

NMRA RECOMMENDED PRACTICES		
<b>TURNOUT DIMENSIONS</b>		
Revised:	Feb. 1961	RP 12.3

## NMRA RECOMMENDED PRACTICES RP-12.3 Turnout Dimensions

**HO SCALE**

Original Calculation by E. R. Frase  
New Design by Clarence H. Hill

(1) FROG NUMBERS	4	5	6	7	8	9	10
<b>PROPERTIES OF CURVED SWITCHES</b>							
(2) Rail Length	2-1/8"	2-1/8"	2-1/8"	3-3/16"	3-3/16"	3-3/16"	3-3/16"
(3) Point Angle *	2d 01'	2d 01'	2d 01'	1d 20'	1d 20'	1d 20'	1d 20'
(4) Heel Spread [+]	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"
(5) Heel Angle *	4d 51'	4d 51'	4d 51'	2d 53'	2d 53'	2d 53'	2d 53'
(6) Switch Radius	43"	43"	43"	117"	117"	117"	117"
(7) Mid-Ordinate	.013"	.013"	.013"	.011"	.011"	.011"	.011"
<b>LEAD TO THEORETICAL POINT OF FROG</b>							
(8) Lead	5-1/16"	5-11/16"	6-1/4"	8-7/16"	9"	9-9/16"	10-1/16"
<b>CLOSURE DISTANCE</b>							
(9) Straight Rail	2-3/8"	2-15/16"	3-7/16"	4-1/2"	4-15/16"	5-3/8"	5-3/4"
(10) Curved (Length	2-7/16"	2-31/32"	3-15/32"	4-17/32"	4-31/32"	5-13/32"	5-25/32"
(11) Rail (Radius	15"	26"	43"	49"	67"	89"	117"
<b>GAGE LINE OFFSETS ON CURVED CLOSURE RAIL</b>							
(12) 1st Point Y1 [+]				15/64"	15/64"	15/64"	15/64"
(13) 1st Point X1				4-7/8"	4-15/16"	5"	5-1/16"
(14) Mid-Point Y2 [+]	19/64"	19/64"	19/64"				
(15) Mid-Point X2	3-1/2"	3-5/8"	3-3/4"				
(16) 3rd Point Y3 [+]				3/8"	3/8"	3/8"	3/8"
(17) 3rd Point X3				6-1/4"	6-1/2"	6-3/4"	6-15/16"
<b>PROPERTIES OF FROGS</b>							
(18) Frog Angle *	14d 15'	11d 25'	9d 32'	8d 10'	7d 09'	6d 22'	5d 43'
(19) Overall Length	1-1/2"	1-11/16"	1-7/8"	2-1/16"	2-3/8"	2-11/16"	3"
(20) Toe Length	9/16"	5/8"	11/16"	3/4"	7/8"	1"	1-1/8"
(21) Heel Length	15/16"	1-1/16"	1-3/16"	1-5/16"	1-1/2"	1-11/16"	1-7/8"
(22) Toe Spread	9/64"	1/8"	7/64"	7/64"	7/64"	7/64"	7/64"
(23) Heel Spread	15/64"	7/32"	13/64"	3/16"	3/16"	3/16"	3/16"
<b>POINT OF FROG TO INTERSECTION OF CENTER LINES</b>							
(24) PF to ICL	2-19/32"	3-1/4"	3-29/32"	4-9/16"	5-3/16"	5-27/32"	6-1/2"
<b>DATA FOR CROSSOVERS -- PF to PF ON PARALLEL TRACKS</b>							
Distance for 2" Track Centers Along:							
(25) Straight Track	2-11/16"	3-3/8"	4-1/8"	4-13/16"	5-9/16"	6-1/4"	6-15/16"
(26) Crossover Track	2-15/16"	3-5/8"	4-1/4"	4-15/16"	5-11/16"	6-3/8"	7-1/16"
Increment for 1/8" Change in Track Centers Along:							
Straight Track	1/2"	5/8"	3/4"	7/8"	1"	1-1/8"	1-1/4"
Crossover Track	1/2"	5/8"	3/4"	7/8"	1"	1-1/8"	1-1/4"

\* the d stands for degrees (2d 01' is 2 degrees 01 minutes)

- NOTES**
- Recommended to use gages for dimensions marked [+]
  - Switch heel joints should not be out of square more than 1/32".
  - Refer to **RP-15.1** for suitable rails.
  - Slip-on joint bars may be used up to 7/16" long and B&S gage No. 30 thick. The fit must be snug on the base of the rail. At the heel of the switch it may be necessary to cut away a portion of the stock rail base.