

DIN EN 15734-1:2013-09 (E)

Railway applications - Braking systems of high speed trains - Part 1: Requirements and definitions (includes Corrigendum :2013)

Contents		Page
1	Scope	5
2	Normative references	5
3	Terms and definitions	7
4	Symbols, units and abbreviations	8
5	Design principles	9
5.1	General requirements	9
5.1.1	Safety	9
5.1.2	Fire protection	11
5.1.3	Reliability and availability	11
5.1.4	Environmental condition	11
5.1.5	Train configuration	12
5.1.6	Maximum speed and line parameters	12
5.1.7	Coupling compatibility/capability	12
5.1.8	Longitudinal track forces	13
5.1.9	EMC	13
5.1.10	Operation in very long tunnels	13
5.2	Applicable brakes	13
5.2.1	Basic architecture for high speed braking	13
5.2.2	Dynamic brakes	13
5.2.3	Friction brakes	14
5.2.4	Magnetic track brakes	14
5.2.5	Non conventional brakes	14
5.3	Dynamic brakes	14
5.3.1	General aspect	14
5.3.2	Electro-dynamic brake (depending on the catenary in function)	15
5.3.3	Rheostatic brake	16
5.3.4	Control Command of the electro-dynamic brakes	16
5.3.5	Brake resistors	16
5.3.6	Hydrodynamic brake	17
5.4	Friction brake	17
5.4.1	General	17
5.4.2	Control command	17
5.4.3	Installation of the brake equipment	18
5.4.4	Leakage	19
5.4.5	Mechanical components/bogie equipment	19
5.5	Eddy current brake	21
5.6	Magnetic track brake	23
5.7	Non conventional brakes	23
5.8	Emergency brake concept	23
5.8.1	General	23
5.8.2	General architecture	24
5.8.3	Demand phase	24
5.8.4	Collecting and distributing brake command signals	27
5.9	Service braking	28
5.9.1	Brake management - Brake blending	28
5.9.2	Brake command	29
5.9.3	Signal processing	30

5.9.4	ATC Automatic train control system (optional)	31
5.9.5	Combined braking with two brake handles	32
5.9.6	Jerk / Ramps	32
5.9.7	Coupling/Decoupling	32
5.10	Wheel slide protection and locked wheel detection	32
5.10.1	General	32
5.10.2	Wheel slide protection	32
5.10.3	Locked wheel monitoring system	34
5.11	Parking brake	34
5.12	Location of the control devices	36
5.12.1	Driver's cab	36
5.12.2	Operating devices others than in the cab	37
5.13	Brake indicators	38
5.14	Fault monitoring and diagnostics	39
5.15	Driver's brake test	41
5.15.1	General	41
5.15.2	Regular basic brake test	41
5.15.3	Full brake test	42
5.15.4	Realisation of brake tests	43
5.16	Power supply	43
5.16.1	Air pressure supply	43
5.16.2	Electrical energy supply	44
5.17	Enhancement of wheel-rail adhesion	44
5.18	Maintenance	45
6	Brake performance	45
6.1	General	45
6.2	Emergency braking	46
6.2.1	General	46
6.3	Service braking	46
6.4	Thermal requirements	47
6.5	Adhesion values	47
Annex A (informative) Passenger alarm system		49
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2008/57/EC		50
Bibliography		52