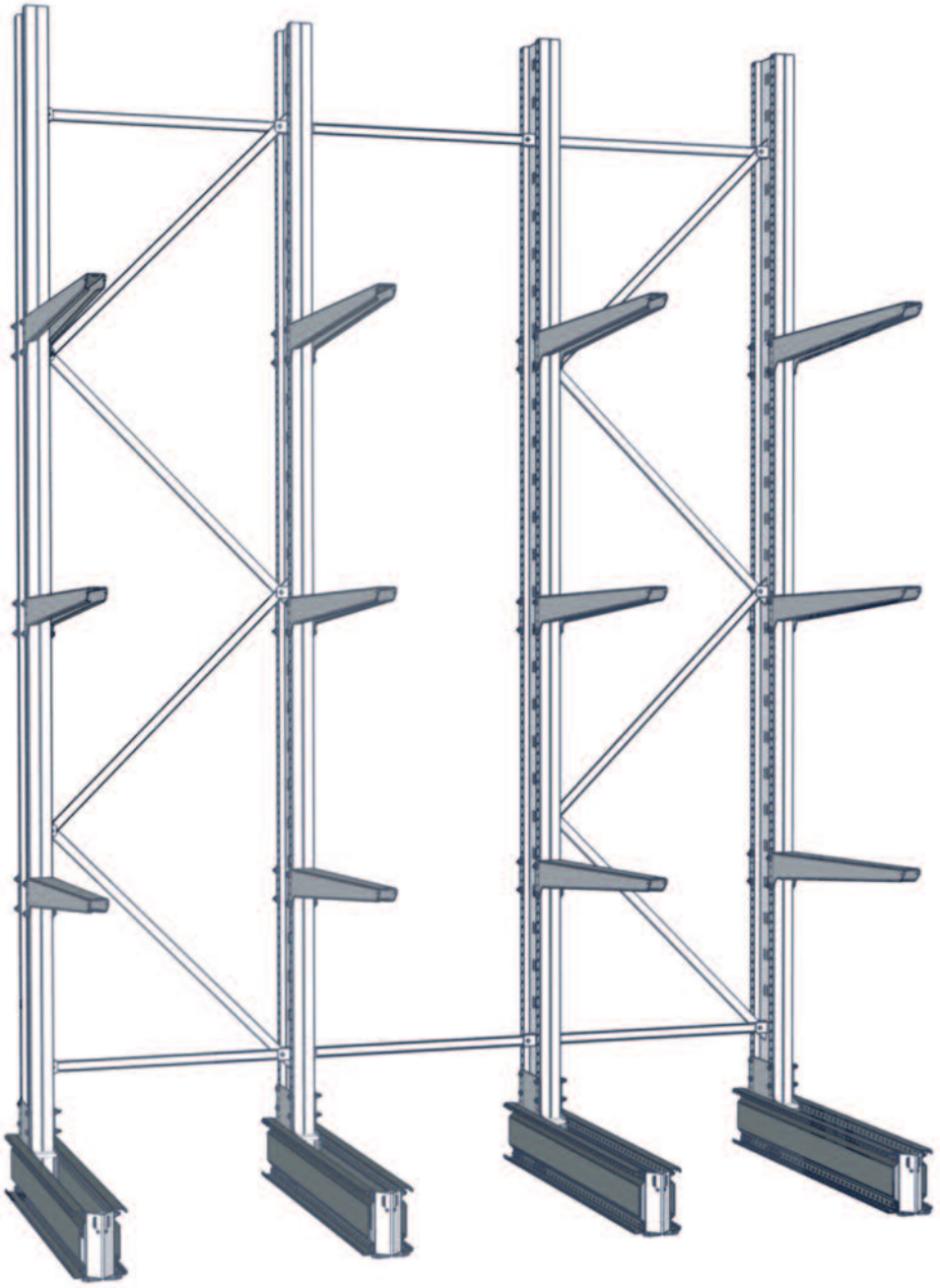
Instructions for Installation and Use of Cantilever racks



WELAND

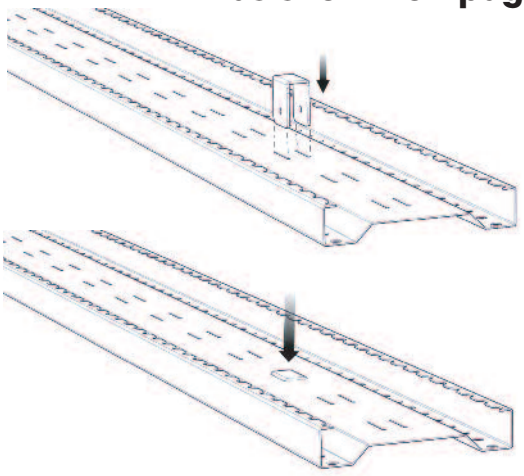
Tools needed for the installation

Spanner or impact wrench
and sockets with wrench opening
24 mm (for M16)
16 mm (for M10)

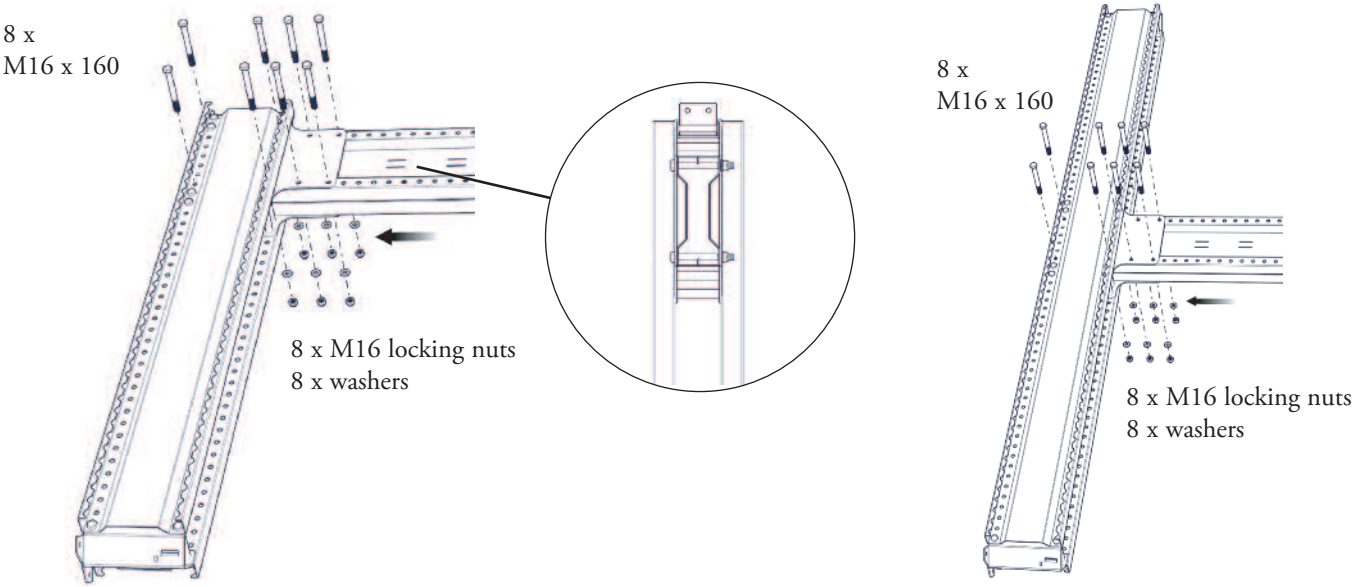
Hammer, mallet or
recoil-free hammer/mallet

Hammer drill and
Ø 10 mm bit for concrete.

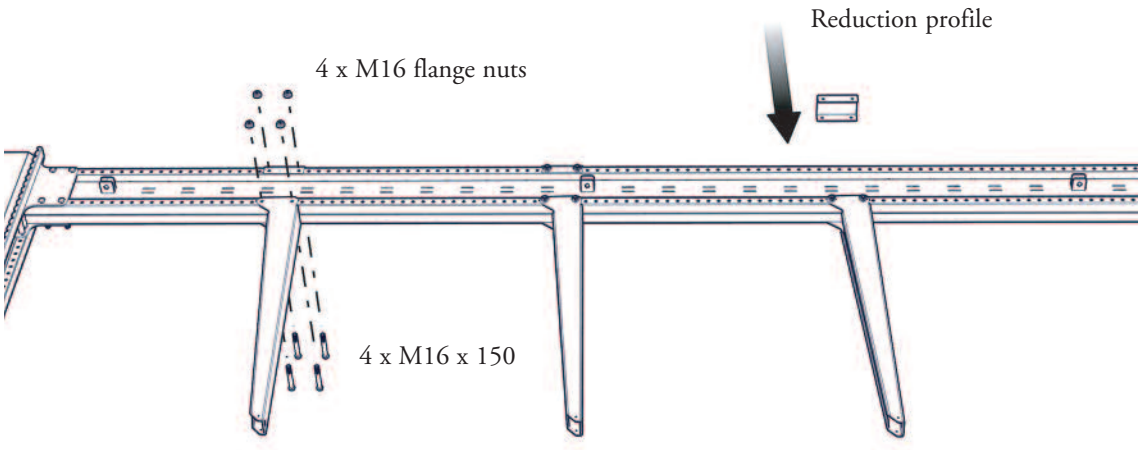
The strut brackets are placed as shown on pages 4-5



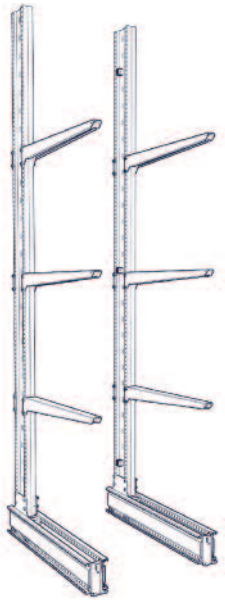
1. Mount the strut brackets on the columns as shown on enclosed drawing. Hit with a hammer until they reach the bottom and lock in place.



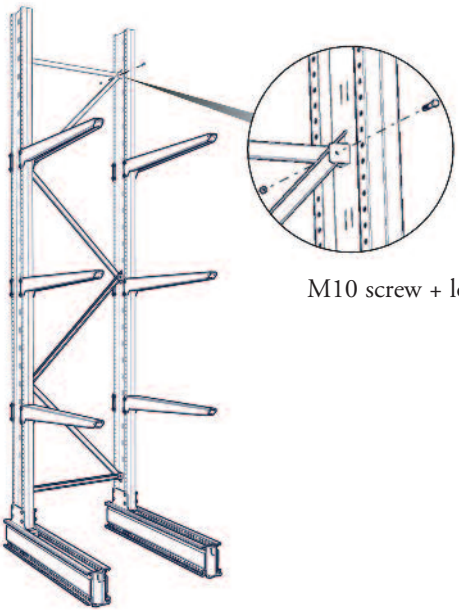
2. Put together 2 column beams to make a column and press them down, through the preassembled foot. The column must go all the way down to the bottom of the foot. Screw the column firmly to the foot. (For 200-profile, only 6 screws, washers and nuts are needed). The columns are easiest assembled horizontally.



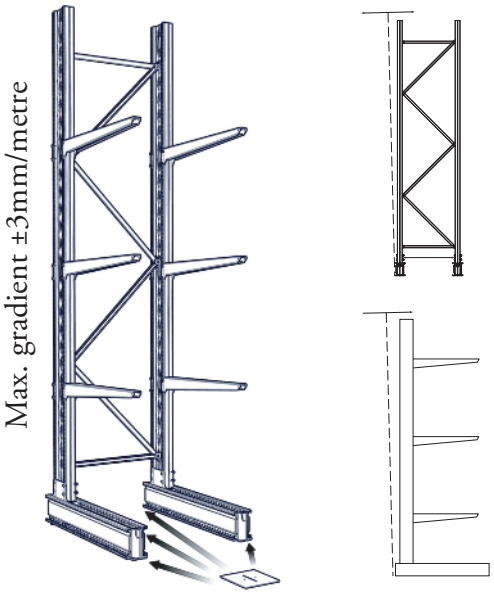
3. Screw the arms into place on one side and the reduction profiles on the other.
Only tighten the bolts to make "good contact", i.e. don't tighten too hard, causing the columns to deform. Check the strut brackets are correctly placed.



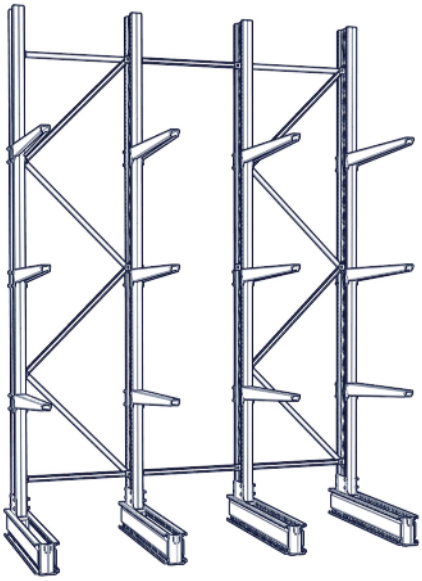
4. Place the completed column in the right location.



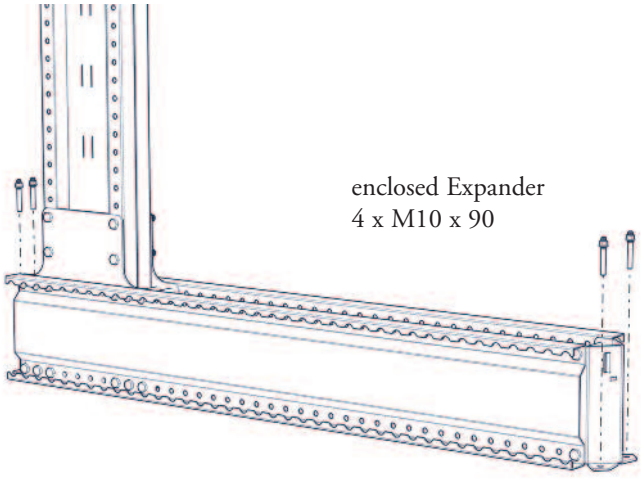
5. Install the struts between the columns as shown on pages 4-5.



6. Straighten the columns vertically. Place underlay, if needed, under the lower beams.



7. Continue with the other sections.



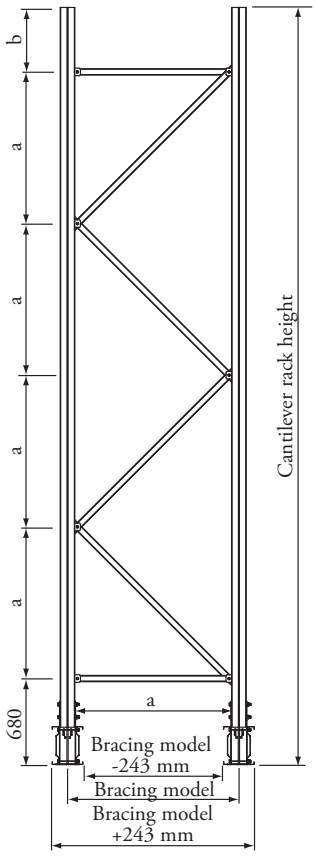
8. Secure the foot to the floor.

Bracing assembly

The number of horizontal struts, diagonal struts, strut brackets and fixings varies depending on the cantilever rack height and bracing model.

Bracing model 750 - 1750

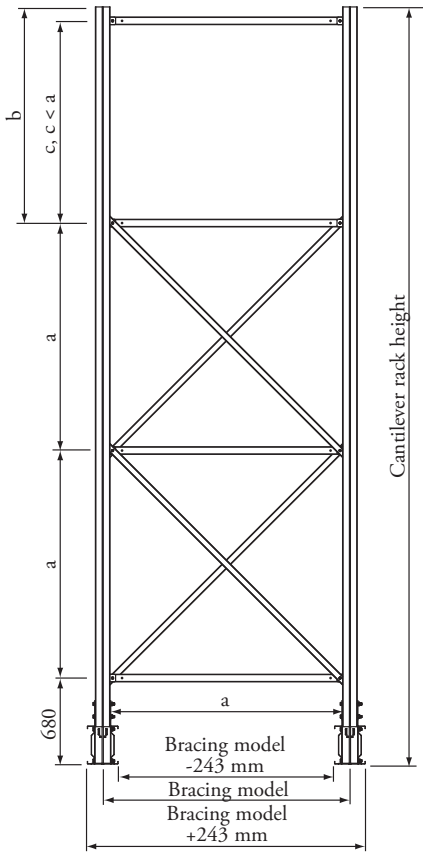
Bracing model 750 - 1750 is braced with diagonal struts alternately against the columns with as many diagonal struts as fit in vertically.
See figure below.



One section with bracing model 750 - 1750 with full bracing

Bracing model 1950 - 2350

Bracing model 1950 - 2350 is braced with two diagonal struts per a-measurement (crossed), with as many crosses as fit in vertically.
See figure below.



One section with bracing model 1950 - 2350 with full bracing

Height adjustment

For all bracing models, the following applies: If the distance from the column's top to the upper horizontal strut (b measurement) is greater than 800 mm, a horizontal strut must be placed in the upper bracing hole.

a measurement

Bracing model c/c measurement	Separation attachment hole horizontal strut and construction height diagonal strut = a
750	600
950	800
1150	1000
1350	1200
1550	1400
1750	1600
1950	1800
2150	2000
2350	2200

b measurement

the b measurement is calculated by;
b = cantilever rack height - 680 + a x $n_{max.}$
$n_{max.}$ = largest positive integer (1, 2, 3...)
that gives a result greater than 0 but less than a.

Example for 6000 mm cantilever rack height with 1550 bracing model
b = 6000 - (680 + 1400 x 3) = 1120, >800
extra horizontal strut needed.

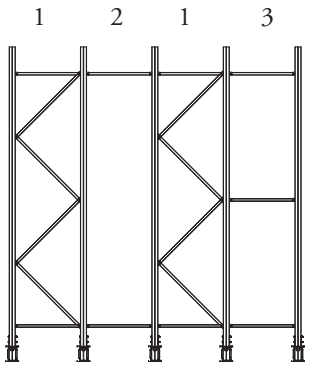
Exception

If the cantilever rack is higher than one a-measurement for the bracing model in question + 680 mm, the cantilever rack must be braced in another way.
Drawing enclosed in these cases.

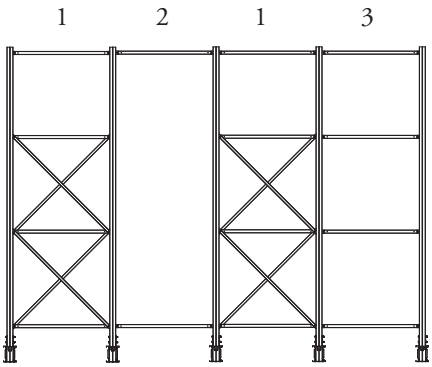
Section bracing

For more than one section in a row, the cantilever rack is braced in alternate sections with full and partial bracing. For an even number of sectionsthere are more horizontal struts on the last section (column bracing).

1 = full bracing, 2 = partial bracing, 3 = column bracing

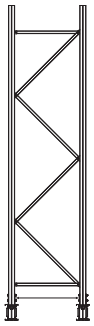


Bracing model 750 - 1750

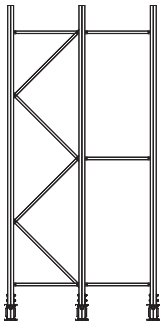


Bracing model 1950 - 2350

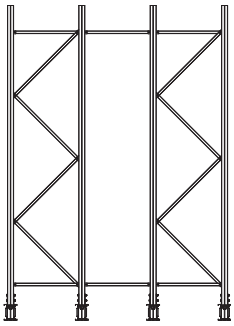
Bracing of 750, 950, 1150, 1350, 1550 and 1750 bracing models



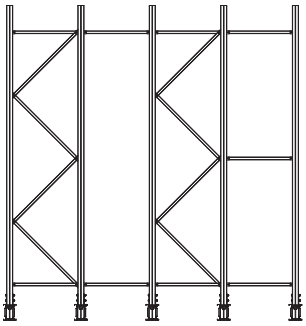
One section



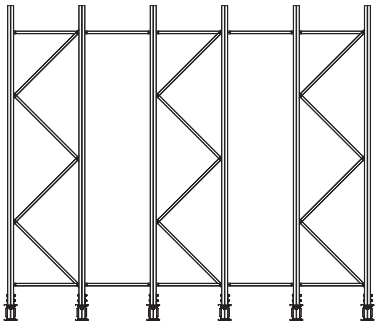
Two sections



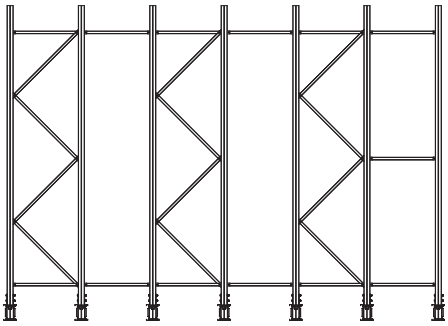
Three sections



Four sections

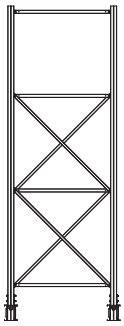


Five sections

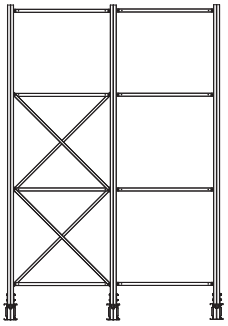


Six sections

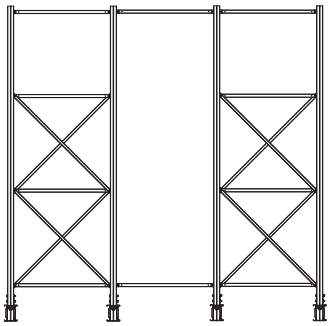
Bracing of 1950, 2150 and 2350 bracing models



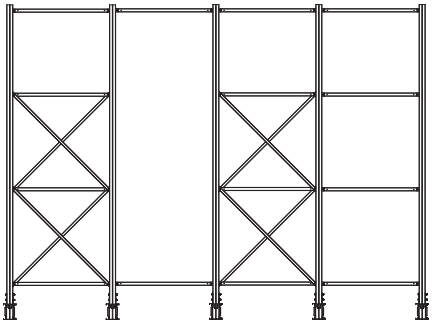
One section



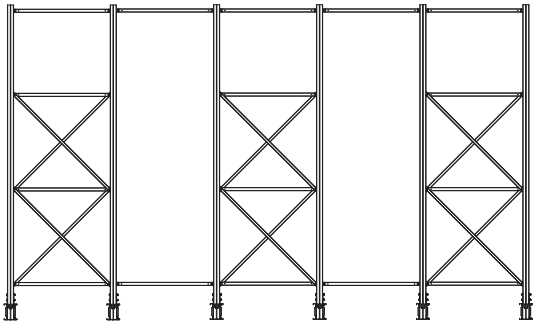
Two sections



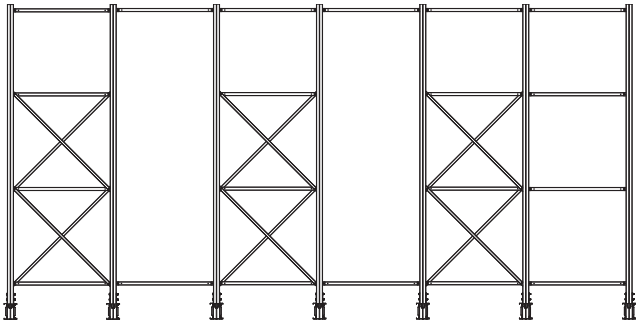
Three sections



Four sections



Five sections



Six sections

General load data

Applicable standards: SS2643 and Eurocode 3

For new installations, object specific loading diagrams are enclosed. The general load data shown in the table below is used for alterations or during other changesto the cantilever racks that differ from the original installation, where the purchaser doesn't find it necessary to make use of the higher capacity that may be provided by the object specific loading diagrams.

WLS can provide object specific loading diagrams, if requested by the purchaser, in case of alterations or other changes to the cantilever racks.

Column model 200 t=2.0 mm

Column height (H) mm	Arm length L mm	Max. load Kg/arm Light	Max. load Kg/arm Medium	Max. load Kg/arm Heavy	Average load kg/arm Max. number of arms per column side								
					3	4	5	6	7	8	9	10	
2000	500	630	2500	-	1200	1000	800	650	550	-	-	-	-
	750	420	1680	-	900	750	600	500	450	-	-	-	-
	1000	310	1260	1760	750	600	500	400	350	-	-	-	-
	1200	260	1050	1470	600	500	450	350	250	-	-	-	-
	1500	-	840	1170	500	400	350	250	200	-	-	-	-
	1800	-	-	980	450	300	250	200	150	-	-	-	-
3000	500	630	2500	-	1150	900	750	600	550	450	400	350	350
	750	420	1680	-	850	700	550	450	350	300	250	250	200
	1000	310	1260	1760	700	550	400	300	250	200	200	150	150
	1200	260	1050	1470	600	450	300	250	200	150	150	150	100
	1500	-	840	1170	500	350	250	200	150	100	100	100	100
	1800	-	-	980	400	350	200	150	100	100	100	50	50
4000	500	630	2500	-	950	800	650	550	450	350	300	300	250
	750	420	1680	-	800	600	450	350	300	250	200	200	150
	1000	310	1260	1760	650	450	350	250	200	150	150	150	100
	1200	260	1050	1470	600	350	250	200	150	150	100	100	100
	1500	-	840	1170	400	250	200	150	100	100	100	50	50
	1800	-	-	980	350	200	150	100	100	50	50	50	50

Column model 300 t=2.0 mm

Column height (H) mm	Arm length L mm	Max. load Kg/arm Light	Max. load Kg/arm Medium	Max. load Kg/arm Heavy	Average load kg/arm Max. number of arms per column side								
					2	3	4	5	6	7	8	9	10
3000	500	630	2500	-	1700	1350	1100	950	800	700	600	550	500
	750	420	1680	-	1450	1100	900	750	650	550	500	450	400
	1000	310	1260	1760	1250	950	750	650	550	450	400	350	300
	1200	260	1050	1470	1100	820	650	550	450	400	350	300	300
	1500	-	840	1170	950	700	550	450	400	350	300	250	250
	1800	-	-	980	800	600	450	350	300	250	250	200	200
4000	500	630	2500	-	1350	1150	950	850	750	650	600	550	500
	750	420	1680	-	1150	950	800	700	600	550	450	400	400
	1000	310	1260	1760	1000	800	700	600	500	450	400	350	300
	1200	260	1050	1470	900	750	600	500	450	400	350	300	250
	1500	-	840	1170	800	650	500	450	350	300	250	200	200
	1800	-	-	980	700	550	450	350	300	250	200	150	150
5000	500	630	2500	-	1200	950	850	750	650	600	550	500	450
	750	420	1680	-	1050	800	700	600	550	500	450	400	350
	1000	310	1260	1760	900	700	600	550	450	400	350	300	250
	1200	260	1050	1470	850	650	550	450	400	350	300	250	200
	1500	-	840	1170	750	550	450	350	300	250	200	200	150
	1800	-	-	980	650	500	350	300	250	200	150	150	150

Column model 400 t=2.0 mm

Column height (H) mm	Arm length L mm	Max. load Kg/arm Light	Max. load Kg/arm Medium	Max. load Kg/arm Heavy	Average load kg/arm Max. number of arms per column side								
					2	3	4	5	6	7	8	9	10
3000	500	630	2500	-	2150	1650	1350	1100	950	850	750	650	600
	750	420	1680	-	1750	1400	1150	950	800	700	600	550	500
	1000	310	1260	1760	1450	1150	950	800	650	600	500	450	400
	1200	260	1050	1470	1300	1050	850	700	600	500	450	400	350
	1500	-	840	1170	1100	900	700	600	500	450	400	350	300
	1800	-	-	980	950	750	600	500	400	350	300	250	250
4000	500	630	2500	-	1750	1400	1200	1050	900	800	700	650	600
	750	420	1680	-	1500	1200	1000	850	750	650	600	500	450
	1000	310	1260	1760	1300	1050	850	750	650	550	500	450	400
	1200	260	1050	1470	1200	950	800	650	550	500	450	400	350
	1500	-	840	1170	1050	800	650	550	500	400	350	350	300
	1800	-	-	980	900	750	600	500	400	350	300	250	250
5000	500	630	2500	-	1400	1200	1050	950	850	750	700	600	550
	750	420	1680	-	1200	1050	900	800	700	600	550	500	450
	1000	310	1260	1760	1050	900	750	650	600	550	500	450	400
	1200	260	1050	1470	1000	800	700	600	550	450	400	400	350
	1500	-	840	1170	850	700	600	500	450	400	350	300	300
	1800	-	-	980	800	650	550	450	400	350	300	250	250

Column model 400 t=3.0 mm

Column height (H) mm	Arm length L mm	Max. load Kg/arm Light	Max. load Kg/arm Medium	Max. load Kg/arm Heavy	Average load kg/arm Max. number of arms per column side								
					2	3	4	5	6	7	8	9	10
3000	500	630	2500	-	3450	2650	2200	1850	1550	1350	1200	1100	1000
	750	420	1680	-	2850	2200	1850	1500	1300	1100	1000	900	800
	1000	310	1260	1760	2350	1900	1550	1300	1100	950	850	750	650
	1200	260	1050	1470	2100	1700	1400	1150	950	850	750	650	600
	1500	-	840	1170	1750	1450	1200	1000	800	700	600	550	500
	1800	-	-	980	1500	1250	950	750	650	550	500	450	400
4000	500	630	2500	-	2700	2250	1900	1650	1450	1300	1150	1050	950
	750	420	1680	-	2350	1900	1600	1400	1200	1100	950	850	750
	1000	310	1260	1760	2050	1650	1350	1200	1000	900	800	700	650
	1200	260	1050	1470	1850	1500	1200	1050	900	800	700	650	600
	1500	-	840	1170	1650	1300	1050	900	800	700	600	550	500
	1800	-	-	980	1450	1150	900	750	650	550	500	400	400
5000	500	630	2500	-	2100	1900	1650	1450	1300	1200	1100	1000	900
	750	420	1680	-	1850	1600	1400	1200	1100	1000	900	800	750
	1000	310	1260	1760	1650	1400	1200	1050	950	850	750	700	650
	1200	260	1050	1470	1500	1300	1100	950	850	750	650	600	550
	1500	-	840	1170	1350	1150	950	900	700	650	600	550	500
	1800	-	-	980	1200	1000	850	700	600	550	450	400	400

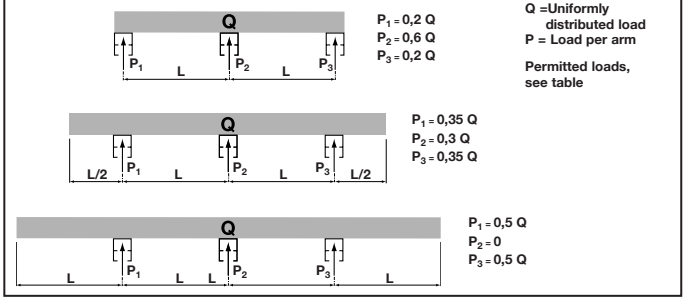
Column model 400 t=4.0 mm

Column height (H) mm	Arm length L mm	Max. load Kg/arm Light	Max. load Kg/arm Medium	Max. load Kg/arm Heavy	Average load kg/arm Max. number of arms per column side 2	3	4	5	6	7	8	9	10
4000	500	630	2500	-	3950	3350	2800	2300	2000	1750	1550	1400	1300
	750	420	1680	-	3400	2850	2350	1950	1650	1450	1300	1150	1050
	1000	310	1260	1760	3000	2500	2000	1650	1400	1250	1100	1000	900
	1200	260	1050	1470	2750	2250	1800	1500	1250	1100	950	850	800
	1500	-	840	1170	2400	1950	1550	1300	1100	950	800	750	650
	1800	-	-	980	2150	1750	1400	1100	950	800	700	650	600
5000	500	630	2500	-	3100	2800	2450	2250	1900	1700	1500	1350	1250
	750	420	1680	-	2700	2400	2100	1850	1600	1400	1250	1100	1050
	1000	310	1260	1760	2400	2100	1800	1600	1350	1200	1050	950	850
	1200	260	1050	1470	2200	1900	1650	1450	1200	1050	950	850	750
	1500	-	840	1170	1950	1700	1450	1250	1050	900	800	700	650
	1800	-	-	980	1750	1500	1250	1100	900	800	700	650	550
6000	500	630	2500	-	2400	2350	2200	2050	1900	1650	1500	1350	1250
	750	420	1680	-	2100	2050	1850	1700	1550	1400	1250	1100	1000
	1000	310	1260	1760	1850	1800	1600	1500	1350	1200	1050	950	850
	1200	260	1050	1470	1700	1650	1450	1350	1200	1050	950	850	750
	1500	-	840	1170	1550	1450	1300	1150	1000	850	800	700	600
	1800	-	-	980	1400	1300	1000	1050	850	700	700	550	500

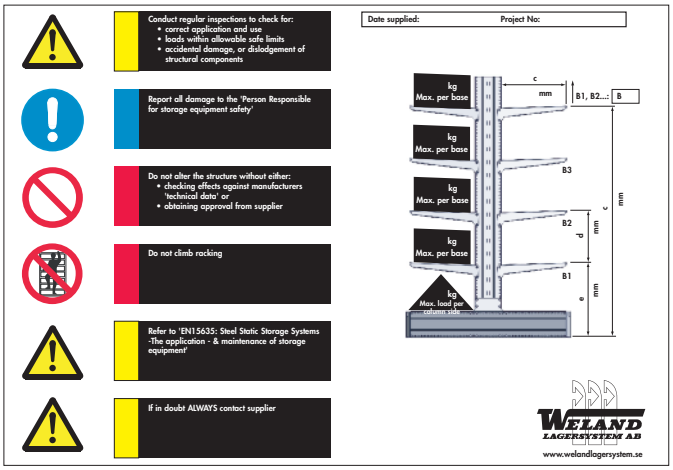
Column model 400 t=5.0 mm

Column height (H) mm	Arm length L mm	Max. load Kg/arm Light	Max. load Kg/arm Medium	MMax. load Kg/arm Heavy	Average load kg/arm Max. number of arms per column side 2	3	4	5	6	7	8	9	10
4000	500	630	2500	-	4950	3650	2950	2450	2100	1850	1650	1500	1350
	750	420	1680	-	4250	3100	2450	2050	1750	1500	1350	1200	1100
	1000	310	1260	1760	3750	2700	2100	1750	1500	1300	1150	1000	950
	1200	260	1050	1470	3400	2400	1900	1550	1300	1150	1000	900	800
	1500	-	840	1170	3000	2100	1650	1350	1150	1000	850	750	700
	1800	-	-	980	2650	1850	1450	1150	1000	850	750	700	600
5000	500	630	2500	-	3800	3400	2750	2300	2000	1750	1600	1400	1300
	750	420	1680	-	3350	2900	2300	1950	1650	1450	1300	1150	1050
	1000	310	1260	1760	3000	2500	2000	1650	1400	1250	1100	1000	900
	1200	260	1050	1470	2750	2300	1800	1500	1250	1100	1000	850	800
	1500	-	840	1170	2400	2000	1550	1300	1100	950	850	750	700
	1800	-	-	980	2200	1800	1400	1150	950	850	750	650	600
6000	500	630	2500	-	2900	2950	2700	2300	1950	1750	1550	1400	1300
	750	420	1680	-	2550	2550	2300	1900	1650	1450	1300	1150	1050
	1000	310	1260	1760	2250	2250	2000	1650	1400	1250	1100	1000	900
	1200	260	1050	1470	2100	2050	1800	1500	1250	1100	1000	900	800
	1500	-	840	1170	1850	1800	1550	1300	1100	950	850	750	700
	1800	-	-	980	1700	1600	1400	1150	950	850	750	650	600

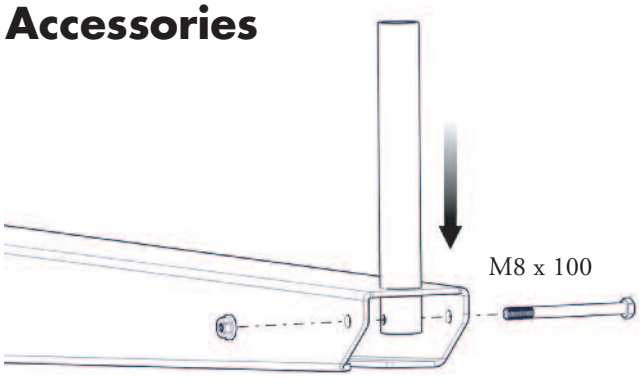
Location of goods, different loading cases



Object specific load data



Accessories



M8 flange nuts

Assemble any end stop on the arm beams

Maintenance
Damage arising from collision, for example, must be repaired immediately, because it will probably affect the cantilever rack's bearing capacity. A damaged column or arm constitutes a safety risk and must be replaced unconditionally.

Disposal
All of the cantilever rack components are recyclable.

Installation inspection
The installation must be inspected to ensure it has been performed according to the installation instructions before the cantilever rack is put into use.

To avoid the risk of overloading the cantilever rack, it is important that the loading diagram shown on the loading plates be observed.

Alteration
In case of any alteration to the cantilever rack, an installation inspection must be performed before it is put into use.

Daily inspection
The cantilever rack must be inspected regularly to ensure there is no damage to a component that affects the cantilever rack's bearing capacity. Damaged components must be replaced.

Periodic inspection
It is a statutory requirement that the cantilever rack be inspected at least once a year, to ensure that it corresponds to the installation instructions.

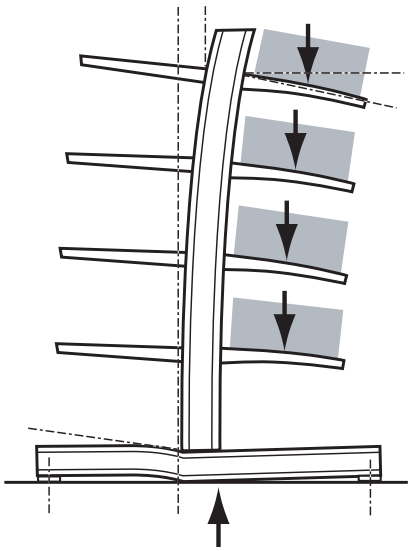
When repairing the cantilever rack, damaged bearing components must be replaced. Other equipment may be repaired.

The purchaser, or the user of the cantilever rack, is responsible for ensuring that inspections are made and documented.

Marking
The load per side and load per arm respectively can be read off the loading tables.

It is the supervisor's responsibility to ensure that these loading tables are available for the staff concerned and that they are observed.

Competence requirements and provision of instructions
Correct installation of storage equipment is as important as its correct dimensioning in order for the completed construction to be safe. The installation must be carried out according to the instructions provided by the supplier and must be done in a professional manner. The quality and accuracy of the work can have a major effect on the function of the storage equipment.
The supplier's fitters must have the correct training to carry out the installation as well as the experience required to carry it out in a safe way. If, according to agreement, the installation work is not to be performed by the supplier, the supplier must provide written installation instructions. The competence of the fitters can then be assumed to be on a level equal to the supplier's fitters.
If the user, or the user's subcontractors, performs this work instead of the supplier, the instructions provided by the supplier must be followed exactly.



The installation instructions comply with Swedish Standard SS 2243 and also SS-EN 15635-2008: Steel static storage systems, installation, application and maintenance.

It is recommended that the purchaser, or responsible personappointed by the purchaser, acquires the above-mentioned standard from SIS. www.sis.se

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