

# DIN EN 15620:2021-11 (E)

## Steel static storage systems - Tolerances, deformations and clearances

---

	Contents	Page
European foreword .....	4	
Introduction .....	5	
1 Scope .....	6	
2 Normative references .....	6	
3 Terms and definitions .....	7	
4 Symbols .....	10	
5 Racking types .....	12	
5.1 General .....	12	
5.2 Crane racking Class 100 .....	12	
5.3 Crane racking Class 200 .....	12	
5.4 Very narrow aisle racking .....	13	
5.4.1 General .....	13	
5.4.2 Very narrow aisle (operator up) .....	13	
5.4.3 Very narrow aisle (operator down) .....	14	
5.4.4 Operation .....	14	
5.5 Wide aisle and narrow aisle .....	14	
5.5.1 Wide aisle .....	14	
5.5.2 Narrow aisle .....	14	
5.6 Cantilever racking .....	15	
5.7 Drive-In racking .....	16	
6 Racking used with Industrial trucks .....	17	
6.1 Slab deformation due to settling and slab deflection .....	17	
6.2 Installation tolerances .....	17	
6.2.1 General .....	17	
6.2.2 Tolerance field of frames in X direction .....	19	
6.3 Deformation limits .....	22	
6.3.1 Beam deformation limits in the Y direction .....	22	
6.3.2 Frame deformations .....	23	
6.3.3 Upright shortening .....	23	
6.3.4 Guide rail deformation (VNA applications) .....	23	
6.4 Clearances for unit loads and truck handling equipment in adjustable pallet racking .....	23	
6.4.1 Clearances relating to the placement of unit loads .....	23	
6.4.2 Horizontal and vertical clearances in a bay .....	23	
6.4.3 Clearances for upright protectors .....	26	
6.4.4 Horizontal clearance in the depth .....	26	
6.4.5 Aisle width clearances (wide and narrow aisle racking) .....	29	
6.4.6 Clearances for gangways .....	30	
6.4.7 Aisle width clearances (VNA) .....	32	
6.5 Pick up and deposit stations .....	32	
7 Crane racking classes 100 and 200 .....	33	
7.1 General .....	33	
7.2 Floor tolerances .....	33	
7.3 Slab deformation due to settling and slab deflection .....	33	
7.4 Top guide rail manufacturing and assembly tolerances .....	33	

7.5	Installation tolerances (single deep and double deep) .....	33
7.6	Deformation limits .....	33
7.6.1	Beam deformation limitations in the Y direction .....	33
7.6.2	Frame deformations in the X and Z directions .....	33
7.6.3	Frame deformations in the X and Z directions for clad rack buildings and wind loads .....	34
7.6.4	Elastic shortening of uprights .....	34
7.7	Safety back stop .....	35
7.7.1	Deformations .....	35
7.7.2	Clearances .....	35
8	Cantilever racking .....	35
8.1	Installation tolerances .....	35
8.2	Verticality tolerances with regard to design and assembly .....	39
8.3	Cantilever racking deformation limits .....	39
8.3.1	General .....	39
8.3.2	Arm deformations .....	40
8.4	Cantilever column deformations in the X and Z directions .....	40
8.5	Clearances for unit loads and truck handling equipment .....	41
8.5.1	Clearances relating to the placement of unit loads .....	41
8.5.2	Horizontal and vertical clearances in a bay .....	41
9	Drive-In racking .....	43
9.1	Installation tolerances .....	43
9.2	Deformation limits .....	46
9.2.1	Beam rail deformation limits in the Y direction .....	46
9.2.2	Frame deformations .....	47
9.3	Minimum pallet bearing .....	47
9.4	Clearances for unit loads and truck handling equipment .....	47
9.4.1	Industrial truck requirement .....	47
9.4.2	Clearances relating to the placement of unit loads .....	48
9.4.3	Horizontal and vertical clearances .....	48
9.4.4	Horizontal clearances in the depth .....	49
9.4.5	Horizontal truck clearances .....	49
9.4.6	Vertical clearances .....	51
10	Racking to warehouse interface .....	51
	<b>Annex A (informative) General safety philosophy .....</b>	<b>52</b>
	<b>Annex B (informative) Racking measurement surveys .....</b>	<b>56</b>
	<b>Annex C (informative) Effects of beam hogging and sagging deformations on clearances .....</b>	<b>57</b>
	<b>Annex D (informative) Additional information for determining dimensions and clearances in the depth of the rack (Z direction) in case of palletised loads .....</b>	<b>62</b>
	<b>Annex E (informative) Additional information for very narrow aisle trucks in adjustable pallet racking .....</b>	<b>65</b>
	<b>Annex F (informative) Consideration of tolerances and deformations in determining clearances .....</b>	<b>66</b>
	<b>Annex G (informative) Sprinkler systems .....</b>	<b>67</b>
	<b>Bibliography .....</b>	<b>71</b>