

DIN EN 13232-9:2012-01 (E)

Railway applications - Track - Switches and crossings - Part 9: Layouts (includes Amendment A1:2011)

Contents		Page
Foreword		4
1	Scope	6
2	Normative references	6
3	Terms and definitions	7
4	General design process	11
4.1	General process	11
4.2	Design step details	12
4.3	Practical use of the design process	12
5	General design (design step 1)	14
5.1	Track layout	14
5.2	Geometrical design	14
5.2.1	Inputs	14
5.2.2	Rules	14
5.2.3	Geometry plan	14
5.3	Wheel rail interaction	15
5.3.1	Inputs	15
5.3.2	Rules	15
5.3.3	Output	23
6	Main constructional design (step 2)	43
6.1	Inputs	43
6.2	Structural requirements	44
6.2.1	General	44
6.2.2	General requirements	44
6.2.3	Specific requirements	44
6.2.4	Other requirements	46
6.3	Actuation, locking and detection design	47
6.4	Output - main construction documents	47
6.4.1	Geometry	47
6.4.2	Guidance	47
6.4.3	Actuation	47
6.4.4	Constructional	48
6.4.5	Information lists	48
7	Detailed component design (step 3)	48
7.1	Switches	48
7.2	Crossings	48
7.3	Expansion devices	48
7.4	Other components	49
7.5	Output - assembly documents	49
7.5.1	Main assembly documents	49
7.5.2	Optional documents	51
8	Acceptance (step 4)	51
8.1	Inputs	51
8.1.1	Documents and plans	51

8.1.2	Limits of supply	51
8.2	Acceptance testing	51
8.2.1	Components acceptance	51
8.2.2	Layout assembly acceptance	52
8.3	Outputs	56
8.3.1	Documents	56
8.3.2	Traceability	56
8.3.3	Markings	56
Annex A (informative) Design criteria		57
A.1	Geometry design	57
A.2	Wheel rail interaction	59
A.3	Actuation, locking and detection conformity	61
A.4	Switch design	63
A.5	Crossing design (with fixed parts)	65
A.6	Crossing design (with moveable parts)	67
A.7	Expansion devices	69
Annex B (informative) Layout acceptance form		70
B.1	Justification	70
B.2	Example of layout acceptance form	71
Annex C (informative) Functional and safety dimensions, practically used by different European Networks		73
Annex D (normative) Maximum angle of attack in obtuse crossings		74
Annex ZA (informative) "Relationship between this European Standard and the Essential Requirements of EU Directive 2008/57/EC"		76
Bibliography		79