1. Purpose

This standard specifies the location of the contact wire when using overhead line, e.g. catenary, operations for models of European railroads and is related to NEM 202.

2. Introduction

Among the European railroads there exist differing operational dimensions for the usable contact shoe and in a few cases the elevation of the overhead contact wire. The usable working surface area of the contact shoe most directly affects the spacing between overhead contact wire support points, e.g. mast spacing, especially in a model world with much smaller curve radii.

Thus there are two application cases to differentiate between:

- System **Wide**: For operation with wide pantograph contact shoe and lateral deviation of 300 – 400 mm off of the overhead contact wire (Examples: Normal and Wide Gauge (Nsp): DB, ÖBB, Narrow Gauge (Ssp): RhB, MOB, Mariazellerbahn),

- System **Narrow**: For operation with narrow pantograph contact shoe and lateral deviation of 200 – 300 mm off of the overhead contact wire (Examples: Normal and Wide Gauge (Nsp): SBB, FS, SNCF, Narrow Gauge (Ssp): MGB, Brünigbahn).

3. Power Wire Position

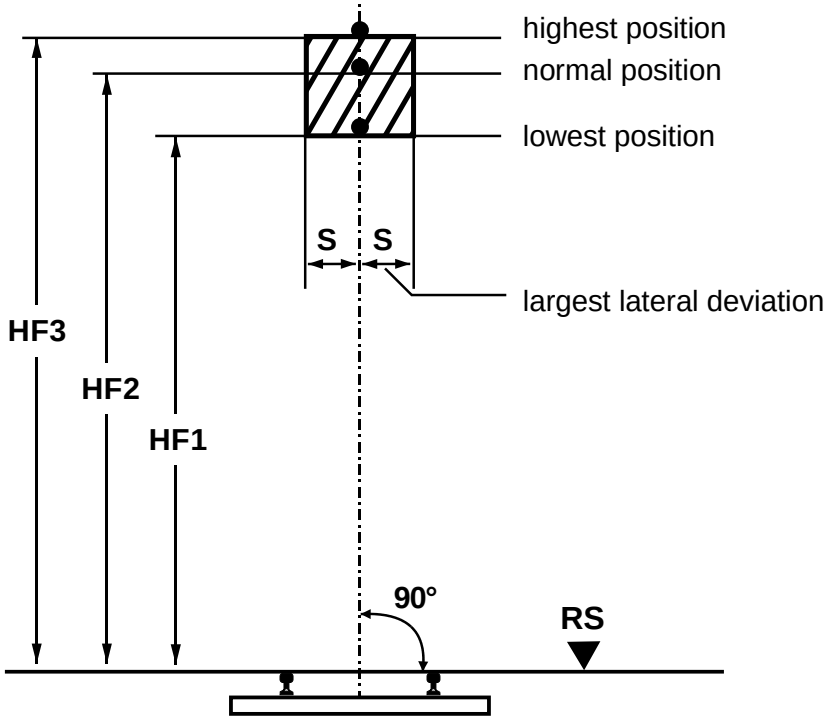

Table of Dimensions:

Gauge	S Wide	S Narrow	HF 1		HF 2		HF 3	
			Nsp	Ssp*	Nsp	Ssp	Nsp	Ssp
Z	2	1	25	23	28	26	30	28
N	3.5	1.5	34	29	38	35	40	38
TT	4.5	2	44	38	50	47	52	51
H0	6.5	3	60	50	69	65	73	70
S	8.5	4	80	69	93	86	98	93
0	11	6	112	98	130	124	139	133
I	17	8	155	134	180	172	194	181
II	27	11	220	190	260	245	276	260

Nsp: Normal and wide gauge Ssp: Narrow gauge (m, e, i)

***** With transport trailers, determine the lowest position of the overhead line as follows:

Mounting surface height above RS (transport trailer) + dimension ***HL4*** from NEM 102

Notes:

1. The dimensions are operational limits and it is advisable to only use the full lateral deviation in track bends. On straight track it is recommended to run in a zig-zag that remains within 2/3 of the maximum lateral deviation.

2. The dimension ***HF2*** establishes the normal position on open track and should be used without elevation deviation. In prototype at rail yards and stations one often finds a higher position and in tunnels and underpasses a lower position being employed. The position of the power wire must remain within the given dimensions.

3. The dimension ***HF1*** is the minimum height and is only applicable for short superstructures and building entries with only the overhead contact wire passing through, as well as tunnels with overhead contact rails.

4. The maximum support point spacing ***L*** (mast spacing) in curves of radius ***R*** can be computed relative to the given lateral deviation ***S*** using the following formula:

$$L_{max} = 4 * \sqrt{R * S}$$

With a multi-track arrangement (cross line, cross truss) utilizing normal track spacing, the support point (mast) spacing is determined by the largest curve radius. In other cases it is recommended one compute results for several radii to determine the practicably usable minimal spacing.