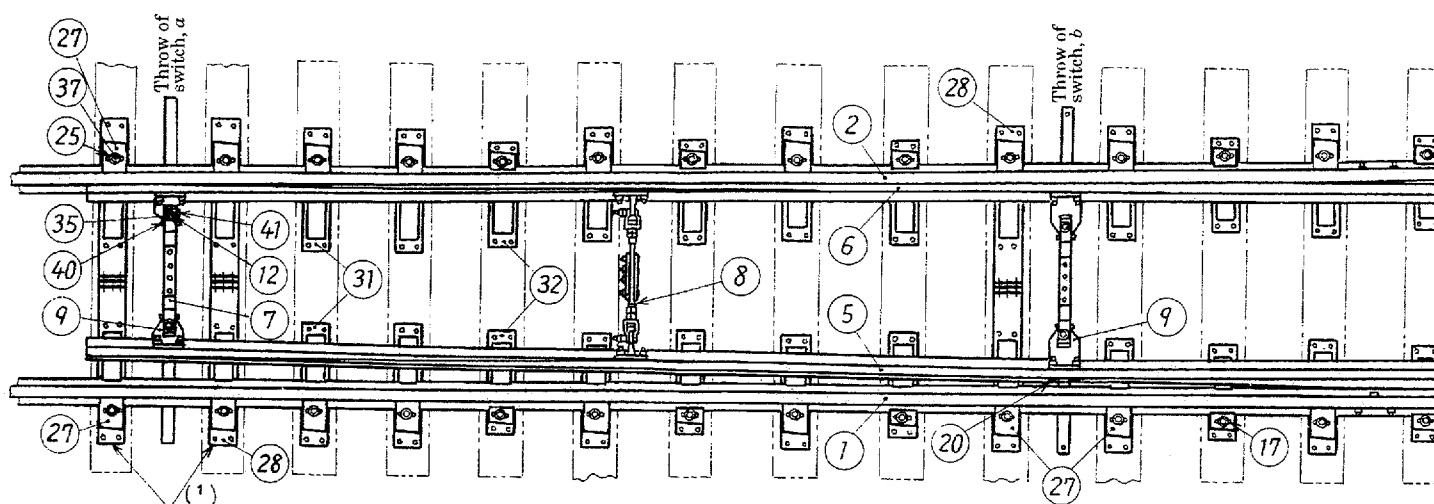
Gauge	Rail type	No.	P	a ₁	a ₂	a ₃	a ₄	b ₁	b ₂	n
1 067	50 N	8	4 500	2 427	1 497	576	1 410	800	640	1
		10	5 500	2 862	1 835	803	1 790	790	620	2

- Remarks
1. The indications of A-A, D-D, E-E, F-F and G-G to I-I are corresponding to those of A-A, D-D, E-E, F-F and G-G to I-I in Attached Fig. 1-1.
 2. Dimension of b_1 , b_2 and n may be changed depending on the working condition.
 3. This tongue rail shall be made of 70 S rail.

Attached Fig. 2.1 (1) Tongue rail

Drawings are omitted as these are symmetrical shape to those in Attached Fig. 2.1 (1).

Attached Fig. 2.1 (2) Tongue rail

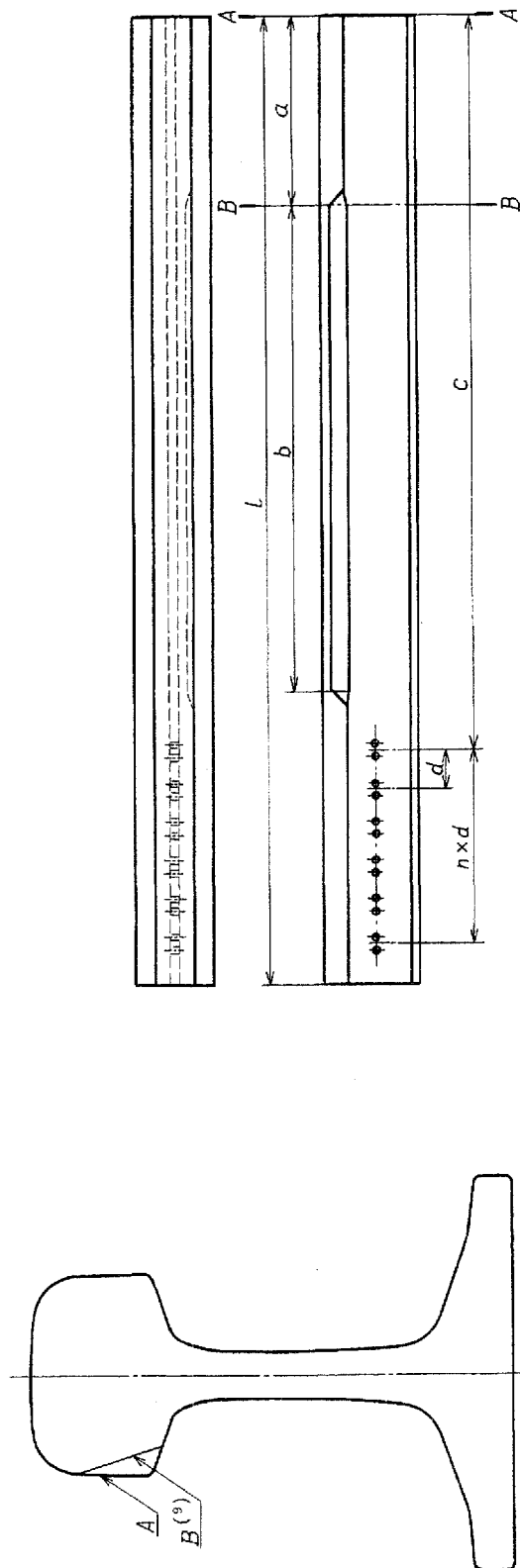


Code	Name	Reference Attached Fig.						
		50 N		60				
				Using 70 S rail		Using 80 S rail		Using 90 S rail
1	Stock rail	3.1 (1)		3.5 (1)				
2	Stock rail	3.1 (2)		3.5 (2)				
3	Stock rail	3.2		—		3.6 (1)		
4	Stock rail	3.2		—		3.6 (2)		
5	Tongue rail	3.3 (1)	3.4 (1)	3.7 (1)		3.8 (1)		3.9 (1)
6	Tongue rail	3.3 (2)	3.4 (2)	3.7 (2)		3.8 (2)		3.9 (2)
7	Switch rod	1.2		1.4	3.11	3.10		
8	Stretcher bar	3.12		3.12				
9	Bearing clip	1.8		3.16	3.13	3.14		3.16
10	Bearing clip	1.8		3.16	3.13	3.14	3.15	3.16 3.17
11	Stud	3.18		3.20		3.19		3.20, 3.21
12	Collar	1.13		1.13				
13	Washer	3.22		3.22				
14	Washer	3.23		3.23				
15	Washer	3.24		3.24				
16	Washer	1.14	3.25	3.25				
17	Washer	3.26		3.26 to 3.28				
18	Washer	3.29		3.28, 3.29				
19	Washer	—		—		3.32		—
20	Washer	—		—		3.33		—
21	Washer	1.19		1.19, 3.34				
22	Washer	3.30		—				
23	Washer	3.30		—				
24	Washer	3.31		—				
25	Washer	Omitted		Omitted				
26	Washer							
27	Rail brace	1.21	3.35	3.36, 3.37				
28	Base plate	1.26	3.38	3.39				
29	Base plate	3.40		3.42, 3.44				
30	Base plate	3.41		3.43, 3.45				
31	Base plate	1.27	3.46	3.47				
32	Base plate	1.28	3.46	3.47				
33	Tie plate body	3.48		3.48				
34	Tie plate body	3.48		3.48				
35	Bolt	Omitted		Omitted				
36	Bolt							
37	Bolt							
38	Bolt							
39	Bolt							
40	Washer	1.30		1.30				
41	Washer	1.20		1.20				
42	Washer	3.49		3.51, 3.53				
43	Washer	3.50		3.52, 3.54				
44	Washer	3.26		3.28				
45	Washer	3.27		3.28				

Gauge mm	Type of rail	Type of turnout	No.	Number of switch rods	Number of stretcher bars
1 067	50 N	Simple turnout	8	1	1
			10	1	1
			12	1	1
			16	2	2
			20	2	2
			24	2	2
	60	Simple turnout	10	1	1
			12	1	1
			16	2	2
			20	2	2
			24	2	2
			28	2	2
1 435	50 N	Simple turnout	8	1	1
			10	1	1
			12	1	1
			16	2	2
			20	2	2
			24	2	2
	60	Simple turnout	8	1	1
			10	1	1
			12	1	1
			16	2	2
			20	2	2
			24	2	2
1 067	50 N	Simple turnout	8	1	1
			10	1	1
			12	1	1
			16	2	2
			20	2	2
			24	2	2
	60	Simple turnout	8	1	1
			10	1	1
			12	1	1
			16	2	2
			20	2	2
			24	2	2

- Remarks
- The shape drawn shows 1 067 mm gauge 60 kg rail No. 16 simple turnout.
 - The throw of switch, *a* and *b* changed according to the condition.
 - The mark * indicates those with the gauge widened to 1 435 mm.

Unit: mm



A-A, B-B

Gauge	No.	l	a	b	c	d	n	(informative) Applicable turnout
1 067	8	12 000	—	—	—	—	—	Simple
	10	13 150	—	—	—	—	—	Symmetrical
	12	14 900	—	—	—	—	—	Symmetrical
	16	15 000	3 850	4 640	9 175	550	6	Symmetrical
	16	15 610	—	—	—	—	—	Symmetrical
1 435	8	12 450	2 440	6 220	9 415	550	5	Simple
	10	12 500	3 100	3 690	7 125	550	7	Simple
	15 000	3 383	3 740	7 707	550	6	7	Simple
	12 500	2 100	4 060	7 125	550	7	7	Simple
	15 000	3 400	4 580	8 509	510	7	7	Simple
12	13 000	1 900	4 585	7 625	550	7	6	Simple
	15 000	3 850	4 580	9 175	550	6	8	Simple
	13 000	2 400	5 350	8 059	550	8	5	Simple
	15 000	3 145	5 350	9 220	550	5	5	Simple

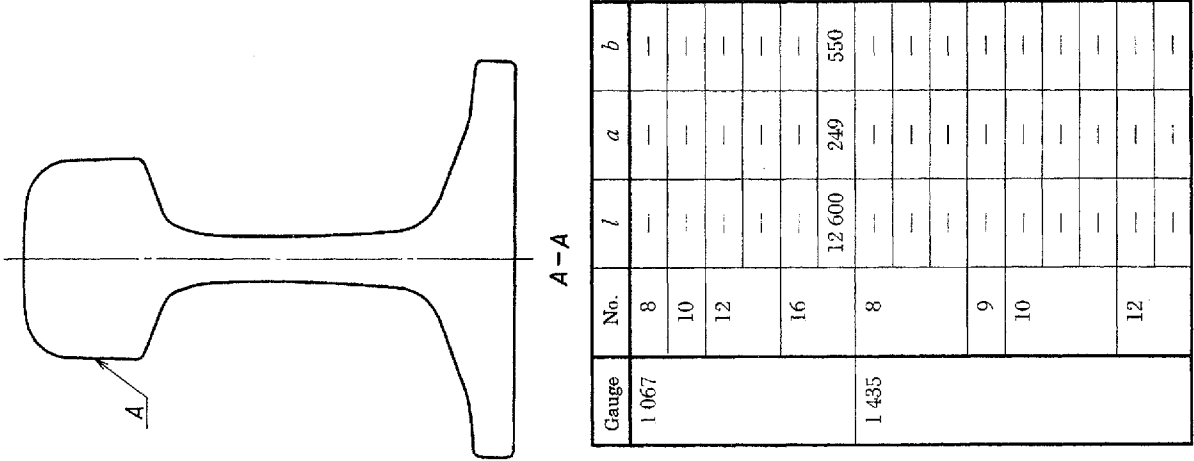
Note (9) The recession in the section B-B applies to the case of using the tongue rail of Attached Fig. 3.4.

- Remarks
1. Dimensions of a , b , c , d and l may be changed according to the working condition.
 2. Portions of no numerical entry in the columns a and b indicate the case without the recession in B-B.
 3. Portions of no numerical entry in the columns c , d and n indicate the case of no bolt holes.

Omitted the drawings, which are symmetrical shape to those shown in Attached Fig. 3.1 (1).

Attached Fig. 3.1 (2) Stock rail (50 kgN rail)

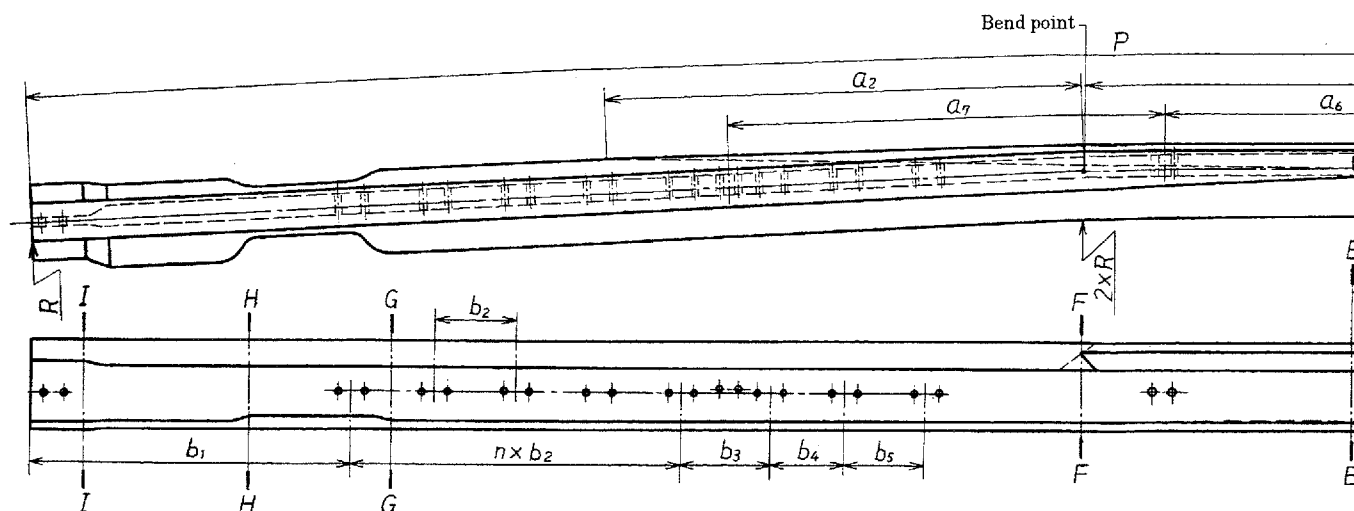
Attached Fig. 3.1 (1) Stock rail (50 kgN rail)



Unit: mm

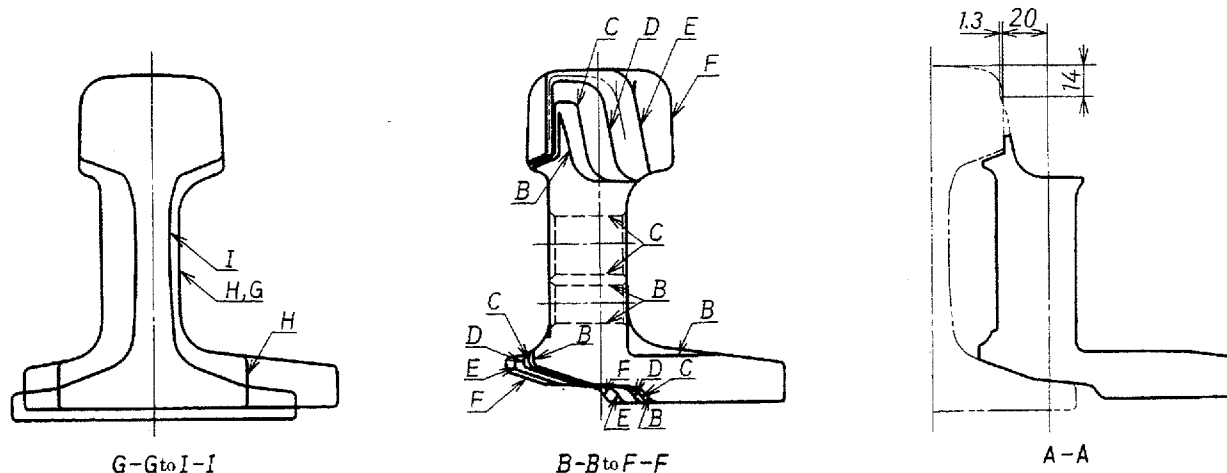
- Remarks
1. Dimensions of a , b and l may be changed according to the working condition.
 2. Portions without numeral entry in the column of l indicate that this stock rail is not applied.

Attached Fig. 3.2 Stock rail (50 kgN rail)



Gauge	No.	P	a ₁	a ₂	a ₃	a ₄	a ₅	a ₆	a ₇	b ₁	b ₂	n	b ₃	b ₄	b ₅	(informative) Applicable turn
1 067	8	9 100	2 924	1 593	2 030	350	2 860	—	—	2 080	550	5	650	—	—	Simple
	10	9 600	3 632	1 998	2 510	350	2 720	—	—	2 075	550	6	—	—	—	
	12	10 600	4 337	2 399	2 980	350	4 300	—	—	2 075	550	6	—	—	—	
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	16	12 800	5 751	3 205	3 940	350	2 620	2 230	2 940	2 140	550	4	600	500	550	
1 435	8	9 500	3 439	1 885	2 380	350	2 750	—	—	2 630	550	5	—	—	—	Simple
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

Remarks 1.

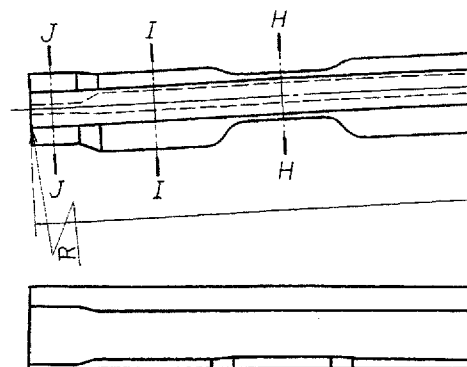


2.

Attached Fig. 3.3 (1) Tongue rail (for 50 kgN rail, made of steel)

Omitted the drawings, which are symmetrical shape to those shown in Fig. 3.3 (1)

Attached Fig. 3.3 (2) Tongue rail (for 50 kgN rail, made of steel)

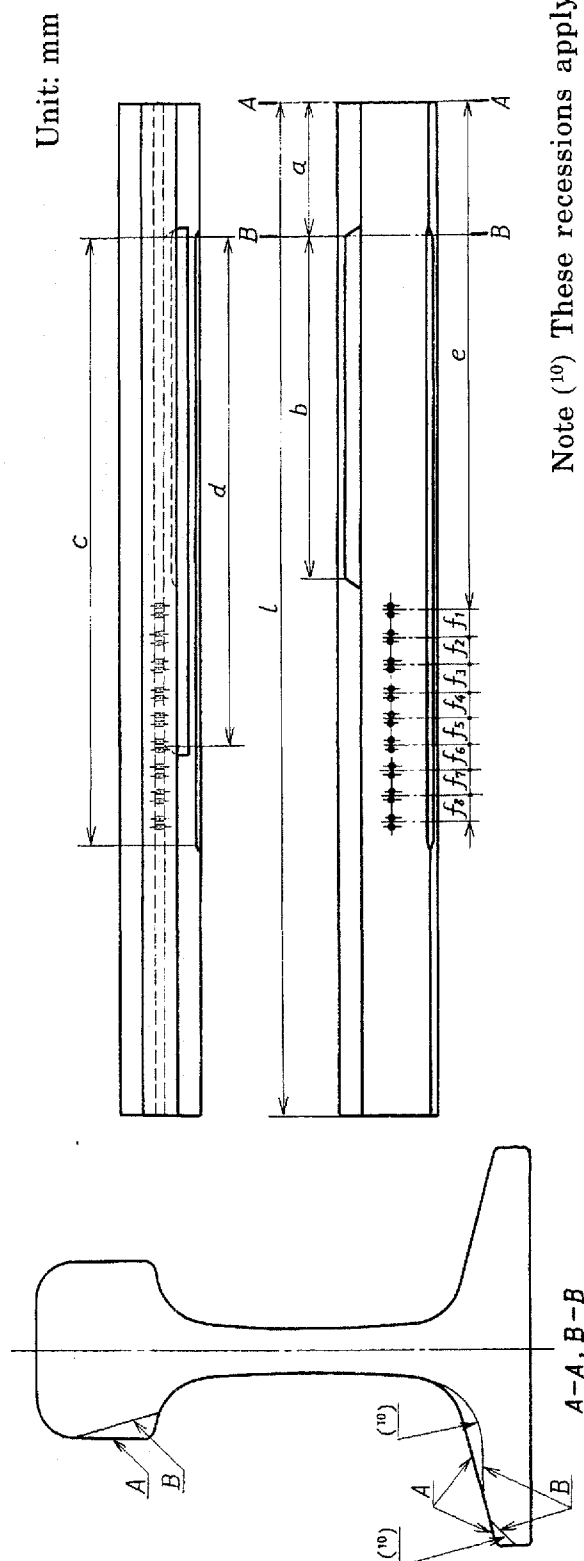


Gauge	No.	P	a_1	a_2	a_3
1 067	8	—	—	—	—
	10	—	—	—	—
	12	—	—	—	—
		10 600	4 438	2 398	3 080
	16	—	—	—	—
		12 800	6 022	3 204	4 344
1 435	8	—	—	—	—
		9 300	3 489	1 885	2 621
		9 600	3 537	1 885	2 461
	9	10 300	3 856	2 116	2 810
	10	10 600	4 373	2 362	3 036
		11 000	4 384	2 361	3 151
		10 600	4 373	2 368	3 036
	12	12 000	5 147	2 835	3 550
		10 800	5 147	2 835	3 570

Attached

Omitted the draw

Attached



Note ⁽¹⁰⁾ These recessions apply only to the cases where the tongue rail is 80 S and 90 S.

- Remarks
1. Dimensions of b, c, d, e, f_1 to f_8 and l may be changed according to the working condition.
 2. Portions without numerical entry in the columns c and d indicate the case of no recession of note ⁽¹⁰⁾.
 3. The mark * indicates those calculated with the gauge widened by 2 mm.

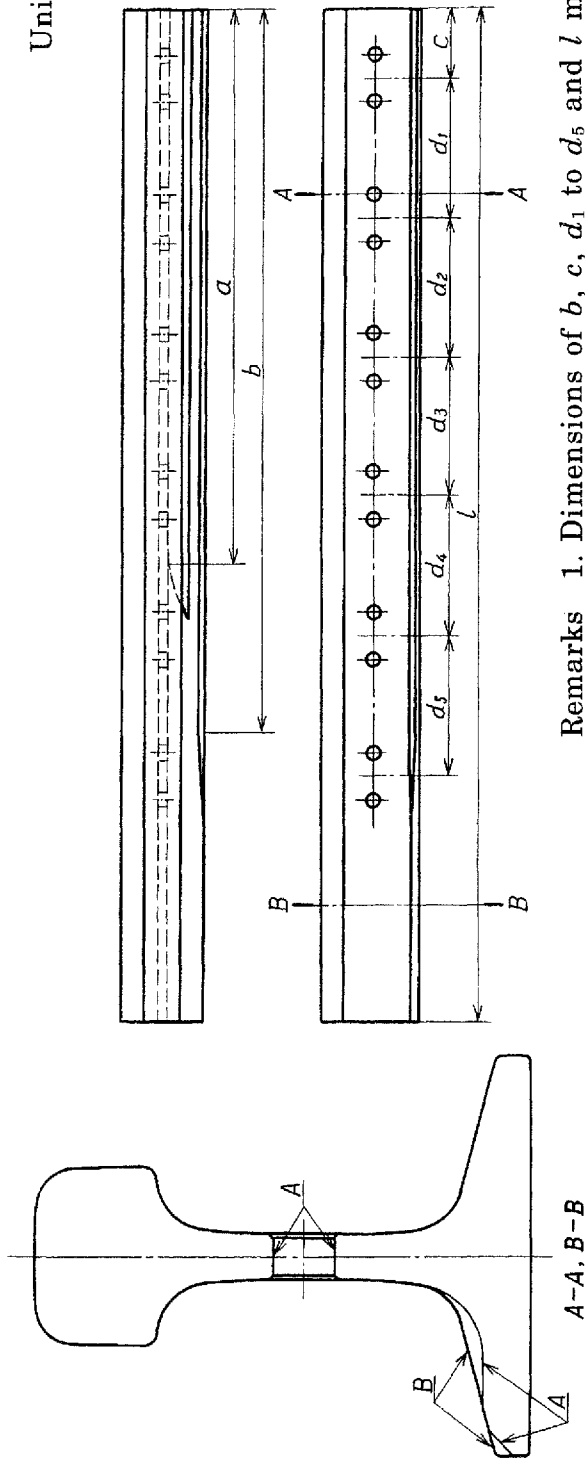
Gauge	No.	l	a	b	c	d	e	f_1	f_2	f_3	f_4	f_5	f_6	f_7	f_8	(informative) Applicable turnout
1 067	8	12 580	2 880	3 200	7 900	4 700	6 870	570	570	570	570	570	570	—	—	Symmet- rical
	10	12 560	2 880	3 930	9 000	6 130	8 000	570	570	570	570	570	570	—	—	Simple
	12	12 560	2 880	4 630	9 000	7 230	8 000	570	570	570	570	570	570	—	—	Symmet- rical
	13	13 680	2 980	4 640	—	—	8 555	570	570	570	570	570	570	—	—	Symmet- rical
	16	12 470	2 310	6 210	9 960	9 200	9 335	570	570	570	570	570	570	—	—	Symmet- rical
1 435	12	12 450	2 440	6 210	10 010	9 690	9 415	550	550	550	550	550	550	—	—	Symmet- rical
	20	12 350	2 880	7 420	9 470	9 470	10 955	585	585	585	585	585	585	—	—	Simple
	8	12 500	2 800	3 800	7 900	5 600	7 360	570	570	570	570	570	570	—	—	Simple
	13	13 080	3 380	3 740	—	—	7 385	570	570	570	570	570	570	—	—	Simple
	*8	12 500	2 800	3 800	7 900	5 600	7 360	570	570	570	570	570	570	—	—	Simple
1 435	10	12 500	2 320	4 580	—	—	7 645	550	550	550	550	550	550	—	—	Simple
	*10	12 500	2 320	4 700	9 000	6 900	8 020	570	570	570	570	570	570	—	—	Simple
	15	15 000	3 365	4 570	9 500	7 140	8 640	550	550	550	550	550	550	550	550	Simple
	12	14 230	2 430	5 350	—	—	7 985	570	570	570	570	570	570	570	570	Simple
	12	14 230	2 430	5 350	—	—	7 985	570	570	570	570	570	570	570	570	Simple

Attached Fig. 3.5 (1) Stock rail (60 kg rail)

Omitted the drawings, which are symmetrical shape to those shown in Attached Fig. 3.5 (1).

Attached Fig. 3.5 (2) Stock rail (60 kg rail)

Unit: mm



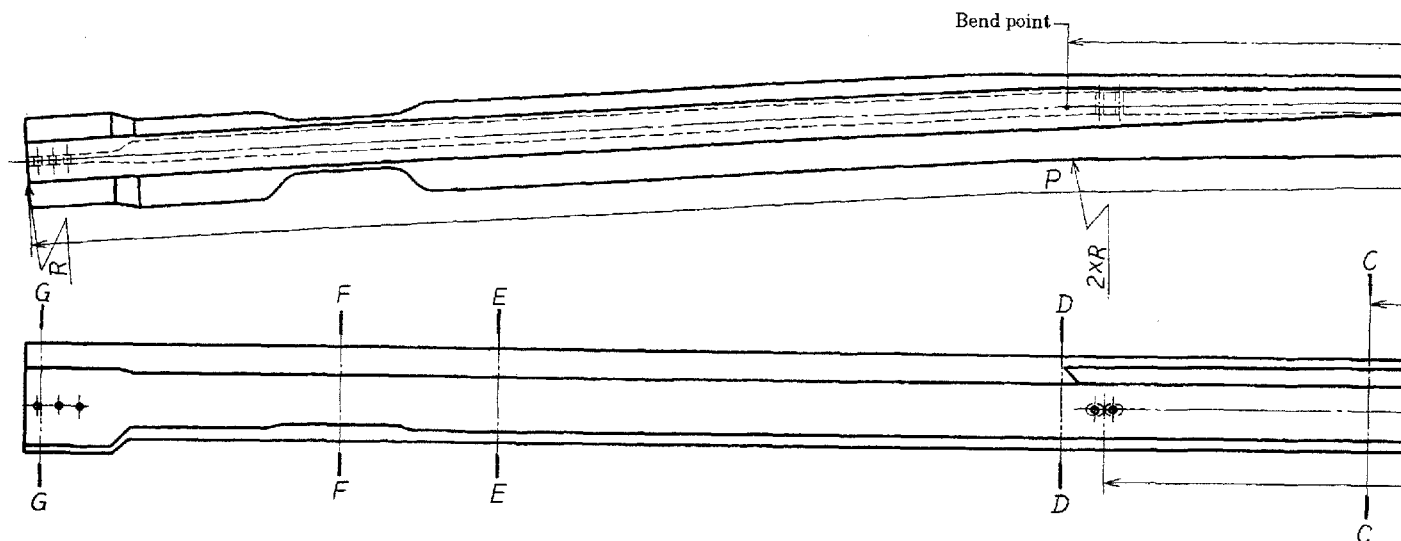
- Remarks
1. Dimensions of b , c , d_1 to d_5 and l may be changed according to the working condition.
 2. Portions without numerical entry in the column of l indicate that this stock rail is not being applied.
 3. The mark ※ indicates those calculated with the gauge widened by 2 mm.

Gauge	No.	l	a	b	c	d_1	d_2	d_3	d_4	d_5
1 067	10	—	—	—	—	—	—	—	—	—
	12	—	—	—	—	—	—	—	—	—
	16	12 800	—	770	269	—	—	—	—	—
	20	12 600	—	1 300	255	550	550	—	—	—
1 435	8	9 484	1 464	3 614	369	545	550	550	545	570
	※ 8	—	—	—	—	—	—	—	—	—
	10	—	—	—	—	—	—	—	—	—
	※ 10	—	—	—	—	—	—	—	—	—
	12	—	—	—	—	—	—	—	—	—
	12	—	—	—	—	—	—	—	—	—

Attached Fig. 3.6 (1) Stock rail (60 kg rail)

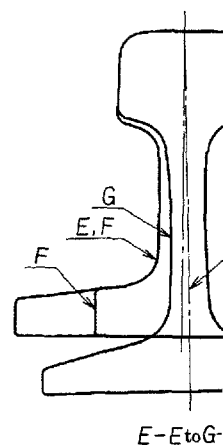
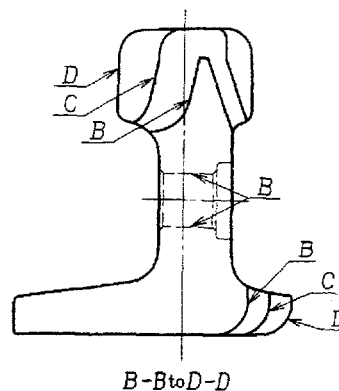
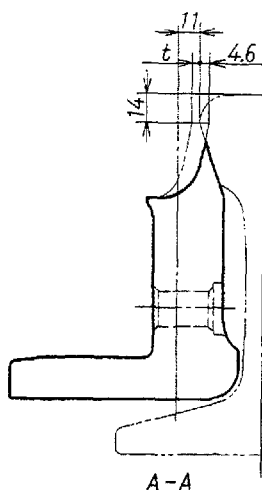
Attached Fig. 3.6 (2) Stock rail (60 kg rail)

Omitted the drawings, which are symmetrical shape to those shown in Attached Fig. 3.6 (1).



Gauge	No.	P	a_1	a_2	a_3	a_4	t
1 067	10	—	—	—	—	—	—
	12	—	—	—	—	—	—
		10 600	4 438	3 101	350	4 555	3.7
	16	—	—	—	—	—	—
		—	—	—	—	—	—
1 435	8	—	—	—	—	—	—
		9 600	3 537	2 270	450	2 870	3.4
	* 8	—	—	—	—	—	—
	10	10 600	4 373	3 036	450	4 200	3.7
	* 10	—	—	—	—	—	—
		—	—	—	—	—	—
	12	11 700	5 147	3 237	350	4 535	4.2

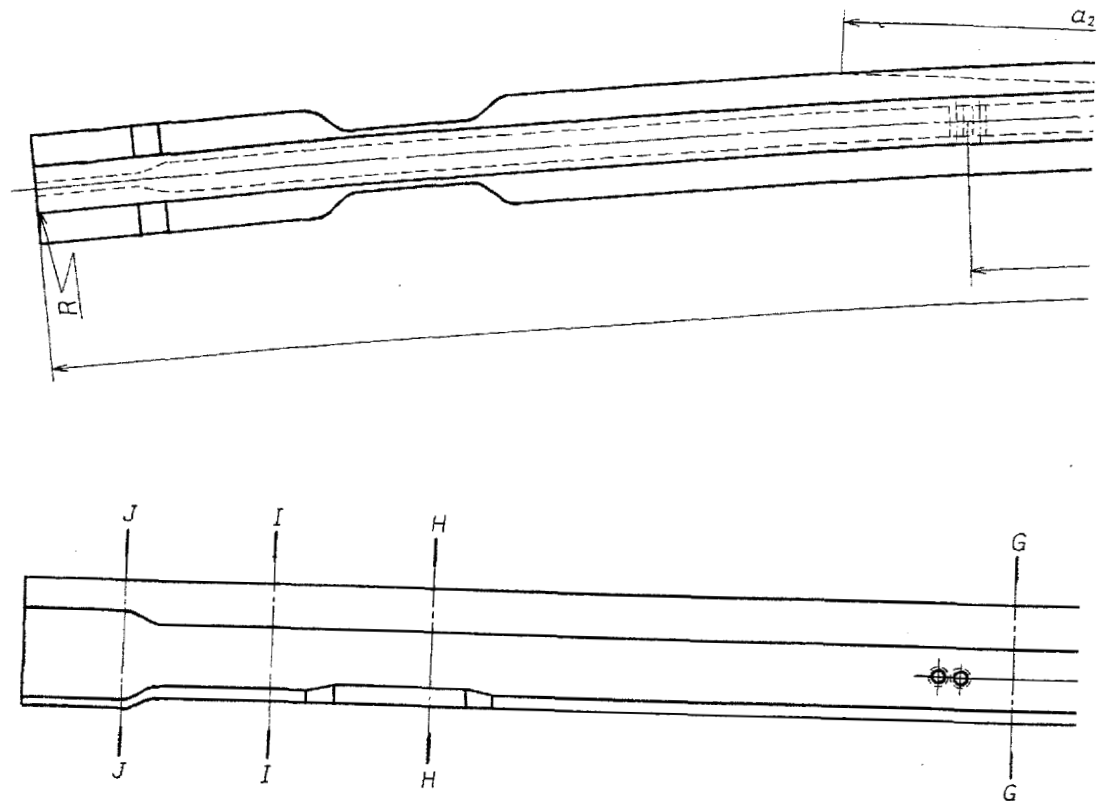
- Remarks
1. Dimensions of a_1 and a_2 may be c to the working condition.
 2. Dimensions of a_3 and a_4 may be c to the sleeper arrangement.
 3. The mark * indicates those ca gauge widened by 2 mm.



Attached Fig. 3.7 (1) Tongue rail (for 60 kg rail, made of 70 S

Omitted the drawings, which are symmetrical shape to those shown in Attach

Attached Fig. 3.7 (2) Tongue rail (for 60 kg rail, made of 70 S

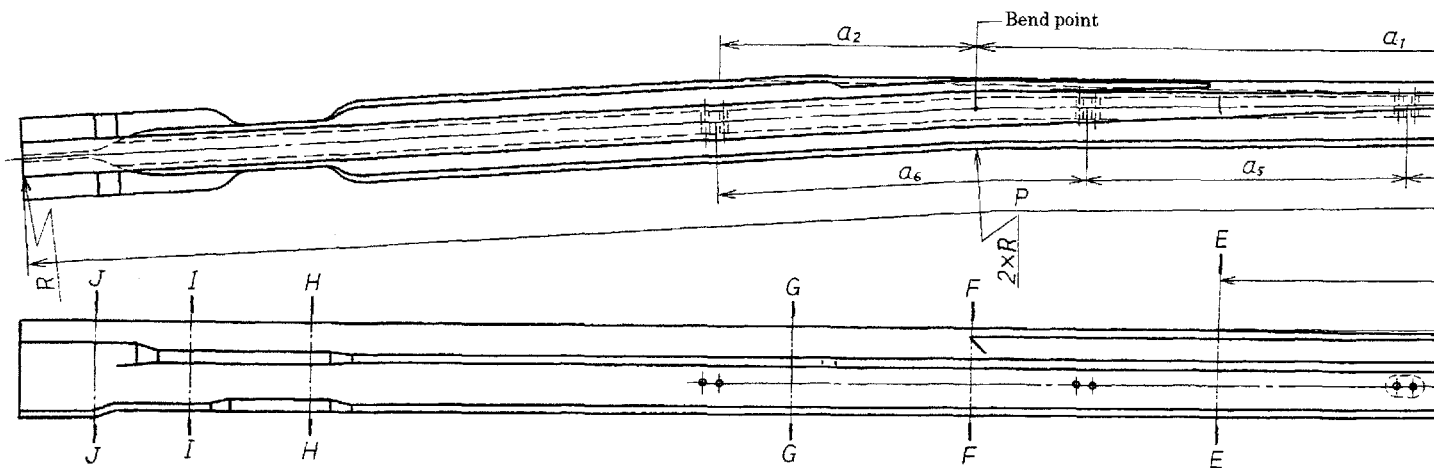


Gauge	No.	P	a_1	a_2	a_3	a_4	a_5	a_6	t	(informative) Applicable turnout	
1 067	8	9 600	3 019	1 182	2 039	2 870	—	—	3.1	Simple	Symmet- rical
	10	10 700	3 726	1 483	2 600	4 010	—	—	3.5		Symmet- rical
	12	10 700	4 429	1 791	3 100	4 010	—	—	3.7		Symmet- rical
		—	—	—	—	—	—	—	—		—
	16	12 600	6 010	2 283	4 096	2 400	2 350	2 295	3.3		Symmet- rical
		12 800	6 010	2 564	4 257	2 480	2 270	2 700	3.3		—
	20	14 800	7 218	2 844	4 807	2 865	2 885	2 360	4.2		Symmet- rical
		—	—	—	—	—	—	—	—		—
1 435	8	9 600	3 585	1 400	2 528	2 870	—	—	3.0	Simple	—
		—	—	—	—	—	—	—	—		—
	※ 8	9 600	3 585	1 400	2 528	2 870	—	—	3.0		—
	10	—	—	—	—	—	—	—	—		—
	※ 10	10 700	4 480	1 753	3 174	4 580	—	—	3.1		—
		11 100	4 368	1 753	3 038	4 250	—	—	3.7		—
	12	—	—	—	—	—	—	—	—		—

Attached Fig. 3.8 (1) To

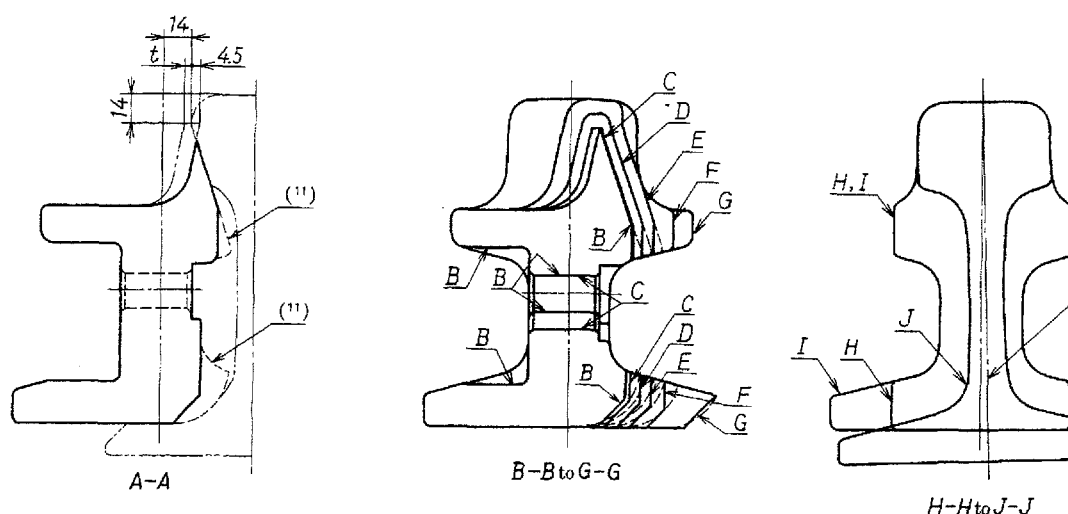
Omitted the drawings, which are sym

Attached Fig. 3.8 (2) To



Gauge	No.	P	a_1	a_2	a_3	a_4	a_5	a_6	t	(informative) Applicable turnout	
1 067	8	9 600	3 019	1 182	2 039	2 870	—	—	3.1	Simple	Symmetrical
	10	10 700	3 726	1 483	2 600	4 010	—	—	3.5		Symmetrical
	12	10 700	4 429	1 791	3 100	4 010	—	—	3.7		Symmetrical
		—	—	—	—	—	—	—	—		—
	16	12 600	6 010	2 283	4 096	2 400	2 350	2 295	3.3		Symmetrical
		12 800	6 010	2 564	4 257	2 480	2 270	2 700	3.3		—
	20	14 800	7 218	2 844	4 807	2 865	2 885	2 360	4.2		Symmetrical
1 435	8	9 600	3 585	1 400	2 528	2 870	—	—	3.0	Simple	—
	—	—	—	—	—	—	—	—	—		—
	※ 8	9 600	3 585	1 400	2 528	2 870	—	—	3.0		—
	10	—	—	—	—	—	—	—	—		—
	※ 10	10 700	4 480	1 753	3 174	4 580	—	—	3.1		—
		11 100	4 368	1 753	3 038	4 250	—	—	3.7		—
	12	—	—	—	—	—	—	—	—		—

Remarks 1. Dimension according to JIS E 1305-1998 (2003)
2. Dimension according to JIS E 1305-1998 (2003)
3. The mark with the

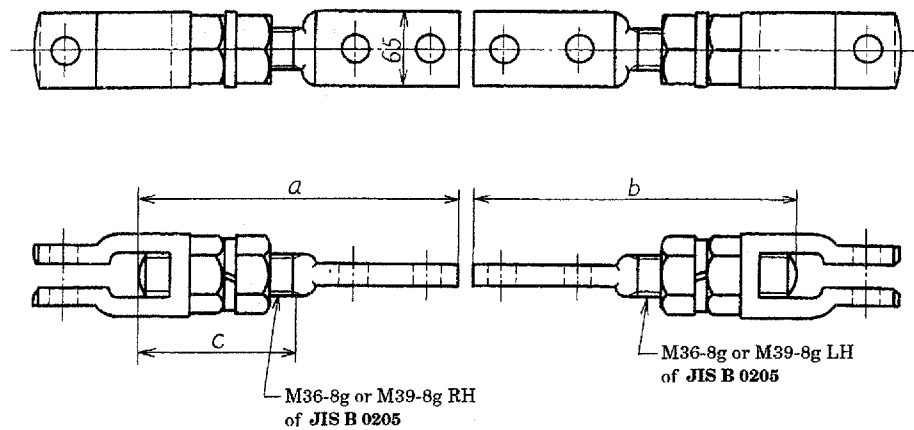


Attached Fig. 3.9 (1) Tongue rail (for 60 kg rail, made of 90 S rail)

Omitted the drawings, which are symmetrical shape to those shown in Attached

Attached Fig. 3.9 (2) Tongue rail (for 60 kg rail, made of 90 S rail)

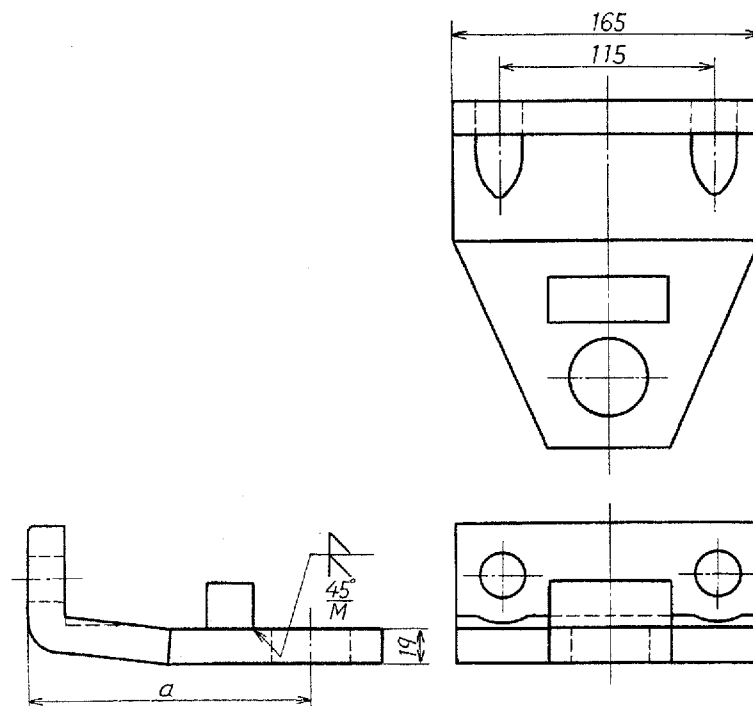
Unit: mm



Remarks: Dimensions a , b and c shall be determined by the working position.

Attached Fig. 3.12 Stretcher bar

Unit: mm



Remarks: The dimension a shall be determined by the working position.

Attached Fig. 3.13 Bearing clip