Scales, Nominal Sizes, Gauges

Binding Standard **Dimensions in mm** **Edition 2011**
(First English Edition)

1. Purpose

This standard lays down the division of gauges and scales of model railroads and their nominal size designations.

2. Specifications

The numerous gauges of the original railroads are combined into four groups for reproduction in the model.

The model scale results in a series of model track gauges and is expressed by the term "**Nominal Size**", designated by letters or numbers (Table 1).

The pure nominal size designation without additional letter refers to original gauge widths ≥ 1250 mm, while for narrow gauge railroads with original gauge widths < 1250 mm the additional letters m, e, i or p are added to the nominal size designation.

Examples: Reproduction of a standard-gauge railroad in 1:87 scale:
Nominal size H0 ("H-zero"), gauge H0 (track gauge 16.5 mm).
Reproduction of a meter gauge railroad in 1:45 scale:
Nominal size 0 ("zero"), gauge 0m (track gauge 22.5 mm)

Table 1:

Original Gauges from	to	Model Scales 2) 1 : 220	1 : 160	1 : 120	1 : 87	1 : 64	1 : 45 4)	1 : 32	1 : 22.5	1 : 16	1 : 11	1 : 8	1 : 5.5	
1250	1700	•	Z	N	TT	H0	S	0	I	II	III	V	VII	X	1), 3)
850	< 1250	Zm	Nm	TTm	H0m	Sm	0m	Im	IIm	IIIm	Vm	VIIm	Xm	•	
650	< 850	Ne	TTe	H0e	Se	0e	Ie	IIe	IIIe	Ve	VIIe	Xe	•	•	
400	< 650	TTi	H0i	Si	0i	Ii	IIi	IIIi	VI	VIIi	Xi	•	•	•	5)
300	< 400	H0p	Sp	0p	Ip	IIp	IIIp	Vp	VIIp	Xp	•	•	•	•	
		4.5	6.5	9	12	16.5	22.5	32	45	64	89	127	184	260	◄ mm
									1¾	2½	3½	5	7¼	10¼	◄ Inch 6)
		Model Gauges G													

Notes to the table:

1) For nominal sizes I and larger, designations in Arabic numerals are also permissible. The designations contained in the 1987 edition of NEM 010 for nominal sizes III and larger are no longer applicable.

2) Individual functional parts may deviate from the scale in accordance with specifications that are subject of individual standard sheets.

3) For wide-gauge railroads (original gauge > 1435 mm) the scale can be calculated on the basis of the ratio of the gauges. This applies in particular to nominal sizes > I.

4) In some countries the scale 1:43.5 is also used.

5) In German-speaking countries instead of the additional letter **i** (industrial railroad) the letter **f** (field railroad) can be used.

6) For large gauges it is also common to use inch-based measurements.

3. Additional notes

3.1 In addition to the gauges listed in Table 1, the 72 mm and 144 mm gauges are also used for the reproduction of standard gauge vehicles, corresponding to the decimal scales of 1:20 and 1:10 respectively.

3.2 Narrow gauge railroads and industrial railroads have a variety of original gauges. Model railroads that correspond to Table 1 in scale and nominal size, but differ in gauge, can be designated X_n. **X** is the nominal size and **n** is the model gauge.

Example: 0_{14}, scale 1:45, gauge 14 mm

3.3 Other track gauges and nominal sizes that are not very common in Europe are contained in the American NMRA standards S1.

3.4 In Anglo-Saxon countries, the scale is also given in the ratio "mm per foot".

For example

3.5 mm scale denotes the scale 1:87

4 mm scale denotes the scale 1:76 (gauge 00)

7 mm scale denotes the scale 1:43.5.

3.5 To evaluate drawings made in a scale other than the desired model scale, multiply the dimensions of the drawing by the ratio of the scales.

Example: Drawing M 1:45
Model M 1:87

Conversion factor = $\frac{45}{87}$ = 0.517

3.6 Exact scale reductions of the original (e.g. "Proto:87" and "H0T") do not require their own standardization in the NEM.